FINAL

Baseline Biodiversity Survey for the San Luis Rey River Park

Prepared for:

County of San Diego
Department of Parks and Recreation
5500 Overland Avenue Drive, Suite 410
San Diego, California 92123
Contact: Jessica Norton

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Brock Ortega

OCTOBER 2011

Printed on 30% post-consumer recycled material.

TABLE OF CONTENTS

Section **Page No.**

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

TABLE OF CONTENTS (CONTINUED)

Page No.

LIST OF FIGURES

LIST OF TABLES

APPENDICES

LIST OF ACROYNYMS

ACOE	U.S. Army Corps of Engineers
AMSL	above mean sea level
AOU	American Ornithologists' Union
APN	Assessor's Parcel Numbers
ASMD	Area-Specific Management Directive
BLM	U.S. Bureau of Land Management
BMO	Biological Mitigation Ordinance
CAL FIRE	California Department of Forestry and Fire Protection
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
CWA	Clean Water Act
DPLU	County of San Diego Department of Planning and Land Use
DPR	County of San Diego Department of Parks and Recreation
FRAP	Fire and Resource Assessment Program
FRMP	Framework Resource Management Plan
GIS	geographic information system
GPS	Global Positioning System
MRCD	Mission Resource Conservation District
MSCP	Multiple Species Conservation Program
NABA	North American Butterfly Association
NCCP	Natural Community Conservation Plan
PAMA	Pre-Approved Mitigation Area
PEIR	programmatic environmental impact report
RMP	Resource Management Plan
RWQCB	Regional Water Quality Control Board
SLRRP	San Luis Rey River Park
TDS	Total dissolved solids
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

The County of San Diego Department of Parks and Recreation (DPR) prepared a master plan in 2007 outlining the creation of the San Luis Rey River Park (SLRRP) in northern San Diego County. Per the Park Implementation Process outlined in the SLRRP Master Plan, the County has acquired approximately 500 of the 1,700 acres planned for the SLRRP. DPR is proposing to manage the SLRRP in accordance with a resource management plan (RMP), including area-specific management directives (ASMDs). Dudek conducted a baseline biodiversity study of the SLRRP parcels to provide DPR with current biological data needed to prepare an RMP.

This report documents the methods and results of this study and provides various management recommendations for ASMDs to preserve and enhance the function of the SLRRP as biological open space in the context of the conservation goals and guidelines of the Draft North County Multiple Species Conservation Program (MSCP) Plan.

Dudek biologists performed the following baseline biological surveys on the parcel additions from fall 2010 through spring 2011: vegetation mapping, focused botanical surveys, exotic species mapping, general butterfly surveys, herpetological pitfall trap surveys, aquatic amphibian surveys, avian point count surveys, bat surveys, small mammal trapping, and large and medium mammal surveys.

Eight vegetation communities or land covers were identified on site, including southern cottonwood–willow riparian forest (including disturbed forms), disturbed habitat, non-native grassland, developed land, orchard, tamarisk scrub, agriculture, and Diegan coastal sage scrub. A total of 168 plant species were recorded within the study area during surveys. No special-status plant species were observed. A total of 166 wildlife species were observed or detected in the study area during surveys, including 3 fish, 4 amphibians, 10 reptiles, 63 birds, 31 mammals, and 55 invertebrates. Eighteen special-status wildlife species were observed or detected in the study area, including two species proposed for coverage under the Draft North County MSCP.

INTENTIONALLY LEFT BLANK

1.0 INTRODUCTION

The County of San Diego (County) Department of Parks and Recreation (DPR) prepared a master plan in 2007 outlining the creation of the San Luis Rey River Park (SLRRP; Park) in northern San Diego County. The SLRRP proposes to incorporate riparian and floodplain restoration, preservation, recreational needs, and natural/cultural resource education and conservation, and it will be composed primarily of open space (95%) with trails and interpretive kiosks. A programmatic environmental impact report (PEIR) was prepared for the SLRRP Master Plan and both documents were certified/approved by the County Board of Supervisors in 2008. Per the park implementation process outlined in the SLRRP Master Plan, the County has begun acquiring parcels and now owns approximately 500 of the 1,700 acres planned for the SLRRP.

The SLRRP Master Plan has been incorporated into the Draft North County Multiple Species Conservation Program (MSCP) Plan, and the SLRRP is within the Draft North County MSCP preserve system. The SLRRP consists of very high value habitats including designated critical habitat for arroyo toad (*Bufo californicus*), least Bell's vireo (*Vireo bellii pusillus*), coastal California gnatcatcher (*Polioptila californica californica*), and southwestern willow flycatcher (*Empidonax traillii extimus*). DPR is proposing to manage the SLRRP in accordance with a resource management plan (RMP) including area-specific management directives (ASMDs). The RMP will be prepared based on the survey information presented in this report.

At the request of DPR, Dudek conducted a baseline biodiversity study of the SLRRP to provide the County with current biological data needed to develop an RMP for the Park. This report provides an assessment of the biological resources present on the approximately 460.11 acres[1] that currently make up the Park (Figures 1 and 2).

1.1 Purpose of the Report

This report describes the existing biological resources within the SLRRP in terms of vegetation, flora, wildlife, and wildlife habitats, and it provides recommendations for monitoring and management of these resources. The data and recommendations presented in this report are intended to provide the baseline information necessary to manage, protect, and enhance the sensitive biological resources present on site and will be used by DPR to develop an RMP, including ASMDs, pursuant to the requirements of the Draft North County MSCP Plan.

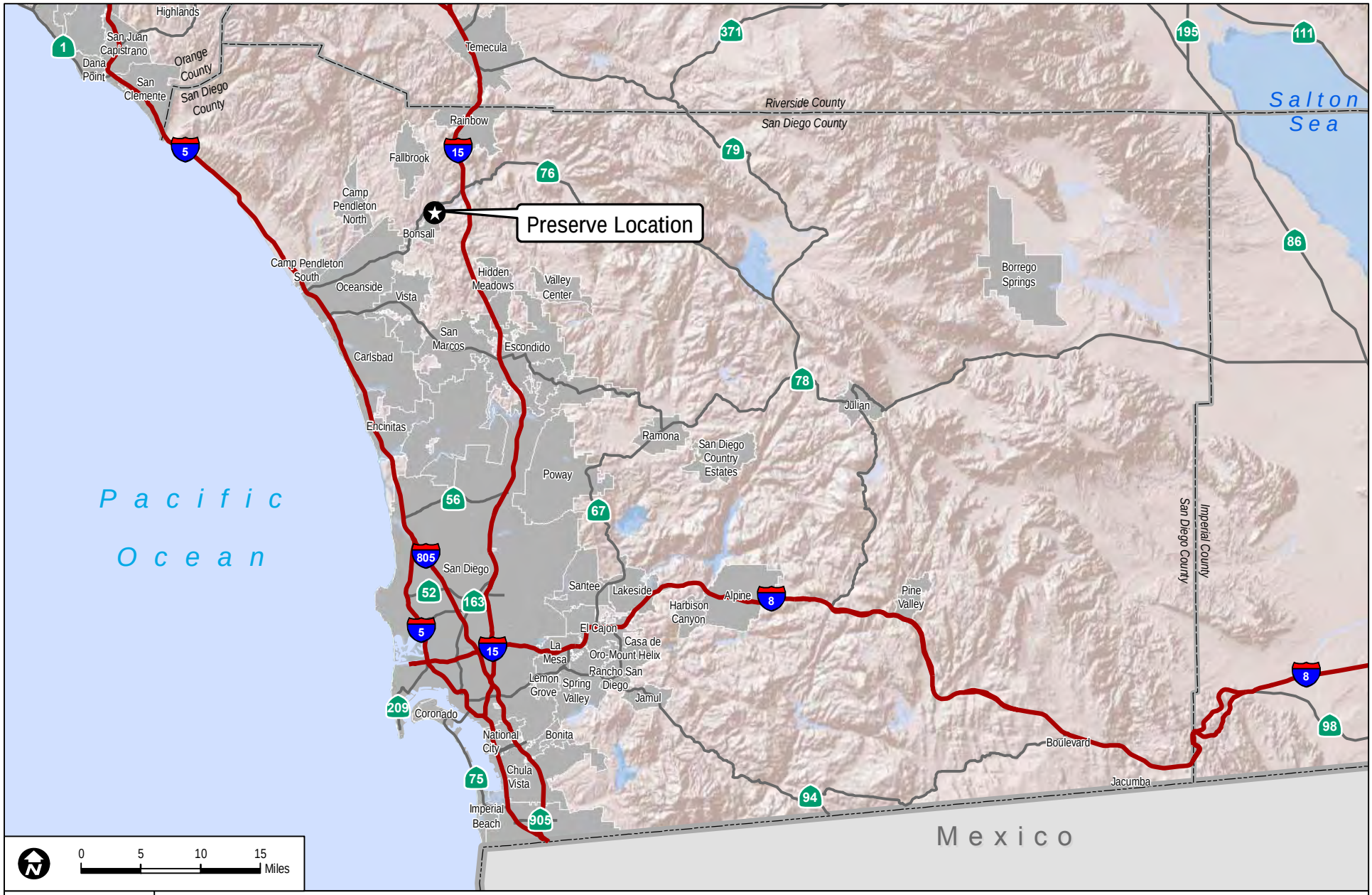
[1] The assessor's parcel data list the Park to be 499.43 acres; however, calculations generated from geographic information system (GIS) data show the Park as 460.11 acres excluding the Caltrans right-of-way.

The appendices to this report provide detailed information about the results of the inventory. Appendices A and B provide the list of observed or detected plant and wildlife species, respectively. Appendix C provides photographs of the avian point count survey locations. Appendices D and E provide an evaluation of the potential for occurrence of special-status plant and wildlife species, respectively. Appendix F provides photographs of the site and selected plant and wildlife species.

1.2 MSCP Context

The SLRRP is located within the boundaries of the County of San Diego MSCP, and is included in the Draft North County MSCP preserve system. The Park parcels are located in the Lower San Luis Rey River Linkage. The Park parcels are designated as Pre-Approved Mitigation Area (PAMA), except for a small area adjacent to State Route 76 (SR-76) in the central portion of the Park, which is designated as outside PAMA (Figure 3).

According to the MSCP Habitat Evaluation Model, the majority of habitat within the Park is very high in value with a few smaller areas of high value habitat and developed land. The Draft North County MSCP species-specific habitat evaluation models designate much of the habitat throughout the Preserve as being very high in value for arroyo toad. In addition, there is U.S. Fish and Wildlife Service (USFWS)-designated Critical Habitat for arroyo toad, least Bell's vireo, coastal California gnatcatcher, and southwestern willow flycatcher within the SLRRP.



DUDEK

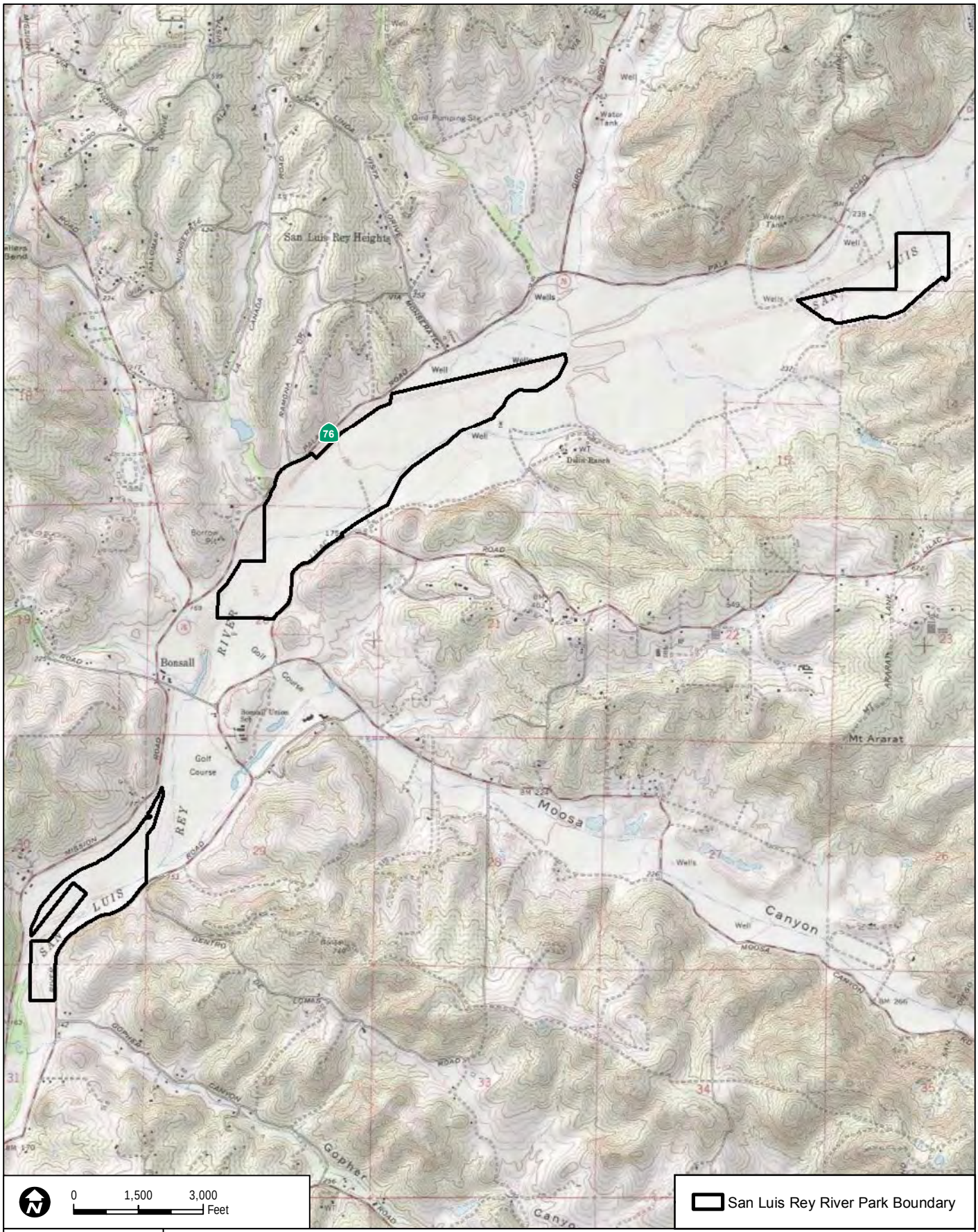
6680-03

FIGURE 1

Regional Map

San Luis Rey River Park - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

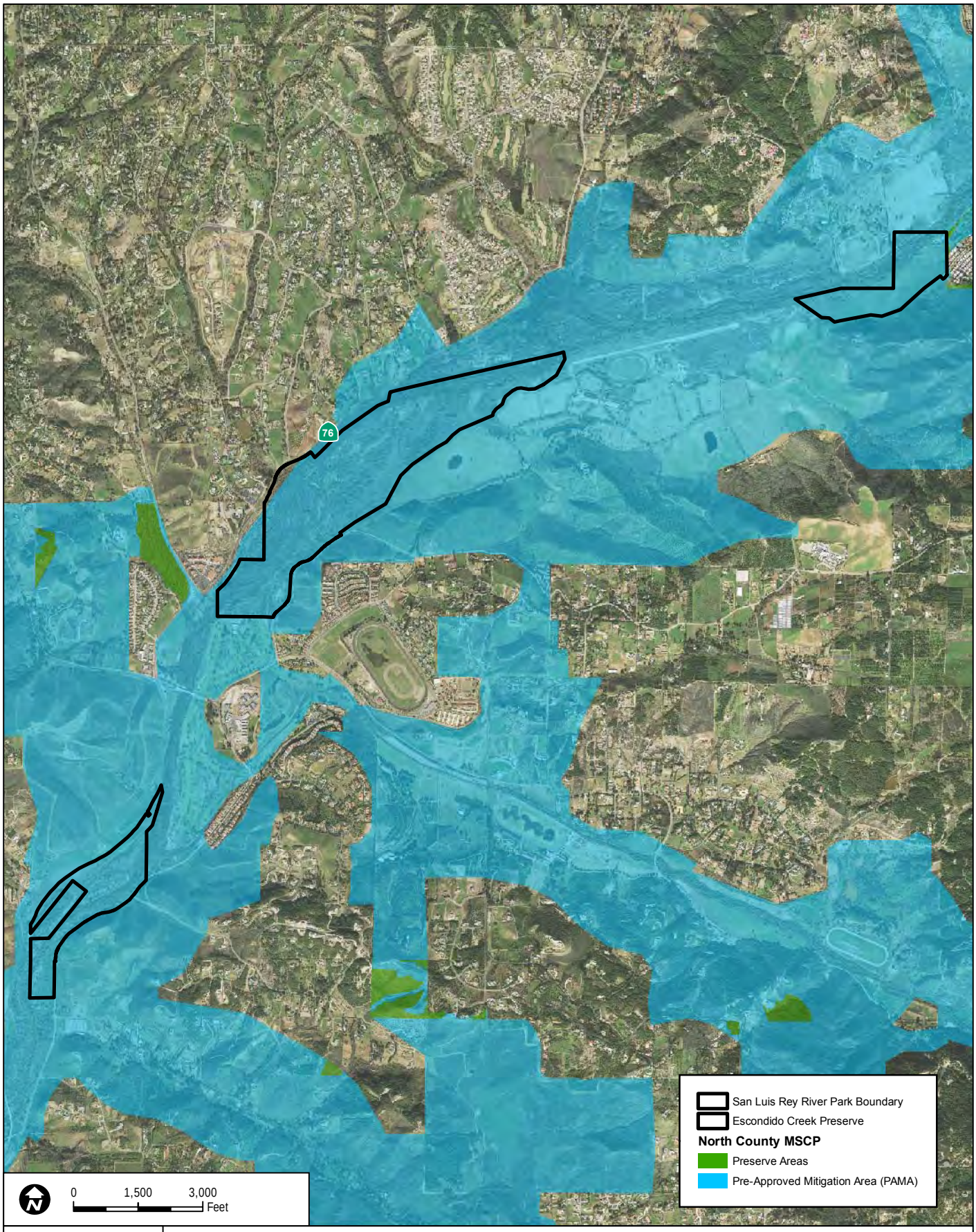
6680-03

SOURCE: USGS 7.5-Minute Series Quadrangle.

FIGURE 2
Vicinity Map

San Luis Rey River Park - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

SOURCE: Digital Globe 2008
MSCP 2008

FIGURE 3

North County MSCP Designations and Conserved Lands

San Luis Rey River Park - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK

2.0 STUDY AREA DESCRIPTION

2.1 Project Location

The SLRRP is generally located along an 8.5-mile stretch of the San Luis Rey River from just east of Interstate 15 to the eastern boundary of the City of Oceanside in northern San Diego County (Figure 1, Regional Map). The SLRRP is mapped on the U.S. Geological Survey (USGS) 7.5-minute Bonsall quadrangle: Township 10 South, Range 3 West, Sections 14, 20, and 29–31; and the Monserate Land Grant (Figure 2, Vicinity Map).

The Park is composed of three separate non-contiguous parcels, and encompasses all of Assessor Parcel Numbers (APNs) 123-381-07, 124-150-30, 124-150-31, 124-150-33, 125-080-20, 125-080-22, 125-131-55, 126-060-80, and 126-060-81, and the portions of APNs 126-080-69, 126-100-18, 126-100-21, and 126-320-14 that are located outside of the Caltrans right-of-way along SR-76.

2.2 Geographical Setting

The study area is located in the coastal foothills of the Peninsular Ranges of Southern California. The study area is composed of relatively flat terrain (the majority of the study area has a slope gradient less than 10º) ranging in elevation from approximately 120 feet (37 meters) above mean sea level (AMSL) to 240 feet (73 meters) AMSL.

The topography of the project site is determined primarily by the San Luis Rey River, which creates relatively flat terrain. The study area is a characterized by slopes of varying aspects, with primarily northwest, southeast, southwest, and west-facing gentle slopes where not flat.

2.3 Geology and Soils

The study area contains 12 soil types belonging to 11 soil series including: Cieneba coarse sandy loam and very rocky coarse sandy loam, Fallbrook sandy loam, Grangeville fine sandy loam, Las Posas stony fine sandy loam, Placentia sandy loam, Ramona sandy loam, Riverwash, Tujunga sand, Visalia sandy loam, Vista coarse sandy loam, and Wyman loam (Figures 4a–d, Soils Map) (Bowman 1973). A brief description of each soil series and the associated soil type that occurs in the study area is provided as follows.

Cieneba Series

The Cieneba series consists of excessively drained, very shallow to shallow, coarse sandy loams that form in material weathered in place from granitic rock. The topsoil layer is a brown, coarse sandy loam about 10 inches deep over weathered granodiorite. Cieneba soils exhibit rapid to

very rapid runoff with a high to very high erosion hazard (Bowman 1973). Cieneba coarse sandy loam (30% to 65% slopes, eroded) occurs in a small area along the southern boundary of the west parcel underlying developed land. Cieneba very rocky coarse sandy loam (30% to 75% slopes) occurs within a very small area along the southern boundary of the east parcel. This soil type supports disturbed southern cottonwood–willow riparian forest and disturbed habitat.

Fallbrook Series

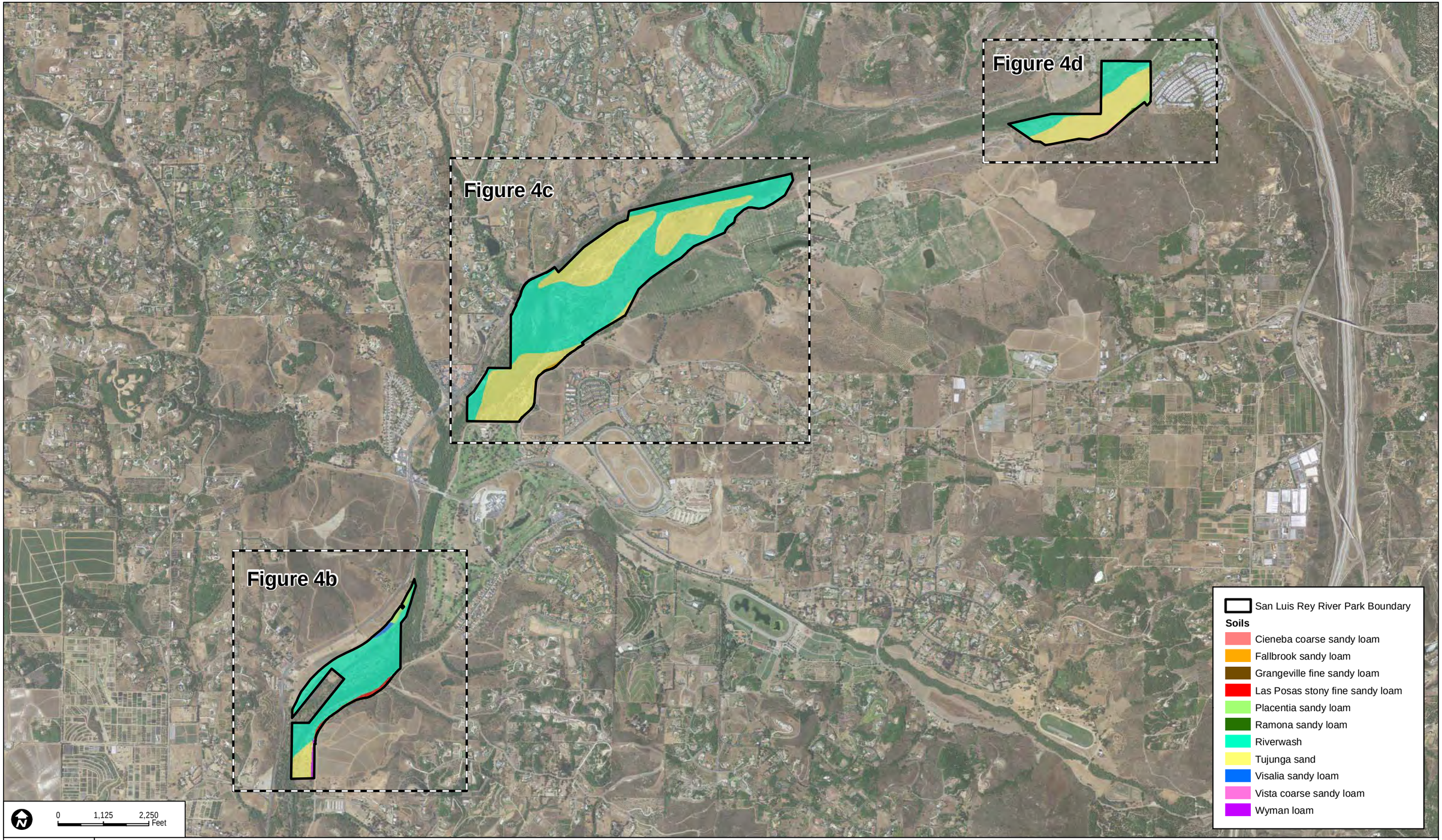
Fallbrook series soils are well-drained, moderately deep to deep sandy loams formed from material weathered in place from granodiorite. The topsoil layer is brown, slightly acid sandy loam about 6 inches deep over sandy clay loam and loam subsoil. Fallbrook sandy loam (15% to 30% slopes, eroded) is mapped on site. It exhibits medium to rapid runoff with a moderate to high erosion hazard (Bowman 1973). This soil occurs in a small area along the southern boundary of the central parcel. This soil type supports southern cottonwood–willow riparian forest and disturbed habitat within the parcel.

Grangeville Series

The Grangeville series consists of somewhat poorly drained, very deep, fine sandy loams derived from granitic alluvium. The topsoil layer is a grayish-brown, moderately alkaline, calcareous fine sandy loam 11 inches deep (Bowman 1973). Grangeville soils exhibit very slow runoff with a slight erosion hazard (Bowman 1973). Grangeville fine sandy loam (0% to 2% slopes) occurs in a small area along the southern boundary of the west parcel underlying orchard and southern cottonwood–willow riparian forest.

Las Posas Series

Las Posas series soils are well-drained, moderately deep, stony fine sandy loams formed in material weathered from basic igneous rocks. The topsoil layer is reddish-brown, stony fine sandy loam about 4 inches deep over clay loam and clay subsoil with a gabbro substratum (Bowman 1973). The soil profiles of Las Posas stony fine sandy loam include clays that are generally associated with special-status plant taxa including mafic chaparral endemic species such as Parry's tetracoccus (*Tetracoccus parryi*). Small inclusions of Las Posas soils may occur within the Cieneba and Fallbrook soil units on site. Las Posas stony fine sandy loam (30% to 65% slopes) occurs along the southern boundary of the west parcel. This soil type exhibits rapid to very rapid runoff with a high to very high erosion hazard. This soil type supports southern cottonwood–willow riparian forest, developed land, and orchard within the parcel.



DUDEK

6680-03

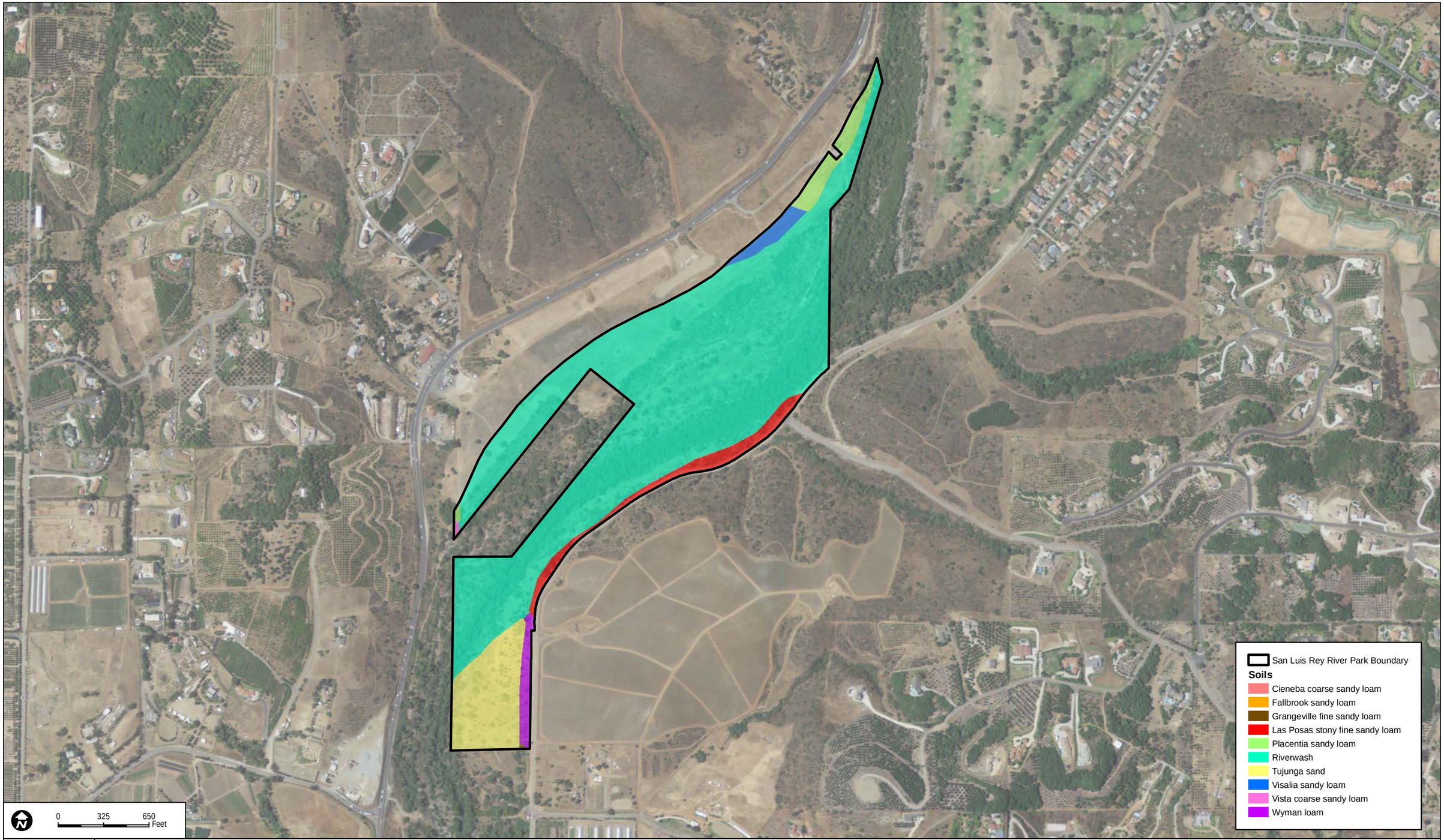
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 4a

Soils - Index Map

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

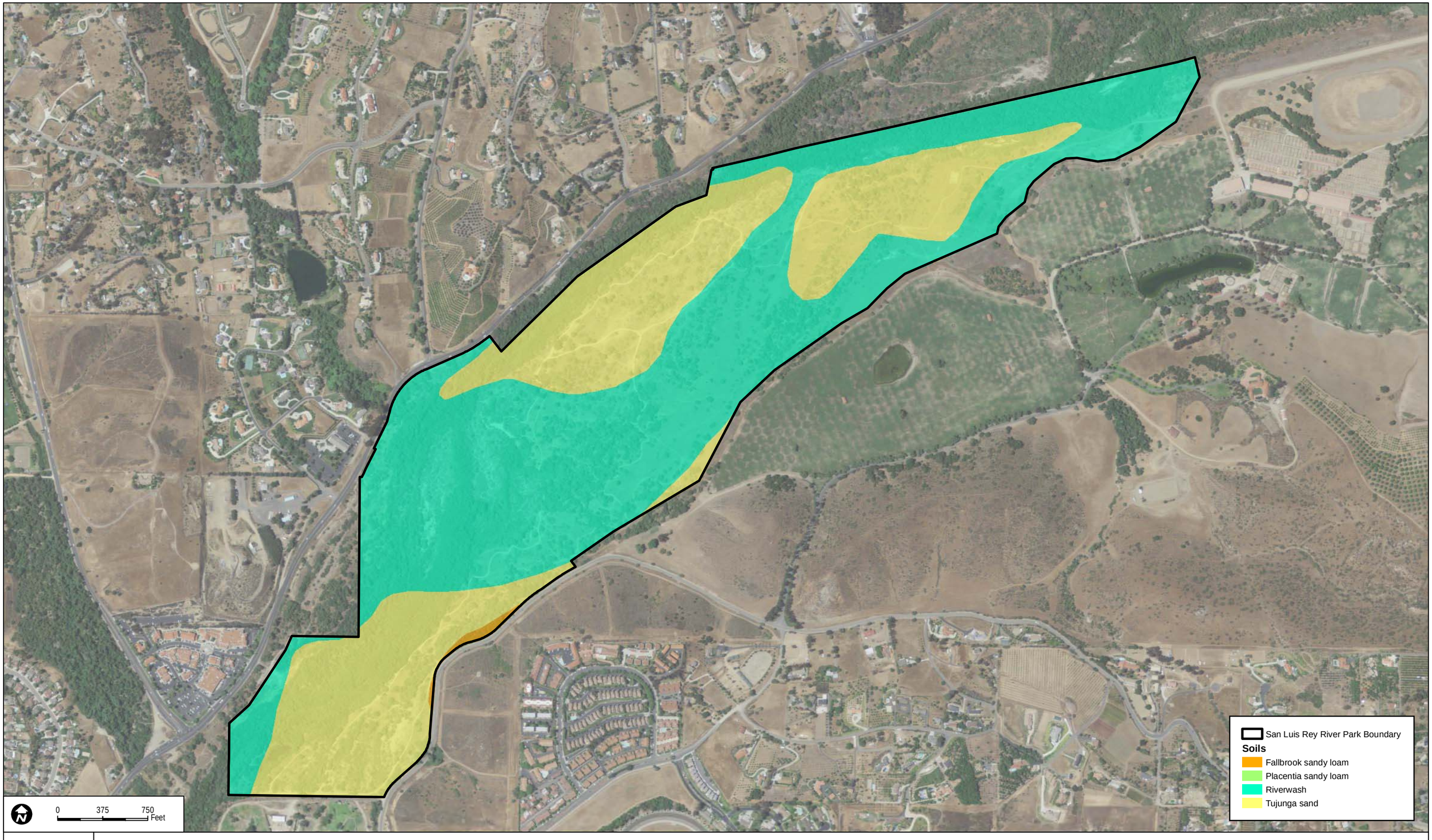
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 4b

Soils Map

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

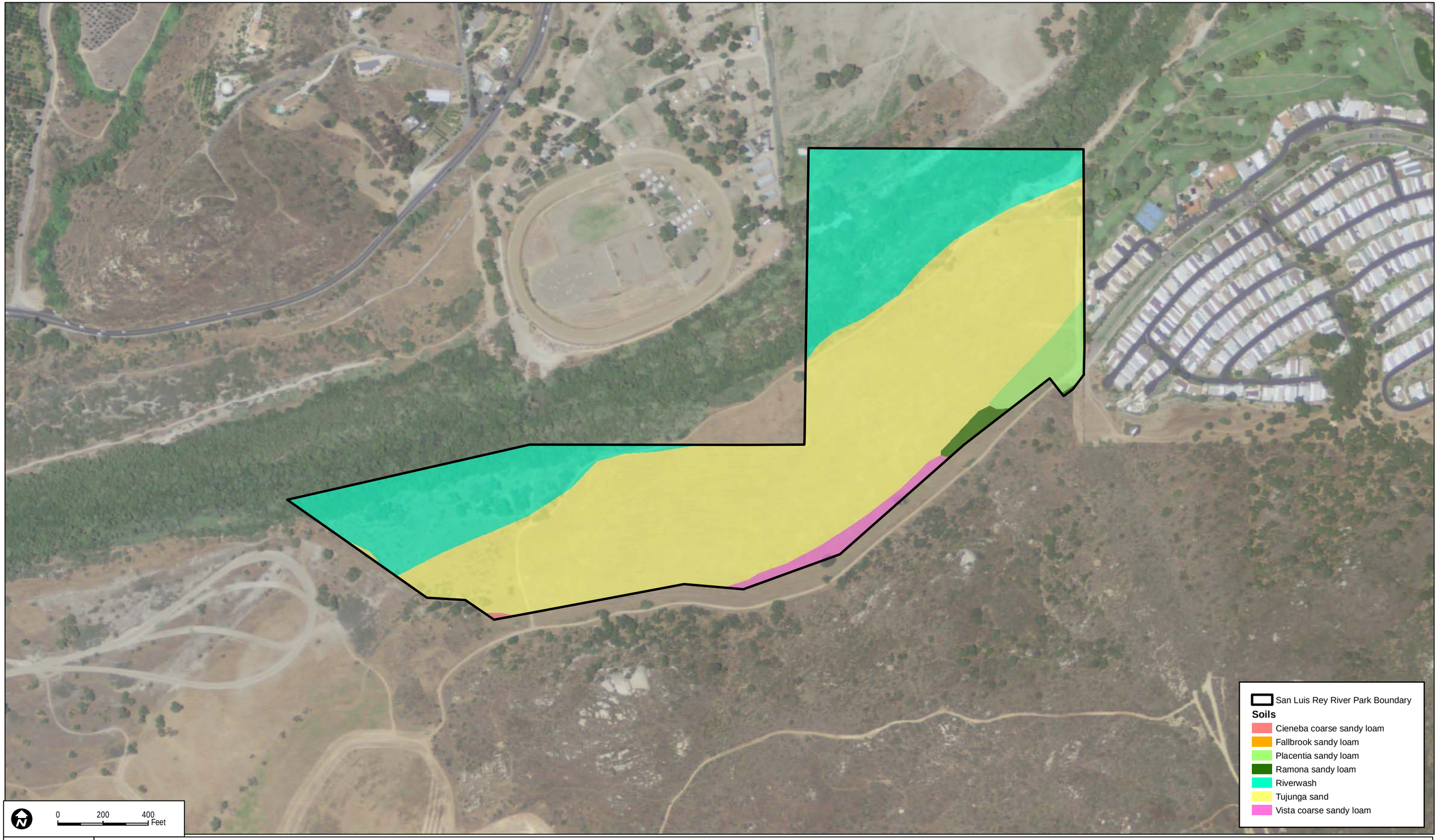
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 4c

Soils Map

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

SOURCE: CDFG NAIP Imagery (2009)

FIGURE 4d

Soils Map

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK

Placentia Series

Placentia series soils are moderately well-drained sandy loams formed in granitic alluvium. The surface layer is brown sandy loam about 13 inches deep with a sandy clay and sandy clay loam subsoil. Placentia sandy loam (2% to 9% slopes) occurs along the northern boundary of the west parcel. This soil exhibits slow to medium runoff with a slight to moderate erosion hazard (Bowman 1973). Placentia sandy loam (9% to 15% slopes, eroded) occurs along the southern boundary of the central parcel, and in the southeast corner of the east parcel. This soil type exhibits medium runoff with a moderate erosion hazard. This soil type supports southern cottonwood–willow riparian forest, Diegan coastal sage scrub, and disturbed habitat on site.

Ramona Series

The Ramona series consists of well-drained, very deep sandy loams with a sandy clay loam subsoil. The topsoil layer is a yellow-brown or brown, slightly to medium acid sandy loam about 17 inches deep over a subsoil of slightly acid and neutral sandy clay loam approximately 43 inches thick. Below this is a layer of yellowish-brown neutral light coarse sandy clay loam. Ramona soils can be gravelly throughout the profile (Bowman 1973). Ramona sandy loam (5% to 9% slopes) occurs in a small area along the southern boundary of the east parcel. This soil type exhibits slow to medium runoff with a slight to moderate erosion hazard, and supports Diegan coastal sage scrub and disturbed habitat.

Riverwash

Riverwash is a term used to refer to unconsolidated sands, gravels, and cobbles that occur in intermittent stream courses. It is excessively drained and rapidly permeable. This soil is often barren due to scour from storm events (Bowman 1973). Riverwash occupies much of the study area and occurs on all three parcels. Although associated with intermittent stream courses this soil type may also occur in adjacent vegetated areas. This soil type supports agriculture, disturbed habitat, Diegan coastal sage scrub, southern cottonwood–willow riparian forest, non-native grassland, orchard, and tamarisk scrub within the study area. This is likely due to the dynamic nature of the historical San Luis Rey Riverbed. Riverwash once occurred within the river itself, but over time the river changed course and the soils became isolated and eventually vegetated.

Tujunga Series

The Tujunga series consists of excessively drained, very deep sands derived from granitic alluvium. The topsoil layer is a brown, neutral sand about 14 inches deep over neutral sand and coarse sand over 60 inches deep (Bowman 1973). Tujunga sand (0% to 5% slopes) occupies much of the study area and occurs on all three parcels. It exhibits very slow to slow runoff with a

slight erosion hazard and supports a number of vegetation types within the Park including agriculture, disturbed habitat, Diegan coastal sage scrub, southern cottonwood-willow riparian forest, non-native grassland, orchard, and tamarisk scrub within the study area.

Visalia Series

Visalia sandy loam soils are very deep soils on alluvial fans and flood plains that are derived from granitic alluvium. The dark grayish-brown topsoil layer is about 12 inches deep, over grayish-brown subsoil that extends to 60 inches deep; soil texture changes from sandy loam to loam at about a 40-inch depth. This soil is moderately well drained, moderately permeable, and has very slow runoff with a slight erosion hazard (Bowman 1973). Visalia sandy loam (2% to 5% slopes) soils are mapped in a small area along the northern boundary of the west parcel and support southern cottonwood-willow riparian scrub and disturbed habitat.

