State of California
Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE

DRAFT

LAND MANAGEMENT PLAN
for the
SAN JACINTO WILDLIFE AREA

DECEMBER 2017

SAN JACINTO WILDLIFE AREA LAND MANAGEMENT PLAN

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LIST OF ACRONYMS AND ABBREVIATIONS

ACOE	U.S. Army Corps of Engineers
ADA	Americans with Disabilities Act
ADRP	archaeological data recovery program
AHPA	Archaeological and Historic Preservation Act
AIS	Aerial Information Systems
ARL	Additional Reserve Lands
ARPA	Archaeological Resources Protection Act
Amsl	above mean sea level
APCD	air pollution control district
APM	applicant proposed measure
AQMD	air quality management district
BGEPA	Bald and Golden Eagle Protection Act
BE	biological element
BLM	Bureau of Land Management
BME	biological monitoring element
BMG	Biological Monitoring Group
BMP	best management practice
BP	before present
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAAP	Conceptual Area Acquisition Plan
CAPP	Conceptual Area Protection Plan
CAO	Cleanup and Abatement Order
CARB	California Air Resources Board
CAS	Climate Adaptation Strategy
CASQA	California Stormwater Quality Association
CBC	California Building Code
CCA	California Coastal Act
CCAR	California Climate Action Registry
CCC	California Coastal Commission
CCP	Comprehensive Conservation Plan

CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDMG	California Division of Mines and Geology
CDP	coastal development permit
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CIR	color infrared
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CUP	Conditional Use Permit
CWA	California Waterfowl Association
CWF	California Wildlife Foundation
DEIR	Draft Environmental Impact Report
DPR	(California) Department of Parks and Recreation
DTSC	Department of Toxic Substances Control
DU	Ducks Unlimited
DWR	(California) Department of Water Resources
EIR	Environmental Impact Report
EMWD	Eastern Municipal Water District
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FME	facilities management element
FRAP	Fire and Resource Assessment Program
GHG	greenhouse gas
GIS	geographic information system
HCP	Habitat Conservation Plan
HMP	Habitat Management Plan
ISTEA	Intermodal Surface Transportation Efficiency Act Program
LMC	Lockheed Martin Corporation
LMP	Land Management Plan
LPC	Lockheed Propulsion Company
MBTA	Migratory Bird Treaty Act
mg/L	milligrams per liter

mm	millimeters
MND	mitigated negative declaration
MOA	Memorandum of Agreement
MOU	memorandum of understanding
MSHCP	Multiple Species and Habitat Conservation Plan
MWD	Metropolitan Water District
NAWCA	North American Wetlands Conservation Act of 1989
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
OWCA	Oak Woodlands Conservation Act
P&T	pump-and-treat protocol
PCB	polychlorinated biphenyl
PQP	Public/Quasi-Public
PRC	Public Resources Code
PUE	public use element
RCA	Regional Conservation Authority
RCFCD	Riverside County Flood Control District
RCHCA	Riverside County Habitat Conservation Agency
RCTC	Riverside County Transportation Commission
ROW	right-of-way
RCTLMA	Riverside County Traffic and Land Management Agency
RWQCB	Regional Water Quality Control Board
SCE	Southern California Edison
SJR	San Jacinto River
SJWA	San Jacinto Wildlife Area
SKR	Stephens' Kangaroo Rat
SKRHCP	Stephens' Kangaroo Rat Habitat Conservation Plan
SP	specific plan
SVE	soil vapor extraction
SWRCB	State Water Resources Control Board
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
TDS	total dissolved solids
TNW	traditional navigable waters (of the U.S.)
TPL	Trust for Public Land

UCI	University of California, Irvine
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
USFWS	U.S. Fish and Wildlife Service
VMP	Vegetation Management Program
VOC	volatile organic compounds
WCB	Water Conservation Board
WRC	Western Riverside County

GLOSSARY

Active Recreation: Habitat-dependent land use activities that require the development and maintenance of facilities which require substantial modification of land conditions or recreational uses that have a higher potential to impact resources, compared with passive uses. Examples of active recreation in this Land Management Plan (LMP) include hunting, hunting dog training, mountain biking, and equestrian uses.

Agriculture: Land use activity that involves the cultivation of plants for human or wildlife consumption. In this LMP, agriculture refers to commercial food production as well as the cultivation of grains specifically for wildlife.

Alkali (community, habitat, sink, sink scrub, playa, grassland, ephemeral wetlands): A series of habitat types that form within saline-alkali (i.e., salty and/or high pH) clay soils. These soils have developed as a result of seismic activity along faults at the valley edges that have resulted in the valley floor sinking relative to the adjacent mountains. Alluvial materials have been deposited on the valley floor, which is poorly drained resulting in high salinity and/or alkalinity due to evaporation of water that accumulates in the closed drainages.

Alliance: Used in vegetation classification as the basic, generic community type, analogous to the genera in organism taxonomy. Classification is usually based on the dominant and characteristic plant species in the upper layer of vegetation.

Association: Used in vegetation classification as the smallest, most fundamental unit, analogous to the species in organism taxonomy. Associations are subdivisions of alliances based on constant patterns of subordinate species within an overall pattern of alliance dominance. These patterns are typically geographically more specific than alliances. Thus, associations tend to be locally distributed and indicative of a certain environment or ecosystem in a local setting.

Avoidance and Minimization: Any of a set of measures taken to reduce the level of impact of an activity on the environment. Avoidance refers to the complete elimination of the impact whereas minimization refers to the reduction in the size, severity, and/or duration of impact.

Authorized Public Use: The wildlife-dependent recreation activities allowed on state lands and specifically in Wildlife Areas, as specified in Title 14 of the California Code of Regulations and the California Fish and Game Code. Such activities typically include but are not limited to hunting, fishing, wildlife viewing, wildlife photography, conservation education, and fish and wildlife research.

Best Management Practice (BMP): Any program, technology, process, siting criterion, operating method, measure, or device that controls, prevents, removes, or reduces pollution.

Blind: A structure used to conceal the user during recreation activities, including bird-watching, hunting, and wildlife photography.

California Environmental Quality Act (CEQA): The Act was passed in 1970 to (1) inform government decision makers and the public about the potential environmental effects of proposed activities; (2) identify the ways that environmental damage can be avoided or significantly reduced; (3) prevent significant, avoidable environmental damage by requiring changes in projects, whether by the adoption of alternatives or imposition of mitigation measures; and (4) disclose to the public why a project was approved if that project will have significant environmental effects.

CEQA Review: Evaluation of the potential for a project (activity) to alter the environment and result in significant adverse impacts. The evaluation is conducted as specified in CEQA Guidelines, using the CEQA Checklist/Initial Study and subsequent documentation as necessary (i.e., a negative declaration, mitigated negative declaration, or environmental impact report).

Check-in Station: Prior to hunting activities, the location where a hunter may have his/her hunting license verified, be assigned a blind and/or hunting location, and be given safety materials. Following hunting activities, the location to verify his/her bag count (i.e., number and type of wildlife killed).

Climate Change: A significant and lasting change in weather patterns. In this LMP, the current and predicted future change in environmental conditions believed to be primarily driven by human-related activities including the greenhouse gas emissions.

Conservation Easement: A recorded document requiring implementation of measures outlined in the document intended to conserve resources within a real property.

Cores: Large blocks of habitat. In this LMP, cores designated in the Western Riverside County Multiple Species and Habitat Conservation Plan and core designated in the Stephens' Kangaroo Rat Habitat Conservation Plan are discussed.

Critical Habitat: Defined in the federal Endangered Species Act as specific areas within the geographical range occupied by a species where physical or biological features "essential to the conservation of the species" are found and "which may require special management considerations or protection." Critical habitat may also include areas outside the current

geographical area occupied by the species that are nonetheless "essential for the conservation of the species."

Cultural Resource: A building, structure, object, district, or site that provides evidence of human history. Resources may include archaeological (i.e., pre-European settlement) resources as well as historical (i.e., post-European settlement) resources.

Ecology (Ecological Value, Ecosystem): Referring to the entire set of plant and animal species combined with environmental conditions of a location including soil, geology, hydrology, climate, and fire regime.

Endangered: The classification given to an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range.

Element: An element refers to any biological unit, public use activity, or facility maintenance program as defined in the LMP for which goals have been prepared and presented.

Facilities: Any actively used man-made structure. Examples may include building, signs, fences, etc.

Feasible: Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

Floodplain: The area adjacent to the stream constructed by the river in the present climate and inundated during periods of high flow.

Game Club: Private property with allowable land uses to include licensed pheasant and duck hunting, the operation of dog kennels and hunting dog training, game bird breeding and holding, fish farming and recreational fishing, and other agricultural uses.

Geographic Information System (GIS): Computer-based mapping technology that manipulates geographic data in digital layers and enables one to conduct a wide array of environmental analyses.

Greenhouse Gas: A gas in an atmosphere that absorbs and emits thermal radiation. The primary greenhouse gases in the Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone.

Guild: A group of species (plant, animal, or both) that function in the environment in similar and/or related ways. Guilds may be defined by location, activities, and/or attributes.

Habitat: The environmental conditions that support occupancy of a given organism in a specified area.

Habitat Conservation Plan (HCP): A document that, among other things, identifies the operating conservation program that will be implemented to minimize, mitigate, and monitor the effects of incidental take on the species covered by a Section 10(a)(1)(B) permit authorized under the federal Endangered Species Act.

Habitat Creation: The establishment of a vegetation community in an area that did not previously support it.

Habitat Enhancement: The improvement of an existing degraded vegetation community. Enhancement involves improving one or more ecological factors, such as species richness, species diversity, overall vegetative cover, or wildlife value.

Habitat Manipulations: The use of mowing, grazing, prescribed fire, and/or herbicide application, to create or maintain particular vegetative structure and/or species composition (i.e., vegetation management) or the use of irrigation to promote particular vegetative growth and habitat conditions.

Habitat Restoration: Restoration is the establishment of a vegetation community in an area that historically supported it, but no longer supports it because of the loss of one or more required ecological factors.

Hunting Dog Training: Activities related to the training of dogs to perform behaviors used during hunting including animal retrieval.

Hydrology: The movement of surface and subsurface water flows in a given area.

Incidental Take Permit (ITP): A permit issued by U.S. Fish and Wildlife Service (USFWS) (or National Marine Fisheries Services (NMFS)) pursuant to the federal Endangered Species Act, Section 10(a)(1)(B), authorizing incidental take of federally listed species named on the permit.

Incidental Take: The taking of a federally listed species, if such taking is incidental to, and not the purpose of, carrying out otherwise lawful activities.

Jurisdictional: Referring to a resource for which particular activities affecting that resource are regulated under the federal Clean Water Act, lake and streambed section of the California Fish and Game Code, and/or state Porter-Cologne Act. Examples typically include lakes, streams, and associated wetlands.

Knox Box: A small, typically wall- or post-mounted safe that holds information for first responders for use during fire or other emergency.

Land Cover: As opposed to vegetation community, land cover refers to areas that are non-vegetated such as paved and open water areas.

Land Use Designation: The designation, by parcel, in an adopted city or county general plan of the allowable uses.

Lands Pass: A pass (either annual or daily) sold by California Department of Fish and Wildlife (CDFW) or a licensed agent/sales office that allows access to CDFW Wildlife Areas. A valid California hunting, fishing, or trapping license can be purchased in lieu of a lands pass.

Linkage: A linear landscape feature that provides connectivity between natural communities within a region or between populations of a species.

Listed Species: A species, subspecies, or qualifying distinct population segment of a plant or animal on the lists of the endangered, threatened, and rare species under the federal or state Endangered Species Acts.

Management: Activities undertaken to protect, maintain, and enhance resources.

Mitigation: Measures undertaken to diminish or compensate for the negative impacts of a project or activity on the environment, including (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or (e) compensating for the impact by replacing or providing substitute resources or environments.

Monitoring: The collection of information and observation of conditions at a specified location, about a resource, and/or about an activity.

Narrow Endemic Species: Native species with restricted geographic distributions, soil affinities.

Operations and Maintenance: Activities related to the maintenance of existing facilities and/or the support of existing authorized land uses.

Pacific Flyway: One of four major north–south migration routes of waterfowl in North America.

Patch Size: Referring to the extent of distributed occurrences of a species or set of ecological conditions.

Passive Recreation: Habitat-dependent land use activities that do not require the development and maintenance of facilities which result in substantial modification of land conditions. Examples in this LMP include hiking and bird-watching/photography.

Planning Horizon: The number of years over which potential future environmental, political, and demographic conditions have been considered in a planning document such as this LMP.

Plots (treatment plots, food plots): A discrete area of land where a particular set of habitat manipulations is performed.

Project (Development): A change in the land use through development of facilities and/or management practices. Examples in this LMP include construction of buildings, trails, or other facilities, and/or implementation of a habitat restoration program.

Range: The geographic area a species is known or believed to occupy.

Reclaimed Water: Former wastewater (i.e., sewage) that is treated to remove solids and certain impurities.

Recreation (Public Recreation): Activities intended for the enjoyment of natural resources. Examples in this LMP include hiking, bird-watching, hunting, and hunting dog training.

Regulation (Regulatory): Any law or policy requiring the implementation of particular measures that may include obtaining review and approval from a government agency.

Regional Planning Efforts: Coordination among government agencies and/or non-governmental organizations to address management of resources such as land, species, and water.

Riparian: Typically referring to vegetation growing on the banks of a river or stream. In this LMP, it applies to habitats that are seasonally flooded and support hydrophytic (water-loving) tree and shrub communities.

Seasonal Limitation: An access control or impact avoidance measure tied to a time of year (e.g., the months when rain is heaviest in an area or the months when certain species breed).

Special-Status Species: All taxa that the California Natural Diversity Database is interested in tracking, regardless of their legal or protection status, including taxa officially listed, proposed for listing, and candidates for listing under the federal and state Endangered Species Acts; taxa that meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the CEQA Guidelines; taxa considered by the CDFW to be a Species of Special Concern; taxa that are biologically rare, very restricted in distribution, declining throughout their

range, or have a critical, vulnerable stage in their life cycle that warrants monitoring; populations in California that may be on the periphery of a taxon's range, but are threatened with extirpation in California; taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, vernal pools, etc.); and taxa designated as a special-status, sensitive, or declining species by other state or federal agencies, or non-governmental organization.

Special-Status Habitat: A habitat or vegetation community that is unique, has relatively limited distribution in the region, or has high wildlife value as defined by federal, state, and local government conservation programs. Many correspond to vegetation series and associations identified in the California Natural Diversity Database as rare locally or statewide.

Stakeholder: A government agency, non-governmental organization, private citizen, or other persons that are users of the Wildlife Area, maintain facilities within or adjacent to the Wildlife Area, or otherwise have an interest in the Wildlife Area.

Study Area: The geographic extent of land analyzed. In this LMP, the study area includes lands owned by the CDFW and privately owned parcels where CDFW holds a Conservation Easement, and certain adjacent lands that may influence management of the Wildlife Area.

Subunit: A unique, geographic area defined for purposes of management. Subunits are defined within the Davis and Potrero Units.

Succession: The change in the composition and structure of a biological community over time. Successional patterns often shift dramatically following a major disturbance (e.g., fire, flood, anthropogenic clearing of land).

Suitable Habitat: Habitat that exhibits the characteristics necessary to support a given species.

Threat: An environmental condition, human activity, or set of conditions/activities that adversely affect a species or habitat.

Threatened: The classification given to a plant or animal species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Take: Defined under the California Endangered Species Act as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Tributary: A river or stream flowing into a larger river or lake.

Type-Conversion: Change from one vegetation community or habitat type to another.

Upland: Those vegetation communities and habitats that generally do not support hydrophytic (water-loving) plant species. In this LMP, upland communities primarily include grassland, sage scrub, and chaparral, as opposed to riparian, wetland, and alkali communities.

Upland Small Game (Small Game): Small bird and mammal species for which hunting is allowed by the CDFW. Species recognized within the state as upland small game species are pheasant, quail, chukar, grouse, ptarmigan, wild turkey, dove, squirrel, rabbit, and hare.

Upland Large Game (Large Game): Large mammal species for which hunting is allowed by the CDFW. Species recognized within the state as upland large or big game species are deer, elk, pronghorn, bear, wild pig, and bighorn sheep.

Unit: Referring to the one of two geographic areas of the San Jacinto Wildlife Area: the Davis and Potrero Units.

Vegetation Community (vegetation classification): A natural or artificial terrestrial community defined by the dominant vegetation and the vegetation structure.

Vegetation Management: Activities taken to achieve a particular vegetation condition in terms of species composition and/or cover. In this LMP, vegetation management techniques may include grazing, water management, application of herbicides, and mowing, among other techniques.

Western Riverside County Multiple Species and Habitat Conservation Plan (MSHCP): A comprehensive, multijurisdictional plan that conserves endangered and threatened plant and animal species and associated habitats in western Riverside County. The plan was approved in June of 2003 by the County of Riverside, and each of the 17 cities in the western county subsequently signed onto the plan, as well as other local and state public entities. The USFWS and CDFW each issued a single umbrella permit to the MSHCP participants for take authorization under federal and state Endangered Species Acts.

Waterfowl: A largely water-dependent/aquatic bird, generally with webbed feet and generally wading, swimming, and diving in freshwater habitats. Includes potential game species recognized by CDFW. Within the state, waterfowl game species include goose, duck, coot, moorhen, and black brant.

Waters of the United States: Term used in the Clean Water Act to define all waters that may be susceptible to use in interstate or foreign commerce including navigable waters as well as associated waters (such as streams and seeps) and wetlands that meet applicable regulatory criteria.

Watershed: The catchment area of land draining into a river, river system, or body of water; the drainage basin contributing water, organic matter, dissolved nutrients, and sediments to a stream or lake.

Wetland: A transitional area between aquatic and terrestrial ecosystems that is inundated or saturated for periods long enough to produce hydric soils and support hydrophytic vegetation.

Wildlife Corridor/Linkage: A linear landscape feature that allows animal movement between two patches of habitat or between habitat and sources of essential resources. Often cited as a wildlife or habitat linkage.

Vegetation Management Regime: A component of a fire management plan that identifies the techniques that will be used to thin or remove vegetation that poses fire risks and/or that requires fire for seral succession. Techniques include but are not limited to mowing, other forms of brush clearing, and prescribed burns.

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1.0 INTRODUCTION

The San Jacinto Wildlife Area (SJWA) is currently composed of 19,600 acres of land located in Southern California within central Riverside County (Figure 1-1). The SJWA consists of two land areas: the Davis and Potrero units. The Davis Unit occupies 10,483 acres in the San Jacinto River Valley, east of Perris Lake, and the Potrero Unit occupies 9,117 acres in the foothills of the San Jacinto Mountains, including Potrero Creek (Figure 1-2). The 9,117 acres includes 565 acres owned by Lockheed Martin Corporation (LMC) with a conservation easement held by California Department of fish and Wildlife.

SJWA was initially created by the California Department of Water Resources (DWR) in 1979 as mitigation for the State Water Project (SWP) and has since been expanded to offer additional protection of lands for the purposes of habitat and species protection and public recreation.

These lands are composed mostly of property owned by the California Department of Fish and Wildlife (CDFW; prior to 2013 – California Fish and Game [CDFG]) but also include privately owned parcels where CDFW has obtained conservation easements that ensure the maintenance of the properties in a manner consistent with land management practices of the greater SJWA. In addition, this Land Management Plan (LMP) includes analysis of a larger study area that includes approximately 517 acres of land not currently owned by CDFW or encumbered by conservation easement (Figure 1-3). These lands are included in the study area due to their close proximity to the current SJWA boundary to account for potential adjacent effects on management activities.

