BASELINE BIODIVERSITY REPORT
SANTA MARGARITA PRESERVE

PREPARED FOR:

County of San Diego
Department of Parks and Recreation
5500 Overland Avenue, Suite 410
San Diego, CA 92123
Contact: Ms. Jennifer Price

PREPARED BY:

ICF International
9775 Businesspark Avenue, Suite 200
San Diego, California 92131

January 2012



ICF International. 2012. Baseline Biodiversity Report, Santa Margarita Preserve. January. Prepared for: County of San Diego Department of Parks and Recreation.

Contents

List of Tables and Figures iv
List of Acronyms and Abbreviations vi
Summary S-1
Chapter 1 **Introduction 1-1**
1.1 Purpose of the Project 1-1
1.2 Multiple Species Conservation Program Context 1-1
Chapter 2 **Study Area Description 2-1**
2.1 Project Location 2-1
2.2 Geographical Setting 2-1
2.3 Geology and Soils 2-1
2.4 Climate 2-2
2.5 Hydrology 2-2
2.6 Fire History 2-2
2.7 Trails and Roads 2-3
Chapter 3 **Methods 3-1**
3.1 Vegetation Communities/Habitats 3-1
3.1.1 Vegetation Communities Mapping 3-1
3.2 Plants 3-2
3.2.1 Floristic Surveys 3-2
3.3 Wildlife 3-2
3.3.1 Invertebrates 3-3
3.3.2 Herpetofauna 3-3
3.3.3 Birds 3-5
3.3.4 Mammals 3-8
Chapter 4 **Results and Discussion 4-1**
4.1 Vegetation Communities/Habitats 4-1
4.1.1 Drought Deciduous Shrublands 4-3
4.1.2 Riparian Shrublands 4-4
4.1.3 Riparian Woodland/Forest 4-4
4.1.4 Woodland 4-4
4.1.5 Unvegetated 4-5
Disturbed Habitat (11300) 4-5
Developed Lands (12000) 4-5
Agriculture (18000) 4-5

4.2 Plants 4-5
4.2.1 Special-Status Plant Species Observed 4-6
4.2.2 Special-Status Plant Species with High Potential to Occur 4-6
4.2.3 Invasive Species 4-7
4.3 Wildlife 4-9
4.3.1 Invertebrates 4-9
4.3.2 Fish 4-10
4.3.3 Herpetofauna 4-10
4.3.4 Birds 4-12
4.3.5 Mammals 4-18
4.3.6 Special-Status Wildlife Species Observed 4-22
4.3.7 Special-Status Wildlife Species with High Potential to Occur 4-29
4.3.8 Invasive Species 4-34
4.4 Wildlife Movement 4-35
Chapter 5 **Conclusions and MSCP Management and Monitoring Recommendations 5-1**
5.1 Vegetation Communities/Habitats 5-2
5.2 Plants 5-2
5.2.1 Rainbow Manzanita 5-3
5.2.2 Engelmann Oak 5-3
5.3 Wildlife 5-4
5.3.1 Arroyo Toad 5-4
5.3.2 Orange-Throated Whiptail 5-5
5.3.3 Least Bell's Vireo 5-5
5.3.4 Yellow-Breasted Chat 5-6
5.3.5 Southern California Rufous-crowned Sparrow 5-7
5.3.6 Mountain Lion 5-8
5.4 Invasive Non-Native Species Removal Control 5-8
5.4.1 Invasive Plants 5-8
5.4.2 Wildlife 5-9
5.5 Restoration Opportunities 5-10
5.6 Fire Management 5-10
5.7 Wildlife Linkages and Corridors 5-10
5.8 Additional Management Recommendations 5-11
5.8.1 Hydrological Management 5-11
5.8.2 Public Access 5-11
5.8.3 Fencing 5-11
5.8.4 Trails and Access Roads 5-12

5.8.5 Signage and Education 5-12
5.8.6 Litter/Trash Removal 5-12
5.8.7 Illegal Off-road Activity 5-12
5.8.8 Emergency and Safety Issues 5-13

Chapter 6 **References 6-1**

Appendix A Vascular Plant Species Detected

Appendix B Potentially Occurring Sensitive Species - Plants

Appendix C Wildlife Species Detected

Appendix D Potentially Occurring Sensitive Species - Wildlife

Appendix E Photo Book

Tables and Figures

Table

1 Array Description 3-4

2 Dates and Personnel for the Pitfall Sampling on the Preserve in 2011 3-5

3 Dates and Personnel for Nocturnal/Diurnal Arroyo Toad Surveys on the Preserve in 2011 3-5

4 Dates and Personnel for the Point Counts on the Preserve in 2011 3-6

5 Dates and Personnel for the Nocturnal Bird Surveys on the Preserve in 2011 3-8

6 Personnel, Date, Time, and Conditions of the Small Mammal Trapping Program at the Preserve in 2011 3-9

7 Trapline Description 3-10

8 Camera Sampling Location Description 3-11

9 Passive Bat Sampling Location Description 3-13

10 Vegetation Communities and Land Cover Types within the Preserve 4-1

11 Non-Native Invasive Plant Species Known to Occur in the Preserve 4-8

12 Butterfly Species Observed or Captured During 2011 Surveys 4-10

13 Amphibian Species Observed or Captured During 2011 Surveys 4-11

14 Reptile Species Observed or Captured During 2011 Surveys 4-12

15 Avian Species Detected at the Preserve in 2011 4-15

16 Avian Point Counts – Totals for Individuals 4-17

17 Avian Point Counts – Totals for Species 4-18

18 Trapline Capture Summary 4-20

19 Small Mammals Detected through Other Survey Methods 4-21

20 Medium and Large Mammals Detected at the Preserves in 2011 4-21

21 Bat Species Detected at the Preserve in 2011 4-22

Figure **Follows Page**

1 Regional Location 1-2

2 Preserve Vicinity Map 1-2

3 MSCP Designations and Conserved Lands 1-2

4 Soils Map 2-2

5 Hydrology Map 2-2

6 Fire History Map 2-2

7 Trails Map 2-4

8 Biological Inventory Locations 3-4

9a–b Vegetation Communities/Habitats 4-2

10 Special Status Plant Species 4-6

11 Invasive Plant Species 4-10

12 Special Status Wildlife Species 4-14

13 Wildlife Corridor Movement Areas 4-36

Acronyms and Abbreviations

°F	Fahrenheit
AMSL	above mean sea level
ASMDs	area specific management directives
station	avian point count station
Cal-IPC	California Invasive Plant Council
CDFG	California Department of Fish and Game
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
DPR	Department of Parks and Recreation
ft	feet
GIS	geographic information system
I-15	Interstate 15
km	kilometers
m	meters
mi	miles
Draft FRMP	Draft North County MSCP Framework Resource Management Plan
MSCP	Multiple Species Conservation Program
Draft North County MSCP	Draft North County Multiple Species Conservation Program
NC MSCP Preserve	North County Multiple Species Conservation Program Preserve
PAMA	pre-approved mitigation area
Preserve	Santa Margarita Preserve
Quino	Quino checkerspot butterfly
SR-76	State Route 76
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Service

Summary

ICF International (ICF) conducted a baseline biological inventory study at the Santa Margarita Preserve (Preserve) that included the following: (1) vegetation surveys with habitat community mapping, rare plant, and California Invasive Plant Council (Cal-IPC) invasive plant species mapping components, (2) butterfly surveys, (3) herpetofauna surveys including pitfall arrays, (4) ornithological surveys including diurnal point counts and nocturnal surveys, and (5) mammal surveys including small mammal trapping, camera stations for medium to large mammals, and bat surveys.

This report summarizes all survey methodologies and data collected during the 2011 survey period (April through October).

The Preserve includes approximately 210 acres[1] and consists of 13 plant alliances or associations. The vegetation communities on-site are dominated by high quality Diegan coastal sage scrub, scrub oak chaparral, and southern willow scrub, but contain a large area of poison hemlock along the banks of Santa Margarita River. Two in a half miles of multi-use trails are located on the eastern portion of the Preserve. To the north the trails connect to the Fallbrook Public Utility Districts trails.

The current survey effort documented 340 species within the Preserve. Specifically, the surveys detected 214 plant species and 126 wildlife species. Of these species, two (2) plants are considered special status and will also be covered by the Draft North County Multiple Species Conservation Project (Draft North County MSCP); 20 special-status wildlife species were detected during the surveys of which seven (7) are proposed to be covered by the Draft North County MSCP.

[1] The assessor's parcel data list the Preserve to be 220.53 acres; however, calculations generated from the GIS data show the Preserve as 210 acres. Therefore, this report references the property as 210 acres.

This page intentionally left blank.

Chapter 1
Introduction

1.1 Purpose of the Project

Baseline biological resources surveys were conducted within the County of San Diego Department of Parks and Recreation (DPR) Santa Margarita Preserve (Preserve) (Figures 1 and 2). The purpose of these surveys was to identify and map existing biological resources. This information will be utilized to develop a resource management plan (RMP) including area specific management directives (ASMDs). These ASMDs will provide the management framework for monitoring and managing the Preserve's resources.

1.2 Multiple Species Conservation Program Context

The Preserve is located in the Draft North County Multiple Species Conservation Program (Draft North County MSCP) planning area (Figure 3). It should be noted that the North County MSCP has not been approved by the resource agencies (California Department of Fish and Game and U.S. Fish and Wildlife Service) and is currently in draft form. A key feature of the Draft North County MSCP is the focus of proposed conservation areas that are identified in the plan as pre-approved mitigation areas (PAMA). As proposed, 80% of the natural habitats within the Draft North County MSCP planning area are proposed for conservation. Within the PAMAs, the plan identifies planning segments including core areas, special areas, and linkages between core areas. The Preserve is located within the PAMA and is between the De Luz and Santa Margarita core habitat areas.

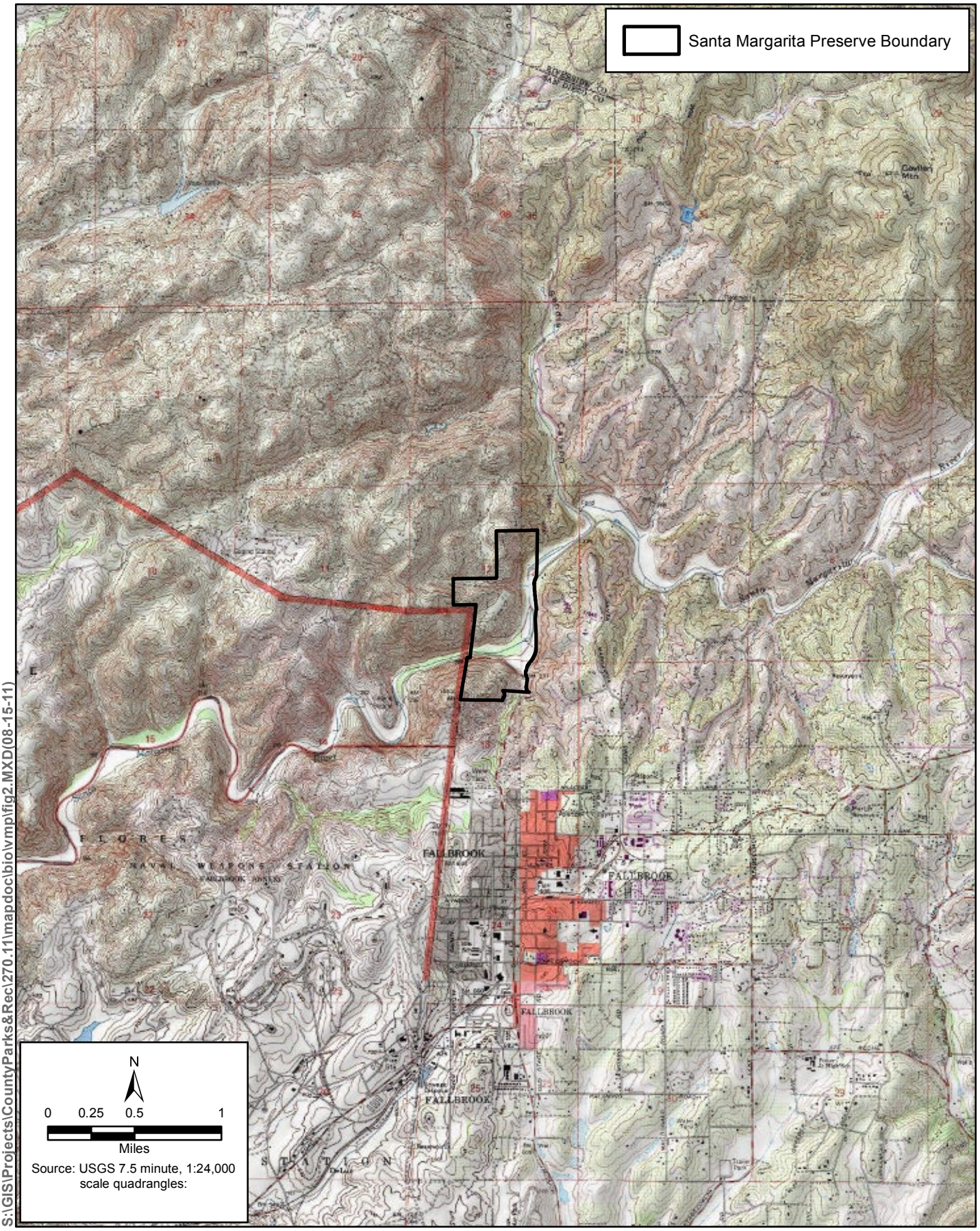
This page intentionally left blank.



S:\GIS\Projects\CountyParks&Rec\270.11\mapdoc\bio\vmp\fig1.MXD(08-15-11)

ICF INTERNATIONAL

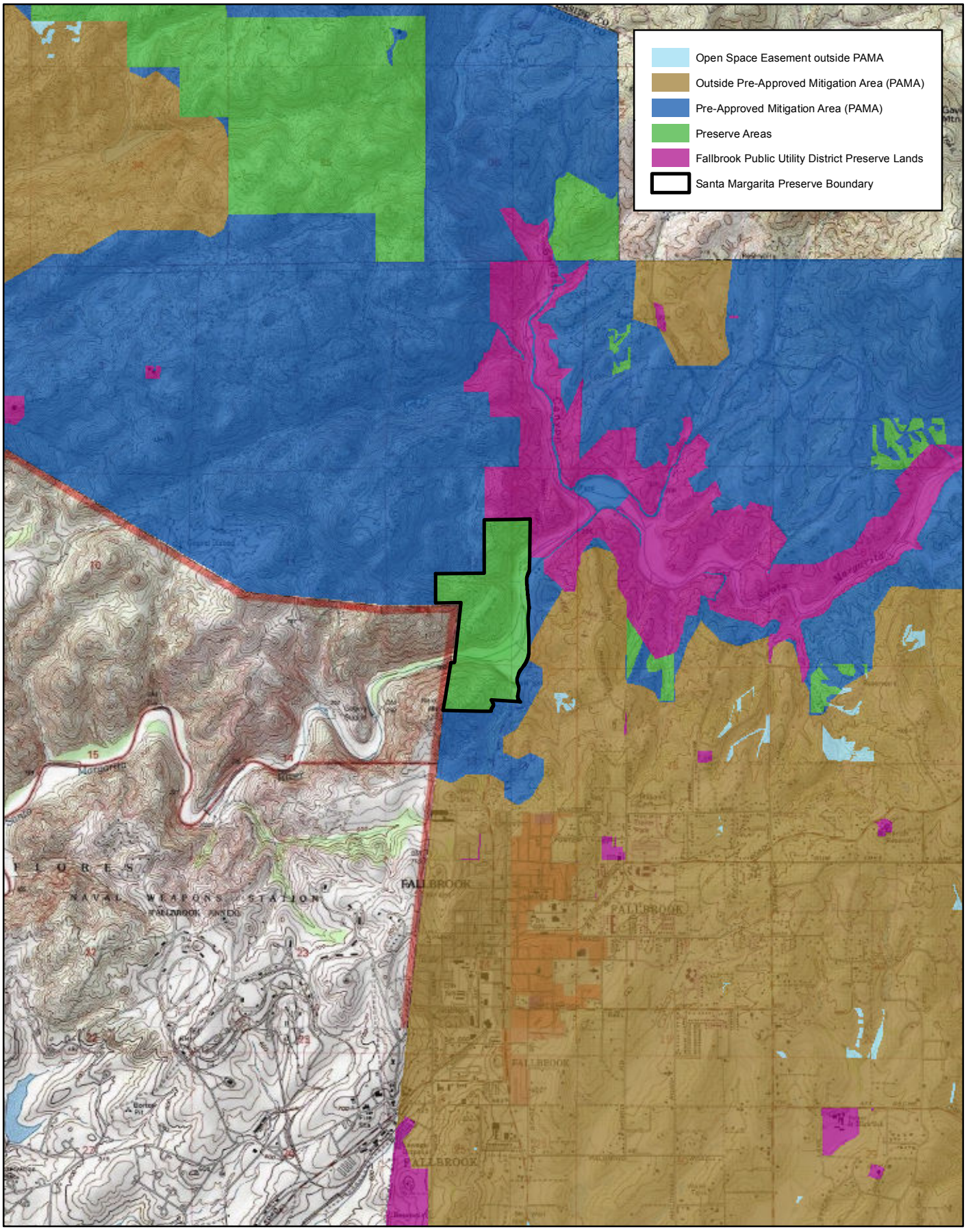
Figure 1
Regional Location
Santa Margarita Preserve



S:\GIS\Projects\CountyParks&Rec\270.11\mapdoc\bio\vmp\fig2.MXD(08-15-11)

ICF INTERNATIONAL

Figure 2
Preserve Vicinity Map
Santa Margarita Preserve



Figuure 3
MSCP Designations and Conserved Lands
Santa Margarita Preserve

Chapter 2
Study Area Description

2.1 Project Location

The Preserve is located in northern San Diego County approximately 5.5 miles west of Interstate 15 (I-15), approximately nine (9) miles north of State Route 76 (SR-76), and approximately two (2) miles northwest of downtown Fallbrook, California (Figure 1). Specifically the Preserve is located directly west of Sandia Creek Drive, just east of the northeastern portion of Camp Pendleton Marine Corps Base and the southern portion of the Preserve is bisected by De Luz Road.

2.2 Geographical Setting

The Preserve is located in the upper Santa Margarita River Valley, which consists of a deep basin surrounded by steep hills and rocky rises ranging in elevation from approximately 90 meters (m) (300 feet [ft]) above mean sea level (AMSL) along the valley floor, to over 275 m (900 ft) AMSL in the hills north and south of the river bottom (Figure 2). The Preserve is situated within the southern Santa Ana Mountains, south of Temecula Valley, west of Rainbow Valley, and west of Gavilan Mountain.

2.3 Geology and Soils

The Preserve lies within the Peninsular Ranges geomorphic province of California. Northwest-trending faults and structural blocks, with intervening valleys, characterize this physiographic region. Regional geologic maps for the area indicate that materials underlying the Preserve are primarily Mesozoic granite, quartz monzonite, granodiorite, and quartz diorite (Geologic Map of California 2010).

Within the Preserve, two principal soil types are represented. The majority of the soil, located on slopes of 30-75%, consists of Cieneba very rocky, coarse, sandy loam. The other major soil type present within the Preserve is alluvial riverwash, located in the Santa Margarita Creek bed (Figure 4) (Bowman 1973). A brief description of each soil type that occurs on the Preserve is provided below.

The Cieneba series consists of very shallow and shallow, somewhat excessively drained soils that formed in material weathered from granitic rock.

Riverwash soils occur in areas with active stream channels or flood plains, and adjacent to drainage ways. In addition to the Riverwash soils two additional soils are found within the Santa Margarita River. These soils include Ramona, sandy, loam and Visalia, sandy, loam. The Ramona soils are comprised of fine loams while the Visalia soils are primarily comprised of coarse loams.

2.4 Climate

A semi-permanent, high-pressure cell located over the Pacific Ocean dominates San Diego climate. This cell drives the dominant onshore circulation, maintaining clear skies for much of the year. Summers at the Preserve are typically warm and dry, while winters are mild with occasional rain (NOAA 2011.

The Preserve lies within the Coastal Climate Zone of San Diego County according to Mapping San Diego (City Data 2011), with average summer temperatures of 70-80˚ F, summer afternoon relative humidity of 60%, and summer afternoon sea breezes of 6-8 miles per hour.

The Fallbrook area has experienced summer high temperatures over 100˚F and strong Santa Ana winds in the fall that reduces relative humidity to dangerous levels. The largest and most destructive wildfires have occurred in the fall and winter during these wind events.

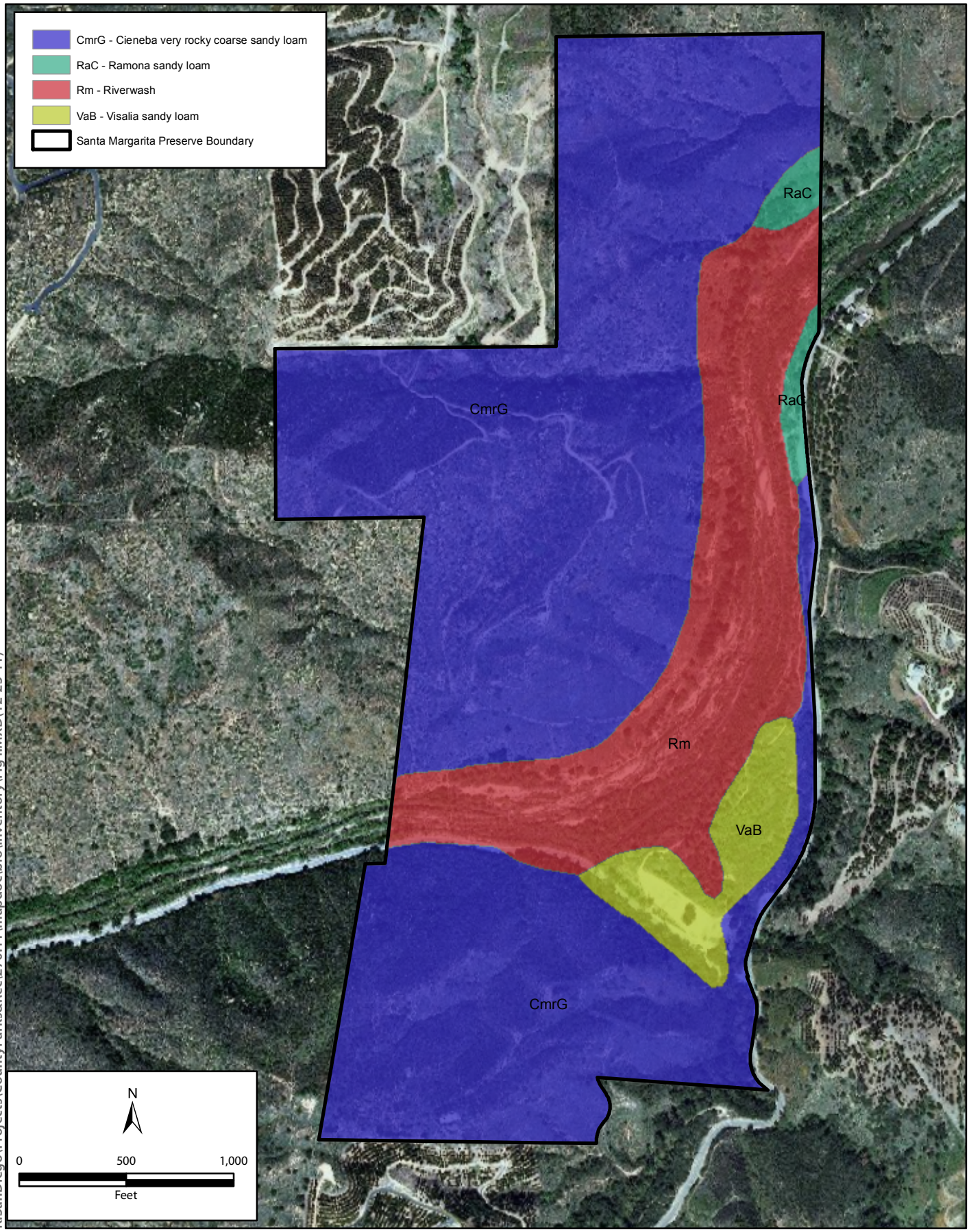
Camp Pendleton is the most complete National Oceanic and Atmospheric Administration (NOAA) record of precipitation with complete records from 1966 to 1993. During this time, the maximum precipitation recorded within a given year was 19.2 inches, the low was 4.75 inches, and the mean was 11.83 inches. Mapping San Diego provides a precipitation range for the northern portion of the Preserve as 18-21 inches per year and the southern portion as 15-18 inches per year (City Data 2011).

2.5 Hydrology

The Preserve is located within the Santa Margarita Watershed and the Santa Margarita River flows through the eastern and southern portions of the Preserve (Figure 5). Project Clean Water (County of San Diego 2000) describes the Santa Margarita Watershed as follows, “The Santa Margarita River watershed encompasses approximately 750 square miles in northern San Diego and southwestern Riverside counties. The watershed contains a variety of nearly intact habitats including chaparral-covered hillsides, riparian woodlands, and coastal marshes. Of the total watershed area, approximately 27% is within San Diego County. The Santa Margarita River is formed near the City of Temecula in Riverside County at the confluence of the Temecula and Murrieta Creek systems. Once formed, the majority of the Santa Margarita River main stem flows within San Diego County through unincorporated areas, the community of Fallbrook, and the Marine Corps Base Camp Pendleton. The lower river and estuary have largely escaped the development typical of other regions of coastal southern California, and are therefore able to support a relative abundance of functional habitats and wildlife.”

2.6 Fire History

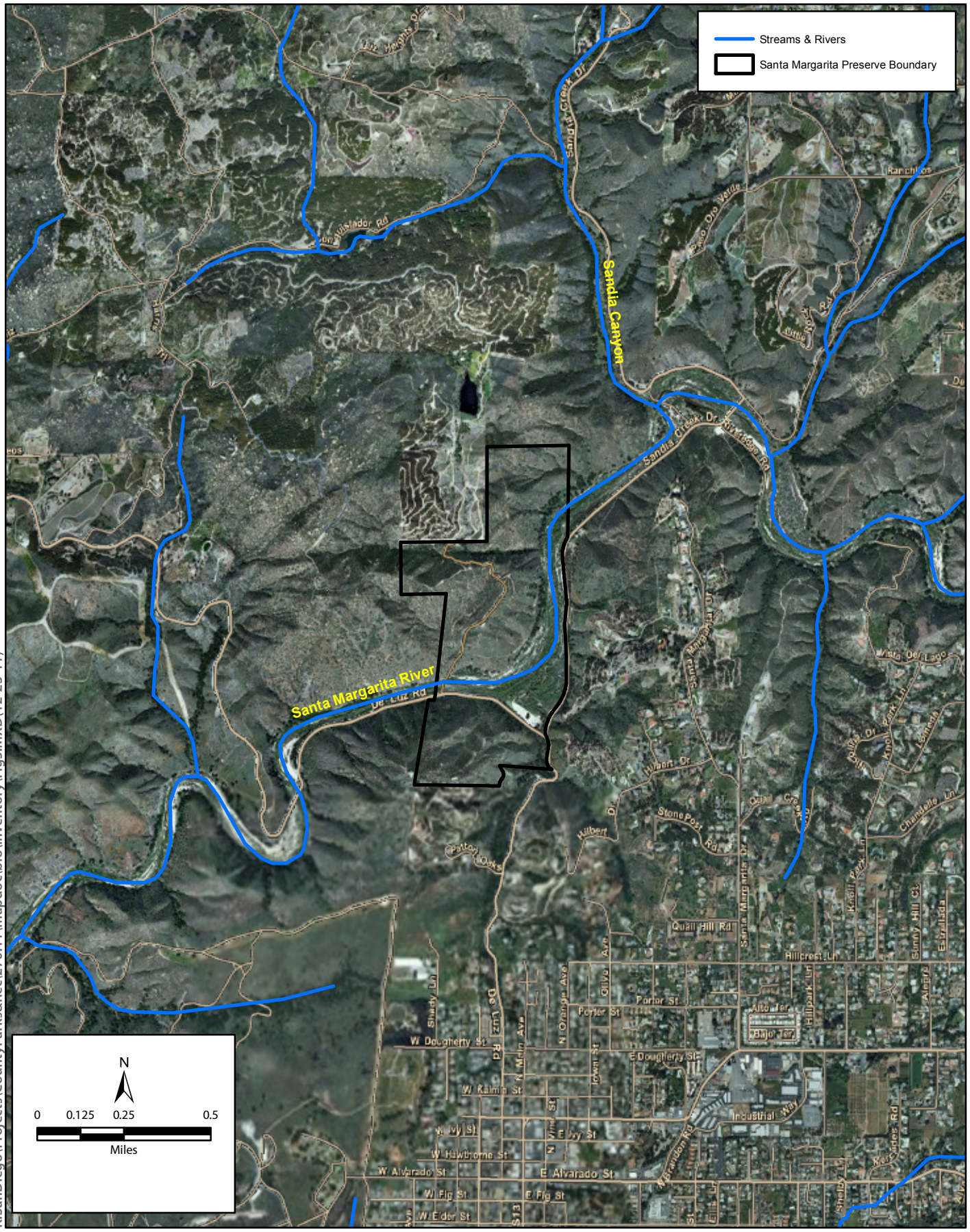
The Preserve was impacted by three fire events during the past century (Figure 6). The earliest recorded fire that impacted the Preserve occurred in 1911 and burned 4,800 acres including the entire Preserve boundary (USGS/California Fire Alliance 2011, Figure 6). In 1945, a 37,000-acre fire burned a small portion of the northwest half of the Preserve. The Gavilan Fire of February 2002 burned a total of 5,600 acres during a Santa Ana wind event; the exterior boundary of the fire included the entire Preserve.