Vista Series

Vista series soils are well-drained, moderately deep and deep, coarse sandy loams formed from granodiorite or quartz diorite. The surface layer is dark grayish-brown and dark brown with a sandy loam subsoil formed over weathered granitic rock. Vista coarse sandy loam (15% to 30% slopes, eroded) occurs along the southern boundary of the east parcel. It exhibits medium to rapid runoff with a moderate to high erosion hazard, and supports disturbed habitat.

Wyman Series

The Wyman series consists of well-drained, very deep loams that formed in alluvium derived from basic igneous rock. The topsoil layer is a brown to reddish-brown, slightly acid and neutral loam about 13 inches deep over neutral clay loam subsoil, and then heavy loam and fine sandy loam substratum farther down (Bowman 1973). Wyman loam (9% to 15% slopes) occurs in the southeastern portion of the west parcel. This soil type exhibits medium runoff with a moderate erosion hazard, and supports southern cottonwood-willow riparian forest and orchard within the study area.

2.4 Climate

As with most of Southern California, the regional climate in the vicinity of the Park is influenced by the Pacific Ocean and is frequently under the influence of a seasonal, migratory, subtropical high-pressure cell known as the Pacific High. Wet winters and dry summers with mild seasonal changes generally characterize the Southern California climate. This climate pattern is occasionally interrupted by extreme periods of hot weather, winter storms, or dry, easterly Santa Ana winds.

However, there is some local variance in the typical Southern California climate. The inland location of the Park affects the degree of influence of the Pacific Ocean, resulting in less-regulated temperatures. The average high temperature calculated from August 1957 to December 2005 for the surrounding Vista area is approximately 74.0º Fahrenheit (F), with higher temperatures in summer and early fall (July through September) reaching up to 83.1°F (Western Regional Climate Center 2009). The mean precipitation for the area is 13.22 inches per year, with the most rainfall concentrated in the months of January (2.80 inches), February (2.55 inches), and March (2.43 inches) (Western Regional Climate Center 2009). In Escondido, the 2009/2010 wet season (July through June) cataloged 14.73 inches of rain while the 2010/2011 wet season cataloged 22.24 inches of rain (City of San Diego Public Utilities Department 2011).

2.5 Hydrology

The entire study area is within the San Luis Rey Watershed (Figure 5, Hydrology Map). The area generally drains to the southwest via the San Luis Rey River. The San Luis Rey River flows approximately 12 miles from the study area to the Pacific Ocean in Oceanside, California.

Designated beneficial uses for the San Luis Rey River in this area include agricultural supply, industrial service supply, contact and non-contact water recreation, preservation of biological habitats of special significance, warm freshwater habitat, wildlife habitat and rare, threatened or endangered species. According to the 2008 Clean Water Act (CWA) Section 303(d) list, the lower San Luis Rey River is impaired by chlorine, enterococcus, fecal coliform, phosphorus, total dissolved solids (TDS), nitrogen, and toxicity.

2.6 Fire History

Based on historical fire perimeter data (FRAP 2009)[2], two fires have affected the study area (Figure 6). The interval between these wildfires was 50 years. Table 1 presents the fire interval data for the study area.

[2] Based on polygon geographic information system (GIS) data from the California Department of Forestry and Fire Protection's (CAL FIRE's) Fire and Resource Assessment Program (FRAP), which includes data from CAL FIRE, U.S. Department of Agriculture (USDA) Forest Service Region 5, Bureau of Land Management (BLM), U.S. National Park Service (NPS), contract counties, and other agencies. The data set is a comprehensive fire perimeter GIS layer for public and private lands throughout the state and covers fires 10 acres and greater back to 1878.

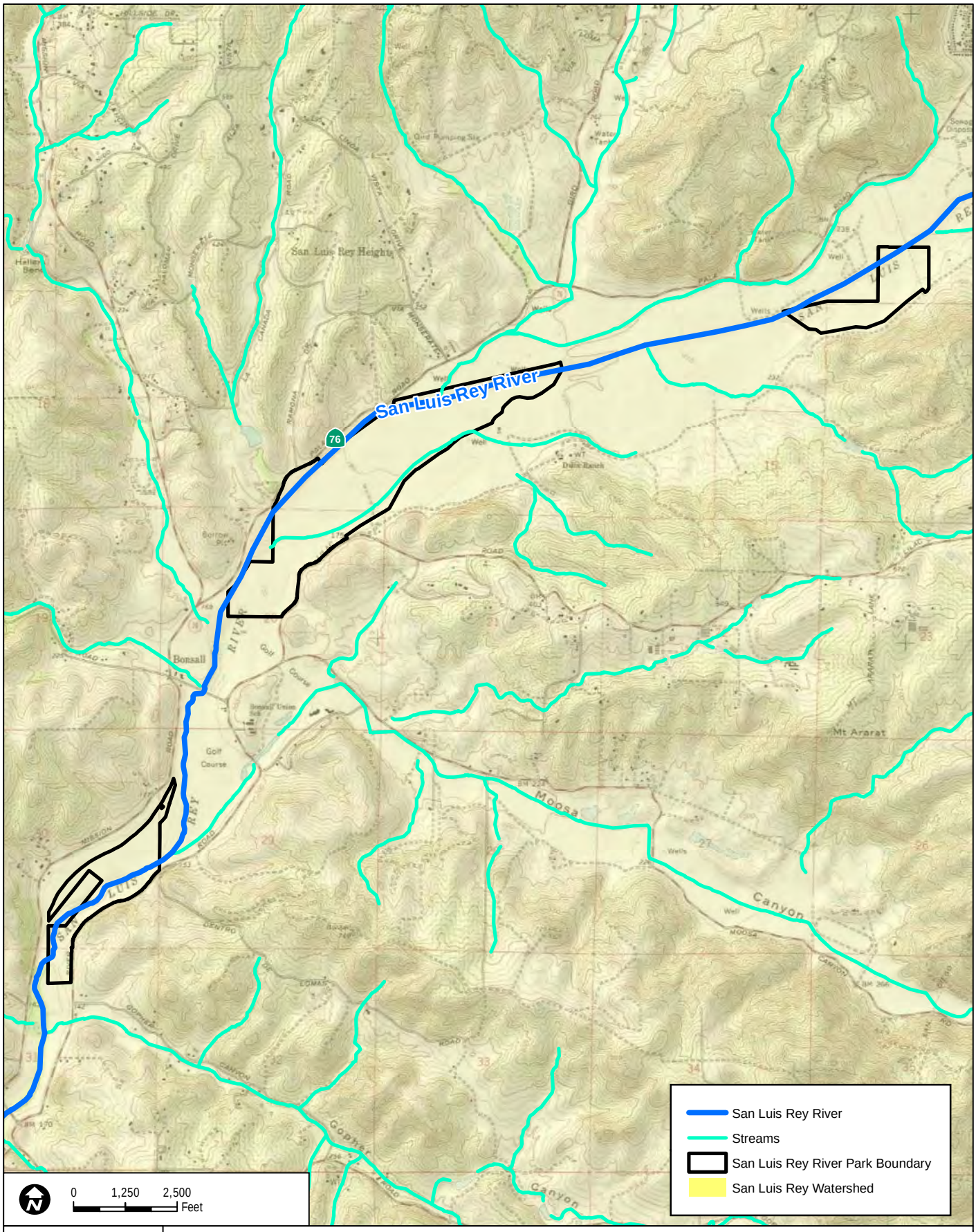
Table 1
Study Area Fire Interval

Fire Year*	Fire Name	Interval (years)	Acreage Burned	Percent of Study Area Burned**
1957	Clancy	n/a	5.2	1.0
2007	Vuelta	50	116.3	23.3

*FRAP 2009
**Based on the 498.69-acre total acreage of the study area

2.7 Trails

Currently, SLRRP is not open to the public and there is no designated, formal trail system within the Park. However, approximately 0.6 mile of unofficial trail occurs in the eastern portion of the west parcel and connects to Old River Road. The large central parcel includes over 4 miles of intertwining trails south of the San Luis Rey River. Another unofficial trail occurs south of the San Luis Rey River in the east parcel.



DUDEK

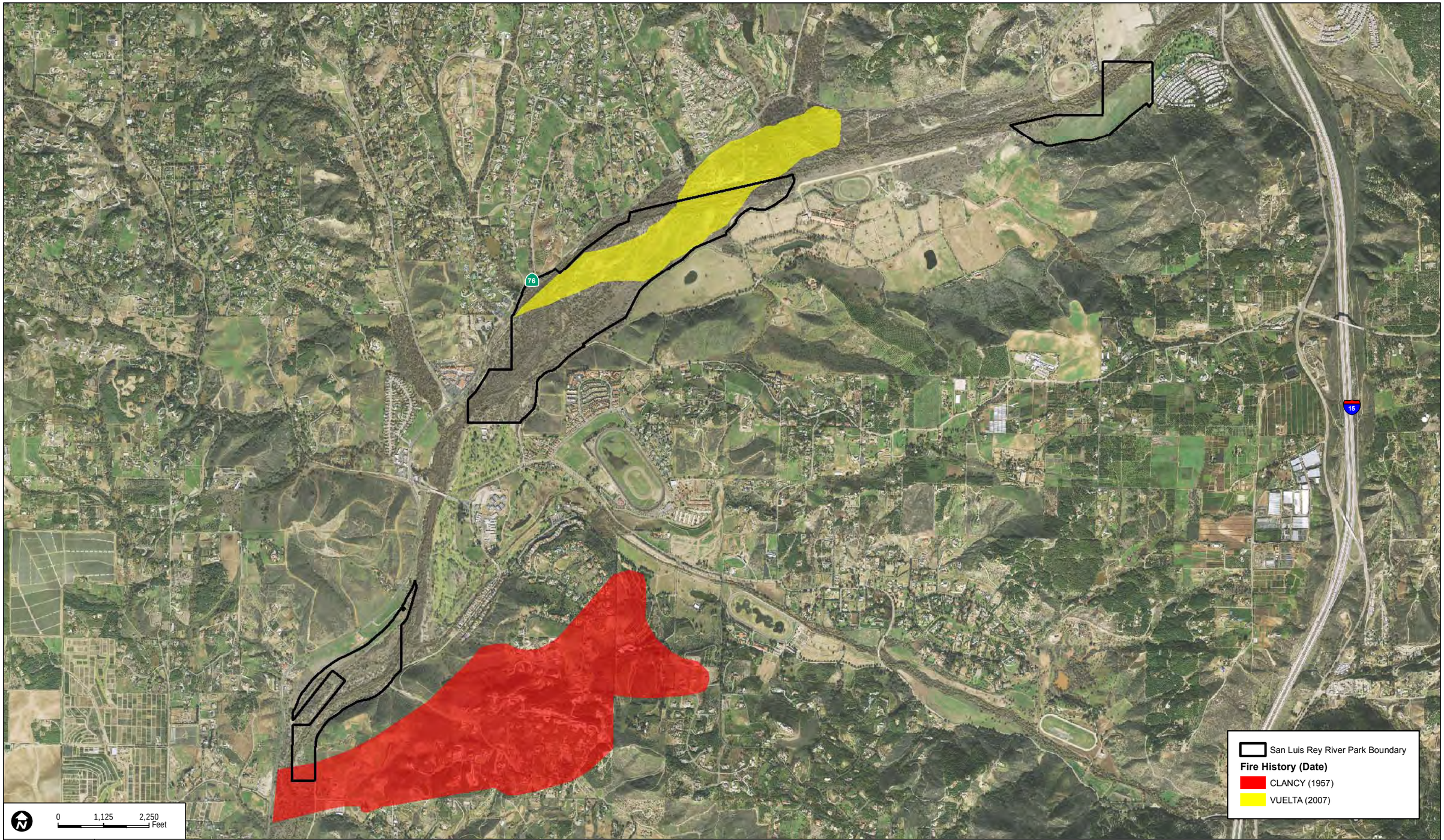
6680-01

SOURCE: USGS 7.5-Minute Series Quadrangle
SANGIS 2008
USGS NHD 2010

FIGURE 5
Hydrology Map

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

SOURCE: Digital Globe 2008
FRAP 2009

FIGURE 6
Fire History

San Luis Rey River Park - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK

3.0 METHODS

Dudek biologists conducted biological surveys beginning in September 2010 through May 2011. Table 2, Schedule of Surveys, shows the surveys conducted and the survey conditions. Surveys included vegetation community mapping; sensitive/rare plant surveys and mapping of invasive, non-native plants; butterfly surveys; herpetological pitfall array surveys; avian point count surveys; small mammal trapping; acoustical bat surveys; and medium and large mammal camera surveys.

Table 2
Schedule of Surveys

Date	Time	Personnel	Survey Type	Conditions
9/13/2010	NR	PCS	Vegetation mapping	NR
9/14/2010	NR	PCS	Vegetation mapping	NR
9/15/2010	NR	PCS	Vegetation mapping	NR
9/16/2010	NR	PCS	Vegetation mapping	NR
9/22/2010	NR	PCS	Vegetation mapping	NR
11/23/2010	0900–1700	ACT, CEO	Invasive plant species mapping	60 to 64 °F: Wind 0–2 mph; 50% clouds
1/7/11–1/21/11	NR	NR	SLR East camera stations	NR
1/7/11–1/21/11	NR	NR	SLR Middle camera stations	NR
1/7/11–1/21/11	NR	NR	SLR West camera stations	NR
1/11/2011	0725–1156	PML	Daytime avian bird count survey	10 to 50% cc; wind 0 to 1 mph; 46°F to 55°F
1/11/2011	1815–2208	PML	Nighttime avian bird count survey	20% cc; wind 0 to 1 mph; 51°F to 57°F
1/14/2011	0830–1000	PCS	Vegetation mapping	Clear; 55°F to 65°F; wind 0 to 3 mph
1/24/2011–1/30/2011	NA	PML	Passive bat surveys at San Luis Rey East (pass 1)	NR
2/3/2011–2/9/2011	NA	PML	Passive bat surveys at San Luis Rey Middle (pass 1)	NR
2/3/2011–2/9/2011	NA	PML	Passive bat surveys at San Luis Rey West (pass 1)	NR
2/10/11–2/17/11	NR	NR	San Luis Rey East camera stations	NR
2/25/11–3/18/11	NR	NR	San Luis Rey Middle camera stations	NR
2/25/11–3/28/11	NR	NR	San Luis Rey West camera stations	NR
3/9/11–3/15/2011	NA	PML	Passive bat surveys at San Luis Rey East (pass 2)	NR
3/9/11–3/15/2011	NA	PML	Passive bat surveys at San Luis Rey Middle (pass 2)	NR

Table 2
Schedule of Surveys

Date	Time	Personnel	Survey Type	Conditions
3/15/2011	1042–1515	EL	Pitfall trap herpetological surveys	Clear to partly cloudy; wind 0 to 5 mph; 69°F to 85°F
3/16/2011	1030–1347	EL	Pitfall trap herpetological surveys	Clear to partly cloudy; wind 0 to 5 mph; 64°F–81°F
3/17/2011	1049–1330	EL	Pitfall trap herpetological surveys	Clear to partly cloudy; wind 0 to 5 mph; 71°F to 75°F
3/18/2011	1314–1716	EL	Pitfall trap herpetological surveys	0% cc; wind 0 to 10 mph; 64°F to 82°F
3/18/2011–3/25/2011	NA	PML	Passive bat surveys at San Luis Rey West (pass 2)	NR
3/27/2011–3/29/2011	NR	PV	Small mammal trapping at MT4 (Pass 1)	Partly cloudy; 49°F to 54°F
3/30/11	0740–1148	TSL	Daytime avian bird count survey	0% cc; wind 0 to 2 mph; 54°F to 76°F
3/30/11	2034–2407	TSL	Nighttime avian bird count survey	0 to 10% cc; wind 0 mph; 55°F to 66°F
3/28/2011– 3/30/2011	NR	PV	Small mammal trapping at MT3 (Pass 1)	Partly cloudy to cloudy; 43°F to 52°F
3/30/2011–3/31/2011	NR	PV	Small mammal trapping at MT6 (Pass 1)	Cloudy; 43°F to 57°F
4/1/2011– 4/3/2011	NR	PV	Small mammal trapping at MT4 (Pass 2)	Cloudy; 50°F to 54°F
4/2/2011– 4/4/2011	NR	PV	Small mammal trapping at MT3 (Pass 2)	Cloudy to foggy; 50°F to 52°F
4/2/2011– 4/6/2011	NR	PV	Small mammal trapping at MT6 (Pass 2)	Partly cloudy to foggy; 52°F to 53°F
4/7/11–4/28/11	NR	NR	San Luis Rey East camera stations	NR
4/7/11–4/28/11	NR	NR	San Luis Rey Middle camera stations	NR
4/7/11–4/21/11	NR	NR	San Luis Rey West camera stations	NR
4/28/2011	1210–1830	BAO	Butterfly survey	30% to 60%cc; wind 0 to 5 mph; 69°F to 78°F
4/30/2011	1400–2230	BAO	Aquatic survey	0% to 40% cc; wind 3 to 5 mph; 78°F to 56°F; water -56°F
5/3/2011	1300–1640	PML	Pitfall trap herpetological surveys	0% cc; wind 3 to 10 mph; 82°F to 84°F
5/4/2011	1400–1730	PML	Pitfall trap herpetological surveys	0% cc; wind 0 to 4 mph; 78°F to 83°F
5/5/2011	1430–1800	PML	Pitfall trap herpetological surveys	0% cc; wind 0 to 5 mph; 71°F to 75°F

Table 2
Schedule of Surveys

Date	Time	Personnel	Survey Type	Conditions
5/6/2011	1315–1630	PML	Pitfall trap herpetological surveys	0% cc; wind 3 to 8 mph; 71°F to 73°F
5/10/2011	0845–1445	KCD, PCS	Rare plant survey – San Luis Rey West	0% to 5% cc; wind 0 to 3 mph; 66°F to 73°F
5/11/2011	0708–1053	PML	Daytime avian bird count survey	0% cc; wind 0 to 5 mph; 60°F to 70°F
5/11/2011	0708–1053	PML	Butterfly survey	0% cc; wind 0 to 5 mph; 60°F to 70°F
5/11/2011	2000–2321	PML	Nighttime avian bird count survey	0% cc; wind 0 to 2 mph; 54°F to 63°F
5/17/2011	0830–1120	PCS	Rare plant survey – San Luis Rey East	100% cc, drizzling to light rain, 60°F
5/18/2011	1942–2320	JDP, PML	Active bat surveys	10% to 85% cc; wind 2 to 4 mph; 45°F to 59°F
5/18/2011	0800–1630	ACT, KCD	Rare plant survey – San Luis Rey Middle	95% cc; wind 2 to 8 mph; 60°F to 65°F
5/18/2011	1400–1600	ACT	Invasive plant species mapping	65°F to 68 °F; Wind 2 to 8 miles per hour (mph); 100% clouds with light rain
5/20/2011	1300–1700	ACT	Invasive plant species mapping	70°F to 74 °F; Wind 2–4 mph; 30% clouds
5/20/2011	NR	ACT	Rare plant survey – San Luis Rey Middle	30%cc; wind 2 to 8 mph; 70°F to 75°F
5/24/2011	1330–1615	PML	Pitfall trap herpetological surveys	0% cc; wind 3 to 7 mph; 72°F to 74°F
5/25/2011	1155–1530	PML	Pitfall trap herpetological surveys	0% cc; wind 3 to 8 mph; 71°F to 73°F
5/25/2011	1620–1900 2030–2230	PML	Aquatic survey	10% to 15% cc; wind 2 to 7 mph; 63°F to 67°F; water -58°F wind 0 to 2 mph; 51°F to 60°F
5/26/2011	1250–1530	PML	Pitfall trap herpetological surveys	0% cc; wind 0 to 7 mph; 72°F to 75°F
5/27/2011	0800–1200	PCS	Rare plant survey – San Luis Rey East	25% to 50% cc, 65°F to 70°F, wind 0 to 5 mph
5/27/2011	1050–1150	PML	Pitfall trap herpetological surveys	0% cc; wind 0 to 5 mph; 76°F to 79°F

Personnel Key:

- ACT: Andy Thomson
- BAO: Brock Ortega
- CEO: Chris Oesch
- EL: Elishya Loveless
- KCD: Kathleen Dayton
- PCS: Patricia Schuyler
- PML: Paul Lemons
- PV: Philippe Vergne
- TSL: Thomas Liddicoat

cc = Cloud cover
NA = Not Applicable
NR = Not Recorded

A review of existing biological resource information for the study area, as well as available state and federal databases, was conducted to provide baseline information regarding sensitive biological resources potentially occurring on the study area and in the surrounding area. The following sources were reviewed for pertinent information prior to conducting the baseline biological diversity surveys: California Natural Diversity Database (CNDDB), information provided by the California Department of Fish and Game (CDFG) (2011a, 2011b, 2011c), and the California Native Plant Society's (CNPS's) *Inventory of Rare and Endangered Vascular Plants* (CNPS 2011).

3.1 Vegetation Communities/Habitat

3.1.1 Vegetation Communities Mapping

Vegetation communities and land cover types were mapped in the field directly onto 100-scale (1 inch = 100 feet) base maps of the project area using 1-foot resolution, color aerial imagery from 2009 (CDFG 2009). Vegetation surveys were conducted throughout the site, both on foot and using vehicles where access was available. Following the completion of fieldwork, vegetation polygons were transferred to acetate, scanned, and digitized using ArcGIS, and GIS coverage was created. Acreage calculations of vegetation communities and land cover types were determined using ArcGIS. Vegetation community classifications used in this report follow Holland (1986), as revised by Oberbauer et al. (2008).

3.2 Plants

Dominant plant species encountered during the field surveys were identified and recorded. Latin names follow the "Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California" (Jepson Flora Project 2010), and common names follow the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service Plants Database (USDA 2010). A list of plant species observed in the study area is provided in Appendix A.

3.2.1 Floristic Surveys

Sensitive/Rare Plant Surveys

Sensitive biological resources present or potentially present in the study area were identified through a literature search using the following sources: CNDDB (CDFG 2011a, 2011b) and the *Inventory of Rare and Endangered Vascular Plants* (CNPS 2011). Special-status plant species considered in this report are those (a) listed by federal and/or state agencies, proposed for listing as threatened or endangered, or are candidate species; (b) assigned a California Rare Plant Rank

(CRPR) (formerly known as the CNPS List); (c) listed on the County of San Diego rare species list (County of San Diego 2009a); or (d) proposed for coverage under the Draft North County MSCP (County of San Diego 2008).

Dudek conducted surveys to maximize detection of sensitive/rare plants in May 2011. Based on usual blooming patterns, a single pass was conducted in May 2011 to detect annual and other spring blooming species. Surveyors were prepared with a target list of species that have potential to occur on site.

Field survey methods conformed to County of San Diego Department of Planning and Land Use (DPLU) Biological Survey Guidelines (County of San Diego 2010); CNPS Botanical Survey Guidelines (CNPS 2001); Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (CDFG 2000); and Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 1996). All plant species encountered during the field surveys were identified to subspecies or variety, if applicable, to determine sensitivity status. Latin names follow the *Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California* (Jepson Flora Project 2010), and common names follow the USDA Natural Resources Conservation Service Plants Database (USDA 2010).

The potential for special-status plant species to occur on site was evaluated based on the elevation, soils, vegetation communities, and level of disturbance of the site, as well as species status and distribution in the vicinity of the study area, and the results of rare plant surveys. Appendix D summarizes the results of this analysis and includes all observed special-status plant species.

Non-native Invasive Species Mapping

Locations of non-native invasive plant species were mapped within the Park. The entire Park area was surveyed; however, to maximize productivity, locations that were identified as disturbed in the vegetation mapping, or areas that are expected to have experienced disturbance in the past due to their proximity to development or other disturbances, were prioritized. The focus was on mapping species with the greatest potential to invade native habitats, such as those listed on the California Invasive Plant Council's (Cal-IPC) California Invasive Plant Inventory (2010) with a rating of moderate or high (e.g., giant reed (*Arundo donax*), salt cedar (*Tamarix ramosissima*), pampas grass (*Cortaderia selloana*), etc.), or species that may not be rated as moderate or high, but are considered to have a localized potential for habitat invasion (e.g., Canary Island date palm (*Phoenix canariensis*), castor bean (*Ricinus communis*), Brazilian pepper tree (*Schinus terebinthifolius*), etc.). Some species may also be listed on the federal USDA list (e.g., yellow starthistle; USDA 2010). Ubiquitous species scattered across the site

that pose limited potential for invasion into established habitats and that would be impractical to control on an individual basis (e.g., brome grasses, tocalote (*Centaurea melitensis*), mustard (*Brassica*), wild oat (*Avena fatua*), etc.) were not mapped as individual occurrences; however, their presence was noted as components of non-native grasslands mapped on site.

Species locations were mapped with a combination of field Global Positioning System (GPS) and hand mapping on field maps. All collected data were combined into a GIS data layer with points and polygons representing species locations. The points and polygons for the non-native invasive species are represented on Figure 9 and were quantified for inclusion in the vegetation management plan prepared for the SLRRP (Dudek 2011).

3.3 Wildlife

All wildlife species detected during the field surveys by sight, vocalizations, burrows, tracks, scat, and other signs were recorded. Binoculars (10×40) were used to aid in the identification of observed wildlife. A cumulative list of wildlife species observed by Dudek during 2010/2011 surveys is presented in Appendix B. Latin and common names of animals follow Crother (2008) for reptiles and amphibians, American Ornithologists' Union (AOU) (2008) for birds, Wilson and Reeder (2005) for mammals, and North American Butterfly Association (NABA 2001) for butterflies.

The potential for special-status wildlife species to occur on site was evaluated based on the elevation, vegetation communities, and level of disturbance of each site, as well as their status and distribution in the vicinity and the results of wildlife surveys conducted on site. Appendix E summarizes the results of this analysis and includes all observed special-status wildlife species.

3.3.1 Invertebrates

Two general butterfly surveys, or passes, were performed in the study area in 2011 at the approximate peak of the early spring butterfly activity period to record anecdotal butterfly species observations active during the early months of the year. While it was not possible to hit the absolute peak, surveys were conducted in April and May 2011 (Table 2). These surveys were conducted simultaneously with other wildlife surveys and included anecdotal observations from other survey visits. The vegetation map, soils, and previous experience with various special-status butterfly species were used to determine areas that may be suitable for common and special-status butterfly species. Host or nectar plants for certain special-status butterflies (e.g., Quino checkerspot (*Euphydryas editha quino*) or Hermes copper ((*Hermelycaena [Lycaena] hermes*)), if observed, were mapped as either a point or polygon location, depending on the size of the population. Areas containing nectar or host plant resources, drainages, ridges, and hilltops,

were emphasized during butterfly surveys. It should be noted that surveys for butterfly were conducted during the afternoon period when it was assumed that more butterflies would be visible; however, the early 2011 season was intermittently quite cold, windy, and wet, and butterfly presence in general was reduced when compared to other years.

Representative photographs were taken of the butterflies observed if possible.

3.3.2 Herpetofauna

Three pitfall trap arrays were constructed on the SLRRP. An attempt was made to install the arrays at locations that provided the greatest amount of potential species diversity. For locations, see Figure 7, Biological Inventory Locations.

The arrays were constructed in accordance with the U.S. Geological Survey (USGS) document "Herpetological Monitoring Using a Pitfall Trapping Design in Southern California" (USGS 2008) and were modified to include snake traps at the end of each arm of the array. Specifically, the array consists of three 15-meter (49-foot) arms of drift fence. Each arm radiates from a central pitfall bucket at approximately 120° increments. Additional pitfall buckets were placed in the center and terminal end of the array arms. In addition, snake traps (i.e., wire mesh rectangular traps with one-way doors) were installed between the middle and terminal pitfall buckets on the right side of the arm. Drift fencing was keyed into the ground to prevent reptiles and snakes from crawling under it. In addition, an effort was made to minimize the number of creases that would provide reptile refuge between buckets. Typical 5-gallon buckets were used as pitfall traps. The edge of the buckets was flush with, or slightly below, the ground surface. Bucket lids were fitted with angled wood blocks on their top surface, providing an approximately 2-inch gap between the ground surface and the lid to encourage reptiles to crawl under while seeking cover. The lids fit the buckets securely and were protected from deterioration so that the buckets could be sealed off from captures when not in use. During the rainy season, small holes were drilled in the bottom of the pitfall traps, and the traps were fitted with fine wire mesh (screen) material to prevent escapes.

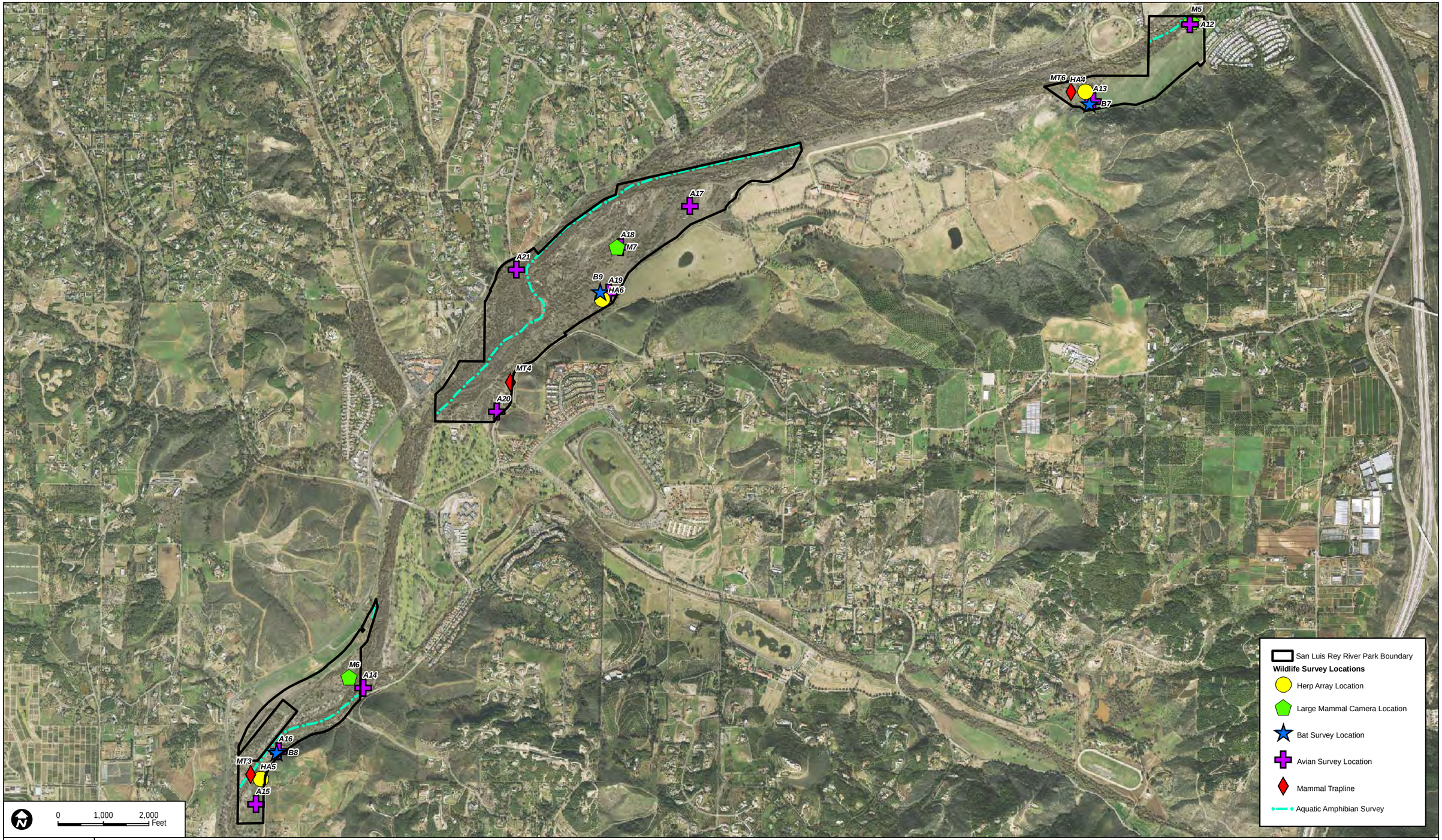
Traps were opened on the first day and checked over the next four days; traps were closed after the fourth trap check. The arrays were checked and all animals processed and released before daytime temperatures reached levels that could result in animal mortality. All captures were identified and sexed. Data were collected regarding the weight, snout-vent length, and age class of the individual. Finally, the individual was marked with permanent marker near the tail to determine if it was a recapture during that session. No scale or toe clipping, or any other means of permanent marking, was performed during this study. After the animal was processed, it was released at a nearby location near shrubs, burrows, or debris (care was taken to ensure that

competitors or potential predator/prey species were not released at the same location). Animals that ran from the release site directly into another pitfall trap or snake trap were released without being counted again. Captured small mammals were weighed, identified, photographed, sexed, and breeding status determined. They were immediately released after processing. The number of large invertebrates (e.g., tarantulas, scorpions, Jerusalem crickets, etc.) was counted and identified as feasible. Trap arrays were sampled during three periods: in March, early May, and late May 2011 (Table 2).

Arrays were set outside of the water flow line to minimize the potential for arroyo toad capture. Arroyo toad capture was not the focus of this effort, but there was a remote possibility that they might be captured given the location and habitats present. To minimize the danger to them, cover was provided in each bucket, and a moistened sponge was present. Additionally, traps were checked during the late morning to early afternoon period so that traps were cleared of amphibians before it got too warm, allowing for a significant lag time before they might be active and trappable again (i.e., evening).

An aquatic survey was conducted within the SLRRP, along all three parcels. The aquatic survey consisted of combining diurnal and nocturnal surveys along the entire reach of the San Luis Rey River within County ownership. Surveys were conducted in April and May 2011 with one survey conducted per month. Surveys consisted of walking the entire river segment while visually or aurally searching for amphibian egg clusters, larvae, juveniles, and adults. Areas that were not passable due to Arundo growth were not walked. No hand capture or dip netting was necessary to identify species. When conducting the aquatic survey, the biologist took care either to walk along the edge of the watercourse, or to walk slowly within it so as not to cause downstream siltation. During the nocturnal portion of the survey, biologists used headlamps to navigate, turning off the headlamps at intervals and waiting silently for a half-hour to listen for amphibian calls. Data was collected regarding the species, number of individuals detected, age class, and location of identification (special-status species only). Special-status species were also visually sexed. The amphibian aquatic survey location is shown on Figure 7, and the sampling schedule is included in Table 2.

Representative photographs were taken of the arrays and aquatic herpetological surveys, and animals that were captured.



DUDEK

6680-01

SOURCE: Digital Globe 2008

FIGURE 7

Biological Inventory Locations

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK

3.3.3 Birds

Using point counts to track species' presence over time is a standard practice and has been implemented over the long term by diverse entities, including the Audubon Christmas Bird Count, Point Reyes National Seashore, Partners in Flight, Arizona State University, Florida Monitoring Project, U.S. National Park Service, CDFG Parks and Recreation Department, USGS, USFWS, and others.

Much variation exists among the various point count studies relating to detection radius, distance between stations, season, and amount of time spent at each station. Because the habitats and topographies present within the study area are diverse, a radius of 50 meters (164 feet) was used around each point. This falls well within ranges found within the literature (20 to 400 meters; 66 to 1,312 feet) and allowed greater confidence of detection than larger radius designs.

Locations

Locations were established such that they covered as many different portions of the study area as possible given the road network constraints and parcel distribution. In addition, these point locations were distributed to cover more of the parcels. No point count station was situated closer than 700 feet from another point. A total of 10 point count stations were established within the study area (Figure 7). All sites were situated in southern cottonwood–willow riparian (including disturbed forms), disturbed habitat, orchard, or non-native grassland. The distribution of points was based on accessibility in the study area. The center point for each station was permanently established in the field by mapping the GPS coordinates and installing a 2-foot section of steel rebar in the soil so that the top 2 inches were visible, flagged, and painted. Each station, along with the viewshed from each station, was photographed in the four cardinal compass directions (Appendix C).

Conducting the Point Count

A vehicle being driven to the point count station traveled no faster than 5 miles per hour within 500 feet of any station. Upon entering the point count station, the observer stopped the vehicle and turned off the engine. The observer waited for 3 minutes before beginning the sampling period. During the waiting period, the observer filled out the weather conditions portion of the data sheet. After the 3-minute waiting period, the observer noted the time on the data sheet and started the counting session. After 10 minutes, the observer stopped the counting session, packed up equipment, and continued to the next station. Stations were counted in the same order each time, starting at approximately the same time relative to sunrise so that future data sets could be compared at the same study area.

When starting the survey, the observer identified and tallied all birds that were observed (audibly or visually) within the 50-meter (164-foot) study area. An attempt was made to count birds only once (i.e., minimize counting the same individual more than once) during the time period. Groups of birds (e.g., quail, family groups) were identified and the number of individuals noted. Birds detected outside the 50-meter area were noted in a separate column. Birds noted only in flight were additionally recorded as either using the landscape (e.g., actively foraging swallows and raptors, and raptors using thermal updrafts) or not (e.g., birds commuting between distant habitat patches off site, such as cormorants over an upland site, or birds migrating high overhead). When multiple sightings of a species occurred within a point count area, multiple entries for a species were only included if the observer was reasonably certain that they were different individuals. Only different individuals of a given species were counted. All recorded species in the data sheets are assumed to be separate individuals (e.g., 10 California towhee (*Melozone crissalis*) means that 10 different California towhee were detected). Estimates for large flocks of birds (e.g., blackbirds, European starlings (*Sturnus vulgaris*), etc.) were provided and noted as being estimates in the Notes section of the data sheet. No differentiation between adult and juvenile birds was made during this study. Unidentified birds were noted to the closest taxonomic group, and notes describing the species were included within the Notes section of the data sheet.

The observer was as unobtrusive as possible during the point count session. The observer wore drab clothing, did not talk, turned cell phones to "vibrate," and did not try to elicit bird responses by "pishing," using recorded calls, or any other means.

Nocturnal surveys proceeded in the same manner as the diurnal surveys. A moderately powered flashlight was used to aid identifications.

Once the point count session was finished, all data sheets were gathered, and data were input into Excel or Access data files for future analysis.

All point count stations were surveyed during the same 24-hour period. Diurnal surveys occurred between 0500 and 1200 hours, and nocturnal surveys took place between 2030 and 1230 hours only. Surveys took place in January, March, and May 2011 (Table 2). Only one day was required per month to cover these areas. Survey timing allowed the detection of both breeding and migratory bird species.

To augment the point count studies, birds identified during the course of other survey work were also included in the species compendium (Appendix B), although their relative abundance was not noted.

3.3.4 Mammals

Small Mammals

Three small mammal trapping arrays were set on the study area. One trap array was located on each of the three parcels (Figure 7). Trapping took place over two rounds, with the first round occurring in March 2011 and the second occurring in April 2011 (Table 2).

Trapping involved setting traps for three consecutive nights. The trapping effort was conducted when the weather had been relatively dry for at least 5 days prior to trapping. Each trap set included meandering parallel lines of Sherman live-traps set at 10- to 20-meter (32- to 65-foot) intervals. Traps were sign-set (i.e., set at burrow entrances, runs, woodrat nests, rock outcrops, etc.) to the extent feasible in order to capture the greatest diversity possible. Lines were set approximately 7 meters (23 feet) apart. Each trap line consisted of 20 traps, for a total of 40 traps set per night, covering approximately 200 meters (656 feet) of distance. Meandering trap lines were set to sample the widest area for species and to obtain greater species diversity information. Traps were set in locations providing the greatest chance for diversified data collection (e.g., interface between community types, areas of microhabitat changes, etc.). The location of each trap was indicated using GPS and marked in the field using whisker nails. All trapped individuals were temporarily marked with a permanent marker, sexed, identified to species, and released at the capture location.

Representative photographs were taken of the trap grid.

In addition, small mammal species identified through other surveys (e.g., pitfall arrays, nocturnal surveys) were included in the species compendium (Appendix B).

Medium to Large Mammals

The San Luis Rey River flows through the entire length of the Park and functions as a wildlife corridor or high-use area. Therefore, three baited motion-sensing cameras were installed with one located on each parcel (Figure 7). Each was set where it was accessible and protected from the public, but placed near potential higher-use movement areas (e.g., dirt roads leading to important resources, such as canyons or creeks). Each camera was baited with chicken in a wire-mesh cage and a scent lure, such as Gusto. Each camera was set so that the bait station and travel path were covered. Cameras were set in place for 2 weeks a month, and photographs were downloaded, the bait refreshed, and batteries checked at approximately 1-week intervals. Camera stations were installed in January 2011 and were also used February through April 2011 (Table 2).

Following the camera study, all photographs were reviewed by at least two biologists to determine species and number present. All data, including time and date of photograph, species captured, and moon phase, were cataloged on an excel spreadsheet. Example photographs of each species captured are included in Appendix F.

Bats

Both Anabat and Sonobat technologies were used to identify foraging and roosting bats present within the study area. Prior to conducting bat habitat assessment and acoustical surveys, a review of the literature of bats in California was conducted to identify species with potential to occur in the survey area. All areas identified as having high potential for bat roosting and foraging and allowing vehicular access were surveyed using both the Pettersson/Sonobat and Anabat systems.