The SJWA is one of the largest public land holdings in the Inland Desert region of Southern California and is a highly visited recreation area. Recreational resources provided by the SJWA include waterfowl and upland small game hunting, bird watching, hiking, hunting dog training, and mountain biking. Many of the recreation uses are supported by active management of facilities including wetland ponds and trails. The SJWA also supports a diverse array of biological resources which include wetland habitats, riparian habitats, alkali habitats, vernal pools, waterfowl habitats, agriculture fields, Stephens' kangaroo rat habitats, and upland habitats.. It is an important stop for a number of migratory birds along the Pacific flyway. CDFW is a participant in two regional conservation plans for which the SJWA provide significant conservation lands: the Stephens' Kangaroo Rat Habitat Conservation Plan (SKRHCP) and Western Riverside County (WRC) Multiple Species Habitat Conservation Plan (MSHCP). As such, it provides important conservation for a variety of state and federal special-status species that require the management of habitat conditions and the monitoring of species status. The SJWA preserves components of several periods of California history and pre-history through the conservation of cultural and historical sites.

These resources have been managed by CDFW since the inception of the SJWA. In 2000, CDFG drafted a LMP to document management activities that occur on the SJWA. Since then, the Potrero Unit was added to the SJWA, the MSHCP was developed, and numerous changes have occurred in the environment. This updated LMP addresses management of these diverse, unique, and valuable biological, cultural, and recreational resources. The LMP includes evaluation of the 19,600 acres owned and managed by CDFW as well as some adjacent and interstitial lands including 565 acres owned by LMC, for a total of 10,996 acres at the Davis Unit and 9,130 acres at the Potrero Unit; 20,126 acres of land collectively referred to in this document as the SJWA. Section 1 of this LMP includes land acquisition and funding information which is based on acquisition records; the remainder of the LMP (Section 2-6) are based on GIS calculations which, in some cases, may differ from acquisition or parcel records.

1.1 Purpose of Acquisition

Mission of California Department of Fish and Wildlife

The mission of the CDFW is to manage California's diverse fish, wildlife, and plant resources and the habitats upon which they depend to preserve their ecological value and to foster their use and enjoyment by the public. Consistent with this mission, the CDFW Lands Program is responsible for assisting regional staff in the management of over 1,123,000 acres of fish and wildlife habitat in California. CDFW manages over 700 properties throughout the state, providing habitat for a rich diversity of fish, wildlife, and plant species and comprising habitats from every major ecosystem in the state. As a part of the Lands Program, CDFW administers 110 state wildlife areas, covering approximately 705,000 acres of wildlife habitat. These lands provide habitat for a great variety of plant and animal species, including many listed as threatened or endangered, and are managed to protect and enhance habitat for wildlife species and to provide for wildlife-associated public uses (CDFG 2008a).

California State Water Project

The SJWA is managed pursuant to the 1979 Mitigation Agreement for the California SWP, the intent of which was to mitigate the direct loss of fish and wildlife habitat and public recreational opportunity resulting from construction of the SWP (DWR 1971).

In October 1979, CDFG, the DWR, and the Metropolitan Water District (MWD) of Southern California executed a Memorandum of Agreement (MOA) for the mitigation of SWP wildlife losses in Southern California. The SWP mitigation actions were implemented pursuant to the Davis-Dolwig Act passed by the State Legislature in 1961 (California Water Code 11900–11922). The Act includes the preservation and enhancement of wildlife and public recreation as

purposes of the SWP. The 1979 MOA designated existing SWP lands in Southern California for wildlife mitigation purposes and provided land acquisition funding, both of which contributed to the establishment of the SJWA.

Additional Land Acquisition

Subsequent to establishment of the initial core SJWA in 1981, additional lands were acquired and included in the SJWA. The acquisition history that follows chronicles all lands acquired to date, identifying the funding source and the purposes for which the lands were acquired and incorporated into the present-day SJWA. Table 1-1 lists the funding sources and the relative amounts of funds that have been provided toward the acquisition of lands within the SJWA.

Table 1-1
Summary of Acquisition Funding Sources

Funding Source/Type	Cumulative Contribution	Notes
Federal		
Intermodal Surface Transportation Efficiency Act Program (ISTEA)	Approximately $370,000	• 1996 purchase of 921-acre Mystic Lake acquisition • 1998 purchase of 386 acres of SKR **mitigation** northeast portion of Mystic Lake
U.S. Fish and Wildlife Service (USFWS) Section 6 Grant, Wildlife Restoration Fund	$8,000,000	• 2003 acquisition of 8,518-acre Potrero Canyon Unit
State of California		
State Water Project (SWP) – Department of Water Resources	$16,646,000	• 1981 and 1982 initial establishment of SJWA – 3,318 acres • 1985 transfer of 851-acre borrow site • 2008 purchase of 922-acre Mystic Lake property
Fish and Wildlife Habitat Enhancement Act of 1984 (Proposition 19)	Approximately $3,500,000	• 1986 purchase of 197 acres in SW corner of SJWA and 293 acres in eastern boundary, north of San Jacinto River channel • 1988 purchase of Ramona Hunt Club Conservation Easement • 1990 purchase of 194-acre Anderson property
Wildlife, Coastal and Parkland Conservation Act of 1988 (Proposition 70)	Approximately $3,400,000	• 1990 purchase of 194-acre Anderson property • 1996-99 Mystic Lake acquisition
Environmental Enhancement and Mitigation Program	Approximately $200,000	• 1996 purchase of 921-acre Mystic Lake acquisition • 1998 purchase of 386 acres of SKR **mitigation** northeast portion of Mystic Lake
General Fund/2000/2001 General Fund–Wetlands	Approximately $5,500,000	• 1996-99 Mystic Lake acquisition • 2001 purchase of 368 acres on the southwest boundary of SJWA
Wildlife Restoration Fund (Cal Fish and Game Code Section 1352)	Approximately $30,000	• 1996-99 Mystic Lake acquisition • 1999 0.8-acre Ramona Expressway parking area purchase

Table 1-1
Summary of Acquisition Funding Sources

Funding Source/Type	Cumulative Contribution	Notes
Wildlife Protection Act of 1990 (Proposition 117) (Habitat Conservation Fund)	Approximately $16,400,000	• 1999 purchase of 301 acres within 921-acre Mystic Lake acquisition area • 1998 purchase of 386 acres of SKR **mitigation** northeast portion of Mystic Lake • 2002 purchase of 5 acres adjacent to Mystic Lake • 2003 Mystic Lake Duck Club CE and 89-acre purchase. • 2007 purchase of 210 acres in eastern portion of SJWA • 2008 purchase of 16 acres near Mystic Lake • Toward 2008 purchase of 922 acres on Mystic Lake
Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000 (Proposition 12)	$16,107,500	• 2001 purchase of 275 acres NW corner of Gilman Springs Road and Bridge Street • 2001/02 purchase of five properties totaling 1,000 areas in northern portion of SJWA, east of Davis unit
California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002 (Proposition 40)	$12,000,000	• 2003 acquisition of 8,518-acre Potrero Canyon Unit
County of Riverside		
Riverside County Transportation Commission (RCTC)	$150,000	• 1996 contribution toward10 acres of **mitigation** for wetlands impacts associated with maintenance of Potrero Creek Debris Basin – purchase is within 921-acre Mystic Lake acquisition
Riverside County Habitat Conservation Agency (RCHCA) – SKR Mitigation Fees	Approximately $3,000,000	• Toward 1998 purchase of 386 acres of SKR **mitigation** northeast portion of Mystic Lake
RCHCA Potrero Acquisition	$5,500,000	• Toward 2003 acquisition of 8,518-acre Potrero Canyon Unit
Private/Other		
46th District Agricultural Association	$437,300	• 1986 contribution to transfer of 293 acres in eastern boundary, north of San Jacinto River channel to exchange 108 acres of State Water Project Mitigation Lands to be used for fairgrounds
Moreno Valley Ranch – Robert P. Warmington Company	$750,000 (land value)	• 1986 land transfer of 244 acres offered partially as **mitigation** for SKR habitat loss
San Bernardino Valley Audubon Society	$75,000	• 1986 donation toward purchase of 197 acres in SW corner of SJWA
City of Moreno Valley	$170,000	• 1989 purchase of 8.6 acres in land exchange and **mitigation** for Cactus Avenue equestrian staging area
MWD	$775,000	• 1996 purchase as **mitigation** for Inland Feeder Pipeline impacts to T&E plants
Selling Property Owner Donation of Land Value	$1,182,800	• 1986 purchase of 194 acres in Bernasconi Hills • 1986 purchase of 292-acre Lovell Duck Ponds • Various Mystic Lake acquisitions from 1998-2002
City of San Jacinto	$60,000	• 2002 donation of 8.7 acres

Table 1-1
Summary of Acquisition Funding Sources

Funding Source/Type	Cumulative Contribution	Notes
LMC	$9,000,000	• 2003 acquisition of 8,552-acre Potrero Canyon Unit
Wildlands, Inc.	$1,000,000	• 2008 purchase of 922 acres of southern Mystic Lake

In summary, lands have been acquired based on funding from a variety of local, state and federal grants, project mitigation funds, state wildlife conservation and protection funds, private donations.

Funding for Ongoing Operations and Projects

In addition, to lands acquisition, funding for ongoing operations and projects has been provided from both federal and state sources. Federal sources account for approximately 75% of staff funding and are derived from Pittman-Robertson Wildlife Restoration Act which obtains funds from taxes on firearm and ammunition sales. These funds are to be used for management of fish and game resources. The remainder of operational funds is provided by the state General Fund and the Fish and Game Preservation Fund which derives funds from licenses, permits, service fees and privilege taxes.

1.2 Acquisition History

1.2.1 Davis Unit

The initial 3,318 acres of land establishing the SJWA is located east of the Lake Perris State Recreation Area and one-half mile north of the community of Lakeview in the San Jacinto Valley of western Riverside County. This land was acquired by the Wildlife Conservation Board (WCB) for approximately $7,344,000 in 1981 and 1982 as partial mitigation for losses of wildlife and wildlife habitat as a result of construction of the SWP in Southern California. Funding for these initial acquisitions was provided by the DWR pursuant to the October 1979 MOA between DWR, CDFG, and the MWD of Southern California. In 1981, CDFG produced a "Conceptual Recreation Development Plan" for the SJWA. This plan called for the development of wetland areas (including 600 acres below Lake Perris Dam), riparian and woodland zones, and a fishing and wildlife lake; cultivation of wildlife food crops to provide maximum wildlife benefits; and limited operational and maintenance facilities on site to support recreational uses such as hunting, fishing, hiking, nature study, photography, and field trials for hunting dogs. DWR transferred an additional 851 acres, known as the "San Jacinto Borrow Site," to CDFG in March 1985. The parcel (T3S, R2W, Sec 20) had been acquired earlier by DWR as a borrow area

for clay used in construction of the Lake Perris Dam. In summary, a total of 4,723 acres of land was acquired for SWP mitigation purposes. The acquisition cost totaled $10,146,000 (CDFG 2000).

In June 1986, the WCB acquired 197 acres at the southwest corner of the SJWA. The $821,000 acquisition was funded by $746,000 of Fish and Wildlife Habitat Enhancement Act of 1984 (Proposition 19) along with a $75,000 donation from the San Bernardino Valley Audubon Society. At the time of acquisition, this parcel was included in a specific plan for an 800-unit housing development located on both the north and south sides of the Ramona Expressway. The specific plan area north of the Expressway was acquired to protect approximately 110 acres of habitat for Stephens' kangaroo rat (*Dipodomys stephensi*), a state-listed threatened species, and to avoid the adverse impacts a major housing project would have had on wildlife and on public use in the adjacent SJWA (CDFG 2000).

In December 1986, as a result of negotiations by the San Gorgonio Chapter of the Sierra Club and the San Bernardino Chapter of the National Audubon Society, and with concurrence of the City of Moreno Valley, the Robert P. Warmington Company transferred 244 acres of land to CDFG. The land transfer extended the SJWA north along the west side of Davis Road almost 2 miles to the south end of Theodore Street. The land, valued at more than $750,000, was provided principally as mitigation for anticipated Stephens' kangaroo rat habitat losses resulting from the Moreno Valley Ranch, a planned community development north of Lake Perris (Figure 1-4). Approximately 150 acres of the site provide suitable habitat for Stephens' kangaroo rat; the remainder of the land serves as a valuable buffer between the SJWA and residential developments to the northwest (CDFG 2000).

Also in December 1986, WCB acquired 293 acres north of the San Jacinto River flood channel and along the east boundary of the SJWA. Funding for the $878,000 purchase price came partly from the Fish and Wildlife Habitat Enhancement Fund Act of 1984 (Proposition 19) ($440,770 – interior wetlands acquisition) and partly from the 46th District Agricultural Association ($437,300). The latter amount was provided in exchange for 108 acres of SWP mitigation lands located below Lake Perris Dam that the District was to use as fairgrounds for the Farmers Fair of Riverside County. The exchange facilitated the addition of the former Lovell Duck Club into the SJWA (CDFG 2000).

In 1988, the WCB purchased a conservation easement on the Ramona Hunt Club. The 301-acre parcel is presently operated as a private duck club and is centrally located on the Davis Unit, delineated by Contour Road (Figure 1-4). The conservation easement was purchased at a cost of $1,220,000, funds that were provided by the Fish and Wildlife Habitat Enhancement Act of 1984 (Proposition 19). The easement restricts future development of the land to maintain the scenic,

natural, and wooded condition of the property. The Ramona Hunt Club retains the right to operate and use the property as a private and commercial game club including licensed pheasant and duck hunting, the operation of dog kennels and hunting dog training, game bird breeding and holding, fish farming and recreational fishing, and other agricultural uses as approved by CDFG (CDFG 1988).

In January 1990, an 8.6-acre parcel was transferred by the City of Moreno Valley as part of a land exchange and mitigation program for an equestrian staging area (Figure 1-4).

Also in 1990, the WCB acquired a 194-acre property that had previously represented a problem inholding (Anderson #1), splitting the northern borrow site from the southernmost SJWA lands. This land is located between the existing horse ranch on Davis Road and the northern portion of Mystic Lake. The purchase of this parcel eliminated a substantial private land inholding and served to consolidate the evolving SJWA holdings. The $2,192,758 acquisition cost was obtained from the Fish and Wildlife Habitat Enhancement Act of 1984 (Proposition 19) and the California Wildlife, Coastal and Parkland Conservation Act of 1988 (Proposition 70). These lands are currently used for both upland and wetland habitat conservation (CDFG 2000).

In 1994, the MWD purchased 75 acres located on the southern boundary of the SJWA. The lands, valued at $775,000, were subsequently transferred to the state and incorporated into the SJWA. The mitigation lands were transferred by MWD for impacts to special-status species resulting from the construction of the Inland Feeder Pipeline on adjacent property in the SJWA (MWD and RCHCA 1992) (Figure 1-4).

Beginning in 1996, the WCB began a multiphase acquisition program to purchase the approximately 928-acre Mystic Lake property, located on the easterly side of the SJWA, under an option acquired by the Trust for Public Land (TPL) to be exercised in up to seven phases (CDFG 1986). The first two phases, completed in 1996 and 1997, respectively, resulted in the acquisition of 175 acres of the 921-acre Mystic Lake property. Funding for the acquisitions was provided by a variety of sources, including two California Environmental Enhancement and Mitigation Program grants, the RCTC, TPL, and the federal Intermodal Surface Transportation Efficiency Act Program of 1991. The contribution from RCTC was provided to fulfill a mitigation obligation to provide 10 acres of wetlands preservation for impacts associated with sediment removal within the Potrero Creek Debris Basin (U.S. Army Corps of Engineers Permit No. 93-806-RS). Based on the available files, these 10 acres are not geographically defined other than occurring within the 921-acre Mystic Lake acquisition area. TPL's option subsequently lapsed, and in 1997, WCB staff negotiated a three-phase option with the landowner for the remaining 746 acres. The first of these three phases was completed in 1997, resulting in the acquisition of approximately 208 acres. In 1998, another 244 acres was acquired, and in 1999, the final phase was completed, resulting in acquisition of the remaining 301 acres. This final

phase is noted in CDFW's acquisition records as having been purchased as mitigation for the Cajalco Creek Dam project with funding from the Habitat Conservation Fund (Proposition 117) and State General Fund (Figure 1-4). No permits or additional information regarding the nature of any mitigation requirements are associated with this purchase.

Additional funding for these acquisitions was provided by California Wildlife Coastal and Parkland Conservation Act of 1988 (Proposition 70), the Habitat Conservation Fund (Proposition 117), the Wildlife Restoration Fund (a fund established under Section 1352 of the California Fish and Game Code), and the General Fund. Known as the Lakeview Investment acquisition, a total of 928 acres of Mystic Lake have been purchased at a cost of $9,518,690. Historically, Mystic Lake was a significant wetland and its purchase by CDFG represented a substantial expansion of the SJWA eastward.

In 1998, the RCHCA transferred 386 acres (Anderson #2) to CDFG for incorporation into the SJWA as mitigation for impacts to Stephens' kangaroo rat (Figure 1-4). Of this total, 7.3 acres was right of way for the eventual widening of Gilman Springs Road and was thus not included in the net acreage for mitigation credits. The dedication by RCHCA extends the northern portions of the SJWA eastward to Gilman Springs Road and includes portions of the northern shoreline of Mystic Lake. RCHCA purchased the land for $3.8 million dollars with funds obtained from numerous sources including Stephens' kangaroo rat mitigation fees, RCTC, the California Environmental Enhancement and Mitigation Program, the Habitat Conservation Fund (Proposition 117), and the federal Intermodal Surface Transportation Efficiency Act Program of 1991. CDFW has committed to manage these lands in perpetuity for Stephens' kangaroo rat and wetland values associated with Mystic Lake (CDFG 1986). The land acquisition also provided a $200,000 endowment, the interest from which is to be used for habitat management on the parcel.

A small purchase (0.8 acre) was made in 1999, known as the Ramona Expressway parking area utilizing $28,500 from the Wildlife Restoration Fund.

Further protection to Mystic Lake and its associated upland habitat and species was provided in January 2001 with the purchase of two vacant properties on the southwest boundary of the SJWA. The purchase price for the 368-acre acquisition was approximately $2.6 million, provided by the 2000/2001 General Fund–Wetlands.

In July 2001, approximately 275 acres of private land were acquired at the northwest corner of Gilman Springs Road and Bridge Street for the expansion of and protection to the wetland areas surrounding Mystic Lake. A sum of $1,707,500 was allocated from the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000 (Proposition 12) for the purchase of the property, which was aided by a $514,000 donation from the owner to the State.

An additional 8.7 acres was donated to the SJWA by the City of San Jacinto in April 2002 for the protection of wetland habitat of Mystic Lake.

In September 2002, 5 acres of private land adjacent to Mystic Lake were acquired for the purchase price of $35,000, funded by the Habitat Conservation Fund (Proposition 117). The acquisition removed a "private inholding" and allowed for further protection of Mystic Lake and its associated floodplain habitat.

In 2001 and 2002, a series of five purchases was made at the north end of the SJWA, just east of Davis Road, making for a total acquisition of 1,000 acres at a purchase price of $14.4 million. The acquisition, funded by the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000 (Proposition 12), was to allow for the protection of upland habitat and associated threatened and endangered plants and animals on the SJWA.