K:\SanDiego\Projects\CountyParks&Rec\270.11\mapdoc\bio\inventory\Fig4.MXD(12-23-11)

ICF INTERNATIONAL

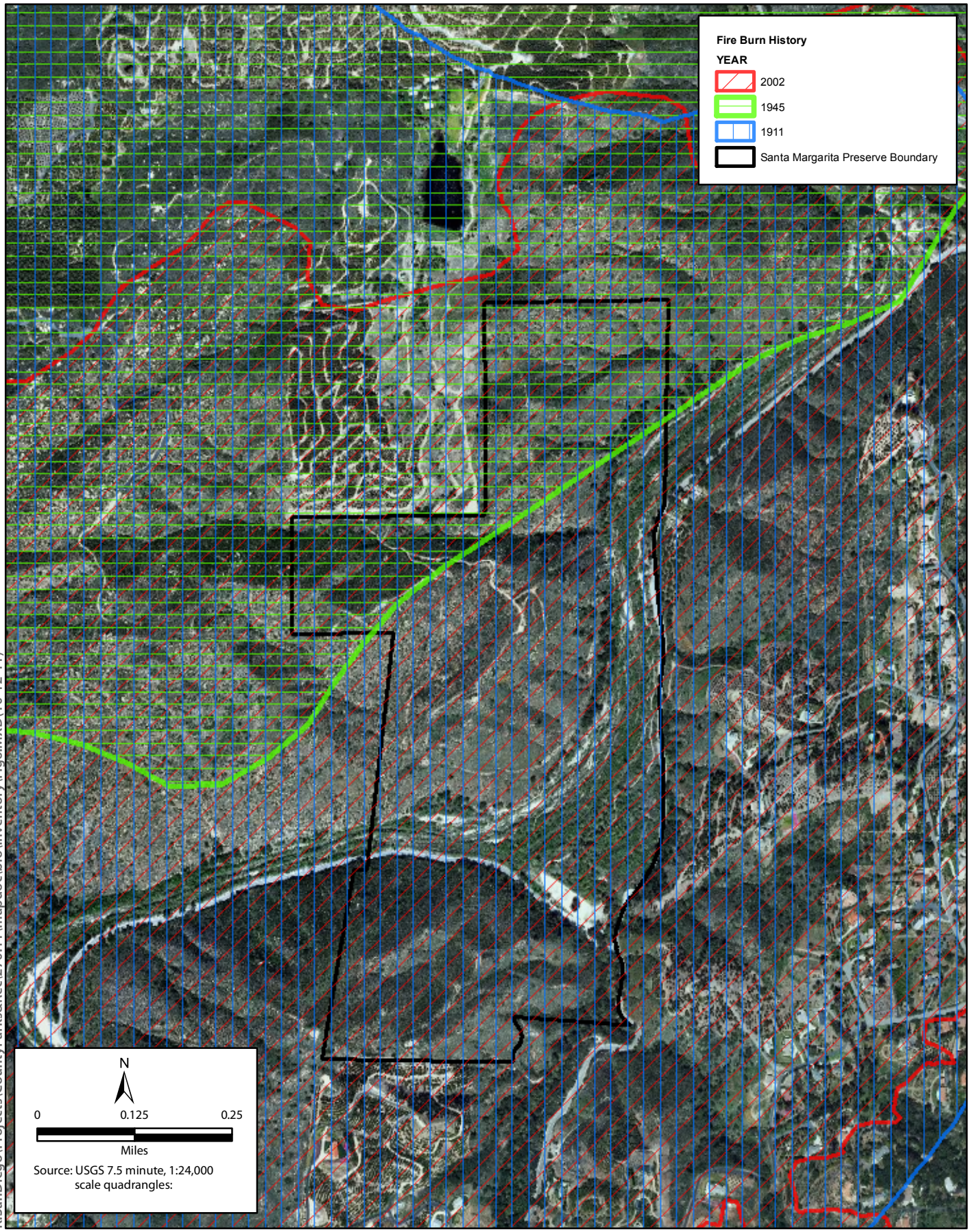
Figure 4
Soils Map
Santa Margarita Preserve



K:\SanDiego\Projects\CountyParks&Rec\270.11\mapdoc\bio\inventory\Fig5.MXD(12-23-11)

ICF INTERNATIONAL

Figure 5
Hydrology Map
Santa Margarita Preserve



K:\SanDiego\Projects\CountyParks&Rec\270.11\mapdoc\bio\inventory\Fig6.MXD(10-12-11)

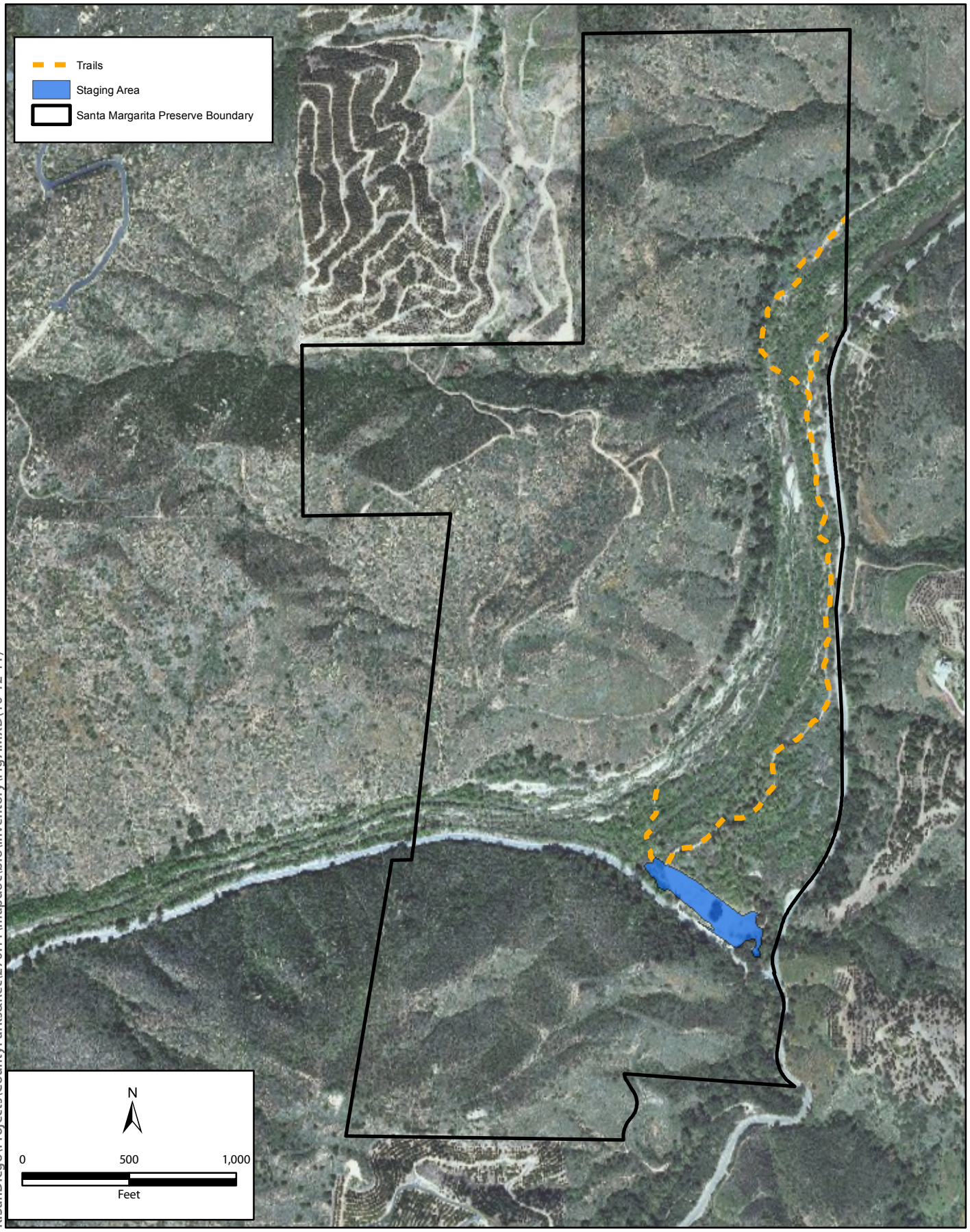
ICF INTERNATIONAL

Figure 6
Fire History Map
Santa Margarita Preserve

2.7 Trails and Roads

The Preserve is open to the public for hiking, biking, and equestrian uses. There are approximately 2.5 miles of existing trails on the Preserve, with a staging area that is approximately seven (7) acres (Figure 7). The County operates the trail system in a partnership with the Fallbrook Land Conservancy which manages 11.2 miles of trail east of the Preserve on lands owned by the Fallbrook Public Utility District (Fallbrook Land Conservancy 2011).

This page intentionally left blank.



K:\SanDiego\Projects\CountyParks&Rec\270.11\mapdoc\bio\inventory\Fig7.MXD(10-12-11)

ICF INTERNATIONAL

Figure 7
Trails Map
Santa Margarita Preserve

Chapter 3
Methods

ICF International (ICF) conducted a baseline biological inventory study at the Preserve that included the following: (1) vegetation surveys with habitat community mapping, rare plant, and Cal-IPC invasive plant species mapping components, (2) butterfly surveys, (3) herpetofauna surveys including pitfall arrays, (4) ornithological surveys including diurnal point counts and nocturnal surveys, and (5) mammal surveys including small mammal trapping, camera stations for medium to large mammals, and bat surveys.

The following sources are followed for taxonomy and nomenclature, including both scientific and standardized English names: Jepson Interchange (2011) for plants; Arnett (2000) for higher taxonomic categories of invertebrate animals; generally Opler and Wright (1999) or Hogue (1993) for invertebrate species; the Center for North American Herpetology (2011) for amphibians and reptiles; American Ornithologist's Union (1998 and supplements) for birds; and Baker et al. (2003) for mammals. The scientific binomial from the cited reference is included with the first mention of a species in the body of this report.

3.1 Vegetation Communities/Habitats

3.1.1 Vegetation Communities Mapping

Vegetation communities were mapped on a "one-inch equals 200 feet" (1:2400) scale aerial photograph of the Preserve in the field and later digitized into a geographic information system (GIS) coverage using ArcGIS software. Vegetation communities were mapped within the Property boundaries plus a 100-foot buffer pursuant to County of San Diego guidelines (County of San Diego 2010). The methods and classification system used for this effort were consistent with the 2011 *Vegetation* Classification *Manual for Western San Diego County* (herein referred to as VCM), which is based on *A Manual of California Vegetation* (Sawyer, Keeler-Wolf, Evens 2009).

The VCM is a hierarchical system that is consistent with the National Vegetation Classification System (NVCS). The highest levels of the NVCS are very broad, and therefore not part of the locally derived VCM, which focuses on the lowest levels – the alliances, associations and stands. *Alliances* are characterized by "the presence of diagnostic species within a range of cover values within a single plant stratum" and *associations* are a "subset of types within an alliance, which are further defined by additional diagnostic species that may be present in any stratum" (AECOM et al. 2011). The most basic unit in the VCM classification system is the *stand*, which is defined by species composition and relative cover, as well as structural integrity (e.g., vertical and horizontal structure resulting from local environmental conditions and site history). *Semi-natural stands* are equivalent to an alliance but dominated by non-native species.

The vegetation types (e.g., Alliances and Associations), were determined by assessing the relative dominance of tree, shrub and herbaceous species. These determinations were made with the use of a key, which was in the form of an interactive CD-ROM that was installed on a computer and used in the field. In addition, to confirm the field identification, "membership rules" were reviewed as well

as slope aspect, topographic position, and soil texture for each Alliance and Association. The boundaries of vegetation communities were then drawn onto a 150-scale (1" = 150') 2009 color aerial photograph and incorporated into a Geographic Information System (GIS) data layer. To ensure consistency with previous mapping, the MSCP, and other planning or regulatory documents, the mapping on the Property was cross-walked to Holland classification system (1986), as modified by Oberbauer et al. (2008), pursuant guidelines detailed in Appendix C of the VCM.

All existing staging areas, roads, and trails were included on the map and depicted as either disturbed (dirt) or developed (paved).

3.2 Plants

Prior to conducting rare plant surveys ICF biologists conducted a literature search of the available special status databases to determine if rare plants were previously detected or known to occur within the vicinity of the Preserve. Available data that was reviewed included the California Natural Diversity Database (CNDDB) (CDFG 2011), the California Native Plant Society (CNPS) Rare Plant Inventory (CNPS 2011), the U.S. Department of Agriculture (USDA) soil survey of the area (USDA 1973), and U.S. Geologic Survey (USGS) topographic maps to identify potential stream courses and other notable topographic features.

Surveys were conducted to categorize and map the plant communities within the Preserve, map special-status plants, map California Invasive Plant Council (CalIPC) invasive plant species, and document all flora observed. ICF botanists traversed the Preserve via meandering transects in an effort to accurately categorize vegetation communities. Rare plant survey priority areas were determined once the literature search and the vegetation mapping were complete. For the purpose of this project, special-status plant species include all species listed or proposed for listing by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG), any species listed as 1B through 4 by the CNPS, any species on the County list (Groups A, B, C, and D), and any species proposed to be covered under the North County MSCP.

3.2.1 Floristic Surveys

Rare plant survey priority areas included unique features within the Preserve that have a high potential to support rare plant species. These features include the periphery of the oak woodland canopy, and unique habitat features such as rock outcrops and grassland openings between denser chaparral/scrub habitats. ICF botanists traversed the study area via meandering transects in an effort to identify the locations of any special-status species readily detectable. All plant species observed were noted, and plants that could not be identified in the field were identified later using taxonomic keys including Beauchamp (1986) and Hickman (1993) (Appendix A).

3.3 Wildlife

Surveys were conducted to document the wildlife species currently using the Preserve and to assess the potential occurrence of special-status wildlife species not detected during the surveys (Appendices C and D). The CNDDB was reviewed to create a list of wildlife with potential to occur on site (CDFG 2011; Fallbrook, Sitton Peak, Wildomar, Murrieta, Margarita Peak, Temecula, Las Pulgas

Canyon, Morro Hill, Bonsall quadrangles). Using a checklist of all species in the region with special status, species were added to the list of potentially occurring species based on professional knowledge and judgment, experience with prior projects in the area, review of previous studies conducted within the Preserve, ICF internal databases, and published and unpublished references. The potential for each of these species to occur on the Preserve or in the immediate vicinity was evaluated. In evaluating the potential for occurrence, a pool of references and resources was utilized for information on species distribution, habitat requirements, disturbance tolerance, threats and causes of declines, and other features of their conservation biology. Special-status wildlife species include all species listed or proposed for listing by the USFWS and CDFG, any species on the County list (Group I and II), and any species proposed to be covered under the Draft North County MSCP.

3.3.1 Invertebrates

Butterflies

ICF biologists conducted a habitat assessment for the federally endangered Quino checkerspot (*Euphydryas editha quino*; Quino) and general butterfly diversity surveys utilizing similar methods as outlined in the USFWS protocol for Quino surveys (USFWS 2002). Surveys conducted used the field methods outlined in the protocol to increase the likelihood that Quino would be detected if it occurs within the Preserve. These methods are also effective for documenting springtime butterfly diversity.

Three surveys were conducted during suitable weather conditions for butterfly activity. The methods differed from the USFWS protocol on the number of surveys, which was limited to three, and also on the extent of the survey area, which was limited to habitat with the highest potential for detecting Quino, rather than 100% coverage of all non-excluded areas.

All butterfly species detected during the surveys were identified and counted. In addition butterflies identified during other biological surveys are also included in the wildlife species detected list in Appendix C.

3.3.2 Herpetofauna

ICF conducted surveys for herpetofauna (amphibians and reptiles) within the Preserve from April through July 2011. Terrestrial herpetological surveys were conducted using pitfall trap arrays as outlined in "Herpetological Monitoring Using a Pitfall Trapping Design in Southern California" (Stokes et al. 2001) with one variation. This design uses a standardized array of pitfall traps, funnel traps, and drift fencing to perform long-term research over a wide geographic area with replicates among site localities, habitats, and environments. The variation from the Stokes et al. design utilizes wire mesh box traps instead of some of the pit fall traps for capturing snakes.

The design recommended by Stokes et al. for sampling arrays utilizes a three-arm drift fence array with seven pitfall traps and three funnel traps. Our array design replaced the three pitfall traps at the ends of the arms with aboveground wire mesh box traps in order to increase the potential for catching snake species. Three feet of additional drift fencing was installed along the sides of the box traps and extended out towards the array from the corners of the box traps nearest the array. A flat wooden board was placed on top of the box trap to provide shade and encourage entry into the traps. With the exception of the use of box traps, this study's array design was consistent with that recommended by Stokes et al., and recommendations for array materials and trap construction were

followed. As the site temperatures were not expected to be excessive during the trapping period, biologists constructed funnel traps with no pitfall trap retreat underneath, as described in the above referenced protocol.

Array locations were selected based on access, vegetation community, soils, topography, and avoidance of known special-status resources (including cultural resources) (Figure 8, Table 1).Two sites were selected to construct arrays. The first array is located on the southern side of the Santa Margarita River, south of De Luz Road and was sampled from April through July 2011. The second array was installed on the northern side of the Santa Margarita River and was sampled from May through July 2011. Locations were mapped using GIS technologies.

All areas immediately surrounding the arrays were actively searched for herptiles during monitoring of each array. Additionally, active searches for herptiles were conducted during other wildlife surveys at the Preserve. Active searches included looking under rocks, shrubs and logs, and the periphery of vegetated water features (i.e. Santa Margarita River). All herptiles observed during active searches and other wildlife surveys were identified to species and recorded. Method of observation (arrays or active surveys) is presented for each species in the results section of this report.

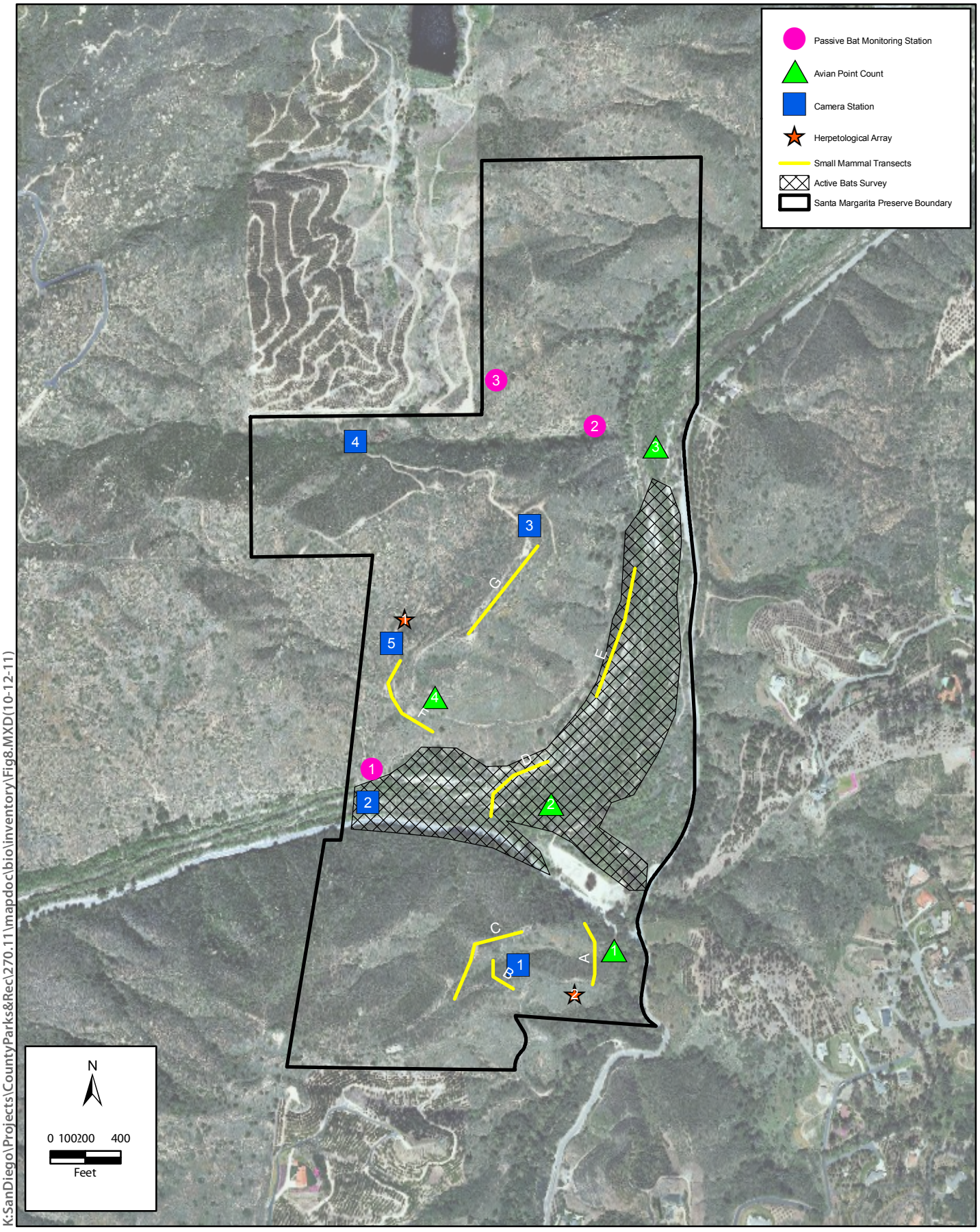
Table 1. Array Description

Array Number	Physical Description	Vegetative Community
1	Relatively flat land on a small plateau surrounded by hills, ridgelines, and rock outcrops vegetated with coastal sage scrub and chaparral.	Chamise chaparral/ Southern mixed chaparral
2	Vegetated south-facing slope on the southern side of the Santa Margarita River. Large expanse of hills and ridges vegetated with coastal sage scrub, southern mixed chaparral. Oak woodland located approximately 200 feet to the east.	Southern mixed chaparral

Monitoring Arrays

Array traps were sampled on four consecutive days once a month beginning in April for array 1 and May for array 2 and continuing through July (Table 2). The traps were opened on a Monday afternoon, sampled Tuesday through Friday, and closed Friday.

Array traps were checked during early morning hours to ensure that animals were released before daytime temperatures reached levels that could result in mortality. All animals were identified to species and immediately released at the point of capture. Biologists did not handle animals other than to photograph and release them from traps. Because the trapping effort's purpose is to generate an inventory of species present within the Preserve (i.e., not to assess population sizes or dynamics), individuals were not marked, weighed, or otherwise measured. Data recorded included species and trap number.



K:\SanDiego\Projects\CountyParks&Rec\270.11\mapdoc\bio\inventory\Fig8.MXD(10-12-11)

ICF INTERNATIONAL

Figure 8
Biological Inventory Sampling Locations
Santa Margarita Preserve

Table 2. Dates and Personnel for the Pitfall Sampling on the Preserve in 2011

Date	Name of Biologists
4/26/11 – 4/29/11	D. Ritenour, I. Cain
5/24/11 – 5/27/11	K. Mozumder, D. Ritenour, I. Cain
6/21/11 – 6/24/11	J. Cogswell, D. Teel
7/25/11 – 7/29/11	J. Cogswell, D. Teel, K. Fischer

Arroyo Toad Surveys

The Preserve falls within the Lower Santa Margarita River Basin, Unit 12b of designated critical habitat for arroyo toad (*Anaxyrus californicus*). The Preserve supports a known population of this federally endangered species. Protocol presence/absence surveys were not performed in 2011 but one nocturnal survey and two diurnal surveys were conducted during peak breeding activity periods to document locations where breeding activity was taking place (Table 3). The nocturnal surveys were conducted with the aid of flashlights and headlamps (Nightrider Trail Rat—a rechargeable 10 watt 6 volt Halogen headlamp). Surveys consisted of listening and inspecting the areas with the highest quality habitat found within the Santa Margarita River. Other aquatic organisms and other species/conditions that may have an effect on the ability of the area to support arroyo toad were also documented during the surveys.

Table 3. Dates and Personnel for Nocturnal/Diurnal* Arroyo Toad Surveys on the Preserve in 2011

Date	Name of Biologists
5/26/11	K. Mozumder
6/22/11	K. Mozumder, K. Fischer
7/08/11	K. Mozumder, S. Choy

*= Each survey consisted of one nocturnal and one diurnal survey.

3.3.3 Birds

Diurnal Point Counts

Avian use of the Preserve was documented through the use of four avian point count stations (stations) sampled once a month for four (4) months beginning in April and concluding in July (Table 4, (Figure 8). Point counts provide a repeatable, quantitative sampling method for a broad spectrum of birds and were complementary to the general reconnaissance effort, strengthening the reference information developed on relative abundance of birds.

Table 4. Dates and Personnel for the Point Counts on the Preserve in 2011

Date	Name of Biologist
4/29/11	K. Fischer
5/27/11	K. Fischer
6/25/11	K. Fischer
7/29/11	K. Fischer

Point count methods followed recommendations provided in Ralph et al. (1995) for extensive (i.e., station independent) surveys. See that source for detailed discussion of the basis for, and further details on, the methods presented here. A summary of methods, including additions beyond the recommendations, is provided below.

Stations were placed non-randomly to maximize sampling of the Preserve and to minimize coverage of outside areas. No particular features (e.g., plant community, slope, or aspect) were selected for or avoided, primarily due to the broad objectives of the study. Stations were generally located at or near existing roads to facilitate access. Prior to the first counts, all stations were mapped in the field, located using GPS, marked for later identification, and photographed. The viewshed from each point was photographed in the four cardinal compass directions.

Counts were conducted at each station once a month (April through July). The following recommendations, drawn directly from Ralph et al. (1995), were followed:

- Stations were located at least 250 m (820 ft) apart to ensure independence (i.e., no or minimal overlapping of individual birds detected).
- Counts were conducted at each station for 10 minutes (stratified into periods of 3, 2, and 5 minutes) and started quickly upon reaching the point.
- All detected birds were counted except for any judged to have been counted at a previous station.
- Both seen and heard individuals were recorded as long as clearly identified.
- Birds were recorded within each time stratum as: (1) within a 50 m (164 ft) radius from the station, (2) outside the 50 m (164 ft) radius, or (3) flying over. This allows for rudimentary density estimates (without weighting for detectability).
- Individuals were counted at the location where first detected and time of first detection, even when not identified until they had moved or a new time period had begun.
- Adverse weather was avoided (e.g., dense fog, strong winds, extended rain).
- Stations were counted in the same order each time, starting at approximately the same time relative to sunrise, and finishing within 4 hours after sunrise. Note that counting stations in the same order each time is recommended as the preferred method where the primary purpose of the data is for comparison with future data sets at the same study area. For the current work, this is judged to be a higher priority than maximizing comparability with point counts

investigating regional issues, which are best counted by randomizing the order of stations within sites and the order of sites within a day.

Additional point count methods used beyond those provided in Ralph et al. (1995) include:

- No attempts were made to attract birds, such as through use of taped vocalizations or "pishing" (imitating avian scold or alarm calls).
- Prior to the initial point counts, the observer practiced distance estimations by locating an object roughly 40 to 60 m (131 to 197 ft) away, assigning it as beyond or closer than 50 m (164 ft). This was done several times on several different days, in different directions, and on varied terrain, but always in open shrub lands similar to that in which the stations were located.
- Birds noted only in flight were additionally recorded as either utilizing the landscape (e.g., actively foraging swallows and raptors, and raptors using thermal updrafts) or not (e.g., birds commuting between distant habitat patches offsite, such as cormorants over an upland site, or birds migrating high overhead).
- Birds were only counted when they had clearly fledged and moved away from a nest. Thus young raptors, which often spend several transitional days immediately adjacent to the nest, were not counted until they had been detected in a part of the tree or cliff where they were not expected to have reached by walking or climbing.
- Vocalization type was typically used to categorize birds that are heard only with regard to whether or not they are assumed to be flying over or perched. Thus flight calls for a particular species were used to categorize a bird as in flight, making it important to separate calls accurately by type for species only detected aurally.
- When a flock was only heard, the number definitely heard was recorded, but when a flock was seen and individuals were not able to be precisely counted, a best estimate was used. Note that with or without this method, point count censusing assumes that at each station an observer has a good opportunity to see and hear birds and that the stations are comparable in this regard.
- No individual birds were discarded (not counted) due to lack of identification, unless they were at the level of simply, unidentified bird (e.g., an unrecognized call). Instead, they were retained at the highest level of identification supported (e.g., hummingbird sp.). Variability among surveyors in such treatment can substantially affect estimates of abundance for some groups, or for overall avian abundance.

Numerous issues that may substantially affect how data are recorded or later interpreted from avian point counts are typically not addressed in published work on suggested methods, in published results, or both. To aid future comparability while also allowing current point counts to provide censusing of a broad spectrum of bird species and behaviors, the following additional discussion of methods is provided.

Birds recorded but not identified to the level of species were counted in the totals and other statistics for individuals but not the totals or statistics for species, except where they clearly represent a species otherwise unrecorded. Thus, "raptor sp." would not add to the overall species total if raptors were also recorded to the species level. However, "raptor sp." (1) would be counted in the total species number for the particular counts on which they occur when no other raptors were recorded and identified to species during that count and (2) would add to the total abundance of birds in any relevant totals.

"Fly-by" (also called "fly-over") birds generally were not added to the totals calculated for numbers of individuals or species. This is standard practice for point count analysis (Ralph et al. 1995). The rationale is that such birds are neither making any use of nor influencing the study area. However, if the birds were judged to be foraging or hunting while in flight over the study area, the observations were included in the calculations. These birds were using the study area in the same way that a bird foraging from a perch makes use of the study area. For the current work, most observations of swifts, swallows, and raptors (including turkey vultures) were included.

The point counts were designed as two-interval counts (referring to distance, not time), using the terminology of Bibby et al. (2000; pp. 101–102). A radius of 50 m (164 ft) was set, and all birds recorded were categorized as inside or outside of this circle. This allows a calculation of density with an adjustment for detectability, but one must guess in applying the detectability adjustment, as this format does not allow testing of how detectability for a given species attenuates across distance (e.g., half normal to a fixed limit). Because the sample size is limited and fragmentation and disturbance make generalizations about distribution across the site tenuous, no density-based estimates of total abundance were provided for any species based on the current results.

Nocturnal Surveys

Monthly nocturnal bird surveys were conducted for four months for nighttime birds at the Preserve (Table 5). Methods included walking trails throughout the Preserve looking and listening for birds. A moderately powerful headlamp was used to aid identifications. Tape playback of owl calls was intermittently used in an attempt to illicit responses from birds.

Table 5. Dates and Personnel for the Nocturnal Bird Surveys on the Preserve in 2011

Date	Name of Biologists
4/29/11	K. Fischer
5/25/11	K. Fischer, D. Ritenour
6/22/11	K. Fischer, K. Mozumder
7/27/11	K. Fischer, D. Ritenour

3.3.4 Mammals

The goal of the mammal surveys was to document what species are currently present on the Preserve and utilizing the Preserve for passage through to other areas of the County. Mammal species were documented through general surveys, small mammal trapping, camera stations, and bat sampling. The goal of the small mammal trapping was to document the small mammal species using different habitats on the Preserve. The camera stations documented the medium to large mammal species that are using the Preserve. Bat sampling was used to document the use of the Preserve by bat species.

Small Mammal Trapping

On July 22, 2011, ICF biologists Phillip Richards and Cindy Dunn visited the Preserve and assessed the physical conditions, vegetative community distribution, vegetative cover, and accessibility for

planning the trapping program for small mammals. For the purposes of this project, small mammals include species in the following families: shrew, mole, squirrel, pocket gopher, pocket mouse, and rat and mouse. Combining the results of the visual inspection with a review of recent vegetation mapping and aerial photographs, sample areas were determined. Sample areas were selected based on three criteria: 1) sampling of different vegetative communities; 2) geographic distribution across the Preserve; and 3) sampling of unique features (e.g., wash or ecotone).

Small mammal trapping on the Preserve consisted of three (3) nights of trapping. A total of seven (7) sample areas were trapped (traps A-G). Based on logistical factors, such as distance and terrain between sample areas and estimated time to process small mammals captured, the number of traps used included 155 traps. In total, the Preserve trapping program produced 465 trap nights (i.e., number of traps multiplied by the number of nights).

The number of traps per sample area ranged from 20 to 25 sequentially numbered 12-inch Sherman live traps. All seven sample areas utilized a meandering "sign" (e.g., scat, burrows, dusting baths, etc) set transect. Traps were spaced between 3m (9ft) and 6 m (18 ft) apart, and were positioned where small rodent sign was apparent. If rodent sign was not apparent, traps were placed near the base of shrubs. The locations of traps were recorded using a recreational grade GPS receiver (Garmin brand, WAAS enabled).

Traps were initially set and baited in the late afternoon on Tuesday, August 23, 2011. In general, traps were opened and baited before dusk and closed during the dawn trap check. Traps were systematically checked around dawn (between 0430 and 0900); however, on the third night an additional check was conducted around midnight (between 2200 and 0140). Table 6 summarizes the personal, dates, and conditions for the trapping program. Table 7 summarizes the characteristics associated with each sample area including the following: configuration (i.e., grid vs. transect), spacing, number of traps, trap sequence, trap night total, physical description, and associated vegetative communities. The location of each sample area is depicted on Figure 8.

Table 6. Personnel, Date, Time, and Conditions of the Small Mammal Trapping Program at the Preserve in 2011

Personnel	Night Number	Date Checked	Times Checked	Conditions
P. Richards, C. Dunn	1	8/24/11	0430-0840	Clear; 55°-69°F; Wind Calm; Moon Visible
P. Richards, C. Dunn	2	8/25/11	0440-0845	Clear; 57°-71°F; Wind Calm; Moon Visible
P. Richards, C. Dunn	*3	8/25-26/11	2200-0140	Clear; 68°-64°F; Wind Calm; No Moon Visible
		8/26/11	0445-0900	Clear; 62°-78°F; Wind Calm; Moon Visible

* = Nights 1 and 2 included only a dawn trap check; however, night 3 included a trap check around midnight and dawn trap check.