Passive acoustic recording of bat calls was conducted at three monitoring locations with one located on each parcel (Figure 7). Two Anabat ultrasonic detectors (SD1 and SD2; Titley Electronics, Ballina, Australia) were utilized in these passive surveys. The Anabat units were deployed and ran continuously for approximately 2 weeks at each location between January and March 2011. Dudek biologist Brock Ortega in consultation with the County selected the locations. Dudek biologists Paul Lemons and Jeff Priest conducted a site reconnaissance survey to further refine the monitoring locations where it was presumed that bat activity would be highest, based on localized topography and presence of drainages. Following the reconnaissance survey, the Anabat units were deployed on a post set in concrete or hung from a tree at each location.

The survey stations were distributed across the study area and sampled different habitats as feasible. Survey stations were set at least 2,000 feet apart. The vehicle-accessible survey stations were surveyed three times using ultrasonic detectors to record bat vocalizations. One pass was conducted in May 2011 using an active method of surveying with an Anabat ultrasonic detector and a Pettersson ultrasonic detector. Surveys were conducted between approximately sunset and 1:00 a.m. One hour was spent at each location, and all three locations were surveyed each night (Table 2). When conducting the surveys, biologists noted the species detected (if able), the recording identifier, location, and any other important information. After returning from the field, the data were saved to a hard drive and backed up on CD. In addition, two surveys were conducted in January/February 2011 and March 2011 using the Anabat equipment, but passively recording data. The unit was left in place for a period of 1 week to record bat calls (Table 3).

Table 3
Schedule of Passive Acoustic Monitoring

Location	Dates of Deployment	Total No. Detector Nights
B7 – SLR East	1/24/11–1/30/11; 3/9/11 – 3/15/11	14
B9 – SLR Middle	2/3/11 – 2/9/11; 3/9/11 – 3/15/11	14
B8 – SLR West	2/3/11 – 2/9/11; 3/18/11 – 3/25/11	15

After completion of these surveys, identification of species used the methods of O'Farrell et al. (1999) based on frequency characteristics, call shape, and comparison with a comprehensive library of vocal signatures developed by O'Farrell and colleagues. Thus, species richness (number of species verified as present) was obtained for each location. An index of abundance (IA), or the magnitude of each species contribution to spatial use, was obtained using the sum of 1-minute time increments for which a species was detected as present, divided by the number of nights of sampling (Miller 2001).

Representative photographs were taken of the bat survey locations (Appendix F).

INTENTIONALLY LEFT BLANK

4.0 RESULTS AND DISCUSSION

4.1 Vegetation Communities/Habitat

Eight vegetation communities and land cover types (including disturbed forms) were mapped on the study area, including agriculture, developed land, disturbed habitat, orchard, non-native grassland, Diegan coastal sage scrub, southern cottonwood–willow riparian forest, and tamarisk scrub (see Table 4, Vegetation Communities and Land Covers).

Sensitive vegetation communities on site include those listed as Tier I through Tier III in the County's MSCP. Figures 8a–d, Vegetation Communities/Habitats, show the distribution of vegetation communities and land covers within the study area.

Table 4
Vegetation Communities and Land Covers

Vegetation Community/Land Cover Type (Holland Code)	MSCP Habitat Tier	Acres on Site[1]
Southern Cottonwood–Willow Riparian Forest[2] (61330)	Tier I	322.58
Disturbed Habitat (11300)	Tier IV	83.66
Non-native Grassland (42200)	Tier III	39.88
Developed Land (12000)	Tier IV	2.47
Orchard (18100)	Tier IV	9.39
Tamarisk Scrub (63810)	Tier I	1.66
Agriculture (18000)	Tier IV	0.41
Diegan Coastal Sage Scrub (32500)	Tier II	0.06
	Total	**460.11**

[1] Does not include 100-foot buffer acreage
[2] Includes 36.03 acres of disturbed southern cottonwood–willow riparian forest

Southern Cottonwood–Willow Riparian Forest (Holland Code 61330)

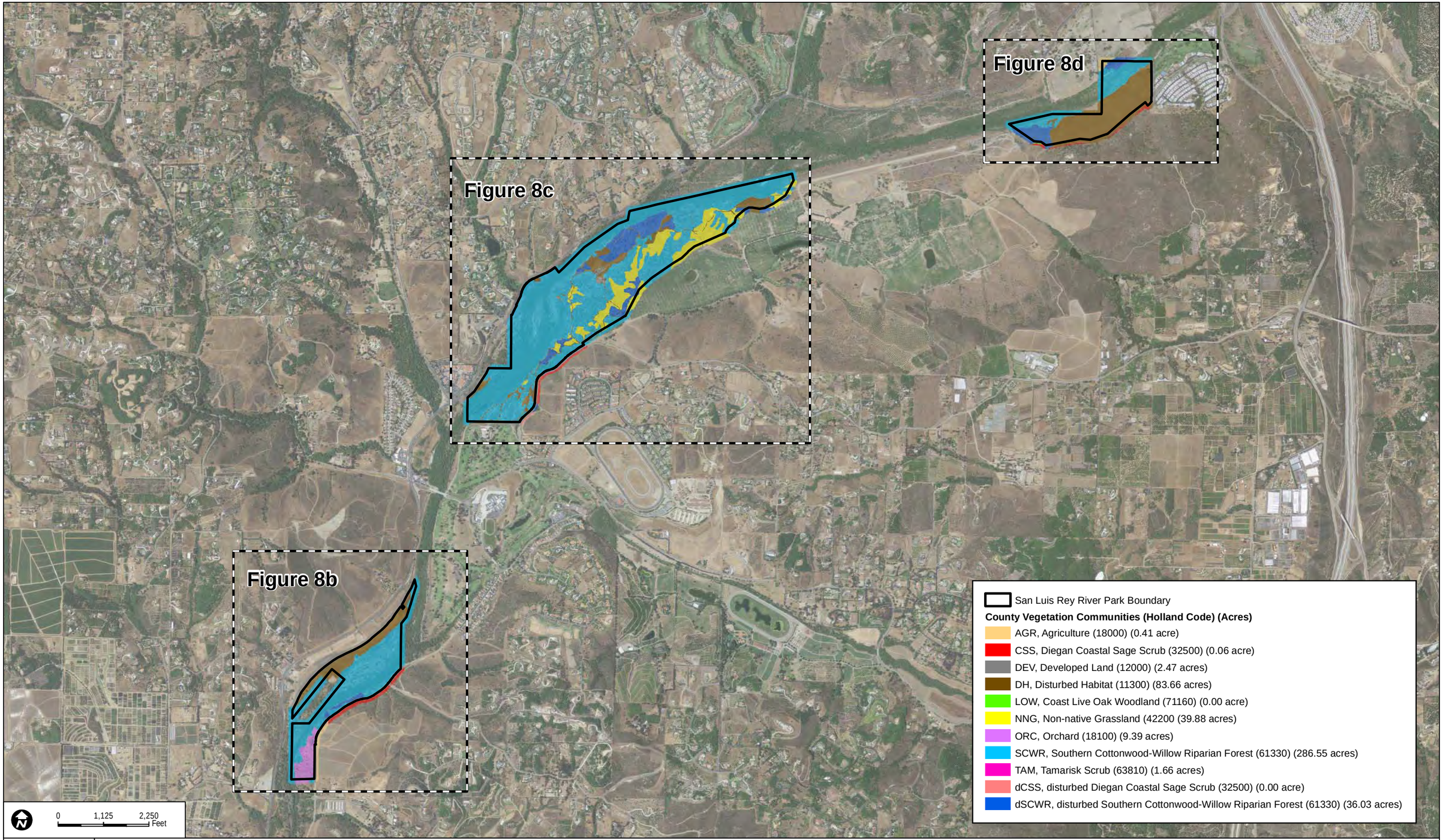
Southern cottonwood–willow riparian forest is described by Holland (1986) as a tall, open, broad-leafed, winter-deciduous riparian forest dominated by cottonwood (*Populus* spp.) and several tree willow species (*Salix* spp.). The understory is generally composed of shrubby willows. Species associated with this community include mugwort (*Artemisia vulgaris*), mulefat (*Baccharis salicifolia*), wild cucumber (*Marah macrocarpus*), western sycamore (*Platanus racemosa*), and hoary nettle (*Urtica dioica* ssp. *holosericea*). This community occurs on sub-irrigated and frequently overflowed lands along rivers and streams of the Transverse and Peninsular Ranges from Santa Barbara County south into Baja California Norte, Mexico, and east to the edge of the deserts (Holland 1986).

The majority of the study area is mapped as southern cottonwood–willow riparian forest with a total of 322.58 acres of this community on site. Of this, there are approximately 36.03 acres located along the southern boundary of the west parcel, portions throughout the central parcel, and in the northern and eastern portions of the east parcel, which are considered disturbed due to invasion by non-native plant species, such as Arundo and tamarisk. The following species are associated with the southern cottonwood-willow riparian forest in the study area: Fremont cottonwood (*Populus fremontii*), mulefat, western sycamore, willows, and poison oak. Southern cottonwood–willow riparian forest is an MSCP Tier I vegetation community.

Disturbed Habitat (Holland Code 11300)

Disturbed habitat refers to areas that are not developed, yet lack native vegetation, and generally are the result of severe or repeated mechanical perturbation. Oberbauer et al. (2008) provides the following examples of disturbed land: areas that have been graded, repeatedly cleared for fuel management purposes, and/or experienced repeated use that prevents natural revegetation, such as dirt parking lots and well-established trails, recently graded firebreaks, graded construction pads, construction staging areas, off-road vehicle trails, and old home sites. Vegetation, if present, is nearly exclusively composed of non-native plant species, such as ornamentals or ruderal exotic forbs, such as thistles (*Centaurea* spp., *Carduus* spp., *Cynara* spp., *Sonchus* spp., *Salsola tragus*), horehound (*Marrubium vulgare*), London rocket (*Sisymbrium irio*), wild radish (*Raphanus* spp.), fig-marigold (*Carpobrotus edulis*), chrysanthemum (*Chrysanthemum* spp.), and fennel (*Foeniculum vulgare*). Although some grass species may be present in disturbed habitat, most annual grass species are more typical of non-native grassland and do not dominate vegetative cover in disturbed habitat (Oberbauer et al. 2008). Disturbed habitat is an MSCP Tier IV vegetation community, indicating that it has limited habitat value.

There are 83.66 acres of disturbed habitat within the study area, located on all three parcels, which consists primarily of ruderal areas and dirt roads. Vegetated areas labeled as disturbed habitat were largely dominated by telegraphweed (*Heterotheca grandiflora*) and included bromes (*Bromus* spp.).



DUDEK

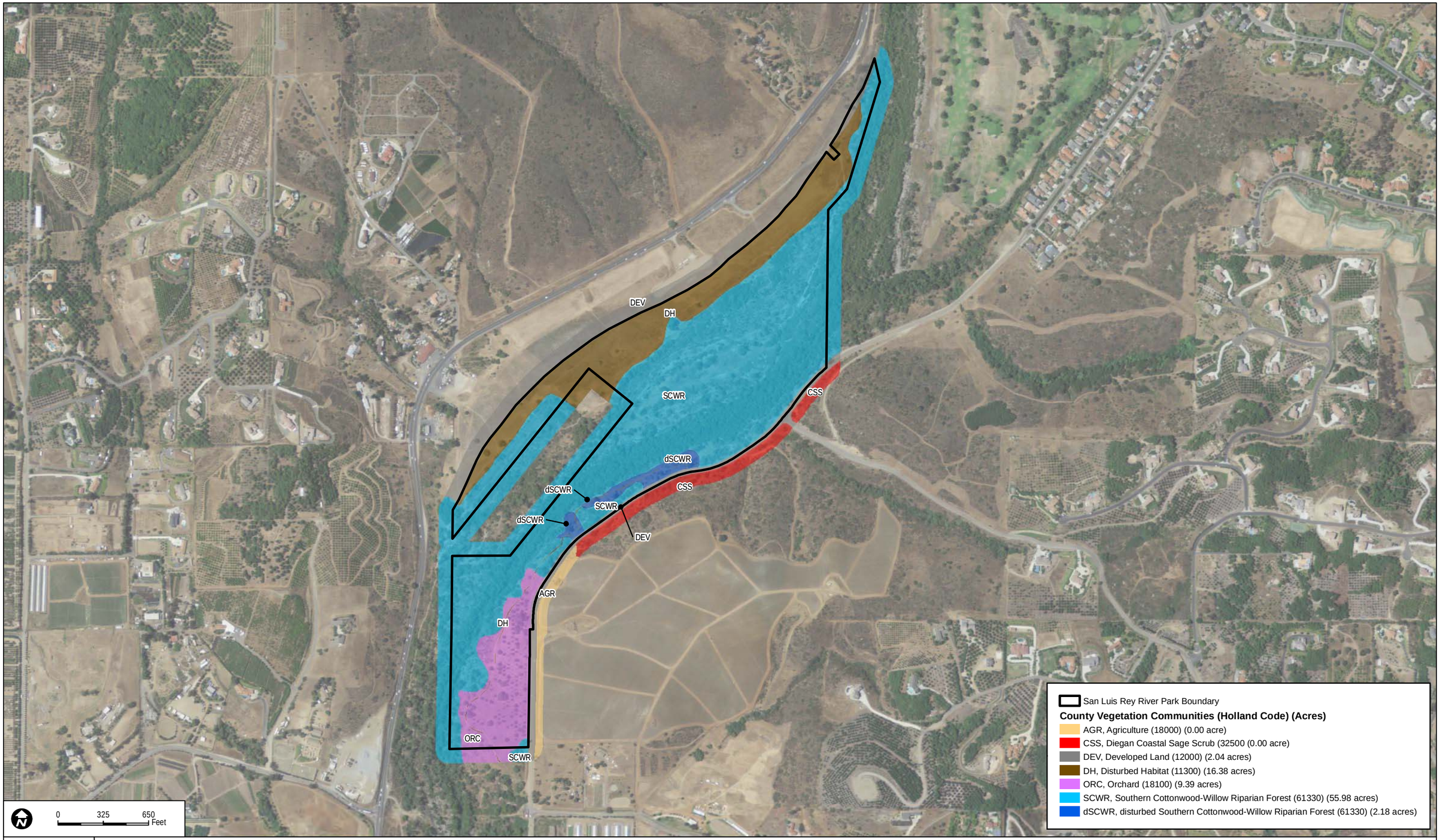
6680-03

SOURCE: CDFG NAIP Imagery (2009)

FIGURE 8a

Vegetation Communities/Habitats - Index Map

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

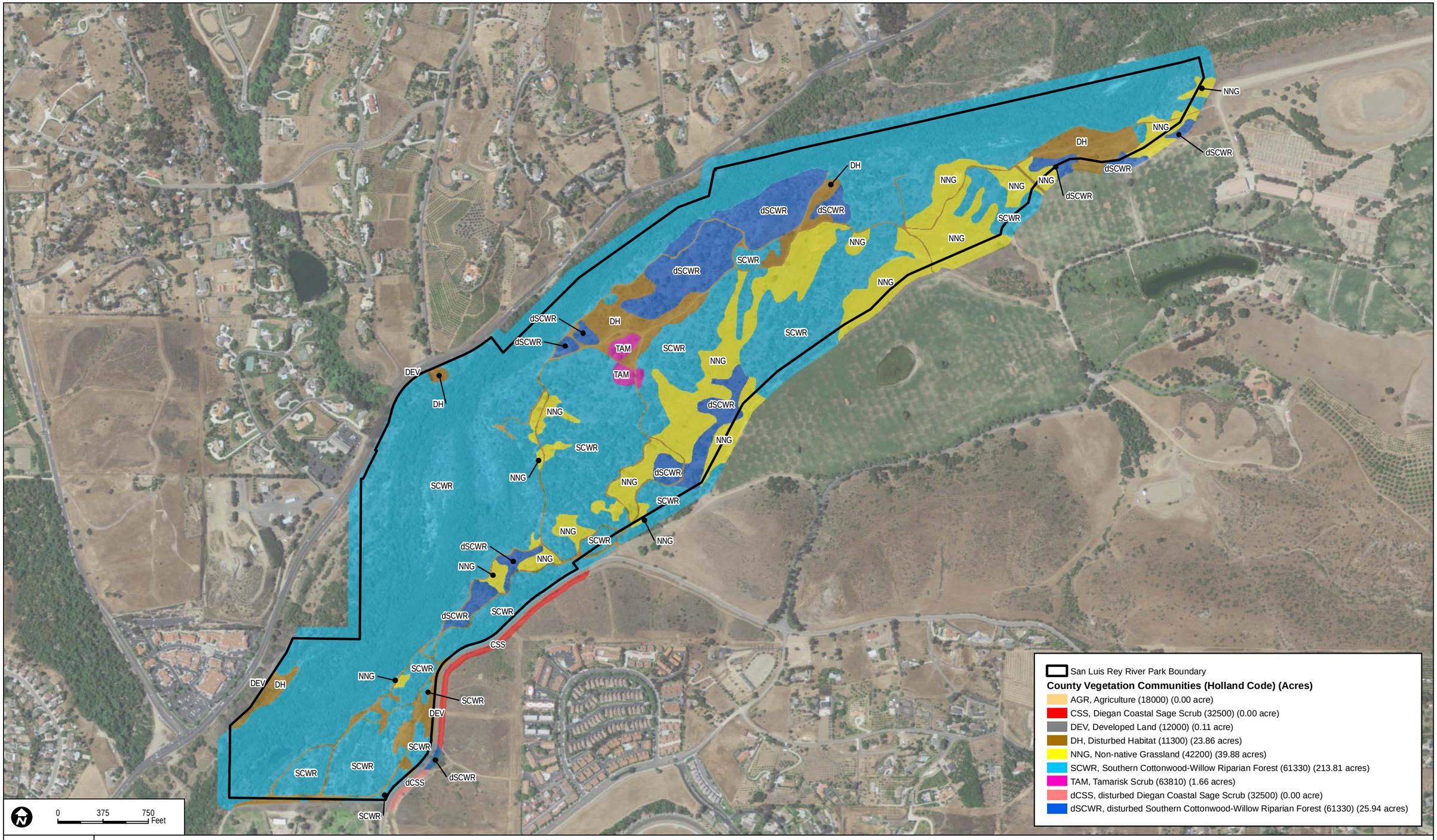
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 8b

Vegetation Communities/Habitats

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

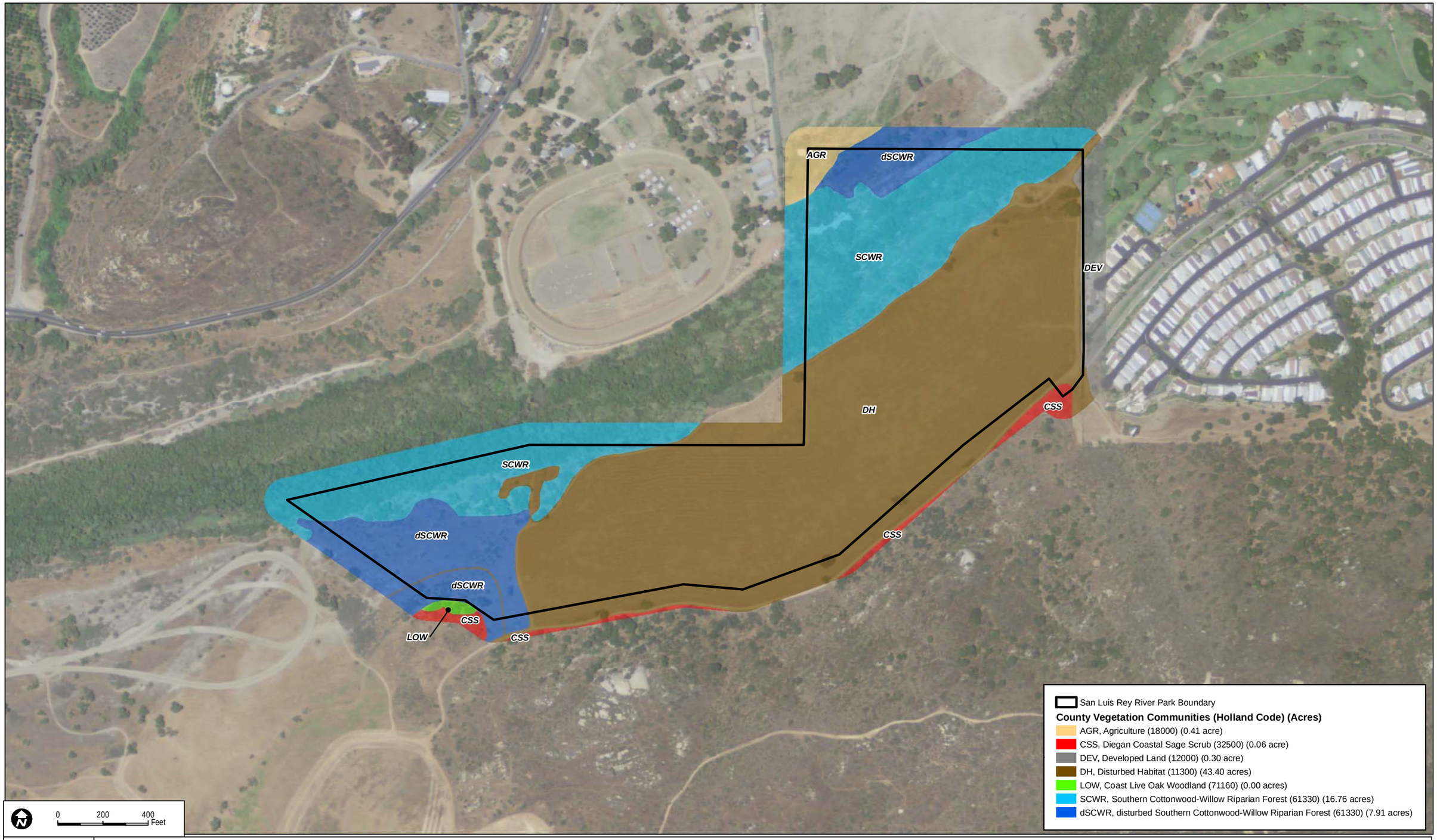
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 8c

Vegetation Communities/Habitats

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

SOURCE: CDFG NAIP Imagery (2009)

FIGURE 8d

Vegetation Communities/Habitats

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK

Non-Native Grassland (Holland Code 42200)

According to Oberbauer et al. (2008), non-native grassland is characterized by a dense to sparse cover of annual grasses, including wild oat, bromes, mustard, and filaree (*Erodium*). Wildflowers are also often associated with non-native grassland. It may occur where disturbance by maintenance (e.g., mowing, scraping, discing, spraying), grazing, repetitive fire, agriculture, or other mechanical disruption has altered soils and removed native seed sources from areas formerly supporting native vegetation. Non-native grassland typically occurs adjacent to roads or other developed areas where there has been some historic disturbance. Non-native grassland may support special-status plant and animal species and provide valuable foraging habitat for raptors (birds of prey).

Non-native grassland occupies 39.88 acres in the study area and is located throughout the central parcel. Throughout the study area, non-native grassland is composed of wild oat, bromes, mustard, and filaree. Non-native grassland is an MSCP Tier III vegetation community.

Developed Land (12000)

Developed land is generally subject to significant human disturbance associated with development. There is 2.47 acres of developed land in the Park. The developed land is primarily composed of paved roads located along the eastern boundary of the east parcel, along the northern boundary of the central parcel, and along both the northern and southern boundaries of the west parcel. Developed land is an MSCP Tier IV vegetation community, indicating that it has limited habitat value.

Orchard (18100)

Orchards refer to land that is set aside for cultivating nuts, fruits, or olives. This land has little biological resource value because it provides very limited habitat value for most native species. There are 9.39 acres of orchard, consisting of a remnant walnut grove, in the southern portion of the west parcel. As agricultural land, orchards are an MSCP Tier IV vegetation community, indicating that they have limited habitat value.

Tamarisk Scrub (Holland Code 63810)

According to Holland (1986), tamarisk scrub is a weedy, monoculture of any of several Tamarix species, usually supplanting native vegetation following a major disturbance. This habitat is usually found in sandy or gravelly braided washes or intermittent streams. Common species include narrowleaf willow (*Salix exigua*), big salt bush (*Atriplex lentiformis*), salt grass (*Distichlis spicata*), tamarisk (*Tamarix* spp.), and arrowweed (*Pluchea sericea*). Tamarisk often occupies jurisdictional wetlands.

Tamarisk scrub occupies 1.66 acres in the middle of the central parcel. This area is a nearly monotypic stand of tamarisk with few associated species. As a riparian scrub, tamarisk scrub is an MSCP Tier I vegetation community.

Agriculture (18000)

Agriculture refer to areas which have been under cultivation or are pastures actively grazed by livestock and contain fewer than 20% native plant cover. These areas contain very few native shrubs and pastures are dominated by non-native grasses and forbs. There is 0.41 acre of agriculture in the northwest corner of the east parcel. Agricultural land is an MSCP Tier IV vegetation community, indicating that it has limited habitat value.

Diegan Coastal Sage Scrub (Holland Code 32500)

According to Holland (1986), coastal sage scrub is composed of a variety of soft, low shrubs, characteristically dominated by drought-deciduous species, such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and sages (*Salvia* spp.), with scattered evergreen shrubs, including lemonadeberry (*Rhus integrifolia*) and laurel sumac (*Malosma laurina*). This vegetation community typically develops on xeric slopes. Diegan coastal sage scrub is widespread in coastal Southern California from Los Angeles to Baja California, Mexico (Holland 1986).

There is a total of 0.06 acre of Diegan coastal sage scrub in the study area. This community occurs in the southeast corner of the east parcel. Species such as California sagebrush, California buckwheat, and laurel sumac are relatively common throughout the coastal sage scrub areas on site.

Coastal sage scrub is an MSCP Tier II vegetation community. Coastal sage scrub is recognized as a sensitive plant community by local, state, and federal resource agencies. It supports a rich diversity of special-status plants and animals, and it is estimated that it has been reduced by 75% to 80% of its historical coverage throughout Southern California. It is the focus of the current State of California Natural Communities Conservation Planning (NCCP) Program.

4.2 Plants

A total of 168 vascular plant species were observed or detected within the study area during the 2010-2011 baseline surveys. Appendix A lists all of the plant species observed on site.

4.2.1 Special-Status Plant Species Observed

No special-status plant species were identified within the study area.

4.2.2 Special-Status Plant Species with High Potential to Occur

Based on an analysis of the elevation, soils, vegetation communities, and level of disturbance of the site, in conjunction with the known distribution of special-status species in the vicinity of the study area and the results of rare plant surveys, three special-status plant species have a high potential to occur in the study area: smooth tarplant (*Centromedia pungens* ssp. *laevis*), San Diego ambrosia (*Ambrosia pumila*), and San Diego sagewort (*Artemisia palmeri*).

Smooth Tarplant (*Centromedia pungens* ssp. *laevis*)

CRPR 1B.1, County List A

Smooth tarplant is an annual herb typically located in alkaline areas of valley and foothill grasslands with minimal shrub cover (Reiser 1994; CNPS 2011). In California, smooth tarplant is found in San Diego, San Bernardino, and Riverside Counties (CNPS 2011). This species is found in alkaline valley and foothill grassland, chenopod scrub, meadows and seeps, playas, and riparian woodland, up to 640 meters (2,100 feet) in elevation (CNPS 2011).

Smooth tarplant was observed adjacent to the study area near the central parcel. However, this may have been a component of a seed mix rather than a natural occurrence given the disturbed nature and species composition of the area.

San Diego Ambrosia (*Ambrosia pumila*)

Federally Endangered, CRPR 1B.1, County List A, Draft North County MSCP

San Diego ambrosia is a small herbaceous perennial often located in creek beds, seasonally dry drainages, or floodplains on the periphery of willow woodland without a protective tree canopy (Reiser 1994). In California, San Diego ambrosia is found only in San Diego and Riverside counties (CNPS 2011). This species is found in a wide range of habitat types including chaparral, coastal scrub, Valley and foothill grassland, and vernal pools. This species generally grows in sandy loam or clay, including riverwash and sandy alluvium that is sometimes alkaline and is often found in disturbed areas (CNPS 2011; Reiser 1994). San Diego ambrosia ranges in elevation from 20 to 415 meters (66 to 1,362 feet) AMSL (CNPS 2011).

Suitable habitat for San Diego ambrosia is present on site. In addition, several populations of San Diego ambrosia have been previously recorded in the immediate area (Caltrans 2007 and 2010), which is also USFWS-designated critical habitat for this species.

San Diego (Palmer's) Sagewort (*Artemisia palmeri*)

CRPR 4.2, County List D

San Diego sagewort (also known as Palmer's sagewort) is an aromatic herb typically located in perennial creeks and drainages near the coast (Reiser 1994). In California, San Diego sagewort is found only in San Diego County (CNPS 2011). This species is found in a wide range of habitat types including chaparral, coastal scrub, riparian forest, riparian scrub, and riparian woodland in sandy, mesic conditions between 15 and 915 meters (50 to 3,000 feet) AMSL (CNPS 2011). San Diego sagewort is most often found in a riparian context. San Diego sagewort grows within a shaded understory beneath willow, sycamore, or cottonwood canopy. Occasionally it also is present beneath coast live oak (*Quercus agrifolia*) canopy, but in decidedly mesic circumstances (Reiser 1994).

A single population of this species was previously recorded within the Park in the northern portion of the central parcel in 2007 (Caltrans 2010). Although not observed during the 2011 surveys, this species has a high potential to occur on site.

4.2.3 Non-native and/or Invasive Plants

Nineteen invasive non-native plant species of concern have been identified in the Park. Table 5 lists the non-native species of concern within the Park and their associated California Invasive Plant Council (Cal-IPC) Inventory rating. Invasive plant species locations are shown on Figure 9.

Table 5
Non-native Plant Species of Concern at the San Luis Rey River Park

Common Name	Scientific Name	Cal-IPC Rating*
Castor Bean**	*Ricinus communis*	Limited
English ivy	*Hedera helix*	High
Giant Reed**	*Arundo donax*	High
Pampas Grass**	*Cortaderia selloana*	High
Sweet Fennel **	*Foeniculum vulgare*	High
Tamarisk (Salt Cedar)**	*Tamarix ramosissima*	High
Perennial Pepperweed	*Lepidium latifolia*	High
Black mustard	*Brassica nigra*	Moderate
Bull thistle	*Cirsium vulgare*	Moderate
Crown daisy	*Glebionis [Chrysanthemum] coronarium*	Moderate
Eucalyptus**	*Eucalyptus* sp.	Moderate
Italian plumeless thistle	*Carduus pycnocephalus*	Moderate
Mexican Fan Palm**	*Washingtonia robusta*	Moderate
Poison hemlock	*Conium maculatum*	Moderate
Shortpod mustard	*Hirschfeldia incana*	Moderate
Tocalote	*Centaurea melitensis*	Moderate

Table 5
Non-native Plant Species of Concern at the San Luis Rey River Park

Common Name	Scientific Name	Cal-IPC Rating*
Tree Tobacco**	*Nicotiana glauca*	Moderate
Athel Tamarisk**	*Tamarix aphylla*	Limited
Peruvian Peppertree**	*Schinus molle*	Limited

* **Source:** Cal-IPC California Invasive Plant Inventory Database, updated December 2010. Overall rating listed for southwest region, factoring impact, invasiveness, distribution, and documentation level.
Inventory Categories
High: Species have severe ecological impacts, are conducive to moderate to high rates of dispersal/establishment and most are widely spread.
Moderate: Species have substantial and apparent, but generally not severe, ecological impacts, are conducive to moderate to high rates of dispersal, though establishment is generally dependent on ecological disturbance, and distribution may range from limited to widespread.
Limited: Species are invasive but their ecological impacts are minor on a statewide level, or there was not enough information to justify a higher score, have low to moderate rates of invasiveness, and are generally limited but may be locally persistent and problematic.

** Observed locations of invasive trees/shrubs were mapped (see Figures 9a–9d).

Castor Bean (*Ricinus communis*)

Castor bean is an herbaceous to semi-woody large shrub or small tree that grows quickly in mild climates. In Southern and Central California, it has escaped cultivation to become a noxious weed. Castor bean contains ricin, a highly toxic chemical (Cal-IPC 2010). Castor bean was observed in two locations, covering only a few square feet (Figures 9c and 9d).

English Ivy (*Hedera helix*)

English ivy is a perennial vine that can escape cultivation and establish in riparian habitats. It has creeping stems that have roots at leaf nodes that allow the plant to climb up vertical surfaces. It can affect all strata of riparian forest habitat as it grows up through the tree canopy and can crowd out native species. English ivy was observed in one location on the northern edge of the riparian area within the Park.

Giant Reed (*Arundo donax*)

Giant reed is a tall perennial grass that forms dense stands on disturbed sites, sand dunes, riparian areas, and wetlands. This species invades by outcompeting native species, such as willows, for water and reduces habitat for sensitive species such as least Bell's vireo and southwestern willow flycatcher (Cal-IPC 2010). It also has the ability to stabilize stream terraces, deepening flood channels, which can result in unsuitable habitat for arroyo toads. Giant reed has been partially controlled within the Park during prior weed control efforts conducted by the Mission Resource Conservation District (MRCD). However, there is still a significant presence of this species within a portion of the Park, with scattered re-sprouting individuals observed in several areas. Over 27 acres of habitat was mapped with giant reed (Figures 9a–9d).

Pampas Grass (*Cortaderia selloana*)

Pampas grass is a large, clumping perennial grass, about 6 to 8 feet (1.8 to 2.4 meters) tall. It is an aggressive spreading, ornamental species that produces significant amounts of biomass, which is extremely flammable, thus increasing the potential for fire ignition and/or spread. This species produces an abundance of seed, which is light, and can be windblown into the surrounding areas. This species was observed in only one location within the Park encompassing only a few square feet (Figure 9c).

Sweet Fennel (*Foeniculum vulgare*)

Sweet fennel is an erect perennial herb common throughout California. Fennel has the potential to substantially alter the composition and structure of many vegetation communities, including grasslands, coastal scrub, riparian, and wetland communities (Cal-IPC 2010). In addition, it can also alter fire regimes creating an intense, fast-moving fire. Sweet fennel was observed in six locations encompassing approximately 0.2 acre (Figures 9b and 9c).

Tamarisk (*Tamarix ramosissima*)

Tamarisk (salt cedar) is a shrub or a tree found throughout California along streams and lakeshores. Tamarisk can substantially alter geomorphology, groundwater availability, soil chemistry, fire frequency, plant community composition, and native wildlife diversity (Cal-IPC 2010). Similar to giant reed, tamarisk can stabilize stream terraces, deepening flood channels, which can result in unsuitable habitat for arroyo toads. Approximately 477 individuals covering approximately 6 acres were mapped within the Park (Figures 9a–9d).

Eucalyptus Trees (*Eucalyptus* spp.)

Eucalyptus is group of large trees that have been widely planted throughout California. Some species commonly escape into natural areas and can spread rapidly, particularly in riparian habitat. Only one eucalyptus tree was observed within the Park encompassing only a few square feet (Figure 9c).

Mexican Fan Palm (*Washingtonia robusta*)

Mexican fan palm is a species of palm tree commonly used for landscaping, which has become invasive in riparian areas, orchards, and landscaped areas. It is known to create monotypic stands in riparian areas, and dead fronds of the tree can create a fire hazard. It can spread into native vegetation communities through seeds being washed downstream in drainages, or birds dispersing seeds into areas with sufficient soil moisture for the palm to germinate and establish. Six palm trees within an area approximately 0.5 acre were mapped on site (Figures 9b and 9c).

Tree Tobacco (*Nicotiana glauca*)

Tree tobacco is a short-lived tree or shrub that grows up to 20 feet tall. Introduced to California approximately 100 years ago, tree tobacco can be found in disturbed soils, vacant lots, and along roadsides, streamsides, and other riparian areas up to 5,000 feet (Cal-IPC 2010). Only three tree tobacco plants were mapped in the Park encompassing only a few square feet (Figures 9c and 9d).

Athel Tamarisk (*Tamarix aphylla)*

Athel tamarisk is a shrub or tree typically found along streams and lakeshores. Introduced as a landscape ornamental, athel tamarisk is less invasive than other tamarisk species (Cal-IPC 2010). Three large individuals of Athel tamarisk were mapped within the Park, encompassing approximately 0.14 acre (Figure 9c).

Peruvian Peppertree (*Schinus molle*)

Peruvian peppertree is an aromatic, evergreen shrub or tree. Peruvian peppertree has escaped cultivation to become invasive in central and Southern California (Cal-IPC 2010). There is one Peruvian peppertree mapped within the Park (Figure 9b).

Perennial Pepperweed (*Lepidium latifolia*)

Perennial pepperweed, also known as tall whitetop and perennial peppercress, is a perennial herb found in moist or seasonally wet sites throughout California. Perennial pepperweed grows very aggressively, forming dense colonies that exclude native species (Cal-IPC 2010). Perennial pepperweed is a state-listed noxious weed in California and is one of four primary species targeted for mapping and control within the County by the San Diego Weed Management Area.

Ubiquitous non-native annual plant species are also present throughout the Park, and comprise the majority of species in the non-native grassland on site, which is dominated by wild oat, bromes, mustard, and filaree. While non-native grassland consists primarily of non-native plant species, it is considered a natural vegetation community under the County's MSCP because it is a naturalized community that provides habitat for native and sensitive plants and animal species. Much of the understory vegetation on the floodplain along the San Luis Rey within the Park is highly disturbed, and composed primarily of non-native herbaceous species. These non-native plant species were not mapped because of their high abundance and broad distribution across the site. These species include poison hemlock (*Conium maculatum*), black mustard (*Brassica nigra*), Italian plumeless thistle (*Carduus pycnocephalus*), crown daisy (*Glebionis [Chrysanthemum] coronarium*), shortpod mustard (*Hirschfeldia incana*), bull thistle (*Cirsium vulgare*), and tocalote (*Centauria melitensis*).

Invasive non-native plant species removal and control are discussed in Section 5.4.1 of this report.

4.3 Wildlife

A total of 166 wildlife species were observed or detected within the study area during the 2010-2011 surveys including: 3 fish, 4 amphibians, 10 reptiles, 63 birds, 31 mammals, and 55 invertebrates. A total of 18 special-status species were observed or detected including two species proposed for coverage under the Draft North County MSCP. Appendix B lists all of the wildlife species observed or detected within the study area.

4.3.1 Invertebrates

A number of large invertebrates were captured within pitfall trap arrays. These were identified to genus where feasible. These included armored stink beetle (*Eloides armata*), ironclad beetle (*Phloedes diabolicus*), wooly ground beetle (*Cratidus osculans*), darkling ground beetle (Family Tenebrionidae), anthaxias beetle (*Anthaxia* spp.), click beetle (Family Elateridae), June beetle (Family Scarabaeidae), Jerusalem cricket (*Stenopelmatus fuscus*), house crickets (Subfamily Nemobiinae), field cicket (Family Gryllinae), venerable silverfish (*Tricholepidion* spp.), common silverfish (*Lepisma* spp.), European earwig (Family Forciculidae), toothed earwig (Family Labiidae), pill bugs (Family Armadillidiidae), millipedes (Diplopoda), centipedes (Chilopoda), grass spiders (Family Agelenidae), money spiders (Family Linyphiidae), yellow sac spider (Family Miturgidae), wolf spider (Family Lycosidae), sow bug killer spider (Family Dysderidae), jumping spider (Family Salticidae), and scorpion (Order Scorpiones). Other invertebrates observed during surveys included bees (Apoidae), wasps (Vespidae), harvester ant colonies (*Pygonomyrex* spp.), mosquitos (Culicidae), flies (Diptera), dragonflies (Anisoptera) and damselflies (Zygoptera).

4.3.1.1 Butterflies

Twenty-three butterfly species were observed during surveys conducted on the study area including funereal duskywing (*Erynnis funeralis*), checkered white (*Pontia protodice*), and acmon blue (*Icaria acmon acmon*) among others. One special-status species, monarch butterfly (*Danaus plexippus*), was observed on site.

No Quino checkerspot or Hermes copper butterflies were observed in the study area. In addition, the site is outside of the USFWS-focused survey area for Quino checkerspot butterfly, no host plant species were observed, and the habitat is generally too closed for this species. No host plants were observed for Hermes copper butterfly.

4.3.2 Herpetofauna

4.3.2.1 Amphibians

Four amphibian species were observed during the aquatic surveys conducted within the Park (Table 6). In addition, western toad was also captured during pitfall trap herpetological surveys in the central parcel (Table 7).

Table 6
Aquatic Survey Results

Species			April 30, 2011			May 25, 2011			
Common Name	**Scientific Name**	**Status**	**Number**	**Sex**	**Age**	**Number**	**Sex**	**Age**	**Total**
Amphibians									
Northern Pacific treefrog	*Pseudacris regilla*	None	1,000s	—	Adult	1,000s	—	Adult	**1,000's**
California treefrog	*Pseudacris cadaverina*	None	—	—	—	100s	—	Adult	**100's**
American bullfrog	*Lithobates catesbeianus*	None	3	—	Adult	10	—	Adult	**13**
Western toad	*Anaxyrus boreas*	None	1	Male	Adult	5	—	3 Adults 2 Juvs	**6**
Reptiles									
Southern alligator lizard	*Elgaria multicarinata*	None	1	—	Adult	—	—	—	**1**
Common kingsnake	*Lampropeltis getula*	None	1	—	Adult	—	—	—	**1**
Western fence lizard	*Sceloporus occidentalis*	None	6	4 Male/ 2 Female	Adult	—	—	—	**6**
Western skink	*Plestidon skiltonianus*	None	1	—	Adult	—	—	—	**1**
Western diamond-backed rattlesnake	*Crotalus atrox*	None	1	—	Adult	—	—	—	**1**

4.3.2.2 Reptiles

Seven reptile species were observed in the Park during herpetological surveys (pitfall trap and aquatic). Three additional reptile species were observed during other surveys for a total of 10 reptile species detected within the study area. Western fence lizard (*Sceloporus occidentalis*) was the most common reptile species observed.