In 2003, a series of three purchases was made for the protection and conservation of wildlife habitat. One property, the 209-acre Mystic Lake Duck Club conservation easement, is located within the Mystic Lake floodplain, just southwest of Mystic Lake. The other two properties, adjacent lands totaling approximately 89 acres, are located northeast of Mystic Lake and extend from the southeast corner of the SJWA boundary northwest along Gilman Springs Road. The total acquisition of approximately 300 acres was funded by the Habitat Conservation Fund (Proposition 117) and was meant to further protect Mystic Lake and its associated floodplain habitat (Figure 1-4).

The protection of native habitat and of the watershed of Mystic Lake was further achieved through the State's acquisition of approximately 210 acres located along Gilman Springs Road on the easterly edge of the SJWA. The April 2007 transaction consisted of the purchase of two properties, one of 194 acres and one of 16 acres, and the sale of 58 acres to the owners of the properties being purchased, resulting in a net purchase price of $2.8 million. Funds were provided by the Habitat Conservation Fund (Proposition 117).

The protection of wildlife habitat was furthered by the acquisition of 16 acres, located directly east of Mystic Lake along Gilman Springs Road, in February 2008. Funds were provided by the Habitat Conservation Fund (Proposition 117).

In August 2008 purchase was completed on 922 acres with a purchase price of $7,096,000 funded by the Habitat Conservation Fund (Proposition 117), DWR Grant, and a private donation from Wildlands, Inc. These lands were purchased to protect wetlands and wildlife habitat and are located along Bridge Street and the southern portion of Mystic Lake.

In addition to the 10,483 acres of CDFW-owned lands and additional 605 acres of privately owned lands with conservation easements discussed above, the LMP includes analysis of 1,331 acres as part of the Davis Unit of the LMP study area.

These lands include three hunting club properties located south of the current SJWA: 21 Gun Club (41 acres), Four Winds Pheasant Club (165 acres), and Ramona Duck Club (112 acres) (Figure 1-4). A 171-acre horse ranch on the east side of Davis Road, north of the headquarter facilities has also been included (Figure 1-4). These properties are included because their proximity to the SJWA necessitates consideration in developing and implementing a management plan.

A small area of CDFW-ownership was added during preparation of this document occurs outside of the SJWA LMP boundary. This area is an existing flood control berm occupying one-half acre southeast of the Four Winds Pheasant Club (Figure 1-4). The area does not significantly affect the overall management considerations presented in this document and therefore has not been added to the LMP boundary for purposes of this document.

1.2.2 Potrero Unit

All of the acquisitions described previously have contributed to the formation of a contiguous portion of the SJWA known as the Davis Unit. In December 2003, the WCB acquired the approximately 8,552-acre Potrero Canyon Unit, nearly doubling the size of the SJWA (CDFG 2003). Located east of Lamb Canyon Road (Hwy 79) and northeast of Gilman Springs Road at the southerly end of Highland Springs Road in the City of Beaumont, the Potrero Canyon Unit (also known as Beaumont Site I) is not contiguous to the Davis Unit. The $25,500,000 acquisition was funded by the California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002 (Proposition 40) ($12,000,000), a USFWS Section 6 Grant ($8,000,000), the RCHCA ($5,500,000), and a property owner (i.e., LMC) donation ($9,000,000). The purchase was made to conserve habitat for 31 threatened and endangered species and species of special concern, including the least Bell's vireo (*Vireo belli pusillus*), Stephens' kangaroo rat (*Dipodomys stephensi*), and the California gnatcatcher (*Polioptila californica californica*). The property also contains animal movement corridors, raptor nesting areas, wetlands, and waterways that are to be conserved.

The Potrero Unit acquisition actually involved the purchase of an 8,552-acre property, the purchase of a conservation easement over a 565-acre property (Option Property) located within the larger property, and an option agreement between the State of California (State) and LMC for the State to acquire the Option Property at a future date. The State can purchase the Option Property for the sum of one dollar, from the recording of the Option until 10 years following the

granting of Final Site Closure, defined as the completion of all required remediation activities on the Option Property. The LMC can require the state to purchase the Option Property at the time of Final Site Closure

1.3 Purpose of this Land Management Plan

The purpose of the draft LMP is to comply with Section 1019 of the California Fish and Game Code and to set forth the goals, objectives, and actions for the use and management of CDFW's lands within the SJWA. Specific objectives of the draft LMP's protection and management of lands within the SJWA, while allowing approved recreational uses, include:

1. To guide the management of habitats, species, and programs described herein to achieve the CDFW's mission to protect and enhance floral and faunal values.
2. To preserve and enhance biological communities in the region including grassland, sage scrub, chaparral, wetlands, and alkali scrub, which protect habitat contributing to and sustaining the overall ecosystem health of the region. This habitat is necessary to support special status species, including Stephen's kangaroo rat, least Bell's vireo, tricolored blackbird, burrowing owl, and others covered by the MSHCP.
3. To maintain habitat connectivity between the SJWA and MSHCP's core areas and linkages.
4. To provide quality, recreational opportunities, including hunting, wildlife observation, and hiking, where compatible with biological resource protection objectives.
5. To provide interpretive and educational programs for the natural diversity within the SJWA.
6. To provide an overview of the SJWA's operation and maintenance and personnel requirements to implement management goals. The LMP also serves as a budget planning aid for annual regional budget preparation.

Sections 2 through 4 of this LMP provide the environmental and political context for consideration when planning land management activities within the SJWA. Section 2 consists of a description of the property including physical characteristics such as geography and hydrology, existing land uses and facilities, cultural features, and current and planned adjacent land uses. Existing agreements and easements are also discussed in this section.

In addition to these general guidelines set forth by the State of California, this LMP discusses compliance of management activities with the original and ongoing funding sources for establishment and operation of the SJWA, as well as compliance with regional planning efforts that apply to the SJWA, including the MSHCP and the SKRHCP approved by the USFWS and

CDFW (RCTLMA 2007; RCHCA 1996). A number of federal and state regulations also govern the management of the SJWA and its natural resources. All of the applicable regional, state, and federal regulations are discussed in Section 3 of this LMP.

Section 4 includes a description of habitat and species that have been documented or have potential to occur within the SJWA. This description includes a general description of plants and wildlife within habitat guilds (i.e., upland species, wetland species, etc.), a detailed listing of species with special-statues (i.e., listed by local, state, or federal agency as rare, sensitive, threatened, endangered, etc.), and a brief description of non-native, invasive species.

Section 5 includes discussion of management, first with a discussion of considerations made toward the designation of areas for various types of biological resources, cultural resources, and public use management. With these often overlapping considerations, an evaluation of compatibility, regulatory requirements, and environmental conditions was performed to support a set of recommended management designations across the SJWA. Specific management goals are listed for each biological resource and public use element. Implementation of these goals within the designated management areas is facilitated by the identification of specific facilities management and biological monitoring tasks.

Finally, Section 6 consists of the Operation and Maintenance requirements to implement the plan.

This LMP takes into account a 30-year planning horizon to the extent feasible. Although an update to the LMP may occur sooner, depending on funding and changes in conditions and the property extent of the SJWA itself, this LMP attempts to anticipate the requirements necessary to meet the objectives for which the lands have been acquired given the evolving context of environmental, political, and demographic conditions over the next 30 years.

Figure 1-1 Regional Map

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2.0 PROPERTY DESCRIPTION

2.1 Geographical Setting

The San Jacinto Wildlife Area (SJWA) is located in the San Jacinto Valley, an inland coastal valley of Southern California situated south of the east–west trending Transverse Mountain range and west of the north–south trending Peninsular Mountain range (Figure 1-1). From the higher elevations on the SJWA, the San Gabriel and San Bernardino mountains, including San Gorgonio Peak, are viewed to the north. To the east, located in the most northerly section of the Peninsular Range, Mount San Jacinto can be seen. The more low-lying Santa Ana Mountains lie to the west and separate the inland San Jacinto Valley from the Pacific Ocean. Coastal influences largely affect the San Jacinto Valley as a result of this geographic setting. To the northeast of the SJWA, the San Gorgonio Pass allows the valley to be influenced by the adjacent Colorado Desert region. The resultant mix of coastal and desert influences provides for rich biodiversity.

The SJWA consists of two noncontiguous units, the Davis Unit and the Potrero Unit. The Davis Unit is located in the San Jacinto Valley, approximately 18 miles southeast of downtown Riverside. Lake Perris State Recreation Area shares a boundary along the western edge of the Davis Unit. A small portion of the northern edge of the Davis Unit is located within the incorporated city of Moreno Valley, which lies to north and east of the Davis Unit. The cities of Hemet and San Jacinto are located to the east, and the unincorporated rural communities of Lakeview and Nuevo are located south of the Davis Unit.

The latitude and longitude of the approximate center of the Davis Unit is 33° 52' 25" N and 117° 06' 35" W. The Universal Transverse Mercator (UTM) coordinates for the approximate center are: UTM Easting (meters) 489854 and UTM Northing (meters) 3748148. The Davis Unit includes all or parts of Sections 16 through 22 of Township 3 South, Range 2 West; Sections 13, 33, and 36 of Township 3 South, Range 3 West; Sections 2 through 7 of Township 4 South, Range 2 West; and Sections 1, 3, 4, 9, 10, 11, and 12 of Township 4 South, Range 3 West within the Perris, Sunnymead, El Casco, and Lakeview 7.5-minute quadrangles, as mapped by the U.S. Geological Survey (USGS).

The Potrero Unit is located within the foothills of the San Jacinto Mountains, approximately 9 miles east of the Davis Unit. The vast majority of the Potrero Unit is located within the City of Beaumont, with a portion on the western edge located in unincorporated Riverside County. The Potrero Unit is bordered on the east by vacant Bureau of Land Management (BLM) land and to the southeast by the Soboba Indian Reservation. The Unit is located approximately 3 miles south of Interstate 10 (I-10), and portions of its western boundary are defined by State Highway 79 (SR-79) (Lamb Canyon Road).

The latitude and longitude of the approximate center of the Potrero Unit is 33° 51' 41" N and 116° 57' 43" W. The UTM coordinates for the approximate center are: UTM Easting (meters) 503519 and UTM Northing (meters) 3746774. The Potrero Unit occupies all or part of Sections 1, 2, 3, 4, 5, 9, 10, and 11 of Township 4 South, Range 1 West; Sections 25, 26, 27, 28, 33, 34, 35, and 36 of Township 3 South, Range 1 West; Sections 30 and 31 of Township 3 South, Range 1 East; and Section 6 of Township 4 South, Range 1 East within the Beaumont, San Jacinto, and Lakeview USGS 7.5-minute quadrangles.

2.2 Geology, Soils, Climate, Hydrology, Fire History, Climate Change

2.2.1 Geology

The Davis Unit is dominated by alluvial material associated with the San Jacinto River (Figure 2-1). The Potrero Unit is dominated by Plio-Pleistocene non-marine formation although alluvial and granitic materials also are found in substantial portions (Figure 2-1). Table 2-1 includes a list of mapped geologic units (i.e., distinct rock formations) within the SJWA study areathat includes adjacent parcels, as provided by the USGS (2000).

Table 2-1
Geologic Units and Acreages Within San Jacinto Wildlife Area – Land Management Plan Study Area[1]

Unit	Geologic Unit	Acreage
Davis	Alluvium (mostly Holocene, some Pleistocene) Quaternary non-marine and marine	9,840
	Granitic and metamorphic rocks, undivided, of pre-Cenozoic age	407
	Mesozoic granitic rocks	591
	Plio-Pleistocene non-marine, Pliocene non-marine	158
	Davis Total	*10,996*
Potrero	Alluvium (mostly Holocene, some Pleistocene) Quaternary non-marine and marine	1,305
	Granitic and metamorphic rocks, undivided, of pre-Cenozoic age	1,739
	Mesozoic granitic rocks	645
	Miocene marine	197
	Plio-Pleistocene non-marine, Pliocene non-marine	5,244
	Potrero Total	*9,130*
	Grand Total	**20,126**

[1] Geologic units mapped according to USGS 2000

The San Jacinto Fault zone is perhaps the dominant geologic feature within the San Jacinto Valley. The fault is located at the base of the badlands and traverses the northeast edge of the valley between the two units of the SJWA. The San Jacinto Fault has shown significant

movement in historic times. In 1923, an earthquake measuring 6.3 on the Richter scale struck the area. A second fault, the Casa Lorna, lies in the center of the San Jacinto Valley and extends as far north as Mystic Lake bed. The two faults run parallel to one another with the Casa Lorna Fault crossing the San Jacinto River channel approximately 3 miles east of Davis Road.

In his June 1998 correspondence, Dr. Michael McKibben, Professor of Geology at the University of California, Riverside, indicates the San Jacinto Valley is among the most seismically active of the major strike-slip fault zone valleys in Southern California and has a strain rate of 20 millimeters (mm) per year, which is comparable to the San Andreas Fault zone (McKibben, pers. comm. 1998). This extremely rapid rate of geologic deformation has resulted in formation of a strike-slip "pull-apart valley" along parallel fault strands in the fault zone. Such valley basins or "holes" in the crystalline basement rock commonly become larger and deeper over time periods of thousands to millions of years, developing into topographically low depressions that are soon filled in with sediments and water. Well-known local examples include the Salton Sea (along the San Andreas Fault zone) and Lake Elsinore (along the Elsinore Fault zone). Mystic Lake, located on the Davis Unit, is a similar young geological feature, forming at the "low spot" in the San Jacinto Valley because of this natural tectonic subsidence along the northern San Jacinto Fault zone. Mystic Lake is thus a natural feature formed within the last million years or so by active faulting.

McKibben explains that human activities more recently have accelerated the growth of Mystic Lake. Normally, the uninterrupted supply of stream and river sediment into a sinking valley would nearly keep up with the rate of tectonic subsidence such that even though the valley's underlying crystal foundation subsides, the growing thickness of incoming sediments acts to fill in and compensate for it. Over time, the valley surface would normally remain at a constant (but low) elevation. In the case of the San Jacinto Valley, however, two human activities are slowing down the natural geologic compensation.

The first activity is groundwater withdrawal. Overproduction of groundwater from the valley's sediment fill has caused the sediment layers to collapse and the valley floor to sink at a rate much faster than normal tectonic subsidence. A review of the data on the effects of groundwater withdrawal this century on the valley's overall subsidence noted that the total land subsidence rate is an astounding 1–2 inches each year (Morton 1977, 1992). In addition, numerous ground cracks and fissures have developed in the valley since the 1950s and have grown progressively in length and number.

The second human activity is the upstream diversion of the San Jacinto River away from its natural historic course into Mystic Lake and out through the Davis Unit. This diversion, which was constructed early in the twentieth century, has cut off the natural compensating supply of sediment into the subsiding lake basin and has increased the total land subsidence rate to a level

well above that due to tectonic deformation and groundwater withdrawal. Consequently, the valley floor, which already has a natural tendency to subside and host a lake because of active faulting, is experiencing an exaggeration of this tendency due to groundwater withdrawals and river diversion. Because of these geologic and human factors, Mystic Lake has become deeper and larger in area each time it has formed this century and will continue to enlarge within the valley as long as the activities continue.

Upland areas within the Davis Unit are dominated by the Bernasconi Hills (2,450 feet) to the west and a cluster of hills (1,980 feet) located in the southeast section of the Davis Unit. At the base of these hills are alluvial slopes that extend to the historic San Jacinto River floodplain (1,430 feet) and Mystic Lake. The floodplain is a deep alluvial mantle known as the Paloma surface. The alluvium varies in depth from 300 to 600 feet, except in the eastern portion of the Davis Unit where bedrock can be as low as 10,000 feet under the valley floor. This difference is a consequence of seismic activity resulting in the formation of a "pull-apart valley" discussed previously.

Major geologic features in the Potrero Unit include Potrero Creek, which flows in a southwesterly direction toward the San Jacinto River, and unnamed tributaries to Potrero Creek. Potrero Creek flows through Massacre Canyon, a 500-feet-deep canyon on the southwestern edge of the Potrero Unit. Gilman Hot Springs, an active hot springs that lies along the San Jacinto Fault and is heated by volcanic activity (Singer 2008), lies a quarter mile to the south of the Potrero Unit. San Jacinto Mountains Foothills comprise the upland portions of the Potrero Unit with areas north of Potrero Creek, as well as tributary valleys to the south of the creek, are mainly comprised of non-marine Plio-Pleistocene sedimentary rock whereas hillside areas south of Potrero Creek are comprised of granitic and metamorphic formations.

2.2.2 Soils

Soil types present on the SJWA are mapped and described in the U.S. Department of Agriculture Soil Survey of the Western Riverside Area (Knecht 1971) (Figures 2-2 through 2-2a–l) (Table 2-2). The Davis Unit is dominated by alkaline and loamy soils but also includes large areas of rockland and water. The Potrero Unit is predominately composed of loamy soils with substantial areas of terrace escarpments, rocky soils, and badlands.

Table 2-2
Soil Types Mapped Within the San Jacinto Wildlife Area – Land Management Plan Study Area[1]

General Soil Type	Soil Series Name	Acreage within Davis Unit	Acreage within Potrero Unit	Total Acreage
Alkaline	Chino	354	10	365
	Domino	42		42
	Grangeville	65	22	87
	Traver	1,000		1,000
	Waukena	874		874
	Willows	2,213		2,213
	Alkaline Subtotal	*4,548*	*32*	*4,581*
Badland	Badland	1	1,050	1,052
Clay	Altamont		30	30
	Willows	116		116
	Clay Subtotal	*116*	*30*	*146*
Loam	Cieneba		477	477
	Escondido		8	8
	Exeter	46		46
	Fallbrook		3	3
	Friant		2,607	2,607
	Gorgonio	13	48	62
	Grangeville	498	83	580
	Hanford	873	604	1,477
	Metz	226	45	271
	Monserate	20	86	106
	Pachappa	35		35
	Placentia	14		14
	Ramona	131	118	249
	San Emigdio	1,867	631	2,498
	San Timoteo	8	700	708
	Sobaba		5	5
	Traver	57		57
	Tujunga		94	94
	Visalia		10	10
	Vista	23	56	79
	Loam Subtotal	*3,809*	*5,575*	*9,386*
Other	Dams	54		54
	Terrace escarpments	66	1,647	1,713
	Other Subtotal	*121*	*1,647*	*1,767*
Riverwash	Riverwash	3	96	98
Rocky	Cieneba	46	569	615

Table 2-2
Soil Types Mapped Within the San Jacinto Wildlife Area –
Land Management Plan Study Area[1]

General Soil Type	Soil Series Name	Acreage within Davis Unit	Acreage within Potrero Unit	Total Acreage
	Rockland	1,244	120	1,364
	Rough broken land		11	11
	Rocky Subtotal	*1,290*	*700*	*1,990*
Silt Loam	Chino	238		238
	Silt Loam Subtotal	*238*		*238*
Water	Water	871		871
	Water Subtotal	*871*		*871*
	Grand Total	**10,996**	**9,130**	**20,126**

[1]Soil mapped according to Knecht 1971.

The San Jacinto River floodplain consists of mostly alkali soils of the following series: Chino, Domino, Grangeville, Traver, Waukena, and Willow. The central portion of the floodplain on the Davis Unit, west of Mystic Lake and along Davis Road, supports Willow soils; the southern portion near Bridge Street contains a mosaic of Chino, Grangeville, Traver, and Waukena soils; the area north of Mystic Lake supports Traver and Willows soils; the area between Bridge Street and Davis Road contains all of these soils types as well as Domino soils. These soils types are all developed in granitic alluvium on alluvial fans and floodplains (Knecht 1971). These soils types provide habitat for alkali-endemic plant species, several of which are considered special-status species, which will be discussed in later sections of this document. In addition, the Willows type includes clays soils, which are also known to support several special-status plant species.