Table 7. Trapline Description

Sample Area	Configuration/ Spacing	Number of Traps	Trap Sequence	Trap Nights	Physical Description	Vegetative Communities
A	Transect/ 3-6 m	20	A51-A60; 51-60	60	Trapline extends from the base of a hill to face of relatively steep hill; hillsides generally east to southeast-facing; soils mostly loam; portions of trapline under oak canopy with non-native grasses and poison oak understory and the rest among mature shrubs with an understory consisting of mix of bare ground and non-native grasses.	Mix of western sycamore-coast live oak, scrub oak-chamise, and white sage-California sage brush.
B	Transect/ 3-6 m	25	A26–A50	75	Trapline extends along the side of a south-facing slope and a ridgeline; soils mostly sandy loam; mix of mature shrubs and bare ground.	Mix of scrub oak-chamise, and white sage-California sage brush.
C	Transect/ 3-6 m	25	A1–A25	75	Trapline extends along a ridgeline with adjacent steep slopes; soils mostly sandy loam; mix of mature shrubs and bare ground.	Mix of scrub oak-chamise, and white sage-California sage brush.
D	Transect/ 3-6 m	20	126-145	60	Trapline within wash (Santa Margarita River floodplain); relatively flat; soils mostly sandy; dense willow canopy cover with understory consisting of a mix of bare ground, debris piles, and herbaceous plants.	Red willow.
E	Transect/ 3-6 m	20	106-125	60	Trapline located on raised terrace between a wash to the south (Santa Margarita River floodplain) and steep south-facing slope to the north; soils mostly sandy loam; trapline mostly under oak and sycamore canopy with an understory consisting of a mix of non-native grasses, poison oak, and scattered shrubs and herbaceous plants.	Mix of coast live oak-poison oak-grass, coast live oak-California sage brush.
F	Transect/ 3-6 m	20	86-105	60	Trapline extends along the side of a south-facing slope; soils mostly sandy loam; mix of mature shrubs and bare ground.	Mix of white sage-California sage brush and Chamise-Buckwheat-California sage brush
G	Transect/ 3-6 m	25	61-85	75	Trapline extends along a ridgeline; soils mostly sandy loam; mix of mature shrubs and bare ground.	Mix of scrub oak-chamise, chamise-buckwheat-California sage brush, and California sagebrush-buckwheat-laurel sumac

When animals were captured, each animal was transferred from the trap into a cloth bag. The animals were removed by their napes and identified to species. The sex and reproductive condition of each animal was recorded (i.e., testes scrotal, not scrotal, vagina perforate, not perforate). Any mites, ticks, or other parasites were noted. Digital photos were taken of some specimens (Appendix F). Once the data were recorded onto data sheets, each animal was released where captured. This whole process took several minutes for each capture. The released animals were observed until they moved to the safety of a burrow or clump of vegetation.

Medium to Large Mammals

For the purposes of this project, medium and large mammals include all mammals in the hare, rabbit, beaver, canid, procyonid, mustelid, skunk, cat, and cervid families.

Camera Tracking Survey

Remote camera stations (1-5) were used to help document the presence of medium and large mammals within the Preserve (Figure 8). These stations allow for the detection of species that are rarely encountered because of their nocturnal or crepuscular activity patterns. Within the Preserve, five camera tracking stations were set up at locations that are judged to have a high potential for movement of medium and large mammals (e.g., along game trails, abandoned roadways, and existing ranch roads) (Table 8).

Each station consisted of one Moultrie infrared digital game camera. These cameras were programmed to record an image every time the motion sensor was triggered. Each image includes an information tag that records the date, time, temperature, camera id, and moon phase. Once in place, the cameras were periodically checked and all recorded images were downloaded to a portable hard drive. Camera station sampling included a spring, summer and fall survey. Digital images were interpreted and all animals were identified to the species level.

Table 8. Camera Sampling Location Description

Camera Station Number	Physical Description	Vegetative Community
1	Historic access road located within the southern section of the Preserve south of De Luz Road.	Southern Mixed Chaparral
2	Sandy terrace located on the north side of the Santa Margarita River. This area is a natural movement corridor. Located in the southwestern area of the Preserve.	Open riparian
3	Historic access road located along the southwestern side of the Preserve.	Southern Coast Live Oak Riparian Forest
4	Historic access road located along the western side of the Preserve adjacent to the avocado orchards.	Diegan Coastal Sage Scrub/Coast Live Oak Woodland
5	Historic access road located along the southwestern side of the Preserve.	Diegan Coastal Sage Scrub

Mammal Track and Sign Survey

Sections of the river and existing access roads were carefully examined for tracks and sign (scat, scrapings, etc.) of medium and large mammals throughout the survey season. These track and sign surveys were conducted concurrently with all other surveys scheduled within the Preserve. Surveys were primarily conducted during the day; however, periodic nighttime surveys were performed. Daytime surveys involved hiking accessible roads and periodic inspections of hilltops, ridges, drainages, and game trails. Nighttime surveys involved a combination of hiking and listening within the Preserve. When feasible, handheld lights were used to identify any wildlife, or wildlife sign observed during the survey.

Bats

Passive surveys utilizing the Pettersson D500x bat detector (Pettersson; Pettersson Elektronik, Sweden) were conducted within the Preserve. The Pettersson D500x is a full-spectrum ultrasound recording unit intended for long-term, unattended recording of bat calls. Calls are analyzed using SonoBat3, and most can be identified to the species level by a biologist experienced with bat vocalization identification. The D500x is designed to automatically turn on and off at set times (i.e. sunset and sunrise), and automatically record bat echolocation signals to a compact flash card. Bat echolocation calls are then downloaded from the compact flash card to a computer and analyzed in the laboratory using specialized software SonoBat3. All recorded bat echolocation calls were identified to species and an index of relative bat activity was generated by taking the number of bat call files recorded divided by the number of sampling nights (number of detectors times number of recording nights) multiplied by a factor of 10 to reduce use of fractional numbers.

Two monitoring sessions: summer and fall were conducted during the 2011 survey effort. During these monitoring sessions, a single Pettersson unit was placed in the Preserve to monitor bats for three (3) consecutive nights. Three locations were sampled (Table 9, Figure 8).

During each of the sampling weeks, active surveys were conducted within the Santa Margarita River channel for foraging bats. Active surveys included walking suitable foraging habitat with a Pettersson unit and recording calls for later analysis.

Table 9. Passive Bat Sampling Location Description

Location Number	Name	Physical Description
1	Cliff Face	This sampling location was about 30 feet off the ground on a cliff face overlooking the riparian corridor on the southernmost portion of the Santa Margarita River. The microphone was placed at an approximate 30 degree angle aimed just above the riparian canopy. This sampling location was selected for its ability to detect bats foraging along above the riparian corridor.
2	Canyon	The detector was about eight (8) feet off the ground on top of a boulder within a mixed chaparral community adjacent to a riparian area dominated by oaks, cottonwood, willow and sycamore. The detector was set in a steep canyon just north of the Santa Margarita River where there are a number of open pools. The microphone was placed at an approximate 30 degree angle aimed just above the riparian in the direction of the pools. This sampling location was selected for its ability to provide good foraging and drinking opportunities for bats.
3	Tree	At this sampling location the detector was attached to a tree snag about eight (8) feet off the ground within a sage scrub dominated community adjacent to an oak dominated riparian. The microphone was placed at a 45 degree angle aiming just above the canopy of the riparian. This sampling location was selected for its proximity to dense coast live oak woodland, and to capture bat activity outside of the main river channel of the Preserve.

This page intentionally left blank.

Chapter 4
Results and Discussion

4.1 Vegetation Communities/Habitats

The Property consists of 13 plant alliances or associations (Table 10; Figure 9a). These vegetation community types are described below and organized as they are in the classification key by functional group (e.g., drought deciduous shrublands, riparian shrublands, and riparian woodlands\forest and woodlands). The VCM does not include unvegetated habitat (e.g. disturbed habitat, urban/developed, and non-vegetated channel); therefore, unvegetated habitat is described using the Oberbauer-modified Holland classification system (Oberbauer et al. 2008, Holland 1986).

Until the VCM was finalized in 2011, MSCP preserve lands were generally mapped using the Holland classification system. To ensure consistency with previous mapping efforts, the Property map data layer was cross-walked to the Holland system pursuant to the VCM (AECOM et al. 2011; Table 10; Figure 9b).

Table 10. Vegetation Communities and Land Cover Types within the Preserve

	Vegetation Community Type				
VCM Code	VCM Alliance/Association	VCM Common Name	Holland Code	Holland Classification	Acres
Drought Deciduous Shrublands					
4.1.2	*Adenostoma fasciculatum-Eriogonomum fasciculatum-Artemisia californica* Association	Chamise-Buckwheat-California Sagebrush Association	37G00	Coastal Sage-Chaparral Transition	26.7
4.2.1	*Ademostoma fasciculatum – Xyloccocus bicolor – Quercus berberidifolia* Association	Chamise-Mission Manzanita-Scrub Oak Association	37903	Southern Mixed Chaparral	9.3
4.38	*Quercus berberidifolia – Adenostoma fasciculatum* Alliance	Scrub Oak-Chamise Alliance	37903	Scrub Oak Chaparral	42.7
4.43.2	*Salvia apiana – Artemisia californica* Association	White Sage-California Sagebrush Association	32501	Diegan Coastal Sage Scrub	44.0
4.7.1	*Artemisia californica – Eriogonum fasciculatum – Malosma laurina* Association	California Sagebrush-Buckwheat-Laurel Sumac Association	32501	Diegan Coastal Sage Scrub	21.8
	Total Drought Deciduous Shrublands				***144.5***
Riparian Shrublands					
4.11.1	*Baccharis sarothroides* Association	Mule Fat Association		Mule Fat Scrub	0.8

	Vegetation Community Type				
VCM Code	VCM Alliance/Association	VCM Common Name	Holland Code	Holland Classification	Acres
	Total Riparian Shrublands				***0.8***
Riparian Woodland/Forest					
3.4.2	*Platanus racemosa – Populus fremontii – Salix lasiolepis* Association	Western Sycamore-Cottonwood-Arroyo Willow Association	62500	Southern Riparian Woodland	3.1
3.4.3	*Platanus racemosa – Quercus agrifolia* Association	Western Sycamore-Coast Live Oak Association	61300	Southern Riparian Forest	4.3
3.6.3	*Quercus agrifolia – Salix lasiolepis* Association	Coast Live Oak-Arroyo Willow Association	61310	Southern Coast Live Oak Riparian Forest	1.2
3.9.1	*Salix laevigata* Association	Red Willow Association	63720	Southern Willow Scrub	35.4
	Total Riparian Woodland/Forest				**44.0**
Woodland					
3.6.1	*Quercus agrifolia – Artemisia californica* Association	Coast Live Oak-California Sagebrush Association	71160	Coast Live Oak Woodland	3.0
3.6.2	*Quercus agrifolia – Quercus (berberidifolia x acutidens)* Association	Coast Live Oak-Scrub Oak Association	71160	Coast Live Oak Woodland	3.5
3.6.4	*Quercus agrifolia – Toxicodendrum diversilobum* Association	Coast Live Oak-Poison Oak-Association	71160	Coast Live Oak Woodland	6.9
	Total Woodland				***13.4***
Unvegetated[1]					
N/A	N/A	N/A	18100	Agriculture	0.1
N/A	N/A	N/A	11300	Disturbed Habitat	3.2
N/A	N/A	N/A	12000	Urban/Developed	1.9
N/A	N/A	N/A	64200	Non-Vegetated Channel	2.4
	Total Unvegetated				***7.6***
		TOTAL LAND COVER			**210.3**

[1] The Vegetation Classification Manual does not classify unvegetated habitats such as that found in the Oberbauer-modified Holland classification system: disturbed habitat, non-vegetated channel, and developed.

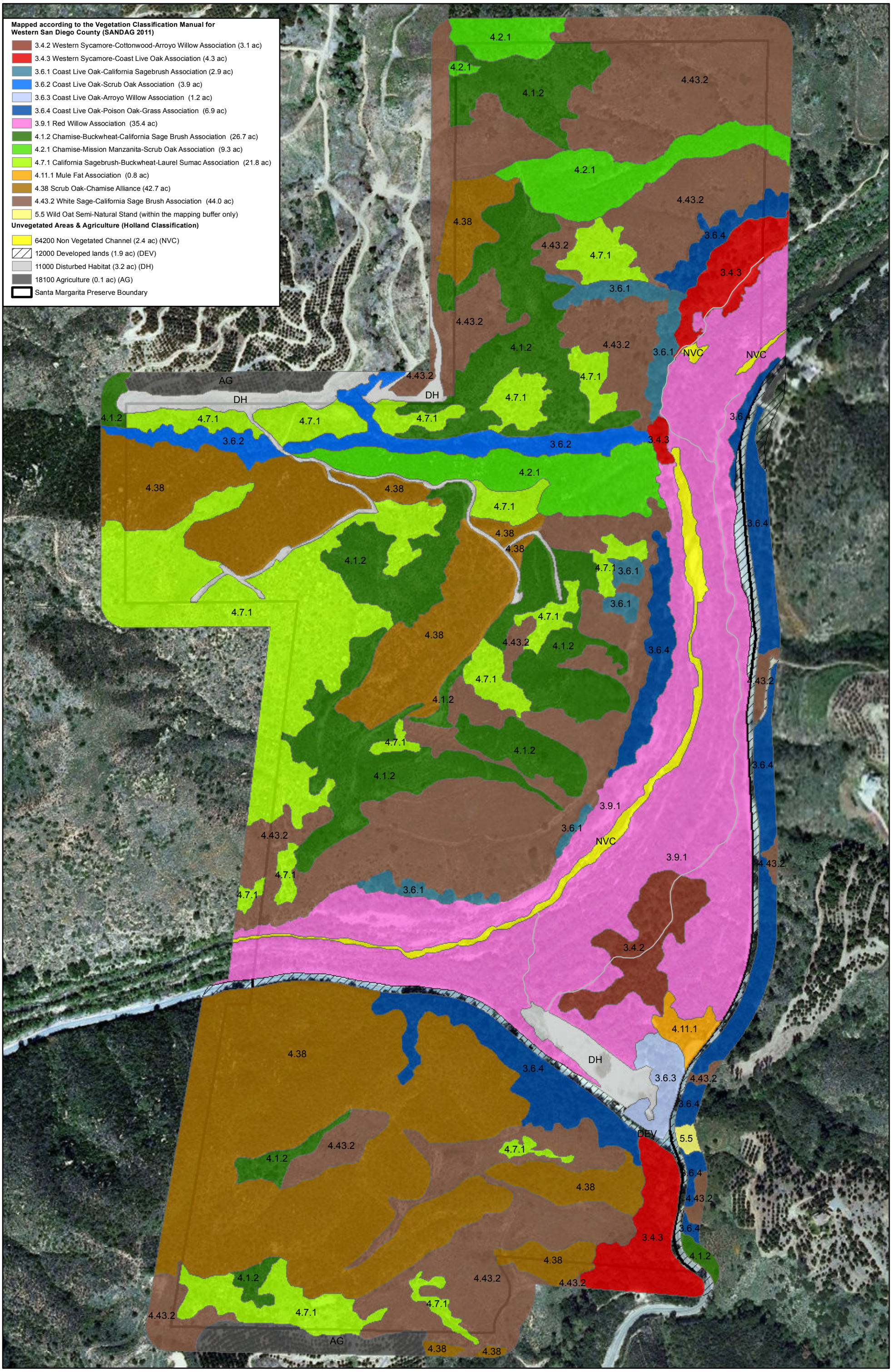


Figure 9a
Vegetation Communities
Vegetation Classification Manual for Western San Diego County
Santa Margarita Preserve

Santa Margarita Preserve Boundary
18100 Agriculture (3.7 ac)
37120 Southern Mixed Chaparral (9.3 ac)
32501 Diegan Coastal Sage Scrub (65.8 ac)
37903 Scrub Oak Chaparral (42.7 ac)
37G00 Coastal Sage-Chaparral Transition (26.7 ac)
42200 Non-Native Grassland (0.2 ac)
61300 Southern Riparian Forest (4.3 ac)
61310 Southern Coast Live Oak Riparian Forest (1.2 ac)
62500 Southern Riparian Woodland (3.1 ac)
63310 Mule Fat Scrub (0.8 ac)
63320 Southern Willow Scrub (35.4 ac)
64200 Non-Vegetated Channel or Floodway (2.4 ac)
71160 Coast Live Oak Woodland (13.4 ac)
11000 Disturbed Habitat (3.2 ac)
12000 Urban/Developed (1.9 ac)
Mapped according to the Holland Classification System as modified by Oberbauer 2008

0 100 200 400
Feet

N

Figure 9b
Vegetation Communities, Holland Classification System
Santa Margarita Preserve

4.1.1 Drought Deciduous Shrublands

Chamise-Buckwheat-California Sagebrush Association (4.1.2)

Chamise – Buckwheat – California Sagebrush Association is a vegetation community comprised of a mixture of herbaceous and shrubby species that forms a community with features of both coastal sage scrub and chaparral. Within the Preserve, this community appears to be a post-fire successional community. Dominant species include spiny redberry (*Rhamnus crocea*), chamise (*Adenostema fasciculatum*), black sage (*Salvia mellifera*), California buckwheat, coastal sagebrush, foxtail chess, slender wild oat, deerweed, golden bush (*Hazardia squarrosa*), white sage, and short-pod mustard (*Hirchfeldia incana*). Within the Preserve, this vegetation association occurs primarily along the ridge tops located north of the Santa Margarita River.

Chamise-Mission Manzanita-Scrub Oak Association (4.2.1)

Chamise-Mission Manzanita-Scrub Oak Association is a broad-leaved sclerophyll shrub community forming dense often impenetrable vegetation dominated by chamise, mission manzanita (*Xylococcus bicolor*), lilac (*Ceanothus oliganthus*), and scrub oak (*Quercus berberidifolia*). Other species observed during the field surveys included Rainbow Manzanita (*Arctostaphylos rainbowensis*), Ramona lilac (*Ceanothus tomentosus*), laurel sumac, Mexican elderberry (*Sambucus mexicanus*), poison oak (*Toxicodendron diversilobum*), sugar bush (*Rhus ovata*), and toyon (*Heteromeles arbutifolia*). On the Preserve this Association occurs on the north facing slopes both north and south of the Santa Margarita River and is one of the more diverse vegetation communities observed.

Scrub Oak-Chamise Alliance (4.38)

The Scrub Oak-Chamise Alliance is a vegetation community comprised of dense, evergreen perennial shrubs up to 6 m (20 ft) tall, dominated by scrub oak (*Quercus berberidifolia*) and chamise. There are few understory plants and typically the understory consists of a substantial accumulation of leaf litter. Other species associated with this community include Rainbow Manzanita, toyon, and sugar bush. This Alliance occurs on the north facing slopes of the Preserve.

White Sage-California Sagebrush Association (4.43.2)

White Sage-California Sagebrush Association is typically characterized by low, woody subshrubs that grow up to 1 m (3 ft) in height. Dominant species within this Association include California buckwheat (*Eriogonum fasciculatum*), coastal sagebrush (*Artemisia californica*), laurel sumac (*Malosma laurina*), deerweed (*Lotus scoparius*), and white sage (*Salvia apiana*). Other species noted on site include non-native grasses such as slender wild oat (*Avena barbata*), foxtail chess (*Bromus madritensis*), and fescue (*Vulpia myuros*). This vegetation Association occurs primarily on the south facing slopes of the Preserve.

California Sagebrush-Buckwheat-Laurel Sumac Association (4.7.1)

California Sagebrush-buckwheat-Laurel Sumac Association is similar to the White Sage- California Sagebrush Association as it is typically characterized by low, woody subshrubs that grow up to 1 m in height. The main difference in this community is the co-dominant presence of laurel sumac which can grow up to 3 m in height. Within the Preserve this Association occurs primarily on the south facing slopes.

4.1.2 Riparian Shrublands

Mule Fat Association (4.11.1)

The mule fat Association is a depauperate, herbaceous riparian scrub dominated by mule fat (*Baccharis salicifolia*). This riparian vegetation association is usually found in intermittent stream channels with fairly coarse substrate and moderate depth to the water table and requires frequent flooding. If frequent flooding does not occur, mule fat scrub commonly succeeds to more mature riparian woodland or forest association/alliances. Within the Preserve the Mule Fat Association occurs along the outer portion of the riparian vegetation associated with the Santa Margarita River.

4.1.3 Riparian Woodland/Forest

Western Sycamore-Cottonwood-Arroyo Willow Association (3.4.2)

Western Sycamore-Cottonwood-Arroyo Willow Association is a mature riparian woodland community consisting of tall trees including western sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*) and arroyo willow (*Salix lasiolepis*). There is one patch of this vegetation Association within the Santa Margarita River channel directly north of the Preserve staging area.

Western Sycamore-Coast Live Oak Association (3.4.3)

The western Sycamore-Coast Live Oak Association is a riparian woodland habitat dominated by western sycamore and coast live oak (*Quercus agrifolia*). Within this Association the coast live oak trees form an open canopy interspersed by tall winter deciduous riparian trees (*Platanus racemosa, Salix* sp.). There are three patches of this vegetation Association within the Santa Margarita River channel.

Coast Live Oak-Arroyo Willow Association (3.6.3)

Coast Live Oak-Arroyo Wilow Assocation is a riparian forest typically found in bottomlands and outer floodplains along larger streams, on fine-grained rich alluvium. It consists of a dense evergreen riparian forest dominated by coast live oaks, with associated species of willow (*Salix* spp.). Within the Preserve this Association occurs just east of the staging area along the outer portion of the riparian vegetation associated with the Santa Margarita River.

Red Willow Association (3.9.1)

The Red Willow Association is a vegetation community that is almost entirely comprised of red willow (*Salix leavigata*). Within the Preserve, the Red Willow Association is one of the dominant riparian vegetation communities found along the Santa Margarita River.

4.1.4 Woodland

Coast Live Oak-California Sagebrush Association (3.6.1)

The Coast Live Oak-California Sagebrush Association is a woodland vegetation community dominated primarily by coast live oak with an understory element containing California sagebrush.

This Association is found along the edge of the riparian canopy and quickly transitions to an upland habitat above the influence of the river.

Coast Live Oak-Scrub Oak Association (3.6.2)

The Coast Live Oak-Scrub Oak Association is a vegetation community comprised of a mixture of coast live oak and scrub oak (*Quercus berberidifolia*). Within the Preserve this Association primarily occurs within the steep ravines adjacent to the Santa Margarita River.

Coast Live Oak-Poison Oak Association (3.6.4)

Coast Live Oak-Poison Oak Association is a woodland vegetation community comprised of a dense tree canopy dominated by coast live oak. The understory element of this community typically consists of a dense bramble of poison oak (*Toxicodendon diversilobum*). Within the Preserve this habitat occurs adjacent to the Santa Margarita River.

4.1.5 Unvegetated

Unvegetated Channel (64200)

Unvegetated channel is comprised of open water and exposed sand associated with the Santa Margarita River active floodway on-site. Within the Preserve, this landcover type is subject to repetitive hydrologic scouring which prevents plants from inhabiting these areas

Disturbed Habitat (11300)

Disturbed habitat within the Preserve consists of the staging area, multi-use trails and San Diego Gas & Electric's transmission line access roads. These areas consist of mostly bare ground.

Developed Lands (12000)

Developed land typically consists of existing paved roads, buildings, and other infrastructure. On the Preserve, the only areas mapped as developed are the paved roads and road shoulders associated with De Luz Road and Sandia Creek Drive.

Agriculture (18000)

At the Preserve a small amount of agriculture is mapped along the southern boundary of the Preserve.

4.2 Plants

The following section discusses special-status plant species observed within the Preserve. A special-status plant species is one listed by federal or state agencies as threatened or endangered; considered to be of special status by one or more special interest groups, such as the CNPS (e.g., California Rare Plant Rank (CRPR) 1, 2, 3, and 4 Plant Species); or is included on the County's Sensitive Plant list (Group A, B, C, or D Listed Plants).

Special-status plant species detected include Engelman oak (*Quercus engelmannii*) and Rainbow Manzanita (*Arctostaphylos rainbowensis)* (Figure 10).

4.2.1 Special-Status Plant Species Observed

Engelmann Oak (*Quercus engelmannii*)

CRPR 4.2, San Diego County List D, North County MSCP Covered Species

Engelmann oak is commonly found in the foothills between 500 and 4,000 ft (152 and 1,219 m). Growing to 40 ft tall (12 m), this tree has flat, grey-blue-green leaves and tolerates less water than coast live oak. Larger oaks are sometimes found growing in savannah grasslands but it may also occur as a shrubby element within chaparral. Engelmann oaks are still relatively abundant throughout their range in southern California. One Engelmann oak was observed along the western bank of the Santa Margarita River (Figure 10).

Rainbow Manzanita (*Arctostaphylos rainbowensis*)

CRPR 1B.1, San Diego County List A, North County MSCP Covered Species

Rainbow Manzanita can be a dominant plant where it occurs. The range of this Manzanita is northern San Diego County and southwestern Riverside County. This species is commonly found in southern mixed chaparral and co-occurs with mission Manzanita and chamise. Rainbow Manzanita is a co-dominant shrub within the chaparral habitats at the Preserve (Figure 10). It was estimated that the Preserve contains approximately 200 individuals of Rainbow Manzanita.

4.2.2 Special-Status Plant Species with High Potential to Occur

White Rabbit-tobacco (*Pseudognaphalium leucocephalum*)

CRPR 2.2

White rabbit-tobacco is a perennial herb that occurs in chaparral, cismontane woodland, riparian woodland and coastal scrub. The blooming period for this species is from July through December. White rabbit-tobacco is known to occur along the Santa Margarita River drainage and is considered to have high potential to occur on site due to the presence of suitable habitat.

Payson's Caulanthus (Also known as Payson's Jewelflower) (*Caulanthus simulans*)

CRPR 4, San Diego County List D

Payson's caulanthus is an annual herb associated with chaparral and coastal sage scrub communities (CNPS 2011). This species was not observed on the Preserve in 2011 but it was mapped as occurring on the Preserve by the CNDDB in 1985. The Preserve has a high potential to support Payson's caulanthus due to the abundance of suitable habitat on site.



K:\SanDiego\Projects\CountyParks&Rec\270.11\mapdoc\bio\inventory\Fig10.MXD(10-12-11)

ICF INTERNATIONAL

Figure 10
Special Status Plant Species
Santa Margarita Preserve

4.2.3 Invasive Species

The introduction of foreign invasive species into native habitats is becoming more common and further expansion of human activities into areas away from urban and suburban centers will amplify this effect. Today, it is almost impossible to find any lowland areas in California that do not support a collection of plant species brought from elsewhere.

The general effect of invasive species is that they out compete native species. This can occur directly through the taking up of space that was formerly occupied by native plants, but can also occur from a variety of indirect, competitive effects of the presence of invasives. Competition can be keen between invasives and native species for scarce water resources, soil nutrients, or even sunlight. Other species may use chemical warfare (i.e., allelopathy) to prevent germination of native plants. With a decrease in native plant diversity, there is an associated decrease in native animal diversity. Thus it becomes important to control or eliminate non-native invasive plant species from natural areas to maintain natural biodiversity, and the support systems for native fauna.

Table 11documents all non-native plant species found during the surveys of the Preserve. During surveys of the Preserve a total of 50 non-native species were detected (Table 11). With the exception of poison hemlock (*Conium maculatum*), most of these species appear as isolated individuals or small patches of individuals. Regardless, each of those listed in Table 11 should be removed from the Preserve whenever encountered.

Based on their current extent (Figure 11), their highly invasive nature and the ability to reproduce quickly, and their potential effects on the environment, seven (7) species have been determined to be “target species”; those for which a concerted effort should be made to monitor and control/eliminate them:

- Italian thistle
- Tocalote
- Poison hemlock
- Short-podded mustard
- Perennial pepperweed
- Tamarisk
- Castor bean

These target species are discussed further in Chapter 5. It should be noted that Table 11 details the presence of three additional Cal-IPC High rated invasive plants but these species are not targeted for removal\control because either they are naturalized (red-brome) or do not currently present a significant risk to the biological resources within the Preserve (i.e. sweet fennel and six-petal water-primrose).

Table 11. Non-Native Invasive Plant Species Known to Occur in the Preserve

Scientific Name	Common Name	Cal-IPC Rating
Anagallis arvensis	Scarlet Pimpernel	N/A
Apium graveolens	Common Celery	N/A
Avena fatua	Wild Oat	Moderate
Bromus diandrus	Ripgut Grass	Moderate
Bromus hordeaceus	Soft Chess	Limited
Bromus madritensis ssp. rubens	Red Brome	High
Carduus pycnocephalus	Italian Thistle	Moderate
Centaurea melitensis	Tocalote	Moderate
Chenopodium album	Lamb's Quarters	N/A
Chenopodium murale	Nettle-Leaf Goosefoot	N/A
Conium maculatum	Poison Hemlock	Moderate
Convolvulus arvensis	Field Bindweed	N/A
Cynodon dactylon	Bermuda Grass	Moderate
Cyperus involucratus	Umbrella Plant	N/A
Erodium botrys	Long-Beak Filaree	N/A
Erodium cicutarium	Red-Stemmed Filaree	Limited
Euphorbia peplus	Petty Spurge	N/A
Foeniculum vulgare	Sweet Fennel	High
Hirschfeldia incana	Short-Podded Mustard	Moderate
Hordeum murinum	Foxtail Barley	N/A
Hypochaeris glabra	Smooth Cat's Ear	Limited
Lactuca serriola	Prickly Lettuce	N/A
Lepidium latifolium	Perennial Pepperweed	High
Ludwigia hexapetala	Six-Petal Water-Primrose	High
Lythrum hyssopifolia	Grass-Poly	Limited
Medicago polymorpha	California Burclover	Limited
Melilotus indicus	Annual Yellow Sweetclover	N/A
Nicotiana glauca	Tree Tobacco	Moderate
Opuntia ficus-indica	Mission Prickly-Pear	N/A
Piptatherum miliaceum	Smilo Grass	Limited
Plantago lanceolata	English Plantain	Limited
Polypogon interruptus	Ditch Beard Grass	N/A
Polypogon monspeliensis	Annual Beard Grass	Limited
Raphanus sativus	Wild Radish	Limited
Ricinis communis	Castor Bean	Limited
Rumex conglomerus	Whorled Dock	N/A
Rumex crispus	Curly Dock	Limited
Schismus barbatus	Common Mediterranean Grass	Limited
Senecio vulgare	Common Groundsel	N/A
Silene gallica	Common Catchfly	N/A

Scientific Name	Common Name	Cal-IPC Rating
Sisymbrium orientale	Hare's-ear Cabbage	N/A
Sonchus asper	Spiny Sow-Thistle	N/A
Spergularia bocconii	Boccone's Sand Spurry	N/A
Stellaria media	Common Chickweed	N/A
Tamarix ramosissima	Tamarisk	High
Torilis arvensis	Hedge Parsley	N/A
Urtica urens	Dwarf Nettle	N/A
Verbascum virgatum	Wand Mullein	N/A
Veronica anagallis-aquatica	Water Speedwell	N/A
Vinca major	Greater Periwinkle	Moderate
Vulpia myuros var. hirsuta	Hairy Rat-tail Fescue	Moderate

4.3 Wildlife

In total, 125 wildlife species were detected during focused surveys, general surveys, pitfall trapping, avian point counts, camera sampling, and Anabat sampling. A total of 20 of these species are considered special-status species by either the federal, state, or local government.

4.3.1 Invertebrates

Twenty-three (23) species of invertebrates including brachiopods, ants, butterflies, skippers, and moths were identified during the 2011 surveys of the Preserve (Appendix B). Species were observed during focused butterfly diversity surveys, herpetological pitfall trapping, and during other active surveys.

Butterflies

In total, 15 butterfly species were observed in 2011 on the Preserve (Table 12). Special-status species observed consists only of the monarch butterfly and this species occurrence on the Preserve is discussed in more detail in Section 4.3.5. Quino was not observed on the Preserve. Although the Preserve does contain suitable habitat for Quino and there is moderate potential for Quino to occur on-site due to presence Quino's primary host plant dwarf plantain (*Plantago erecta*), the Preserve is not expected to have high potential to support this species as no recent sightings have occurred in the vicinity. The closest recent (1997) sighting of Quino is approximately 10 miles northeast of the Preserve in Riverside County (USFWS 2011).