Aquatic survey results are presented in Table 6. Table 7, Pitfall Trap Results, provides a summary of the species observed during pitfall trap herpetological surveys. Survey locations are shown on Figure 7.

Table 7
Pitfall Trap Results

Species			March 15–18, 2011			May 3–6, 2011			May 24–27, 2011			
Common Name	Scientific Name	Status	HA5	HA4	HA6	HA5	HA4	HA6	HA5	HA4	HA6	Total
Amphibians												
Western toad	*Anaxyrus boreas*	None	—	—	1	—	—	6	—	—	1	**8**
Reptiles												
Southern alligator lizard	*Elgaria multicarinata*	None	1	4	2	2	—	1	—	2	—	**12**
Western skink	*Plestidon skiltonianus*	None	2	2	1	2	—	—	3	—	—	**10**
Common sagebrush lizard	*Sceloporus graciosus*	None	—	—	—	1	—	—	—	—	—	**1**
Western fence lizard	*Sceloporus occidentalis*	None	6 (7)	—	4 (7)	4 (5)	4 (7)	7	3 (4)	7 (9)	1	**36 (47)**
Common side-blotched lizard	*Uta stansburiana*	None	—	—	3 (4)	—	—	2	—	—	—	**5 (6)**
Small Mammals												
Crawford's gray shrew	*Notiosorex crawfordi*	None	—	—	—	1	—	—	—	—	—	**1**
Botta's pocket gopher	*Thomomys bottae*	None	—	1	—	1	—	—	—	—	—	**2**
California vole	*Microtus californicus*	None	1	1	2	2 (3)	5	3	—	1	4	**19 (20)**
		Total	**10 (11)**	**8**	**13 (17)**	**13 (15)**	**9 (12)**	**19**	**6 (7)**	**10 (12)**	**6**	**94 (107)**

NOTE: The first number is the number of new individuals captured, and the second number (in parentheses) is the total number captured, including recaptured individuals.

4.3.3 Birds

Forty-nine bird species were observed at the study area during avian point count surveys. The most common species observed in terms of numbers of individuals recorded were bushtit (*Psaltriparus minimus*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Spinus psaltria*). The following birds were observed during the nocturnal surveys: barn owl (*Tyto alba*), common poorwill (*Phalaenoptilus nuttallii*), great horned owl (*Bubo virginianus*), and northern mockingbird (*Mimus polyglottos*). Fourteen additional bird species were observed during other surveys conducted on site for a total of 63 bird species detected within the study area (Appendix B).

Nine special-status bird species were observed during avian point count surveys: barn owl, Cooper's hawk (*Accipiter cooperii*), great blue heron (*Ardea herodias*), least Bell's vireo (*Vireo bellii pusillus*), red-shouldered hawk (*Buteo lineatus*), turkey vulture (*Cathartes aura*), western bluebird (*Sialia mexicana*), white-faced ibis (*Plegadis chihi*), and yellow warbler (*Dendroica petechia brewsteri*). In addition, Vaux's swift (*Chaetura vauxi*) was observed during other surveys on site. With the exception of the Vaux's swift, which only migrates through San Diego County, it could be presumed that the remaining species likely nest within the area (San Luis Rey River influenced area) or on site; however, none of them were confirmed to be nesting in the study area.

Table 8, Avian Point Count Survey Results, provides a summary of the results of the avian point counts for each survey point. The numbers in each cell represent the number of unique species counts on that particular day. The number in parentheses that follows is the total number of birds observed including any flyovers. Survey locations are shown on Figure 7.

Table 8
Avian Point Count Survey Results

Survey Point	January 11, 2011		March 30, 2011		May 11, 2011		Total
	AM	*PM*	*AM*	*PM*	*AM*	*PM*	
A12	7 (12)	2 (3)	15 (30)	0	9 (30)	1 (1)	25 (76)
A13	6 (13)	2 (2)	9 (13)	0	10 (27)	1 (3)	21 (58)
A14	4 (4)	0	16 (35)	1 (1)	7 (14)	0	20 (54)
A15	7 (12)	1 (1)	19 (42)	1 (1)	11 (36)	1 (1)	21 (93)
A16	9 (15)	0	15 (43)	0	8 (28)	0	26 (86)
A17	8 (22)	0	11 (25)	1 (2)	8 (14)	1 (3)	20 (66)
A18	8 (16)	1 (1)	11 (15)	0	9 (37)	1 (1)	18 (70)
A19	4 (13)	1 (1)	9 (14)	1 (1)	7 (33)	0	17 (62)
A20	5 (15)	0	13 (18)	0	6 (26)	0	21 (59)
A21	5 (7)	1 (2)	9 (23)	0	9 (19)	1 (2)	16 (53)
Total	**19 (129)**	**3 (10)**	**34 (258)**	**1 (5)**	**32 (264)**	**2 (11)**	**49 (677)**

NOTE: The numbers represent unique species counts. The number in parentheses is the total, including flyover species if any were observed.

Survey points A12 and A16, which were located in the southern cottonwood–willow riparian forest in the northeastern corner of the study area and the disturbed southern cottonwood–willow riparian forest on the west parcel respectively, had the greatest species richness. Survey point A21 on the central parcel had the lowest bird species diversity although the species diversity did not vary substantially between survey points.

4.3.4 Mammals

4.3.4.1 Small Mammals

Ten small mammals, all rodents, were trapped on the study area during the small mammal surveys, including the special-status species San Diego pocket mouse (*Chaetodipus fallax fallax*) and Dulzura pocket mouse (*Chaetodipus californicus femoralis*). The most common species trapped was North American deermouse (*Peromyscus maniculatus*).

Table 9, Small Mammal Survey Results, provides a summary of total number of individuals captured in each trapline during the trapping sessions. The first number is the number of new individuals captured, and the second number in parentheses is the total number captured, including recaptured individuals.

Table 9
Small Mammal Survey Results

Species			Session 1			Session 2			
Common Name	*Scientific Name*	*Status1*	*MT4*	*MT3*	*MT6*	*MT4*	*MT3*	*MT6*	**Total**
Dulzura pocket mouse	*Chaetodipus californicus femoralis*	CSC/ Group 2	—	1 (1)	—	—	3 (3)	—	4 (4)
Northwestern San Diego pocket mouse	*Chaetodipus fallax fallax*	CSC/ Group 2	1 (3)	–	—	3 (5)	—	—	4 (8)
Dulzura Kangaroo Rat	*Dipodomys simulans*	None	1 (3)	—	1 (1)	—	1 (1)	2 (4)	5 (9)
California vole	*Microtus californicus*	None	1 (1)	—	1 (1)	—	—	1 (1)	3 (3)
House mouse	*Mus musculus*	None	—	1 (2)	—	—	1 (3)	—	2 (5)
Woodrat	*Neotoma fuscipes*	None	1 (1)	1 (2)	1 (1)	2 (4)	1 (3)	—	6 (11)
Brush deermouse	*Peromyscus boylii*	None	2 (3)	3 (3)	—	—	2 (2)	—	7 (8)
North American deermouse	*Peromyscus maniculatus*	None	27 (47)	25 (37)	18 (30)	33 (62)	32 (50)	25 (41)	160 (267)
Western harvest mouse	*Reithrodontomys megalotis*	None	2 (4)	4 (6)	2 (4)	4 (5)	3 (4)	2 (2)	17 (25)
Ornate shrew	*Sorex ornatus*	None	1 (1)	—	—	—	—	—	1 (1)
		Total	**36 (63)**	**35 (51)**	**23 (37)**	**42 (76)**	**43 (66)**	**30 (48)**	**209 (341)**

[1] CSC: California Special Concern Species (CDFG); Group 2: Animals declining but not in immediate threat of extinction or extirpation (County)

NOTE: The first number is the number of new individuals captured, and the second number in parentheses is the total number captured, including recaptured individuals. Also, individuals caught during the first trapping session may have been recaptured during the second trapping period but would have been recorded as new individuals.

Three mammal species were also detected during herpetological surveys: Crawford's gray shrew (*Notiosorex crawfordi*), Botta's pocket gopher (*Thomomys bottae*), and California vole (*Microtus californicus*) (Table 7).

4.3.4.2 Medium and Large Mammals

Two large mammal species were detected by the camera stations located on the study area: coyote (*Canis latrans*) and bobcat (*Lynx rufous*). Medium-sized mammals detected include raccoon (*Procyon lotor*) and Virginia opossum (*Didelphis virginiana*). A summary of the camera study results are provided in Table 10. Tracks and scat of a variety of species, including gray fox (*Urocyon cinereoargenteus*), mule deer (*Odocoileus hemionus*), and California ground squirrel (*Spermophilus beecheyi*), were identified during the course of other survey efforts. The San Luis Rey River and associated uplands surely functions as a wildlife movement corridor within the North County area. Usage within this area may be hampered by abundant human use of interior paths. Camera data was compromised by the theft of two cameras during the study effort, so the results likely underestimate species abundance.

Table 10
Wildlife Camera Study Results

	M5 – SLR East			M4 – SLR Middle			M3 – SLR West			
Observation[1]	*January 1–21*	*February 10–17*	*April 7–28*	*January 7–21*	*February 25–March 18*	*April 7–28*	*January 7–21*	*February 25–March 28*	*April 7–21*	**Total**
Coyote			1		7	1	10			**19**
Bobcat			1							**1**
Raccoon	1									**1**
Deermouse	1	1								**2**
Virginia opossum	2									**2**
Domestic dog			4							**4**
Human			1				3			**4**
Common raven			2							**2**
Mourning dove	1	1								**2**
Total	**5**	**2**	**9**	**0**	**7**	**1**	**13**	**0**	**0**	**37**

[1] Number identified refers to the total number of detections. In many cases, these represent numerous visits by the same individual(s) over the study period. However, due to the study design (i.e., no mark and recapture involved), it is not possible to differentiate between individuals in most cases.

4.3.4.3 Bats

Nine bat species were identified within the study area using the Anabat and Sonobat survey systems, including big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), western mastiff bat (*Eumops perotis*), California myotis (*Myotis californicus*), canyon bat (*Parastrellus hesperus*), Brazilian free-tailed bat (*Tadarida brasiliensis*), western red bat (*Lasiurus blossevillii*), Yuma myotis (*Myotis yumanensis*), and pocketed free-tailed bat (*Nyctinomops femorosaccus*).

Table 11, Bat Survey Results by Survey Pass, shows the number of minutes of bat activity during each survey pass. Table 12, Bat Survey Results by Location, shows the number of minutes of bat activity for each bat survey location. Number of minutes of bat activity is more useful than exact numbers of individuals because they are not marked and thus we are unable to differentiate between individuals. Minutes of activity can be analyzed and compared to other sites more directly for future management and monitoring efforts.

Table 11
Bat Survey Results by Survey Pass (in minutes of detection)

Species			First Pass[2] 1/24/11–2/9/11	Second Pass 3/9/11–3/25/11	Active Pass 5/18/11	Total
Common Name	*Scientific Name*	*Status*[1]				
Big brown bat	*Eptesicus fuscus*	None	0	0	**3**	**3**
Western mastiff bat	*Eumops perotis californicus*	CSC, Group 2	0	1	0	**1**
Western red bat	*Lasiurus blossevillii*	CSC, Group 2	4	4	0	**8**
Hoary bat	*Lasiurus cinereus*	None	7	120	0	**127**
California myotis	*Myotis californicus*	None	2	0	0	**2**
Yuma myotis	*Myotis yumanensis*	Group 2	22	78	1	**101**
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	CSC, Group 2	2	141	**0**	**143**
Canyon bat	*Parastrellus hesperus*	None	2	0	**0**	**2**
Brazilian free-tailed bat	*Tadarida brasiliensis*	None	90	227	**3**	**320**
		Total	**129**	**571**	**7**	**707**

[1] **CSC**: California Special Concern Species (CDFG); **Group 2**: Animals declining but not in immediate threat of extinction or extirpation (County); **NCMSCP**: Proposed for coverage under the Draft North County MSCP (February 2008)
[2] Refer to Table 3 for the specific dates of each bat survey location

Table 12
Bat Survey Results by Location (in minutes of detection)

Species			Survey Location			
Common Name	*Scientific Name*	*Status*[1]	*B7*	*B8*	*B9*	**Total**
Big brown bat	*Eptesicus fuscus*	None	3	0	0	**3**
Western mastiff bat	*Eumops perotis californicus*	CSC, Group 2	1	1	0	**2**
Western red bat	*Lasiurus blossevillii*	CSC, Group 2	2	3	3	**8**
Hoary bat	*Lasiurus cinereus*	None	22	96	9	**127**
California myotis	*Myotis californicus*	None	2	0	0	**2**
Yuma myotis	*Myotis yumanensis*	Group 2	30	30	41	**101**
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	CSC, Group 2	20	121	2	**143**
Canyon bat	*Parastrellus hesperus*	None	2	0	0	**2**
Brazilian free-tailed bat	*Tadarida brasiliensis*	None	104	117	99	**320**
		Total	**186**	**368**	**154**	**708**

[1] **CSC**: California Special Concern Species (CDFG); **Group 2**: Animals declining, but not in immediate threat of extinction or extirpation (County); **NCMSCP**: Proposed for coverage under the Draft North County MSCP (February 2008).
[2] Survey locations are shown on Figure 7.

4.3.5 Special-Status Wildlife Observed

Eighteen special-status wildlife species were observed or detected within the Park during the 2010–11 surveys (Figures 10a–d), two of which are proposed for coverage under the Draft North County MSCP. Observed special-status species are discussed as follows.

Invertebrates

Monarch Butterfly (*Danaus plexippus*)

County Group 2

The monarch butterfly (*Danaus plexippus*) follows a pattern of seasonal migration and known summer grounds of the species include the northern Rocky Mountains, which are occupied from May through late August to mid-September (Urquhart 1987). The Rocky Mountains population migrates southwest to wintering grounds along the California coast. The species' distribution is controlled by the distribution of its larval host plant (i.e., various milkweeds, genus *Asclepias*). Eggs are deposited and hatch on the underside of leaves of the milkweed plant. Upon hatching, the larvae feed upon the fine hairs on the leaves of the plant and stay on the same plant throughout its molting stages. After molting, the larvae leave the milkweed and construct its chrysalis elsewhere. However, once an adult monarch butterfly emerges from the chrysalis, it soon returns to a milkweed plant for foraging and shelter (Urquhart 1987). Sexually mature monarch butterflies mate along their northern migratory route (while returning to their summer

grounds) and deposit eggs on milkweed plants. Adults die shortly after mating and laying eggs, leaving the completion of the northern migration to their offspring.

A monarch was observed flying near the southern riparian fringe within the central parcel. It is likely that monarch fly through all three parcels during the spring, though it is not likely that winter roosting areas are present.

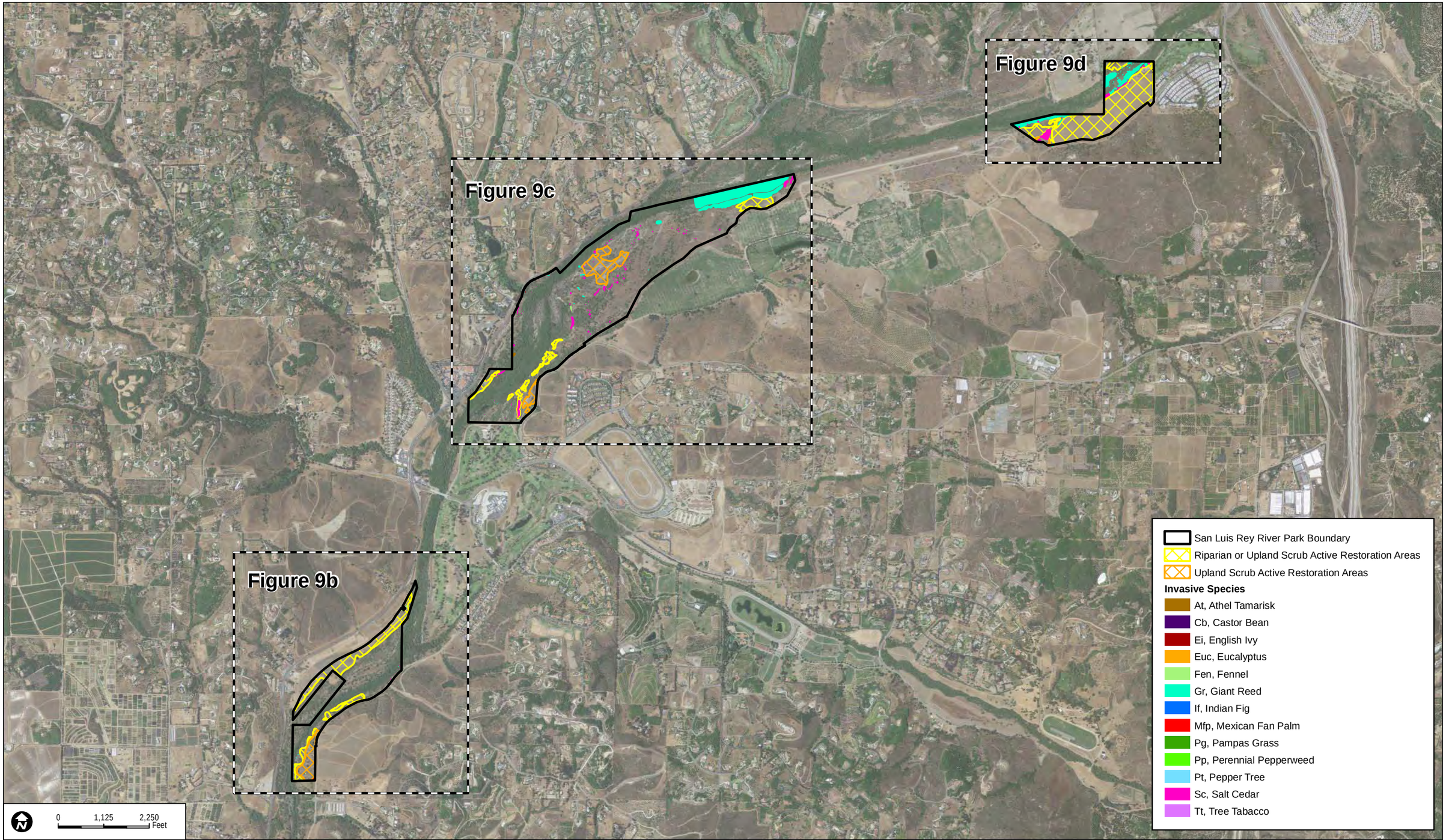
Birds

Great Blue Heron (*Ardea herodias)*

County Group 2

Great blue heron is found in estuaries and both fresh and saline wetlands throughout most of California where they feed mostly on fish and sometimes amphibians, small rodents, lizards, and birds (Zeiner et al 1990a). Great blue heron nests at the top of tall groves of trees near feeding areas, where the most active feeding takes place yearlong around dawn and dusk (Zeiner et al. 1990a). Great blue heron does very little migrating, many depart eastern and northeastern areas during winter. Great blue heron usually lays three to five eggs in February or March, and the young are born approximately 1 month after (Zeiner et al. 1990a).

A single great blue heron was observed on the east parcel at avian bird count location A12 during the March 2011 avian bird count surveys (Figure 10d).



DUDEK

6680-01

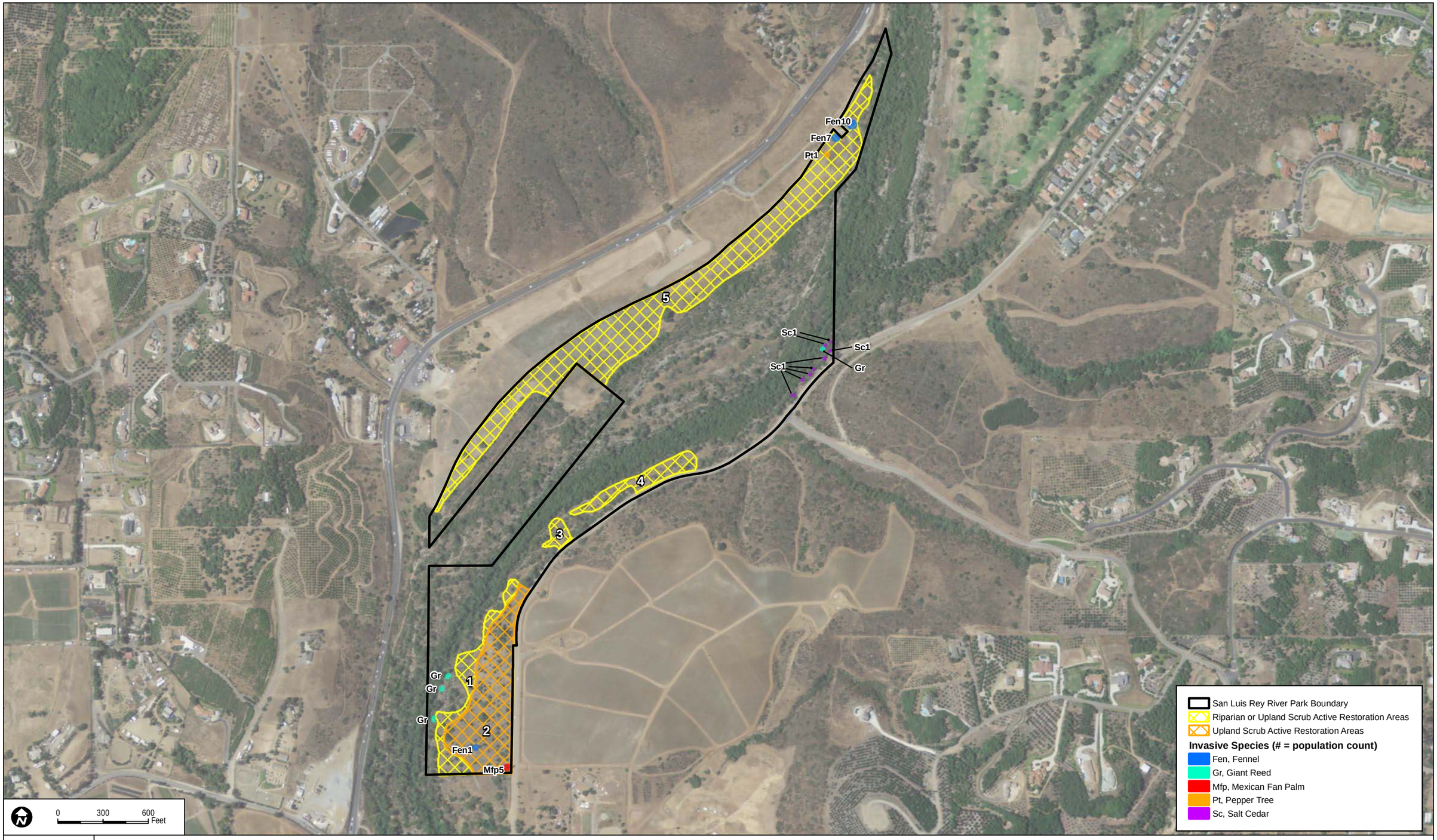
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 9a

Target Invasive Non-native Plant Species Locations and Potential Restoration Areas - Index Map

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-01

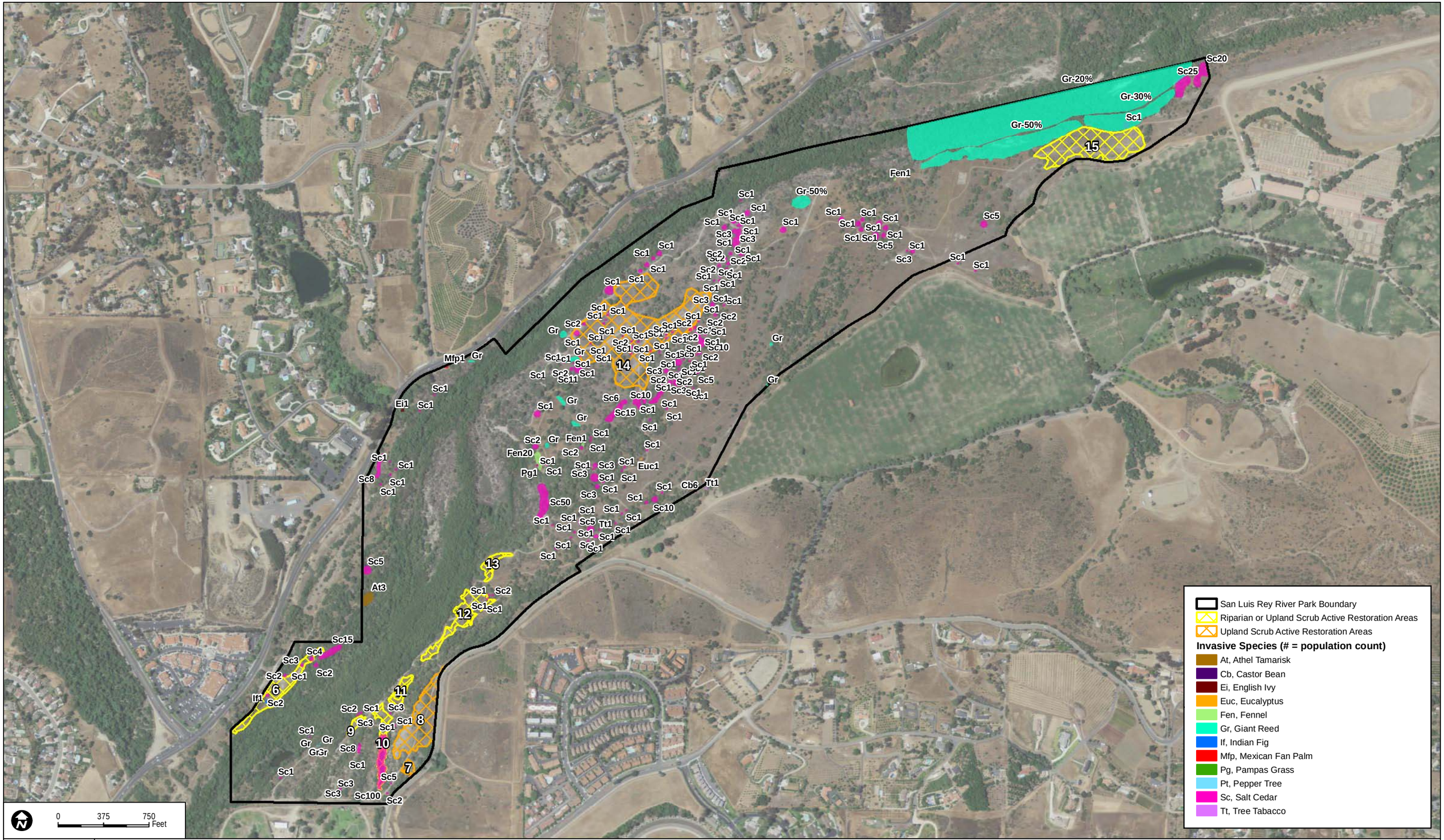
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 9b

Target Invasive Non-native Plant Species Locations and Potential Restoration Areas

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-01

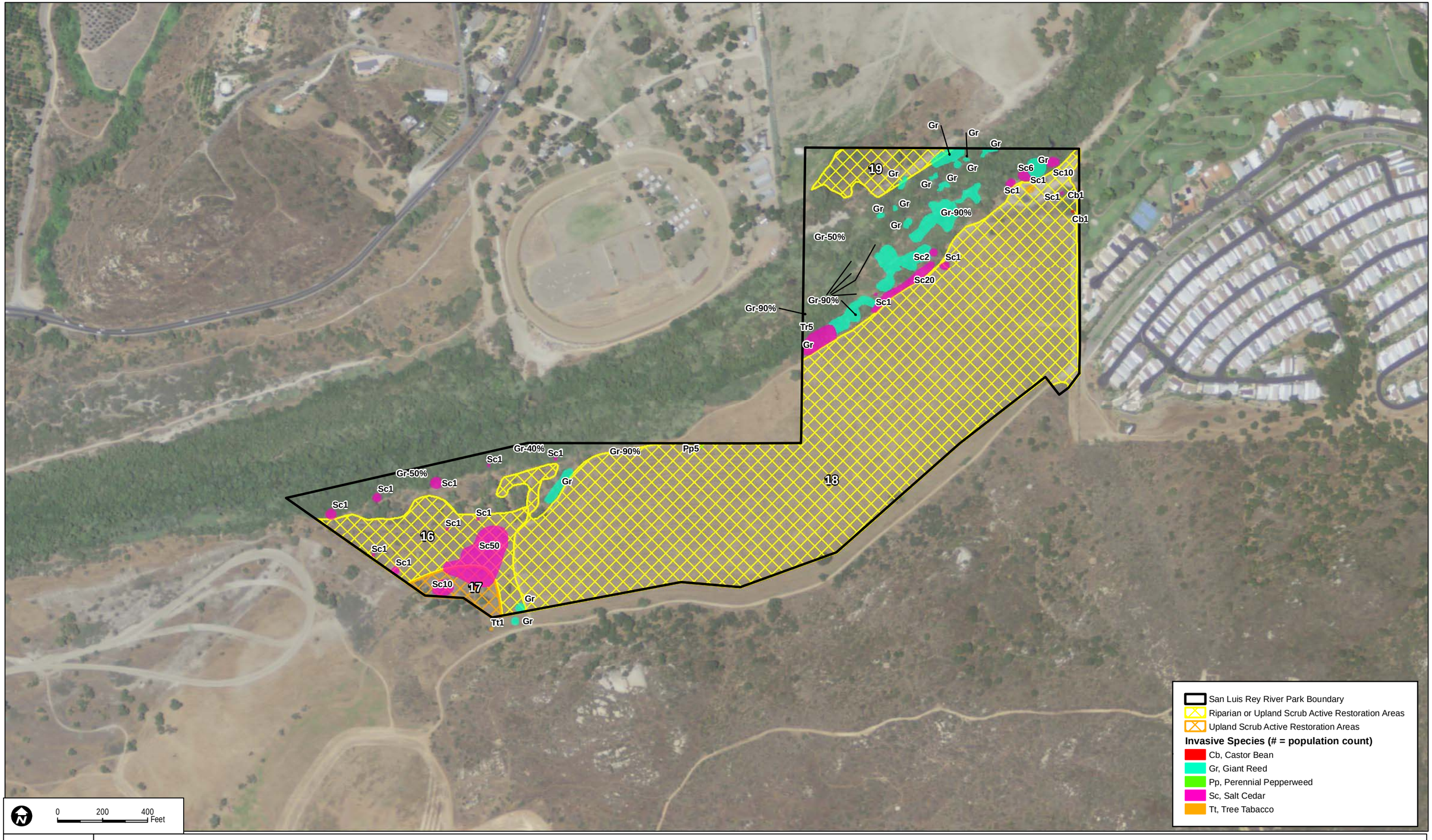
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 9c

Target Invasive Non-native Plant Species Locations and Potential Restoration Areas

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-01

SOURCE: CDFG NAIP Imagery (2009)

FIGURE 9d

Target Invasive Non-native Plant Species Locations and Potential Restoration Areas

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK

DUDEK

6680-03

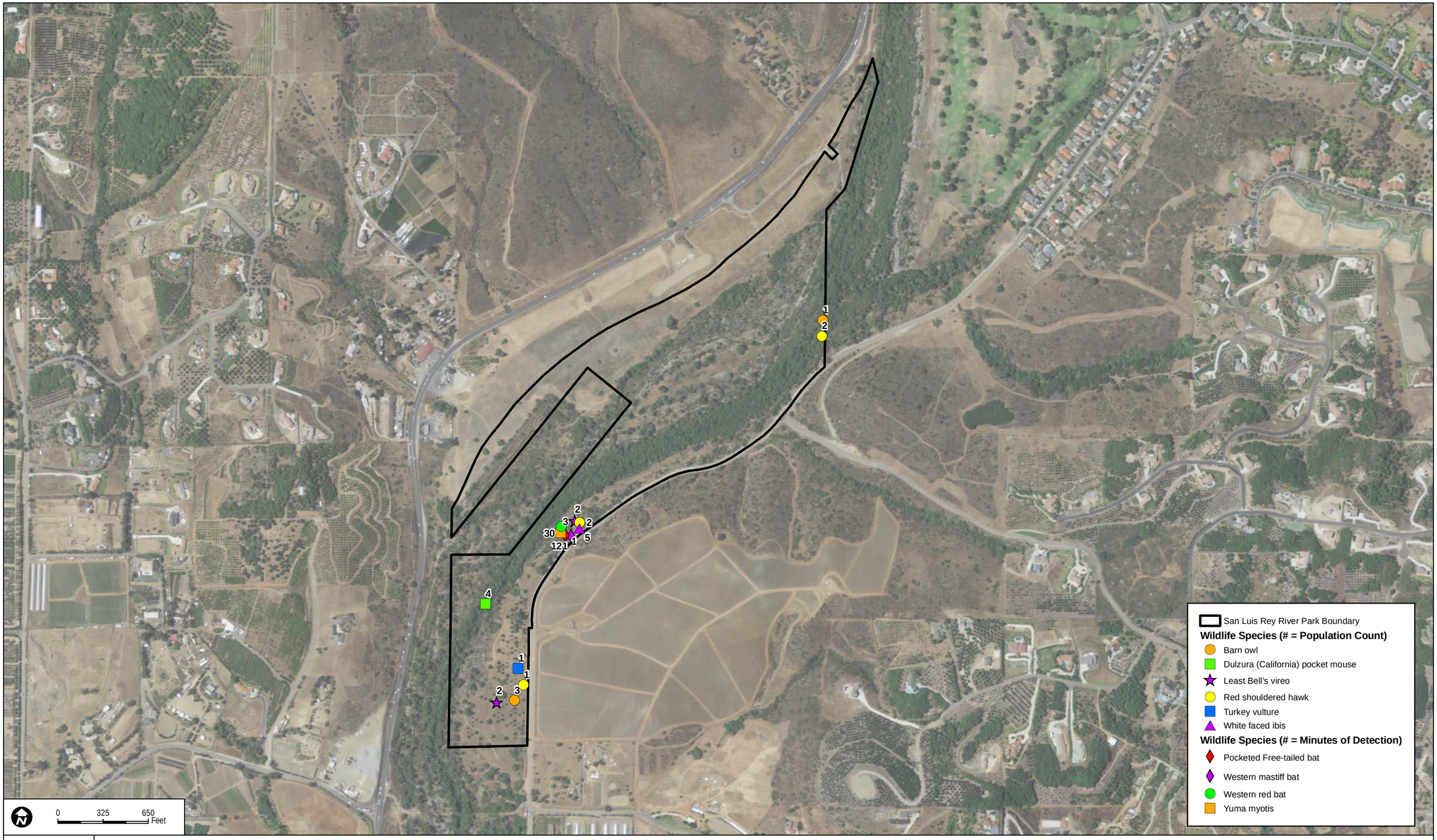
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 10a

Special Status Wildlife Species - Index Map

San Luis Rey River Park - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

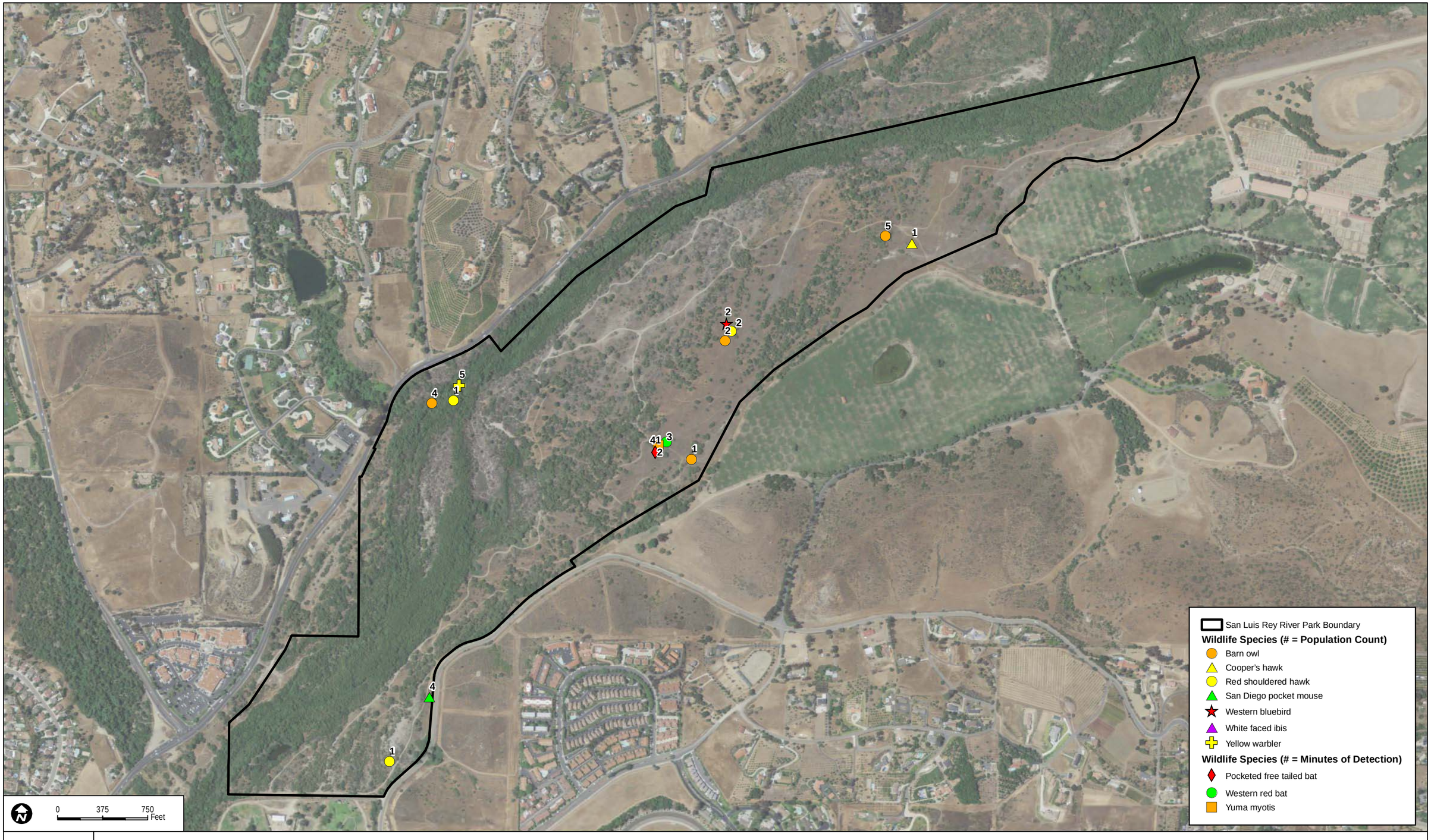
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 10b

Special Status Wildlife Species

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

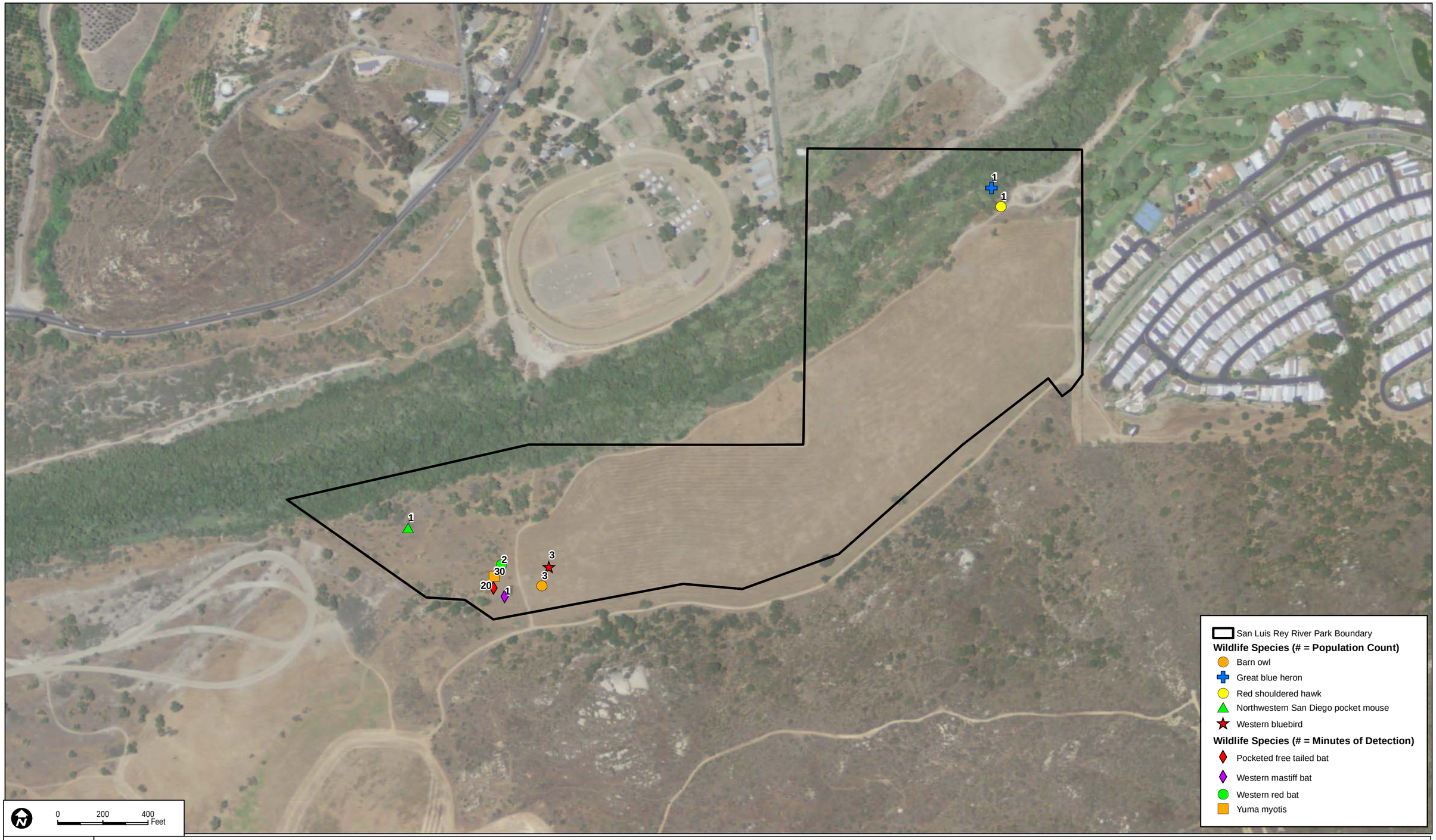
SOURCE: CDFG NAIP Imagery (2009)

FIGURE 10c

Special Status Wildlife Species

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK



DUDEK

6680-03

SOURCE: CDFG NAIP Imagery (2009)

FIGURE 10d

Special Status Wildlife Species

San Luis Rey Riverpark - Baseline Biodiversity Survey

INTENTIONALLY LEFT BLANK

Vaux's Swift (*Chaetura vauxi*)

State Species of Special Concern

Vaux's swift is a summer resident in Northern California, a migrant throughout most of the state in April and May and August and September, and it may winter in small numbers, irregularly, in southern coastal lowlands. This species breeds in the Coast Ranges from Sonoma County north, very locally south to Santa Cruz County, in the Sierra Nevada, and potentially in the Cascade Range. Vaux's swift nests in large hollow trees and snags within redwood and Douglas fir habitats. Foraging habitat includes a wide variety, often over rivers and lakes. Vaux's swift typically builds its nest on the vertical inner wall of a large, hollow tree or snag, especially tall burned-out stubs. The species feeds high in the air and takes flying insects in long, continuous foraging flights (Zeiner et al. 1990a).