The Mystic Lake bed is mapped as water; the soil type within the lake bed is not identified by the soil survey.

The upland soils on the Davis Unit are dominated by the San Emigdio and Hanford soils with large areas also classified as Rockland. In areas of grasslands and agriculture along Gilman Springs Road and the northern portion of the Davis Unit, soils include Chino, San Emigdio, San Timoteo, and Metz types. All four types are developed in alluvium; Chino soils are developed in granitic alluvium and can have some alkaline characteristics; Metz and San Timoteo soils are developed from weakly calcareous sandstone and shale; and San Emigdio from weakly consolidated sedimentary formations. Most soils in this area are sands and loams (Knecht 1971).

The hills west of Davis Road consists of Cieneba, Gorgonio, Greenfield, Hanford, Placentia, Ramona, and Vista soils as well as Rockland and Terrace escarpments and are mostly sandy loams. Cieneba soils are derived from coarse-grained igneous rock; Gorgonio, Greenfield,

Hanford, Placentia, and Ramona soils are all developed in alluvium from granitic material. Rockland refers to areas of granite boulders and rock outcrops; Terrace escarpments refer to areas of alluvial terraces (Knecht 1971).

The hill east of Davis Road and south of the headquarters is mostly classified as Rockland with some Hanford sandy loam soils along the base of the slope (Knecht 1971).

The areas west of Lake Perris Dam include Exeter, Gorgonio, Greenfield, Hanford, Monserate, Pachappa, Ramona, soils, and Rockland. Most soils are sandy loams; all are derived from granitic alluvium (Knecht 1971).

Upland soils on the Potrero Unit are dominated by the Friant and Cieneba series, with large areas also classified as Terrace escarpments, and Badlands. The Cieneba and Friant soils are well-drained soils developed from igneous rock and mica-schist, respectively. Within the Potrero Unit, the Friant soils range from 8% to 50% and the Cieneba soils range from 5% to 50%. In both soil series, rock outcrops occupy 2% to 10% of the surface. Terrace escarpments consist of variable alluvium on terraces with slopes ranging from 30% to 75%. Although Terrace escarpments support some riparian vegetation, they are predominantly located in upland areas on the Potrero Unit. Badlands consist of acid igneous alluvium that originally was deposited by an inland sea (Knecht 1971). Badlands are mapped in the northern portion of the Potrero Unit in areas adjacent to tributaries of Potrero Creek.

Valleys within the Potrero Unit mostly consist of Hanford, San Timoteo, and San Emigdio series. These are well-drained soil developed in alluvium from weakly consolidated sedimentary formations (Knecht 1971).

Soils mapped along Potrero Creek are predominantly Riverwash, Metz loamy sand, and Tujunga loamy sand (Knecht 1971).

2.2.3 Climate

The San Jacinto Valley receives approximately 10–12 inches of rainfall each year. Most of the precipitation occurs from December through March. The climate is characterized by hot, dry summers and moderate winters. The yearly average temperature for the area is 17°C (62°F). Summer temperatures often exceed 38°C (100°F); temperatures of 49°C (120°F) have been recorded during the summer months. The lowest temperature recorded in the area was -14°C (7°F).

Climate change is discussed in Section 2.2.6.

2.2.4 Hydrology

The SJWA is within the South Coast hydrologic region; an area encompassing the western portion of southern California, draining from the Transverse and Peninsular mountain ranges westward to the Pacific Ocean. Within this hydrologic region, the SJWA lies in the San Jacinto Valley hydrologic unit; an area that extends along the San Jacinto River from the San Jacinto Mountains west to Lake Elsinore. SJWA is located in the central portion of the San Jacinto Valley hydrologic unit. Within the San Jacinto Valley hydrologic unit, the SJWA lies within both the Perris hydrologic area and the San Jacinto hydrologic area (Figure 2-3).

The western portion of the Davis Unit is located within the Perris hydrologic area. This portion of the SJWA is within two further subdivisions of this hydrologic area, the Perris Valley and Lakeview hydrologic subareas.

The majority of the Davis Unit, and all of the Potrero Unit, are within the San Jacinto hydrologic area. These areas are completely within the Gilman Hot Springs hydrologic subarea portion of the San Jacinto hydrologic area.

Historically, the San Jacinto Valley was a major groundwater producing area. Artesian wells were numerous until development pressures forced groundwater levels to drop precipitously. The last artesian wells on the Davis Unit ceased flowing in 1950. In 1973, it was estimated that the annual decline in groundwater levels for both subareas was approximately 1.8 meters, or 6 feet (Keene 1982). A consequence of the groundwater production from the valley's aquifer has been ground surface subsidence which is occurring throughout the valley (CDFG 2000).

Concentrations of dissolved minerals have built up in many parts of the groundwater basins as a result of long-term, adverse salt balance. More salts are added to the basin through agricultural development and natural condition than are leaving it. About 35 wells have been drilled in the vicinity of the Davis Unit. Some wells near the Casa Loma Fault have shown high concentrations of both boron and fluoride. These concentrations are natural occurrences associated with the fault. High total dissolved solids (TDS) measurements (about 1,100 milligrams per liter (mg/L)) were recorded in Section 21 near the borrow area. The average TDS concentration of groundwater in the Davis Unit was said to be 400 mg/L in 1978 (Coe 1978), this being an indication of reasonably good quality groundwater. A more recent consequence of groundwater over-production is that brackish groundwater is now entering the Lakeview hydrologic subarea from the adjacent Perris Valley hydrologic subarea (DWR 1978).

The San Jacinto River, which traverses the Davis Unit, Potrero Creek, and other streams entering the SJWA are largely intermittent. Substantial runoff and flooding occur only during years of

high rainfall. The majority of the Davis Unit lands are located within the 100-year floodplain of the San Jacinto River (below elevation 1,430 feet) (Figure 2-3). Historically, the San Jacinto River flowed into Mystic Lake, forming a substantial wetland habitat (Willett and Jay 1911). Early in the twentieth century, a river diversion channel was constructed to divert the river away from the historic lake bed. The resultant flood control channel, which traverses the southern portion of the Davis Unit, has largely deteriorated due to siltation over time, and more often than not, in years of heavy rainfall, the river overflows to the historic Mystic Lake bed. The pre-diversion historic channel of the river also traverses the more central portion of the SJWA and serves as the outlet for Mystic Lake. Consequently, the failure of the southern flood control channel (Mystic Lake diversion) will result in the formation of Mystic Lake while the northern historic river channel serves only as an outlet for Mystic Lake subsequent to lake formation. The 1975 Riverside County Flood Control Master Plan for the San Jacinto River recommends making no changes to the historic floodplain between the Ramona Expressway (located immediately south of the Davis Unit) and Sanderson Avenue (located immediately south of the Potrero Unit) (i.e., the entire segment of the San Jacinto River on the Davis Unit).

2.2.5 Fire History

Fire history is an important component in understanding fire frequency, fire type, significant ignition sources, and vulnerable areas. A significant difference in fire history and recurrence potential exists between the Davis and Potrero Units. Specifically, the topography and vegetation associated with the Potrero Unit and surrounding lands in the foothills of the San Jacinto Mountains combine to create a unique situation capable of supporting large-scale, high-intensity wildfires. Conversely, the location of the Davis Unit in the San Jacinto Valley has buffered it from significant wildfire activity, with historic fire occurrence in this Unit associated primarily with the adjacent Lake Perris State Recreation Area.

Based on a review of fire perimeter data from CAL FIRE's Fire and Resource Assessment Program (FRAP), nearly the entire Potrero Unit has burned, with some portions of the Unit having burned up to 9 times during the recorded fire history period from 1878 to 2009 (FRAP 2010)[1]. The majority of the Davis Unit, however, has not experienced fire over the recorded fire history period. Historic fire activity in the Davis Unit has been concentrated in the west and southwest portions of the Unit with some small portions having burned up to 4 times over the

[1] Based on polygon GIS data for CAL FIRE, USDA Forest Service Region 5, BLM, National Park Service, Contract Counties and other agencies fires measuring 10 acres and greater in size. The data cover fires from 1878 to 2009 and includes fires 10 acres and greater. Acreage of burn areas within the SJWA LMP Study Area may be less than 10 acres where fires extend beyond the limits of the study area.

recorded fire history period. Table 2-3 presents the quantity of times the SJWA study area has burned, by land area (acreage) and Unit. These data are also graphically displayed in Figure 2-4.

Table 2-3
Quantity of Times Between 1878 and 2009 That Areas Within the San Jacinto Wildlife Area – Land Management Plan Study Area Have Burned[1]

Quantity of Times Burned	Davis Unit Acreage	Potrero Unit Acreage	Total Acreage
1	1,034	307	1,341
2	516	1,724	2,240
3	79	2,790	2,869
4	148	1,807	1,955
5	0	1,687	1,687
6	0	473	473
7	0	139	139
8	0	25	25
9	0	5	5
Total	**1,777**	**8,957**	**10,734**

[1] FRAP 2010

Fire history in the region is significant, concentrated primarily in the foothills of the San Jacinto Mountains. Significant large fires (in excess of 5,000 acres) burning within one-half mile of the SJWA include the following:

- An Unnamed 1932 Fire (approximately 10,750 total acres)
- An Unnamed 1962 Fire (approximately 8,200 total acres)
- The 1967 Kohler Fire (approximately 6,900 total acres)
- An Unnamed 1967 Fire (approximately 25,500 total acres)
- An Unnamed 1968 Fire (approximately 16,000 total acres)
- An Unnamed 1975 Fire (approximately 12,800 total acres)
- The 1996 Wolfskill Complex Fire (approximately 12,600 total acres)
- The 1998 Edna Fire (approximately 28,000 total acres)
- The 2006 Esperanza Fire (approximately 40,000 total acres).

Within the SJWA, 36 fires have been recorded between 1912 and 2009 (FRAP 2010), most significantly in the Potrero Unit. Based on fire history data, fire return intervals for the Potrero Unit range from 1 to 42 years, with all but one interval measuring less than 9 years and 6

instances where two fires burned within the Unit during the same calendar year. Fire return intervals for the Davis Unit range from 1 to 15 years, with all but one interval measuring less than 8 years and 2 instances where two or more fires burned within the Unit during the same calendar year. Based on fire return interval data for the SJWA, the average interval between wildfires burning in the SJWA was calculated to be 2.8 years, with intervals ranging between 0 and 42 years. As noted, this average includes one very long interval of 42 years and numerous occurrences of multiple fires in a single calendar year, so an evaluation of the median interval between fires is calculated at 2 years when extracting these outliers. Based on this analysis, it is expected that the Preserve would be subject to wildfire occurrence every 2 years. The majority of these fires would be expected within the Potrero Unit.

In addition to mapped fires within the boundary of the SJWA, prescribed/broadcast burns are routinely conducted by California State Parks within the boundary of the Lake Perris State Recreation Area adjacent to the western edge of the Davis Unit. More specifically, prescribed/broadcast burns are conducted within the eastern upland game hunting area of the State Recreation Area. According to CAL FIRE, the most recent recorded prescribed burn in the State Recreation Area occurred in June 2017 and then previously in May 2013 and covered approximately 220 acres (FRAP 2015).

A broad discussion of climate change, including potential effects on fire intervals and intensity, is provided in Section 2.2.6.

2.2.6 Climate Change

This section is intended to provide a broad overview of the current understanding of how climate change may affect local resources and management decisions with the SJWA. Questions posed within this section include:

1. Broadly, what are the effects of climate change that will need to be considered within the SJWA?
2. How will resources managed within the SJWA be affected?

A further question that is addressed in Section 3, which is organized based on state and federal regulations and policies, is:

3. What policies or regulatory mechanisms are directing climate change strategies?

Finally, Section 5 will include discussion of:

4. How will SJWA LMP goals and management activities be adapted to address the effects of climate change?

The SJWA is likely to be at risk from many of the same effects of climate change that have been described for California as a whole. According to California's Wildlife Action Plan, climate change is one of the four major categories of detrimental impacts that threaten wildlife diversity (CDFG 2007). Projected climate change threats to wildlife and habitats are broadly associated with higher temperatures and amplified drought periods, altered hydrology, and indirect adverse effects resulting from the introduction of new increases in the abundance and distribution of invasive species.

State-wide projections that hotter, drier climates could facilitate expansion of deserts and grasslands, resulting in a loss of native plant diversity and an increase in non-native, invasive species (CNRA 2009) are likely to be applicable to the habitats and species within the SJWA. In particular, marshes, playas and vernal pools, and scrub and chaparral communities within the SJWA may be at risk of displacement due to expansion of grasslands or conversion from desertification. Areas within the SJWA that are water-dependent (waterfowl ponds, riverine habitat such as southern willow scrub, lacustrine habitat such as Mystic Lake) are also likely to be affected by hotter, drier seasons.

Altered hydrology due to earlier snowmelt and altered geomorphological processes in California may affect regeneration of early successional riparian vegetation (CNRA 2009), which may affect many riparian and wetland species. Even areas without significant snowmelt because of their relatively low elevation and lack of accumulation of a seasonal snowpack may experience altered hydrology of local drainages (e.g., longer dry periods), resulting in adverse effects on riparian and wetlands species, including spatial or temporal loss or reduction of habitat necessary to support the life histories of many species. For example, riparian vegetation of sufficient patch size or structural complexity to support breeding birds may be lost or reduced in extent. Adequate aquatic breeding and foraging sites for amphibians and semi-aquatic reptiles also may be lost or reduced due to premature drying of creeks and ponds in the spring and summer, thus reducing the chance of these species successfully completing their reproductive cycles.

As described in greater detail below, the primary sources of hydrology within the SJWA are largely intermittent surface flows associated with the San Jacinto River and Potrero Creek and recycled water that is used in the management of wetlands and riparian areas within the Davis Unit. While substantial runoff and flooding within the San Jacinto River occurs only in years of high rainfall, earlier snowmelt within the headwaters of the San Jacinto River in the San Jacinto Mountains may have an effect on downstream hydrology in the SJWA. Changes in hydrology within the SJWA will likely to affect both the quantity and quality of wetland and riparian

communities and aquatic habitat. Although aquatic habitats within the Davis Unit are to some extent maintained with recycled water, the supply of recycled water itself may also be affected in the future by increased efforts to maximize water conservation and the use of recycled water within nearby urban communities.

Climate change may also have adverse indirect effects resulting from the introduction of non-native, invasive species that compound the stress of climate change. The potential adverse effects of non-native species include herbivory, predation, disease, parasitism, competition, habitat destruction, hybridization, and changed disturbance regimes and nutrient cycles (Simberloff 2000). Climate change may exacerbate these effects by providing habitats for non-native species that were not otherwise available. As noted above, woodland and shrubland communities may be vulnerable to conversion to more open savannah and grassland communities directly as result of climate change and indirectly as a result of increased fire intensity or frequency. Lenihan et al. (2003) suggest that grassland would advance into the range of mixed evergreen woodland and shrubland due to a decline in the competitiveness of woody life-forms associated with reduced rainfall and increased or more intense fire events. D'Antonio and Vitousek (1992) identify the mechanisms by which non-native grasses can outcompete native vegetation, including inhibition of seedlings of woody species by light absorption, water uptake, and nutrient uptake. Invasive grasses may also alter natural fire regimes due to high fuel loads and higher volatility. Grasses also recover from fire more quickly than woody species. Invasion by grassland therefore can then create a positive feedback grass/fire cycle that increases the frequency, area, and intensity of fires (D'Antonio and Vitousek 1992).

2.3 Management Setting

The regional, ecological setting frames the breakdown of management units. While the entire SJWA is within the Southern California Mountain and Valley Ecological Section, the Davis Unit is within the Perris Valley and Hills subsection, and the Potrero Unit is in the San Jacinto Foothills–Cahuilla Mountains subsection (USGS 7.5 Minute Series Quadrangle, Figure 2-5) (USFS 2005). The SJWA is further divided into 25 management subunits by the California Department of Fish and Wildlife (CDFW; prior to 2013, California Department of Fish and Game (CDFG)) based on geographic features and management objectives (Figure 2-6). Management subunits in the Davis Unit are labeled D1 through D14. Management subunits in the Potrero Unit are labeled P1 through P11 (Table 2-4).

Table 2-4
Management Subunits, Ownership, and Acreage for the San Jacinto Wildlife Area – Land Management Plan Study Area

Management Subunit	Ownership	Property Name (if any)	Acreage
D1	CDFW		816
D2	CDFW		715
D3	CDFW		1,552
	Private		30
D4	CDFW		1,141
	Private	Horse Ranch	171
D5	CDFW		774
D6	CDFW		609
D7	CDFW		934
	Private w/ easement	Ramona Hunt Club	18
D8	CDFW		166
D9	CDFW		56
	Private w/ easement	Mystic Duck Club	202
		Ramona Hunt Club	279
D10	CDFW		143
	Private w/ easement	Mystic Duck Club	3
	Private	21 Gun Club	40
		Four Winds Pheasant Club	162
		Ramona Duck Club	112
D11	CDFW		431
D12	CDFW		482
	Private w/ easement	Mystic Duck Club	4
		Ramona Hunt Club	4
D13	CDFW		839
D14	CDFW		708
D15	CDFW		605
Davis Unit Subtotal			*10,996*
P1	CDFW		453
P2	CDFW		1,044
P3	CDFW		805
P4	CDFW		1,301
P5	CDFW		1,070
P6	CDFW		436
P7	CDFW		865
P8	CDFW		908
P9	CDFW		1,127
P10	CDFW		127

Table 2-4
Management Subunits, Ownership, and Acreage for the San Jacinto Wildlife Area – Land Management Plan Study Area

Management Subunit	Ownership	Property Name (if any)	Acreage
	Private w/ easement	Lockheed Martin Corporation	565
P11	CDFW		416
	private		13
		Potrero Unit Subtotal	*9,130*
		Total	**20,126**

The management setting includes all existing management efforts occurring on the SJWA, as well as existing agreements and easements that influence management decisions. Also included is a discussion of existing management efforts related to remnant hazards on the Potrero Unit due to past land uses on that site. To discuss the diverse array of management activities, this section is organized as follows:

1. Management Subunits
2. Agreements and Easements
3. Agriculture
4. Public Recreation
5. Hazards Management.

2.3.1 Management Subunits

An arrangement of management subunits has been devised for this Land Management Plan (LMP) to more easily reference and manage the diverse array of resources and management activities on the SJWA. These management subunits are unique to this LMP and therefore will not be found in older documents related to SJWA but will be used in the future by staff at SJWA. The following is a description of these management subunits in terms of geographic features, roads, general plant community cover types, intensive public uses, particular concentrations of special-status species and cultural resources. Greater detail is provided regarding all of these subjects in later sections of this document.

Davis Unit

Management Subunit D1

This subunit is in the north–central portion of the Davis Unit and provides access to the SJWA from the north via Davis Road at Theodore Street (Photo 1). Davis Road is an all-purpose roadway that functions as a road and multi-use trail. West of Davis Road, hillsides support native shrub communities, and public use is currently limited to hiking and seasonal small game hunting. Also west of Davis Road are gentle slopes supporting annual grassland that is actively managed for and occupied by Stephens' kangaroo rat (SKR; *Dipodomys stephensi*). East of Davis Road within management subunit D1, former agricultural lands support annual grassland with a substantial proportion of ruderal species.