Table 12. Butterfly Species Observed or Captured During 2011 Surveys

Scientific Name	Common Name	Survey Detection Type	Local Government Special Status
Papillo zelicaon	Anise Swallowtail	Focused Survey, Plant Survey	
Plygonia satyrus	Satyr Comma	Plant Survey	
Pontia protodice	Checkered (Common) White	Focused Survey, Plant Survey	
Pieris rapae	Cabbage White	Focused Survey, Plant Survey	
Colias eurytheme	Orange Sulfur	Focused Survey	
Callophyrys augustinus	Brown Elfin	Focused Survey	
Limenitis lorquini	Lorquin's Admiral	Focused Survey, Plant Survey	
Icaricia acmon	Acmon Blue	Focused Survey	
Nymphalis antiopa	Mourning Cloak	Focused Survey, Plant Survey	
Vanessa cardui	Painted Lady	Focused Survey	
Vanessa annabella	West Coast Lady	Focused Survey	
Junonia coenia	Common Buckeye	Focused Survey, Plant Survey	
Adelpha brewdowii	California Sister	Focused Survey, Plant Survey	
Danaus plwxippus	Monarch	Herpetological Array Monitoring	SDC Group II
Erynnis funeralis	Funereal Duskywing	Focused Survey	

Legend: Special Status: SDC= County of San Diego Sensitive Animal ; MSCP= North County Multiple Species Conservation Program Covered Species

Other Invertebrates

Three other invertebrate species were detected during the herpetological array sampling and/or observed during other fieldwork (Appendix B). These species were identified in the field, or photographed to allow for identification by a local entomologist; no invertebrate species were collected.

4.3.2 Fish

No focused fish surveys were done during this biological inventory. However, one fish species was observed during active wildlife surveys, the common carp (*Cyprinus carpio*) (Appendix B). This species is non-native. Two special-status fish species have the potential to occur, the arroyo chub (*Gila orcuttii*) and southern steelhead (*Oncorhynchuss mykiss irideus*), and are discussed in more detail in Section 4.3.7.

4.3.3 Herpetofauna

In total, four amphibian species and 11 reptile species were captured in the sampling arrays and/or observed during active surveys (Appendix B). Three of the 15 herptile species observed are considered special-status species by either federal, state, or local agencies. These species' occurrences on the Preserve are discussed in more detail in Section 4.3.7.

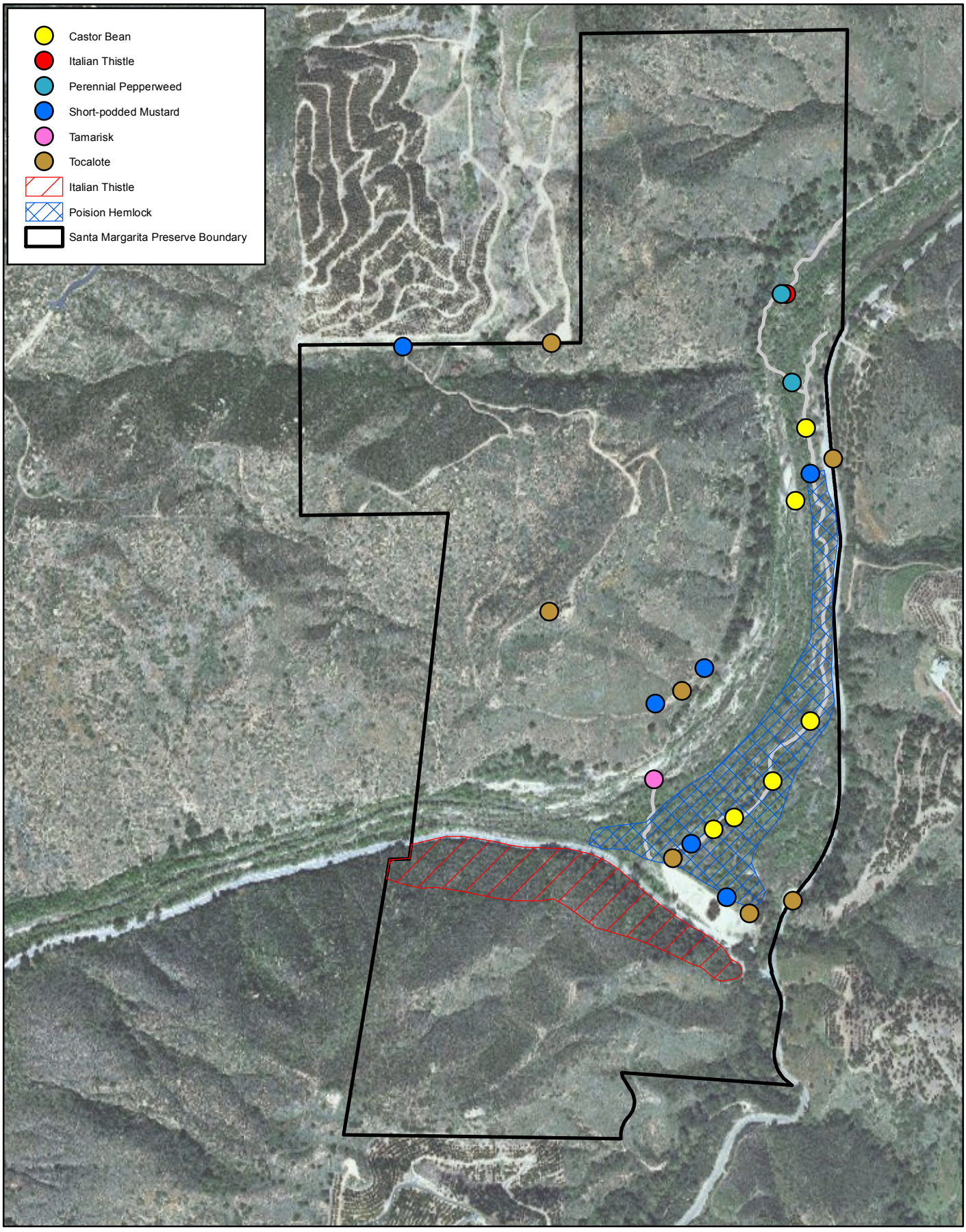


Figure 11
Invasive Plant Locations
Santa Margarita Preserve

Amphibians

During the 2011 sampling at the Preserve, four amphibian species were observed (Table 13, Appendix B). No amphibians were captured in the sampling arrays as the arrays were placed in areas where amphibians had a low potential to occur. Special-status species observed consists only of the arroyo toad and this species occurrence on the Preserve is discussed below and in more detail in Section 4.3.6. There is no potential for other special-status amphibian species to occur on the Preserve.

Table 13. Amphibian Species Observed or Captured During 2011 Surveys

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type
Anaxyrus californicus	Arroyo Toad	FE, CSC	SDC Group I, MSCP	AS
Pseudacris cadaverina	California Chorus Frog			AS
Pseudacris regilla	Pacific Chorus Frog			AS
* *Lithobates catesbeiana*	Bullfrog			AS

Legend:
*=non-native species
Special Status: FE= Federally Endangered CSC = California Species of Special Concern, SDC= County of San Diego Sensitive Animal, MSCP= North County Multiple Species Conservation Program Covered Species
Survey Type: AS= Active Survey

Adult and juvenile arroyo toads were observed within Santa Margarita River during surveys in June and July, 2011. Historically, this species is known to breed within Santa Margarita River. Breeding was confirmed through the observation of neonates during the final diurnal survey in July. Sections of the river contain high quality habitat as defined by the habitat assessment protocol detailed in the Marine Corps Base Camp Pendleton Arroyo Toad Monitoring Protocol (Atkinson et al 2002). This model uses three physical characteristics to assess the potential to support breeding arroyo toads: 1) channel substrate type being predominantly composed of sand; 2) the presence of flat sandy terraces immediately adjacent to channel; and 3) having a watercourse of braided channels.

The most common native species identified was pacific chorus frog (*Pseudacris regilla*). Pacific chorus frog adults and juveniles were detected throughout the river. One common non-native species, bullfrog (*Lithobates catesbeiana*), was also observed. Adult and juvenile bullfrogs were both detected throughout the Santa Margarita River. This species was abundant in high numbers and is a threat to native wildlife in the immediate vicinity.

Reptiles

During the 2011 sampling at the Preserve, 11 reptile species were observed (Table 14, Appendix B). Four species were captured only in the sampling arrays, four were observed during other surveys, and three were captured in a sampling array and observed during active surveys. Six lizards and five snake species were detected with three species having special-status. Special-status species observed consist of orange-throated whiptail (*Aspidoscelis hyperythra*), western whiptail (*Aspidoscelis tigris stejnegeri*), and red diamond rattlesnake (*Crotalus ruber*). These species' occurrences on the Preserve are discussed in more detail in Section 4.3.6.

Based on the presence of potentially suitable habitat, several additional reptile species may also occur on the Preserve. As discussed in Section 4.3.7, special-status species with potential consist of southwestern pond turtle (*Emys marmorata pallida*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), Coronado skink (*Plestiodon skiltonianus*), coastal rosy boa (*Charina trivirgata roseofusca*), coast patch-nosed snake (*Salvadora hexalepsis*), San Diego ringneck snake (*Diadophis punctatus*), and two-striped garter snake (*Thamnophis hammondii*).

Table 14. Reptile Species Observed or Captured During 2011 Surveys

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type
Elgaria multicarinata	Southern Alligator Lizard			
Sceloporus occidentalis	Western Fence Lizard			ARY # 1, 2
Uta stansburiana	Side-blotched Lizard			
Plestiodon gilberti	Gilbert's Skink			Y # 1
Aspidoscelis hyperythra beldingi	Orange-throated Whiptail	CSC	SDC Group II, MSCP	Y # 1, 2
Aspidoscelis tigris	Western Whiptail		SDC Group II	Y # 1, 2
Lampropeltis getula	Common Kingsnake			ARY # 2
Masticophis lateralis	Striped Racer			ARY # 1, 2
Crotalus helleri	Southern Pacific Rattlesnake			Y # 1
Crotalus ruber	Red Diamond Rattlesnake	CSC	SDC Group II, MSCP	
Hypsiglena torquata	Night Snake			

Legend:

Special Status: CSC= California Species of Special Concern, SDC= County of San Diego Sensitive Animal, MSCP= North County Multiple Species Conservation Program Covered Species

Survey Type: AS= Active Survey, ARY= Sampling Array

4.3.4 Birds

Avian species richness (total species detected) was found to be moderate to high at the Preserve. In total, 63 bird species were detected with 48 bird species during the point counts and 15 during other fieldwork (Table 15). These included year-round residents, breeding species that migrate to the Neotropics, and some species that are strictly migratory through the Preserve.

The Preserve's avifauna is a mixture of species that are associated with the habitat types found on site. These species include mallard (*Anas platyrhynchos*), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), barn owl (*Tyto alba*), Anna's hummingbird (*Calypte anna*), Costa's hummingbird (*Calypte costae*), black-chinned hummingbird (*Archilochus alexandri*), acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Picoides nuttallii*), downy woodpecker (*Picoides pubescens*), pacific-slope flycatcher (*Empidonax difficilis*), ash-throated

flycatcher (*Myiarchus cinerascens*), bushtit (*Psaltriparus minimus*), white-breasted nuthatch (*Sitta carolinensis*), least Bell's vireo (*Vireo belli pusillus*), Bewick's wren (*Thryomanes bewickii*), house wren (*Troglodytes aedon*), blue-gray gnatcatcher (*Polioptila caerulea*), wrentit (*Chamaea* fasciata), phainopepla (*Phainopepla nitens*), yellow warbler (*Dendroica petechia*), yellow-breasted chat (*Icteria virens*), spotted towhee (*Pipilo maculates*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), California towhee (*Melozone crissalis*), song sparrow (*Melospiza melodia*), black-headed grosbeak (*Pheucticus melanocephalus*), brown-headed cowbird (*Molothrus ater*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Carduelis psaltria*). Further discussion of the use of the Preserve by special-status species is found in Section 4.3.6.

The Preserve has a good diversity of raptors for its size, including six (6) observed raptor species: turkey vulture (*Cathartes aura*), Cooper's hawk, red-tailed hawk, barn owl, western screech-owl (*Megascops kennicottii*), and great horned owl (*Bubo virginianus*). These birds are using the Preserve for foraging and some species breed on-site. One active red-tailed hawk nest was observed within the southern portion of the Preserve along the edge of the river. Several other species are probably breeding on the Preserve or nearby.

Least Bell's vireos were detected at the Preserve during surveys in 2011. A maximum of three singing males were detected with only two of these regularly detected throughout the breeding season (Figure 12). Breeding was not confirmed due to the dense nature of the vegetation at the Preserve; however, it was probable as two of the males were detected in each month except June. In addition, scolding was detected when the three males were detected in May. This behavior indicates there was either a female or a nest being protected by a male.

Coastal California gnatcatchers (*Polioptila californica californica*) are known to occur in the surrounding areas of the Preserve such as Naval Weapons Station Seal Beach Detachment Fallbrook. The habitat on the Preserve has low potential to support coastal California gnatcatchers. The coastal sage chaparral scrub present in the higher elevations of the Preserve has more chaparral plant species than coastal sage scrub and the slopes with coastal sage scrub are extremely steep. Focused surveys were not conducted but biologists knowledgeable of the species conducted general surveys through all of habitats on the Preserve and no gnatcatchers were detected. This coastal sage chaparral scrub may be used by the species in years with high numbers in surrounding populations.

There is moderate potential for southwestern willow flycatcher (*Empidonax traillii extimus*) to occur at the Preserve. This species has been detected off-site downstream along the Santa Margarita River. Focused surveys were not conducted on-site. Individuals were not detected during other surveys of the riparian habitat.

Four non-native or invasive species were detected during the surveys: red junglefowl (*Gallus gallus*), rock pigeon (*Columba livia*), European starling (*Sturnus vulgaris*), and brown-headed cowbird (*Mollothrus aster*). One red jungle fowl was observed in the staging area in July. Several rock pigeons were observed flying over the Preserve during a herpetological array survey. One European starling was detected in the staging area in April. None of these species poses a threat to the native avian species present on the Preserve. One male brown-headed cowbird, an obligate brood parasite, was observed flying up and down the river during the four months of point count surveys. At no time was a female or fledglings observed. If there is parasitism occurring on the Preserve, it is in low numbers.

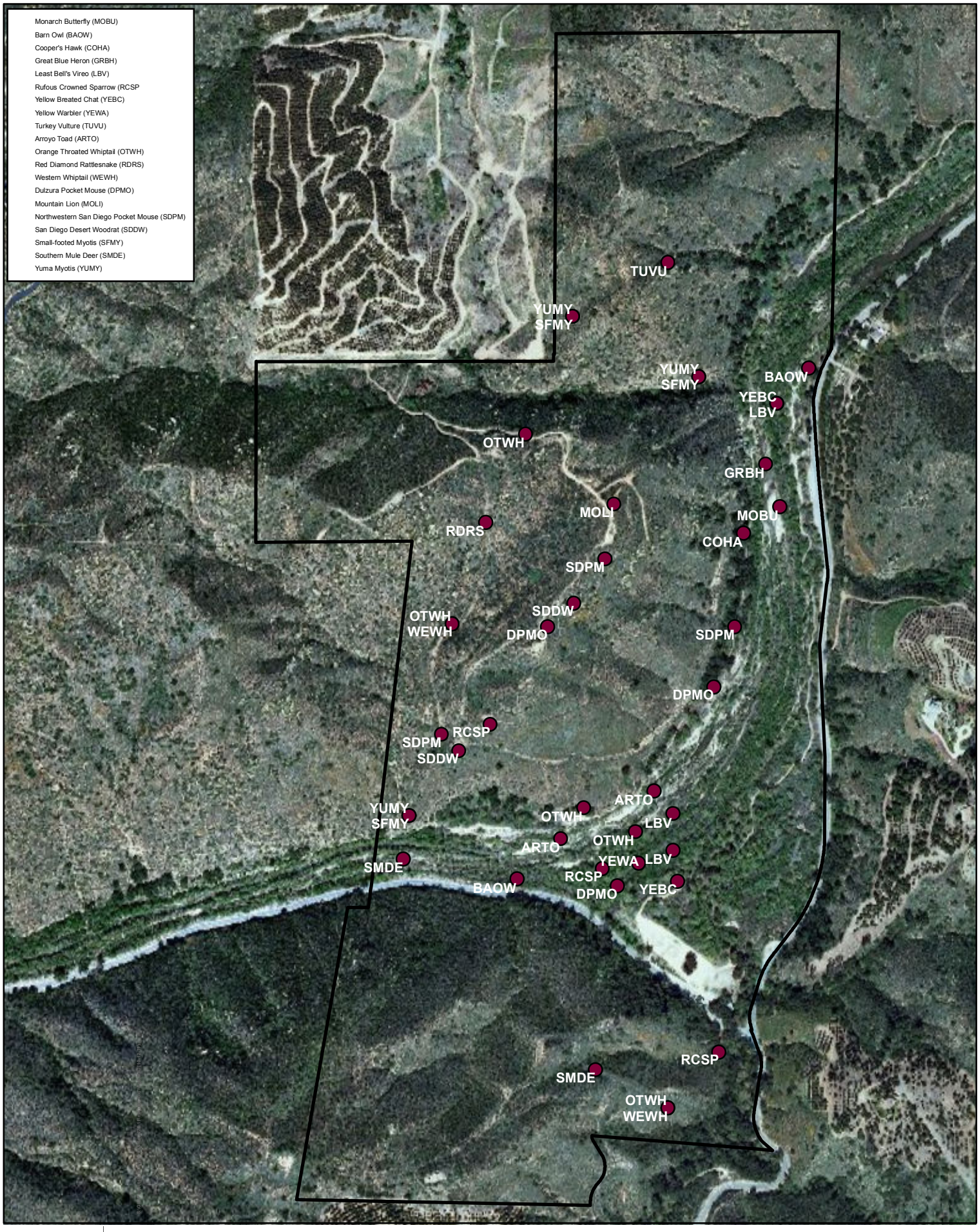
Point Counts

As detailed in Section 3.3.3, 10-minute avian point counts were conducted at four (4) stations (Figure 8) monthly from April through July 2011. ICF wildlife biologist Kylie Fischer conducted all of the counts.

The most regularly encountered and/or most numerous bird species in decreasing number of observations were lesser goldfinch (61 observations), wrentit (59 observations), song sparrow (41 observations), California towhee (38 observations), spotted towhee (32 observations), house wren (20 observations), Bewick's wren (19 observations), phainopepla (17 observations), and house finch (16 observations). All other species has less than 15 observations during the course of the point counts.

Tables 16 and 17 provide quantitative summaries of the results for species and individuals. Station 3 shows the highest number of observations (133) and the highest diversity of species (35). Station 4 had the lowest number of observations (113) and the lowest species diversity (26). This station is on the northern portion of the Preserve in the coastal sage-chaparral scrub. When compared to the stations in the mature riparian or adjacent to the oak woodland, a lower diversity of species and less observations is expected.

One occurrence of an unknown woodpecker species was excluded from the calculation of total species. This occurrence was of an individual heard drumming in the distance but no vocalizations were emitted to enable the observer to identify the species. As several woodpecker species were recorded at the Preserve, this species is most likely already recorded during the sampling. This individual was included in the number of observations as it represented a unique bird during the sampling period. Two observations of unknown species were excluded from the species data but were included as bird observations. The biologist was confident that these observations were not of a bird that had already been documented during the point count.



ICF INTERNATIONAL

Figure 12
Special Status Wildlife
Santa Margarita Preserve

Table 15. Avian Species Detected at the Preserve in 2011

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type	Breeding Status
Anas platyrhynchos	Mallard			PC	pr
Callipepla californica	California Quail			PC	pr
**Gallus gallus*	Red Junglefowl			OS	
Ardea herodias	Great Blue Heron		SDC Group II	PC	
Ardea alba	Great Egret			PC	
Cathartes aura	Turkey Vulture		SDC Group I	OS	
Accipiter cooperii	Cooper's Hawk		SDC Group I	PC	
Buteo jamaicensis	Red-tailed Hawk			PC	CO
Larus sp.	Gull			OS	
**Columba livia*	Rock Pigeon			OS	
Patagioenas fasciata	Band-tailed Pigeon			OS	
Zenaida macroura	Mourning Dove			PC	pr
Tyto alba	Barn Owl		SDC Group II	OS	pr
Megascops kennicottii	Western Screech-Owl			OS	?
Bubo virginianus	Great Horned Owl			OS	?
Phalaenoptilus nuttallii	Common Poorwill			OS	?
Archilochus alexandri	Black-chinned Hummingbird			PC	pr
Calypte anna	Anna's Hummingbird			PC	pr
Calypte costae	Costa's Hummingbird			PC	pr
Melanerpes formicivorus	Acorn Woodpecker			PC	pr
Picoides nuttallii	Nuttall's Woodpecker			PC	pr
Picoides pubescens	Downy Woodpecker			PC	pr
Colaptes auratus	Northern Flicker			PC	
Empidonax difficilis	Pacific-slope Flycatcher			PC	pr
Sayornis nigricans	Black Phoebe			PC	pr
Myiarchus cinerascens	Ash-throated Flycatcher			PC	pr
Vireo bellii pusillus	Least Bell's Vireo	FE, SE	SDC Group I, MSCP	PC	pr
Vireo huttoni	Hutton's Vireo			PC	pr

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type	Breeding Status
Aphelocoma californica	Western Scrub-Jay			PC	pr
Corvus brachyrhynchos	American Crow			PC	
Corvus corax	Common Raven			PC	
Stelgidopteryx serripennis	Northern Rough-winged Swallow			PC	
Petrochelidon pyrrhonota	Cliff Swallow			PC	
Baeolophus inornatus	Oak Titmouse			PC	CO
Psaltriparus minimus	Bushtit			PC	CO
Sitta carolinensis	White-breasted Nuthatch			PC	?
Thryomanes bewickii	Bewick's Wren			PC	CO
Troglodytes aedon	House Wren			PC	CO
Polioptila caerulea	Blue-gray Gnatcatcher			OS	pr
Chamaea fasciata	Wrentit			PC	pr
Catharus ustulatus	Swainson's Thrush			OS	
Toxostoma redivivum	California Thrasher			PC	pr
**Sturnus vulgaris*	European Starling			OS	
Phainopepla nitens	Phainopepla			PC	CO
Vermivora celata	Orange-crowned Warbler			PC	pr
Vermivora ruficapilla	Nashville Warbler			OS	
Dendroica petechia	Yellow Warbler	CSC	SDC Group II	PC	pr
Wilsonia pusilla	Wilson's Warbler			PC	
Geothlypis trichas	Common Yellowthroat			PC	pr
Icteria virens	Yellow-breasted Chat	CSC	SDC Group I, MSCP	PC	pr
Pipilo maculatus	Spotted Towhee			PC	pr
Aimophila ruficeps canescens	So. Calif. Rufous-crowned Sparrow		SDC Group I, MSCP	PC	pr
Melozonecrissalis	California Towhee			PC	pr
Spizella atrogularis	Black-chinned Sparrow			PC	
Melospiza melodia	Song Sparrow			PC	CO

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type	Breeding Status
Pheucticus melanocephalus	Black-headed Grosbeak			PC	pr
Passerina caerulea	Blue Grosbeak			OS	?
Passerina amoena	Lazuli Bunting			PC	?
**Molothrus ater*	Brown-headed Cowbird			PC	
Icterus cucullatus	Hooded Oriole			OS	pr
Icterus bullockii	Bullock's Oriole			PC	pr
Carpodacus mexicanus	House Finch			PC	pr
Carduelis psaltria	Lesser Goldfinch			PC	CO

Legend

*=Non-native or Invasive species

Special Status: FE= Federally Endangered, FT=Federally Threatened, SE= State Endangered, CSC= California Species of Special Concern, CFP= California Fully Protected, SDC Group= San Diego County Sensitive Animal, MSCP= North County Multiple Species Conservation Program Covered Species

Survey Type: PC = detected during point count, OS = Observed during other fieldwork

Breeding Status: CO = Confirmed breeding, pr = Probable breeder,? = Possible breeder. Rating is based on number of observations and period of observation (i.e. was the species identified throughout the breeding season or only during certain times of the year)

Table 16. Avian Point Counts – Totals for Individuals*

	Point Count Stations				Total # of	*Mean # of*
Month	1	2	3	4	Individuals	*Individuals*
April	30	32	38	34	**134**	*33.5*
May	31	29	38	31	**129**	*32.3*
June	37	39	35	25	**136**	*34.0*
July	21	21	22	23	**87**	*21.8*
Total # of Individuals	**119**	**121**	**133**	**113**	**486**	
Mean # of Individuals	*29.8*	*30.3*	*33.3*	*28.3*		*30.4*

*See Section 3.3.3 regarding the exclusion of individuals recorded as "fly-bys.

Table 17. Avian Point Counts – Totals for Species*

Month	Point Count Stations 1	2	3	4	Total # of Species	*Mean # of Species*
April	16	14	23	16	**40**	*21.8*
May	18	13	19	16	**31**	*19.4*
June	20	19	21	11	**34**	*21.0*
July	12	13	11	10	**26**	*14.4*
Total # of Species	**33**	**30**	**35**	**26**	**131**	
Mean # of Species	*16.5*	*14.8*	*18.5*	*13.3*		*15.8*

* Birds not identified to species were excluded from the calculation. "Fly-by" species were included in the calculations.

Nocturnal Surveys

The nocturnal bird surveys documented four nocturnal avian species: barn owl, great horned owl, western screech-owl, and common poorwill (*Phalaenoptilus nuttallii*). Barn owl, a special-status species, was detected in two areas; one along the lower portion of the River and another in the upper portion of the River floodplain (Figure 12). A power pole at the top of the ridgeline had numerous pellets below it indicating owls regularly perch on this pole. A great horned owl pair was detected near point count station 2. Two western screech-owls were detected between point count station 2 and 3. One common poorwill was flushed on the trail up to point count station 4.

4.3.5 Mammals

In total, 28 mammal species were detected during general surveys, mammal trapping, camera station sampling, and bat sampling (Appendix B). Of these, seven (7) species have special-status with federal, state, and/or local governments.

Small Mammals

In total, 11 small mammal species were recorded at the Preserve during small mammal trapping and other surveys (Table 18). These species were detected through capture, direct observation, or sign. The trapping results indicate that the Preserve has good abundance and species diversity of small mammals with 146 captures and ten species (Table 18). One additional species was detected during visual surveys or in a herpetological pitfall array (Table 19). Three species have special status with federal, state, and local governments and include Dulzura pocket mouse (*Chaetodipus californicus femoralis*), northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*), and San Diego desert woodrat (*Neotoma lepida intermedia*). Further discussion of the use of the Preserve by special-status small mammal species is found in Section 4.3.6.

In addition, a habitat assessment was conducted for Stephens' kangaroo rat (*Dipodomys stephensi*) as there is a known population on the nearby Naval Weapons Station Seal Beach Detachment Fallbrook and if there was suitable habitat, the trapping program would be conducted in a manner to confirm the species presence on the Preserve. This species is found almost exclusively in open grasslands or sparse shrublands with cover of less than 50% during the summer. The species typically avoids dense grasses (for example, non-native bromes [*Bromus* spp.]) and is more likely to

inhabit areas where the annual forbs disarticulate in the summer and leave more open areas. Soil type also is an important habitat factor. As a fossorial (burrowing) animal, the species typically is found in sandy and sandy loam soils with a low clay to gravel content, although there are exceptions where they can utilize the burrows of Botta's pocket gopher (*Thomomys bottae*) and California ground squirrel (*Spermophilus beecheyi*). This species tends to avoid rocky soils. Slope is a factor in occupation; the species tends to use flatter slopes (i.e., < 30%), but may be found on steeper slopes in trace densities (i.e., < one individual per hectare). Furthermore, the species may use steeper slopes for foraging, but not for burrows. In general, the highest abundances of species occur on gentle slopes less than 15%. The habitat assessment determined that there is no habitat on the Preserve suitable for this species. There are no open grassy areas with slopes less than 15% slope that could support the species.

Table 18. Trapline Capture Summary

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Sample Area							Total
				A	B	C	D	E	F	G	
Spermophilus beecheyi	California Ground Squirrel			1 esc							1 esc
Chaetodipus californicus femoralis	Dulzura Pocket Mouse	CSC	SDC Group II			3 ♂ 2 ♀		9 ♂ 8 ♀		1 ♂ 2 ♀	13 ♂ 12 ♀
Chaetodipus fallax fallax	Northwestern San Diego Pocket Mouse	CSC	SDC Group II					1 ♂	1 ♂ 10 ♀	2 ♂ 3 ♀	4 ♂ 13 ♀
Peromyscus maniculatus	Deer Mouse			7 ♀	2 ♂ 1 ♀		20 ♂ 3 ♀	4 ♂ 7 ♀	3 ♀		26 ♂ 21 ♀
Peromyscus californicus	California Mouse			4 ♀	3 ♂ 4 ♀		3 ♂ 8 ♀	2 ♂ 1 ♀			8 ♂ 17 ♀
Peromyscus eremicus	Cactus Mouse			1 ♀	1 ♀	1 ♂ 3 ♀			3 ♂ 3 ♀	1 ♂ 3 ♀	5 ♂ 11 ♀
Dipodomys simulans (=*Dipodomys agilis simulans*)	Dulzura Kangaroo Rat									2 ♂ 3 ♀	2 ♂ 3 ♀
Reithrodontomys megalotis	Western Harvest Mouse							1 ♂ 2 ♀			1 ♂ 2 ♀
Neotoma lepida intermedia	San Diego Desert Woodrat	CSC	SDC Group II						1 ♂ 1 esc	2 ♂	3 ♂ 1 esc
Neotoma fuscipes	Dusky-footed Woodrat					3 ♂					3 ♂
Total				**13**	**10**	**13**	**34**	**35**	**22**	19	146

Legend:
♂ = male, ♀ = female, and esc = escaped prior to determining sex
Special Status: FE= Federal Endangered, ST= State Threatened, CSC= California Species of Concern, SDC= County of San Diego Sensitive Animal, MSCP= North County Multiple Species Conservation Program Covered Species

Table 19. Small Mammals Detected through Other Survey Methods

Scientific Name	Common Name	Vegetation Communities	Method of Detection
Spermophilus beecheyi nudipes	California Ground Squirrel	all communities	visual, sign
Microtus californicus	California Vole	grassland	captured in pitfall array

Medium and Large Mammals

Evaluation of the images captured at the five camera stations resulted in the identification of nine (9) medium to large mammal species using the Preserve and two (2) medium species were identified through visual and/or sign (Table 20). See Figure 8 for camera station locations. Nine of these species were also detected through tracks, sign, and nocturnal surveys (Table 20). Movement of larger animals appeared to be concentrated along easily traveled routes with good visibility such as roads, ridgelines, and along the Santa Margarita River. Most sign of medium and large sized animals were within natural communities with dense cover, especially chaparral. Two of these species, mountain lion (*Puma concolor*) and southern mule deer (*Odocoileus hemionus fuliginata*), are both considered special-status species. Further discussion of the use of the Preserve by special-status medium and large mammal species is found in Section 4.3.6.

Table 20. Medium and Large Mammals Detected at the Preserve in 2011

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Vegetation Communities	Method of Detection
**Didelphis virginiana*	Virginia Opossum			riparian	visual
Sylvilagus audubonii	Desert Cottontail			all	visual, sign, camera station
Canis latrans	Coyote			all	visual, sign, camera station
***Canis familiaris*	Domestic Dog			all	visual, sign, camera station
Procyon lotor	Northern Raccoon			riparian	visual, sign, nocturnal survey
Urocyon cinereoargenteus	Common Gray Fox				camera station
Mephitis mephitis holzneri	Striped Skunk			riparian	visual, sign, camera station
Puma concolor	Mountain Lion		SDC Group II, MSCP	all	sign, camera station

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Vegetation Communities	Method of Detection
Lynx rufus	Bobcat			all	sign, camera station
***Equus caballus*	Domestic Horse			all	visual, sign, camera station
Odocoileus hemionus fuliginata	Southern Mule Deer		SDC Group II	chaparral	sign, camera station, nocturnal survey

Legend:
*=non-native species
** = non-native species used by visitors on the trails.
Special Status: SDC = County of San Diego Sensitive Animal, MSCP= North County Multiple Species Conservation Program Covered Species

Bats

A total of six (6) bat species were detected during the bat surveys (Table 21). The bat species detected included Yuma myotis (*Myotis yumanensis*), Mexican free-tailed bat (*Tadarida brasiliensis*), canyon bat (*Parastrellus hesperus*), big brown bat (*Eptesicus fuscus*), California myotis (*Myotis californicus*) and small-footed myotis (*Myotis ciliolabrum*) (Table 21). A moderate number of bat species appear to occur within the Preserve. The Preserve's habitats are fairly diverse and contain features important to bats in the southern California landscape such as riparian vegetation, oak woodland, and scrub vegetation (Krutzsch 1948, Stokes et al 2005). Further discussion of the use of the Preserve by special-status bat species is found in Section 4.3.6.