Vaux's swift was observed flying over the river in the eastern parcel during butterfly surveys in late April 2011.

Yellow Warbler (*Dendroica petechial brewsteri*)

State Species of Special Concern, County Group 2

Yellow warbler breeds in California's riparian woodlands, montane chaparral, ponderosa pine, and mixed conifer habitats, ranging from coastal and desert lowlands up to 8,000 feet (2,438 meters) AMSL in the Sierra Nevada (Zeiner et al. 1990a). It arrives in California in April and is gone by October. Yellow warbler feeds on insects and spiders found in riparian deciduous habitats (Zeiner et al. 1990a). Yellow warbler nests in territories where there are tall trees for singing and a dense brush understory for nesting (Zeiner et al. 1990a). Peak breeding activity occurs in June when females lay 3 to 6 eggs; the young begin to breed the following year (Zeiner et al. 1990a).

Five yellow warblers were detected on the central parcel at avian bird count location A21 during the May 2011 avian bird count surveys (Figure 10c). Warblers were also frequently observed within riparian vegetation throughout the river corridor during wildlife surveys conducted in 2006-2007 and are expected to nest within suitable riparian habitat in the area (Caltrans 2010).

Cooper's Hawk (*Accipiter cooperii*)

State Watch List, County Group 1

Cooper's hawk inhabits live oak, riparian deciduous, or other forest habitats near water. Nesting and foraging usually occur near open water or riparian vegetation. Nests are built in dense stands

with moderate crown depths, usually in second-growth conifer or deciduous riparian areas. Nests in deciduous trees are typically located in crotches 20 to 50 feet above the ground; in conifers, nests are in horizontal branches or the main crotch. Cooper's hawks use patchy woodlands and edges with snags for perching and hunting small birds, small mammals, reptiles, and amphibians (Zeiner et al. 1990a). Cooper's hawks are diurnally active and yearlong residents. Breeding occurs from March through August, with peak activity in May through July. Males defend an area about 330 feet around potential nest sites (Zeiner et al. 1990a).

One Cooper's hawk was observed during avian bird count surveys in January 2011 on the central parcel at point count station A17 (Figure 10c). No nests were observed.

Red-Shouldered Hawk (*Buteo lineatus*)

County Group 1

Red-shouldered hawk inhabits low-elevation (below 5,000 feet or 1,524 meters AMSL) riparian woodlands, particularly in areas with interspersed swamps and emergent wetlands. Red-shouldered hawks forage primarily along wet meadow, swamp, and emergent wetland edges for a variety of prey including mammals, snakes, lizards, amphibians, small or young birds, and large insects. They nest in dense riparian habitats near permanent water (Zeiner et al. 1990a). Red-shouldered hawks are diurnally active and yearlong residents. Breeding occurs from February through July (Zeiner et al. 1990a).

Red-shouldered hawk was detected during the avian bird county surveys in January, March, and May 2011. A total of ten were recorded although no more than two were observed at any given point. This species was recorded on all three parcels at avian bird count locations A12, A14, A15, A16, A18, A20, and A21 (Figures 10b–d).

Turkey Vulture (*Cathartes aura*)

County Group 1

Turkey vulture most regularly inhabits a wide variety of habitats including pastured rangeland, non-intensive agricultural land, and wild areas with rock outcrops suitable for nesting. Turkey vultures feed on a wide variety of carrion, consisting largely of mammals, ranging from rodents to large ungulates (Kirk and Mossman 1998). Turkey vulture nests primarily on rocky cliffs or slopes. In California, this species occurs year-round in the Coast Ranges and inland. It breeds in the eastern portion of the state (Kirk and Mossman 1998).

Turkey vulture was recorded at avian bird count location A15 on the west parcel in March 2011 (Figure 10b); however, there is no suitable nesting habitat on site.

White-faced Ibis (*Plegadis chihi*)

State Watch List, County Group 1, Draft North County MSCP

White-faced ibis is an uncommon summer resident in parts of Southern California, a rare visitor in the Central Valley, is more widespread in migration, and no longer breeds regularly anywhere in California. This species feeds on earthworms, insects, crustaceans, amphibians, small fishes, and invertebrates in fresh emergent wetland, shallow lacustrine waters, muddy ground of wet meadows, and irrigated or flooded pastures and croplands. Nesting habitat consists of dense, fresh emergent wetland. Nests are made of dead tules or cattails in tall marsh plants or on mounds of vegetation, (Zeiner et al. 1990a). Eggs were present May to July at Los Baños. Females typically lay three to five eggs and incubate them for approximately 21 days (Zeiner et al. 1990a).

Five white-faced ibis were observed on the west parcel at avian bird count location A16 during the March 2011 avian survey (Figure 10b).

Barn Owl (*Tyto alba*)

County Group 2

Barn owl inhabits a variety of open habitats. Barn owls nest in cavities, both natural and man-made, including trees, cliffs, caves, riverbanks, church steeples, barn lofts, haystacks, and artificial nest boxes. Barn owls feed at night and locate prey by sound. Their diet consists primarily of rodents, but also includes shrews, bats, and leporids (rabbits and hares) and less frequently includes birds, reptiles, amphibians, and arthropods (Marti et al. 2005). Barn owls breed and winter throughout lowlands and lightly forested foothills in California. Where climate permits, barn owls can breed year-round (Marti et al. 2005).

Barn owl was detected during the avian bird county surveys in January, March, and May 2011. A total of 19 were recorded although no more than 3 were observed at any given time. This species was recorded on all three parcels at avian bird count locations A13, A14, A15, A17, A18, A19, and A21 (Figures 10b–d).

Western Bluebird (*Sialia mexicana*)

County Group 2

Western bluebird inhabits open coniferous and deciduous woodlands, riparian woodlands, grasslands, coastal chaparral, desert habitats, and farmlands. Western bluebirds nest in rotted or previously excavated cavities in trees and snags, or between the trunk and bark of a tree. Western bluebirds feed on insects, small fruits, and seeds (Guinan et al. 2008). In California, western bluebird breeds from the Oregon border south to the area of Mono, Kern, and Santa Barbara counties, and from Ventura, Los Angeles, and San Bernardino counties south through the Transverse and Peninsular Ranges of southwestern California to southern San Diego County. Western bluebird winters in all areas west of the Klamath, Salmon, Trinity, and Panamint Mountains (Guinan et al. 2008).

Western bluebirds were observed at avian bird count locations A13 and A18 on the central and east parcels during the May 2011 avian bird count surveys (Figures 10c and d). Western bluebirds have not been recorded as breeding regularly in San Diego County until recently. Given that this species was observed in spring, it could breed on site.

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

Federally Endangered, State Endangered, County Group 1, Draft North County MSCP

The least Bell's vireo's breeding range includes coastal and inland Southern California (including the western edge of Southern California's southern deserts), a small area within California's Central Valley, and extreme northern Baja California, Mexico. Although the winter range of full species Bell's vireo is not well known, it generally appears to winter from southern Baja and southern Sonora, Mexico, south along the west coast of Mexico and Central America to Honduras and occasionally to northern Nicaragua. It is also reported from the eastern coast of Central America from Veracruz south to Honduras (County of Riverside 2008). Least Bell's vireos primarily occupy riverine riparian habitats along water, including dry portions of intermittent streams that typically provide dense cover within one to two meters (3.3 to 6.6 feet) of the ground, often adjacent to a complex, stratified canopy. Least Bell's vireo nesting habitats in cismontane and coastal areas include southern willow scrub, mulefat scrub, arroyo willow riparian forest edge, wild blackberry thickets, and, more rarely, cottonwood forest, sycamore alluvial woodland, and southern coast live oak riparian forest (51 FR 16474–16482; Small 1994). Clutch sizes of the least Bell's vireo are from two to five eggs (typically three or four) that are laid shortly after nest construction (Salata 1984; Kus 1994; USFWS 1998). Incubation is about 14 days, and the young

fledge about 12 to 14 days after hatching (Zeiner et al. 1990a). Bell's vireos are known to feed primarily on insects and spiders (Chapin 1925; Bent 1950; Terres 1980).

USFWS-designated critical habitat for least Bell's vireo occurs throughout the Park. Two least Bell's vireos were detected on the west parcel at both A15 and A16 locations during avian bird count surveys in May 2011 (Figure 10b). Least Bell's vireo was also observed during aquatic surveys conducted within the study area in late April 2011. In addition, multiple occurrences of this species have been previously recorded within all three parcels (CDFG 2011a; Caltrans 2007 and 2010). Least Bell's vireo is presumed to breed within the study area.

Mammals

Dulzura (California) Pocket Mouse (*Chaetodipus californicus femoralis*)

State Species of Special Concern, County Group 2

Dulzura pocket mouse inhabits coastal scrub, chamise-redshank, montane chaparral, sagebrush, grassland, valley foothill hardwood, valley foothill hardwood-conifer, and montane hardwood habitats from San Francisco Bay to Mexico (Zeiner et al. 1990b). Dulzura pocket mouse eats the seeds of annual grasses and forbs, and insects and leafy vegetation in brushy areas, while foraging mainly from the ground (Zeiner et al. 1990b). Pocket mouse is nocturnal and reduces activity during cold winters (Zeiner et al. 1990b). Between April and June, usually four offspring are born in the burrows pocket mice dig in soft soil (Zeiner et al. 1990b).

Four individual Dulzura pocket mice were captured during small mammal trapping in the study area. This species was detected during both trapping sessions at the trapping location (MT3) on the western parcel of the Park (Figure 10b).

Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)

State Species of Special Concern, County Group 2

San Diego pocket mouse occurs mainly in the arid coastal and desert border areas of San Diego County, but also occurs in parts of Riverside and San Bernardino Counties, from sea level to 6,000 feet (1,829 meters) AMSL. It inhabits coastal scrub, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland, usually in sandy herbaceous areas with rocks or coarse gravel (Zeiner et al. 1990b). San Diego pocket mouse feeds mostly on seeds of forbs, grasses, and shrubs, but also eats some insects. San Diego pocket mice carry seeds in cheek pouches and store them in and

around the burrow (Zeiner et al. 1990b). San Diego pocket mouse generally breeds from March to May with an average of four young per litter (Zeiner et al. 1990b).

Five individual northwestern San Diego pocket mice were captured during small mammal trapping in the study area. This species was detected during both trapping sessions at the trapping locations on the central parcel of the Park, as well as on the Park's east parcel during the second trapping session.

Western Mastiff Bat (*Eumops perotis californicus*)

State Species of Special Concern, County Group 2

Western mastiff bat is found in San Joaquin Valley and coastal ranges from Monterey County down through Southern California, from the coast eastward to the Colorado Desert in open, arid habitats including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, and desert scrub (Zeiner et al 1990b). Western mastiff bat is nocturnal and feeds while in flight on small low-flying insects (Zeiner et al. 1990b). Greater western mastiff bats typically roost alone in rock crevices, trees, on cliff faces or buildings (Zeiner et al. 1990b). Reproduction begins in spring, and one offspring is produced each year (Zeiner et al. 1990b).

Western mastiff bat was detected during the first pass of passive bat surveys at stations B7 and B8 (Figures 10b and 10d).

Western Red Bat (*Lasiurus blossevillii*)

State Species of Special Concern, County Group 2

Western red bat occurs in California from Shasta County to the Mexican border and west of the Sierra Nevada/Cascade crest and deserts. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests (Zeiner 1990b). The species feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Western red bat is not found in desert areas. It roosts primarily in trees, and less often in shrubs, in edge habitats adjacent to streams, fields, or urban areas. Western red bat prefers edges or habitat mosaics that have trees for roosting and open areas for foraging.

Western red bat was detected during both passes of passive bat surveys at all three sites (Figures 10b–d).

Yuma Myotis (*Myotis yumanensis*)

County Group 2

Yuma myotis occurs throughout California, but is uncommon in the Mojave and Colorado desert regions, except the mountain ranges bordering the Colorado River Valley. They can be found in many habitat types, but prefer open forests and woodlands with sources of water they can forage over (Zeiner et al. 1990b). Yuma myotis ranges from sea level to 11,000 feet (3,353 meters) AMSL, but is generally found below 8,000 feet (2,438 meters) (Zeiner et al. 1990b). Yuma myotis roosts in groups of several thousand in caves, buildings, mines, and under bridges (Zeiner et al. 1990b). Reproduction for Yuma myotis begins in the fall, and a single litter of one young is born sometime between May and June (Zeiner et al. 1990b).

Yuma myotis was detected during both passes of passive bat surveys at every survey location and was also detected during active bat surveys (Figures 10b–d).

Pocketed Free-tailed Bat (*Nyctinomops femorosaccus*)

State Species of Special Concern, County Group 2

Pocketed free-tailed bat inhabits pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis. Pocketed free-tailed bats roost in rock crevices, caverns, or buildings, and they feed on flying insects, especially large moths, detected by echolocation (Zeiner et al. 1990b). Pocketed free-tailed bat occurs in San Diego, Riverside, and Imperial counties and is more common in Mexico. Pocketed free-tailed bats bear a single litter with one young in June and July, peaking in late June (Zeiner et al. 1990b).

Pocketed free-tailed bat was detected during both passes of passive bat surveys at each survey location within the study area (Figures 10b–d).

Mule Deer (*Odocoileus hemionus*)

County Group 2

Southern mule deer occur throughout California and much of the western United States and Great Plains, north into Canada, and south to the southern end of the Mexican Plateau. Southern mule deer inhabit a broad range of habitats including agricultural and suburban areas, desert, woodlands and forests, grassland and herbaceous vegetation communities, savanna, shrubland, and chaparral. Mule deer are herbivorous and browse on a variety of woody plants, grasses, and forbs (NatureServe 2011). Breeding typically peaks late November to mid-December (NatureServe 2011).

Mule deer tracks were observed throughout the Park.

4.3.6 Special-Status Wildlife with High Potential to Occur

Based on an analysis of the elevation, soils, vegetation communities, and level of disturbance of the site in conjunction with the known distribution of special-status species in the vicinity of the study area and the results of focused wildlife surveys, 19 wildlife species have a high potential to occur on the study area. The species with high potential to occur include two amphibian, nine reptile, seven bird, and one mammal species.

Arroyo Toad (*Anaxyrus* [=*Bufo*] *californicus*)

Federally Endangered, State Species of Special Concern, County Group 1, Draft North County MSCP

Arroyo toad is found along low-gradient streams in coastal and desert drainages as well as high-elevation valleys in southern California and northern Baja California, Mexico. It uses aquatic, riparian, and upland habitats to different degrees depending on an individual's stage of development, the time of year, and the weather. Breeding and larval development occur within aquatic habitats; foraging may occur within drying streambeds, terraces adjacent to breeding sites, and nearby uplands, where aestivation and overwintering also occur. Breeding habitat for the arroyo toad is created and maintained by the fluctuating hydrological, geological, and ecological processes operating in riparian ecosystems and the adjacent uplands. Periodic flooding that modifies stream channels, redistributes channel sediments, and alters pool location and form, coupled with upper terrace stabilization by vegetation, is required to keep a stream segment suitable for all life stages of the arroyo toad (66 FR 9413–9474). During the day and other periods of inactivity, arroyo toads seek shelter by burrowing into sand (Sweet 1992). Thus, areas of sandy or friable (readily crumbled) soils are the most important habitat for the species, and these soils can be interspersed with gravel or cobble deposits (70 FR 19562–19633). Breeding generally occurs from late March until mid-June (Sweet 1989). Eggs are deposited in shallow aquatic habitats characterized by sandy and/or gravelly substrates and where silt deposition is minimal. The filter-feeding arroyo toad tadpoles require algal mats for development. Breeding sites are typically located adjacent to sandy terraces (59 FR 64589–64866); at or near the edge of shallow pools, low-flow stream channels, and ox-bows; and along in-stream sand bars with minimal current, and little or no emergent vegetation.

The San Luis Rey River is USFWS-designated critical habitat for arroyo toad. Arroyo toad was previously recorded within the west parcel in 1998 (Caltrans 2007), the central parcel in 2006 and 2007, and the east parcel in 2006 (Caltrans 2010). The majority of these toads were visually

observed along existing game trails and equestrian trails on the north side of the San Luis Rey River in sandy substrate. Arroyo toads were also observed on the south side of the San Luis Rey River, but in lower numbers. Tadpoles were observed infrequently in pools of the San Luis Rey River (Caltrans 2010). Currently, the habitat within the Park parcels does not appear to be very appropriate for arroyo toad, due to the dense vegetation and lack of naturally fluctuating river processes; however, the suitability of the habitat for arroyo toad may improve if river vegetation is thinned or scoured during rain or flood events. These events may allow the system to regain natural braids, channels, openings, and benches, which would foster better breeding habitat for arroyo toad.

Western Spadefoot (*Spea hammondi*)

State Species of Special Concern, County Group 2, Draft North County MSCP

Western spadefoot is distributed throughout the Central Valley and foothill regions. It is found in the Coast Ranges from Santa Barbara County to the Mexican border (Zeiner et al. 1988). This species occurs in grasslands but can also occur in valley-foothill hardwood woodlands. Breeding and egg-laying occur almost exclusively in shallow, temporary pools, such as vernal pools, formed by winter rain. The first rains of the fall and winter season initiate breeding activity of the western spadefoot, and breeding activity is normally completed by the end of March. After breeding, much of the year is spent in underground burrows, which the adults construct (Zeiner et al. 1988).

Western spadefoot is known to occur within the San Luis Rey River system and was previously recorded adjacent to the central and east parcels (Caltrans 2010). Suitable habitat is present within the study area.

Silvery Legless Lizard (*Anniella pulchra pulchra*)

State Species of Special Concern, County Group 2

The silvery legless lizard occurs from Antioch, California; south through the Coast, Transverse, and Peninsular ranges and the western slopes of the Sierra Nevada southward into northwestern Baja California, Mexico (Stebbins 2003). Silvery legless lizards have been found at elevations ranging from sea level to 1,554 meters (5,100 feet) AMSL (Stebbins 2003). The silvery legless lizard is a fossorial (i.e., burrowing) animal and is found primarily in areas with sandy or loose soils where they typically are found beneath leaf litter (Holland and Goodman 1998; Zeiner et al. 1988). This species may be found in sparsely vegetated areas in a variety of habitats, including chaparral; California sagebrush scrub; oak woodlands; sandy washes; and stream terraces with sycamores, cottonwoods, or oaks (Zeiner et al. 1988; Stebbins 2003; Holland and Goodman 1998). The species may forage in leaf litter by day for insects, insect larvae, and spiders and

emerge on the surface at dusk or at night (NatureServe 2011; Stebbins 2003). The species is also found under or in the close vicinity of logs, rocks, old boards, and the compacted debris of woodrat nests. Soil moisture is considered essential for legless lizards to conserve energy at high temperatures and to allow shedding to occur (Jennings and Hayes 1994). Ovulation occurs in May through July and live births occur in July through October, with typical litter sizes of one or two, but up to four can occur. Females do not produce young every year in Southern California (NatureServe 2011).

Silvery legless lizard was previously recorded within the central parcel (Caltrans 2010) and suitable habitat and soils (i.e., sandy drainages) occur on site.

Orange-throated Whiptail (*Aspidoscelis hyperythra*)

State Species of Special Concern, County Group 2, Draft North County MSCP

Orange-throated whiptail occurs in low-elevation coastal scrub, chamise-redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats (Zeiner et al. 1988). Orange-throated whiptail occurs in Orange, Riverside, and San Diego Counties, west of the crest of the Peninsular Ranges, and in southwestern San Bernardino County near Colton. It extends up to 3,410 feet (1,039 meters) AMSL (Zeiner et al. 1988). Orange-throated whiptails forage on the ground and scratch through surface debris for food. Their diet consists of a variety of small arthropods, especially termites. Orange-throated whiptails likely lay eggs in loose, well-aerated soil under or near surface objects, or at the base of dense shrubs (Zeiner et al. 1988).

High-quality suitable habitats for orange-throated whiptail occur within the study area. In addition, this species was previously recorded adjacent to the study area (Caltrans 2007 and 2010).

Coastal Western Whiptail (*Aspidoscelis tigris stejnegeri*)

County Group 2

Coastal western whiptail occurs primarily in hot, dry open areas with little vegetation, including chaparral, woodland, and riparian habitats (CaliforniaHerps 2009). The coastal western whiptail occurs in coastal Southern California, ranging north into Ventura County and south into Baja California. Coastal western whiptails forage on small lizards and invertebrates, especially spiders, scorpions, centipedes, and termites. Coastal western whiptails lay eggs from April to August (CaliforniaHerps 2009).

High-quality suitable habitats for coastal western whiptail occur within the study area.

Northern Red Diamond Rattlesnake (*Crotalus ruber ruber*)

State Species of Special Concern, County Group 2, Draft North County MSCP

Northern red diamond rattlesnake is distributed along coastal San Diego County to the eastern slopes of the mountains and north through western Riverside County into southernmost San Bernardino County. It occurs from sea level to 900 meters (3,000 feet) AMSL in chaparral, woodland, and arid desert habitats in rocky areas and dense vegetation (Zeiner et a1. 1988). Northern red diamond rattlesnake eats small mammals, including ground squirrels, wood rats, rabbits, lizards, and birds (CaliforniaHerps 2009). Northern red diamond rattlesnake is primarily nocturnal and crepuscular during periods of excessive daytime heat (CaliforniaHerps 2009). Northern red diamond rattlesnake young are live-born from July to September (CaliforniaHerps 2009).

Northern red diamond rattlesnake was previously recorded adjacent to the east parcel (Caltrans 2010) and high-quality suitable habitat occurs within the study area.

San Diego Ringneck Snake (*Diadophis punctatus similis*)

County Group 2

San Diego ringneck snake is widespread from the coast to the mountains at elevations from sea level to 7,000 feet (2,134 meters) AMSL, and it is frequently found in coastal sage, chaparral, oak woodlands, pinyon-juniper woodlands, riparian areas and grasslands (Lemm 2006). This species uses damp environments such as rotting logs, leaf litter, burrows, and rocks to seek out prey including salamanders, lizards, frogs, earthworms, and small snakes (Lemm 2006). Breeding occurs from May through June when females will lay up to 10 eggs in aerated soil; the eggs hatch approximately 1 month later (Zeiner et al. 1988).

High-quality suitable habitats for San Diego ringneck snake occur within the study area.

Coronado Skink (*Eumeces skiltonianus interparietalis*)

State Species of Special Concern, County Group 2

Coronado skink occurs in rocky areas near streams with vegetation, but it is also found in areas away from water (CaliforniaHerps 2009). It occurs in grassland, woodlands, pine forests, chaparral, and in open sunny areas such as clearings. Coronado skink is found inland in Southern California, south through the north Pacific coast region into Baja California. Coronado skink

feeds on insects and other small invertebrates, especially spiders and sow bugs. The skinks lay two to ten eggs in June and July, which hatch late in July and August (CaliforniaHerps 2009).

Coronado skink was previously recorded within the central parcel (Caltrans 2010) and high-quality suitable habitat and abundant litter for Coronado skink occur within the study area.

Coast Horned Lizard (*Phrynosoma blainvillei*)

State Species of Special Concern, County Group 2, Draft North County MSCP

Coast horned lizard inhabits valley-foothill hardwood, conifer, pine-cypress, juniper, annual grassland, and riparian habitats (Zeiner et al. 1988). The coast horned lizard occurs throughout the central and Southern California coast up to 6,000 feet (1,829 meters) AMSL and the Sierra Nevada foothills from Butte County to Kern County up to 4,000 feet (1,219 meters) AMSL (Zeiner et al. 1988). Horned lizards forage on the ground in open areas. Coast horned lizards' diet consists primarily of ants, but also includes large numbers of small beetles when especially abundant, and can include wasps, grasshoppers, flies, and caterpillars. In Southern California, egg-laying occurs from late May through June; the mean clutch size is 13 eggs (Zeiner et al. 1988).

Coast horned lizard was previously recorded adjacent to the central and east parcels (Caltrans 2010) and there is high-quality habitat present within the study. This species' preferred forage (native ants) is also present.

Two-striped Garter Snake (*Thamnophis hammondii*)

State Species of Special Concern, County Group 1, Draft North County MSCP

Two-striped garter snake occurs along the coast of California from Monterrey County to the east desert of Victorville and down to San Diego County (Lemm 2006). Two-striped garter snake inhabits areas with sufficient water vegetation such as pools, creeks, riparian areas, chaparral, bushland, and coniferous forests (Lemm 2006). Two-striped garter snake occurs at an elevation range of sea level to 8,000 feet (2,438 meters) AMSL (Lemm 2006). Two-striped garter snake has a diet that consists of frogs, salamanders, and fish and fish eggs, and is able to climb trees up to 9 feet (Lemm 2006). Breeding occurs in the spring, and as many as 36 live young are born in early fall (Lemm 2006).

Two-striped garter snake was previously recorded immediately adjacent to the central parcel (Caltrans 2010) and high-quality habitat, including abundant water resources, is present within the study area.

South Coast Garter Snake (*Thamnophis sirtalis* ssp.)

State Species of Special Concern, County Group 2

The 14 known subspecies of south coast garter snake occur in variable habitats throughout most of North America except for far northern latitudes and southwestern deserts. It inhabits marsh and upland habitats near permanent water with strips of riparian vegetation. South coast garter snake is generally active from spring to fall (March–October). The diet of this species consists primarily of amphibians (Jennings and Hayes 1994).

High-quality habitat, including abundant water resources, is present within the study area for south coast garter snake.

Sharp-Shinned Hawk (*Accipiter striatus*)

State Watch List, County Group 1

Sharp-shinned hawk typically breeds in conifer forests, but winters in a variety of habitats including urban and suburban areas. Sharp-shinned hawks occur throughout much of North America, but only winters in Southern California. Where they breed, sharp-shinned hawks nests are usually made in mature conifers. The species eats mostly small birds, but also may take large insects and small mammals (Cornell Lab of Ornithology 2011).

Sharp-shinned hawk was previously recorded within the central parcel (Caltrans 2010) and there is suitable winter foraging habitat for this species within the study area. This species does not nest along the coastal slope of Southern California and would only be expected as a winter migrant.

Canada Goose (*Branta canadensis*)

County Group 2

Canada goose is generally a year-round resident in northeastern California. Elsewhere in California, wintering populations migrate to breeding grounds in northeastern California, several western states, Canada, and Alaska. Canada goose is found in lacustrine, fresh emergent wetlands, and moist grasslands, croplands, pastures, and meadows (Zeiner et al 1990a). In California, the Canada goose consumes mostly green shoots, seeds of cultivated grains, wild grasses and forbs, and aquatic plants. Canada goose nests near water (Zeiner et al. 1990a). Canada goose usually lays four to six eggs and typically nests from March to June in northeastern California, and February to June on coastal slopes (Zeiner et al. 1990a).

High-quality foraging habitat for Canada goose is present on upland portions of the Park.

Northern Harrier (*Circus cyaneus*)

State Species of Special Concern, County Group 1, Draft North County MSCP

Northern harrier inhabits meadows, grasslands, open rangelands, desert sinks, and fresh and saltwater emergent wetlands; this species is rarely found in wooded areas. Northern harriers nest in shrubby vegetation on the ground, usually at the edge of a marsh, and feed on voles and other small mammals, birds, frogs, small reptiles, crustaceans, and insects; northern harriers rarely feed on fish (Zeiner et al. 1990a). Northern harrier is a permanent resident in the northeastern plateau and coastal areas of California and a less common resident of the Central Valley. This species is a widespread winter resident and migrant in suitable habitat.

Northern harrier was previously recorded adjacent to the central and east parcels (Caltrans 2010), and high-quality habitat is present within the study area.

Vermilion Flycatcher (*Pyrocephalus rubinus*)

State Species of Special Concern, County Group 1

The vermilion flycatcher is normally a year-round resident throughout all but the northernmost portion of the breeding range in the United States, Mexico, and Central America. Its range during the winter fluctuates with winter conditions; in some winters, the species wanders along river corridors outside its normal range (Grinnell and Miller 1944). The vermilion flycatcher appears to be a strict insectivore with no records of plant material being consumed (Wolf and Jones 2000). Although the vermilion flycatcher is largely a resident species, where it does show migratory movements, the male arrives to the breeding locations in February or March and females arrive afterwards, typically in March or April, depending on location (Wolf and Jones 2000). Nests are built in a horizontal fork or branch under a canopy in an area free of leaves, about 8 to 20 feet aboveground (Wolf and Jones 2000; Tinkham 1949). The nest is a shallow open cup, loosely constructed out of small twigs, forbs, rootlets, grasses, fibers, or other similar materials, and lined with feathers and hair (Wolf and Jones 2000). Each clutch size averages between two and four and is incubated by the female for 14 to 15 days; both parents care for the young, and they are fledged after 14 to 16 days (Wolf and Jones 2000; Taylor and Hanson 1970).

A single vermilion flycatcher was observed near the study area during avian bird count surveys conducted on March 30, 2011, and one individual male was observed south of the central parcel in May 2007 (Caltrans 2010). Because of the known migration and nesting ranges of this species, it is likely these individuals were migrating through the area.

White-tailed Kite (*Elanus leucurus caeruleus*)

State Fully Protected, County Group 1

White-tailed kites occur mainly in lowlands of southern and northwestern cismontane California in savanna, open woodland, marshes, cultivated fields, and partially cleared lands (Zeiner et al. 1990a). White-tailed kites hunt in the morning and late afternoon for voles and mice, usually near farmlands. There are no known migrations for the white-tailed kite (Zeiner et al. 1990a). Nests are made of piled sticks and twigs and placed near the tops of oak, willow, or other trees near marshes and foraging areas (Zeiner et al. 1990a). Peak breeding occurs from May to August and females lay three to five eggs, incubating for approximately 1 month (Zeiner et al. 1990a).

High-quality habitat for white-tailed kite is present within the study area. In addition, this species was previously observed in the immediate area both flying overhead and perched adjacent to riparian habitat south of the river (Caltrans 2007 and 2010).

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

Federally Endangered, State Endangered, County Group 1, Draft North County MSCP

The southwestern willow flycatcher has a known U.S. breeding range in seven states: Arizona, New Mexico, California, southwestern Colorado, extreme southern portions of Nevada and Utah, and, possibly, western Texas. In California, its breeding range extends from the Mexican border north and inland to the City of Independence in the Owens Valley east of the Sierra Nevada, to the South Fork Kern River in the San Joaquin Valley, and coastally to the Santa Ynez River in Santa Barbara County (Craig and Williams 1998). The southwestern willow flycatcher is a riparian-obligate species restricted to complex streamside vegetation. Four general habitat types are used by the southwestern willow flycatcher at its breeding sites: monotypic high-elevation willow; exotic monotypes (e.g., dense stands of tamarisk (*Tamarix* spp.) or Russian olive (*Elaeagnus angustifolius*)), especially in the desert southwest; native broadleaf-dominated riparian forest; and mixed native/exotic forests (Sogge et al. 1997). Southwestern willow flycatcher nests typically occur in areas with multilayered vegetation and fairly closed (60% to 65%) tree canopy cover (Craig and Williams 1998). Clutches of two to four eggs are laid in the third week in June, with fledglings first appearing in mid-July (Sanders and Flett 1989). Willow flycatchers are insectivores and forage by aerially gleaning prey (capturing insects, for example, while hovering) from trees, shrubs, and herbaceous vegetation or by hawking (capturing in flight) larger insects (Ettinger and King 1980; Sanders and Flett 1989).

USFWS-designated critical habitat for southwestern willow flycatcher, consisting of high-quality riparian vegetation adjacent to the San Luis Rey River, occurs throughout the Park. Previous

records of this species within the Park include: a CNDDB record from 2008 overlapping the southern end of the study area in the central parcel (CDFG 2011a); multiple occurrences in the west parcel in 2002 (Caltrans 2007); and multiple occurrences in the central and east parcels during 2006 and 2007 focused protocol surveys (Caltrans 2010).

Yellow-breasted Chat (*Icteria virens*)

State Species of Special Concern, County Group 1, Draft North County MSCP

The yellow-breasted chat has a broad geographic range occurring in several disjunct areas in the United States, southwestern portions of Canada, and Mexico (Eckerle and Thompson 2001). Its breeding range includes the eastern United States from Wisconsin south to the Gulf coast, and east to the Atlantic Coast. In Southern California, the yellow-breasted chat breeds locally on the coast and very locally inland at lower elevations throughout the region (Garrett and Dunn 1981). In Southern California, the yellow-breasted chat nests in dense, relatively wide, riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. The yellow-breasted chat feeds on small invertebrates, including insects and spiders, during the summer, and forages for berries and fruits from shrubs and low trees when available (Bent 1953). The yellow-breasted chat breeds from late April through early August (Comrack 2008). Clutch size consists of three to six eggs, which have an incubation time of 11 to 12 days (Eckerle and Thompson 2001).

High-quality habitat is present for yellow-breasted chat, and the species is known to occur in the vicinity. In addition, this species was previously recorded adjacent to the west parcel (Caltrans 2007) and throughout the central parcel (Caltrans 2010).

Mountain Lion (*Puma* [=*Felis*] *concolor*)

County Group 2, Draft North County MSCP

Mountain lions range throughout most of California. In general, they occupy areas wherever deer or bighorn sheep are present. The most suitable mountain lion habitats include foothills and mountains. Although deer are their main food source, mountain lions have also been known to take livestock and pets (CDFG 2007).

The Park is located within a known wildlife movement corridor and suitable habitat for this species occurs throughout the study area. Mountain lion track and scat were previously identified both north and south of the river in the central and east parcels during a 2007-2008 wildlife movement study (EDAW 2009), and a mountain lion was observed in the same area during 2006-2008 focused protocol surveys (Caltrans 2010).

4.3.7 Invasive Species

Two brown-headed cowbird (*Molothrus ater*) individuals were detected at avian bird station A15 on March 11, 2011. Brown-headed cowbirds were also observed during aquatic and butterfly surveys conducted in late April 2011. Brown-headed cowbird is a brood parasite that adversely affects native passerine populations. Although few brown-headed cowbirds were observed, the data may understate the level of cowbird use on site since cowbirds breed primarily between April and May and most work was conducted outside that window. The entire site would provide suitable breeding resources for cowbirds.

One common non-native amphibian species, bullfrog, was detected along the San Luis Rey River during aquatic surveys on April 30 and May 25, 2011. Native to the eastern United States, the bullfrog was introduced to California and is now widespread and common in the state. The bullfrog is the largest frog in California and preys on, or competes for food and space with native amphibians such as arroyo toad and western spadefoot. Both arroyo toad and western spadefoot have been previously documented along San Luis Rey River within and adjacent to the Park; however, they were not detected during the 2010-2011 surveys. Occurrence of bullfrogs may potentially negatively affect arroyo toads if still present and would hinder recolonization of the Park.

In addition, European starling (*Sturnus vulgaris*) was observed throughout the study area. Starlings are cavity nesters, which outcompete native bird species for nest resources. While not considered to be "invasive species," pet dogs were frequently observed off-leash on trails along with their hiking, jogging, or biking owners. These pets were not often observed to run through native habitat, but there is always a risk. Dogs do not kill nearly as many native species as pet cats do; however, they do stress native species and have the potential to kill.

4.4 Wildlife Movement

The SLRRP is located within the Lower San Luis Rey River Linkage, which has been identified as a very important regional wildlife movement corridor that provides an east-west connection joining coastal habitats to substantial open space in the inland portions of North San Diego County. This corridor is somewhat fragmented given the development of this region. Specifically, urban and agricultural development borders this corridor in some areas, which constricts wildlife movement. Because the San Luis Rey River contains water throughout the year, many species, including large mammals, are able to reside permanently and maintain stable populations within the corridor. The presence of water does not preclude wildlife from crossing the river through the area.

The general area functions to convey large and small mammals within and through the Park as evidenced through wildlife camera data, track and scat observations, and visual observations of mule deer, bobcat, and coyote. In addition, a wildlife movement study conducted from July 2006 through March 2009 for the Caltrans' SR-76 improvement project identified two important trends through the SLRRP and surrounding area: (1) regional east-west wildlife movement through the riparian corridor and in the upland habitat to the south, and (2) north and south ecotonal (upland to riparian ecotones) movement for smaller resident species attempting to find vital resources on the northern riparian/upland border (EDAW 2009). The existing SR-76 which borders SLRRP to the north currently functions as a barrier to wildlife movement through direct mortality and indirect barrier effects to species behaviorally sensitive to roads.

5.0 CONCLUSIONS AND MANAGEMENT RECOMMENDATIONS

Surveys conducted in 2010–2011 documented eight vegetation communities, or land cover types, and 168 plant and 166 wildlife species were observed or detected within the study area during surveys, including 3 fish, 4 amphibians, 10 reptiles, 63 birds, 31 mammals, and 55 invertebrates. This list includes 18 special-status species (all wildlife), of which 2 are proposed for coverage under the Draft North County MSCP.

This section provides resource-specific conclusions and management recommendations for each vegetation community and taxonomic group assessed during the 2010-2011 survey effort. These recommendations are based on the results of the baseline biological diversity surveys, and the management and monitoring guidelines and conservation goals provided in the Draft North County MSCP Framework Resource Management Plan (FRMP) (County of San Diego 2009b). The FRMP includes plan-wide stewardship and management guidelines; habitat- and species-specific management guidelines; and monitoring guidelines; as well as specific conservation goals for each of the 23 planning segments identified in the Draft North County MSCP. The Park parcels are located within the Lower San Luis Rey River Linkage planning segment.

It should be noted that currently the Draft North County MSCP FRMP does not detail the exact methods that should be implemented when conducting covered species monitoring, although the plan does suggest that the methods should be consistent with the monitoring methods being implemented by the South County MSCP.

5.1 Vegetation Communities/Habitats

The study area consists of eight vegetation communities and land cover types (including disturbed forms) including riparian habitats, coastal sage scrub, and grasslands. As part of the Lower San Luis Rey River Linkage, the FRMP conservation goals for the Park include: minimizing impacts to sensitive habitats including coastal sage scrub habitat important to the California gnatcatcher, and arroyo toad and western spadefoot toad habitat (particularly for aestivation); and maintaining riparian and upland habitat along the river for water quality and sensitive species.

Areas along the San Luis Rey River primarily consist of riparian habitat, the majority if which is southern cottonwood–willow riparian forest. The FRMP indicates the biggest challenges facing riparian habitats are related to hydrology and invasive species, and the management and monitoring guidelines provided for these habitats are specific to these threats. Specific recommendations regarding invasive species and hydrology are discussed in Sections 5.4 and 5.8.4, respectively.

The Park also includes smaller areas of coastal sage scrub and grassland habitats. The challenges that these habitats face, as noted in the FRMP, are primarily associated with fire and invasive species. Fire recommendations are discussed in Section 5.6, and invasive species recommendations are discussed in Section 5.4.