Photo 1

Native upland Riversidian sage scrub is limited to an approximately 18-acre restoration area where the habitat was re-established. Species recorded in this area include burrowing owl (*Athene cunicularia*), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), white-tailed kite (*Elanus leucurus*), horned lark (*Eremophila alpestris actia*), loggerhead shrike (*Lanius ludovicianus*), red-tailed hawk (*Buteo jamaicensis*), and deer mouse (*Peromyscus maniculatus*). Similar to the west side of Davis Road, this area supports hiking and seasonal small game hunting.

Management Subunit D2

This subunit extends along the northern boundary of the Davis Unit from Davis Road east to Gilman Springs Road. Lands consist of former agricultural fields; the western half of the subunit (approximately 289 acres) is currently leased for agricultural production (Photo 2). Agricultural and forage crops in this subunit could support nesting birds in adjacent wetlands in D4. Within the

Photo 2

eastern area, a small ephemeral drainage exists running from north to south. Sheet flow across the site from the north provides seasonal water to Mystic Lake. Habitat conditions are generally poor, with high broad-leaved non-native forb cover (e.g., mustard) across the site; however, a historical (early 1990s) SKR occurrence is recorded in the eastern portion of this subarea. Other species records indicate use by raptors (ferruginous hawk (*Buteo regalis*) and northern harrier (*Circus cyaneus*)) and grassland species such as horned lark, loggerhead shrike, and western meadowlark (*Sturnella neglecta*). No other significant biological resources are recorded in this area. Although the area is open to hiking, there are no formal trails in this area.

Management Subunit D3

Management subunit D3 includes Mystic Lake in the eastern portion of the Davis Unit. The lake dominates the area functioning either as open water or dried lake bed depending on rain patterns over the previous few years (Photo 3). Other general vegetation communities surrounding the lake in the subunit include annual grassland, alkali ephemeral wetlands, and former agricultural lands (in the south only). The northwestern corner of the subunit supports an approximately 30-acre riparian restoration area consisting of large willow trees supported partially by irrigation flooding.

Photo 3

Lands in the northern part of the subunit (Anderson parcel) were purchased specifically as SKR mitigation and support a historical (early 1990s) occurrence record of the species (Figure 1-4). Two occurrences of San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*) (federally listed endangered plant) and Coulter's goldfields (a common alkali plant species) are recorded both on the western and northeastern edges of the lake. An incidental observation of bald eagle (*Haliaeetus leucocephalus*) is recorded in the southern part of Mystic Lake. Other species recorded include typical grassland bird species as noted for D2.

Public uses in D3 include small game hunting across the north edge of the lake, and open hiking throughout the subunit. When not open for hunting, the area functions as a large closed zone, that include game species associated with hunting in other portions of the SJWA.

Management Subunit D4

Set in the central portion of the Davis Unit, east of Davis Road and west of Mystic Lake, management subunit D4 includes the principal waterfowl hunting facilities within the CDFW -owned portion of the SJWA. The area is accessed from Headquarters' Road and North Contour Road, which both run east from Davis Road.

Photo 4

The northernmost waterfowl area includes blinds A1–A3, B1–B5, C1–C4, D1–D2, and E1–E4. This northern waterfowl area is created by a series of seasonally flooded basins supporting a mosaic of open water, marsh, and riparian habitats (Photo 4).

Between the northern and central hunting areas is part of the historic path of the San Jacinto River, currently supporting annual grassland and alkali scrub communities with no public facilities other than trail access on two existing roads that allow access from north to south in this area. CDFW has two established agricultural food plot areas in this location where crops are grown and left in place as forage for both game and non-game waterfowl species (Photo 5).

Photo 5

The central waterfowl area includes Ponds 1–4 and hunt areas A–D, G1–G2, and U–Z. Ponds 1–4 represent the original waterfowl facilities on the property and are in a rectangular configuration, while the other waterfowl areas are basins surrounding the four original ponds (Photos 6 and 7). The newest waterfowl ponds, F1–F7 and W1–W12, are south of Headquarters' Road.

Photo 6

These waterfowl areas are utilized for a variety of public recreation activities including waterfowl hunting, bird watching, mountain cycling, equestrian riding, and photography. An auto tour loop is also available from the Headquarters around the subunit.

Photo 7

Besides managed open water, riparian, and marsh habitats within the waterfowl ponds/basins, the subunit supports grasslands and alkali scrub habitats between the managed ponds/basins. Disturbed uplands in the area include dirt roads and cleared parking areas.

The subunit has two records of state/federally listed species; an occurrence of least Bell's vireo *(Vireo bellii pusillus)* in the northeast corner of the subunit and an occurrence of San Jacinto Valley crownscale in the southwest corner of the subunit. Several wetland and riparian species including downy woodpecker (*Picoides pubescens*), yellow warbler (*Dendroica petechia*), tree swallow (*Tachycineta bicolor*), black-crowned night-heron (*Nycticorax nycticorax*), double-crested cormorant (*Phalacrocorax auritus*), red-necked phalarope (*Phalaropus lobatus*), red-winged blackbird (*Agelaius phoeniceus*), savannah sparrow (*Passerculus sandwichensis*), tricolored blackbird (*Agelaius tricolor*), and white-faced ibis (*Plegadis chihi*) are recorded in the subunit. Raptors detected in the area include Cooper's hawk (*Accipiter cooperii*), white-tailed kite, northern harrier, and burrowing owl. Alkali plant species include Coulter's goldfields, smooth tarplant (*Centromadia pungens* ssp. *laevis*), and vernal barley (*Hordeum intercedens*). Most species were in the northern, central, and southern portions of the subunit, outside of the waterfowl ponds.

Management subunit D4 also contains an existing horse ranch that is a private in-holding of the SJWA occupying the western portion of the subunit (Figure 1-4). The horse ranch is a fully developed property with several structures and no extensive native habitat.

Management Subunit D5

This subunit includes disjointed northern and southern areas both bordering Gilman Springs Road in the east. The northern area is a small hilltop slightly raised above the eastern shore of Mystic Lake, while the southern area wraps around the southern edge of Mystic Lake and extends to the southeastern boundary of the Davis Unit along Bridge Street. The two areas are separated by an existing private dairy farm that is neither part of the SJWA nor a part of the LMP

study area. Both northern and southern areas within the subunit are former agricultural areas; however, structures are limited to an abandoned concrete pad adjacent to Gilman Springs Road and a larger rectangular disturbance area both in the northern areas of the subunit, along a road that extends from Gilman Springs Road in the northeast towards Mystic Lake in the southwest.

No public facilities are currently located in this subunit. Upland small game hunting is allowed in the southern portion of the subunit. The entire subunit is open to hiking although trails are limited to an existing dirt road that parallels Bridge Street.

Existing vegetation consists mostly of annual grassland; however, some alkali wetland communities occur in the extreme northern and southern portions of the subunit and some riparian habitat exists along Gilman Springs Road in the northern portion of the subunit. SKR has been documented in the northern portion of this subunit in 2009. Other species recorded in this area are typical of grassland or are likely observations of birds that utilize Mystic Lake, including Bullock's oriole (*Icterus bullockii*), horned lark, loggerhead shrike, American avocet (*Recurvirostra americana*), American white pelican (*Pelecanus erythrorhynchos*), black-necked stilt (*Himantopus mexicanus*), great egret (*Ardea alba*), and savannah sparrow.

Management Subunit D6

This management subunit runs along the western boundary of the main Davis Unit, west of Davis Road at the foothills of the Bernasconi Hills (Photo 8). This area supports native upland communities (mainly coastal sage scrub and annual non-native grassland) and is seasonally open to small game hunting facilitated by several existing guzzlers located at the base of the hills. The area is open to hiking year-around.

Photo 8

SKR occurs in grasslands at the base of the hills in the northern portion of the subunit. California gnatcatcher (*Polioptila californica*) is the only other state or federally listed species recorded in this area; it was recorded in 2007 in the south-central portion of the subunit. Other species in the area are typical of coastal sage scrub and grassland habitats including American kestrel (*Falco sparverius*), Bewick's wren (*Thryomanes bewickii*), California thrasher (*Toxostoma redivivum*), canyon wren (*Catherpes mexicanus*), rock wren (*Salpinctes obsoletus*), rufous-crowned sparrow (*Aimophila ruficeps*), Bell's sparrow (*Artemisiospiza belli*), white-crowned sparrow (*Zonotrichia leucophrys*), and game species such as California quail (*Callipepla californica*) and ring-necked

pheasant (*Phasianus colchicus*). Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) has been trapped in this area. Several raptors and wetland birds have been detected, presumably flying overhead and potentially using habitats throughout the area and (not necessarily just within the subunit); these include Cooper's hawk, great horned owl (*Bubo virginianus*), sharp-shinned hawk (*Accipiter striatus*), golden eagle (*Aquila chrysaetos*), red-tailed hawk, turkey vulture (*Cathartes aura*), common yellowthroat (*Geothlypis trichas*), great blue heron (*Ardea herodias*), red-winged blackbird and savannah sparrow.

Management Subunit D7

Management subunit D7 occupies the central portion of the Davis Unit, following the historic San Jacinto River channel. East of Davis Road, the subunit is narrowly defined along the channel that still supports native riparian habitat. A manufactured pond is located immediately south of Headquarters' Road; it is not open to hunting but rather featured as a brood pond and wildlife viewing area. West of Davis Road, the subunit is more broadly defined but still includes riparian habitat along the historic San Jacinto River channel (Photo 9). In the adjacent uplands are annual grasslands and alkali scrub habitats; west of the river channel the grasslands covering approximately 20% of the area are utilized by CDFW for planting and non-irrigated production of grain/food crops mainly for upland game; and east of the river channel the land is generally unused with the exception of a 30-acre alkali habitat restoration area adjacent to Davis Road and a narrow strip of land (approximately 10 feet wide) that is cultivated for upland grain/food crops.

Photo 9

The portion of the subunit west of Davis Road is open to small game hunting during the hunting seasons and the entire subunit is open to passive trail use (i.e., hiking, walking, running, bird watching) and active trail use (i.e.,non-motorized vehicles, cycling, equestrian riding).. Active trail use is appropriate on the designated roads and pathways. Existing trails occur along a dirt road on the western boundary of the subunit and a short secondary road extending from Davis Road.

Photo 10

San Jacinto Valley crownscale and spreading navarretia (*Navarretia fossalis*) (Federally listed threatened) are recorded both east and west of Davis Road where the San Jacinto River crosses Davis Road and in the southern portion of the subunit (Photo 10). Thread-leaved brodiaea (*Brodiaea filifolia*) (State-listed endangered/federally threatened) is also recorded in the southern portion of the subunit. This area was originally purchased as mitigation for the Metropolitan Water District Inland Feeder Pipeline project for the thread-leaved brodiaea and is also federally designated critical habitat for this species. Other alkali plants recorded in these areas include Coulter's goldfields, smooth tarplant, south coast saltscale (*Atriplex pacifica*), Wright's trichocoronis (*Trichocoronis wrightii var. wrightii*), and vernal barley.

Numerous riparian wildlife species are recorded in this subunit including black-headed grosbeak (*Pheucticus melanocephalus*), blue grosbeak (*Guiraca caerulea*), Bullock's oriole, Cassin's kingbird (*Tyrannus vociferans*), western wood-pewee (*Contopus sordidulus*), and yellow warbler. Upland species recorded in the area are typical of the SJWA including burrowing owl, Bewick's wren, horned lark, and loggerhead shrike. Several wetlands species are also recorded in the area including belted kingfisher (*Ceryle alcyon*), black-crowned night-heron, Brewer's blackbird (*Euphagus cyanocephalus*), common gallinule (*Gallinula galeatea*), marsh wren (*Cistothorus palustris*), great blue heron, tricolored blackbird, and white-faced ibis. Game species recorded in this area include California quail, ring-necked pheasant, American coot (*Fulica americana*), and mallard (*Anas platyrhynchos*).

Management Subunit D8

This subunit consists of upland hills and the Headquarter facilities. The upland hills are largely closed to hunting except for special events; but the entire area can be accessed for hiking and supports upland scrub communities. Headquarters includes the main office and garage/yard maintenance areas.

Species recorded in this area include San Jacinto Valley crownscale and Coulter's goldfields which are probably associated with alkali scrub habitat located in the adjacent subunit D4 (northern edge of D8). SKR occupies grasslands which wrap around the base of the hill within the subunit. Western spadefoot (*Spea hammondi*) is recorded in the hills in the western portion of

the subunit. Other species records are typical for uplands in the SJWA including burrowing owl, loggerhead shrike, red-tailed hawk, and California quail.

Management Subunit D9

Management subunit D9 is completely on private lands but represents part of the SJWA through existing easements with the two private land owners, Ramona Hunt Club in the north and Mystic Lake Duck Club in the south (Photo 11). Access to the two areas is from Davis Road along both the West Contour Road and South Contour roads. Subunit D9 is primarily occupied by waterfowl ponds with the exception of a narrow sliver of disturbed land along the northern boundary.

Photo 11

San Jacinto Valley crownscale is recorded from 1995 in a waterfowl pond in the south-central portion of the D9. Other alkali species have been recorded more recently in and around pond areas including Coulter's goldfields and vernal barley. Burrowing owl, golden eagle, loggerhead shrike, turkey vulture, and northern harrier have been recorded along the eastern boundary of the subunit.

Management Subunit D10

Management Subunit D10 is southwest of Mystic Lake and includes the Ramona Duck Club, 21 Gun Club, and Four Winds Pheasant Club (Figure 1-4). Much of the lands within this subunit are privately owned (21 Gun Club, and Four Winds Pheasant), with the exception of the Ramona Duck Club and represent potential easement or acquisition areas. Access is through Ramona Duck and Mystic Lake Duck Clubs from the north or from Bridge Street to the south. Lands throughout this area are largely disturbed with waterfowl ponds in Ramona Duck Club and 21 Gun Club and food crops in Four Winds Pheasant Club. Adjacent areas mostly support annual grassland or other disturbed vegetation with the exception

Photo 12

of the eastern boundary of the management subunit that supports alkali ephemeral wetland communities.

San Jacinto Valley crownscale is recorded in the west-central portion of the subunit. Smooth tarplant is recorded the southern portion of the subunit. Burrowing owl is recorded in the northern portion of the subunit.

Management Subunit D11

Photo 13

This subunit includes the southwestern shore of Mystic Lake and historic agricultural fields between Mystic Lake and Bridge Street. The area is comprised of disturbed grasslands and forb-dominated habitat with the exception of an approximately 8-acre rectangular reservoir in the west-central portion of the subunit (Photos 12 and 13). The area is open to small game hunting as well as hiking and other passive recreation. Species recorded in the area are typical for open grassland/agricultural habitats including peregrine falcon (*Falco mexicanus*), loggerhead shrike, northern harrier, Swainson's hawk (*Buteo swainsoni*), and song sparrow (*Melospiza melodia*).

Management Subunit D12

Photo 14

This subunit includes two prominent peaks rising approximately 400 feet immediately east of Davis Road. The subunit supports small game hunting and upland scrub communities, with some annual grassland in the lower reaches (Photo 14). A small portion of the Ramona Hunt Club extends into D12. The area is open to small game hunting as well as hiking and other passive recreation. Species recorded in the area are typical for sage scrub and grassland communities but also includes species that likely were observed from high points in D12 but utilizing lower, wetlands portions on the SJWA. These species include Cooper's hawk, Nuttall's woodpecker (*Picoides nuttallii*),

spotted towhee (*Pipilo maculatus*), Bewick's wren, canyon wren, ferruginous hawk, greater roadrunner (*Geococcyx californianus*), horned lark, rufous-crowned sparrow, western bluebird (*Sialia mexicana*), American badger (*Taxidea taxus*), common yellowthroat, red-winged blackbird, and tricolored blackbird. Game species recorded in the subunit include California quail, ring-necked pheasant, American coot, and mallard.

Management Subunit D13

This subunit occurs in the southern portion of the Davis Unit, east of Davis Road, and includes the current San Jacinto River channel and historic agricultural fields to the north and south of the channel (Photo 15). These former fields currently support annual grassland and alkali ephemeral wetlands. Historic waterfowl ponds occur north of the river channel. Fields are seasonally flooded south of the river channel to support additional wetlands and are used as an upland and wetland hunting dog training area. Access to the area is via South Contour Road in the north and Marvin Road in the south.

Photo 15

San Jacinto Valley crownscale, spreading navarretia, and thread-leaved brodiaea are recorded at several locations in this subunit mostly along the north border of the subunit (brodiaea is only located in the western portion); San Jacinto Valley crownscale is also recorded in the southern portion of the subunit. Federally designated critical habitat for thread-leaved brodiaea is located in this area. Other alkali species recorded in this area include Coulter's goldfields, smooth tarplant, south coast saltscale and vernal barley.

SKR is recorded in the north-central portion of the subunit. Other species recorded in the subunit include white-tailed kite, burrowing owl, horned lark, and white-faced ibis.

Management Subunit D14

Subunit D14 is the disjointed western portion of the Davis Unit, west of Lake Perris Dam. The area is bounded by Ramona Expressway to the south and west. Within the area, there is a mosaic of dirt roads, upland scrub, grassland, and isolated riparian habitats, and a maintenance yard area used by CDFW unstaffed lands crew. The southern portion of the subunit has large hills, but the remainder of the subunit is relatively flat with the exception of rock outcrops in

the north-central portion of the subunit. Currently, there are no hunting, agricultural leases, or other activities in the subunit.

SKR and California gnatcatcher are recorded in this subunit. SKR occupies the northern portion of the subunitand gnatcatcher has been recorded in the central portion of the subunit. Other species recorded in this area are typical given the mix of habitats present and include blue grosbeak, Bullock's oriole, white-tailed kite, Bewick's wren, canyon wren, phainopepla (*Phainopepla nitens*), rufous-crowned sparrow, Dulzura kangaroo rat (*Dipodomys simulans*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), common yellowthroat, double-crested cormorant, and great blue heron.

Management Subunit D15

This subunit is primarily SKR habitat consisting of gently sloped grasslands at the foot of the Bernasconi Hills and west of the San Jacinto River (Photo 15). The area is accessed by North Contour Road. The area is open to seasonal upland small game hunting and has a small network of dirt roads that offer access throughout the subunit for passive trail use (i.e., hiking, walking, running, bird watching) and active trail use (i.e., non-motorized vehicles cycling, equestrian riding). Active trail use is appropriate on the designated roads and pathways.

In addition to SKR, the area has records of Los Angeles pocket mouse, cactus mouse (*Peromyscus eremicus*), deer mouse, Dulzura kangaroo rat, and San Diego desert woodrat (*Neotoma lepida intermedia*). Bird species recorded in the area include sharp-shinned hawk, burrowing owl, grasshopper sparrow (*Ammodramus savannarum*), horned lark, loggerhead shrike, rock wren, rufous-crowned sparrow, common yellow throat, red-winged blackbird, and song sparrow. Western spadefoot toad is recorded in the southern portion of the subunit.

Potrero Unit

Management Subunit P1

This subunit is on the western edge of the site including the small portion of the Potrero Unit that is north of Lamb Canyon Road. The Main Road defines the southern boundary of the subunit. This area supports upland scrub communities and annual grasslands on relatively gentle slopes. Species recorded in this area are typical of upland scrub and grassland communities and include Bewick's wren, California towhee (*Pipilo crissalis*), horned lark, rock wren, rufous-crowned sparrow, sage sparrow, western meadowlark, and white-crowned sparrow. Golden eagle was recorded in 2006 in the southeastern corner of the subunit. No LMC operations are reported to be in this subunit

Management Subunit P2

Photo 16

This subunit is directly east of P1 but extends south of the Main Road to include Potrero Canyon. Hills in this area are more readily erodible, resulting in deep gullies generally running from north to south. The North Loop Road defines part of the eastern boundary of this subunit and bisects the subunit before connecting back to the Main Road. North of the Main Road, in the eastern portion of the subunit, two abandoned Lockheed facilities exist within this subunit. The westernmost facility, which partially extends into subunit P4, consists of an approximately one-half-acre concrete parking area and a single bunker-style building in the hillside (Photo 16).