Table 21. Bat Species Detected at the Preserve in 2011

Scientific Name	Common Name	Local Government Special Status
Myotis californicus	California Myotis	
Myotis ciliolabrum	Small-footed Myotis	SDC Group II
Myotis yumanensis	Yuma Myotis	SDC Group II
Parastrellus hesperus	Canyon Bat	
Eptesicus fuscus	Big Brown Bat	
Tadarida brasiliensis	Mexican Free-tailed Bat	

Legend:
SDC= County of San Diego Sensitive Animal, MSCP= North County Multiple Species Conservation Program Covered Species

4.3.6 Special-Status Wildlife Species Observed

In total, 20 special-status wildlife species were detected during the 2011 survey at the Preserve (Figure 12). One special-status invertebrate species was detected: monarch butterfly. One special-status amphibian species was detected: arroyo toad. Three special-status reptile species were detected and include orange-throated whiptail, western whiptail, and red diamond rattlesnake. Eight

special-status bird species were detected and include great blue heron (*Ardea herodias*), turkey vulture, Cooper's hawk, barn owl, least Bell's vireo, yellow warbler (*Dendroica petechia*), yellow-breasted chat, and southern California rufous-crowned sparrow. Seven special-status mammal species were detected and include small-footed myotis, Yuma myotis, Dulzura pocket mouse, northwestern San Diego pocket mouse, San Diego desert woodrat, mountain lion, and southern mule deer. See Figure 12 for locations of special-status species detected during surveys of the Preserve.

Invertebrates

Monarch Butterfly (*Danaus plexippus*)

San Diego County Group II

The monarch butterfly is one of the most recognized and studied insects in North America. The species is known to migrate great distances and the monarch regularly uses habitats in Canada, United States and Mexico. The primary host plant for the monarch larvae are plants in the milkweed genus (*Asclepias* sp.). During the summer months monarchs can have up to four (4) generations that live from 2-5 weeks during which they mate and lay eggs. The last generation of butterflies is considered to be in a state of reproductive diapause and these butterflies migrate south along the Pacific Ocean where they overwinter. Some monarchs can live as long as nine (9) months.

In San Diego County monarchs can occur along the coast where they cluster in eucalyptus groves. They typically mate in January and then leave for their spring migration. Second generation hatches will occur in the Sierra Nevada foothills. Third and fourth generation hatches are known to occur well into the mountains of Oregon, Nevada and Arizona.

During 2011 biological surveys one monarch butterfly was observed at the Preserve (Figure 12). This individual was likely a second generation butterfly migrating north.

Herpetofauna

Arroyo Toad (Anaxyrus californicus)

Federally Endangered, California Species of Special Concern, San Diego County Group I, Draft North County MSCP Covered Species

The arroyo toad is endemic to the coastal plains, mountains, and desert slopes of central and southern California and northwestern Baja California from near sea level to about 2,400 m (8,000 ft). Within these areas, the arroyo toad is found in both perennial and intermittent rivers and streams with shallow, sandy to gravelly pools adjacent to sand or fine gravel terraces. This species has evolved in a system that is inherently dynamic, with marked seasonal and annual fluctuations in rainfall and flooding. Breeding habitat requirements are highly specialized. Specifically, arroyo toads require shallow slow-moving stream and riparian habitats that are naturally disturbed on a regular basis, primarily by flooding (USFWS 2000).

The breeding period occurs from late January or February to early July, although it can be extended in some years depending on weather conditions. Breeding in mountainous habitats may commence later (May–June) and last longer (to August) than in the coastal portion of the range. Breeding occurs in quiet, clear backwaters of streams as waters recede from the floods of the wet season. When water

temperatures reach 57°F (14°C), adult males advertise with a soft, high- whistled trill. Males call from suitable breeding habitat at night. Receptive females seek out calling males based on the size of the male and the sound of his call. Little is known about movements or other behavior in the non-breeding season (USFWS 2000). Adult arroyo toads spend most of the year in burrows in upland habitat near washes and streams. Non-breeding habitat includes sage scrub, mixed chaparral, and oak woodland.

Adult and juvenile arroyo toads were observed within the Santa Margarita River during 2011 surveys. Sections of the river contain high quality habitat as defined by the habitat assessment protocol detailed in the Marine Corps Base Camp Pendleton Arroyo Toad Monitoring Protocol (Atkinson et al 2002). This model uses three physical characteristics to assess the potential to support breeding arroyo toad: 1) channel substrate type being predominantly composed of sand; 2) the presence of flat sandy terraces immediately adjacent to channel; and 3) having a watercourse of braided channels.

Orange-throated Whiptail (Aspidoscelis hyperythra beldingi)

California Species of Special Concern, San Diego County Group II, Draft North County MSCP Covered Species

The orange-throated whiptail is a medium-sized lizard that ranges from southern California (specifically Corona del Mar in Orange County and Colton in San Bernardino County) southward to the tip of Baja California, Mexico. Historically, most populations of the orange-throated whiptail were found on floodplains or terraces along streams in brushy areas with loose soil and rocks (McGurty 1980). Habitat types they are known to use include chaparral, non-native grassland, coastal sage scrub, juniper woodland, and oak woodland. California buckwheat (*Eriogonum fasciculatum*) is an important indicator of appropriate habitat for orange-throated whiptail (Dudek 2000). This plant species is a colonizer of disturbed, sandy soils and usually indicates open shrub spacing that is required for whiptail foraging and thermoregulatory behavior. Orange-throated whiptails appear to be dietary specialists with most (> 85%) of their prey being termites (Dudek 2000). The decline of orange-throated whiptails is likely due to loss of habitat to agriculture and urban development. On the Preserve, this species was captured at Arrays #1 and #2 and observed during active surveys in the chaparral and scrub habitats (Figure 12). This species is presumed to be abundant within the Preserve.

Western Whiptail (*Aspidoscelis tigris*)

San Diego County Group II

Western whiptail is a medium-sized slender lizard that is found in arid and semiarid desert to open woodlands where the vegetation is sparse so running is easy (Stebbins 2003). Its range includes coastal southern California and western Baja California. The decline of western whiptails is likely due to loss of habitat to agriculture and urban development. On the Preserve, this species was captured at Arrays #1 and #2 (Figure 12). This species is presumed to be abundant within the Preserve.

Red Diamond Rattlesnake (*Crotalus ruber*)

California Species of Special Concern, San Diego County Group II, Draft North County MSCP Covered Species

The red diamond rattlesnake is a large, heavy-bodied rattlesnake that has a wide tolerance for varying environments and can be found in a variety of vegetation types, but it is most commonly seen in areas with heavy brush and cacti, rocks, or boulders (Stebbins 2003). The known range extends from San Bernardino County along the coastal and desert slopes southward to Baja California. Adult red diamond rattlesnakes eat mostly squirrels and rabbits, but lizards, specifically the western whiptail, are a significant food source for juveniles (Jennings and Hayes 1994). Urban development and the trend towards planting orchards on steeper rocky hillsides have significantly decreased the amount of appropriate habitat for this species (Jennings and Hayes 1994). During 2011 surveys, this species was observed in the central portion of the Preserve (Figure 12). This species has potential to occur throughout the upland habitats that occur in the Preserve.

Birds

Great Blue Heron (*Ardea herodias*)

San Diego County Group II

The great blue heron is a large water bird that can be found in any type of wetland and is typically a colonial breeder that nests in trees near water (Unitt 2004); however, breeding has been documented by isolated pairs and in the absence of trees. Great blue herons will nest in bushes, on the ground, or in artificial structures (Butler 1992, Unitt 2004). This species is non-migratory in southern California but is migratory in other parts of its range (Unitt 2004). Great blue herons forage diurnally in estuaries and beaches but are also commonly seen on dry land (Unitt 2004, K. Fischer Personal Observation). Great blue herons were sporadically observed overhead along the river during 2011 surveys (Figure 12). This species does not breed at the Preserve. It may use the Preserve for foraging.

Turkey Vulture (*Cathartes aura*)

San Diego County Group I

Turkey vultures are often seen foraging over woodlands and nearby open country (Unitt 2004). They prefer dry, open country and ranch lands and often occur along roadsides where carrion is common. They nest in crevices among granite boulders (Unitt 2004). The turkey vultures' range has been retracting from the coast due to human disturbance, loss of foraging habitat, and pesticide contamination (Unitt 2004). Turkey vultures were observed foraging over the Preserve during 2011 surveys (Figure 12). There is no suitable breeding habitat for this species on the Preserve. This species is common in the undeveloped areas of San Diego County.

Cooper's Hawk (*Accipiter cooperii*)

San Diego County Group I

The Cooper's hawk is a resident of riparian deciduous habitats and oak woodlands but in recent times has become adapted to urban park environments (Unitt 2004). They hunt their primary

source of food, passerines, in broken woodlands and forest margins, and they are also known to take fish and mammals. The Cooper's hawk population declined due to hunting and loss of habitat; however, this species is making a comeback through its adaptation to the urban environment (Unitt 2004). Cooper's hawk was not regularly detected at the Preserve during 2011 surveys; however, the Preserve supports breeding and foraging habitat for the species. This species is widespread throughout the County.

Barn Owl (*Tyto alba*)

San Diego County Group II

The barn owl is the owl species that is most tolerant to urban development (Unitt 2004). It will nest in buildings, nest boxes, at the base of the leaves in palm trees, and in cavities in native trees (Unitt 2004). Even though this species is tolerant of human development, dense housing communities do not provide suitable nesting habitat, and increased traffic has had a negative effect on the species (Unitt 2004). Barn owls were detected in two locations at the Preserve and a power pole appears to be a commonly used perch for the species as evidenced by the large number of pellets below the pole. Breeding was not confirmed, but can be assumed. This species is widespread throughout the County.

Least Bell's Vireo (*Vireo belli pusillus*)

Federally Endangered, State Endangered, San Diego County Group I, Draft North County MSCP Covered Species

Historically, the least Bell's vireo was a common to locally abundant species found in lowland riparian habitats from northern California to coastal southern California. Loss of riparian habitats and the effects of brown-headed cowbird parasitism have resulted in a large decline in the population. The population was estimated at 300 pairs in 1986 when listed by the USFWS. Currently, the population is limited to mid- to southern California. The majority of the population is found in San Diego County. Since listing, least Bell's vireo numbers have increased six-fold. In 1998, the population was estimated at 2,000 pairs (Kus 2002). Nests are typically placed within 1 meter (m) of the ground in dense shrubby riparian habitat.

Up to three males were detected during the 2011 surveys of the Preserve. One male was regularly detected near point count station 2 and a second was regularly detected near point count station 3. An additional male was detected in May near point count station 2 but he was only detected during the one survey period. Scolds were detected during this survey indicating the presence of a female or a male protecting a nest. Even though breeding was not confirmed, due to the temporal regularity of their detection (three out of four sampling periods), and based on the level of loquaciousness (periods of male song followed by periods of silence), breeding can be assumed for the two males.

Yellow Warbler (*Dendroica petechia*)

California Species of Special Concern, San Diego County Group II

The yellow warbler is a small insectivorous migratory passerine that inhabits lowland and foothill mature riparian woodlands (Unitt 2004, Dudek 2000). Preferred plant species include cottonwoods (*Populous* spp.), willows (*Salix* spp.), and other small trees and shrubs typically found in open-canopy riparian woodlands. Yellow warblers are usually on their breeding grounds from late March to mid-

October. Destruction and degradation of riparian habitat and brood parasitism by the brown-headed cowbird led to the decline of this species (Unitt 2004). Cowbird trapping has caused an increase in the San Diego County population of yellow warblers (Unitt 2004). Yellow warblers were detected near point count stations 2 and 3 during 2011 surveys (Figure 12). Breeding can be assumed as the species was detected in April, May, and June. This species is currently considered fairly common in San Diego County (Unitt 2004).

Yellow-breasted Chat (*Icteria virens*)

California Species of Special Concern, San Diego County Group I, Draft North County MSCP Covered Species

The yellow-breasted chat is a common summer breeding visitor that prefers to nest in extensive dense thickets of riparian habitat (Unitt 2004). This species is very secretive so finding their nests is a challenge. The decline of this species is due to the loss of riparian woodlands in the coastal lowland as a result of development, agriculture, and channeling rivers (Dudek 2000). Yellow-breasted chats were detected at point count stations 2 and 3in all four sampling months during 2011 surveys. The breeding status of these birds was unknown but can be assumed due to the presence in suitable breeding habitat throughout the breeding season. This species is still considered a common species in San Diego County.

Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)

San Diego County Group I, Draft North County MSCP Covered Species

The southern California rufous-crowned sparrow is a resident species that is closely associated with coastal sage scrub, steep rocky hillsides, burned chaparral, and openings in mature chaparral (Unitt 2004). Preferring open habitat with approximately 50% shrub cover, this species seeks cover in shrubs, rocks, grass, and forb patches (Dudek 2000, Unitt 2004). The southern California subspecies is restricted to semiarid coastal sage scrub and sparse chaparral from Santa Barbara south to the northwestern corner of Baja California (Dudek 2000). Southern California rufous-crowned sparrows are declining due to loss of appropriate habitat and their sensitivity to habitat fragmentation (Unitt 2004). During 2011 surveys, southern California rufous-crowned sparrows were incidentally detected during other surveys or while surveyors were traveling to the count point stations and were recorded at point count stations 1, 2, and 4 in all four sampling periods. This species is still found throughout San Diego County in large numbers (Unitt 2004).

Mammals

Small-footed Myotis (*Myotis ciliolabrum*)

San Diego County Group II

The small-footed myotis is found throughout most of western North America, from southwestern Canada south into Mexico (BCI 2008). There is not much information on the habitat requirements of this species, but it has been documented under rock slabs and in crevices, mine tunnels, under loose tree bark, and in buildings (BCI 2008). This species hibernates in caves, typically in small groups. Reasons for decline are poorly understood as there has been little research conducted on this species. Both suitable roosting and foraging habitat for the small-footed myotis occur on site and the species

was detected during 2011 surveys at each sampling location indicating widespread use of the Preserve by this species.

Yuma Myotis (Myotis yumanensis)

San Diego County Group II

The Yuma myotis is found throughout much of the western U.S. and into Canada (BCI 2008). The species is always found near lakes, creeks, or ponds where the species forages over the water. Typically, individuals skim low over the water and snatch up flying insects, but they can forage in other mesic areas. The species roosts by day usually in buildings or bridges but have been documented using mines or caves (BCI 2008). Yuma myotis are threatened by loss of riparian habitat and the decline in permanent water sources in the southwest. Yuma myotis were detected at each sampling locations during the 2011 sampling sessions.

Dulzura Pocket Mouse (Chaetodipus californicus femoralis)

California Species of Special Concern, San Diego County Group II

Dulzura pocket mouse is mainly active on the ground, but also climbs shrubs and small trees when feeding (CDFG 2005). This species can become torpid by day at any time of the year, and is inactive in cold wet weather. It breeds in spring to early summer and occurs from sea level to approximately 2,408 m (7,900 ft) AMSL (CDFG 2005). This species prefers dense chaparral and is less common in dry grassland and desert scrub. During the 2011 trapping program on the Preserve, 25 of the 146 animals captured were Dulzura pocket mice. Captures were associated with trapping locations C, E, and G (Figure 12).

Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*)

California Species of Special Concern, San Diego County Group II

The northwestern San Diego pocket mouse is typically found in coastal sage scrub, sage scrub/grassland ecotones, and chaparral (Dudek 2000). It inhabits open, sandy areas of both the Upper and Lower Sonoran areas of southwestern California and northern Baja California (Dudek 2000). This species is sensitive to habitat fragmentation and degradation, which has led to its decline. During the 2011 trapping program on the Preserve, 17 of the 146 animals captured were northwestern San Diego pocket mice. Captures were associated with trapping locations E, F, and G (Figure 12).

San Diego Desert Woodrat (*Neotoma lepida intermedia*)

California Species of Special Concern, San Diego County Group II

San Diego desert woodrat requires large amounts of water, which it obtains from fleshy plants such as yucca species and prickly pear cactus (*Opuntia* sp.). It usually makes a stick house under one of these food plants, or may den among rocks (CDFG 2005). House materials include cacti, sticks, bones, and a variety of debris. Houses provide insulation against excessive heat as well as protection from predators. This species breeds in late winter or spring, occurs from sea level to approximately 2,591 m (8,500 ft) AMSL in deserts and coastal sage scrub, and prefers areas with rocky outcrops and

plentiful succulents (CDFG 2005). During the 2011 trapping program on the Preserve, 4 of the 146 animals captured were San Diego desert woodrats. Captures were associated with trapping locations F and G (Figure 12).

Mountain Lion (*Puma concolor*)

San Diego County Group II, Draft North County MSCP Covered Species

Mountain lions prefer rocky areas, cliffs, and ledges that provide cover within open woodlands and chaparral (Dudek 2000). Riparian areas also provide protective habitat connections for movement between fragmented habitats. This species is widespread in North and South America and occupy a broad variety of habitats from the northern limit of the Canadian forests to Patagonia in South America. Populations of this species require large areas to sustain themselves, requiring at least 850 square miles to remain stable (Dudek 2000). Habitat fragmentation, loss of large areas of undeveloped land, road kills, indiscriminate shootings, animal control measures, and loss of natural prey base have led to the decline of this species. The Preserve and the surrounding open space provide habitat for mountain lion to use for foraging and cover, and the species was photographed twice along an upper ridgeline at camera station 3 (Figure 12).

Southern Mule Deer (Odocoileus hemionus fuliginata)

San Diego County Group II

Southern mule deer are common across the western U.S. in a variety of habitats from forest edges to mountains and foothills (Whitaker 1996). Southern mule deer prefer edge habitats, rarely travel or forage far from water, and are most active around dawn and dusk. Some sign of southern mule deer was seen at the Preserve during 2011 surveys, and a few deer were photographed during camera sampling. Southern mule deer was visually observed camera stations 1 and 2 (Figure 12).

4.3.7 Special-Status Wildlife Species with High Potential to Occur

Fish

Arroyo Chub (*Gila orcuttii*)

San Diego County Group I

The arroyo chub is a small fish that is found in slow-moving or backwater sections of warm to cool streams with mud or sand substrates (Moyle et al. 1995). The species breeds from February through August, although most spawning takes place in June and July, in pools or in quiet edge waters (Moyle et al. 1995). Depths are typically greater than 40 centimeters. This species decline has been attributed to introduced species and degradation of streams from urbanization (Moyle et al. 1995). In the 1990's, fish sampling confirmed the presence of this species within one mile of the De Luz Road Bridge crossing of the Santa Margarita River (CDFG 2011). This population is probably extant in the Santa Margarita River but no focused fish sampling was conducted on the Preserve to confirm the current status.

Southern Steelhead (*Oncorhynchus mykiss*)

Federally Endangered, California Species of Special Concern, San Diego County Group I

Southern steelhead are the anadromous, or ocean-going form of the species *Oncohynchus mykiss (*also known as rainbow trout). Historically southern steelhead were the only abundant salmon species that occurred naturally within southern California. Steelhead would enter the rivers and streams of southern California during the winter months when storms produced sufficient runoff to breach the sandbars at the rivers mouths. These fish would continue inland to upstream to spawning habitat.

Anadromous steelhead are not currently known to occur in the Santa Margarita River. However, historically anadromous steelhead were known to occur along the entire length of the Santa Margarita River. According to the Southern California Steelhead Recovery Plan the Santa Margarita River currently supports fair to poor quality habitat for anadromous steelhead. However, the recovery plan purposes the need to develop and implement a restoration and management plan for the Santa Margarita River Estuary that would potentially allow for the recovery of this species throughout the river.

Herpetofauna

San Diego Horned Lizard (*Phrynosoma blainvillii*)

California Species of Special Concern, San Diego County Group I, Draft North County MSCP Covered Species

The San Diego horned lizard is a large lizard that historically was found in Kern, Los Angeles, Santa Barbara, and Ventura Counties southward to Baja California, Mexico. Horned lizards inhabit a variety of vegetation communities including coastal sage, annual grassland, chaparral, oak woodland, riparian woodland, and coniferous forest (Stebbins 2003). Loose, fine soils with a high sand content, an abundance of prey, and open areas with limited overstory typify suitable habitat for this species (Jennings and Hayes 1994). The San Diego horned lizard's insectivorous diet consists mostly of native harvester ants (*Pogonmyrmex* sp.), which make up over 90% of its prey; however, it is an opportunistic feeder that will take other insects including termites, beetles, flies, wasps, and grasshoppers (Stebbins 2003, Jennings and Hayes 1994).

This species has disappeared from about 45% of its former range and a number of factors have led to this decline including habitat fragmentation and degradation, loss of native prey to exotic species, and extensive collection for the curio trade (Jennings and Hayes 1994). The specialized diet of harvester ants has made horned lizards especially vulnerable to extirpation since the introduction of Argentine ants (*Linepithema humile*). The San Diego horned lizard was not detected on the Preserve but has potential to occur throughout the scrub and chaparral habitats.

Southwestern Pond Turtle (*Emys marmorata pallida*)

California Species of Special Concern, San Diego County Group I, Draft North County MSCP Covered Species

The southwestern pond turtle is a small turtle with a relatively low carapace (shell) that may exhibit a pattern of dark spots or lines that radiate from the centers of the scutes, or it may be almost

patternless olive brown, dark brown, or grayish. Seasonal activity varies geographically and Western pond turtles may be active in every month at some localities. Western pond turtles eat a wide variety of food items, including algae, various plants (including the pods of the yellow water lily), snails, crustaceans (crayfish, Daphnia), isopods, insects, fish, frogs (tadpoles and adults). They prefer live prey, which they capture by opportunistic foraging tactics, but also scavenge carrion; they have been observed feeding on carcasses of mammals, birds, reptiles, amphibians, and fish.

The southwestern pond turtle inhabits slow-moving rivers, streams and ponds, where they seek permanent water. In intermittent streams, the turtles rely on small pools that persist through the dry season. Nests are excavated beyond the watercourse in banks or in open uplands. This species uses its aquatic habitats primarily for foraging, thermoregulation, and avoidance of predators. Southwestern pond turtles require emergent basking sites.

Southwestern pond turtles are reported from the CNDDB both upstream and downstream from the Preserve. Southwestern pond turtles have a high potential to occur at the Preserve due to presence of suitable habitat.

Coronado Skink (*Plestiodon skiltonianus interparietalis*)

California Species of Special Concern, San Diego County Group II

The Coronado skink is a medium-sized secretive lizard that is typically found in the moister areas of coastal sage, chaparral, oak woodlands, pinon-juniper, riparian woodlands, and pine forests (Jennings and Hayes 1994). Its prey includes small invertebrates found in leaf litter or dense vegetation at the edges of rocks and logs. The Coronado skink is found along the coastal plain and Peninsular Ranges west of the deserts from approximately San Gorgonio Pass in Riverside County south to San Quentin, Mexico (Jennings and Hayes 1994). The Coronado skink was not detected on the Preserve but has potential to occur throughout the scrub, chaparral, woodland, and riparian habitats.

Coastal Rosy Boa (*Charina trivirgata roseofusca*)

San Diego County Group II

Coastal rosy boas are heavy-bodied snakes that inhabit arid scrublands, semi-arid and rocky shrublands, rocky deserts, canyons, and other rocky areas (Stebbins 2003). This species eats rodents, small birds, lizards, small snakes, and amphibians and kills its prey by constriction. Coastal rosy boas occur in southwestern California from the coastal slopes of the San Gabriel and San Bernardino Mountains, and across the peninsular ranges into the desert in San Diego County (Stebbins 2003). Threats to this species include habitat degradation and fragmentation from urban development. The coastal rosy boa was not detected on the Preserve but has potential to occur throughout the scrub habitats and in rocky areas.

San Diego Ringneck Snake (*Diadophis punctatus similis*)

San Diego County Group II

The San Diego ringneck snake is a small, thin snake that prefers moist habitats, including wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests, and

woodlands (Stebbins 2003). It is secretive in its behavior, usually found under the cover of rocks, wood, bark, boards, and other surface debris. Ringneck snakes eat small salamanders, tadpoles, small frogs, small snakes, lizards, worms, slugs, and insects. This species' range includes San Diego County along the coast and into the Peninsular Range, southwestern San Bernardino County, and barely south into northern Baja California (Stebbins 2003). Threats to this species include habitat degradation and fragmentation from urban development. The San Diego ringneck snake was not detected on the Preserve but has potential to occur in moist areas on the rocky hillsides, or in the chaparral and woodland habitats.

Coast Patch-Nosed Snake (*Salvadora hexalepis virgutea*)

California Species of Special Concern, San Diego County Group II

The coast patch-nosed snake is a medium-sized, slender snake that is a habitat generalist that makes use of whatever vegetative cover is available and thrives in most environments. It is also a generalist in its diet, opportunistically feeding on anything it can overpower including small mammals, lizards, and the eggs of lizards and snakes. The species ranges from Creston in San Luis Obispo County southward into Baja California (Stebbins 2003). This species' decline is likely due to conversion of habitat to development, agriculture, or non-native plant species. The coast patch-nose snake was not detected on the Preserve but has potential to occur on-site throughout the habitat.

Two-Striped Garter Snake (*Thamnophis hammondii hammondii*)

California Species of Special Concern, San Diego County Group I, North County MSCP Covered Species

Two-striped garter snake occurs west of the deserts and Central Valley from Salinas, Monterey County, south into Baja California, and at elevations from sea level up to about 2,438 m (8,000 ft) in the San Jacinto Mountains (Jennings and Hayes 1994). It is often in water and rarely found far from it, though it is also known to inhabit intermittent streams having rocky beds bordered by willow thickets or other dense vegetation (Jennings and Hayes 1994). Two-striped garter snake will also inhabit large riverbeds such as those of the Santa Ana and Santa Clara Rivers if riparian vegetation is available, and even will occur in artificial impoundments if both aquatic vegetation and suitable prey items (small amphibians and fish) are present (Jennings and Hayes 1994). Declines are attributable directly to loss of riparian habitats. The two-striped garter snake was not detected on the Preserve but has potential to occur in the Santa Margarita River.

Birds

White-Tailed Kite (*Elanus caeruleus*)

California Fully Protected Species (nesting), San Diego County Group I

The white-tailed kite is found in lower elevations in open grasslands, agricultural areas, wetlands, and oak woodlands. Their primary source of food is the California vole (*Microtus californicus sanctidiegi*) (Unitt 2004). It typically forages in open, undisturbed habitats and nests in the top of a dense oak, willow, or other large tree (Unitt 2004). The white-tailed kite population is on the decline mostly due to urban sprawl; however, this species is still considered fairly widespread throughout the foothills of San Diego County (Unitt 2004). White-tailed kites are known to occur in the vicinity

and the Preserve does provide the large trees required for nesting; however, the grasslands they prefer to forage over are not present.

Northern Harrier (*Circus cyaneus*)

California Species of Special Concern (nesting), San Diego County Group I, North County MSCP Covered Species

The northern harrier is associated with open grassland and marshes. This species typically forages in open, undisturbed habitat and nests on the ground in areas of dense low-growing vegetation to help conceal the nest. Nesting harriers are now considered rare and the known breeding population in San Diego County is estimated at 25 to 75 pairs (Unitt 2004). As with other ground nesting grassland birds, the northern harrier population is on the decline due to urban sprawl (Unitt 2004). The Preserve does not provide optimal nesting habitat; however, the species may occasionally forage and winter there.

Sharp-shinned Hawk (*Accipiter striatus*)

San Diego County Group II

Sharp-shinned hawks breed in young coniferous forests with high canopies. This species has not been documented breeding in San Diego; however, some summer sightings have been recorded (Unitt 2004). It is considered a fairly common migrant and winter resident, except in areas with deep snow (Dudek 2000). The known population breeding within California is very small and is vulnerable to impacts from falconry and logging. This species has high potential to occur as a migrant within the Preserve.

Red-shouldered Hawk (*Buteo lineatus*)

San Diego County Group I

The red-shouldered hawk was once an uncommon breeder of lowland riparian woodlands but has been thriving in urban environments with large trees such as eucalyptus (Unitt 2004). On the west coast, this species is found in California and northern Baja California and is common throughout San Diego County. Red-shouldered hawks have high potential to occur on the Preserve. This species is widespread throughout the County.

Swainson's Hawk (*Buteo swainsoni*)

State Threatened, San Diego County Group I

Swainson's hawks are rare migrants over San Diego County and are typically seen inland such as Lakeside, Lake Cuyamaca, and Borrego Valley. In 2011, two groups of Swainson's hawks were observed migrating near the Santa Margarita River valley. One group was documented by local birders on March 8, 2011 and a second group was observed by ICF biologists K. Fischer and D. Allen on 30 March, 2011. The second group was observed on Naval Weapons Station Seal Beach Detachment Fallbrook and was moving in the direction of the Preserve. This species has high potential to migrate through the Preserve and use the ridgetop updrafts for migration.

Ferruginous Hawk (*Buteo regalis*)

San Diego County Group I

The ferruginous hawk is an uncommon winter visitor to San Diego County that is mostly found foraging in open grasslands (Unitt 2004). Development of the grasslands they forage over caused the decline in this species (WRI 2007). Ferruginous hawks have potential to be detected at the Preserve during migration.

Golden Eagle (*Aquila chrysaetos*)

State Fully Protected Species, San Diego County Group I, North County MSCP Covered Species

Golden eagles nest on cliff ledges or trees on steep slopes and forage in grasslands, sage scrub, or broken chaparral (Unitt 2004). Development of the grasslands they forage over has taken a toll on the numbers of this species present in San Diego County. A territory averages 36 square miles so removal of foraging habitat will have significant impacts on this species (Unitt 2004). In 2011, a golden eagle individual was detected in spring at Naval Weapons Station Seal Beach Detachment Fallbrook and has high potential to use the Preserve for foraging. There is no habitat suitable for nesting on the Preserve.

Merlin (*Falco columbarius*)

San Diego County Group II

The merlin is most often seen in grasslands but has the potential to occur in any vegetation community except dense woodland (Unitt 2004). This species is a rare winter visitor to San Diego County that feeds mostly on small birds and can be found where small birds flock (Unitt 2004). This species has high potential to occur as a migrant within the Preserve.

Bell's Sage Sparrow (*Amphispiza belli belli*)

California Species of Special Concern, San Diego County Group I, Draft North County MSCP Covered Species

The Bell's sage sparrow is a resident species that is usually found in chaparral and coastal sage scrub in southern California and Baja California. This mostly ground-dwelling species prefers open chaparral and sage scrub and is one of the first species to inhabit recently burned habitat (Unitt 2004). This species occurs along the coastal lowlands, inland valleys, and in the lower foothills of the local mountains in southern California and south into Baja California (Dudek 2000). The decline of this species can be attributed to fire suppression, invasion by exotic plant species, loss of habitat to agriculture and urban development, and population isolation due to habitat fragmentation (Unitt 2004, Dudek 2000). Bell's sage sparrows were not observed during the 2011 surveys, but there is high potential for the species to occur as it has been recorded in the immediate vicinity (Unitt 2004).

4.3.8 Invasive Species

Native species are often at a disadvantage after exotic species or non-native predators are introduced. Non-native animal species have few natural predators or other ecological controls on

their population sizes, and they thrive under conditions created by humans. These species may aggressively out-compete native species or otherwise harm sensitive species. When top predators are absent, intermediate predators multiply and increase predation on native bird species and their nests. Feral and domestic animals, particularly cats, can prey on small native wildlife species. Feral animals are not a current problem at the Preserve. With the increased use of the Preserve by hikers and their dogs and horseback riders, increased interactions between domestic animals and native animals are expected.