Additionally, it is recommended that the County conduct ongoing habitat monitoring within the SLRRP to maintain an up-to-date inventory of the distribution and species composition, and other basic characteristics of the vegetation communities on site. Ongoing monitoring within the Park will identify any adverse changes in vegetation community distribution and habitat quality, such as changes from fire, invasion by non-natives, or decline of existing species, and monitoring will indicate whether modifications to current management actions are needed. According to the FRMP, habitat monitoring should be repeated at least once every 5 years and should follow the CNPS Vegetation Rapid Assessment Protocol (CNPS 2004).

5.2 Plants

The 2010-2011 survey effort did not document any special-status plant species within the study area. Therefore, no recommendations for the preservation of special-status plant species are provided at this time. However, future vegetation monitoring and rare plant surveys within the Park should be conducted at appropriate times to maximize the detection of the three special-status plant species with high potential to occur on site. Monitoring should be conducted to the protocols outlined in the MSCP Rare Plant Monitoring Review and Revision (McEachern et al. 2007) developed for the South County Subarea or any new methods recommended by the North County MSCP FRMP, once they are developed.

5.3 Wildlife

The current survey effort documented 18 special-status wildlife species, including two species proposed for coverage under the Draft North County MSCP. Species-specific measures for management and monitoring of sensitive species are currently under development in the FRMP. Once these are developed, the County should include recommendations for the proposed covered species on site. In the meantime, the FRMP indicates that the management recommendations provided for specific habitat types are intended to be adequate for the conservation of all species proposed for coverage under the Draft North County MSCP.

5.3.1 Invertebrates

Only one special-status invertebrate species, monarch butterfly (County Group 2), was observed within the study area. Individual monarch butterflies were observed within SLRRP; however, this species is only expected to occur in low numbers in the Park due to the distance from known

overwintering sites, and lack of suitable habitat (eucalyptus groves) and larval host plants (various milkweeds, genus *Asclepias*) on site. In addition, no other special-status invertebrate species are likely to occur on site. Therefore, no recommendations are provided for invertebrate species at this time.

5.3.2 Herptofauna

Amphibians

No special-status amphibian species were detected within the study area. However, two special-status species proposed for coverage under the Draft North County MSCP have been previously recorded in the area and have a high potential to occur within the Park: arroyo toad and western spadefoot. These species will benefit from the recommended resource management actions for riparian habitats as discussed in Section 5.1. Future monitoring for these species should follow the recommendations identified by the Final North County MSCP FRMP.

In addition, existing non-native invasive species detected within the Park are known to adversely affect these species, including American bullfrog, tamarisk, and giant reed. Recommended measures to protect against these and other non-native, invasive species are discussed in Section 5.4.

Reptiles

No special-status reptile species were detected within the study area. However, nine special-status reptiles have a high potential to occur within the Park, including four species proposed for coverage under the Draft North County MSCP: orange-throated whiptail, northern red diamond rattlesnake, two-striped garter snake, and coast horned lizard. Orange-throated whiptail and coast horned lizard are identified as primary species that will benefit from the recommended resource management actions for coastal sage scrub, chaparral and grassland habitats, and two-striped garter snake will benefit from recommended resource actions for riparian habitats as discussed in Section 5.1. In addition, these will also benefit northern red diamond rattlesnake, which is known to occupy a number of different habitat types. Monitoring protocols, including survey methods and frequencies, for these species should follow those recommended by the Final North County MSCP FRMP.

In addition, coast horned lizard may be adversely affected by the invasive, non-native Argentine ant, which can displace its main food source (native ants), and bullfrog predation is a major threat to two-striped garter snake. Recommended measures to protect against these non-native, invasive species are discussed in Section 5.4.2.

5.3.3 Birds

Ten special-status birds were detected within the Park including two proposed for coverage under the Draft North County MSCP: white-faced ibis and least Bell's vireo. Least Bell's vireo is identified as a primary species that will benefit from the recommended resource management actions for riparian habitats discussed in Section 5.1, as is Cooper's hawk, although it is not proposed for coverage under the Draft North County MSCP. These will also benefit white-faced ibis. Monitoring protocols, including survey methods and frequencies, for these species should follow those recommended by the Final North County MSCP FRMP.

One of the major factors attributed to the decline of least Bell's vireo is nest parasitism by brown-head cowbird. Recommended measures to protect against brown-headed cowbird are addressed in Section 5.4.2.

5.3.4 Mammals

Seven special-status mammal species were detected within the Park, none of which are proposed for coverage under the Draft North County MSCP. However, one special-status species proposed for coverage under the Draft North County MSCP, mountain lion, has been previously recorded within SLRRP and has a high potential to occur on site. Mountain lion is identified as a primary species that will benefit from the recommended resource management actions for coastal sage scrub, chaparral and grassland habitats as discussed in Section 5.1. Monitoring protocols for mountain lion should follow the FRMP wildlife corridor monitoring recommendations, which are further discussed in Section 5.7.

5.3.5 Critical Habitat

The SLRRP contains USFWS-designated critical habitat for arroyo toad, southwestern willow flycatcher, least Bell's vireo, and coastal California gnatcatcher. Any potential impacts to USFWS-designated critical habitat from proposed projects within the Park would require consultation under Section 7 or Section 10 of the Federal Endangered Species Act. The County is currently preparing a Trails Master Plan for SLRRP, which will require consultation for any proposed impacts to the existing designated critical habitat. Once the Trails Master Plan is completed, additional surveys and reports to determine the extent of proposed trail impacts will be required.

5.4 Non-Native Invasive Species Removal and Control

As part of the Lower San Luis Rey River Linkage, one of the FRMP conservation goals for the Park is the removal of invasive, non-native species (e.g., *Tamarix*, *Arundo*, brown-headed cowbirds, bull frogs, etc.) to enhance habitat quality.

5.4.1 Plants

Nineteen invasive, non-native plant species mapped within the Park have been identified as target species in need of removal and control. A removal priority ranking system was established for these target species in conjunction with the development of the *San Luis Rey River Park Vegetation Management Plan* (Dudek 2011). The identified target species and their removal priority ranking are presented in Table 13. Species ranked as high priority are recommended for control as soon as possible; species ranked as moderate priority are recommended for control as soon as high-priority species are under control; and species ranked as low priority are recommended for control after high and moderate priority species are under control.

Table 13
Removal Priority of Target Invasive Non-Native Species

Common Name	Scientific Name	Removal Priority
Castor Bean	*Ricinus communis*	High
English ivy	*Hedera helix*	High
Giant Reed	*Arundo donax*	High
Pampas Grass	*Cortaderia selloana*	High
Sweet Fennel	*Foeniculum vulgare*	High
Tamarisk (Salt Cedar)	*Tamarix ramosissima*	High
Perennial Pepperweed	*Lepidium latifolia*	High
Black mustard	*Brassica nigra*	Moderate
Bull thistle	*Cirsium vulgare*	Moderate
Crown daisy	*Glebionis [Chrysanthemum] coronarium*	Moderate
Eucalyptus	*Eucalyptus* sp.	Moderate
Italian plumeless thistle	*Carduus pycnocephalus*	Moderate
Mexican Fan Palm	*Washingtonia robusta*	Moderate
Poison hemlock	*Conium maculatum*	Moderate
Shortpod mustard	*Hirschfeldia incana*	Moderate
Tocalote	*Centaurea melitensis*	Moderate
Tree Tobacco	*Nicotiana glauca*	Moderate
Athel Tamarisk	*Tamarix aphylla*	Low
Peruvian Peppertree	*Schinus molle*	Low

Recommended removal methodologies including manual removal, mechanical removal, herbicides, and cut and daub are discussed in further detail in the vegetation management plan (Dudek 2011b). However, the appropriate removal methodology should ultimately be determined with consideration of many variables, including time of year, severity of infestation, presence of sensitive species, the degree of intermixing of invasive species with sensitive native habitats, access, and proximity to surface water. The U.S. Army Corps of Engineers (ACOE) and CDFG should be consulted regarding potential permitting requirements if invasive removal will occur in waterways or wetlands under their jurisdiction.

It should be noted that the MRCD, in cooperation with the County, has been treating invasives, mostly giant reed, within the west and central parcels of the Park over the last several years. Partnerships are a good way to obtain the support and funding necessary to complete invasive plant removal projects. It is recommended that DPR continue to coordinate and partner with other agencies such as MRCD, non-profit organizations and/or volunteer groups in order to seek funding and implement invasive, non-native plant removal projects within the Park.

5.4.2 Wildlife

Brown-headed cowbirds were detected within the study area. This species is a wildlife management concern within SLRRP because it poses a threat to common and sensitive passerines within the Park including least Bell's vireo, southwestern willow flycatcher, yellow warbler, and yellow-breasted chat. Although few brown-headed cowbirds were observed, the data may understate the level of cowbird use on site since cowbirds breed primarily between April and May and many of the surveys were conducted earlier in the year. Gathering additional information regarding the distribution and abundance of brown-headed cowbirds on site during the breeding season is recommended to understand the extent of breeding activity and the extent to which native species, such as least Bell's vireo, may be impacted.

The FRMP states that if management of cowbird populations within the study area is determined to be necessary, possible control methods include trapping adults or removing eggs from host nests (County of San Diego 2009b). Cowbird trapping is currently being conducted within the Park in support of the San Luis Rey River Flood Risk Management Project. It is recommended that DPR continue and potentially expand the trapping program within the Park to reduce impacts to sensitive species.

European starling may take over the cavity nest resources in an area, thus outcompeting native cavity nesters and reducing their reproductive success. Species that might be affected by European starlings include woodpeckers, bluebirds, wrens, and others. This is a region-wide issue, and resources would probably not be well-spent attempting to address the issue on this

particular Park. European starling travels large distances between nesting and foraging resources, so would likely just reoccupy managed areas. They are probably best controlled en mass on wintering roost sites.

Bullfrogs were also detected within SLRRP during the 2010-2011 surveys. The presence of adult bullfrogs within the Park may directly and indirectly impact arroyo toad, and possibly western spadefoot, both of which have been previously detected within the Park or adjacent areas. Therefore, removal of this introduced predator could improve arroyo toad and western spadefoot habitat and increase the success of recruitment. However, because source and satellite populations of bullfrog occur along the entire San Luis Rey River, efforts to eradicate and control bullfrog within the SLRRP is likely infeasible.

Non-native Argentine ants often displace native ants, an important food source for the coast horned lizard, which has a high potential to occur on site. The FRMP suggests restriction of litter and food waste, inspection of planting stock, and education of nearby residents about measures they can take to reduce the risk and extent of invasion (County of San Diego 2009b). Argentine ants are generally associated with a water source. It is recommended that monitoring for this invasive species be conducted along the San Luis Rey River and within other mesic portions of the Park, as well as around any observed areas of litter and food waste.

5.5 Restoration Opportunities

The Park is generally composed of high-quality native vegetation communities within the San Luis Rey River channel, and highly disturbed vegetation communities on the floodplains and buffers. Restoration opportunities within the river channel include invasive species control and passive restoration. Restoration opportunities within the floodplain and buffer habitat are abundant, but would require active restoration to be successful.

Two methods of restoration are proposed for the disturbed areas within the Park: (1) passive restoration and (2) active restoration. Passive restoration involves performing weed and erosion control, as needed, in disturbed areas where natural recruitment of native plant species is actively occurring. Active restoration involves soil preparation and planting of disturbed or degraded areas where native vegetation recruitment is not actively occurring. Active restoration is recommended in heavily disturbed areas that are not showing significant natural recruitment of native plant species, and/or that are degraded from erosion. *The San Luis Rey River Park Vegetation Management Plan* (Dudek 2011) identifies specific restoration areas and details restoration methods.

5.6 Fire Management

The Park is dominated by southern cottonwood-willow riparian forest, with patches of non-native grassland (in the central parcel) and disturbed habitat (in the northeastern parcel). While riparian forest habitats are not typically susceptible to annual burning, grass cover can burn yearly (Minnich and Scott 2005). Riparian forests tend to limit ground fuel accumulation with age. Canopy closure serves to "shade out" understory plants, resulting in mature riparian forests characterized by a dense canopy layer and an understory consisting primarily of leaf and twig litter and downed woody debris. Canopy closure also reduces habitat suitability for certain rare species such as the arroyo toad. Edges of riparian forest along ecotones or roadways often include shrub or grass understory creating ladder fuels that allow the potential for canopy fire spread. The primary concern for vegetation type conversion and increased fire hazard in the Park is the presence and encroachment of non-native/exotic plants into open space areas. This condition has increased the overall fuel load and likelihood for higher intensity fire.

A vegetation management plan has been developed for the Park that includes both a short-term tactical fire suppression plan and long-term strategic vegetation management plan, which considers strategic fire prevention activities, fire suppression with regard to fire effects on habitat, and post-fire monitoring and rehabilitation (Dudek 2011). Fuel management recommendations include prescriptions specific to the high-value vegetation resources present on site (i.e., southern cottonwood-willow riparian forest, annual grasslands and coastal sage scrub), based on a combination of prevention practices including grazing, mowing, herbicides, prescribed fire, thinning, and fuel breaks. Management recommendations that would complement fuel reduction practices are also identified, including maintaining and delineating fuel modification zones, providing emergency fire access, promoting data sharing, controlling illegal access, public education, ignition reduction, fuels management, and fire suppression (Dudek 2011).

5.7 Wildlife Linkages and Corridors

Wildlife are expected to move freely within the Park given that is relatively open and the entire area is accessible to medium and large mammals. Important wildlife movement trends through this area are the regional east-west movement of medium and large species through the riparian corridor and in the upland habitat to the south, and north-south ecotonal movement for smaller resident species attempting to find vital resources on the northern riparian/upland border.

Per the FRMP, target species for corridor use include California gnatcatchers, mountain lion, and southern mule deer. Monitoring protocols for dispersal of California gnatcatchers are still under development and should follow any recommendations identified in the final FRMP. Corridor usage by mammals should be monitored as described below.

Monitoring stations should be established along the San Luis Rey River and in the upland habitat to the south, as well as adjacent to SR-76 wildlife underpasses that facilitate north-south movement between ecotones. At these stations, track identification, scat identification, and video observation methods should be employed to determine use by target mammal species. Wildlife corridor monitoring should occur every 5 years. The scope of monitoring will be sufficient to determine if corridors are being utilized, but not to determine the extent of use (i.e., how many individuals of any given species use a corridor).

5.8 Additional Management Recommendations

5.8.1 Public Access

The SLRRP proposes to incorporate recreational needs and natural/cultural resource education with the inclusion of public trails and interpretive kiosks. A PEIR was prepared for the SLRRP Master Plan, and both documents were certified/approved by the County Board of Supervisors in 2008. Part of this process will be to develop a trails master plan for the SLRRP. This plan will need to balance the desire to provide human access with wildlife habitat and movement needs.

The Park currently receives human use, which may or may not include approved uses. These uses include hiking, equestrian activities, biking, fishing, and potentially camping. Because much of the interior is dense vegetation, human activity is mostly constrained to the network of paths that weave through the Park. These would likely be the same paths that medium and large mammal species would use to move through the Park, and some of these paths would be expected to be included within any future planned trail network. Once established, careful management will need to take place to monitor activity and protect sensitive and endangered resources in the Park.

5.8.2 Hydrological Management

The Draft North County MSCP Plan FRMP indicates some of the biggest challenges to riparian habitats, such as those within the study area associated with the San Luis Rey River, are directly related to hydrology factors including accumulation of contaminants in water sources, alteration of hydrologic regimes, and erosion due to human uses.

These threats are best addressed at the watershed level. Given that the project site includes a very small portion of the watershed, there are limited site-specific activities that can be done to control pollution or hydrologic changes that would impact riparian habitat. The majority of the effort aimed at protecting riparian habitat within the San Luis Rey River should be directed toward cooperation with regional watershed management efforts to address pollution and hydromodification. These efforts are principally led by the Regional Water Quality Control

Board (RWQCB) through issuance of State Construction General Permit and Municipal Stormwater Permits and related stormwater management programs. Within the study area, maintenance of riparian cover along creek banks is the surest method of minimizing erosion and maximizing potential for nutrient transformation and pollutant removal.

In conjunction with the habitat monitoring described in Section 5.1, a visual assessment of channel conditions should be conducted. Where channel conditions are considered poor (e.g., unstable banks), follow-up surveys should be conducted to determine if management actions are necessary.

6.0 REFERENCES

51 FR 16474–16482. Final rule: "Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Least Bell's Vireo." 1986.

59 FR 64589–64866. Final rule: "Endangered and Threatened Wildlife and Plants: Determination of Endangered Status for the Arroyo Southwestern Toad." 1994.

66 FR 9413–9474. Final rule: "Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Arroyo Toad." 2001.

70 FR 19562–19633. Final rule: "Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Arroyo Toad (*Bufo californicus*)." April 13, 2005.

AOU (American Ornithologists' Union). 2008. "Check-List of North American Birds: List of the 2,055 Bird Species Known From the AOU Check-list Area." AOU | Check-List of North American Birds | Browse the List. Accessed August 3, 2010. http://www.aou.org/checklist/north/full.php.

Bent, A.C. 1950. "Life Histories of North American Wagtails, Shrikes, Vireos, and their Allies." Washington D.C.: *U.S. National Museum Bulletin* 197.

Bent, A.C. 1953. *Life Histories of North American Wood Warblers*. Washington D.C.: *U.S. National Museum Bulletin* 203.

Bowman, R.H. 1973. *Soil Survey, San Diego Area, California, Part 1*. United States Department of the Agriculture. 104 pp. + appendices.

CaliforniaHerps. 2009. "California Reptiles and Amphibians." Accessed December 2009. http://www.californiaherps.com/index.html.

Cal-IPC (California Invasive Plant Council). 2010. "California Invasive Plant Inventory Database." Berkley, California: California Invasive Plant Council. Accessed December 2010. http://plants.usda.gov/java/noxious?rptType=State&statefips=06.

Caltrans (California Department of Transportation). 2007. *Natural Environment Study: State Route 76 Melrose to South Mission Highway Improvement Project in San Diego County, California*. 11-SD-76-KP 12.1–21.1 (PM 7.5–13.1), EA 080100. September 2007.

Caltrans. 2010. *Natural Environment Study: State Route 76 Mission Road to Interstate 15 Highway Improvement Project in San Diego County, California*. 11-SD-76 (PM 12.4/17.6), 11-SD-15 (PM 46.1/47.1), EA number 257110. August 2010.

City of San Diego Public Utilities Department, Water Operations Branch, Systems Operations Division. 2011. Reservoir Status Report. June 28, 2011.

CDFG (California Department of Fish and Game). 2000. *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities*. December 9, 1983. Revised May 8, 2000.

CDFG. 2007. "Commonly Asked Questions About Mountain Lions". Updated July 2007. Accessed March 7, 2011 at http://www.dfg.ca.gov/news/issues/lion/lion_faq.html.

CDFG. 2009. Natural Agriculture Imagery Program (NAIP), 4-band aerial imagery for California. Summer 2009. http://www.dfg.ca.gov/biogeodata/gis/imaps.asp.

CDFG. 2011a. *RareFind*, Version 4. Sacramento, California: California Natural Diversity Database. Accessed May 2011. http://www.dfg.ca.gov/ biogeodata/cnddb/mapsanddata.asp.

CDFG. 2011b. *Special Vascular Plants, Bryophytes, and Lichens List*. California Natural Diversity Database (CNDDB). January. 85 pp.

CDFG. 2011c. "Special Animals (898 taxa)." California Natural Diversity Database (CNDDB), Biogeographic Data Branch. January. 60 pp.

Chapin, E.A. 1925. "Food Habits of the Vireos*." Agricultural Bulletin* 1355. Washington, DC: U.S. Department of Agriculture.

CNPS (California Native Plant Society). 2001. *CNPS Botanical Survey Guidelines*. December 9, 1983. Revised June 2, 2001. Accessed April 15, 2011. http://cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf.

CNPS. 2004. *Vegetation Rapid Assessment Protocol*. CNPS Vegetation Committee. November 5, 2001, Revised September 20, 2004. Available at: http://www.cnps.org/cnps/vegetation/pdf/rapid_assessement_protocol.pdf.

CNPS. 2011. *Inventory of Rare and Endangered Plants* Online ed. Version 8-01a. Sacramento, California: CNPS. Accessed January 4, 2011. http://www.rareplants.cnps.org/detail/1599.html.

Comrack, L.A. 2008. "Yellow-breasted Chat (*Icteria virens*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*. Edited by. W.D. Shuford and T. Gardali, 351–358. In *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: California Department of Fish and Game.

Cornell Lab of Ornithology. 2011. "Sharp-shinned Hawk." *All About Birds*. Accessed June 19, 2011. http://www.allaboutbirds.org/guide/Sharp-shinned_Hawk/lifehistory.

County of Riverside. 2008. "BIRDS." Volume 2 – The MSHCP Reference Document. *Western Riverside County Multiple Species Habitat Conservation Plan*. County of Riverside Transportation and Land Management Agency (TLMA). Accessed October 20, 2008. http://www.rctlma.org/mshcp/volume2/birds.html.

County of San Diego. 1998. *Final Multiple Species Conservation Program. MSCP Plan*. August. Accessed April 2011. http://www.sdcounty.ca.gov/dplu/mscp/docs/SCMSCP/FinalMSCPProgramPlan.pdf

County of San Diego. 2008. Proposed North County MSCP Covered Species List. Accessed February 2008, at: http://www.sdcounty.ca.gov/dplu/mscp/docs/NCMSCP/ NCMSCP_species_list_Feb_2008.pdf.

County of San Diego. 2009a. *County of San Diego rare species list*.

County of San Diego. 2009b. *Draft Multiple Species Conservation Program: North County Plan*.

County of San Diego. 2010. *Report Format and Content Requirements: Biological Resources*. Fourth Revision. September 15, 2010. Accessed April 2011. http://www.co.san-diego.ca.us/dplu/docs/Biological_Report_Format.pdf.

Craig, D. and P.L. Williams. 1998. "Willow Flycatcher (*Empidonax traillii*)." *California Partners in Flight Riparian Bird Conservation Plan*. Accessed February 8, 2008. http://www.prbo.org/calpif/htmldocs/riparian_v-2.html.

Crother, B.I. 2008. *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in our Understanding*. 6th ed. Herpetological Circular No. 37. Edited by J.J. Moriarty. Shoreview, Minnesota: Society for the Study of Amphibians and Reptiles.

Digital Globe. 2008. Map. GIS data.

Dudek. 2011. *San Luis Rey River Park Vegetation Management Plan*. Prepared for County of San Diego Department of Parks and Recreation.

Eckerle, K.P. and C.F. Thompson. 2001. "Yellow-Breasted Chat (*Icteria virens*)." In *The Birds of North America*. Edited by A. Poole and F. Gill. No. 575. Philadelphia, Pennsylvania: *The Birds of North America, Inc*.

EDAW (EDAW, Inc.). 2009. State Route 76 Highway Improvement Project Wildlife Movement Study 2007/2008 South Mission Road to Interstate 15. Prepared for Caltrans. August.

Ettinger, A.O. and J.R. King. 1980. "Time and Energy Budgets of the Willow Flycatcher (*Empidonax traillii*) during the Breeding Season." *Auk* 97:533–546.

Flett, M.A. and S.D. Sanders. 1987. "Ecology of a Sierra Nevada Population of Willow Flycatchers." *Western Birds* 18:37–42.

FRAP (Fire and Resource Assessment Program). 2009. California Department of Forestry and Fire Protection. Accessed November 17, 2009. http://frap.cdf.ca.gov/.

Garrett, K. and J. Dunn. 1981. *The Birds of Southern California: Status and Distribution.* Los Angeles, California: Los Angeles Audubon Society.

Grinnell, J. and A.H. Miller. 1944. "The Distribution of the Birds of California." *Pacific Coast Avifauna* Number 27. Berkeley, California: Copper Ornithological Club. Reprinted in Lee Vining, California: Artemisia Press. April 1986.

Guinan, Judith A., Patricia A. Gowaty, and Elsie K. Eltzroth. 2008. "Western Bluebird (*Sialia mexicana*)." *The Birds of North America Online*. Edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/510doi:10.2173/bna.510.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame-Heritage Program, California Department of Fish and Game. October 1986.

Holland, D.C. and R.H. Goodman. 1998. *A Guide to the Amphibians and Reptiles of MCB Camp Pendleton, San Diego County, California*. Prepared for AC/S Environmental Security Resource Management Division MCB Camp Pendleton, California. Contract M00681-94-C-0039.

Jennings, M.R., and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Final report. Commissioned by the California Department of Fish and Game, Inland Fisheries Division Endangered Species Project. November 1, 1994. Accessed February 9, 2010. http://www.dfg.ca.gov/wildlife/nongame/publications/docs/herp_ssc.pdf.

Jepson Flora Project. 2010. "Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California." Berkeley, California: University of California. Accessed October 8, 2010. http://ucjeps.berkeley.edu/interchange/I_status_1+2.html.

Kirk, David A. and Michael J. Mossman. 1998. "Turkey Vulture (Cathartes aura)," In The Birds of North America Online. Edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/ 339doi:10.2173/bna.339.

Kus, B.E. 1994. Breeding Status of the Least Bell's Vireo in the Tijuana River Valley, California, 1994. Prepared for the International Boundary and Water Commission.

Lemm, J.M. 2006. *Field Guide to Amphibians and Reptiles of the San Diego Region*. Berkeley, California: University of California Press.

McEachern, K., B. Pavlik, J. Rebman, and R. Sutter. 2007. Multiple Species Conservation Program (MSCP) rare plant monitoring review and revision: United States Geological Survey Scientific Investigations Report 2007-5016, Multiple Species Conservation Program Division. San Diego, California.

Marti, Carl D., Alan F. Poole and L. R. Bevier. 2005. "Barn Owl (*Tyto alba*)," In *The Birds of North America Online*. Edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna / species/001doi:10.2173/bna.1.

Miller, B. W. 2001. "A method for determining relative activity of free flying bats using a new activity index for acoustic monitoring." *Acta Chiropterologica* 3:93–105.

Minnich, R.A. and Scott, T.A. 2005. Wildland fire and the conservation of coastal sage scrub, On-line at: http://ecoregion.ucr.edu/review/cssfirex.pdf. Accessed April 28, 2005.

NABA (North American Butterfly Association). 2001. *North American Butterfly Association (NABA) Checklist & English Names of North American Butterflies.* 2nd ed. Morristown, New Jersey: NABA. Accessed June 9, 2009. http://www.naba.org/pubs/enames2.html.

NatureServe. 2011. *NatureServe Explorer*: An Encyclopedia of Life. Version 7.1. February 2, 2009. Data last updated August 2010. Accessed March 2011. http://www.natureserve.org/explorer/index.htm.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge. 2008. *Draft Vegetation Communities of San Diego County*. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California." Robert F. Holland, PhD., October 1986. March.

O'Farrell, M. J., B. W. Miller, and W. L. Gannon. 1999. "Qualitative identification of free-flying bats using the Anabat detector." *Journal of Mammalogy* 80:11–23.

Reiser, C.H. 1994. *Rare Plants of San Diego County*. May 1994. Accessed March 2011. http://sandiego.sierraclub.org/rareplants/008.html.

Salata, L. 1984. *Status of the Least Bell's Vireo on Camp Pendleton, California: Report on Research Done in 1984*. Laguna Niguel, California: USFWS.

Sanders, S. D., and M. A. Flett. 1989. Ecology of a Sierra Nevada population of Willow Flycatchers (*Empidonax traillii*), 1986–1987. State of California, the Resources Agency, Department of Fish and Game, Wildlife Management Division, Nongame Bird and Mammal Section. 27pp.

SanGIS. 2008. Map. San Diego Geographic Information System (SanGIS) data.

Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, California: Ibis Publishing Company.

Sogge, M.K., R.M. Marshall, S.J. Sferra, and T.J. Tibbitts. 1997. *A Southwestern Willow Flycatcher Natural History Summary and Survey Protocol*. National Park Service, U.S. Department of the Interior.

Stebbins, R.C. 2003. *Western Reptiles and Amphibians*. Peterson Field Guide, 3rd ed. New York, New York: Houghton Mifflin Company.

Sweet, S.S. 1992. *Ecology and Status of the Arroyo Toad (*Bufo microscaphus californicus*) on the Los Padres National Forest of Southern California, with Management Recommendations*. Report to U.S. Forest Service, Los Padres National Forest; Goleta, California.

Taylor, W.K., and H. Hanson 1970. "Observations on the Breeding Biology of the Vermilion Flycatcher in Arizona." *Wilson Bulletin* 82:315–319.

Terres, J.K. 1980. *The Audubon Society Encyclopedia of North American Birds*. New York, New York: Alfred A. Knopf.

Tinkham, E.R. 1949. "Notes on the Nest-Building of the Vermilion Flycatcher." *Condor* 51:230–231.

Urquhart, F.A. 1987. *The Monarch Butterfly: International Traveler*. Toronto, Canada: University of Toronto Press.

USDA (U.S. Department of Agriculture). 2010. "California." *State PLANTS Checklist* (Online Plants Database). Accessed October 8, 2010. http://plants.usda.gov/dl_state.html.

USGS (U.S. Geological Survey). 2008. "Herpetological Monitoring Using a Pitfall Trapping Design in Southern California."

USGS. 2011. "San Luis Rey, CA" [map]. 1:24,000. 7.5-Minute Series (Topographic). Reston, Virginia: USGS.

USFWS (U.S. Fish and Wildlife Service). 1996. *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants*.

USFWS. 1998. *Draft Recovery Plan for the Least Bell's Vireo (Vireo bellii pusillus)*. Portland, Oregon: USFWS, Region 1.

Western Regional Climate Center. 2009. California Climate Data Archive. http://www.calclim.dri.edu/rawslist.html.

Wilson, D.E., and D.M. Reeder, eds. 2005. *Mammal Species of the World: A Taxonomic and Geographic Reference*. 3rd ed. Baltimore, Maryland: Johns Hopkins University Press.

Wolf, B.O. and S.L. Jones. 2000. "Vermilion Flycatcher." In *The Birds of North America Online*. Edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. Accessed February 12, 2008. http://bna.birds.cornell.edu/bna/species/484

Zeiner, D.C., W.F. Laudenslayer, Jr., and K.E. Mayer, eds. 1988. *California's Wildlife, Volume 1: Amphibians and Reptiles*. Sacramento, California: CDFG.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1990a. *California's Wildlife, Volume 2: Birds*. Sacramento, California: CDFG.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, ed. 1990b. *California's Wildlife, Volume 3: Mammals*. Sacramento, California: CDFG.

INTENTIONALLY LEFT BLANK

APPENDIX A

Observed Species List – Plants

APPENDIX A
Observed Species List – Plants

VASCULAR SPECIES

***ADOXACEAE* – MUSKROOT FAMILY**

Sambucus nigra – black elderberry

***ANACARDIACEAE* – SUMAC OR CASHEW FAMILY**

* *Schinus molle* – Peruvian pepper tree

Toxicodendron diversilobum – Pacific poison oak

***APIACEAE* – CARROT FAMILY**

* *Anthriscus caucalis* – bur chervil

* *Apium graveolens* – wild celery

* *Conium maculatum* – poison hemlock

Daucus pusillus – American wild carrot

* *Foeniculum vulgare* – sweet fennel

***ARALIACEAE* – GINSENG FAMILY**

* *Hedera helix* – English ivy

ARECACEAE – PALM FAMILY

* *Washingtonia robusta – Mexican fan palm*

***ASTERACEAE* – SUNFLOWER FAMILY**

Ambrosia acanthicarpa – flatspine bur ragweed

Ambrosia psilostachya – Cuman ragweed

Artemisia douglasiana – Douglas' sagewort

Artemisia dracunculus – tarragon

Baccharis pilularis – coyotebrush

Baccharis salicifolia – mule-fat

* *Carduus pycnocephalus* – Italian plumeless thistle

* *Centaurea benedicta* – blessed thistle

* *Centaurea melitensis* – Maltese star-thistle

* *Chamomilla suaveolens* – disc mayweed

Chaenactis glabriuscula var. *glabriuscula* – yellow pincushion

* *Cirsium vulgare* – bull thistle

Conyza canadensis – Canadian horseweed

Deinandra fasciculata – clustered tarweed

Eriophyllum confertiflorum – golden-yarrow

Euthamia occidentalis – western goldentop

* *Glebionis coronaria* – crowndaisy

Gnaphalium californicum – ladies' tobacco
* *Gnaphalium luteoalbum* – Jersey cudweed
* *Hedypnois cretica* – Cretanweed
* *Helminthotheca echioides* – bristly oxtongue
Heterotheca grandiflora – telegraphweed
* *Hypochaeris glabra* – smooth cat's ear
Isocoma menziesii – Menzies' goldenbush
* *Lactuca serriola* – prickly lettuce
Lasthenia californica – California goldfields
* *Logfia gallica* – narrowleaf cottonrose
Pluchea odorata – sweetscent
Pseudognaphalium canescens – Wright's cudweed
* *Silybum marianum* – blessed milkthistle
* *Sonchus asper* – spiny sowthistle
* *Sonchus oleraceus* – common sowthistle
Stephanomeria virgata – rod wirelettuce
Stylocline gnaphaloides – mountain neststraw
Xanthium strumarium – rough cocklebur

***BETULACEAE* – BIRCH FAMILY**
Alnus rhombifolia – white alder

***BORAGINACEAE* – BORAGE FAMILY**
Amsinckia menziesii – Menzies' fiddleneck
Cryptantha sp . – cryptantha
Cryptantha intermedia – Clearwater cryptantha
Heliotropium curassavicum – salt heliotrope
Pectocarya penicillata – sleeping combseed
Phacelia cicutaria – caterpillar phacelia
Phacelia distans – distant phacelia
Phacelia imbricata – imbricate phacelia
Phacelia ramosissima – branching phacelia
Pholistoma auritum – blue fiestaflower

***BRASSICACEAE* – MUSTARD FAMILY**
* *Brassica nigra* – black mustard
* *Hirschfeldia incana* – shortpod mustard
* *Lepidium latifolium* – broadleaved pepperweed
Lepidium virginicum ssp. *virginicum* – Virginia pepperweed
Nasturtium officinale – watercress
* *Raphanus raphanistrum* – wild radish

* *Raphanus sativus* – cultivated radish

***CACTACEAE* – CACTUS FAMILY**

* *Opuntia ficus-indica* – Barbary fig
Opuntia littoralis – coastal pricklypear

***CARYOPHYLLACEAE* – PINK FAMILY**

Loeflingia squarrosa var. *artemisiarum* – sagebrush loeflingia
* *Polycarpon tetraphyllum* – fourleaf manyseed
* *Spergularia bocconi* – Boccone's sandspurry
* *Stellaria media* – common chickweed

***CHENOPODIACEAE* – GOOSEFOOT FAMILY**

Atriplex triangularis – triangle orache
* *Chenopodium album* – lambsquarters
Chenopodium californicum – California goosefoot
* *Chenopodium murale* – nettleleaf goosefoot
* *Salsola tragus* – prickly Russian thistle

***CRASSULACEAE* – STONECROP FAMILY**

Crassula connata – sand pygmyweed

***CUCURBITACEAE* – GOURD FAMILY**

Cucurbita foetidissima – Missouri gourd
Marah macrocarpus – Cucamonga manroot

***CYPERACEAE* – SEDGE FAMILY**

Bolboschoenus robustus – sturdy bulrush
Carex sp. – sedge
Cyperus esculentus – yellow nutsedge
Schoenoplectus pungens – common threesquare

***EQUISETACEAE* – HORSETAIL FAMILY**

Equisetum sp. – horsetail

***EUPHORBIACEAE* – SPURGE FAMILY**

Croton californicus – California croton
Croton setigerus – dove weed
* *Euphorbia lathyrus* – gopher plant
* *Euphorbia peplus* – petty spurge
* *Ricinus communis* – castorbean

***FABACEAE* – LEGUME FAMILY**

Acmispon americanus – American bird's-foot trefoil
Acmispon glaber – common deerweed
Acmispon strigosus – strigose bird's-foot trefoil
Amorpha fruticosa – desert false indigo
Lathyrus sp. – pea
* *Lotus corniculatus* – bird's-foot trefoil
Lupinus bicolor – miniature lupine
* *Medicago polymorpha* – burclover
* *Melilotus albus* – yellow sweetclover
* *Melilotus indicus* – annual yellow sweetclover

***FAGACEAE* – OAK FAMILY**

Quercus agrifolia – California live oak

***GERANIACEAE* – GERANIUM FAMILY**

* *Erodium botrys* – longbeak stork's bill
* *Erodium cicutarium* – redstem stork's bill
* *Erodium moschatum* – musky stork's bill
Geranium carolinianum – Carolina geranium

***JUNCACEAE* – RUSH FAMILY**

Juncus bufonius – toad rush
Juncus mexicanus – Mexican rush

***LAMIACEAE* – MINT FAMILY**

* *Marrubium vulgare* – horehound
Salvia apiana – white sage

LOASACEAE – LOASA FAMILY

Mentzelia sp. – blazingstar

***LYTHRACEAE* – LOOSESTRIFE FAMILY**

* *Lythrum hyssopifolia* – hyssop loosestrife

***MALVACEAE* – MALLOW FAMILY**

* *Malva parviflora* – cheeseweed mallow

***MYRSINACEAE* – MYRSINE FAMILY**

* *Anagallis arvensis* – scarlet pimpernel

MYRTACEAE – MYRTLE FAMILY

* *Eucalyptus* sp. – eucalyptus

***ONAGRACEAE* – EVENING PRIMROSE FAMILY**

Camissonia bistorta – southern suncup
Camissonia parvula – Lewis River suncup
Camissonia strigulosa – sandysoil suncup
Clarkia purpurea – winecup clarkia
Oenothera elata ssp. *hookeri* – Hooker's evening primrose

***PAPAVERACEAE* – POPPY FAMILY**

Dendromecon rigida – tree poppy
Eschscholzia californica – California poppy

***PHRYMACEAE* – LOPSEED FAMILY**

Mimulus pilosus – false monkeyflower

***PLANTAGINACEAE* – PLANTAIN FAMILY**

* *Plantago major* – common plantain
* *Veronica anagallis-aquatica* – water speedwell

***PLATANACEAE* – PLANE TREE, SYCAMORE FAMILY**

Platanus racemosa – California sycamore

***PLUMBAGINACEAE* – LEADWORT FAMILY**

* *Limonium sinuatum* – wavyleaf sea lavender

***POACEAE* – GRASS FAMILY**

* *Avena fatua* – wild oat
* *Arundo donax* – giant reed
* *Avena barbata* – slender oat
* *Brachypodium distachyon* – purple false brome
* *Bromus diandrus* – ripgut brome
* *Bromus hordeaceus* – soft brome
* *Bromus madritensis* ssp. *rubens* – red brome
* *Bromus tectorum* – cheatgrass
* *Cortaderia selloana – pampas grass*
* *Cynodon dactylon* – Bermudagrass
Distichlis spicata – saltgrass
* *Hordeum murinum* – mouse barley
Leymus condensatus – giant wildrye
Leymus triticoides – beardless wildrye

* *Lolium multiflorum* – Italian ryegrass
* *Polypogon monspeliensis* – annual rabbitsfoot grass
* *Schismus barbatus* – common Mediterranean grass
Schismus sp. – Mediterranean grass
* *Vulpia myuros* – rat-tail fescue

***POLEMONIACEAE* – PHLOX FAMILY**
Gilia angelensis – chaparral gilia

***POLYGONACEAE* – BUCKWHEAT FAMILY**
Chorizanthe procumbens – prostrate spineflower
Eriogonum fasciculatum – Eastern Mojave buckwheat
Lastarriaea coriacea – leather spineflower
Rumex californicus – toothed willow dock
* *Rumex conglomeratus* – clustered dock
* *Rumex crispus* – curly dock

***PORTULACACEAE* – PURSLANE FAMILY**
* *Portulaca oleracea* – little hogweed

***RANUNCULACEAE* – BUTTERCUP FAMILY**
Clematis sp. – leather flower

***ROSACEAE* – ROSE FAMILY**
Rosa sp. – rose
Rubus ursinus – California blackberry

***RUBIACEAE* – MADDER FAMILY**
Galium aparine – stickywilly

***SALICACEAE* – WILLOW FAMILY**
Populus fremontii – Fremont cottonwood
Salix exigua – narrowleaf willow
Salix gooddingii – Goodding's willow
Salix laevigata – red willow
Salix lasiolepis – arroyo willow

***SAURURACEAE* – LIZARD'S-TAIL FAMILY**
Anemopsis californica – yerba mansa

***SOLANACEAE* – NIGHTSHADE FAMILY**
Datura wrightii – jimsonweed

Datura wrightii – sacred thorn-apple
* *Nicotiana glauca* – tree tobacco

***TAMARICACEAE* – TAMARISK FAMILY**
* *Tamarix aphylla* – Athel tamarisk
* *Tamarix ramosissima* – saltcedar

***TYPHACEAE* – CATTAIL FAMILY**
Typha latifolia – broadleaf cattail

***URTICACEAE* – NETTLE FAMILY**
Urtica dioica – stinging nettle

***VITACEAE* – GRAPE FAMILY**
Vitis girdiana – desert wild grape

* Signifies introduced (non-native) species

INTENTIONALLY LEFT BLANK

APPENDIX B

Observed Species List – Wildlife

APPENDIX B
Observed Species List – Wildlife

WILDLIFE SPECIES – VERTEBRATES

AMPHIBIANS

***BUFONIDAE* – TOADS**

Anaxyrus boreas – Western toad

***HYLIDAE* – TREEFROGS**

Pseudacris cadaverina – California treefrog
Pseudacris regilla – Northern Pacific treefrog