Photo 17

The second facility, proceeding east, is a brick building shell with no remnant interior structure (Photo 17).

Vegetation communities in this subunit predominantly are upland scrub types but also include some grasslands, riparian, and chaparral in the north. South of the Main Road, Potrero Canyon supports extensive riparian communities adjacent to grasslands in the lower hills and upland scrub in the upper hills (Photo 18).

Photo 18

SKR is recorded in the east and central portions of this subunit, north of Potrero Creek. Least Bell's vireo is recorded from Potrero Creek in the central portion of the subunit. Other species include typical upland birds such as (Bewick's wren, dark-eyed junco (*Junco hyemalis*), Lawrence's goldfinch (*Carduelis lawrencei*), grasshopper sparrow, oak titmouse (*Baeolophus inornatus*), rufous-crowned sparrow, western bluebird, and wrentit (*Chamaea fasciata*)) and riparian and wetland species such as (barn owl (*Tyto alba*), blue

grosbeak, Cassin's kingbird, northern flicker (*Colaptes auratus*), yellow warbler, Brewer's blackbird, common yellowthroat, and song sparrow. Englemann oak (*Quercus engelmannii*) has been recorded in a tributary to Potrero Creek in the central part of the subunit. Portions of five former LMC operational areas lie within this subunit: Area E-Radioactive Waste Disposal Site, Area F- LPC Test Services Area, Area G-Helicopter Weapons Test Area, Area H –Sanitary Landfill and Area I-Western Aerojet Range.

Photo 19

Management Subunit P3

This subunit, directly east of P2, includes the historical landing strip and the most prominent peak in the north portion of the Potrero Unit (Photo 19). Again, the Main Road defines the southern boundary of the subunit, and communities within the subunit are mainly upland scrub but with some relatively large patches of grassland and chaparral in the north (Photo 20). Species recorded in the area are typical of scrub and grassland communities including horned lark, western meadowlark, rufous-crowned sparrow, California thrasher, and spotted towhee.SKR is recorded from a single location in the western-central portion of the subunit, in the area of a historic landing strip.

Photo 20

Photo 21

Portions of four former LMC operational area lie within this subunit: Area F –LPC Test Services Area, Area G-Helicoptor Weapons Test Area, Area H- Sanitary landfill and Area I- Western Aerojet Range. A launch structure is located along the Main Road in the southeastern corner of this subunit (Photo 21). The approximately 30-foot tall concrete vertical wall with some metal beams attached to it is surrounded by concrete paving**.**

Management Subunit P4

This subunit includes a valley in its center, tributary to Potrero Creek, and typical erodible hills in the surrounding area. Again, vegetation communities consist mainly of upland scrub with smaller portions of grassland, especially in the southern portion of the subunit, and chaparral mainly in the northern portion of the subunit. Species recorded in the area includes spotted towhee, loggerhead shrike, merlin (*Falco columbarius*), wrentit, Dulzura kangaroo rat, and San Diego horned lizard (*Phrynosoma coronatum blainvillii*).

SKR is recorded from several locations in the southeastern portion of the subunit in the lower portion of the tributary valley. A dirt road offers access from the Main Road approximately halfway through the subunit, through the middle of this valley.

A portion of one former LMC operational area lie within this subunit: Area F-LPC Test Services Area.

Management Subunit P5

This subunit includes the Main Road connection with Highland Springs Road along the eastern edge of the subunit and a much broader valley associated with Potrero Creek in the central portion of the subunit. Thus, a greater proportion of this area is occupied by grassland with surrounding hills occupied by upland scrub communities (Photo 22).

Photo 22

Numerous upland and riparian birds are recorded in the area including black-headed grosbeak, Bullock's oriole, northern flicker, spotted towhee, white-tailed kite, yellow warbler, burrowing owl, horned lark, phainopepla, rock wren, rufous-crowned sparrow, Dulzura kangaroo rat, common yellowthroat, and song sparrow. Smooth tarplant is recorded on the western tributary channel, just upstream of the confluence with Potrero Creek in this subunit.

Photo 23

SKR is recorded throughout the lower portion of the tributary valley in the western part of the subunit as well as adjacent to Potrero Creek in the southern part of the subunit, and along the Main Road in the eastern part of the subunit.

Photo 24

Portions of 3 former LMC operational areas lie within this subunit: Area A-Eastern Aerojet range, Area B-Rocket Motor Production Area, and Area F-LPCTest Services Area. Two structures exist, one in the southwestern corner of the subunit and one in the northern part of the subunit; both are adjacent to the Main Road. The structure in the southwestern corner is a tall (approximately 25 feet tall) brick warehouse with a garage and office (Photo 23). The northern structure is a series of bunkers that appear as mounds in the hillside (Photo 24).

Management Subunit P6

This subunit is bounded by the Main Road on the west and the boundary of the Potrero Unit on the north, east, and south. Roughly half of this area supports grassland, while the remaining area supports upland scrub communities. Species recorded in this subunit include California towhee, horned lark, California quail, and Parry's spineflower (*Chorizanthe parryi* var. *parryi*). SKR is recorded in two locations, one along the south-central boundary of the SJWA and one in the central portion of the subunit. A Portion of one former LMC operational area lies within this subunit: Area A-Eastern Aerojet range. There are no existing structures in this subunit.

Management Subunit P7

This subunit is south of the Main Road on the western edge of the Potrero Unit, adjacent to Gilman Springs Road. It is almost entirely made up of a southwest-facing slope extending up to 1,500 feet from the valley floor. The outlet of Potrero Canyon runs through the center of the subunit. Communities are mainly upland scrub with small patches of grasslands (Photo 25). Species monitoring has not been conducted in this area presumably due to the steepness of the area.

Photo 25

No LMC operations are reported to have taken place within this subunit.

Management Subunit P8

This is the next subunit to the east and due to its higher elevation supports a mosaic of upland scrub and chaparral communities (Photo 26). The South Access Road extends from the Main Road on subunit P8 in the north and to the ridgeline in the south, an ascent of approximately 2,600 feet in elevation. Slopes in P8 are mainly north facing. Similar to subunit P7, there are few monitoring locations in this subunit. Gray fox was recorded at scent stations in the southern part of the subunit. A number of species are recorded in the northern part of the subunit, associated with Potrero Creek as listed for the adjacent subunit P2.

Photo 26

Photo 27

A portion of one former LMC operational area lies within this subunit: Area G- Helicopter Weapons Test Area.

Management Unit P9

This unit is a continuation of the north-facing slope of the southern hills of the Potrero Unit. This unit is largely inaccessible with no major roads going through it (Photo 27). The unit supports upland scrub and chaparral in relatively even proportions (Photo 28). There is one monitoring station in the central part of the subunit which reveals typical upland scrub community species including Bewick's wren, California towhee, Lawrence's goldfinch, red-tailed hawk, rufous-crowned sparrow, wrentit, black-chinned sparrow (*Spizella atrogularis*), mountain quail (*Oreortyx pictus*), and spotted towhee.

Photo 28

Portions of three former LMC operational areas lie within this subunit: Area D-LPC Ballistics Test Range, Area E- Radioactive Waste Disposal Site, and Area G- Helicopter Weapons Test Area.

Management Subunit P10

Photo 29

This subunit contains Potrero Creek with its riparian corridor as well as a broad valley supporting annual grassland (Photo 29). The subunit includes a 565 acre conservation easement that exists to protect the site while Lockheed Martin continues a perchlorate clean-up effort in the area, prior to final transfer of ownership to CDFW. Two roads extend south from the Main Road, offering access to either side of a significant tributary that enters from the south through P10. This tributary supports floodplain scrub communities; other upland scrub and chaparral communities occupy hills along the southern edge of P10.

East of the southern tributary and south of Potrero Creek the large grassland areas supports SKR as well as western meadowlark, red-tailed hawk, loggerhead shrike, hooded oriole (*Icterus cucullatus*), rufous-crowned sparrow, black-chinned sparrow, rock wren, San Diego black-tailed jackrabbit, and one location of smooth tarplant. SKR is also recorded in several locations west of the southern tributary and south of Potrero Creek. Species recorded within the southern tributary itself include least Bell's vireo (from 1990), tricolored blackbird, gray fox (*Urocyon cinereoargenteus californicus*), yellow warbler, spotted towhee, Nuttall's woodpecker, great horned owl, blue grosbeak, Cooper's hawk, and American coot. Potrero Creek within the subunit supports a diverse array of species including American kestrel, barn owl, Bewick's wren, black-headed grosbeak, blue grosbeak, California quail, California thrasher, Lawrence's goldfinch, oak titmouse, downy woodpecker, Swainson's thrush (*Catharus ustulatus*), tricolored blackbird, and white-tailed kite. SKR is also recorded north of Potrero Creek, west of the confluence of the southern tributary.

Portions of five former LMC operational areas lie within this subunit: Area B- Rocket Motor Production Area, Area C- Burn Pit Area, Area D- LPC Ballistics Test Range, Area E- Radioactive Waste Disposal site, and Area F- LPC Test Services Area.

Management Subunit P11

This subunit extends along the eastern edge of the Potrero Unit and supports mostly west-facing slopes with upland scrub communities and some small areas of grassland and chaparral. Access across this area is facilitated by a north–south road extending from the Main Road along the western edge of this subunit. The northern portion of the subunit includes Potrero Creek.

SKR is recorded along the border with subunit P10 in the southern and western portions of subunit P11. Other species recorded in this subunit include granite spiny lizard (*Sceloporus orcutti*), black-chinned sparrow, western meadowlark, California quail, rock wren, spotted towhee, phainopepla, and rufous-crowned sparrow.

Portions of four former LMC operational areas lie within this subunit: Area A- Eastern Aerojet Range, Area B-Rocket Motor Production Area, Area C-Burn Pit Area, and Area D-LPC Ballistics Test range.

2.3.2 Agreements and Easements

2.3.2.1 Water Project Wildlife Losses in Southern California

Memorandum of Agreement (MOA) Regarding Mitigation of State Water Project Wildlife Losses in Southern California- On October 23, 1979 the California Department of Water Resources (DWR), California Department of Fish and Game, and the Metropolitan Water District of Southern California entered into an agreement that among other actions helped establish portions of the San Jacinto Wildlife Area. The Memorandum of Agreement designated existing State Water Project lands for wildlife mitigation and provided funding for land acquisition, both of which contributed to the establishment of the SJWA. The SJWA is managed pursuant to the 1979 Mitigation Agreement for the State Water Project, the intent of which was to mitigate the direct loss of fish and wildlife habitat and public recreational opportunity resulting from construction of the State Water Project. The SJWA is a type "A" wildlife area. According to the California Code of Regulations, Title 14. Type A Wildlife Areas represent the largest recreational use on Department Lands which include having restricted hunter access during waterfowl season, and require a hunting pass to be purchased in advance and exchanged for an entry permit at the wildlife area (CDFW 2016c). Parts of the MOA are not relevant to SJWA management because they pertain to Lake Mathews or other areas; however, Provision #7 in the MOA states “that if DWR requires any of these lands for SWP [State Water Project] operations, DWR will replace such lands taken with other lands acceptable to DFG.”

2.3.2.2 Eastern Municipal Water District Agreement

On August 18, 1987, CDFW and the Eastern Municipal Water District (EMWD) entered into an agreement to complete a cooperative project for the construction and operation of a recycled water conveyance system consisting of approximately 53,000 feet of pipeline and appurtenant facilities to provide a water source for both the wildlife habitat on the SJWA and areas adjacent to the pipeline (the San Jacinto Wildlife Area Recycled Water Supply Project Agreement, referred to as the “Agreement”). The 11-mile pipeline, originating at EMWD’s Hemet/San

Jacinto Regional Water Reclamation Facility, was completed in January 1990. In return for partially funding the pipeline, CDFW received, at a reduced cost, an initial amount of 1,500 acre-feet of recycled water each year, increasing to a maximum of 4,500 acre-feet per year in 1999–2000 and lasting the duration of the initial term of the Agreement (CDFG and EMWD 1987). Based on historical records, the most water usage by CDFW was in 2015 (a drought year) in the amount of 3,493 acre-feet.

Section F of the Agreement states that while the term of the Agreement is 25 years commencing with the date hereof (Agreement's original term ended in 2012), providing water for the SJWA is a long-term, mutually beneficial program for both EMWD and CDFW. The program would result in the production of valuable wildlife habitat that will support resident and migratory populations of wildlife and provide long-term benefits to the public. EMWD and CDFW realize that wildlife populations and public benefits will become dependent upon habitat supported by the recycled water delivery program. In recognition thereof, EMWD and CDFW consider this program to be a long-term commitment, to be extended beyond the initial term of this Agreement, and in good faith and consistent with their legal authority intend to periodically extend the Agreement with such amendments as are at the time deemed necessary. Since the expiration of the Agreement, there has been year-to-year extensions of the contract resulting in no lapse in water availability to the SJWA. CDFW and EMWD plan to extend this Agreement each year indefinitely until after the draft LMP is approved, at which time an Agreement will be requested that covers a longer time period for the 4,500 acre feet per year of recycled water allocation.

2.3.2.3 Lockheed Martin Corporation

On December 31, 2003 the CDFW purchased 8552 acres of the 9117 acre Potrero Canyon Unit from LMC. The balance of the property (565 acres) was retained by LMC. LMC deeded The remaining 565 acres to a conservation easement and provided CDFW with the option to purchase the 565 acres during the option term, presently LMC still owns the property. The purchase and sales agreement between LMC and CDFW includes access agreements for both parties to enter each other's property. CDFW has access to LMC's property to ensure LMC is conserving the property. LMC has access to CDFW property to access their own property and to investigate and remediate any hazardous substances that may have been released On CDFW property. The access agreement states that the public is not included as part of the agreement to access LMC property. The purchase and sales agreement requires CDFW to coordinate the use of water at the site with LMC and gives LMC authority to restrict water use under prescribed conditions. The purchase and sales agreement also provides for the implementation of land use covenants/restrictions (LUC) in the event the department of toxic substances control (DTSC) requires restricted land use on either property as part of the fulfillment of the 1989 consent order issued by DTSC's predecessor (State of California Health and Welfare Agency).

2.3.2.4 Lockheed Martin Conservation Easement Deed

On December 31, 2003, LMC and the State of California Wildlife Conservation Board signed a Conservation Easement Deed, as well as an Option Agreement. The Conservation Easement, located in Potrero Subunit P10, is approximately 560 acres with approximately 5 acres included in Subunit P11, and provides occupied and potential habitat for the federal and state-listed endangered or threatened SKR, animal movement corridors including the Potrero Creek streambed, raptor nesting areas, wetlands, and waterways. The purpose of the Conservation Easement is to ensure the property will be retained in its natural condition in perpetuity. The property within the Optional Agreement is subject to ongoing environmental investigation, monitoring, cleanup, and remediation program efforts implemented by LMC and governed by the California DTSC under a Consent Order dated June 14, 1989, as amended. The Consent Order was entered into between LMC and DTSC to perform remediation activities on the option property.

2.3.2.5 Utility Easements

Southern California Edison (SCE), Southern California Gas Company (SoCal Gas), Metropolitan Water District (MWD)

CDFW maintains an easement with SCE on the west side of Davis Road to allow SCE to maintain the SCE high-voltage transmission line traversing the Davis Unit (Figure 2-15A). CDFW maintains an easement with SoCal Gas south of the Double Bar 'S' Horse Ranch to the Ramona Expressway to allow SoCal Gas to maintain the natural gas pipeline that traverses the Davis Unit. CDFW maintains an easement with MWD along the entire length of Davis Road to allow MWD to maintain the 12-foot-diameter (buried) water pipeline. These utility easements will remain in perpetuity unless changes in the alignment of the utilities would result in an amended easement.

2.3.2.6 Lake Perris State Park/Department of Water Resources

The California Department of Parks and Recreation (DPR) utilized an approximately 10-acre site within Subunit D14 as a headquarters area during the initial development of the Lake Perris State Recreation Area. The headquarters site is now used by DPR for equipment storage. CDFW and DPR jointly use the headquarters site, located west of Lake Perris Dam and east of Ramona Expressway pursuant to an informal cooperative arrangement.

2.3.2.7 Non-Profit Associations – State and Federal Grants

CDFW has undertaken partnerships with nonprofit associations (e.g., California Wildlife Foundation, California Waterfowl Association) to maintain existing infrastructure and implement

new projects on the Davis Unit using state and federal grants (e.g., North American Wetlands Conservation Act of 1989, funds administered by the state Wildlife Conservation Board). CDFW will continue to partner with nonprofit associations and apply for state and federal grants to support new projects and maintenance activities in both the Davis and Potrero Units, including the National Fish and Wildlife Foundation Endowment.

2.3.2.8 Ramona Hunt Club

Conservation Easement, Memorandum of Understanding (MOU), and Wildlife Management Plan

CDFW maintains a conservation agreement with the Ramona Hunt Club which allows this hunt club unlimited access to property located in Subunit D9 for permitted uses such as licensed pheasant and duck hunting, game bird breeding/holding, crop planting to attract waterfowl, fish farming and recreational fishing, membership RV parking on upland slopes containing existing structures (as of agreement date), construction of new buildings only if replacing a pre-existing and similar structure, and construction of new or modification of existing ponds.

In June 2000, an MOU was executed between CDFG and Wildon Associates (the grantor of the conservation easement) regarding the management of the Ramona Hunt Club. The MOU included requirements for removal of certain structures as mitigation for those structures being located on the property contrary to the 1988 Deed of Easement and outlined wildlife management plans for the property and provisions for an annual meeting to facilitate the wildlife management plan and other agreements. In March 2001, a wildlife management plan for the property was approved for implementation by CDFG and Ramona Hunt Club, with the approval of CUP3301. The wildlife management plan identifies three natural vegetation series—California annual grassland, bush–seepweed series, and bulrush–cattail series—and an active agricultural area on site and discusses wildlife resources and management objectives for each.

2.3.2.9 Ramona Duck Club Conservation Easement

CDFW maintains a conservation agreement with the Ramona Duck Club that allows continued use of the property by the duck club, which is located within Subunit D10, as a hunting club, including continued access for hunting as well as preservation and maintenance of managed wetlands, grassland, and wildlife-friendly farmland. The purposes of the easement are to ensure that the property will be preserved, protected and maintained forever as natural, restored or enhanced habitat and as an open space resource, and to prevent any unauthorized use of the property that will significantly impair or interfere with the conservation values of the property. This easement will confine the use of the property to activities involving the preservation, restoration or enhancement of native species and their habitats as well as uses and activities associated with the

adjacent Ramona Hunt Club property (D9) as a hunting club. This easement, signed March 22, 2011, permanently terminates all development rights on the property.

2.3.2.10 Mystic Lake Duck Club

Conservation Easement, MOU, and Conditional Use Permit

CDFW maintains a conservation agreement on a 224-acre property located in Subunit D9 with the Mystic Lake Duck Club that restricts and limits the use of the property to ensure it will be retained forever in a natural condition and to prevent any use of the property that will significantly impair or interfere with the conservation values of the property. The artificial wetlands on property are flooded each fall in anticipation of waterfowl hunting season (mid-October through January) and are maintained as either moist soil wetlands or semi-permanent wetlands. The conservation easement was recorded on September 6, 2011.