Nine (9) non-native animal species were documented during the current survey effort including red swamp crayfish (*Procambarus clarkia*), cabbage white (*Pieris rapae*), common carp, bullfrog, red junglefowl, rock pigeon, European starling, brown-headed cowbird, Virginia opossum (*Didelphis virginiana*).

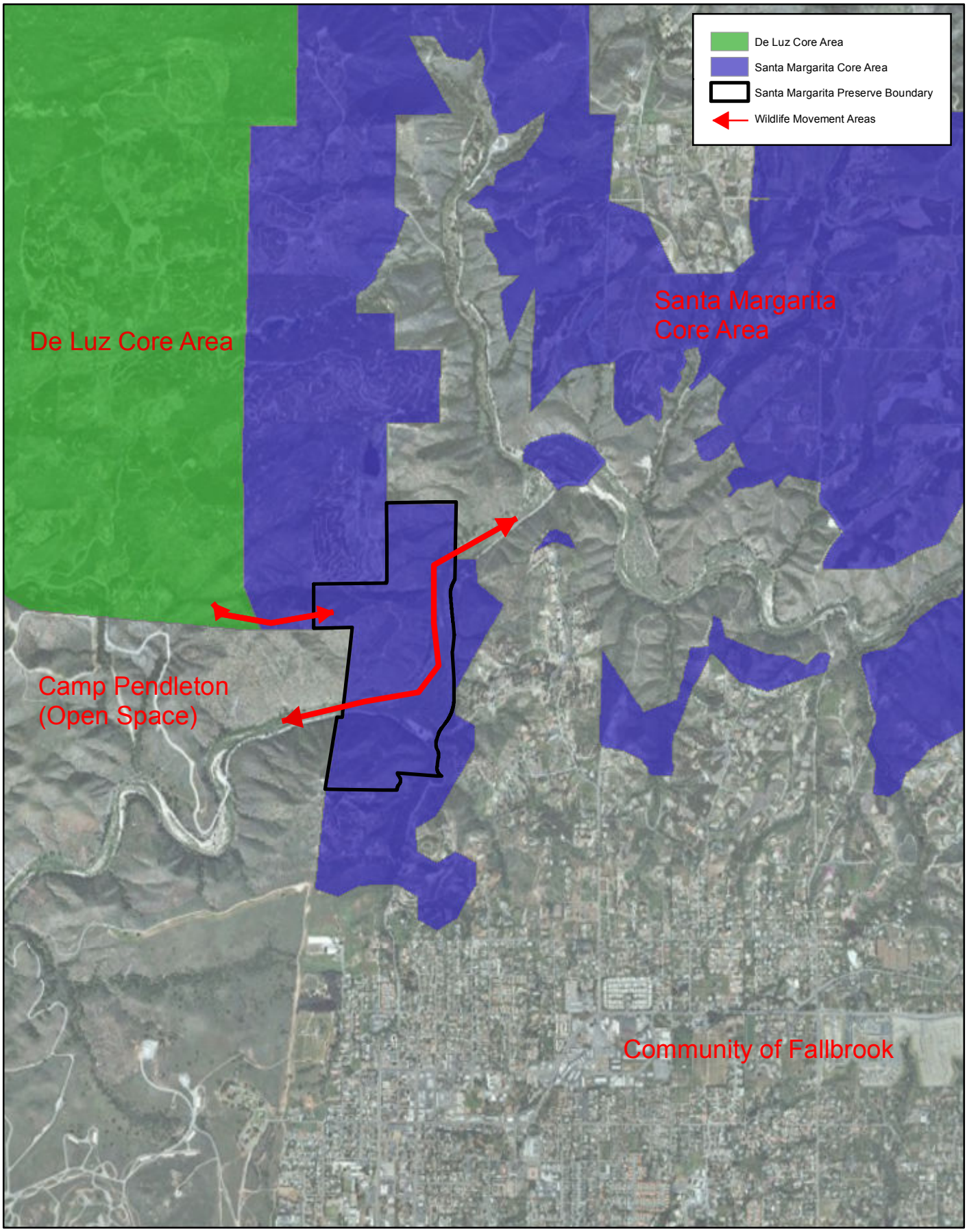
The two invasive species seen in large numbers were bullfrog and common carp. Both of these species are direct threats to arroyo toads and their breeding. Non-native bird species observed were in low numbers and were not seen as imminent threats to the listed avian species present at the Preserve. Virginia opossums were observed in the southern portion of the River near De Luz Road.

4.4 Wildlife Movement

Wildlife movement corridors are areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, ridgelines, or areas with vegetative cover provide corridors for wildlife movement. Wildlife movement corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas; and facilitate the exchange of genetic traits between populations.

The Preserve is identified within the Draft North County MSCP as a core habitat area (Area 1 De Luz). The Preserve serves as an important corridor for wildlife movement between the Del Luz and Santa Margarita Core Areas (Figure 13). The major wildlife movement feature located within the Preserve is the Santa Margarita River, which provides access and concealment to wildlife species of all sizes. Larger mammals such as coyotes regularly move on, off of, and across the Preserve, to and from adjacent open space. In addition, mountain lion were detected on the Preserve in 2011.

This page intentionally left blank.



ICF INTERNATIONAL

0 0.25 0.5 1
Miles

N

Figuure 13
Wildlife Corridor Movement Areas
Santa Margarita Preserve

Chapter 5
Conclusions and MSCP Management and Monitoring Recommendations

The Preserve is located in the Draft North County MSCP planning area and contains designated USFWS Critical Habitat for the coastal California gnatcatcher, arroyo toad, least Bell's vireo and southwestern willow flycatcher. Baseline surveys detected arroyo toad and least Bell's vireo but did not detect the coastal California gnatcatcher or the southwestern willow flycatcher. The Preserve is also identified within the Draft North County MSCP as containing conserved core habitat that is located between the De Luz and Santa Margarita Core Habitat Regions. Due to the importance of the Preserve within the Draft North County MSCP, ongoing monitoring and adaptive management should be implemented to assess the status and trends of biological resources within the Preserve. The Draft North County MSCP includes general biological monitoring intended to evaluate whether the preserve system is meeting conservation targets for covered plant and animal species and their habitats, identify threats to covered species and their habitats, and help identify management needs. The Draft North County MSCP Framework Resource Management Plan (Draft FRMP) contains specific management and monitoring recommendations that will be used to develop ASMDs for preserves that fall within the plan area such as the Santa Margarita Preserve.

The Draft FRMP requires that preserve areas implement Phase I and Phase II management and monitoring measures. It should be noted that prior to the finalization of ASMDs, preserve areas are proposed to be managed following the general guidelines in the Draft FRMP.

Phase I measures include:

0. Addressing interim management needs;
1. Conducting baseline inventory of target species (high priority species and invasive non-native species);
2. Providing an inventory of management needs; and
3. Developing ASMDs and a compliance monitoring strategy.

Phase II requirements are to begin after baseline inventories are complete and ASMDs are developed. Phase II involves the ongoing management and monitoring of preserve lands and consists of the following:

4. Implementation of ASMDs
    - Ongoing management and monitoring of preserve areas following ASMDs established during Phase I.
5. Species Distribution Surveys/Status Monitoring
    - Repeated at least once every 5 years (i.e., once during Years 6–10, once during Years 11–15, etc.).
6. Wildlife Corridor Monitoring

- Wildlife migration corridors will be monitored to ensure they are being utilized by California gnatcatchers and certain mammal species.

It should be noted that the Draft FRMP does not currently detail the exact methods that should be implemented when conducting species distribution surveys (covered species monitoring); although the plan does suggest that the methods are consistent with the monitoring methods that are being implemented by the South County MSCP. The South County MSCP monitoring methods include utilizing the USFWS Animal Monitoring Protocol and the USGS Plant Monitoring Protocol. The Animal Monitoring Protocol covers the following species: coastal California gnatcatcher, coastal cactus wren, light-footed clapper rail, tricolored blackbird, southwestern willow flycatcher, burrowing owl, California least tern, Thorne's hairstreak, wandering skipper, and San Diego and Riverside fairy shrimp. The revised Plant Monitoring Protocol covers all of the South County MSCP-covered plant species.

In this chapter, we will present specific management recommendations for the habitat types documented within the Preserve and the various taxonomic groups assessed during this survey effort. As detailed previously, the current survey effort documented 13 vegetation associations/alliances and 340 species within the Preserve. Specifically, the surveys detected 214 plant species and 126 wildlife species. Of these species, two (2) plants are considered special status and are covered by the Draft North County MSCP; and 20 special-status wildlife species were detected during the surveys of which seven (7) are proposed to be covered by the Draft North County MSCP.

5.1 Vegetation Communities/Habitats

As previously discussed, the Preserve contains 13 vegetation associations/alliances including a diverse riparian vegetation corridor associated with the Santa Margarita River. Upland communities at the Preserve are dominated by Diegan coastal sage scrub, southern mixed chaparral and scrub oak chaparral. In order to assess the overall biological integrity of the Preserve it is recommended that the County maintain an updated vegetation community map. The map should be used as a tool for adaptive management within the Preserve. Updates should occur once every five years or within the first growing season following an unforeseen disturbance (i.e., fire, rock fall, flood or manmade disturbance). The purpose of the ongoing mapping effort should be to document changes in the vegetation communities within the Preserve that could affect quality and usage by wildlife. Vegetation monitoring for habitat value should also focus on identifying adverse changes and their effects on the vegetation over time. This includes dramatic changes such as fire, as well as slower but equally important effects such as invasion by non-natives or slow decline of existing species.

5.2 Plants

During baseline surveys in 2011 two (2) Draft North County MSCP covered plant species; Rainbow Manzanita and Engelmann oak were detected. Management recommendations for these species are detailed below.

5.2.1 Rainbow Manzanita

Approximately 200 Rainbow Manzanita shrubs were identified during 2011 surveys. This species was documented as occurring primarily along southern and central portion of the Preserve in southern mixed chaparral and scrub oak chaparral. Soil specificity and fire response are not certain for Rainbow Manzanita. Rainbow Manzanita may require fire for regeneration. However, it could be adversely affected by repeated burning. Effective conservation of this species must include a fire management plan that protects conserved populations from overly frequent fires, those that occur more often than once every 10 years. Further study is needed to know if seed production is limited by availability of specialist pollinators.

Although Rainbow Manzanita has a restricted range, impacts to its habitat have not been as significant as for species whose range occurs primarily along the coast. Because Rainbow Manzanita is a relatively long-lived shrub, and due to a fewer number of imminent threats to its habitat, it has a medium priority for management and monitoring.

Monitoring efforts should focus on Trend Monitoring: identifying trends in order to more specifically assess change over time regarding population and habitat quality. Monitoring should be structured to learn about management needs and opportunities. Both species specific and habitat based variable should be evaluated during monitoring efforts for Rainbow Manzanita.

Species-specific monitoring variables should include:

1. Number, size, variability and health status (*e.g.,* new vegetative growth, flowering) of Rainbow Manzanita.
2. Presence of exotic plant species in the vicinity of Rainbow Manzanita.
3. Observed insect/bird pollinators and animal vectors.
4. Condition of soils and evidence of soil disturbance such as cracking and trampling/crushing by cattle or humans.
5. Hybridization with other manzanita species in areas where both occur.

Habitat-based monitoring variables should include:

1. Changes in cover of Rainbow Manzanita over time.
2. General health status (*e.g.,* evidence of over-grazing or browsing, new vegetative growth, etc.).
3. Soil conditions (*e.g.,* trampling, nutrients).
4. Frequent/high-intensity fire effects.
5. Persistence of Boring Insect Infestations.

5.2.2 Engelmann Oak

One Engelmann oak was observed along the western bank of the Santa Margarita River during baseline surveys in 2011. The Preserve does not contain a significant population of this covered species. However, the Preserve is located within the De Luz planning segment of the Draft North County MSCP and this segment has been identified a key planning unit that should be given management priority for Engelmann oak populations.

The overall priority for management and monitoring of Engelmann oak occurrences is low because of its stability within its limited distribution. Monitoring efforts should focus on Status Monitoring. Status monitoring should involve general assessments of habitat characteristics, such as threats, or changes in habitat quality as a check on their condition. On the species-specific level, status monitoring should involve presence/absence surveys and the presence of seedlings and young trees. In all cases, this monitoring type should be structured to learn about management needs and opportunities. Due to the diversity of vegetation communities containing Engelmann oaks, the management priority may also vary (*i.e.* riparian habitat holding a medium priority while woodland habitat is lower priority). The Engelmann oak has not exhibited major declines; however, because its range is limited, issues to be monitored include heavy grazing in areas where recruitment is limited, recreational activities, and exotic species competition. Monitoring will be conducted primarily at a habitat level.

Habitat-based monitoring variables should include:

1. Relative cover of Engelmann oak.
2. General health status of individual mature trees (*e.g.,* evidence of over-grazing or browsing, disease, new vegetative growth, etc.).
3. Seedlings and saplings.
4. Acorn productivity.
5. Cover and proportion of understory exotic plant species/native plant species.
6. Soil conditions (*e.g.,* trampling, nutrients).
7. Hydrology (dewatering or over watering).
8. Fire effects and benefits.
9. Exotic species competition
10. Human Impacts (recreational activities)

5.3 Wildlife

As documented previously the seven (7) Draft North County MSCP wildlife species were detected during baseline survey at the Preserve in 2011. Covered wildlife species detected included arroyo toad, orange-throated whiptail, red diamond rattlesnake, least Bell's vireo, yellow-breasted chat, southern California Rufous-crowned sparrow and mountain lion. Management and monitoring recommendation for each of these species covered are detailed below.

5.3.1 Arroyo Toad

The North County MSCP Conservation Analysis does not call out the Santa Margarita River as an important management priority for arroyo toad within the preserve system. Areas that are identified as important for the arroyo toad within the Draft North County MSCP Preserve include the Pala, Guejito Creek and Ramona Grasslands Core areas and the upper and lower San Luis Rey River Linkage areas.

The overarching management approach for this species is population and habitat maintenance, and when necessary, enhancement. Depending upon the vegetation community and species needs, maintenance may involve securing fences, removing trash, controlling weeds, fire management measures aimed at habitat stabilization. Beyond maintenance, enhancement involves actively working to improve the existing sites and create greater opportunities for the arroyo toad to persist. Possible methods include habitat restoration, removal of invasive species, controlling fire, and other actions aimed at enhancing the population and habitat.

As a listed species with limited distribution and clearly identified immediate threats to long-term persistence, the arroyo toad has a high priority for management and monitoring. Monitoring efforts should focus on Trend Monitoring: identifying trends in order to more specifically assess change over time regarding population and habitat quality. Monitoring will be conducted both at a species-specific and habitat level.

Species-specific monitoring variables should include:

1. Distribution and spatiotemporal trends of arroyo toad populations. Proportion of stream segments occupied.
2. Status of introduced predators, such as American bullfrog and crayfish, and pathogens (*e.g.*, Chytrid fungus, which causes Chytridiomycosis).
3. Status of Argentine ants in arroyo toad breeding habitat and their direct and indirect impacts on arroyo toads.

Habitat-based monitoring variables should include:

1. Vegetation communities, long-term status.
2. Relative cover of different native plant species.
3. Proportion of exotic plant species/native plant species.
4. Results of habitat restoration activities, including invasive species controls, riparian/wetland restoration, and creek and soils stabilization programs.

5.3.2 Orange-Throated Whiptail

Suitable habitat for orange-throated whiptail occurs throughout most of the habitat within the Preserve. The adaptive management goal for this species within the Draft North County MSCP includes protecting and managing viable occurrences of orange-throated whiptail. The Draft North County MSCP identifies the orange-throated whiptail as having a low monitoring priority as the species is assumed to be broadly distributed throughout suitable habitat within the Draft North County MSCP Preserve. Monitoring efforts for this species should focus on Status Monitoring, which should involve general assessments of habitat characteristics, such as threats, or changes in habitat quality as a check on their condition.

5.3.3 Least Bell's Vireo

Within the Draft North County MSCP the overarching management approach for this species is population and habitat maintenance, and when necessary enhancement. Depending upon the vegetation community and species needs, maintenance may involve securing fences, trash removal,

weed control, fire management measures (prescribed burning, and other actions aimed at habitat stabilization). Beyond maintenance, enhancement involves actively working to improve the existing sites and create greater opportunities for species persistence. Possible enhancement tools include habitat restoration (e.g., removal of invasive species, herbicide use), and other actions (e.g., reintroduction) aimed at enhancing the population and habitat.

Least Bell's vireo has a medium priority for management and monitoring. Monitoring efforts should focus on Trend Monitoring: identifying trends in order to more specifically assess change over time regarding population and habitat quality. Monitoring should be structured to learn about management needs and opportunities. Monitoring will be conducted both at a species-specific and habitat level.

Species-specific monitoring variables should include:

1. Status of breeding population
2. Proportion of "suitable" habitat occupied
3. Brown-headed cowbird nest parasitism
4. Urban-related predator impacts

Habitat-based monitoring variables should include:

1. Vegetation communities, long-term status
2. Relative cover of different native plant species
3. Proportion of exotic plant species/native plant species
4. Results of habitat restoration activities, including invasive species controls, riparian/wetland restoration, and creek and soils stabilization programs

5.3.4 Yellow-Breasted Chat

Within the Draft North County MSCP important planning units for the yellow-breasted chat include the Santa Margarita and Pala Core Habitat Areas, the lower San Luis Rey River and the Escondido-Temecula Linkages. The overarching management approach for this species is habitat maintenance. Maintenance may involve securing fences, trash removal, weed control, fire safety measures and other actions aimed at species stabilization. In the case of the yellow-breasted chat, an effort must be made to maintain hydrological conditions in riparian habitats. At this time there are no identified imminent threats to the chat in the Preserve that require immediate action, although invasive species control in riparian areas is necessary. Brown-head cowbird parasitism and Argentine ants may be management issues that could affect yellow-breasted chat.

Within the context of the Draft North County MSCP the monitoring priority for yellow-breasted chat is considered low as the plan area supports a relatively large population of this species. Monitoring for this species should focus on Status Monitoring. Status monitoring should involve general assessments of habitat characteristics, such as threats, or changes in habitat quality as a check on their condition. On the species-specific level, status monitoring should involve presence/absence surveys. In all cases, this monitoring type should be structured to learn about management needs and opportunities. Monitoring should be conducted both at a species-specific and habitat level.

Species-specific monitoring variables should include:

1. Status of breeding population
2. Proportion of "suitable" habitat occupied
3. Brown-headed cowbird nest parasitism
4. Urban-related predator impacts

Habitat-based monitoring variables should include:

1. Vegetation communities, long-term status
2. Relative cover of different native plant species
3. Proportion of exotic plant species/native plant species
4. Results of habitat restoration activities, including invasive species controls, riparian/wetland restoration, and creek and soils stabilization programs

5.3.5 Southern California Rufous-crowned Sparrow

Within the Draft North County MSCP, the De Luz, Hellhole Canyon and the Elfin Forest Core areas are considered important planning units for the southern California rufous-crowned sparrow. The management approach for this species is habitat maintenance. Without proper maintenance, habitat may become overrun by invasive species or become otherwise degraded such that it is no longer habitable.

Throughout the Draft North County MSCP Preserve rufous-crowned sparrow has a low priority for management and monitoring. However, monitoring efforts should focus on Status Monitoring. Status monitoring should involve general assessments of habitat characteristics, such as threats, or changes in habitat quality as a check on their condition. On the species-specific level, status monitoring should involve presence/absence surveys. In all cases, this monitoring type should be structured to learn about management needs and opportunities. Monitoring will be conducted at both a species-specific and habitat level.

Species-specific monitoring variables should include:

1. Presence/absence surveys for rufous-crowned sparrows in appropriate habitat

Habitat-based monitoring variables should include:

1. Vegetation communities, long-term status
2. Relative cover of different native plant species
3. Proportion of exotic plant species/native species
4. Evidence of urban-related predators (tracks, scat, and direct observations)
5. Evidence of urban run-off, erosion, pollutants
6. Evidence of unauthorized public activities (trespass, trampling, illegal trails, trash, shooting)

5.3.6 Mountain Lion

All core areas within the Draft North County MSCP Preserve are considered to be important planning units for the mountain lion. Core areas contain large blocks of un-fragmented natural habitat and these areas include the predicted range of the species within the plan area. The overarching management approach for this species is habitat maintenance including maintaining linkages (migration and dispersal corridors) between conserved habitat areas.

Within the Draft North County MSCP Preserve the mountain lion has a low priority for management and monitoring. Monitoring efforts should focus on Status Monitoring. Status monitoring should involve general assessments of habitat characteristics, such as threats, or changes in habitat quality as a check on their condition. For the mountain lion, monitoring should additionally focus on corridor quality assessment and wildlife corridor monitoring. On the species-specific level, status monitoring should involve presence/absence surveys. In all cases, this monitoring type should be structured to learn about management needs and opportunities. Monitoring should be conducted at the habitat level.

Habitat-based monitoring variable should include:

1. Status of prey populations (e.g mule deer, rabbit, rodents, coyotes, snakes)
2. Evidence of human disturbance (road collisions, residential encroachment)
3. Evidence of human persecution (e.g., illegal hunting)

5.4 Invasive Non-Native Species Removal Control

Within the Draft North County MSCP, invasive non-native plant species control is primarily monitored and implemented at the vegetation community level. As discussed in Section 5, specific management and monitoring measures are required within conserved core habitats.

5.4.1 Invasive Plants

Table 11 in Chapter 4-11 detailed the Cal-IPC plants that were observed on the Preserve during the current survey effort. Most of the plants are not currently occupying the Preserve in a manner that would be detrimental to the conserved habitats on site. The invasive non-native plant species locations that have the potential to affect core conserved habitats were presented in Figure 11. Target invasive plants identified for control at the Preserve include:

- Italian thistle
- Tocalote
- Poison hemlock
- Sorth-podded mustard
- Perennial pepperweed
- Tamarisk
- Castor bean

With the exception of poison hemlock, generally speaking, these species are currently represented by a few individuals or patches of individuals, and therefore it should be considered a high priority to quickly eradicate these species from the Preserve before they can reproduce further, making control harder later. Efforts to control hemlock would be more substantial. The Vegetation Management Plan (ICF 2011) details removal methods for the seven (7) target species.

When invasive non-native plant control is implemented within a preserve, the Draft FRMP requires that the following measures be followed.

- Prioritize areas for exotic species control based on aggressiveness of invasive species and degree of threat to the native vegetation (Figure 11).
- Eradicate species based on biological desirability and feasibility.
- Use an integrated pest management approach, i.e., use the least biologically intrusive control methods, at the most appropriate period of the growth cycle to achieve the desired goals.
- Consider both mechanical and chemical methods of control. Only herbicides compatible with biological goals should be used. Only licensed pest control advisers are permitted to make specific pest control recommendations.
- In Traditional Use areas, consult with Native Americans on appropriate methods to control invasive non-native plant species.
- Properly dispose of all exotic plant materials that are removed from preserve lands (e.g., in offsite facilities).
- Revegetate exotic weed removal areas with species appropriate to biological goals, as appropriate.
- Identify where active revegetation (as opposed to passive recruitment) will be necessary in the RMP.

5.4.2 Wildlife

Carp and bullfrogs are the two primary invasive wildlife species that need to be monitored and controlled at the Preserve. It is recommended that a trapping program be implemented to reduce or eliminate the presence of these species on site.

Carp and Bullfrog Trapping Program

The removal and control of both carp and bullfrogs at the Preserve is required to enhance the habitat quality for a variety of native wildlife species including the federally endangered arroyo toad. Removal methods can include dip netting and removal of both adult carp and bullfrogs. In addition surveys can be conducted for bullfrog egg masses and if found they can be removed. The abundance of adult bullfrogs and carp found throughout the Santa Margarita River potentially poses a significant long-term threat to the persistence of arroyo toad at the Preserve.

5.5 Restoration Opportunities

The Preserve is generally composed of high quality habitat that provides essential habitat for special status species that are covered under the Draft North County MSCP.

As stated in the draft North County MSCP Framework Resource Management Plan (Draft FRMP) (County of San Diego 2009), the goal of habitat restoration is to reestablish or enhance the biological functions and values of habitat that has been degraded from either human or natural causes. Restoration methods range from active revegetation, which recreates habitat, to passive management. For preserve lands, restoration is typically not required; however, in some cases, if resources are available, active restoration may assist the recovery of an area that has been disturbed and is showing difficulty in recovering. The need for restoration activities will be determined based on the results of habitat monitoring and trail maintenance activities. Any proposed restoration activity should utilize current, accepted techniques and avoid/minimize impacts to sensitive species or native habitats. Additionally, revegetation activities should use only local native plant seed or container stock plants that have been propagated from plant material from the Santa Margarita watershed.

The need for active restoration on the Preserve is currently not proposed. Existing trails within the riparian corridor will remain to service the recreational uses including hiking and horseback riding. Existing game trails that occur along the Preserve ridgelines will also remain as these features are essential for wildlife corridor movement. Passive restoration primarily in the form of target invasive plant species control is proposed and detailed in the Santa Margarita Preserve Vegetation Management Plan (ICF 2011).

5.6 Fire Management

Fire management guidelines are addressed in the Santa Margarita Preserve Vegetation Management Plan (ICF 2011).

5.7 Wildlife Linkages and Corridors

The primary function of wildlife corridors is to provide migration routes between core biological areas. In some cases wildlife corridors may also serve as habitat for various life history requirements (e.g., foraging, reproduction, growth). Target species for corridor use include large mammals such as coyotes and southern mule deer. Corridor use by mammals will be monitored as described below.

A program to monitor corridor use by mammals is established within the existing South County MSCP area (Conservation Biology Institute 2003). A similar program will be developed for the Draft North County MSCP planning area. Within the planning area, corridor use will be monitored with stations that will be established at corridor pinch points (narrow segments along corridors frequently located at road underpasses). At these stations, track identification, scat identification, and video observation methods will be utilized to determine use by target mammal species. The camera station locations used for the baseline information presented in this report should be incorporated into the overall North County MSCP wildlife linkage and corridor monitoring.

The Santa Margarita River is regionally significant wildlife corridor that connects substantial amount of habitat that occurs on federally owned lands west of the Preserve to core habitat areas within the Draft North County MSCP Preserve. From a management perspective, it is important to identify areas along this movement corridor that may serve as pinch points. These pinch points are areas where movement may be restricted by one or more features such as road crossings, fences, dense vegetation, or incised narrow portions of the creek. These features are important places to monitor for wildlife movement because they have the potential to block or deter animals as they move across the Preserve. Additionally these areas are important because a relatively small amount of management action (e.g., vegetation trimming) has the potential to greatly increase the use of the preserve by numerous wildlife species. De Luz Road and Sandia Creek Drive both potentially represent pinch points that could affect wildlife movement from open space lands north and south of the Preserve. However, on the Preserve no pinch points occur along the main channel of the Santa Margarita River, which is the most likely area to support significant wildlife movement.

5.8 Additional Management Recommendations

5.8.1 Hydrological Management

As detailed above, the Preserve is traversed by the Santa Margarita River which is comprised of an active flood channel that conveys perennial surface flows downstream to the Pacific Ocean. The Preserve should be managed to maintain existing natural drainage and watershed and to restore or minimize changes to natural hydrological processes. Proposed structures and activities should be evaluated for effects on hydraulics, and remedial actions should be taken as needed. Best Management Practices (BMPs) should be used both within and adjacent to the Preserve to maintain water quality.

5.8.2 Public Access

Passive recreational activities (e.g., hiking, bird watching, equestrian use) are currently allowed at the Preserve and are generally compatible with Draft North County MSCP conservation goals. In general, passive activities only pose a significant threat to biological resources when the level of recreational use becomes too intense in areas where sensitive species or resources are located. The intensity of the current public access does not appear to be causing an negative affect to biological resources at the Preserve.

5.8.3 Fencing

Fencing plays an important role in the use of the landscape by humans, domestic animals, and wildlife. Fencing can control human access, particularly by off-highway vehicles. Fencing can direct wildlife to road undercrossings and prevent road kills. However, fencing can also have an impact on cultural resources, restrict normal wildlife movement, restrict access to food and water, and guide wildlife onto roads. Currently, the only fencing that occurs at the Preserve is associated with the staging area located along De Luz Road. Fencing within the riparian area is not recommended as it would potentially conflict with the hydrological management of the Santa Margarita River. In addition, fencing within the river could cause debris to build up within the river which could cause

potential deposition and flooding issues at the Preserve. Additional fencing is not currently proposed for the Preserve.

5.8.4 Trails and Access Roads

Ensure passive recreational use of the Preserve is consistent with the protection and enhancement of biological resources. Passive recreational facilities should be managed to promote the maintenance of habitat value surrounding these facilities and reduce impacts to the conserved resources.

5.8.5 Signage and Education

Signs educate, provide direction, and promote the sensitive use and enjoyment of natural areas, but they can also inadvertently invite vandalism and other destructive behavior. Signs that explain the rules of the Preserve (firearms use, protection of archaeological resources, etc.) are most effective at staging areas and trail heads. Educational signs along the multi-use trails should be posted at appropriate locations.

Existing signage at the Preserve includes two staging area kiosks that explain the park rules and regulations. The kiosks also include a map of the Preserve trail system and information related to wildlife species known to occur at the Preserve. Trail head signs are found at each of the two trail access points at the western portion of the staging area. These signs instruct the public to keep dogs leashed at all times and detail the approved recreational use types for the trail system (equestrian, biking and hiking). Specific language used on these sign includes;

- Dogs Must Be leashed At All Times
- Off Roading and ATV Prohibited
- Weapons and Fireworks Prohibited
- Campfires or Open Flames Prohibited
- All Plant and Animals are Protected
- Yield to Trail Users, Obey Posted Speed Limit
- Smoking is Prohibited

5.8.6 Litter/Trash Removal

Management of the Preserve should include implementing a litter and trash removal program. The purpose of this program would be to ensure that contaminants do not negatively affect the conserved resources within the Preserve. The staging area is the only location of a trash receptacle on-site.

5.8.7 Illegal Off-road Activity

Off road activities can pose a significant detrimental effect on the conserved resources within the Preserve by reducing air quality, causing soil erosion and sedimentation into local waters, creating noise pollution, and causing habitat degradation. Disturbance from off-road vehicles can also disrupt breeding activities. For these reasons, off-road vehicle use is not compatible in Preserve areas. The fences and

gates located along De Luz Road should be maintained to prevent illegal access. It should be noted that currently off-road vehicular activity is not perceived to be a problem at the Preserve.

5.8.8 Emergency and Safety Issues

Safety measures will be implemented within the Preserve as needed. These measures may include installing safety signs and identifying emergency evacuation procedures such as vehicular access and helicopter landing areas. The Preserve is not open at night, so safety lighting is not necessary.

This page intentionally left blank.

Chapter 6
References

AECOM, California Department of Fish and Game, and Conservation Biology Institute. 2011. Vegetation classification manual for western San Diego County, First edition. Prepared for San Diego Association of Governments. February 2011.

American Ornithologists' Union. 1998 and supplements. Checklist of North American Birds, 7th edition. American Ornithologists' Union, Washington, D.C.

Arnett, Jr., R. H. 2000. American Insects: A Handbook of the Insects of America North of Mexico. 2nd ed. Boca Raton, FL: CRC Press.

Atkinson, A., B. Yang, R.N. Fisher, E. Ervin, T.J. Case, N. Scott, and H.B. Shaffer. 2002. Recommendations for MCB Camp Pendleton Arroyo toad Monitoring Protocol: 1. Summary of results from a workshop on August 27, 2002; 2. Recommended monitoring protocol and target studies. Prepared for MCB Camp Pendleton.

Baker, R. J., L. C. Bradley, R. D. Bradley, J. W. Dragoo, M. D. Engstrom, R. S. Hoffmann, C. A. Jones, F. Reid, D. W. Rice, and C. Jones. 2003. Revised Checklist of North American Mammals North of Mexico, 2003. Lubbock, TX: Occasional Papers, Museum of Texas Tech University, Number 229.