***RANIDAE* – TONGUELESS FROGS**

* *Lithobates catesbeianus* – American bullfrog

REPTILES

***ANGUIDAE* – LIZARDS**

Elgaria multicarinata – Southern alligator lizard

***COLUBRIDAE* – COLUBRID SNAKES**

Coluber flagellum – Coachwhip
Lampropeltis getula – Common kingsnake
Pituophis cantifer – Gophersnake

***EMYDIDAE* – BOX TURTLES AND POND TURTLES**

* *Chrysemys picta* – Painted turtle

***PHRYNOSOMATIDAE* – EARLESS LIZARDS**

Sceloporus graciosus – Common sagebrush lizard
Sceloporus occidentalis – Western fence lizard
Uta stansburiana – Common side-blotched lizard

***SCINCIDAE* – SKINKS**

Plestidon skiltonianus – Western skink

***VIPERIDAE* – VIPERS**

Crotalus atrox – Western diamond-backed rattlesnake

FISH

***CENTRARCHIDAE* – SUNFISH**

* *Lepomis cyanellus* – Green sunfish

***CYPRINIDAE* – CARP**

* *Cyprinus carpio* – Common carp

***POECILIIDAE* – LIVEBEARERS**

* *Gambusia affinis* – Mosquitofish

BIRDS

***ACCIPITRIDAE* – HAWKS**

Accipiter cooperii – Cooper's hawk
Buteo jamaicensis – Red-tailed hawk
Buteo lineatus – Red-shouldered hawk

***AEGITHALIDAE* – BUSHTITS**

Psaltriparus minimus – Bushtit

***ANATIDAE* – DUCKS, GEESE, AND SWANS**

Anas platyrhynchos – Mallard

***APODIDAE* – SWIFTS**

Chaetura vauxi – Vaux's swift

***ARDEIDAE* – HERONS, BITTERNS, AND EGRETS**

Ardea alba – Great egret
Ardea herodias – Great blue heron
Bubulcus ibis – Cattle egret
Egretta thula – Snowy egret

***CAPRIMULGIDAE* – NIGHTHAWKS AND NIGHTJARS**

Phalaenoptilus nuttallii – Common poorwill

***CATHARTIDAE* – VULTURES AND CONDORS**

Cathartes aura – Turkey vulture

***CHARADRIIDAE* – PLOVERS, DOTTERELS, AND LAPWINGS,**

Charadrius vociferus – Killdeer

***COLUMBIDAE* – PIGEONS AND DOVES**

* *Columba livia* – Rock pigeon (rock dove)
Zenaida macroura – Mourning dove

***CORVIDAE* – JAYS AND CROWS**

Aphelocoma californica – Western scrub-jay

Corvus brachyrhynchos – American crow
Corvus corax – Common raven

***CUCULIDAE* – CUCKOOS, ROADRUNNERS**
Geococcyx californianus – Greater roadrunner

***EMBERIZIDAE* – BUNTINGS AND SPARROWS**
Melospiza melodia – Song sparrow
Melozone crissalis – California towhee
Pipilo maculatus – Spotted towhee

***FALCONIDAE* – FALCONS**
Falco sparverius – American kestrel

***FRINGILLIDAE* – FINCHES**
Carpodacus mexicanus – House finch
Spinus psaltria – Lesser goldfinch
Spinus tristis – American goldfinch

***HIRUNDINIDAE* – SWALLOWS**
Petrochelidon pyrrhonota – Cliff swallow
Tachycineta bicolor – Tree swallow

***ICTERIDAE* – BLACKBIRDS AND ORIOLES**
Agelaius phoeniceus – Red-winged blackbird
Euphagus cyanocephalus – Brewer's blackbird
Icterus cucullatus – Hooded oriole
* *Molothrus ater* – Brown-headed cowbird
* *Quiscalus mexicanus* – Great-tailed grackle
Sturnella neglecta – Western meadowlark

***MIMIDAE* – THRASHERS**
Mimus polyglottos – Northern mockingbird
Toxostoma redivivum – California thrasher

***PARULIDAE* – WOOD WARBLERS**
Dendroica coronata – Yellow-rumped warbler
Dendroica petechia – Yellow warbler
Geothlypis trichas – Common yellowthroat
Icteria virens – Yellow-breasted chat
Vermivora celata – Orange-crowned warbler
Wilsonia pusilla – Wilson's warbler

***PICIDAE* – WOODPECKERS**

Picoides nuttallii – Nuttall's woodpecker
Picoides pubescens – Downy woodpecker

***RALLIDAE* – RAILS AND GALLINULES**

Fulica americana – American coot

***STRIGIDAE* – TRUE OWLS**

Bubo virginianus – Great horned owl

***STURNIDAE* – STARLINGS**

* *Sturnus vulgaris* – European starling

***THRESKIORNITHIDAE* – IBISES AND SPOONBILLS**

Plegadis chihi – White-faced ibis

***TIMALIIDAE* – LAUGHING THRUSH AND WRENTIT**

Chamaea fasciata – Wrentit

***TROCHILIDAE* – HUMMINGBIRDS**

Calypte anna – Anna's hummingbird
Calypte costae – Costa's hummingbird
Selasphorus rufus – Rufous hummingbird

***TROGLODYTIDAE* – WRENS**

Thryomanes bewickii – Bewick's wren
Troglodytes aedon – House wren

***TURDIDAE* – THRUSHES AND BABBLERS**

Sialia mexicana – Western bluebird

***TYRANNIDAE* – TYRANT FLYCATCHERS**

Empidonax difficilis – Western flycatcher
Myiarchus cinerascens – Ash-throated flycatcher
Sayornis nigricans – Black phoebe
Sayornis saya – Say's phoebe
Tyrannus verticalis – Western kingbird
Tyrannus vociferans – Cassin's kingbird

***TYTONIDAE* – BARN OWLS**

Tyto alba – Barn owl

***VIREONIDAE* – VIREO**

Vireo bellii pusillus – Least Bell's vireo

MAMMALS

***CANIDAE* – COYOTES, DOGS, FOXES, JACKALS, AND WOLVES**

Canis latrans – Coyote

* *Canis lupus familiaris* – Domestic dog

Urocyon cinereoargenteus – Gray fox

***CERVIDAE* – DEER**

Odocoileus hemionus – Mule deer

***DIDELPHIDAE* – OPOSSUM**

* *Didelphis virginiana* – Virginia opossum

FELIDAE – CATS

Lynx rufus – Bobcat

***GEOMYIDAE* – POCKET GOPHERS**

Thomomys bottae – Botta's pocket gopher

***HETEROMYIDAE* – KANGAROO RATS, KANGAROO MICE, AND ROCK POCKET MICE**

Chaetodipus californicus femoralis – Dulzura California pocket mouse

Chaetodipus fallax fallax – Northwestern San Diego pocket mouse

Dipodomys simulans – Dulzura kangaroo rat

***LEPORIDAE* – HARES AND RABBITS**

Sylvilagus audubonii – Desert cottontail

***MEPHITIDAE* – SKUNKS AND STINK BADGERS**

Mephitis mephitis – Striped skunk

***MOLOSSIDAE* – BATS**

Eumops perotis californicus – Greater bonnetted bat

Nyctinomops femorosaccus – Pocketed free-tailed bat

Tadarida basiliensis – Brazilian free-tailed bat

***MURIDAE* – RATS AND MICE**

Microtus californicus – California vole

* *Mus musculus* – House mouse

Neotoma fuscipes – Dusky-footed woodrat

Peromyscus boylii – Brush deermouse
Peromyscus maniculatus – North American deermouse
Reithrodontomys megalotis – Western harvest mouse

***PROCYONIDAE* – RACCOONS AND RELATIVES**
Procyon lotor – Common raccoon

***SCIURIDAE* – SQUIRRELS**
Spermophilus beecheyi – California ground squirrel

***SORICIDAE* – SHREWS**
Notiosorex crawfordi – Crawford's gray shrew
Sorex ornatus – Ornate shrew

***VESPERTILIONIDAE* – VESPER BATS**
Eptesicus fucus – Big brown bat
Lasiurus blossevillii – Western red bat
Lasiurus cinereus – Hoary bat
Myotis californicus – Californian myotis
Myotis yumanensis – Yuma myotis
Parastrellus hesperus – Canyon bat

WILDLIFE SPECIES – INVERTEBRATES

BUTTERFLIES AND MOTHS

***HESPERIIDAE* – SKIPPERS**
Erynnis funeralis – Funereal duskywing

***LYCAENIDAE* – BLUES, HAIRSTREAKS, AND COPPERS**
Atlides halesus – Great purple hairstreak
Callophrys augustinus – Brown elfin
Celistrina ladon [argiolus] echo – Echo blue
Glaucopsyche lygdamus australis – Southern blue
Plebejus acmon – Acmon blue

***NYMPHALIDAE* – BRUSH-FOOTED BUTTERFLIES**
Adelpha bredowii – California sister
Danaus gilippus – Queen
Danaus plexippus – Monarch
Junonia coenia – Common buckeye
Limenitis lorquini – Lorquin's admiral

Nymphalis antiopa – Mourning cloak
Nymphalis californica – California tortoiseshell
Speyeria callippe comstocki – Comstock's fritillary
Vanessa atalanta – Red admiral
Vanessa cardui – Painted lady

***PAPILIONIDAE* – SWALLOWTAILS**

Papilio eurymedon – Pale swallowtail
Papilio rutulus – Western tiger swallowtail

***PIERIDAE* – WHITES AND SULFURS**

Colias eurytheme – Orange sulphur
* *Pieris rapae* – Cabbage white
Pontia beckerii – Becker's white
Pontia protodice – Checkered white

***RIODINIDAE* – METALMARKS**

Apodemia mormo virgulti – Behr's metalmark

CRUSTACEANS

***CAMBARIDAE* – CRAYFISH**

* *Procambarus* sp. – Crayfish

INSECTS AND SPIDERS

Phloedes diobolicus – ironclad beetle
unknown – dragonflies
unknown – flies
unknown – mosquito
Pygonomyrex spp. – harvester ant
unknown – wasps
unknown – bees
unknown – scorpion
unknown – jumping spider
unknown – sow bug killer spider
unknown – wolf spider
unknown – toothed earwig
unknown – pill bugs
unknown – millipedes
unknown – centipedes
unknown – grass spiders

unknown – money spiders
unknown – yellow sac spider
unknown – European earwig
Lepisma spp. – common silverfish
Tricholepidion spp. – venerable silverfish
unknown – damselflies
unknown – field cricket
unknown – house crickets
Stenopelmatus fuscus – Jerusalem cricket
unknown – june beetle
unknown – click beetle
Anthiaxia spp. – Anthiaxias beetle
unknown – darkling ground beetle
Cratidus osculans – wooly ground beetle
Eloides armata – armored stink beetle

APPENDIX C

Avian Point Location Photographs

Point A12 looking north

Point A12 looking west

Point A12

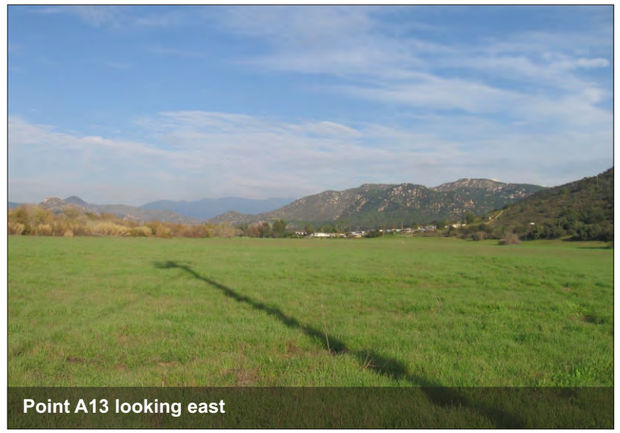
Point A12 looking east

Point A12 looking south

Point A13 looking north

Point A13 looking west

Point A13



Point A13 looking east

Point A13 looking south


Point A14 looking north


Point A14 looking west


Point A14


Point A14 looking east


Point A14 looking south


Point A15 looking north


Point A15 looking west


Point A15


Point A15 looking east


Point A15 looking south

Point A16 looking north

Point A16 looking west

Point A16

Point A16 looking east

Point A16 looking south

Point A17 looking north

Point A17 looking west

Point A17

Point A17 looking east

Point A17 looking south

Point A18 looking north

Point A18 looking west

Point A18

Point A18 looking east

Point A18 looking south

Point A19 looking north

Point A19 looking west

Point A19

Point A19 looking east

Point A19 looking south

Point A20 looking north

Point A20 looking west

Point A20

Point A20 looking east

Point A20 looking south


Point A21 looking north


Point A21 looking west


Point A21


Point A21 looking east


Point A21 looking south

APPENDIX D

Sensitive Plant Species Detected or Potentially Occurring at San Luis Rey River Park Site Elevation 120–240 Feet

APPENDIX D
Sensitive Plant Species Detected or Potentially Occurring At San Luis Rey River Park
Site Elevation 120–240 feet

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Abronia villosa var. *aurita*	Chaparral sand-verbena	None/ None/1B.1/ List A	Chaparral, coastal scrub; sandy/ annual herb/ January–August/ 260–5,250 feet	Within surrounding quads.	Marginal	**Low potential to occur.** Site elevation is slightly lower than the species' recorded elevation range.
Acanthomintha ilicifolia	San Diego thornmint	FT/SE/1B.1/List A, NCMSCP	Chaparral, coastal scrub, valley and foothill grassland, vernal pools/ clay, openings; annual herb/ April–June/ 30–3,150 feet.	Within surrounding quads.	Not present	**Not likely to occur.** No suitable clay soils occur on site.
Adolphia californica	Spineshrub	None/None/1B.1/ List B, NCMSCP	Chaparral, coastal scrub, valley and foothill grassland; clay/ perennial deciduous shrub/ December–May/ 145–2,430 feet.	Within surrounding quads.	Present	**Low potential to occur.** Limited suitable habitat present; not detected during 2011 surveys.
Agave shawii	Shaw's agave	None/None/2.1/List B	Coastal bluff scrub, coastal scrub/ leaf succulent/ September–May/ 30–250 ft.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site.
Ambrosia pumila	San Diego ambrosia	FE/None/1B.1/List A, NCMSCP	Chaparral, coastal scrub, valley and foothill grassland, vernal pools; sandy loam or clay, often in disturbed areas, sometimes alkaline/ perennial rhizomatus herb/ April–October/ 60–1,360 feet.	Within 1 mile.	Present	**High potential to occur.** Suitable habitat is present and several populations of this species have been previously recorded in the immediate area, which is also USFWS-designated critical habitat (Caltrans 2007 and 2010).
Aphanisma blitoides	Aphanisma	None/None/1B.2/List A	Coastal bluff scrub, coastal dunes, coastal scrub; sandy/ annual herb/ March–June/ <1,000 ft.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited suitable habitat present; not detected during 2011 surveys.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Arctostaphylos glandulosa ssp. *crassifolia*	Del Mar Manzanita	FE/None/1B.1/List A, NCMSCP	Chaparral (maritime, sandy)/perennial evergreen shrub/ December–June/ 0–1,200 feet.	Within surrounding quads.	Not present	**Not likely to occur.** No suitable chaparral habitat on site.
Arctostaphylos rainbowensis	Rainbow Manzanita	None/None/1B.1/ List A, NCMSCP	Chaparral/ perennial evergreen shrub/ December–March/ 700–2,200 feet.	Within surrounding quads.	Not present	**Not likely to occur.** Site is above elevation range of species. No suitable chaparral habitat on site.
Artemisia palmeri	San Diego sagewort	None/None/4.2/List D	Chaparral, coastal scrub, riparian forest, scrub, and woodland; sandy, mesic/ deciduous shrub/ May–September/ 50–3,000 ft.	List 4 species not necessarily recorded in CNDDB/CNPS database.	Present	**High potential to occur.** Suitable habitat present. A single population was previously recorded within the north-central portion of the Park in 2007 (Caltrans 2010)
Astragalus deanei	Dean's milk-vetch	None/None/1B.1/ List A	Chaparral, coastal scrub, riparian forest/ perennial herb/ February–May/ 250–2,200 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Site elevation is slightly lower than the species' recorded elevation range.
Astragalus insularis var. *harwoodii*	Harwood's milk-vetch	None/None/ 2.2/List B	Desert dunes, Mojavean desert scrub/ annual herb/January–May/ <2,200 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site.
Astragalus oocarpus	Descanso milk-vetch	None/None/ 2.2/List A	Chaparral, cismontane woodland/ perennial herb/ May–August/ 1,000–5,000 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site.
Astragalus pachypus var. jaegeri	Jaeger's milk-vetch	None/ None/1B.1/ List A	Chaparral, cismontane woodland, coastal scrub, valley and foothill grasslands; rocky or sandy soil/shrub/ December–June/ 1,200–3,000 feet	Within surrounding quads.	Not present	**Not likely to occur.** Site is approximately 1,000 feet below elevation range of species.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Astragalus tener var. *titi*	Coastal dunes milk-vetch	FE/ SE/ 1B.1/List A	Coastal bluff scrub, coastal dunes, coastal prairie; mesic, often vernallly mesic/ annual herb/ March–May/ <170 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site.
Atriplex coulteri	Coulter's saltbush	None/None/1B.2/ List A, NCMSCP	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland/ perennial herb/ March–October/ <1,300 feet	Within surrounding quads.	Present	**Moderate potential to occur.** Suitable habitat is present; not detected during 2011 surveys.
Atriplex pacifica	South Coast saltscale	None/None/1B.2/List A	Coastal bluff scrub, coastal dunes, coastal scrub, playas/ annual herb/ March–October/ <500 feet.	Within surrounding quads.	Present	**Moderate potential to occur.** Suitable habitat is present; not detected during 2011 surveys.
Atriplex parishii	Parish brittlescale	None/None/1B.1/ List A, NCMSCP	Chenopod scrub, playas, vernal pools/ annual herb/ June–October/ 75–6,000 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat or vernal pools on site.
Atriplex serenana var. *davidsonii*	Davidson's saltscale	None/None/1B.2/List A	Coastal bluff scrub, coastal scrub; alkaline/ annual herb/ April–October/ 30–650 feet.	Within 5 miles.	Present	**Low potential to occur.** Limited suitable coastal scrub habitat on site.
Baccharis vanessae	Encinitas baccharis	FT/SE/1B.1/List A, NCMSCP	Chaparral, cismontane woodland/ perennial deciduous shrub/ August–November/ 180–2,500 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site.
Berberis nevinii	Nevin's barberry	FE/SE/1B.1/List A, NCMSCP	Chaparral, cismontane woodland, coastal scrub/ perennial evergreen shrub/ March–June/ 900–2,700 feet.	Within surrounding quads.	Not present	**Not likely to occur.** Site is below elevation range of species. Limited suitable coastal scrub habitat on site.
Bergerocactus emoryi	Golden-spined cereus	None/ None/ 2.2/List B	Closed-cone conifer forest, chaparral, coastal scrub; sandy/ shrub/ May–June/ 10–1,300 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Brodiaea filifolia	Thread-leaf brodiaea	FT/SE/1B.1/List A, NCMSCP	Chaparral, cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools/ perennial bulbiferous herb/ March–June/ 80–4,000 feet.	Within 5 miles.	Present	**Moderate potential to occur.** Suitable habitat is present; not detected during 2011 surveys.
Brodiaea orcutti	Orcutt's brodiaea	None/None/1B.1/ List A, NCMSCP	Closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, vernal pools/ perennial bulbiferous herb/ May–July/ 90–5,600 feet.	Within surrounding quads.	Present	**Moderate potential to occur.** Suitable habitat is present; not detected during 2011 surveys.
Brodiaea santarosae	Santa Rosa Basalt brodiaea	None/None/3/None	Valley and foothill grassland/basaltic/ bulbiferous herb/ May–June/ 1,900–3,430 feet	Within surrounding quads.	Not present	**Not likely to occur.** Site is below elevation range of species. No suitable habitat on site.
Calandrinia breweri	Brewer's calandrinia	None/None/4.2/List D	Chaparral, coastal scrub/ annual herb/ March–June/ 33–4,003 feet	List 4 species not necessarily recorded in CNDDB/CNPS database.	Present	**Low potential to occur.** Limited suitable coastal scrub habitat present; not detected during 2011 surveys.
Calochortus dunnii	Dunn's mariposa lily	None/SR/1B.2/List A	Closed-cone coniferous forest, chaparral, valley and foothill grassland/ Perennial bulbiferous herb/ April–June/ 1,200–6,000 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site.
Camissonia lewisii	Lewis's evening primrose	None/None/3/List C	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland/ annual herb/ March–May/<700 feet.	Within surrounding quads.	Present	**Moderate potential to occur.** Suitable habitat is present; not detected during 2011 surveys.
Caulanthus simulans	Payson's jewel-flower	None/ None/ 4.2/List D	Chaparral, coastal scrub; sandy and granitic/ annual herb/ March–May/ 90–2200 meters	Within surrounding quads.	Present.	**Low potential to occur.** Limited suitable coastal scrub habitat present; not detected during 2011 surveys.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Ceanothus cyaneus	Lakeside ceanothus	None/None/1B.2/List A	Closed-cone coniferous forest, chaparral/ Perennial evergreen shrub/ March–May/ 750–2,500 feet.	Within surrounding quads.	Not present	**Not likely to occur.** Site is below elevation range of species. No suitable habitat on site.
Ceanothus ophiochilus	Vail Lake ceanothus	FT/SE/1B.1/None	Chaparral gabbroic or pyroxenite-rich outcrops)/ evergreen shrub/ February–March/ 1,900–3,490 feet	Within surrounding quads.	Not present	**Not likely to occur.** Site is below elevation range of species. No suitable habitat on site.
Ceanothus verrucosus	Wart-stemmed ceanothus	None/None/2.2/List B, NCMSCP	Chaparral/ perennial evergreen shrub/ December–May/ <1,250 feet.	Within surrounding quads.	Not present	**Not likely to occur.** No suitable chaparral habitat on site.
Centromadia (=*Hemizonia*) *parryi* spp. *australis*	Southern tarplant	None/None/1B.1/ List A, NCMSCP	Marshes and swamps (margins), valley and foothill grassland (vernally mesic), vernal pools/ annual herb/ May–November/ 0–1,400 feet	Within surrounding quads.	Not present	**Moderate potential to occur.** Suitable habitat is present; not detected during 2011 surveys.
Centromadia (=*Hemizonia*) *pungens* ssp. *laevis*	Smooth tarplant	None/None/1B.1/List A	Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland; alkaline/ annual herb/ April–September/ <1,580 feet.	Within surrounding quads.	Present	**High potential to occur.** Observed adjacent to the study area during 2011 surveys. However, this may have been a component of a seed mix rather than a natural occurrence.
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	None/ None/1B.1/ List A	Coastal bluff scrub, coastal dunes/ annual herb/ January–August/ 10–330 feet.	Within 5 miles.	Not present	**Not likely to occur.** No suitable habitat on site.
Chorizanthe orcuttiana	Orcutt's spineflower	FE/ SE/1B.1/List A, NCMSCP	Closed-cone coniferous forest, chaparral, coastal scrub/annual herb/ March–May/ 0–410 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited suitable coastal scrub habitat on site.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Chorizanthe polygonoides var. *longispina*	Long-spined spineflower	None/ None/1B.2/ List A	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland; often clay/ annual herb/ April–July/ 100–5,000 feet.	Within surrounding quads.	Present	**Low potential to occur.** No suitable clay soils on site. Limited suitable habitat present; not detected during 2011 survey.
Clarkia delicata	Delicate clarkia	None/None/1B.2/List A	Chaparral, cismontane woodland/ annual herb/ April–June/ 750–3,500 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site. Site is below species' known elevation range.
Comarostaphylis diversifolia ssp. *diversifolia*	Summer-holly	None/None/1B.2/ List A, NCMSCP	Chaparral, cismontane woodland/ perennial evergreen shrub/ April–June/ 90–1,800 feet.	Within 5 miles.	Not present	**Not likely to occur.** No suitable habitat on site.
Corethrogyne filaginifolia var. *incana*	San Diego sand aster	None/ None/ 1B.1/ List A	Chaparral, coastal bluff scrub, coastal scrub/ perennial herb/ June–September/ 10–380 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited suitable coastal scrub habitat on site.
Corethrogyne filaginifolia var. *linifolia*	Del Mar Mesa sand aster	None/ None/ 1B.1/ List A	Coastal bluff scrub, maritime chaparral (openings), coastal scrub; sandy/ perennial herb/ May–September/ 10–380 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited suitable coastal scrub habitat on site.
Dodecahema leptoceras	Slender-horned spineflower	FE/ SE /1B.1/ None	Chaparral, cismontane woodland, coastal scrub; alluvial fan, sandy/ annual herb/ April–June/ 650–2,500 feet.	Within surrounding quads.	Not present	**Not likely to occur.** Site is below species' elevation range. Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.
Dudleya blochmaniae spp. *blochmaniae*	Blochman's dudleya	None/ None/ 1B.1/ List A	Chaparral, coastal bluff scrub, coastal scrub, valley and foothill grassland, rocky; often clay or serpentinite/ perennial herb/ April–June/ 15–1,500 feet.	Within surrounding quads.	Present	**Low potential to occur.** No clay soils on site. Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Dudleya brevifolia	Short-leaf dudleya	None/SE/1B.1/List A, NCMSCP	Chaparral, coastal scrub/perennial herb/ April/ 90–850 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.
Dudleya multicaulis	Many-stemmed dudleya	None/ None/ 1B.2/ List A	Chaparral, coastal scrub, valley and foothill grassland; often clays/ perennial herb/ April–July/ 50–2,590 feet	Within surrounding quads.	Present	**Moderate potential to occur.** Suitable habitat is present; not detected during 2011 surveys.
Dudleya variegata	Variegated dudleya	None/None/1B.2/List A	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, vernal pools; clay/ perennial herb/ April–June/ <1,900 feet.	Within surrounding quads.	Not Present	**Low potential to occur.** No suitable clay soils on site. No suitable habitat on site.
Dudleya viscida	Sticky dudleya	None/None/1B.2/ List A, NCMSCP	Coastal bluff scrub, chaparral, cismontane woodland, coastal scrub; rocky/ perennial herb/May–June/ 30–1,800 feet.	Within surrounding quads.	Present	**Low potential to occur.** Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.
Ericameria palmeri var. *palmeri*	Palmer's ericameria	None/None/2.2/List B	Chaparral, coastal scrub/ perennial evergreen shrub/ September–November/ 90–1,300 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited suitable coastal scrub on site; not detected during 2011 surveys.
Eryngium aristulatum var. *hooveri*	Hoover's button-celery	None/None/1B.1/None	Vernal pools/ annual-perennial herb/ July/ 10–150 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site.
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE/SE/1B.1/List A, NCMSCP	Coastal scrub, valley and foothill grassland, vernal pools /annual/ perennial herb/ April–June/ 60–2,000 feet.	Within surrounding quads.	Present	**Low potential to occur.** Suitable habitat present, but no vernal pools on site.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Erysimum ammophilum	Sand-loving wallflower	None/ None/ 1B.2/ None	Maritime chaparral, coastal dunes, coastal scrub; sandy, openings/ perennial herb/ February–June/ <200 feet.	Within surrounding quads.	Present	**Low potential to occur.** Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.
Euphorbia misera	Cliff spurge	None/ None/ 2.2/List B	Coastal bluff scrub, coastal scrub, Mojavean desert scrub; rocky/ shrub/ December–August/ 30–1,650 feet.	Within 5 miles.	Present	**Not likely to occur.** Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.
Ferocactus viridescens	San Diego barrel cactus	None/None/2.1/List B, NCMSCP	Chaparral, coastal scrub, valley and foothill grassland, vernal pools/ perennial stem succulent/ May–June/ <1,500 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.
Geothallus tuberosa	Campbell's liverwort	None/None/1B.1/None	Coastal scrub (mesic), vernal pools/ ephemeral liverwort/ NA/ 30–2,000 feet.	Within surrounding quads.	Not present	**Not likely to occur.** No suitable mesic habitat or vernal pools on site.
Githopsis diffusa ssp. *filicaulis*	Mission Canyon bluecup	None/None/3.1/List C	Chaparral/ annual herb/ April–June/ 1,400–2,300 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site. Site is below species' known elevation range.
Grindelia hirsutula var. *hallii*	San Diego gumplant	None/None/1B.2/List A	Chaparral, lower montane conifer forest, meadows and seeps, valley and foothill grassland/ perennial herb/ July–October/ 600–5,700 feet	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. Site is approximately 350 feet below species' known elevation range
Harpagonella palmeri	Palmer's grapplinghook	None/ None/ 4.2/List D	Chaparral, coastal scrub, valley and foothill grassland; clay/ annual herb/ March–May/ 60–3,100 ft.	Within surrounding quads.	Not present	**Not likely to occur.** No suitable clay soils on site.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Hazardia orcuttii	Orcutt's hazardia	FC/ ST/ 1B.1/ List A	Maritime chaparral, coastal scrub; often clay/ evergreen shrub/ August–October/ 250–280 ft.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. No clay soils and limited suitable coastal scrub habitat on site.
Hesperocyparis stephensonii	Cuyamaca cypress	None/None/1B.1/List A	Closed-cone coniferous forest, chaparral, cismontane woodland, riparian forest/ perennial evergreen tree/ 3,000–6,000 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. Site is below elevation range of species.
Heterotheca sessiliflora ssp. *sessiliflora*	False goldenaster	None/None/1B.1/None	Chaparral, coastal dunes, coastal scrub/ perennial herb/ March–December/ <4,000 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.
Horkelia cuneata ssp. *puberula*	Mesa horkelia	None/ None/1B.1/ List A	Chaparral, cismontane woodland, coastal scrub; sandy or gravelly/ perennial herb/ February – July / 230 – 2,660 feet	Within surrounding quads.	Present	**Low potential to occur.** Limited suitable coastal scrub on site; not detected during 2011 surveys.
Horkelia truncata	Ramona horkelia	None/None/1B.3/List A	Chaparral, cismontane woodland/ perennial herb/ May–June/ 1,200–4,000 feet.	Within surrounding quads.	Not present	**Not likely to occur.** No suitable habitat on site. Site is below species' known elevation range.
Isocoma menziesii var. *decumbens*	Decumbent goldenbush	None/None/1B.2/List A	Chaparral, coastal scrub/ perennial shrub/ April–November/ <450 feet.	Within surrounding quads.	Present	**Low potential to occur.** Limited suitable coastal scrub on site; not detected during 2011 surveys.
Iva hayesiana	San Diego marsh-elder	None/ None/ 2.2/List B	Marshes and swamps, playas/ perennial herb/ April–November/ 30–1,650 feet.	List 4 species not necessarily recorded in CNDDB/CNPS database.	Present	**Moderate potential to occur.** Suitable habitat present; not detected during 2011 surveys.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Juncus acutus spp. *leopoldii*	Southwestern spiny rush	None/ None/ 4.2/List D	Coastal dunes(mesic), meadows and alkaline seeps, coastal saltwater marshes and swamps/ rhizomatous herb/ May–June/ <3,000 feet.	List 4 species not necessarily recorded in CNDDB/CNPS database.	Present	**Moderate potential to occur.** Suitable habitat present; not detected during 2011 surveys.
Juncus luciensis	Santa Lucia dwarf rush	None/ None/ 1B.2/None	Chaparral, Great Basin scrub, lower montane coniferous forest, meadows and seeps, vernal pools/ annual herb/ April–July/ 980–6,690 feet.	Within surrounding quads.	Not present	**Not likely to occur.** Site is below elevation range of species.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/ None/1B.1/ List A	Saltwater marsh and swamps, playas, vernal pools/ annual herb/ February–June/ <4000 feet.	Within surrounding quads.	Not Present	**Not likely to occur.** No suitable saltwater habitat or vernal pools on site.
Lepechinia cardiophylla	Heart-leaved pitchersage	None/None/1B.2/List A	Chaparral, coastal scrub/ perennial shrub/ April–July/ 1,700–4,500 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. Limited suitable coastal scrub on site, which is also below species' known elevation range.
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	None/None/1B.2/List A	Chaparral, coastal scrub/ annual herb/ January–July/ <2,700 feet.	Within 5 miles.	Present	**Low potential to occur.** Limited suitable coastal scrub on site; not detected during 2011 surveys.
Leptosyne (=Coreopsis) maritima	Sea dahlia	None/ None/ 2.2/List B	Coastal bluff scrub, coastal scrub/ perennial herb/ March–May/ 15–500 feet.	Within surrounding quads.	Present	**Low potential to occur.** Limited suitable coastal scrub on site. Species' preferred microhabitat is sandstone cliffs near the ocean (Reiser 1994).
Lessingia glandulifera var. *tomentosa*	Warner Springs lessingia	None/None/1B.3/List A	Chaparral/ annual herb/ August–October/ 2,800–6,500 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable chaparral habitat on site.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Limnanthes gracilis ssp. *parishii*	Parish's slender meadowfoam	None/SE/1B.2/List A	Lower montane coniferous forest, meadows and seeps, vernal pools/ annual herb/ April–June/ 1,900–6,500 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site. Site is below species' known elevation range.
Linanthus orcutti	Orcutt's linanthus	None/None/1B.3/List A	Chaparral, lower montane coniferous forest, pinyon and juniper woodland/ annual herb/ May–June/ 3,000–7,000 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site. Site is below species' known elevation range.
Lotus nuttallianus	Nuttall's lotus	None/ None/ 1B.1/ List A	Coastal dunes, coastal scrub; sandy/ annual herb/ March–June/ <35 feet.	Within surrounding quads.	Not present	**Not likely to occur.** Site is approximately 90 feet above elevation range of species.
Monardella hypoleuca ssp. *lanata*	Felt-leaved rock-mint	None/None/1B.2/ List A, NCMSCP	Chaparral, cismontane woodland/ perennial rhizomatous herb/ June–August/ 900–5,200 feet.	Within 5 miles.	Not present	**Not likely to occur.** Site is below elevation range of species.
Monardella viminea	Willowy monardella	FE/SE/1B.1 /List A	Chaparral, coastal scrub, riparian forest, woodland, and scrub; alluvial ephemeral washes/ perennial herb/ June–August/ 160–750 feet	None in the area.	Present	**Low potential to occur.** No known occurrences in the area. Not detected during 2011 surveys.
Muilla clevelandii	San Diego goldenstar	None/None/1B.1/ List A NCMSCP	Chaparral, coastal scrub, valley and foothill grasslands, vernal pools; clay/ perennial bulbiferous herb/ April–May/ 150–1,550 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable clay soils on site.
Myosurus minimus ssp. *apus*	Little mousetail	None/None/3.1/List C, NCMSCP	Valley and foothill grassland, vernal pools/ annual herb/ March–June/ 60–2,100 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. No vernal pools on site.
Nama stenocarpum	Mud nama	None/ None/ 2.2/List B	Marshes and swamps, lake margins, riverbanks/ annual-perennial herb/ January–July/ 15–1,650 feet.	Within 5 miles.	Present	**Moderate potential to occur.** Suitable habitat present; not detected during 2011 surveys.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Navarretia fossalis	Spreading navarretia	FT/None/1B.1/List A, NCMSCP	Chenopod scrub, shallow freshwater marshes and swamps, playas, vernal pools/ annual herb/ April–June/ 100–4,300 feet.	Within surrounding quads.	Not present	**Not likely to occur.** No suitable habitat on site.
Navarretia prostrata	Prostrate navarretia	None/ None/1B.1/ List A	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools; mesic/ annual herb/ April–July/ 50–2,300 feet.	Within surrounding quads.	Present	**Moderate potential to occur.** Suitable habitat present; not detected during 2011 surveys.
Nemacaulis denudata var. *denudata*	Coast woolly-heads	None/ None/ 1B.2/ List A	Coastal dunes/ annual herb/ April–September/ < 330 feet.	Within surrounding quads.	Not present	**Not likely to occur.** No suitable coastal dune habitat on site.
Nemacaulis denudata var. *gracilis*	Slender woolly-heads	None/ None/ 2.2/List B	Coastal dunes, desert dunes, Sonoran desert scrub/ annual herb/ (March)April–May/ 160–1,300 feet.	Within surrounding quads.	Not present	**Not likely to occur.** No suitable dune or desert scrub habitat on site.
Nolina cismontana	Chaparral beargrass	None/None/1B.2/ List A, NCMSCP	Chaparral, coastal scrub/ perennial evergreen shrub/ May–July/ 450–4,200 feet.	Within 5 miles.	Present	**Not likely to occur.** Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.
Opuntia californica var. *californica*	Snake cholla	None/ None/ 1B.1/ List A	Chaparral, coastal scrub/ stem succulent/ April–May/ 100–500 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.
Orcuttia californica	California Orcutt grass	FE/ SE/ 1B.1/ List A	Vernal pools/ annual herb/ April–August/ 50–2,200 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No vernal pools on site.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Orobanche parishii ssp. *brachyloba*	Short-lobed broom-rape	None/ None/ 4.2/List D	Coastal bluff scrub, coastal dunes, coastal scrub; sandy/ perennial herb parasitic/ April – October/ <1,000 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited suitable coastal scrub habitat on site; not detected during 2011 surveys.
Packera ganderi	Gander's ragwort	None/SR/B.2/List A, NCMSCP	Chaparral (burns)/ perennial herb/ April–June/ 1,200–4,000 feet.	Within surrounding quads.	Not present	**Not likely to occur.** Site is below elevation range of species. No suitable chaparral habitat on site.
Pinus torreyana spp. *torreyana*	Torrey pine	None/None/1B.2/List A	Closed-cone conifer forest, chaparral; sandstone/ evergreen tree/ NA/ 250–550 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site.
Pogogyne abramsii	San Diego mesa mint	FE/ SE/ 1B.1/ List A	Vernal pools/ annual herb/ May–July/ 300–650 ft.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No vernal pools on site.
Pogogyne nudiuscula	Otay Mesa mint	FE/ SE/ 1B.1/ List A	Vernal pools/ annual herb/ May–July/ 300–620 ft.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No vernal pools on site.
Pseudognaphalium leucocephalum	White rabbit-tobacco	None/ None/ 2.2/None	Chaparral, cismontane woodland, coastal scrub, riparian woodland; sandy, gravelly/ perennial herb/ (July) August–November (Dec)/ <6,700 feet.	Within surrounding quads.	Present	**Moderate potential to occur.** Suitable habitat is present; not detected during 2011 surveys.
Quercus dumosa	Nuttall's scrub oak	None/None/1B.1/ List A, NCMSCP	Closed-cone coniferous forest, chaparral, coastal scrub/ perennial evergreen shrub/ February–April/ <1,300 feet.	Within surrounding quads.	Present	**Low potential to occur.** Limited suitable coastal scrub habitat present; not detected during 2011 surveys.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Quercus engelmannii	Engelmann oak	None/None/4.2/List D, NCMSCP	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland/ perennial deciduous tree/ March–June/ 150–4,300 feet.	List 4 species not necessarily recorded in CNDDB/CNPS database.	Present	**Moderate potential to occur.** Several individuals previously recorded in the immediate vicinity (Caltrans 2007 and 2010). However, this perennial deciduous tree would likely have been detected during surveys if present.
Ribes canthariforme	Moreno currant	None/None/1B.3/List A	Chaparral, riparian scrub/ perennial deciduous shrub/ February–May/ 1,100–4,000 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. Site is below species' known elevation range.
Satureja chandleri	San Miguel savory	None/None/1B.2/ List A, NCMSCP	Chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland; rocky, gabbroic or metavolcanic/ shrub/ March–July/ 400–3,550 feet	Within surrounding quads.	Not present	**Not likely to occur.** Site is below species' known elevation range. No suitable soils on site.
Schizymenium shevockii	Shevock's copper-moss	None/ None/ 1B.2/None	Cismontane woodland; metamorphic rock, mesic/ moss/ NA/ 2,500–4,600 feet.	Within surrounding quads.	Not present	**Not likely to occur.** Site is below species' known elevation range. No suitable habitat on site.
Scutellaria bolanderi ssp. *austromontana*	Southern mountains skullcap	None/None/1B.2/List A	Chaparral, cismontane woodland, lower montane coniferous forest/ perennial rhizomatous herb/ June–August/ 1,300–6,600 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No suitable habitat on site.
Selaginella cinerascens	Ashy spike-moss	None/ None/ 4.1/List D	Chaparral, coastal scrub/ perennial rhizomatous herb/ 66–2,100 feet	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited coastal scrub habitat on site.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Senecio aphanactis	Chaparral ragwort	None/ None/ 2.2/List B	Chaparral, cismontane woodland, coastal scrub; sometimes alkaline/ annual herb/ January–April/ 50–2,630 feet.	None in the area.	Present	**Not likely to occur.** No known occurrences in the area. Limited coastal scrub habitat on site.
Sphaerocarpus drewei	Bottle liverwort	None/ None/ 1B.1/None	Chaparral, coastal scrub; openings/ ephemeral liverwort/ NA/ 300–1,970 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. Site is slightly below elevation range of species. Limited coastal scrub habitat on site.
Stemodia durantifolia	Purple stemodia	None/None/2.1/List B	Sonoran desert scrub/ perennial herb/ January–December/ 550–1,000 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. No Sonoran desert scrub habitat on site.
Suaeda esteroa	Estuary seablite	None/ None/ 1B.2/ List A	Coastal salt marshes and swamps/ perennial herb/ May–October (Jan)/ < 20 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. This species only occurs closer to the coast at lower elevations.
Tetracoccus dioicus	Parry's tetracoccus	None/None/1B.2/ List A, NCMSCP	Chaparral, coastal scrub/ perennial deciduous shrub/ April–May/ 500–3,500 feet.	Within 5 miles.	Not present	**Not likely to occur.** Site is below species' known elevation range. Additionally, large conspicuous perennial would likely have been detected during surveys if present.
Thermopsis californica var. *semota*	Velvety false lupine	None/None/1B.2/List A	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland/ perennial rhizomatus herb/ March–June/ 3,200–6,200 feet.	None in the area.	Not present	**Not likely to occur.** No known occurrences in the area. Site is below species' known elevation range.