In February 1994, an MOU was executed between CDFG and then-owners of the Mystic Lake Duck Club (Harold Hill and John Sooy) making available approximately 60 acres on the south end of the Mystic Lake Duck Club for spring–summer wetland habitat enhancement. In exchange for the wetland use of the property, CDFW supplies recycled water from its annual SJWA allocation from EMWD pursuant to the Agreement (not to exceed 150 acre-feet, from March 1 to July 15) to sustain the spring/summer wetland habitat. In August 2003, San Jacinto Partners, the new (and current) owners of the Mystic Lake Duck Club, entered into an MOU with CDFG to continue the wildlife habitat program previously established on the land. CDFW would also continue to assist with levee and wetland management of the spring/summer wetland not to exceed 40 hours of equipment/personnel time each year. Additionally, the 2003 MOU provided for the refurbishment of an abandoned irrigation well on CDFW's Welch property (located within the northwest portion of Davis Subunit D13) for wetland habitat maintenance on the Mystic Lake Duck Club and adjoining SJWA lands. The installation of 1,800 feet of pipeline on CDFW lands extended the existing Welch property pipeline to reach the Mystic Lake Duck Club property boundary. CDFW use of the well is secondary to Mystic Lake Duck Club use during fall and winter months and primary during spring and summer months. The 2003 MOU had an initial term of 10 years, which ended in 2013. Since expiring in 2013, the MOU is being extended on an annual basis until final approval of the draft LMP. Once the LMP is approved the MOU will be re addressed for its potential use or nonuse on a long term basis.

2.3.2.11 California Waterfowl Association and Ducks Unlimited

CDFW works in cooperation with California Waterfowl Association and Ducks Unlimited (non-governmental organizations) for the purposes of cooperatively acquiring, developing, or restoring waterfowl habitat to maintain and increase waterfowl populations within Subunit D9.

Although this cooperation is not specifically considered an easement or formal agreement, it has been included here because of the ongoing cooperation between CDFW and the non-governmental organizations.

2.3.2.12 Potential Future Easements

CDFW may enter into other agreements or MOUs as necessary to further ongoing cooperative relationships with agencies and other joint powers authorities such as the Regional Conservation Authority, Riverside County Habitat Conservation Agency, and the U.S. Fish and Wildlife Service. Ongoing coordination with these groups will support CDFW's mission and ensure long-term success of the SJWA

2.3.3 Agriculture

Agricultural Leases

Agricultural leases previously existed on the SJWA and located in the Davis Unit, subunit D2 (Figure 2-7a). For example, a lease with Bouris Ranch was for a 2-year period. Payment for the lease was provided by use of custom tractor work on the SJWA as directed by CDFW staff. Generally, the agricultural lease area is farmed through dryland farming techniques, which require tilling and amendment of the soil in fall, planting of seed prior to the onset of winter rains, and harvest in the spring. Although not stipulated in the lease, the farmer generally leaves approximately 20% of the grain crop on the field.

CDFW-Operated Agriculture

CDFW operates food crop production in five existing areas on SJWA (Figure 2-7a). Located in the Davis Unit, subunits D4, D7, and D11, these agricultural production areas are primarily for the purpose of providing cereal crops for birds and small game. The food plots in D4 and D11 are irrigated with recycled water and include crop production year around generally benefiting waterfowl. Food plots in D7 include a large area west of existing riparian habitat where land is farmed through dryland farming techniques with very limited soil disturbance. Seeds including safflower and winter wheat, are broadcast in the late fall to supplement food availability mainly for small game species. A more intensive food plot production is conducted in a narrow strip of habitat east of the riparian habitat in D7.

2.3.4 Public Recreation

The following types of public recreation currently exist at the SJWA and will be described briefly herein:

- Passive Trail Use (i.e., hiking, bird watching)
- Active Trail Use (i.e., mountain biking, equestrian use)
- Waterfowl Hunting
- Upland Small Game Hunting
- Hunting Dog Training and Trials.

2.3.4.1 *Trail-Based Recreation*

The existing SJWA trail and road network on the Davis Unit is illustrated on Figure 2-7A. As shown on the figure, the majority of existing trails are unimproved; however, unimproved and paved trails, and the auto loop tour road, are suitable for passive trail use such as walking, hiking, running. Active trail use, such as biking, and equestrian riding, is allowed on designated trails and roads only. All internal roadways and unimproved trails on the Davis Unit can be used unless otherwise posted for nonuse for hiking, horseback riding, and non-motorized bicycling, and other recreational pursuits including photography, bird watching and wildlife viewing, however, there are seasonal use restrictions. On the SJWA and in general, all CDFW land, wildlife viewing, hiking, and photography are allowed except where the property or portion of the property is specifically closed (CDFW 2016c). Similarly, the recreational use of horses is allowed on CDFW lands designated as wildlife areas (including the SJWA) except where the area has been specifically closed or is listed in subsection 551 (l) of CDFW's Waterfowl and Upland Game Hunting & Department Lands Public Regulations (CDFW 2016). While the SJWA is not listed in subsection 551 (l), Subunit D3 on the Davis Unit functions as a large "closed zone" when not open for hunting (see Chapter 4, Environmentally Setting). However, the "closed zone" designation is applicable only to hunting and passive recreation is permitted on Subunit D3 outside of the hunting seasons. No other closed zones are located on the Davis or Potrero Units. During waterfowl season, bicycles are only permitted in the wetland hunting areas, on roads or levees for transportation between parking lots and hunting areas for the purpose of transporting hunting gear from the assigned parking lot to the participants hunt site. On the Potrero Unit, bicycles will only be allowed on designated roads and trails (CDFW 2016d). According to SJWA staff observations, equestrian riders comprise the majority of trail-based recreationists on the Davis Unit and mountain biking use is relatively limited. With increased development in the surrounding areas the wildlife area biking and hiking may increase substantially and additional rules may be applied to the area. Currently, the SJWA is patrolled by the CDFW Law Enforcement Division and SJWA staff conduct routine patrols to maintain fences, signage, etc.

While information regarding daily or monthly passive trail use is not collected by CDFW, the Davis Unit is well known to environmental groups and bird watching enthusiasts including members of the

San Bernardino Valley Audubon Society, the Sierra Club, and the Friends of the Northern San Jacinto Valley. Friends of the Northern San Jacinto Valley typically conducts bird or other wildlife viewing focused walks each month at the SJWA (Friends of the Northern San Jacinto Valley 2016a, 2016b). All scheduled group events are required to coordinate with the Wildlife Area Manager. During the four-month waterfowl hunting season (generally late October to late January), the SJWA is closed to hunting on Sundays to provide trail-based recreationists a weekend day of availability. As stated previously, entry permits and fees will be required on the SJWA for wildlife viewing and other non-hunting/non-fishing recreational purposes once the land management plan is adopted.

Within the Potrero Unit there are over 20 miles of existing unimproved and asphalt trails; however, maintenance of these trails is limited to ensuring continued access to the site and not toward facilitating recreation. However, due to the presence of trails and current restrictions barring public access in the Potrero Unit, existing trails in the Potrero Unit are assumed to receive use by trail-based recreationists. Figure 2-15B in Chapter 2, Project Description, shows existing trails within the Potrero Unit. Bicycles will be prohibited except on designated trails (CDFW 2016c). All visitors to the SJWA are responsible for knowing and following CDFW Public Lands Regulations including regulations related to bicycle use (CDFW 2016a).

2.3.4.2 Waterfowl Hunting

Waterfowl hunting (mainly duck and geese) only occurs on the Davis Unit. Hunting opportunities are facilitated through the use of natural cover, hog wire, and pit blinds located in permanent, semi-permanent and seasonally flooded wetlands/ponds separated by levees. The CDFW conducts random lottery draws known as "reservations" to provide hunting opportunities at SJWA. Reservations and passes for hunting waterfowl on State-operated Areas are available for many State-operated wildlife areas and are issued by random drawings. You can apply for waterfowl reservation drawings through the Online License Service, at any CDFW License Agent or CDFW License Sales Office. The fee is $1.34 per hunt choice, (2016/2017 season). The deadline to apply is 17 days before each hunt. For those successful being selected are notified via mail or can check the Departments web site. Those who are not selected still have an opportunity to participate by being at the Check Station on a hunt day and can fill the remaining blind sites after the reservation card holders have been processed. Additionally there is also a refill list available for those hunters that wish to stay and refill blind sites after other hunters have completed their opportunity. There are traditionally approximately 50-60 blinds within the Davis Unit waterfowl hunting areas. There are potentially more opportunities for more blinds when natural flooding occurs. The current waterfowl hunting areas are shown on Figure 2-9 in Chapter 2, Project Description. There are five areas that are used for waterfowl hunting totaling 1,129 acres (or approximately 11% of the Davis Unit's approximately 10,996 acres); each of these areas is further divided into ponds with either a letter, number, or alphanumeric designation that identifies blind sites for waterfowl hunters. (see

Figure 4-4, Waterfowl Ponds – Davis Unit). Hunters visiting the SJWA must hunt from their designated blind site unless otherwise permitted by CDFW staff onsite or they will be removed from the facility (CDFW 2015). Hunters are also subject to bag limits for duck and geese and all waterfowl taken must be checked in at the SJWA Check Station for CDFW personal to verify the bag limit has not been exceeded and to collect data on species harvested (CDFW 2015).

Waterfowl hunting traditionally starts on the third Saturday in October and extends to the last Sunday in January. The dates are set by USFWS, CDFW and the California Fish and Game Commission (Commission) During the open season, hunting is permitted only on Wednesdays and Saturdays. Each hunting day approximately 50 reservations are drawn by a CDFW headquarters programAvailable slots can hold up to four hunters each. Therefore, there are approximately 200 hunters that visit the SJWA each open day of hunting. During the season the SJWA is open to hunting for approximately 30 total days and is visited by approximately 6,000 hunters on an annual basis. According to one source, the SJWA was visited by approximately 4,300 hunters during the 2015/2016 hunting season (So Cal Hunt 2016). Youth hunting is allowed one additional Saturday following the close of the season. Youth hunters are 17 years old or younger and accompanied by a non-hunting adult 18 years of age or older. Hunting starts approximately 30 minutes before sunrise and concludes at sunset and only shotguns are allowed as legal method of take.

SJWA check station does not sell any license items, permits or passes. Hunters must purchase any needed passes and validations from a CDFW license sales office, a license agent or online. Before going to SJWA to hunt waterfowl, verify that the members of your hunting party have the items: California Hunting License, prepaid Wildlife Area Pass (not required for junior hunters), (Type A One-Day, Two Day or Season Pass for Type A Areas), Harvest Information Program (HIP) Validation, California Duck Validation (not required for junior hunters) and a Federal Duck Stamp (required for all hunters age 16 or older)

Davis subunit D4 includes 669 acres of existing waterfowl ponds within the three areas; northern, central, and southern. The northern areas includes the two main reservoirs for storage and controlled release of recycled waters (E1 and E2) as well as hunting areas in a mosaic of open water, marsh, and riparian habitats including the A1-A3, B1-B5, C1-C4, D1-D2, and E1-E4 ponds. This northern area also includes three parking lots (A1 in the west, B4/C2 in the center, and E1 in the east) and handicap-accessible blinds, viewing platform, and bathroom at the B4/C2 ponds. The central ponds are the oldest ponds on the SJWA and include ponds 1-4 (rectangular open water ponds) intervening and adjacent marsh areas with blinds A-D and V-Z, and a set of two relatively new ponds in the northeastern portion of the central area G1-G2. Two parking lots are located adjacent to pond 1 and between ponds 3 and 4. The southern ponds (Walker ponds) are the newest, support open water and marsh vegetation, and include F1-F7 and W1-W12.

An additional 459 acres of waterfowl hunting is provided on the private lands in D9 and extending into D10 and D13 where conservation easements are in place. These ponds are owned and operated by the private hunting clubs but managed in accordance with the conservation easement.

During the four-month hunting season (October-January) passive trail users are not allowed in waterfowl areas that are being hunted on hunt days (2 days per week; currently Wednesday and Saturday).

2.3.4.3 Upland Small Game Hunting

Similar to waterfowl hunting, upland gamehunting currently only occurs on the Davis Unit in designated areas. There is no existing upland game hunting on the Potrero Unit. Up to 7,240 acres of the Potrero Unit are recommended as proposed areas and future potential areas where upland game hunting could occur. At this time, P5 and P6 (1,136acres) are proposed in the near term to be opened to upland game hunting (Figure 2-12B).There is a potential for other acres to be opened to upland and small game hunting in the long-term.. As shown in Table 2-5, upland small game hunting areas comprise 6,478 acres of the approximately 10,996-acre Davis Unit (Table 2-5; Figure 2-7a).

Table 2-5
Upland Small Game Hunting Areas – Management Subunits

Unit	Subunit	Acreage
Davis	D1	816
	D2	715
	D3	279
	D4	4
	D5	772
	D6	609
	D7	845
	D10	71
	D11	433
	D12	489
	D13	839
	D15	605
	Grand Total	**6,478**

- Hunting occurs year round for some species and is seasonally restricted for others. In general, upland game hunting occurs daily during the season and pheasant hunting is only allowed on Mondays during the pheasant hunting season which begins on the second

Saturday in November and extends for six consecutive Mondays (reservations are required for pheasant hunting) (CDFW 2016d) when pheasant hunting is allowed. As with waterfowl hunting, only shotguns are allowed for upland game hunting and non-lead shot is required when taking upland game birds with a shotgun at SJWA. The non-lead ammunition regulation phases-in the requirement to use certified non-lead ammunition depending on where and what you are hunting. The first phase began July 1, 2015, and requires use of non-lead ammunition when hunting on all CDFW properties and for all 2015 bighorn sheep hunts. Effective July 1, 2016, hunters using shotguns will be required to use certified non-lead ammunition to take upland game species (except for dove, quail, snipe, and any species taken on licensed game bird clubs), fur-bearing and nongame species, and any species taken under the authority of a depredation permit. Shotgun ammunition containing pellets composed of materials approved as nontoxic by the U.S. Fish and Wildlife Service, as identified in Title 14 Section 507.1, is considered certified. Effective July 1, 2019, the use of certified non-lead ammunition will be required statewide when taking any wildlife. The new regulation does not modify the existing requirements to use certified non-lead ammunition when taking big game and non-game within the California condor range. Upland game hunting commences 30 minutes before sunrise and ends at sunset. Upland game species hunted on the Davis Unit include the following (seasonal hunting restrictions are detailed in the parenthesis):Black-tailed jackrabbit (*Lepus californicus*) and rock pigeon (*Columba livia*) – no restrictions, hunted year round

- Cottontail rabbit (*Sylvilagus floridanus*) – July 1 to the last Sunday in January
- Dove, both Mourning Dove (*Zenaida macroura*) and White Wing Dove (*Zenaida asiatica*) – September 1 to September 15 and then reopens for the second season on the second Saturday in November and the following 45 days
- Quail (*Callipepla californica*), also known as the California valley quail or valley quail - traditionally from the second week in October to the last Sunday in January
- Eurasian Collared Dove (*Streptopelia decaocto*) – open all year
- Snipe (*Scolopacidae*) − second Saturday in October and extends to the last Sunday in January
- Crow (*Corvus brachyrhynchos*) – first Saturday in December to the second Sunday in April
- Ring-necked pheasant (*Phasianus colchicus*), (general/statewide) – CDFW currently limits the pheasant season and number of pheasant hunters (1,200 annually) on the SJWA due to low populations. Pheasant hunting is only allowed on Mondays during the pheasant hunting season which begins on the second Saturday in November running for six consecutive Mondays (reservations are required for pheasant hunting)(CDFW 2016c).

SJWA has suspended the public pheasant hunting on Mondays since the 2008 season due to lack of substantial pheasant population numbers and hopes to reopen public pheasant opportunities on Mondays once the pheasant population recovers to an acceptable size. It is also envisioned that SJWA will potentially revitalize the population with a introduction of relocated pheasants from another area as it was done previously.

Upland game hunting opportunities are facilitated by a network of water guzzlers installed to sustain wildlife during the summer and fall months (Figure 2-7a). Approximately 3,000 hunters hunt upland game on the Davis Unit each year with about 100 hunters on each day.

2.3.4.4 Hunting Dog Training, Hunt Tests and Field Trials

Hunting dog training and the use of hunt tests and field trial hunting dogs currently occurs in Subunit D7 and D13 on the Davis Unit (Figure 2-7a) and includes both upland and wetland training (267 acres). American Kennel Club, NAVDA and other various approved groups sponsor hunting dog tests, field trial and other hunting dog training activities. Currently this takes place in Subunit D13 and one to three hunting dog events are currently held each month during a 9-month season. Hunt tests, Field trials and dog training are not allowed from March 1 through June 1st to avoid impacts to ground-nesting birds. Up to three events are eligible to be held each month during the 9-month season. The events consist of the release, shooting, and retrieval of game species including chucker (*Alectoris chukar*), bobwhite quail (*Colinus virginianus)*, pigeons, and other approved species by SJWA.

According to the *2016-2017 Waterfowl, Upland Game Hunting and Public Use of Department Lands Regulations* (CDFW 2016), hunting dog training on the Davis Unit does not require written authorization from the area manager, but Hunting dog Hunt tests, field trials and utility tests do require written authorization from the Area Manager due in part that the organization hosting the event must supply the area manager with proof of insurance, portable toilets, and be on the calendar so they do not conflict with another organizations event date.

2.3.5 Hazards Management

Hazards potentially present on the Potrero Unit were assessed by Tetra Tech Inc. on behalf of Lockheed Martin Corporation (LMC) to determine environmental compliance under various orders and agreements with the Department of Toxic Substances Control (DTSC). The results of Tetra Tech Inc.'s assessment are provided in a three-volume document including an Environmental Compliance Assessment, Safety and Toxics Assessment, and Phase 1 Environmental Site Assessment (Tetra Tech Inc. 2003). Since 2003, considerable work has been done to investigate, evaluate and mitigate the risk associated with industrial chemicals released at th e site and munitions and explosives of concern (MEC) tested at the site (Lockheed Martin

Corperation 20XX, 20XX, 20XX, 20XX, 20XX, 20XX). Appendix D has three maps of lLMC former operational areas, LMC MEC locations and LMC remediation.