Bat Conservation International (BCI). 2008. Bat Species Profiles. Last revised: 2008. Available: http://www.batcon.org/SPprofiles/index.asp . Accessed: 10/17/08.

Beauchamp, R.M. 1986. A Flora of San Diego County, California. Sweetwater River Press.

Bibby, C. J., N. D. Burgess, D. A. Hill, and S. H. Mustoe. 2000. Bird Census Techniques, 2nd ed. London: Academic Press.

Bowman, R. 1973. Soil Survey of the San Diego Area, California. U.S. Department of Agriculture, Soil Conservation Service and Forest Service in cooperation with University of California Agricultural Experiment Station. U.S. Department of the Interior. Washington, D.C.

Butler, R. W. 1992. Great Blue Heron (*Ardea herodias*). The Birds of North America Online (A. Poole, ed.). Ithaca: Cornell Lab of Ornithology. Available: <http://bna.birds.cornell.edu/bna/species/025>.

California Department of Fish and Game (CDFG). 2005. California Wildlife Habitat Relationships System (CWHR), version 8.1 personal computer program. Sacramento, CA: California Department of Fish and Game.

CDFG. 2011. California Natural Diversity Data Base (CNDDB) RareFind 3 Report.

California Native Plant Society (CNPS). 2011. Inventory of Rare and Endangered Plants of California (Seventh Edition). Online Edition. http://cnps.web.aplus.net/cgibin/inv/inventory.cgi. Accessed 04/15/2011.

City Data. 2011. Weather data for Fallbrook, CA. Accessed: July 29, 2011. Available at: http://www.city-data.com/city/Fallbrook-California.html

Center for North American Herpetology. 2011. http://www.cnah.org/index.asp

County of San Diego. 2000. The Clean Water Project – Santa Margarita Watershed. Accessed: July 29, 2011. Available at: http://www.projectcleanwater.org/html/ws_santa_margarita.html

County of San Diego. 2010. Report format and content requirements. Biological resources. Land Use and Environment Group, Departments of Planning and Land Use, and Public Works. Fourth revision, September 15, 2010.

Dudek and Associates (Dudek). 2000. Sensitive Species Accounts for the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP).

Geologic Map of California. 2010. http://www.quake.ca.gov/gmaps/GMC/stategeologicmap.html

Fallbrook Land Conservancy. 2011 http://www.fallbrooklandconservancy.org/Preserves/preserves.htm Accessed: December 27, 2011.

Fischer, K. 2011. Personal Observations of Great Blue Heron Distribution within the County of San Diego.

Hickman, J.C. (ed.). 1993. The Jepson Manual; Higher Plants of California. University of California Press, Berkeley.

Hogue, C. L. 1993. Insects of the Los Angeles Basin. Los Angeles, CA: Natural History Museum of Los Angeles County.

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

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Final report submitted to California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California, under Contract 8023.Keinath, D. A. 2006. Anabat call key for greater Yellowstone ecosystem. http://uwadmnweb.uwyo.edu/WYNDD/Bat_Call/Anabat%20CallKey3.pdf.

Jepson Interchange. 2011 The Jepson Online Interchange California Floristics University of California, Berkeley.

Kus, B. 2002. Least Bell's Vireo (*Vireo bellii pusillus*). In The Riparian Bird Conservation Plan: A Strategy for Reversing The Decline of Riparian-Associated Birds in California. California Partners in Flight. http://www.prbo.org/calpif/htmldocs/species/riparian/least_bell_vireo.html.

Krutzsch, P. H. 1948. Ecological Study of The Bats of San Diego County, California. MA Thesis, Univ. Calif., Berkeley, Calif. 184 pp.

McGurty, B. M. 1980. Preliminary Review of The Status of The San Diego horned lizard, *Phrynosoma coronatum blainvellii* and the Orange-Throated Whiptail, *Cnemidophorus hyperythrus beldingi*. Inland Fisheries Endangered Species Program Special Publication, California Department of Fish and Game.

Moyle, P.B, R.M. Yoshiyama, J.E. Williams, and E.D. Wikramanayakae. 1995. Fish Species of Special Concern in California. Second Edition. Prepared for the California Department of Fish and Game.

NOAA. 2011. ISMCS Station Climatic Narrative for San Diego. http://www.wrh.noaa.gov/sgx/climate/san-san.htm. Accessed 12/19/2010.

Oberbauer, T., M. Kelly, and J. Buegge. 2008. Draft vegetation communities of San Diego County. Based on Preliminary *descriptions of the terrestrial natural communities of California*, R.F. Holland, Ph.D., October 1986.

Opler, P. A., and A. B. Wright. 1999. A Field Guide to Western Butterflies. Boston, MA: Houghton Mifflin Co.

Ralph, C. J., J. R. Sauer, and S. Droege, technical editors. 1995. Monitoring Bird Populations by Point Counts. General Technical Report PSW-GTR-149. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Dept. Agriculture.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento. 1300 pp.

Stebbins, R.C. 2003. A Field Guide to Western Reptiles and Amphibians, Third Edition. Houghton Mifflin Company, Boston, Massachusetts.

Stokes, D., C. Rochester, R. Fisher and T. Case. 2001. Herpetological Monitoring Using a Pitfall Trapping Design in Southern California. U.S. Geological Survey and University of California at San Diego.

Stokes, D.C., C.S. Brehme, R.N. Fisher. 2005. Bat Inventory of The San Diego County Multiple Species Conservation Program Area, Final Report. USGS Technical Report prepared for the County of San Diego and the California Department of Fish and Game, 95 pp.

U.S. Department of Agriculture. 1973. Soil Survey, San Diego Area, California. Washington, DC: U.S. Dept. of Agriculture, Soil Conservation Service [now Natural Resources Conservation Service] and Forest Service.

U.S. Fish and Wildlife Service (USFWS). 2000. Biological opinion on The Effects of Ongoing Forest Activities That May Affect Listed Riparian Species on The Cleveland National Forest, the Los Padres National Forest, the San Bernardino National Forest and Angeles National Forest in Southern California (1 -6-99-F-2 1).

USFWS. 2002. Quino Checkerspot Butterfly (*Euphydryas editha quino*) Year 2002 Survey Protocol.

USFWS. 2011. Carlsbad Fish & Wildlife Service Quino Checkerspot Butterfly Reference Information 2009. Available: http://www.fws.gov/carlsbad/TEspecies/Documents/QuinoDocuments/2009MonRef/Quino_2011_Ref_Info.html.

U.S. Geological Survey/California Fire Alliance. 2011. Accessed July 29, 2011. Available at: http://wildfire.cr.usgs.gov/calfireplan/viewer.htm

Unitt, P. 2004. San Diego County Bird Atlas. Proceedings of the San Diego Society of Natural History 39: i–vii, 1–639.

Whitaker, J.O. 1996. The Audubon Society Field Guide to North American Mammals. Revised and expanded. A.A. Knopf. New York.

Wildlife Research Institute. 2007. Wintering Raptors Report.

This page intentionally left blank.

Appendix A

Vascular Plant Species Detected

This page intentionally left blank.

Appendix A. Santa Margarita Preserve Plant Species Detected

Scientific Name	Common Name	Special Status
LYCOPHYTES		
Selaginellaceae - Spike-moss Family		
Selaginella bigelovii	Bigelow's Spike Moss	
EQUISETOPHYTES		
Equisetaceae - Horsetail Family		
Equisetum arvense	Common Horsetail	
Equisetum laevigatum	Smooth Scouring Rush	
LEPTOSPORANGIATE FERNS		
Pteridaceae - Brake Family		
Cheilanthes parryi	Parry's Lipfern	
Pellaea andromedifolia	Coffee Cliff-Brake	
Pellaea mucronata var. mucronata	Bird's Foot Cliff-Brake	
Pentagramma triangularis	Silverback Fern	
MAGNOLIID-PIPERALES		
Saururaceae - Lizard's-Tail Family		
Anemopsis californica	Yerba Mansa	
MONOCOTS		
Agavaceae - Agave Family		
Hesperoyucca whipplei	Chaparral Candle	
Cyperaceae - Sedge Family		
Bolboschoenus maritimus ssp. paludosus	Prairie Bulrush	
Carex sp.	Sedge	
* *Cyperus involucratus*	Umbrella Plant	
Eleocharis sp.	Spike-Rush	
Schoenoplectus americanus	Olney's Bulrush	
Schoenoplectus californicus	California Bulrush	
Liliaceae - Lily Family		
Calochortus splendens	Splendid Mariposa Lily	
Poaceae - Grass Family		
* *Avena fatua*	Wild Oat	
* *Bromus diandrus*	Ripgut Grass	
* *Bromus hordeaceus*	Soft Chess	
* *Bromus madritensis ssp. rubens*	Red Brome	

Scientific Name	Common Name	Special Status
* *Cynodon dactylon*	Bermuda Grass	
* *Hordeum murinum*	Foxtail Barley	
Leymus condensatus	Giant Wild-Rye	
Melica imperfecta	Coast Range Melic	
Muhlenbergia microsperma	Annual Muhly	
* *Piptatherum miliaceum*	Smilo Grass	
* *Polypogon interruptus*	Ditch Beard Grass	
* *Polypogon monspeliensis*	Annual Beard Grass	
* *Schismus barbatus*	Common Mediterranean Grass	
Stipa coronatum	Giant Stipa	
Stipa lepida	Small-Flowered Needlegrass	
* *Vulpia myuros var. hirsuta*	Hairy Rat-tail Fescue	
Themidaceae - Brodiaea Family		
Bloomeria crocea	Common Goldenstar	
Dichelostemma capitatum ssp. capitatum	Blue Dicks	
Typhaceae - Cattail Family		
Typha sp.	Cattail	
EUDICOTS		
Adoxaceae - Adoxa Family		
Sambucus nigra ssp. caerulea	Mexican Elderberry	
Anacardiaceae - Sumac Or Cashew Family		
Malosma laurina	Laurel Sumac	
Rhus aromatica	Skunkbrush	
Rhus integrifolia	Lemonadeberry	
Toxicodendron diversilobum	Poison Oak	
Apiaceae - Carrot Family		
Apiastrum angustifolium	Mock-Parsely	
* *Apium graveolens*	Common Celery	
* *Conium maculatum*	Common Poison Hemlock	
Daucus pusillus	Rattlesnake Weed	
* *Foeniculum vulgare*	Sweet Fennel	
* *Torilis arvensis*	Hedge Parsley	
Apocynaceae - Dogbane Family		
* *Vinca major*	Greater Periwinkle	

Scientific Name	Common Name	Special Status
Asteraceae - Sunflower Family		
Acourtia microcephala	Sacapellote	
Adenophyllum porophylloides	San Felipe Dogweed	
Amblyopappus pusillus	Pineapple Weed	
Ambrosia acanthicarpa	Annual Bur-Sage	
Ambrosia psilostachya	Western Ragweed	
Artemisia californica	California Sagebrush	
Artemisia douglasiana	Douglas Sagewort	
Baccharis pilularis	Chaparral Broom, Coyote Brush	
Baccharis salicifolia	Mule-Fat, Seep-Willow	
Bebbia juncea var. aspera	Rough Sweetbush	
Brickellia californica	California Brickellbush	
* *Carduus pycnocephalus*	Italian Thistle	
* *Centaurea melitensis*	Tocalote	
Chaenactis artemisiifolia	White Pincushion	
Chaenactis glabriuscula var. glabriuscula	Yellow Pincushion	
Conyza canadensis	Horseweed	
Corethrogyne filaginifolia var. filaginifolia	Common Sand Aster	
Erigeron foliosus var. foliosus	Leafy Fleabane	
Eriophyllum confertiflorum var. confertiflorum	Long-Stem Golden-Yarrow	
Hazardia squarrosa var. grindelioides	Southern Sawtooth Goldenbush	
Heterotheca grandiflora	Telegraph Weed	
* *Hypochaeris glabra*	Smooth Cat's Ear	
Isocoma menziesii var. menziesii	White-Flowered Goldenbush	
* *Lactuca serriola*	Prickly Lettuce	
Lasthenia gracilis	Common Goldfields	
Logfia californica	California Filago	
Madia sativa	Coastal Tarweed	
Porophyllum gracile	Odora	
Pseudognaphalium beneolens	Fragrant Everlasting	
Pseudognaphalium biolettii	Bicolor Cudweed	
Pseudognaphalium californicum	California Everlasting	
Pseudognaphalium stramineum	Cotton Batting Plant	

Scientific Name	Common Name	Special Status
* *Senecio vulgare*	Common Groundsel	
* *Sonchus asper*	Spiny Sow-Thistle	
Uropappus lindleyi	Silver Puffs	
Venegasia carpesioides	Canyon Sunflower	
Xanthium strumarium	Cocklebur	
Betulaceae - Birch Family		
Alnus rhombifolia	White Alder	
Boraginaceae - Borage Family		
Amsinckia menziesii	Rigid Fiddleneck	
Cryptantha clevelandii var. clevelandii	Cleveland's Cryptantha	
Cryptantha muricata var. jonesii	Jones's Prickly Cryptantha	
Heliotropium curassavicum	Salt Heliotrope	
Phacelia cicutaria var. hispida	Caterpillar Phacelia	
Phacelia distans	Distant Phacelia	
Phacelia minor X parryi	Parry's Minor Phacelia	
Phacelia ramosissima var. ramosissima	Branching Phacelia	
Pholistoma racemosum	San Diego Fiesta Flower	
Brassicaceae - Mustard Family		
* *Hirschfeldia incana*	Short-Podded Mustard	
* *Lepidium latifolium*	Broad-Leaved Peppergrass	
Lepidium nitidum var. nitidum	Shining Peppergrass	
Nasturtium officinale	Water-Cress	
* *Raphanus sativus*	Wild Radish	
* *Sisymbrium orientale*	Hare's-ear Cabbage	
Cactaceae - Cactus Family		
* *Opuntia ficus-indica*	Mission Prickly-Pear	
Caprifoliaceae - Honeysuckle Family		
Lonicera subspicata var. denudata	Johnston's Honeysuckle	
Caryophyllaceae - Pink Family		
* *Silene gallica*	Common Catchfly	
Silene laciniata ssp. major	Southern Indian Pink	
* *Spergularia bocconii*	Boccone's Sand Spurry	
* *Stellaria media*	Common Chickweed	

Scientific Name	Common Name	Special Status
Chenopodiaceae - Goosefoot Family		
* *Chenopodium album*	Lamb's Quarters	
Chenopodium californicum	California Goosefoot	
* *Chenopodium murale*	Nettle-Leaf Goosefoot	
Cistaceae - Rock-Rose Family		
Helianthemum scoparium	Peak Rush Rose	
Convolvulaceae - Morning-Glory Family		
Calystegia macrostegia	Island Morning-Glory	
* *Convolvulus arvensis*	Field Bindweed	
Cuscuta californica var. californica	Chaparral Dodder	
Cuscuta pentagona	Five-Angeled Dodder	
Cuscuta subinclusa	Canyon Dodder	
Crassulaceae - Stonecrop Family		
Crassula connata	Sand Pygmyweed	
Dudleya edulis	Fingertips	
Dudleya pulverulenta	Chalk Dudleya	
Cucurbitaceae - Gourd Family		
Marah macrocarpus var. macrocarpus	Southern Wild Cucumber	
Ericaceae - Heath Family		
Arctostaphylos rainbowensis	Rainbow Manzanita	CRPR 1B.1
Xylococcus bicolor	Mission Manzanita	County List A, MSCP,
Euphorbiaceae - Spurge Family		
Chamaesyce polycarpa	Small-Seeded Spurge	
Croton californicus	California Croton	
* *Euphorbia peplus*	Petty Spurge	
* *Ricinus communis*	Castor Bean	
Fabaceae - Legume Family		
Acmispon americanus var. americanus	Spanish-Clover	
Acmispon glaber var. brevialatus	Short-Winged Deerweed	
Acmispon strigosus	Strigose Lotus	
Lathyrus vestitus var. alefeldii	San Diego Pea	
Lupinus bicolor	Miniature Lupine	
Lupinus hirsutissimus	Stinging Lupine	
Lupinus truncatus	Blunt-Leaved Lupine	
* *Medicago polymorpha*	California Burclover	

Scientific Name	Common Name	Special Status
* *Melilotus indicus*	Annual Yellow Sweetclover	
Trifolium willdenovii	Valley Clover	
Vicia ludoviciana var. ludoviciana	Slender Vetch	
Fagaceae - Oak Family		
Quercus × acutidens	Torrey's Scrub Oak	
Quercus agrifolia var. agrifolia	Coast Live Oak	
Quercus berberidifolia	Scrub Oak	
Quercus engelmannii	Engelmann Oak	CRPR 4.2, County List D, MSCP
Geraniaceae - Geranium Family		
* *Erodium botrys*	Long-Beak Filaree	
* *Erodium cicutarium*	Red-Stemmed Filaree	
Geranium carolinianum	Carolina Geranium	
Grossulariaceae - Gooseberry Family		
Ribes indecorum	White-Flowering Currant	
Lamiaceae - Mint Family		
Salvia apiana	White Sage	
Salvia columbariae	Chia	
Salvia mellifera	Black Sage	
Lythraceae - Loosestrife Family		
* *Lythrum hyssopifolia*	Grass-Poly	
Malvaceae - Mallow Family		
Malacothamnus fasciculatus	Clustered-Leaf Bushmallow	
Sidalcea malviflora ssp. sparsifolia	Few-Flowered Checkerbloom	
Montiaceae - Montia Family		
Claytonia perfoliata ssp. perfoliata	Miner's Lettuce	
Myrsinaceae - Myrsina Family		
* *Anagallis arvensis*	Scarlet Pimpernel	
Nyctaginaceae - Four O'clock Family		
Mirabilis laevis var. crassifolius	Coastal Wishbone Plant	
Onagraceae - Evening Primrose Family		
Camissoniopsis hirtella	Hairy Sun Cups	
Clarkia purpurea ssp. quadrivulnera	Purple Clarkia	
Clarkia similis	Ramona Clarkia	
Epilobium canum ssp. canum	California Fuchsia	
Epilobium minutum	Small-Flower Willowherb	

Scientific Name	Common Name	Special Status
Eulobus californicus	False-Mustard	
Gayophytum diffusum ssp. parviflorum	Diffuse Gayophytum	
* *Ludwigia hexapetala*	Six-Petal Water-Primrose	
Orobanchaceae - Broom-Rape Family		
Castilleja exserta	Purple Owl's-Clover	
Cordylanthus rigidus ssp. setigerus	Dark-Tip Bird's Beak	
Oxalidaceae - Oxalis Family		
Oxalis californica	California Wood-Sorrel	
Paeoniaceae - Peony Family		
Paeonia californica	California Peony	
Papaveraceae - Poppy Family		
Eschscholzia californica	California Poppy	
Phrymaceae - Hopseed Family		
Mimulus aurantiacus var. puniceus	Coast Monkey Flower	
Mimulus brevipes	Slope Semiphore	
Mimulus guttatus	Seep Monkey Flower	
Plantaginaceae - Plantain Family		
Antirrhinum nuttallianum ssp. nuttallianum	Nuttall's Snapdragon	
Collinsia concolor	Southern Chinese Houses	
Keckiella cordifolia	Climbing Bush Penstemon	
Linaria canadensis	Blue Toadflax	
Penstemon spectabilis var. spectabilis	Showy Penstemon	
Plantago erecta	Dot-Seed Plantain	
* *Plantago lanceolata*	English Plantain	
* *Veronica anagallis-aquatica*	Water Speedwell	
Platanaceae - Sycamore Family		
Platanus racemosa	Western Sycamore	
Polemoniaceae - Phlox Family		
Eriastrum sapphirinum	Sapphire Eriastrum	
Gilia angelensis	Chaparral Gilia	
Gilia capitata ssp. abrotanifolia	Ball Gilia	
Navarretia hamata ssp. hamata	Hooked Skunkweed	
Polygonaceae - Buckwheat Family		
Chorizanthe fimbriata var. fimbriata	Fringed Spineflower	
Eriogonum elongatum var. elongatum	Long-Stemmed Buckwheat	

Scientific Name	Common Name	Special Status
Eriogonum fasciculatum var. fasciculatum	Coastal California Buckwheat	
Persicaria hydropiperoides	Swamp Smartweed	
Pterostegia drymarioides	Granny's Hairnet	
* *Rumex conglomeratus*	Clustered Dock	
* *Rumex crispus*	Curly Dock	
Ranunculaceae - Buttercup Family		
Delphinium parryi	Parry's Larkspur	
Thalictrum fendleri var. polycarpum	Fendler's Meadow-Rue	
Rhamnaceae - Buckthorn Family		
Ceanothus crassifolius	Hoary-Leaved Ceanothus	
Ceanothus leucodermis	Chaparral Whitethorn	
Ceanothus tomentosus	Woolly-Leaf Ceanothus	
Rhamnus ilicifolia	Holly-Leaf Redberry	
Rosaceae - Rose Family		
Adenostoma fasciculatum	Chamise	
Cercocarpus minutiflorus	Smooth Mountain-Mahogany	
Heteromeles arbutifolia	Toyon	
Rosa californica	California Wild Rose	
Rubus ursinus	California Blackberry	
Rubiaceae - Madder Family		
Galium angustifolium	Narrow-Leaved Bedstraw	
Galium aparine	Common Bedstraw	
Salicaceae - Willow Family		
Populus fremontii ssp. fremontii	Freemont's Cottonwood	
Salix exigua	Narrow-Leaf Willow	
Salix laevigata	Red Willow	
Salix lasiolepis	Arroyo Willow	
Schrophulariaceae -Figwort Family		
Scrophularia californica ssp. floribunda	California Figwort	
Scrophulariaceae - Figwort Family		
* *Verbascum virgatum*	Wand Mullein	
Solanaceae - Nightshade Family		
* *Nicotiana glauca*	Tree Tobacco	
Solanum parishii	Parish's Nightshade	

Scientific Name	Common Name	Special Status
Tamaricaeae - Tamarisk Family		
* *Tamarix ramosissima*	Tamarisk	
Urticaceae - Nettle Family		
Urtica dioica ssp. holosericea	Hoary Stinging Nettle	
* *Urtica urens*	Dwarf Nettle	
Vitaceae - Grape Family		
Vitis girdiana	Desert Wild Grape	

Legend

*= Non-native or invasive species

Special Status:

County List A = Plants rare, threatened or endangered in California and elsewhere
County List B = Rare or Endnagered in the California, more common elsewhere
County List C = Plants for which we need more information - Review list
County List D = Plants of limited distribution and are uncommon, but not presently rare or endangered.

MSCP: = North County MSCP Covered Species

CRPR – California Rare Plant Rank
1A. Presumed extinct in California
1B. Rare or Endangered in California and elsewhere
2. Rare or Endangered in California, more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

Threat Ranks
.1 - Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

Note that in March, 2010, CDFG changed the name of “CNPS List” or “CNPS Ranks” to “California Rare Plant Rank” (or CRPR). This was done to reduce confusion over the fact that CNPS and DFG jointly manage the Rare Plant Status Review groups that the rank assignments are the product of a collaborative effort and not solely a CNPS assignment.

Appendix B

Potentially Occurring Sensitive Species - Plants

This page intentionally left blank.

Appendix B Potentially Occurring Plant Species

Common Name (*Scientific Name*)	**Sensitivity Code & Status**	**Habitat Preference/ Requirements**	**Verified On Site (Yes/No)**	**Potential to Occur**	**Rationale/Determination**
Chaparral Sand-Verbena (*Abronia villosa* var. *aurita*)	CRPR List 1B.1 SDC List A	Annual herb Chaparral, coastal scrub, and desert dunes; 80-1600 m (262 – 5249 ft). Blooming period: January - September	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.
San Diego Ambrosia (*Ambrosia pumila*)	FE CRPR List 1B.1 SDC List A MSCP	Rhizomatous herb Chaparral, coastal sage scrub, valley and foothill grassland, vernal pools, often in disturbed areas. Can occur in creek beds, seasonally dry drainages, and floodplains; 20-415 m (66-1362 ft). Blooming period: April - October	No	Low	Marginal habitat occurs on site.
Rainbow Manzanita (*Arctostaphylos rainbowensis*)	CRPR List 1B.1 SDC List A MSCP	Perennial evergreen shrub Chaparral; 205-670 m (672-2198 ft). Blooming period: December - March	Yes	Present on site	Co dominant shrub within the chaparral habitats on site.
Engelmann Oak (*Quercus engelamanii*	CRPR List 4 SDC List D MSCP		Yes	Present on site	One individual was adjacent to the Santa Margarita River.
Jaeger's Milk-Vetch (*Astragalus pachypus* var. *jaegeri*)	CRPR List 1B.1 SDC List A	Perennial shrub Sandy or rocky soils in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland; 365-915 m (1197-3002 ft). Blooming period: December - June	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.
Encinitas Baccharis (*Baccharis vanessae*)	FT SE CRPR 1B.1 SDC List A MSCP	Perennial deciduous shrub Sandstone in maritime chaparral, and cismontane woodland; 60-720 m (196-2362 ft). Blooming period: August - November	No	Low	Suitable habitat occurs on site. However, focused surveys did not detect this species.
Thread-Leaved Brodiaea (*Brodiaea filifolia*)	FT SE CRPR 1B.1 SDC List A MSCP	Perennial bulbiferous herb Often found in clay soils in openings in chaparral, cismontane woodland, coastal scrub, playas, valley and foothill grassland, and vernal pools; 25-1219 m (82-3999 ft). Blooming period: March - June	No	Low	Marginally suitable habitat occurs on site. However, focused surveys did not detect this species.

Common Name (*Scientific Name*)	**Sensitivity Code & Status**	**Habitat Preference/ Requirements**	**Verified On Site (Yes/No)**	**Potential to Occur**	**Rationale/Determination**
Orcutt's Brodiaea (*Brodiaea orcuttii*)	CRPR List 1B.1 SDC List A MSCP	Bulbiferous herb Moist grasslands, near streams and the periphery of vernal pools; 0-1600 m (0-5249 ft). Blooming period: May - July	No	Low	Marginally suitable habitat occurs on site. However, focused surveys did not detect this species.
Payson's Jewel-Flower (*Caulanthus simulans*)	CRPR List 4.2 SDC List D	Annual herb Sandy and granitic soils in chaparral and coastal scrub; 90-2200 m (295-7218 ft). Blooming period: February - June	No	High	Suitable habitat occurs on site and this species was historically documented from the Preserve (CNDDB 2011).
Parry's Spineflower (*Chorizanthe parryi* var. *parryi*)	CRPR List 1B.1	Annual herb Chaparral, cismontane woodland, coastal sage scrub, and valley and foothill grassland; 275-1220 m (902-4002 ft) Blooming period: April - June	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.
Long Spined Spineflower (*Chorizanthe polygonoides* var. *longispina*)	CRPR List 1B.2 SDC List A	Annual herb Clay lenses, largely devoid of shrubs. Occasionally seen on the periphery of vernal pool habitat and the periphery of montane meadows near vernal seeps; below 1400 m (4593 ft). Blooming period: April - June	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.
Summer Holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)	CRPR List 1B.2 SDC List A MSCP	Annual herb Sandy soils in coastal bluff scrub, coastal scrub, and valley and foothill grassland; 5-300 m (16-984 ft). Blooming period: February - August	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.
Slender-horned Spineflower (*Dodecahema leptoceras*)	FE, SE CRPR List 1B.1	Annual herb Chaparral, cismontane woodland, and coastal sage scrub; 200-760 m (656-2493 ft). Blooming period: April - June	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.
Many-Stemmed Dudleya (*Dudleya multicaulis*)	CRPR List 1B.2 SDC List A	Perennial herb Often in clay soils in chaparral, coastal scrub, and valley and foothill grassland; 15-790 m (49-2592 ft). Blooming period: April - July	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.

Common Name (*Scientific Name*)	**Sensitivity Code & Status**	**Habitat Preference/ Requirements**	**Verified On Site (Yes/No)**	**Potential to Occur**	**Rationale/Determination**
Sticky Dudleya (*Dudleya viscida*)	CRPR List 1B.2 SDC List A MSCP	Perennial herb Rocky soils in coastal bluff scrub, chaparral, cismontane woodland, and coastal scrub; 10-550 m (32-1804 ft). Blooming period: May - June	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.
Mesa Horkelia (*Horkelia cuneata* ssp. *puberula*)	CRPR List 1B.1 SDC List A	Perennial herb Sandy and gravelly soils within maritime chaparral, cismontane woodland, and coastal scrub; 70-810 m (229-2657 ft). Blooming period: February - September	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.
Ramona Horkelia (*Horkelia truncata*)	CRPR List 1B.3 SDC List A	Perennial herb Open chamise chaparral on metavolcanic soils between 400-1300 m (1312-4265 ft). Blooming period: May - June	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.
Santa Lucia Dwarf Rush (*Juncus luciensis*)	CRPR List 1B.2	Annual herb Chaparral, great basin scrub, lower montane coniferous forest, meadows and seeps, and vernal pools; 300-2040 m (984-6693 ft). Blooming period: April - July	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species.
Felt-leaved Monardella (*Monardella hypoleuca* var. *lanata*)	CRPR List 1B.2 SDC List A MSCP	Rhizomatous herb Chaparral understory; 300-1000 m (984-3280 ft). Blooming Period: June - August	No	Moderate	Suitable habitat occurs on site. However, focused surveys did not detect this species on the Preserve.
White Rabbit-Tobacco (*Pseudognaphalium leucocephalum*)	CRPR List 2.2	Perennial herb Chaparral, cismontane woodland, coastal sage scrub, and riparian woodland; 0-2100 m (0-889 ft). Blooming period: August - November	No	High	Suitable habitat occurs on site. This species is known to occur within the Santa Margarita River.
San Miguel Savory (*Satureja chandleri*)	CRPR List 1B.2 SDC List A MSCP	Shrub Rocky slopes with chaparral and oak woodland; 520-690 m (1706-2263 ft). Blooming period: March - July	No	Low	Suitable chaparral habitat occurs on site but the Preserve lack suitable rocky soils.

Common Name (*Scientific Name*)	**Sensitivity Code & Status**	**Habitat Preference/ Requirements**	**Verified On Site (Yes/No)**	**Potential to Occur**	**Rationale/Determination**
Southern Skullcap (*Scutellaria bolanderi* ssp. *austromontana*)	CRPR List 1B.2 SDC List A	Rhizomatous herb Moist embankments of montane creeks; 600-2000 m (1969-6562 ft). Blooming period: June - August	No	Low	Marginally suitable habitat occurs on site. Although Preserve is outside of the known range of this species.
San Bernardino Aster (*Symphyotrichum defoliatum*) *(=Aster defoliatum)*	CRPR List 1B.2	Rhizomatous herb Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic)/near ditches, streams springs; 2-2040 m (7-6693 ft). Blooming period: July - November	No	Moderate	Suitable habitat occurs on site. However, focused surveys for this species were negative.

Federal:
FE = Federally Endangered
FT = Federally Threatened

State:
SE = State Endangered

CRPR = California Rare Plant Rank
1A. Presumed extinct in California
1B. Rare or Endangered in California and elsewhere
2. Rare or Endangered in California, more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

SDC = Sand Diego County; List A = Plants rare, threatened or endangered in California and elsewhere; List B Plants rare, threatened or endangered in California but more common elsewhere; List C Plants which may be quite rare, but need more information to determine their true rarity status; County List D = Plants of limited distribution and are uncommon, but not presently rare or endangered.

MSCP = Draft North County MSCP Covered Species

Appendix C

Wildlife Species Detected

This page intentionally left blank.