Scientific Name	Common Name	Status [1] Federal/State/ Rare Plant Rank/ County List	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Known occurrences (CNDDB/CNPS)[2]	Suitable Habitat/ Elevation	Status On Site or Potential to Occur
Tortula californica	California screw-moss	None/ None/1B.2/None	Chenopod scrub, valley and foothill grassland; sandy soil/ moss/ NA/ 30–4,800 feet.	Within surrounding quads.	Present	**Moderate potential to occur.** Suitable habitat is present; not detected during 2011 surveys.

[1] Status
FE: Federally listed as endangered
FT: Federally listed as threatened
SE: State-listed as endangered
SR: State-listed as rare
CNPS List 1B, County List A: Considered rare, threatened, or endangered in California and elsewhere.
CNPS List 2, County List B: Considered rare, threatened, or endangered in CA, but more common elsewhere.
CNPS List 3, County List C: Plants which need more information
CNPS List 4, County List D: Limited distribution – a watch list
NCMSCP: Proposed for coverage under the Draft North County MSCP (February 2008)

[2] Not recorded in the area: Not documented by CNDDB or CNPS within the Bonsall quad or the surrounding quads.

APPENDIX E

Sensitive Wildlife Species Detected or Potentially Occurring at San Luis Rey River Park

APPENDIX E
Sensitive Wildlife Species Detected or Potentially Occurring at San Luis Rey River Park

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
		Amphibians	
Anaxyrus (= *Bufo microscaphus*) *californicus* Arroyo toad	FE/CSC/ Group 1, NCMSCP	Stream channels for breeding (typically 3rd order); adjacent stream terraces and uplands for foraging and wintering	**High Potential to occur**. San Luis Rey River is designated critical habitat for arroyo toad. Currently, the habitat is not very appropriate for arroyo toad; however, they are known from upstream and downstream (approximately 0.5 mile upstream) Previously recorded in all three Park parcels (Caltrans 2007 and 2010). If the river is thinned or scoured during rain or flood events, then it is likely that the site would be recolonized.
Ensatina eschscholtzii klauberi Large-blotched salamander	None/CSC/ Group 1	Oak woodland, chaparral, coastal sage scrub, coastal dunes, conifer forest	**Low potential to occur**. Site is not typical of normally occupied habitat.
Rana draytoni California red-legged frog	FT/CSC/ Group 1	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	**Not expected to occur**. Species is not known from the system, and the closest known individuals occur on the Santa Rosa Plateau in Riverside County.
Rana muscosa Mountain yellow-legged frog	FE/CSC/ Group 1	Meadow streams, isolated pools, lake borders, rocky stream courses within ponderosa pine, montane hardwood-conifer and montane riparian habitat types	**Not expected to occur**. No suitable habitat present. Preserve is outside of the species' range.
Spea [=*Scaphiopus*] *hammondi* Western spadefoot	None/CSC/ Group 2, NCMSCP	Most common in grasslands, coastal sage scrub near rain pools or vernal pools; riparian habitat	**High Potential to Occur**. Known to occur within river system and suitable habitats present. Previously recorded adjacent to central and east parcels (Caltrans 2010).
Taricha torosa torosa Coast Range newt (Monterey Co. south only)	None/CSC/ Group 2, NCMSCP	Coastal drainages from Mendocino Co. to San Diego Co. Lives in terrestrial habitats and will migrate over 1 km to breed in ponds, reservoirs and slow moving streams.	**Low potential to occur**. Site is not typical of normally occupied habitat.
		Fish	
Eucyclogobius newberryi Tidewater goby	FE/CSC/ Group 1	Low-salinity waters in coastal wetlands	**Not expected to occur**. No suitable habitat present.
Gila orcutti Arroyo chub	None/ CSC/ Group 1	Warm, fluctuating streams with slow-moving or backwater sections of warm to cool streams at depths > 40 centimeters; substrates of sand or mud	**Low potential to occur**. The species is thought to have been extirpated from much of the lower San Luis Rey River, though significant populations still apparently exist above the Lake Henshaw reservoir.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Reptiles			
Actinemys marmorata pallida Western pond turtle	None/CSC/ Group 1, NCMSCP	Slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter	**Low to moderate potential to occur**. Suitable habitat exists, but they have been widely extirpated from much of former range, including this area, due to development, water resource impacts, competition with non-native species, and predation.
Anniella pulchra pulchra Silvery legless lizard	None/CSC/ Group 2	Loose soils (sand, loam, humus) in coastal dune, coastal sage scrub, woodlands, and riparian habitats	**High potential to occur**. Suitable habitat and soils (i.e., sandy drainages) on site. Previously recorded within the central parcel (Caltrans 2010).
Aspidoscelis hyperythra beldingi Orange-throated whiptail	None/CSC/ Group 2, NCMSCP	Coastal sage scrub, chaparral, grassland, juniper and oak woodland; sandy soils, washes	**High potential to occur**. High-quality suitable habitats present. Previously recorded adjacent to the Park (Caltrans 2007 and 2010).
Aspidoscelis tigris stejnegeri Coastal western whiptail	None/None/ Group 2	Coastal sage scrub, chaparral; sandy areas, gravelly arroyos, or washes	**High potential to occur**. High-quality suitable habitats present.
Charina trivirgata roseofusca Rosy boa	None/None/ Group 2	Rocky chaparral, coastal sage scrub, oak woodlands, desert and semi-desert scrub	**Moderate potential to occur**. Moderately suitable habitat is present in the form of dense woody vegetation, though upland connection is tenuous. Although there is a CNDDB record from 1923for the species that overlaps the east parcel.
Coleonyx switaki Barefoot gecko	None/ST/ Group 2	Rocky areas at the heads of canyons	**Not expected to occur**. Not expected to occur within the region. The distribution includes the east face of the Peninsular Range.
Coleonyx variegatus abbotti San Diego banded gecko	None/None/ Group 1	Cismontane chaparral, coastal sage scrub, desert scrub; granite outcrops	**Low potential to occur**. Poor habitat suitability because the site does not contain the required massive boulders that this species prefers.
Crotalus ruber ruber Northern red-diamond rattlesnake	None/CSC/ Group 2, NCMSCP	Variety of shrub habitats where there is heavy brush, large rocks, or boulders	**High potential to occur**. High-quality habitat present. Previously recorded adjacent to the east parcel (Caltrans 2010).
Diadophis punctatus similis San Diego ringneck snake	None/None/ Group 2	Open, rocky areas in moist habitats near intermittent streams: marsh, riparian woodland, sage scrub	**High potential to occur**. High-quality habitat present.
Eumeces skiltonianus interparietalis Coronado skink	None/CSC/ Group 2	Grassland, riparian and oak woodland; found in litter, rotting logs, under flat stones	**High potential to occur**. High-quality habitat present. Abundant litter present. Previously recorded in the central parcel (Caltrans 2010)

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Lampropeltis zonata (San Diego population) San Diego mountain kingsnake	None/CSC/ Group 2	Valley-foothill hardwood, hardwood-conifer, chaparral, coniferous forest, wet meadow	**Low potential to occur**. It is known to occur only in the San Diego County peninsular ranges.
Phrynosoma coronatum (blainvillei population) Coast (San Diego) horned lizard	None/CSC/ Group 2, NCMSCP	Coastal sage scrub, annual grassland, chaparral, oak and riparian woodland, coniferous forest, sandy areas, washes, flood plains	**High potential to occur**. High-quality habitat present. Preferred forage (native ants) present. Previously recorded immediately adjacent to the central and east parcels (Caltrans 2010).
Salvadora hexalepis virgultea Coast patch-nosed snake	None/CSC/ Group 2	Chaparral, washes, sandy flats, rocky areas	**Moderate potential to occur**. Moderate quality habitat present. No chaparral communities present, but dense riparian brush and sandy soils present.
Sceloporus graciosus vanderburgianus Southern sagebrush lizard	None/None/ Group 2	Montane chaparral, hardwood and conifer forest, juniper, coastal sage scrub	**Not expected to occur**. It is known to occur only in the San Diego County peninsular and transverse ranges.
Thamnophis hammondii Two-striped garter snake	None/CSC/ Group 1, NCMSCP	Marshes, meadows, sloughs, ponds, slow-moving water courses	**High potential to occur**. High-quality habitat present. Abundant water resources. Previously recorded immediately adjacent to central parcel (Caltrans 2010).
Thamnophis sirtalis ssp. South Coast garter snake	None/CSC/ Group 2	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	**High potential to occur**. High-quality habitat present. Abundant water resources.
Birds			
Accipiter cooperii Cooper's hawk (nesting)	None/WL/ Group 1	Riparian and oak woodlands, montane canyons	**Present**. Observed during 2011 avian bird count surveys.
Accipiter striatus (nesting) Sharp-shinned hawk	None/WL/ Group 1	Nests in coniferous forests, ponderosa pine, black oak, riparian deciduous, mixed conifer, Jeffrey pine; winters in lowland woodlands and other habitats	**High potential to occur**. Suitable foraging habitat during the winter. This species does not nest along the coastal slope of Southern California and would only be expected as a winter migrant. Previously recorded within the central parcel as a winter resident (Caltrans 2010).
Agelaius tricolor Tricolored blackbird	BCC/CSC/ Group 1, NCMSCP	Nests near fresh water, emergent wetland with cattails or tules; forages in grasslands, woodland, agriculture	**Low potential to occur**. Suitable foraging habitat on site, but no suitable nesting habitat.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Aimophila ruficeps canescens Southern California rufous-crowned sparrow	None/WL/ Group 1, NCMSCP	Grass-covered hillsides, coastal sage scrub, chaparral with boulders and outcrops	**Low potential to occur**. Very poor habitat quality present; however, this species was previously detected north of SR-76 near the east parcel and is expected to breed within suitable coastal sage scrub in the surrounding area.
Anser caerulescens Snow goose	None/None/ Group 2	Fresh emergent wetlands, adjacent lacustrine waters, and nearby wet croplands, pastures, meadows, and grasslands. Occasionally found in saline (brackish) emergent wetlands and adjacent estuarine waters.	**Low potential to occur**. Limited, suitable foraging habitat on site, but no suitable nesting habitat.
Anas strepera Gadwall	None/None/ Group 2	Interior valleys, wetlands, ponds, and streams. Feeds and rests in freshwater lacustrine and emergent habitats, and to a lesser extent, estuarine and saline emergent habitats, and nests in nearby herbaceous and cropland habitats.	**Moderate potential to occur**. Suitable foraging habitat on site, but no suitable nesting habitat.
Amphispiza belli belli Bell's sage sparrow	BCC/WL/ Group 1, NCMSCP	Coastal sage scrub and dry chaparral along coastal lowlands and inland valleys	**Not expected to occur**. Very poor habitat suitability.
Ammodramus savannarum Grasshopper sparrow	None/CSC/ Group 1, NCMSCP	Occurs in grassland with sparse brush, primarily in the coastal lowland.	**Low potential to occur**. Limited suitable habitat on site; however, previously detected immediately south of the central parcel (Caltrans 2010).
Aquila chrysaetos Golden eagle (nesting and wintering)	BCC/WL, FP/Group 1, NCMSCP	Open country, especially hilly and mountainous regions; grassland, coastal sage scrub, chaparral, oak savannas, open coniferous forest	**Moderate potential to occur**. Suitable foraging habitat present on grassland portions of site, and known from general area. Previously recorded flying over the area between the central and east parcels (Caltrans 2010).
Ardea herodias Great blue heron	None/None/ Group 2	Variety of habitats, but primarily wetlands; lakes, rivers, marshes, mudflats, estuaries, saltmarsh, riparian habitats	**Present**. Observed during 2011 avian bird count surveys.
Asio flammeus Short-eared owl	None/CSC/ Group 2	Grassland, prairies, dunes, meadows, irrigated lands, saline and freshwater emergent wetlands	**Low potential to occur**. Limited suitable habitat on site. Would only be a wintering species.
Asio otus Long-eared owl	None/CSC/ Group 1	Riparian, live oak thickets, other dense stands of trees, edges of coniferous forest	**Moderate potential to occur**. Suitable habitat present on site, but not known from vicinity.
Athene cunicularia Burrowing owl	BCC/CSC/ Group 1, NCMSCP	Grassland, lowland scrub, agriculture, coastal dunes and other artificial open areas	**Low potential to occur**. Limited suitable habitat on site.
Aythya americana Redhead	None/None/ Group 2	Lacustrine waters, foothills and coastal lowlands, and along the coast and Colorado river. Nests in fresh emergent wetland bordering open water.	**Low potential to occur**. Limited suitable foraging habitat on site.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Branta canadensis Canada goose	None/None/ Group 2	Lakes, fresh emergent wetlands, moist grasslands, croplands, pastures, and meadows.	**High potential to occur**. High-quality foraging habitat present on upland portions of site.
Buteo lineatus Red-shouldered hawk	None/None/ Group 1	Riparian and woodland habitats, eucalyptus	**Present**. Observed during 2011 avian bird count surveys.
Buteo regalis Ferruginous hawk	BCC/WL/ Group 1	Open, dry country, grasslands, open fields, agriculture	**Low potential to occur**. Limited suitable habitat on site. Would only be a migratory species.
Buteo swainsoni Swainson's hawk	BCC/ST/ Group 1	Open grassland, shrublands, croplands	**Low potential to occur** during migration only. Suitable foraging habitat on site is marginal.
Butorides virescens Green heron	None/None/ Group 2	Lakes, marshes, streams	**Moderate potential to occur**. Moderately suitable habitat present. Usually requires more cattail near water
Campylorhynchus brunneicapillus sandiegensis Coastal (San Diego) cactus wren	BCC/CSC/ Group 1, NCMSCP	Southern cactus scrub, maritime succulent scrub, cactus thickets in coastal sage scrub	**Not expected to occur**. No suitable habitat on site.
Cathartes aura Turkey vulture	None/None/ Group 1	Rangeland, agriculture, grassland; uses cliffs and large trees for roosting, nesting and resting	**Present**. Observed during 2011 avian bird count surveys.
Chaetura vauxi Vaux's swift	None/CSC/ None	Prefers redwood and Douglas-fir habitats with nest-sites in large hollow trees and snags, especially tall, burned-out stubs.	**Present.** Observed during 2011 butterfly surveys in April. This species quickly moves through San Diego in April and May, so this is considered to be a migrant.
Charadrius alexandrinus nivosus Western snowy plover	FT, BCC/ CSC/Group 1	Nests primarily on coastal beaches, in flat open areas, with sandy or saline substrates; less commonly in salt pans, dredged spoil disposal sites, dry salt ponds and levees.	**Not expected to occur**. No suitable habitat on site.
Charadrius montanus Mountain plover	PT, BCC/ CSC/Group 2	Nests in open, shortgrass prairies or grasslands; winters in shortgrass plains, plowed fields, open sagebrush, and sandy deserts	**Low potential to occur**. Marginal habitat present on site.
Circus cyaneus Northern harrier	None/CSC/ Group 1, NCMSCP	Open wetlands (nesting), pasture, old fields, dry uplands, grasslands, rangelands, coastal sage scrub	**High potential to occur**. High-quality habitat present. Previously recorded between the central and east parcels (Caltrans 2010).
Coccyzus americanus occidentalis Western yellow-billed cuckoo	FC, BCC/SE/ Group 1	Dense, wide riparian woodlands and forest with well-developed understories	**Low potential to occur**. Suitable habitat present, but has been extirpated from the San Diego region.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Contopus cooperi [*borealis*] Olive-sided flycatcher	BCC/CSC/ Group 2	Summer resident in a wide variety of forest and woodland habitats. Preferred nesting habitats include mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine	**Not expected to occur**. No suitable habitat on site.
Cypseloides niger Black swift	BCC/CSC/ Group 2	Nests in moist crevices or caves on sea cliffs or near waterfalls in deep canyons; forages over many habitats	**Not expected to occur**. No suitable habitat on site.
Dendrocygne bicolor Fulvous whistling-duck	None/CSC/ Group 2	Fresh emergent wetlands, shallow lacustrine and quiet riverine waters; feeds in wet croplands and pastures. Nests in dense wetlands of cattails.	**Not expected to occur**. No suitable habitat on site.
Dendroica petechia brewsteri Yellow warbler	BCC/CSC/ Group 2	Nests in lowland and foothill riparian woodlands dominated by cottonwoods, alders and willows; winters in a variety of habitats	**Present**. Observed during 2011 avian bird count surveys. Also previously recorded within riparian vegetation during wildlife surveys conducted in 2006-07 along the San Luis Rey River corridor and are known to breed within the area (Caltrans 2010).
Elanus leucurus (*caeruleus*) White-tailed kite	None/FP/ Group 1	Open grasslands, savanna-like habitats, agriculture, wetlands, oak woodlands, riparian	**High potential to occur**. High-quality habitat present and previously recorded in the immediate area flying overhead and south of the river (Caltrans 2007 and 2010).
Empidonax traillii extimus Southwestern willow flycatcher	FE/SE/ Group 1, NCMSCP	Riparian woodlands along streams and rivers with mature, dense stands of willows or alders; may nest in thickets dominated by tamarisk	**High potential to occur**. High-quality USFWS-designated critical habitat present. Riparian vegetation adjacent to water. Previously recorded within all 3 Park parcels (CNDDB, and Caltrans 2007 and 2010).
Eremophila alpestris actia California horned lark	None/WL/ Group 2	Open habitats, grassland, rangeland, shortgrass prairie, montane meadows, coastal plains, fallow grain fields	**Moderate potential to occur**. Site supports some upland open habitat that is required.
Falco columbarius Merlin	None/WL/ Group 2	Nests in open country, open coniferous forest, prairie; winters in open woodlands, grasslands, cultivated fields, marshes, estuaries and sea coasts	**Moderate potential to occur** for wintering. Suitable habitat present on site.
Falco mexicanus Prairie falcon	BCC/WL/ Group 1	Grassland, savannas, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs	**Moderate potential to occur** for wintering. Suitable habitat present on site.
Falco peregrinus anatum American peregrine falcon	FD, BCC/ SD,FP/ Group 1	Nests on cliffs, buildings, bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present	**Moderate potential to occur** as a migrant.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Grus canadensis canadensis Lesser sandhill crane	None/CSC/ Group 2	Wet meadow, shallow lacustrine, and fresh emergent wetland habitats (summer); annual and perennial grassland habitats, moist croplands with rice or corn stubble, and open, emergent wetlands. It prefers relatively treeless plains (winter).	**Not expected to occur**. No suitable habitat on site.
Grus canadensis tabida Greater sandhill crane	None/ST, FP/ Group 2	Wet meadow, shallow lacustrine, and fresh emergent wetland habitats (summer); annual and perennial grassland habitats, moist croplands with rice or corn stubble, and open, emergent wetlands. It prefers relatively treeless plains (winter).	**Not expected to occur**. No suitable habitat on site.
Haliaeetus leucocephalus Bald eagle	FD, BCC/ SE, FP/ Group 1	Seacoasts, rivers, swamps, large lakes; winters at large bodies of water in lowlands and mountains	**Not expected to occur**. No suitable habitat on site. Access to water is constrained. Not known to roost in area.
Icteria virens Yellow-breasted chat	None/CSC/ Group 1, NCMSCP	Dense, relatively wide riparian woodlands and thickets of willows, vine tangles and dense brush.	**High potential to occur**. High-quality habitat present. Previously recorded adjacent to the west parcel and throughout the central parcel (Caltrans 2007 and 2010; CDFG 2011).
Ixobrychius exilis Least bittern	BCC/CSC/ Group 2	Dense emergent wetland vegetation, sometimes interspersed with woody vegetation and open water	**Moderate potential to occur**. Typically requires more emergent vegetation. Site is predominated by woody riparian vegetation.
Lanius ludovicianus Loggerhead shrike	BCC/CSC/ Group 1	Open ground including grassland, coastal sage scrub, broken chaparral, agriculture, riparian, open woodland	**Moderate potential to occur**. Only marginal habitat present. This species requires a matrix of open habitat and shrub/trees. Habitat on site includes a mix of closure attributes.
Larus californicus California gull	None/WL/ Group 2	Along the coast: sandy beaches, mudflats, rocky intertidal, and pelagic areas of marine and estuarine habitats, fresh and saline emergent wetlands. Inland: lacustrine, riverine, and cropland habitats, landfill dumps, and open lawns in cities. Nests in alkali and freshwater lacustrine habitats; adults roost along shorelines, landfills, pastures, and on islands.	**Moderate potential to occur.** Would not be expected to use the site, but might fly over the site on occasion.
Laterallus jamaicensis coturniculus California black rail	BCC/ST, FP/ Group 2	Saline, brackish, and fresh emergent wetlands	**Not expected to occur**. No suitable habitat on site.
Melanerpes lewis Lewis' woodpecker	BCC/None/ Group 1	Open oak savannahs, broken deciduous and coniferous habitats.	**Not expected to occur**. No suitable habitat on site.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Mycteria americana Wood stork (Non-breeding, very rare)	None/CSC/ Group 2	Shallow, relatively warm waters with fish for prey. Nests colonially.	**Not expected to occur**. No suitable habitat on site.
Numenius americanus Long-billed curlew	BCC/WL/ Group 2	Nests in upland shortgrass prairies and wet meadows in northeast California; winters in coastal estuaries, open grasslands and croplands	**Not expected to occur**. Not enough suitable habitat on site.
Oreotyx pictus eremophila Mountain quail	None/None/ Group 2	Dense montane chaparral and brushy areas within coniferous forest, pinyon-juniper-yucca associations; uses shrubs, brush stands and trees on steep slopes for cover	**Not expected to occur**. No suitable habitat on site.
Pandion haliaetus Osprey	None/WL/ Group 1, NCMSCP	Large waters (lakes, reservoirs, rivers) supporting fish; usually near forest habitats, but widely observed along the coast	**Low potential to occur**. Not enough access to open water. They do occur along the river where open water is present, but not known from this vicinity.
Passerculus sandwichensis beldingi Belding's savannah sparrow	None/ SE/ Group 1	Saltmarsh, pickleweed	**Not expected to occur**. No suitable habitat on site.
Piranga rubra (nesting) Summer tanager	None/ CSC/ Group 2	Nests in riparian woodland; winter habitats include parks and residential areas	**Low potential to occur**. Limited suitable habitat on site.
Plegadis chihi White-faced ibis (rookery site)	None/WL/ Group 1, NCMSCP	Nests in marsh; winter foraging in shallow lacustrine waters, muddy ground of wet meadows, marshes, ponds, lakes, rivers, flooded fields and estuaries	**Present**. Observed during 2011 avian bird count surveys. Known to occur throughout suitable habitat in area.
Polioptila californica californica Coastal California gnatcatcher	FT/CSC/ Group 1, NCMSCP	Coastal sage scrub, coastal sage scrub-chaparral mix, coastal sage scrub-grassland ecotone, riparian in late summer	**Moderate potential to occur**. Designated critical habitat for this species occurs within the west parcel and adjacent to the central and east parcels; however, there is very poor habitat suitability for this species within the study area. This species was previously recorded north of the west parcel in 2002, and adjacent to the central and east parcels during focused protocol surveys conducted between 2006 and 2008 (Caltrans 2007 and 2010; CDFG 2011),.
Progne subis (nesting) Purple martin	None/CSC/ Group 1	Nests in tall sycamores, pines, oak woodlands, coniferous forest; forages over riparian, forest and woodland	**Not expected to occur**. Suitably sized nest trees available, but not known to nest in this area.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Pyrocephalus rubinus Vermilion flycatcher	None/CSC/ Group 1	Nesters inhabit cottonwood, willow, mesquite, and other vegetation in desert riparian habitat adjacent to irrigated fields, irrigation ditches, pastures and other open, mesic areas in isolated patches.	**High potential to occur**. Observed adjacent to the site during 2011 avian bird count surveys. Previously recorded south of the central parcel in May 2007 (Caltrans 2010). Known migration and nesting ranges would suggest these individuals were likely migrating through the area.
Rallus longirostris levipes Light-footed clapper rail	FE/ SE, FP/ Group 1, NCMSCP	Coastal saltmarsh	**Not expected to occur**. No suitable habitat on site.
Riparia riparia Bank swallow	None/ST/ Group 1	Nests in lowland country with soft banks or bluffs; open country and water during migration	**Not expected to occur**. No suitable habitat on site.
Sialia mexicana Western bluebird	None/None/ Group 2	Open forests of deciduous, coniferous or mixed trees, savanna, edges of riparian woodland	**Present**. Observed during 2011 avian bird count surveys.
Sternula antillarum browni California least tern	FE/ SE, FP/ Group 1	Coastal waters, estuaries, large bays and harbors, mudflats; nests on sandy beaches	**Not expected to occur**. No suitable habitat on site.
Strix occidentalis occidentalis California spotted owl	BCC/CSC/ Group 1	Forests and woodlands dominated by hardwoods, oak and oak-conifer woodlands, and conifers at high elevations	**Not expected to occur**. No suitable habitat on site.
Tyto alba Barn owl	None/None/ Group 2	Open habitats including grassland, chaparral, riparian, and other wetlands.	**Present**. Observed during 2011 avian bird count surveys.
Vireo bellii pusillus Least Bell's vireo (nesting)	FE/ SE/ Group 1, NCMSCP	Nests in southern willow scrub with dense cover within 1-2 meters of the ground; habitat includes willows, cottonwoods, baccharis, wild blackberry or mesquite on desert areas	**Present**. Observed during 2011 avian bird count surveys. USFWS-designated critical habitat occurs throughout the Park. Multiple occurrences of this species have been previously recorded within all 3 parcels (CDFG 2011a; Caltrans 2007 and 2010).
Vireo vicinior Gray vireo	BCC/CSC/ Group 1	Summer resident in arid pinyon-juniper, juniper, and chamise-redshank chaparral habitats	**Not expected to occur**. No suitable habitat on site.
Mammals			
Antrozous pallidus Pallid bat	None/CSC/ Group 2, NCMSCP	Rocky outcrops, cliffs, and crevices with access to open habitats for foraging	**Low potential to occur**. Habitat is generally not very suitable.
Bassariscus astulus Ringtail	None/None/ Group 2	Mixed forests and shrublands near rocky areas or riparian habitats.	**Low potential to occur**. While water and trees are present, they are not known from the area.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Chaetodipus californicus femoralis Dulzura (California) pocket mouse	None/CSC/ Group 2	Coastal sage scrub, chaparral, riparian-scrub ecotone; more mesic areas	**Present**. Observed during 2011 small mammal surveys.
Chaetodipus fallax fallax Northwestern San Diego pocket mouse	None/CSC/ Group 2	Coastal sage scrub, grassland, sage scrub-grassland ecotones, sparse chaparral; rocky substrates, loams and sandy loams	**Present**. Observed during 2011 small mammal surveys.
Chaetodipus fallax pallidus Pallid San Diego pocket mouse	None/CSC/ Group 2	Coastal scrub, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland.	**Low potential to occur**. It is known to occur only in the San Diego County peninsular and transverse ranges.
Choeronycteris mexicana Mexican long-tongued bat	None/CSC/ Group 2	Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon-juniper woodland. Roosts in caves, mines, and buildings.	**Not expected to occur**. No suitable habitat on site.
Coryorhinus townsendii Townsend's big-eared bat	None/CSC/ Group 2, NCMSCP	Mesic habitats, gleans from brush or trees or feeds along habitat edges	**Moderate potential to occur**. Suitable habitat present but not detected during surveys.
Dipodomys stephensi Stephens' kangaroo rat	FE/ST/ Group 1, NCMSCP	Open habitat, grassland, sparse coastal sage scrub, sandy loam and loamy soils with low clay content; gentle slopes (<30%)	**Not expected to occur**. Poor habitat suitability.
Euderma maculatum Spotted bat	None/CSC/ Group 2	Rock crevices, riparian forest, woodland, and scrub, ponds, lakes, grasslands	**Moderate potential to occur**. Suitable habitat on site but there are limited cliff and crevice opportunities for roost in the vicinity. Could forage over the site. Not detected during surveys.
Eumops perotis californicus Greater western mastiff bat	None/CSC/ Group 2	Roosts in small colonies in cracks and small holes, seeming to prefer man-made structures	**Present**. Detected during the 2010–11 surveys at the eastern and middle survey sites.
Lasiurus blossevillii Western red bat	None/CSC/ Group 2	Prefers edges with trees for roosting and open areas for foraging. Roosts in woodlands and forests. Forages over grasslands, shrublands, woodlands, forests, and croplands.	**Present**. Detected during the 2010–11 surveys at all three sites.
Lasiurus xanthinus Western yellow bat	None/CSC/ None	Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon-juniper woodland.	**Low potential to occur**. Habitat is generally not suitable for this species.
Lepus californicus bennettii San Diego black-tailed jackrabbit	None/CSC/ Group 2, NCMSCP	Arid habitats with open ground; grasslands, coastal sage scrub, agriculture, disturbed areas, rangelands	**Moderate potential to occur**. Would have expected to observe them if present. However, they may occasionally come on site from adjacent habitat.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Macrotus californicus California leaf-nosed bat	None/CSC/ Group 2	Desert riparian, desert wash, desert scrub, desert succulent shrub, alkali desert scrub, and palm oasis.	**Low potential to occur**. Habitat is generally not suitable for this species.
Myotis ciliolabrum Small-footed myotis	None/None/ Group 2	Caves, old mines, abandoned buildings	**Not expected to occur**. No suitable habitat on site.
Myotis evotis Long-eared myotis	None/None/ Group 2	Roosts in buildings, crevices, under bark, and snags. Caves used as night roosts. Feeds along habitat edges, in open habitats, and over water.	**Low potential to occur**. Suitable habitat for foraging occurs on site; however, this species prefers to occur in coniferous forests and woodlands.
Myotis thysanodes Fringed myotis	None/None/ Group 2	Maternity colonies in caves, mines, buildings, or crevices. Forages over open habitats, early successional stages, streams, lakes, and ponds.	**Moderate potential to occur**. Suitable foraging habitat occurs on site; however, its preferred habitat, pinyon-juniper, valley foothill hardwood, and hardwood-conifer, is not present.
Myotis volans Long-legged myotis	None/None/ Group 2	Feeds over open water and over open habitats, using denser woodlands and forests for cover and reproduction	**Moderate potential to occur**. Suitable foraging and roosting habitat occurs on site. Was not detected during surveys.
Myotis yumanensis Yuma myotis	None/None/ Group 2	Closely tied to open water which is used for foraging; open forests and woodlands are optimal habitat	**Present**. Observed during 2010–11 surveys conducted on site at every station.
Neotoma lepida intermedia San Diego desert woodrat	None/CSC/ Group 2	Coastal sage scrub, chaparral, pinyon-juniper woodland with rock outcrops, cactus thickets, dense undergrowth	**Moderate potential to occur**. Some suitable habitat present, but site lacks rock outcrops and scrub habitat.
Nyctinomops femorosaccus Pocketed free-tailed bat	None/CSC/ Group 2	Rocky desert areas with high cliffs or rock outcrops	**Present**. Detected during 2010–11 surveys conducted on site at each station.
Nyctinomops macrotis Big free-tailed bat	None/CSC/ Group 2	Rugged, rocky canyons	**Low potential to occur**. Habitat is generally not suitable for this species.
Odocoileus hemionus Mule deer	None/None/ Group 2	Coastal sage scrub, chaparral, riparian, woodlands, forest; often browses in open areas adjacent to cover	**Present**. Observed during 2011 butterfly surveys.
Onychomys torridus ramona Southern grasshopper mouse	None/CSC/ Group 2	Grassland, sparse coastal sage scrub	**Low potential to occur**. Suitable habitat present on site, but in limited quantities. The available suitable habitat has been heavily managed by mechanical equipment in the past, which would reduce its suitability.
Ovis canadensis nelsoni Peninsular bighorn sheep	FE/ ST, FP/ Group 1	Alpine dwarf-shrub, low sage, sagebrush, bitterbrush, pinyon-juniper, palm oasis, desert riparian, desert succulent shrub, desert scrub, subalpine conifer, perennial grassland, montane chaparral, and montane riparian.	**Not expected to occur**. Habitat is unsuitable and site is outside of species range.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Perognathus longimembris brevinasus Los Angeles pocket mouse	None/CSC/ Group 2	Grassland, coastal sage scrub, disturbed habitats; fine, sandy soils	**Not expected to occur.** Site is outside of species range
Perognathus longimenmbris pacificus Pacific pocket mouse	FE/CSC/ Group 1	Grassland, coastal sage scrub with sandy soils; along immediate coast	**Not expected to occur**. Habitat is unsuitable and site is outside of species range.
Puma [=*Felis*] *concolor* Mountain lion	None/None/ Group 2, NCMSCP	Coastal sage scrub, chaparral, riparian, woodlands, forest; rests in rocky areas, and on cliffs and ledges that provide cover	**High potential to occur**. This large north County movement corridor is connected to suitable habitat. Mountain lions are known from the area and are known to move through this area on occasion while searching out new territories. Young males in particular. A mountain lion was previously observed within the central and east parcels during focused protocol surveys (2006-08) (Caltrans 2010) and tracks and scat were identified in the same area during a wildlife movement study (2007-08) (Caltrans 2009).
Taxidea taxus American badger	None/CSC/ Group 2, NCMSCP	Dry, open treeless areas, grasslands, coastal sage scrub	**Moderate potential to occur**. Habitat quality is marginal due to proximity to urban development and lack of openness; however, this species was previously, incidentally observed in the central parcel (Caltrans 2010).
Invertebrates			
Branchinecta sandiogonensis San Diego fairy shrimp	FE/None/ Group 1, NCMSCP	Small, shallow vernal pools, occasionally ditches and road ruts	**Not expected to occur**. No suitable habitat on site.
Callophyrs (=*Mitoura*) *thornei* Thorne's hairstreak butterfly	None/None/ Group 1	Tecate cypress	**Not expected to occur**. No suitable habitat on site.
Cicindela hirticollis gravida Sandy beach tiger beetle	None/None/ Group 2	Sandy areas adjacent to non-brackish water along California coast; found in dry sand in upper zone.	**Not expected to occur**. No suitable habitat on site.
Cicindela senilis frosti Senile tiger beetle	None/None/ Group 2	Salt marshes.	**Not expected to occur**. No suitable habitat on site.

Scientific Name/ Common Name	Status (Federal/ State/ County)[1]	Habitat Preferences/Requirements	Status On site or Potential to Occur
Coelus globosus Globose dune beetle	None/None/ Group 1	Coastal dunes.	**Not expected to occur**. No suitable habitat on site.
Danaus plexippus Monarch butterfly (wintering sites)	None/None/ Group 2	Overwinters in eucalyptus groves	**Present,** Likely only occurs during migrations. No suitable winter roost habitat present.
Euphydryas editha quino Quino checkerspot butterfly	FE/None/ Group 1, NCMSCP	Sparsely vegetated hilltops, ridgelines, occasionally rocky outcrops; host plant *Plantago erecta* and nectar plants must be present	**Low potential to occur**. Site is outside of survey area for species and few host plants were detected. Habitat is generally too closed.
Euphyes vestris harbisoni Harbison's dun skipper	None/None/ Group 1, NCMSCP	Restricted to wetland, riparian, oak woodlands, and chaparral habitats supporting host plant *Carex spissa*	**Not expected to occur**. Host plant not observed on site.
Linderiella occidentalis California linderiella	None/None/ Group 1	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Water in the pools has very low alkalinity, conductivity and TDS.	**Not expected to occur**. No suitable habitat on site.
Lycaena hermes Hermes copper butterfly	None/None/ Group 1, NCMSCP	Coastal sage scrub, southern mixed chaparral supporting at least 5% cover of host plant *Rhamnus crocea*	**Not expected to occur**. Host plant not observed on site.
Papilio multiculdata Two-tailed swallowtail	None/None/ Group 1	Foothill slopes and canyons, moist valleys, streamsides, woodlands, parks, roadsides, suburbs, and cities	**Not expected to occur**. No suitable habitat on site.
Streptocephalus woottonii Riverside fairy shrimp	FE/None/ Group 1, NCMSCP	Deep, long-lived vernal pools, vernal pool-like seasonal ponds, stock ponds; warm water pools that have low to moderate dissolved solids	**Not expected to occur**. No suitable habitat on site.
Tryonia imitator Mimic tryonia (California brackishwater snail)	None/None/ Group 2	Coastal lagoons, estuaries and salt marshes	**Not expected to occur**. No suitable habitat on site.

[1] Status:

Federal Designations (USFWS)

- BCC Fish and Wildlife Service: Birds of Conservation Concern
- FC Candidate for federal listing as threatened or endangered
- FD Federally-delisted
- FE Federally-listed Endangered
- FT Federally-listed as Threatened
- PT Proposed Threatened

State Designations (CDFG)

- CSC California Species of Special Concern
- FP Fully Protected Species
- SD State-delisted
- SE State-listed as Endangered
- ST State-listed as Threatened
- WL Watch List

County Designations

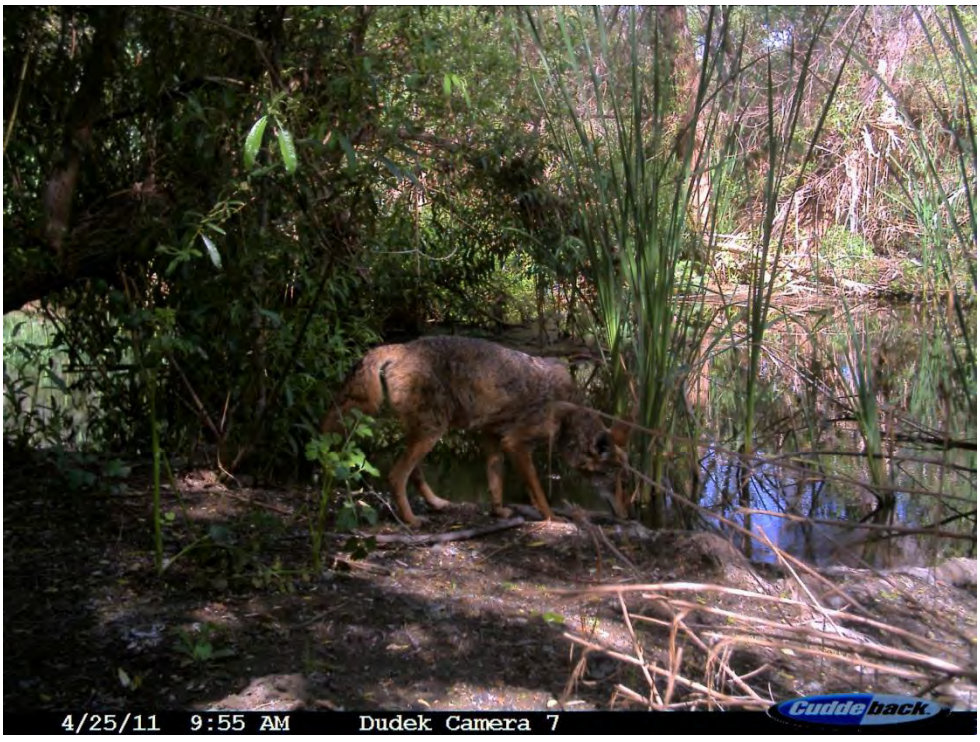
Group 1	Animals of high sensitivity (listed or specific natural history requirements)
Group 2	Animals declining, but not in immediate threat of extinction or extirpation
NCMSCP	Proposed for coverage under the Draft North County MSCP (February 2008)

APPENDIX F

Site Photographs

Small mammal trap on the west parcel (MT3)

Photograph of coyote (*Canis latrans*) taken with a wildlife camera on the central parcel.



Photograph of coyote taken with a wildlife camera on the east parcel

Photograph of Virginia opossum (*Didelphis viginiana*) taken with a wildlife camera on the east parcel

Photograph of coyote taken with a wildlife camera on the central parcel

Photograph of coyote taken with a wildlife camera on the west parcel

Photograph of Jerusalem cricket (*Stenopelmatus fuscus*) and other invertebrates found in a pitfall trap

Anabat survey location on the east parcel (B7)

Anabat survey location on the east parcel (B7)

Anabat survey location on the east parcel (B7)

Anabat survey location on the central parcel (B9)

Anabat survey location on the central parcel (B9)

Anabat survey location on the central parcel (B9)

Anabat survey location on the central parcel (B9)

Anabat survey location on the west parcel (B8)

Anabat survey location on the west parcel (B8)

Anabat survey location on the west parcel (B8)