Appendix C. Santa Margarita Preserve Wildlife Species Detected

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status
INVERTEBRATES			
Branchiopods			
**Procambarus clarkii*	Red Swamp Crayfish		
Insects			
Brachynemurus / Myrmeleon sp.	Ant Lion		
Pepsis / Hemipepsis sp.	Tarantula Hawk Wasp		
Moths, Skippers and Butterflies			
Papilio zelicaon	Anise Swallowtail		
Pontia protodice	Checkered White		
**Pieris rapae*	Cabbage White		
Colias eurytheme	Orange Sulphur		
Callophrys agustinus	Brown Elfin		
Icaricia acmon	Acmon Blue		
Polygonia satyrus	Satyr Comma		
Nymphalis antiopa	Mourning Cloak		
Vanessa cardui	Painted Lady		
Vanessa annabella	West Coast Lady		
Junonia coenia	Common Buckeye		
Limenitis lorquini	Lorquin's Admiral		
Adelpha bredowii	California Sister		
Danaus plexippus	Monarch		SD County Group II
Erynnis funeralis	Funereal Duskywing		
VERTEBRATES			
Fish			
**Cyprinus carpio*	Common Carp		
Amphibians			
Anaxyrus californicus	Arroyo Toad	FE, CSC	SDC Group I, MSCP
Pseudacris cadaverina	California Chorus Frog		
Pseudacris regilla	Pacific Chorus Frog		
**Lithobates catesbeiana*	Bullfrog		
Reptiles			

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status
Elgaria multicarinata	Southern Alligator Lizard		
Sceloporus occidentalis	Western Fence Lizard		
Uta stansburiana	Side-blotched Lizard		
Plestiodon gilberti	Gilbert's Skink		
Aspidoscelis hyperythra	~~Orangethroate~~d Whiptail	CSC	SDC Group II, MSCP
Aspidoscelis tigris	Western Whiptail		SDC Group II
Lampropeltis getula	Common Kingsnake		
Masticophis lateralis	Striped Racer		
Crotalus helleri	Southern Pacific Rattlesnake		
Crotalus ruber	Red Diamond Rattlesnake	CSC	SDC Group II, MSCP
Hypsiglena torquata	Night Snake		
Birds			
Anas platyrhynchos	Mallard		
Callipepla californica	California Quail		
**Gallus gallus*	Red Junglefowl		
Ardea herodias	Great Blue Heron		SDC Group II
Ardea alba	Great Egret		
Cathartes aura	Turkey Vulture		SDC Group I
Accipiter cooperii	Cooper's Hawk		SDC Group I
Buteo jamaicensis	Red-tailed Hawk		
Larus sp.	Gull		
**Columba livia*	Rock Pigeon		
Patagioenas fasciata	Band-tailed Pigeon		
Zenaida macroura	Mourning Dove		
Tyto alba	Barn Owl		SDC Group II
Megascops kennicottii	Western Screech-Owl		
Bubo virginianus	Great Horned Owl		
Phalaenoptilus nuttallii	Common Poorwill		
Archilochus alexandri	Black-chinned Hummingbird		
Calypte anna	Anna's Hummingbird		
Calypte costae	Costa's Hummingbird		

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status
Melanerpes formicivorus	Acorn Woodpecker		
Picoides nuttallii	Nuttall's Woodpecker		
Picoides pubescens	Downy Woodpecker		
Colaptes auratus	Northern Flicker		
Empidonax difficilis	Pacific-slope Flycatcher		
Sayornis nigricans	Black Phoebe		
Myiarchus cinerascens	Ash-throated Flycatcher		
Vireo bellii pusillus	Least Bell's Vireo	FE, SE	SDC Group I, MSCP
Vireo huttoni	Hutton's Vireo		
Aphelocoma californica	Western Scrub-Jay		
Corvus brachyrhynchos	American Crow		
Corvus corax	Common Raven		
Stelgidopteryx serripennis	Northern Rough-winged Swallow		
Petrochelidon pyrrhonota	Cliff Swallow		
Baeolophus inornatus	Oak Titmouse		
Psaltriparus minimus	Bushtit		
Sitta carolinensis	White-breasted Nuthatch		
Thryomanes bewickii	Bewick's Wren		
Troglodytes aedon	House Wren		
Polioptila caerulea	Blue-gray Gnatcatcher		
Chamaea fasciata	Wrentit		
Catharus ustulatus	Swainson's Thrush		
Toxostoma redivivum	California Thrasher		
**Sturnus vulgaris*	European Starling		
Phainopepla nitens	Phainopepla		
Vermivora celata	Orange-crowned Warbler		
Vermivora ruficapilla	Nashville Warbler		
Dendroica petechia	Yellow Warbler	CSC	SDC Group II
Geothlypis trichas	Common Yellowthroat		
Wilsonia pusilla	Wilson's Warbler		
Icteria virens	Yellow-breasted Chat	CSC	SDC Group I, MSCP

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status
Pipilo maculatus	Spotted Towhee		
Aimophila ruficeps canescens	Southern California Rufous-crowned Sparrow		SDCGroup I, MSCP
Melozone crissalis	California Towhee		
Spizella atrogularis	Black-chinned Sparrow		
Melospiza melodia	Song Sparrow		
Pheucticus melanocephalus	Black-headed Grosbeak		
Passerina caerulea	Blue Grosbeak		
Passerina amoena	Lazuli Bunting		
**Molothrus ater*	Brown-headed Cowbird		
Icterus cucullatus	Hooded Oriole		
Icterus bullockii	Bullock's Oriole		
Carpodacus mexicanus	House Finch		
Carduelis psaltria	Lesser Goldfinch		
Mammals			
**Didelphis virginiana*	Virginia Opossum		
Myotis californicus	California Myotis		
Myotis ciliolabrum	Small-footed Myotis		SD County Group II
Myotis yumanensis	Yuma Myotis		SD County Group II
Parastrellus hesperus	Canyon Bat		
Eptesicus fuscus	Big Brown Bat		
Tadarida brasiliensis	Mexican Free-tailed Bat		
Sylvilagus audubonii	Desert Cottontail		
Spermophilus beecheyi	California Ground Squirrel		
Chaetodipus californicus femoralis	Dulzura Pocket Mouse	CSC	SD County Group II
Chaetodipus fallax fallax	Northwestern San Diego Pocket Mouse	CSC	SD County Group II
Dipodomys simulans	Dulzura Kangaroo Rat		
Reithrodontomys megalotis	Western Harvest Mouse		
Peromyscus californicus	California Mouse		
Peromyscus eremicus	Cactus Mouse		
Peromyscus maniculatus	Deer Mouse		
Neotoma fuscipes	Dusky-footed Woodrat		

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status
Neotoma lepida intermedia	San Diego Desert Woodrat	CSC	SD County Group II
Microtus californicus	California Vole		
Canis familiaris	Domestic Dog		
Canis latrans	Coyote		
Urocyon cinereoargenteus	Common Gray Fox		
Procyon lotor	Northern Raccoon		
Mephitis mephitis	Striped Skunk		
Puma concolor	Mountain Lion		SDC Group II, MSCP
Lynx rufus	Bobcat		
Equus caballus	Domestic Horse		
Odocoileus hemionus	Southern Mule Deer		SDC Group II

*= Non-native or invasive species

Federal:
FE = Endangered
FT = Threatened

State:
SE = Endangered
ST =Threatened
CSC = California Species of Special Concern

County:
SDC Group 1 - includes those that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirement that must be met.
SDC Group 2 - includes those species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action.
MSCP = Draft North County MSCP Covered Species

Appendix D

Potentially Occurring Sensitive Species – Wildlife

This page intentionally left blank.

Appendix D Potentially Occurring Wildlife Species

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/ Requirements	Verified On Site (Yes/No)	Potential to Occur	Rationale/Determination
Quino Checkerspot Butterfly (*Euphydryas editha quino*)	FE SDC Group I MSCP	Sunny openings in coastal sage scrub and chaparral that support its primary larval host plant, dwarf plantain (*Plantago erecta*).	No	Moderate	No individuals detected but the host larval plant is present on the Preserve.
Hermes Copper (*Lycaena hermes*)	SDC Group I	Endemic to San Diego County, west of the Peninsular mountain ranges. Host plant is spiny redberry (*Rhamnus crocea*).	No	Moderate	Historical populations are known to occur near Fallbrook. The primary larval host spiny redberry occurs on site. However, due to the relatively recent fire (2001) that burned the Preserve this species is not expected to presently occur on the Preserve. Potential habitat occurs on site and the Preserve could potentially support Hermes Copper in the future.
Monarch Butterfly (*Danaus plexippus*)	SDC Group I	The primary host plant for the monarch larvae are plants in the milkweed genus (*Asclepias* sp.). In San Diego County monarchs can occur along the coast where they cluster in eucalyptus groves.	Yes	Present	Observed moving through the Preserve.
Southern Steelhead - Southern California DPS (*Oncorhynchus mykiss irideus*)	FE CSC SDC Group I	Steelhead are capable of surviving in a wide range of temperature conditions. They winter in deep low-velocity pools in streams. Spawning habitat consists of gravel substrates free of excessive silt.	No	High	Historically, the federally endangered southern California steelhead trout occupied the Santa Margarita River; however, research indicates that these populations declined prior to the 1940s and in addition, there is no water system connection on the Preserve with San Mateo Creek where the species was most recently documented (Lang et al. 1998, MCB Camp Pendleton 2007).
Arroyo Chub (*Gila orcutti*)	CSC SDC Group I	In habits sandy and muddy bottoms in flowing pools and runs of headwaters creeks and small to medium rivers. Often found in intermittent streams.	No	High	Historically detected at the Preserve (CNDDB 2011). Not observed 2011; however, focused fish surveys were not conducted.
California Newt (*Taricha torosa torosa*)	CSC SDC Group II MSCP	In or near streams in valley-foothill hardwood and hardwood conifer habitats. Takes cover under surface objects and in.	No	Low	Closest observations are Marine Corps Base Camp Pendleton near Roblar Creek and in Cole Canyon, Riverside County (CNDDB 2011).
Arroyo Toad (*Anaxyrus (=Bufo) californicus*)	FE CSC SDC Group I MSCP	Exposed shallow pools with a sand or gravel base are used for breeding. Breeding pools must occur in the vicinity (ca. 10-100 m) of a braided sandy channel with shorelines or central bars made of stable, sandy terraces.	Yes	Present	Observed during nocturnal surveys.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/ Requirements	Verified On Site (Yes/No)	Potential to Occur	Rationale/Determination
Western Spadefoot (*Spea hammondii*)	CSC SDC Group II MSCP	Habitats include mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Rainpools which do not contain bullfrogs, fish, or crayfish are necessary for breeding. From near sea level up to 1365 m (4500 ft).	No	Low	No breeding habitat present on the Preserve. No pools present outside of the river floodplain. Species not detected during nocturnal surveys.
Southwestern Pond Turtle (*Emys (=Clemmys) marmorata pallida*)	CSC SDC Group I MSCP	Slack- or slow-water aquatic habitat with basking sites.	No	High	Has historically been observed near or within the Preserve (CNDDB 2011).
Orangethroated Whiptail (*Aspidoscelis hyperythra beldingi*)	CSC SDC Group II MSCP	The habitat characteristics are poorly understood; however, historically it was found in floodplains or terraces along streams and in low-elevation coastal scrub, chamise-redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats. Closely tied to coastal sage scrub plants and some chaparral plants. 1040 m (3410 ft).	Yes	Present	Captured in the herpetological arrays.
Coastal Whiptail (*Aspidoscelis tigris*)	SDC Group II MSCP	Found in arid and semiarid desert to open woodlands where the vegetation is sparse so running is easy.	Yes	Present	Captured in the herpetological arrays.
Coronado Skink (*Plestiodon skiltonianus interparietalis*)	CSC SDC Group II	Forest, open woodland and grassy areas. Usually found under leaf litter, logs or rocks.	No	High	Species has potential to occur throughout the scrub, chaparral, woodland, and riparian habitats.
San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*)	CSC SDC Group II MSCP	Grasslands, brushlands, woodlands, and open coniferous forest with sandy or loose soil; requires abundant ant colonies for foraging.	No	High	Species has the potential to occur throughout the scrub and chaparral habitats
Coastal Rosy Boa (*Charina trivigata roseofusca*)	SDC Group II	Inhabits arid scrublands, semi-arid and rocky shrublands, rocky deserts, canyons, and other rocky areas.	No	High	Species has potential to occur throughout the scrub habitats and in rocky areas.
San Diego Ringneck Snake (*Diadophis punctatus similis*)	SDC Group II	Prefers moist habitats, including wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests, and woodlands	No	High	Has potential to occur in moist areas on the rocky hillsides, or in the chaparral and woodland habitats.

Common Name (*Scientific Name*)	**Sensitivity Code & Status**	**Habitat Preference/ Requirements**	**Verified On Site (Yes/No)**	**Potential to Occur**	**Rationale/Determination**
Red Diamond Rattlesnake (*Crotalus ruber*)	CSC SDC Group II MSCP	Occurs from sea level to 914 m (3000 ft) in chaparral, woodland, and arid desert habitats with rocky areas and dense vegetation.	Yes	Present	Was observed in the southern mixed chaparral in the southern portion of the Preserve.
Coast Patch-nosed Snake (*Salvadora hexalepis virgultea*)	CSC SDC Group II	Inhabits semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains.	No	High	Has potential to occur in any habitat on the Preserve.
Two-striped Garter Snake (*Thamnophis hammondii*)	CSC SDC Group I MSCP	Inhabits perennial and intermittent streams with rocky beds and bordered by willow thickets or other dense vegetation.	No	High	Has high potential to occur in the Santa Margarita River.
Great Blue Heron (*Ardea herodias*)	SDC Group II	A large water bird that can be found in any type of wetland and is typically a colonial breeder that nests in trees near water.	Yes	Present	Great blue herons were sporadically observed overhead along the river. This species does not breed at the Preserve. It may use the Preserve for foraging.
Turkey Vulture (*Cathartes aura*)	SDC Group I	Found in open areas including mixed farmland, forest, and rangeland, especially within a few miles of rocky or wooded areas. Rocky outcroppings, cliffs, and dry forests provide nesting sites, while open areas act as foraging habitat.	Yes	Present	Observed foraging over the Preserve.
White-tailed Kite (*Elanus caeruleus*)	SFP (nesting) SDC Group I	Open grasslands, agricultural areas, wetlands, and oak woodlands. Their primary source of food is the California vole. It typically forages in open undisturbed habitats and nests in the top of a dense oak, willow or other large tree.	No	Breeding: High Foraging: Low	White-tailed kites are known to occur in the vicinity and the Preserve does provide the large trees required for nesting; however, the grasslands they prefer to forage over are not present.
Northern Harrier (*Circus cyaneus hudsonius*)	CSC (nesting) SDC Group I MSCP	Grasslands and marshes. Nests are on the ground and typically concealed within a marsh or other dense vegetation.	No	Breeding: Low Wintering/Migrant: High	The Preserve does not provide optimal nesting habitat; however, the species may occasionally forage and winter there.
Sharp-shinned Hawk (*Accipiter striatus*)	SDC Group II	A fairly common migrant and winter resident in San Diego. Breeds in young coniferous forests with high canopies	No	Breeding: None Wintering/Migrant: High	Species may use the Preserve during migration.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/ Requirements	Verified On Site (Yes/No)	Potential to Occur	Rationale/Determination
Cooper's Hawk (*Accipiter cooperii*)	SDC Group I	A resident of riparian deciduous habitats and oak woodlands but in recent times has become adapted to urban park environments.	Yes	Present	Cooper's hawk was not regularly detected at the Preserve; however, the Preserve supports breeding and foraging habitat for the species.
Red-shouldered Hawk (*Buteo lineatus*)	SDC Group I	Forests with open understory, especially bottomland hardwoods, riparian areas, and flooded swamps.	NO	Breeding: High Foraging: High	Suitable habitat is present.
Swainson's Hawk (*Buteo swainsoni*)	ST SDC Group I	Swainson's hawks are rare migrants over San Diego County and are typically seen inland such as Lakeside, Lake Cuyamaca, and Borrego Valley. In 2011, two groups of Swainson's hawks were observed migrating near the Santa Margarita River valley.	No	Migration: High	This species has high potential to migrate through the Preserve and use the ridgetop updrafts for migration.
Ferruginous Hawk (*Buteo regalis*)	SDC Group I	An uncommon winter visitor to San Diego County that is mostly found foraging in open grasslands.	No	Migration: High	Species may use Preserve during migration.
Golden Eagle (*Aquila chrysaetos*)	SFP SDC Group I MSCP	Nest on cliff ledges or trees on steep slopes. Forage in grasslands, sage scrub or open chaparral.	No	Breeding: None Foraging: Low	In 2011, a golden eagle individual was detected in spring at Naval Weapons Station Seal Beach Detachment Fallbrook and had high potential to use the Preserve for foraging. There is no habitat suitable for nesting on the Preserve.
Merlin (*Falco columbarius*)	SDC Group II	The merlin is most often seen in grasslands but has the potential to occur in any vegetation community except dense woodland	No	Migration: High	Species may use Preserve during migration.
Barn Owl (*Tyto alba*)	SDC Group II	The barn owl is the owl species that is most tolerant to urban development. It will nest in buildings, nest boxes, at the base of the leaves in palm trees, and in cavities in native trees	Yes	Present	Barn owls were detected in two locations at the Preserve and a power pole appears to be a commonly used perch for the species as evidenced by the large number of pellets below the pole. Breeding was not confirmed can be assumed.
Burrowing Owl (*Athene cunicularia*)	CSC SDC Group I MSCP	Prairies, grasslands, lowland scrub, agricultural lands, coastal dunes, desert floors, and some artificial, open areas. They require large open expanses of sparsely vegetated areas on gently rolling or level terrain with an abundance of active small mammal burrows. They use rodent or other burrows for roosting and nesting cover and also known to use pipes, culverts, and nest boxes where burrows are scarce.	No	Low	There is no suitable breeding habitat at the Preserve. May occur during winter migration.

Common Name (*Scientific Name*)	**Sensitivity Code & Status**	**Habitat Preference/ Requirements**	**Verified On Site (Yes/No)**	**Potential to Occur**	**Rationale/Determination**
Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*)	SE SDC Group I	Prefers open woodland with clearings and low, dense, scrubby vegetation; often associated with watercourses.	No	Low	This species has been seen on Marine Corps Base Camp Pendleton as recently at 2000 but these individuals did not breed (Unitt 2004).
Southwestern Willow Flycatcher (*Empidonax trailii extimus*)	FE SE SDC Group I MSCP	Breeds in riparian woodlands along rivers, streams, or other wetlands. They usually nest within close proximity of water or very saturated soil.	No	Moderate	This species has been detected downstream along the Santa Margarita River. Focused surveys were not conducted; however, individuals were not detected during other surveys of the riparian habitat.
Loggerhead Shrike (*Lanius ludovicianus*)	CSC SDC Group I	Grassland, open sage scrub, and chaparral, and desert scrub.	No	Moderate	This species has potential to occur on the Preserve as there is some suitable habitat.
Least Bell's Vireo (*Vireo bellii pusillus*)	FE SE SDC Group I MSCP	Riparian thickets either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons.	Yes	Present	Up to three males were detected during the surveys of the Preserve. One male was regularly detected near point count station 2 and a second was regularly detected near point count station 3. An additional male was detected in May near point count station 2 but he was only detected during the one survey period. Scolds were detected during this survey indicating the presence of a female or a male protecting a nest. Even though breeding was not confirmed, due to the temporal regularity of their detection (three out of four sampling periods), and based on the level of loquaciousness (periods of male song followed by periods of silence), breeding can be assumed for the two males.
Coastal California gnatcatcher (*Polioptila californica californica*)	FT CSC SDC Group I MSCP	Prefer open scrubby habitats such as coastal sage scrub and some forms of chaparral.	No	Low	The coastal sage chaparral scrub present in the higher elevations of the Preserve has more chaparral plant species than coastal sage scrub and the slopes with coastal sage scrub are extremely steep. Focused surveys were not conducted but biologists knowledgeable of the species conducted general surveys through all of habitats on the Preserve and no gnatcatchers were detected. This coastal sage chaparral scrub may be used by the species in years with high numbers in surrounding populations.
Western Bluebird (*Sialia mexicana*)	SDC Group II	Open coniferous and deciduous woodlands, wooded riparian areas, grasslands, farmlands, and edge and burned areas.	No	Low	Prefers areas of woodland with meadows nearby. No meadows present at the Preserve.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/ Requirements	Verified On Site (Yes/No)	Potential to Occur	Rationale/Determination
Yellow Warbler (*Dendroica petechia brewsteri*)	CSC SDC Group II	Mature riparian woodlands.	Yes	Present	Yellow warblers were detected near point count stations 2 and 3. Breeding can be assumed as the species was detected in April, May, and June.
Yellow-breasted Chat (*Ictera virens*)	CSC SDC Group II MSCP	Dense riparian woodland.	Yes	Present	Yellow-breasted chats were detected at point count stations 2 and 3in all four sampling months. The breeding status of these birds was unknown but can be assumed due to the presence in suitable breeding habitat throughout the breeding season.
Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)	SDC Group I MSCP	A resident species that is closely associated with coastal sage scrub, steep rocky hillsides, burned chaparral, and openings in mature chaparral.	Yes	Present	Southern California rufous-crowned sparrows were incidentally detected during other surveys or while surveyors were traveling to the count point stations and were recorded at point count stations 1, 2, and 4 in all four sampling periods.
Bell's Sage Sparrow (Amphispiza belli belli)	SDC Group I MSCP	Found in chaparral and coastal sage scrub in southern California and Baja California. This mostly ground-dwelling species prefers open chaparral and sage scrub and is one of the first species to inhabit recently burned habitat.	No	High	Bell's sage sparrows were not observed during the 2011 surveys, but there is high potential for the species to occur as it has been recorded in the immediate vicinity.
Tricolored Blackbird (*Agelaius tricolor*)	CSC (nesting colony) SDC Group I MSCP	Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats.	No	Low	Limited breeding habitat present and no foraging habitat. Closest population is in Bonsall (Unitt 2044).
Pallid Bat (*Antrozous pallidus*)	CSC SDC Group II MSCP	Roosts in rock crevices, caves, mine shafts, under bridges, in buildings and tree hollows.	No	Roosting – Low Foraging – High	Suitable foraging habitat is present on site.
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	CSC SDC Group II MSCP	Variety of habitats, almost always near caves or cave-like roosting areas.	No	Roosting – Low Foraging – Low	Suitable foraging habitat is present on site.
Western Mastiff Bat (*Eumops perotis californicus*)	CSC SDC Group II	Lives in rocky areas and cliff faces. Roosts in cliff crevices and buildings.	No	Roosting – Low Foraging – Low	Suitable foraging habitat is present on site.

Common Name (*Scientific Name*)	**Sensitivity Code & Status**	**Habitat Preference/ Requirements**	**Verified On Site (Yes/No)**	**Potential to Occur**	**Rationale/Determination**
Small-footed Myotis (*Myotis ciliolabrum*)	SDC Group II	Found throughout most of western North America, from southwestern Canada south into Mexico. There is not much information on the habitat requirements of this species, but it has been documented under rock slabs and in crevices, mine tunnels, under loose tree bark, and in buildings.	Yes	Present	Both suitable roosting and foraging habitat for the small-footed myotis occur on site and the species was detected at each sampling location indicating widespread use of the Preserve by this species.
Yuma Myotis (*Myotis yumanensis*)	SDC Group II	Always found near lakes, creeks, or ponds where the species forages over the water.	Yes	Present	Yuma myotis were detected at each sampling locations during the sampling sessions.
Western Red Bat (*Lasiurus blossevillii*)	CSC SDC Group II	Usually among dense foliage, in forests and wooded areas, making long migrations from the northern latitudes to warmer climes for winter, sometimes hibernates in tree hollows or woodpecker holes.	No	Roosting – Moderate Foraging – Moderate	Suitable roosting and foraging habitat is present on site.
Pocketed Free-tailed Bat (*Nyctinomops (=Tadarida) femorosaccus*)	CSC SDC Group II	Lives in deserts and sage scrub, roosts in rocky crevices.	No	Roosting – None Foraging – Low	Suitable foraging habitat present on site.
Big Free-tailed Bat (*Nyctinomops (=Tadarida) macrotis*)	CSC SDC Group II	Inhabits arid, rocky areas; roosts in crevices in cliffs.	No	Roosting – None Foraging – Low	Suitable foraging habitat present on site.
California Leaf-nosed Bat (*Macrotus californicus*)	CSC SDC Group II	Roosts are in deep tunnels or caves, occasionally in buildings or bridges.	No	Roosting – None Foraging – Low	Suitable foraging habitat present on site.
San Diego Black-tailed Jackrabbit (*Lepus californicus bennettii*)	CSC SDC Group II MSCP	Mostly found on the coastal side of our local mountains in open habitats, usually avoiding dense stands of chaparral or woodlands.	No	Low	Habitat on the Preserve has some potential to support the species but most of it is too dense.

Common Name (*Scientific Name*)	**Sensitivity Code & Status**	**Habitat Preference/ Requirements**	**Verified On Site (Yes/No)**	**Potential to Occur**	**Rationale/Determination**
Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*)	CSC SDC Group II	It inhabits areas of open ground, prefers fine sandy soils (for burrowing) but is also found commonly on gravel washes and on stony soils, within brush and woodland habitats. It is rarely found on sites with a high cover of rocks. Elevation range for the species as a whole extends from near sea level to at least 5,600 ft (1707 m).	No	Low	Species is found north of the Preserve and only marginal habitat is present on the Preserve.
Dulzura Pocket Mouse (*Chaetodipus californicus femoralis*)	CSC SDC Group II	Coastal and montane regions on chaparral slopes.	Yes	Present	During the 2011 trapping program on the Preserve, 25 of the 146 animals captured were Dulzura pocket mice. Captures were associated with trapping locations C, E, and G
Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*)	CSC SDC Group II	Coastal sage scrub, sage scrub/grassland ecotones, and chaparral communities.	Yes	Present	During the 2011 trapping program on the Preserve, 17 of the 146 animals captured were northwestern San Diego pocket mice. Captures were associated with trapping locations E, F, and G.
Pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*)	CSC SDC Group II	The preferred habitat is chaparral but can also be found in open, sandy areas.	No	Moderate	Suitable habitat is present on site.
San Diego Desert Woodrat (*Neotoma lepida intermedia*)	CSC SDC Group II	Variety of shrub and desert habitats, primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth.	Yes	Present	During the 2011 trapping program on the Preserve, 4 of the 146 animals captured were San Diego desert woodrats. Captures were associated with trapping locations F and G.
Southern grasshopper mouse (*Onychomys torridus ramona*)	CSC SDC Group II	Grasslands and sparse coastal sage scrub habitats.	No	Low	Some suitable habitat is present on the slopes but the species was not captured during general mammal trapping.
Mountain Lion (*Puma concolor*)	SDC Group II MSCP	Prefers rocky areas, cliffs, and ledges that provide cover within open woodlands and chaparral.	Yes	Present	The Preserve and the surrounding open space provide habitat for mountain lion to use for foraging and cover, and the species was photographed twice along an upper ridgeline at camera station 3.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/ Requirements	Verified On Site (Yes/No)	Potential to Occur	Rationale/Determination
Southern Mule Deer (*Odocoileus hemionus fuliginata*)	SDC Group II	Common across the western U.S. in a variety of habitats from forest edges to mountains and foothills	Yes	Present	Some sign of southern mule deer was seen at the Preserve, and a few deer were photographed during camera sampling. Southern mule deer was visually observed camera stations 1 and 2.

Legend:
Status:
Federal
FE - Listed as endangered under the federal Endangered Species Act.
FT - Listed as threatened under the federal Endangered Species Act.
FC – Candidate for listing under the federal Endangered Species Act.
State
SE - Listed as endangered under the California Endangered Species Act.
ST – Listed as threatened under California Endangered Species Act.
SR – Listed as rare under California Endangered Species Act.
SFP – State Fully Protected.
San Diego County Group
Animals
Group 1 - includes those that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirement that must be met.
Group 2 - includes those species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action.
MSCP = Draft North County MSCP Covered Species
References:
Special Status plant information from CDFG 2011. Nomenclature and plant descriptions from Abrams 1923 and 1944, Abrams and Ferris 1960, Beauchamp 1986, CNPS Online Inventory, Hickman 1993, Lightner 2006, McAuley 1996, Munz 1974, Reiser 2001, Roberts 1989, Skinner and Pavlik 1994. Range information from CNDDB 2011, CNPS 2011, and SDNHM Plant Atlas Project 2011.
Special Status animal information from Shuford and Gardali 2008 and CDFG 2011. Nomenclature and invertebrate descriptions from USFWS 2008. Nomenclature and vertebrate descriptions from AOU 1998 and supplements, Collins and Taggart 2002, Stephenson and Calcarone 1999, Wilson and Reeder 1993, Wilson and Cole 2000, Unitt 2004.

Appendix E

Photo Book

This page intentionally left blank.



Photo 1. Riparian habitat located within the Santa Margarita River valley



Photo 2. Santa Margarita River



Photo 3. Santa Margarita River and rocky shoreline



Photo 4. Slow moving portion of the Santa Margarita. Potentially suitable Arroyo Toad breeding habitat.



Photo 5. Santa Margarita River Valley and adjacent upland habitat.



Photo 6. Sandy bench located adjacent to the Santa Margarita River.



Photo 7. Sandy bench and riparian habitat within the Santa Margarita River.



Photo 8. Coastal sage scrub habitat.



Photo 9. Juvenile Arroyo Toad



Photo 10. Camera station located at the base of a Rainbow Manzanita shrub.



Photo 11. Bobcat



Photo 12. Coyote



Photo 13. Mule Deer



Photo 14. Mountain Lion



Photo 15. Western Pacific Rattlesnake



Photo 16. Red Diamond Rattlesnake



Photo 17. Dulzura pocket mouse

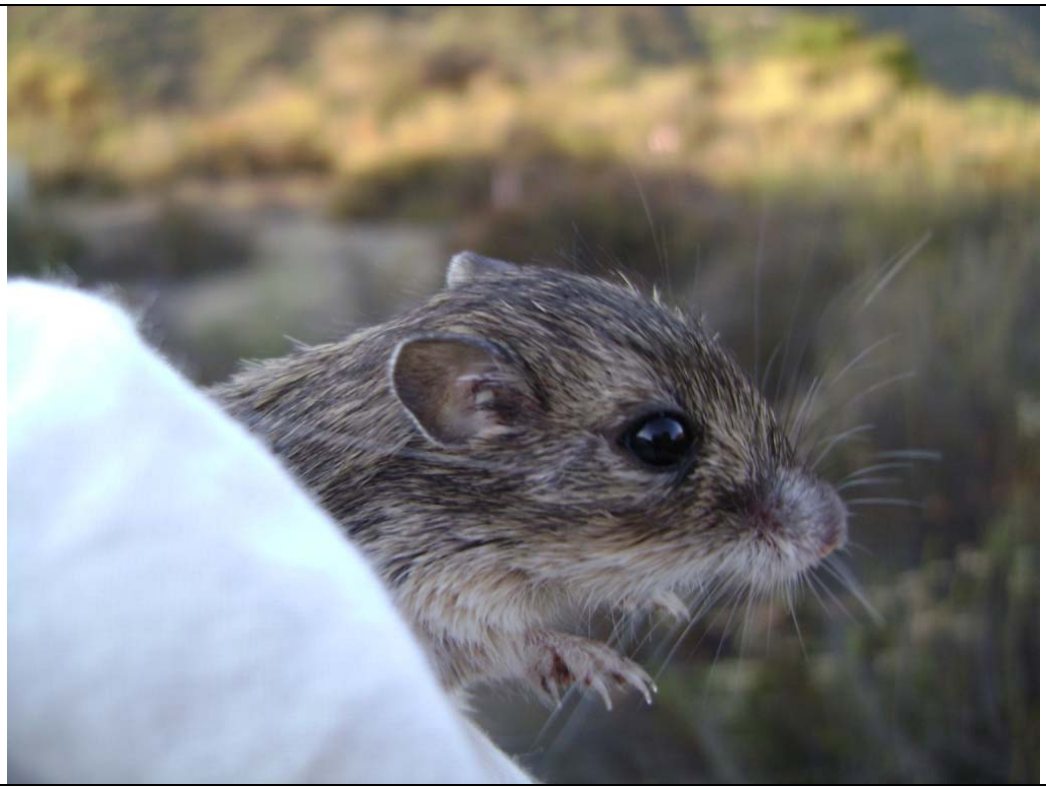


Photo 18. Northwestern San Diego pocket mouse