The Potrero Unit was purchased by the Grand Central Rocket Company in the late 1950s/early 1960s and was used as a remote test facility for early space and defense programs. LMC acquired the property in 1963 and up until 1974, used the site for solid rocket propellant mixing and testing operations. The site included nine operational areas:

- Area A-"Eastern Aerojet Range" (occupying the majority of subunit P5) – testing of trajectories, curves, and velocities of "dummy" aluminum bullets were conducted in this area (no live warheads were used). Several U-shaped revetments were also constructed for the storage of explosive materials and motors in this area. MEC investigations into the testing conducted in this area found both inert and live explosive 30mm projectiles were tested in this area. An MEC removal action was conducted. Periodic inspections to look for potential residual MEC exposed by erosion are routinely conducted on portions of the former range.
- Area B-"Rocket Motor Production Area" (occupying the northern portion of P10 and adjacent portion of P11) – processing and mixing of rocket motor propellants were conducted in this area. Chemicals were stored, mixed, and poured into casings. If the propellant mixture was defective, it was washed off the casings, and the residue was taken to the "Burn Pit Area" for incineration. Perclorate and VOCs are present in the soil and the groundwater. The area represents a secondary source of impacts to ground water. A small soil excavation to remove impacted soil is proposed near the former mixing station. MEC investigations in this area found that a phalanx gun and a bazooka were tested in this area. Periodic inspections to find inert projectiles from the phalanx gun that are exposed by erosion are routinely conducted at the earthen target backstop that remains in the area.
- Area C-"Burn Pit Area" (occupying the southeastern portion of P10 and adjacent portion of P11) – was used to dispose of various hazardous materials including ammonium perchlorate. Pits were dug approximately 6 to 8 feet wide, 4 to 6 feet deep, and 50 to 100 feet long. Hazardous materials were placed in the pits, and then were saturated with diesel fuel and ignited. After burning, the trenches were visually inspected and filled with soil. A total of 20 to 40 pits were used in the area. Perchlorate and VOCs are present in the soil and groundwater. This area represents the primary source of impacts to groundwater. The impacts to groundwater will be contained by a groundwater extraction and treatment system proposed to be installed along Potrero Creek near the leading edge of the plume.

- Area D-"Ballistics Test Range" (occupying the south-central portion of P10 and adjacent portions of P9) – was used for test firing of large guns (155 millimeter (mm), 40 mm, and 37 mm). No live warheads were used, and the remains of rounds were collected after firing. A ballistics tunnel was also constructed and used in this area to photograph rounds fired through the tunnel, using high-speed strobe photographic equipment. Additional testing included rocket-assisted projectiles and incendiary bombs to observe shrapnel and penetration patterns. MEC investigations in this area found discarded MEC in the creek bedrunning through the area. An MEC removal action was conducted. Periodic inspections for potential residual MEC exposed by erosion are routinely conducted on portions of the former range.
- Area E-"Radioactive Waste Disposal Site" (occupying the southeastern portion of P2) – In 1971, low-level radioactive waste including Carbon-14, Sulfur-35, and Tritium were buried in one of four canyons, although the exact location was unknown. In 1990, the Radian Corporation located and removed the waste with testing indicating that concentrations were within naturally occurring ranges. No additional investigations were performed in this area and no additional remediation is proposed at this time.
- Area F-"Test Services Area" (occupying the northeastern and central-eastern portion of P2) – included a variety of testing facilities, workshops, and storage areas. The largest industrial x-ray machine in Southern California was operated at this site. A 13-foot-diameter spherical pressure vessel was used to simulate pressures at ocean depths and high altitudes. A test bay was used to test fire large motors including the Apollo launch escape motor. Bunkers were utilized in the area for protection of personnel and instrumentation during testing. Perchlorate and VOCs are present in the soil and groundwater. This area represents a secondary source of impacts to groundwater. Two potential contingency remedial actions have been proposed for this area.
- Area G-"Helicopter Weapons Test Area" (occupying the northwestern portion of P9 and northeastern portion of P8) – included a hanger, helicopter landing pad, stationary ground-mounted gun platforms, and a mobile target suspended between two towers. Projectiles were fired from helicopters but did not include any live warheads. Inert projectiles remain at the range. Periodic inspections for projectiles exposed by erosion are rountinely conducted along the creek bed.
- Area H-"Permitted Sanitary Landfill" (occupying a small area in the southwestern portion of P3) – was used to dispose of paper, scrap metal, concrete, and wood generated from routine daily operations of the site. PCBs and perchlorate were found during testing at the landfill. Belted 7.62mm machine gun ammunition was reportedly disposed of in

the landfill. Periodic inspections for MEC exposed by erosion are routinely conducted at the landfill. The proposed remedy is to cap the landfill in place.

- Area I-"Western Aerojet Range" (occupying the western boundary of P3 and adjacent area in P2) – was used for an incendiary test of a 500-pound bomb. The area also includes a level area that was utilized for ballistics testing. The area was leveled for ballistics testing. Inert 27.5 mm projectiles were tested on targets placed on the range.

From 1975 to at least 1991, LMC leased portions of the property to various entities that used the site for various purposes. The International Union of Operating Engineers conducted surveying and heavy equipment training; a farmer used the site for sheep grazing and dryland farming, including barley production; General Dynamics conducted gun testing; and Structural Composites conducted vehicle roll-over tests and heat and puncture tests on pressurized fiberglass and plastic reinforced cylinders (Tetra Tech, Inc. 2003),

Environmental site testing began in 1983 with the installation of eight observation wells. In 1984 and 1985, an underground fuel storage tank was removed and a polychlorinated biphenyl (PCB) spill was cleaned up. The PCB spill was due to vandalism of transformers on the site. In 1986, LMC prepared a report that identified volatile organic compounds (VOCs) within groundwater, which precipitated a Consent Order to be issued by the DTSC in 1989. Remedial investigations identified a VOC soil vapor plume migrating from the "Burn Pit Area" and a groundwater VOC plume extending 2 miles downgradient from both the "Rocket Motor Production Area" and "Burn Pit Area" (Tetra Tech Inc. 2003).

Remediation began in 1992 with approximately 48,600 cubic yards of soil removed from the "Burn Pit Area" with confirmation samples conducted in accordance with regulatory requirements. In addition, soil vapor extraction (SVE) was implemented at the "Burn Pit Area" to remove VOCs from the soil and prevent further groundwater contamination. A groundwater pump-and-treat protocol (P&T) was also implemented downgradient of the ""Rocket Motor Production Area" and "Burn Pit Area." The P&T operation is designed to remove solvent impacted groundwater and re-inject the treated groundwater to upgradient and downgradient wells for hydraulic containment (Tetra Tech Inc. 2003). The SVE and P&T operations are the subject of an Operation and Maintenance Agreement between DTSC and LMC and are located within subunit P10. The SVE system operated from 1994–1998, then the SVE unit was removed in 2005. The vapor extraction wells and the underground piping still remain. Operation of the P&T was halted at the request of the DTSC in 2003. The treatment system, extraction wells, and piping still remain at the site. .

The Phase 1 Environmental Site Assessment identified 54 items of Recognized Environmental Concerns located throughout the site, including buildings, motor casings, storage drums, vaults, pads, and testing areas, each of which has the potential to contain chemical hazards. The assessment was based on review of historical uses and site inspections conducted in 2002 and 2003 (Tetra Tech Inc. 2003).

The Safety and Toxics Assessment includes identification of 154 safety hazards and 31 toxic items identified through a field investigation conducted in 2003. Safety hazards are nearly all associated with structures and debris within the former operational areas of the site. Examples of such hazards include concrete pads with protruding bolts, metal debris, open electrical vault, fallen utility wires, rusted metal drums, and barbed wire. Toxic items are also associated with the historical operations areas and include asbestos-containing materials, lead-based paints, PCBs, mercury switches, florescent bulbs, mold, and potential biological hazards such as hantavirus or valley fever. Detailed maps are included in the report providing the location of these hazards (Tetra Tech Inc. 2003).

The Environmental Compliance Assessment confirms that site cleanup efforts have conformed with environmental permitting requirements with the exception of ongoing remedial activities related to subunit P10 (Tetra Tech Inc. 2003). A new Remedial Action Plan is in the process of being implemented, the design and permitting aspects are ongoing and construction is scheduled to start in late 2017. Based on numerical modeling, remedial activities (groundwater extraction) proposedanlong Potrero Creek could indirectly impact up to 17.4 acres of groundwater – dependant riparian vegetation in subunit P-10. Construction will directly impact up to 0.5 acres of riparian habitat.

2.4 Existing Infrastructure

2.4.1 Roads

Davis Unit

Davis Road provides the primary public access to the Davis Unit of the SJWA with vehicle traffic allowed from the south. Davis Road is a maintained dirt road (with paved portions) which runs from Ramona Expressway south of the SJWA boundary northward to Theodore Road where a gate limits/controls vehicular access (Figure 2-8). On July 9, 2002, the City of Moreno Valley vacated the right-of-way for a portion of Davis Road that travels from the end of Theodore Rd to the north end of the Double Bar S Horse ranch. When the City vacated the right-of-way, the public easement ceased and the title reverted to CDFW, the owner of the parcels adjoining the vacated street easement. The County of Riverside maintains Davis Road south of this point to the southern end of the Davis Unit at Marvin Road, a portion on which the county holds a 60-foot ROW.

One additional unimproved road, South Contour Road, runs east from Davis Road and provides access to the eastern portion of the Davis Unit (Figure 2-8). Referred to as the Duck Club Road, it provides access to the Ramona Hunt Club, the Mystic Lake Duck Club, and the Ramona Duck Club. The road was largely built by private land owners. The first 1,500 feet of this road, as it leaves Davis Road, is on the property of the Ramona Hunt Club; the State and private land owners share in ownership along the current eastern boundary of the SJWA. The SJWA staff and private land owners cooperate in periodic maintenance activities performed on this access road. Currently, the road is used to provide alternative access to waterfowl hunters when the internal SJWA road system is not passable due to heavy rainfall.

There are six service roads intersecting Davis Road, each with a locked gate. One additional gated access is located off the Ramona Expressway, one-half mile west of the San Jacinto River. The only SJWA roads open to general public vehicle use are Davis Road, Contour Road, and the self-guided auto tour loop which provides vehicle access from the office check station to the northern wetland areas. All the internal roadways on the Davis Unit can be used for hiking, horseback riding, and non-motorized bicycling. Some of the internal roads also function as wildfire fuel breaks and movement corridors for Stephens' Kangaroo Rat, as appropriate.

Potrero Unit

Primary public access to the Potrero Unit of the SJWA will be from Highland Springs Avenue when it becomes opened to the public (Figure 2-8). This is a maintained dirt road that provides access from the I-10 (Highland Springs Avenue exit) to the northern boundary of the Potrero Unit. Highland Springs Avenue runs more or less in a north–south direction through management subunit P5 and P6 along the eastern portion of the Potrero Unit. Approximately half-way between the north and south boundary of the Potrero Unit, a maintained dirt road splits from Highland Springs Avenue to the west and traverses the entire Potrero Unit, eventually connecting with Lambs Canyon Road just outside Potrero's western boundary. There are many smaller dirt roads of varying conditions that connect to this east–west road, some running all the way to the northern boundary of the unit. One additional road of note turns to the south from this east–west road and provides access to the higher elevations found in Potrero's southern portion. The 565 acre portion owned by LMC will not be accessible to the public.

2.4.2 Water Management Facilities

Davis Unit

A vast network of water control and water storage structures are used to maintain the wetland habitat that exists on the Davis Unit of the SJWA. The structures include levees surrounding the

wetland hunting areas, flood gates between hunting areas, pumps, pipelines, and release valves. Sprinkler systems have also been installed in the existing agricultural fields to irrigate food crops. There are also five guzzlers on the site that are currently maintained by Quail Unlimited and are at least 20 years old (Figure 2-7a).

Potrero Unit

No water management facilities are in operation on the Potrero Unit.

2.4.3 Waterfowl Habitat Areas

The expansion of open water/marsh habitat is intended to provide resources through the construction of new waterfowl ponds with appropriate water management infrastructure. Waterfowl habitats are areas that are suitable for waterfowl species, such as ducks, geese and other large aquatic birds, and those not open to hunting are referred to as "closed zones." Approximately 9 acres of an existing waterfowl closed zone (ponds) are located within Davis Subunit D7. Up to 47 acres of a new waterfowl closed zone (ponds) are proposed within Davis Subunit D4 (Figure 2-9).

Wetland management practices are continually improved by research and experimental management, which includes varying the amount of water used in certain situations. The results of these learning efforts are disseminated to interested parties by the agencies and organizations involved in waterfowl management. However, it is to the advantage of all wetland managers to keep accurate records of habitat manipulations (e.g. dates of flooding, irrigation, drawdown, discing). Managers should eventually be able to predict how the vegetation on their property will respond to specific management practices; this in turn will allow them to provide high-quality waterfowl habitat with the most efficient use of water. The Davis Unit uses recycled water to flood-up the various wetland types. Moist soil wetlands includes crops grown to attract tricolored blackbirds. Only 20% of riparian habitat is actually flooded with an estimated 14 acre feet/month.

The average loss of water to evaporation is estimated at 7 acre feet per surface acre per year. The highest loss of water to evaporation occurs in the summer months when ponds are typically drained. Even in a drought year, some of this loss is decreased with precipitation. It is estimated that half of the loss to evaporation will be offset by rainfall. Therefore, the evaporative water loss is adjusted to be 0.29 acre feet per surface acre per month. The following table of various wetland types is a rough estimate of reclaimed water use in a given year.

Table 2-6
Estimated Reclaimed Water Use For Wetlands on Davis Unit

	Surface Acre	Depth	Months	Flood-up	Evaporative Loss*	Total
Seasonal wetlands	200	2	4	400	232	632
Semi-permanent wetlands	404	2	9	808	1054	1862
Permanent wetlands	100	2	12	200	348	548
Reverse cycle wetlands	160	1	5	160	232	392
Moist soil wetlands	270	0.5	3	135	-----	135
Riparian Habitat	(136) 28	0.5	12	14	-----	168
Total	1162				**Total**	**3737**

* Evaporative water loss adjusted rate = 0 .29 acre feet/month-surface acre

On August 18, 1987, the California Department of Fish and Game (now CDFW) and EMWD entered into an agreement that provided CDFW with a 4500 acre feet per year allocation of recycled water (see section 4.3 of this document for a more detailed description of this agreement). The initial term of the agreement was 25 years ending on June 30, 2014. As part of the Agreement, CDFW has reserved 6.5 MGD (20 acre feet per day) capacity rights in the system from September 1 through May 31 (CDFG and EMWD 1987).

On June 18, 2014, CDFW and EMWD executed the First Amendment to the 1987 Agreement for the SJWA. The amendment extended the original agreement terms one year (CDFW and EMWD 2014). A subsequent Second Amendment to the 1987 Agreement was executed on June 26, 2015 (CDFW and EMWD 2015). A Third Amendment to the 1987 Agreement was executed June 30, 2016 (CDFW and EMWD 2016). A Fourth Amendment to the 1987 Agreement was executed May 22, 2017 (CDFW and EMWD 2017). CDFW and EMWD plan to extend this Agreement each year indefinitely until after the draft LMP is approved, at which time an agreement will be requested that covers a longer time period. The new agreement may require additional CEQA review by CDFW.

The construction of new or expanded water-dependent projects on SJWA will not occur if recycled water demand exceeds the 4,500 acre feet per year identified in the 1987 Agreement and until a new long- term agreement is in place. The following Table 2-5 shows the historic uses of recycled water at the SJWA.

Table 2-7
Historic Usage of Recycled Water at Davis Unit

Year	Usage (Acre Feet)
1992	106.98
1993	675.56
1994	1113.58
1995	604.64
1996	1466.85
1997	1760.01
1998	921.90
1999	2385.04
2000	2316.10
2001	2623.57
2002	2632.71
2003	2029.70
2004	1387.35
2005	2027.53
2006	1298.13
2007	2392.69
2008	3068.47
2009	2805.13
2010	1998.85
2011	2254.11
2012	2538.13
2013	3054.54
2014	3480.69
2015	3493.24
2016	3340.25

While there are some naturally occurring wetlands on the Potrero Unit, these areas are discussed under wetlands resources above and are not open for hunting; therefore they are considered waterfowl habitat closed zones.

2.4.4 Houses and Other Structures

Davis Unit

A 1,600-square-foot office/check station was built on the SJWA in 1984 (Figure 2-8). Located just east of Davis Road in the central western portion of the Davis Unit, management subunit D8, the building provides administrative work space for the Wildlife Area staff and serves as a year-round Visitor Information Center. During the fall hunting season, the building serves as a hunter check station. Just south of the office/check station, a public restroom building with four unisex bathrooms was built in 1985. In 1986, a 4,000-square-foot shop and utility building was constructed 100 feet directly east of the office/check station. The utility building is partitioned, with one side being used for equipment storage and the other providing a workshop area. The workshop/utility building is surrounded by a 6-foot chain-link fence. Outside the building are a series of shade structures used for equipment storage.

Two employee residences are located on the slope behind the office and utility building complex (Figure 2-8). Access to these mobile homes is provided by a bifurcated roadway. Two 2,000-gallon water tanks that provide domestic water storage are located behind one of the residences. A domestic water well, located approximately a quarter mile to the south, pumps water up-slope to the water storage tanks. Domestic water for the employee residences, office/check station, and public restrooms is then distributed from this high point.

Potrero Unit

As discussed in Section 2.3.1, several remnant structures exist on the Potrero Unit in various states of disrepair from former Lockheed Martin facilities. None of these structures are immediately useable in their current condition. These structures include two buildings in P2, an approximately half-acre concrete parking area with a single bunker-type building located in the adjacent hillside and a small brick building shell without any remnant interior structure. Subunit P3 includes a graded area used for munitions testing, which does not include any specific structures other than the flat strip of land and adjacent dirt road. A rocket launching structure is also present in P3 consisting of an approximately 30-foot tall concrete vertical wall with several metal beams attached to it and a surrounding concrete paved area. Finally, P5 includes a substation run by Southern California Edison and a relatively large (approximately 25 feet tall) brick warehouse with garage and office areas that is likely useable as a future building for the

SJWA. In the northern portion of P5, a series of bunkers are located in the hillside and appear as flattened mounds.

2.5 Cultural Features

2.5.1 Archaeology

Excavations throughout southern California provide evidence for occupation by Native Californians at least 10,000 years before present (BP). Between approximately 10,000 and 6,000 years BP, these peoples relied upon a predominantly hunting-based economy, demonstrated by the presence of numerous large, fluted spear points and large animal bones. The abundance of these spear points has resulted in the term given this period of the "Fluted Point Tradition" (Moratto 1984). Small game and vegetal foods were probably also exploited. Archaeological sites dating to this period lack extensive deposits, suggesting that populations were organized in small, extended family groups who likely did not establish permanent villages for extended periods. Many of these sites have been identified on the edge of ancient lakeshores, such as Tulare Lake, China Lake, and Lake Mohave. Early sites were also identified along an ancient dry stream channel in the Pinto Basin, at the eastern edge of Joshua Tree National Monument (Moratto 1984). Mystic Lake, in the SJWA, would have provided similar environmental advantages to prehistoric occupation during this period.

By approximately 6,000 years BP, a drier climate resulted in a change in subsistence strategies from primarily hunting toward a greater use of plant foods. This is evidenced by a proliferation of stone grinding tools (e.g., metates and manos) used to process seeds and other plant matter. This period is accordingly called the Millingstone Horizon, and extended until approximately 3,000 years BP. Hunting remained an important component of subsistence strategies, but appears to have declined relative to preceding millennia. This is in part a result of the drying up of pluvial lake environments that were previously exploited. Archaeological sites from this period contain deeper, more extensive deposits indicating that the size of population groups and the duration of occupation had become more intensified. Uto-Aztecan speakers populating an area extending from the Pacific Ocean to the Colorado River were related to southwestern and northern Mexico indigenous peoples. They are thought to have entered California from Arizona approximately 5,000 years ago (Moratto 1984).

Another fluctuation in climate to a generally wetter regime occurred after about 3,000 years BP. During what is called the Late Horizon, both plant gathering and hunting continued. Expanding oak tree distributions and plentiful acorns, however, provided for much more accessible gathering processes as evidenced by the introduction of grinding stone mortars and pestles. Chipped-stone tools became more refined and specialized. In response to expanded food

resource availability, population densities appear to have increased, based on a greater number of archaeological sites overall, as well as substantial permanent villages located near perennial fresh water sources such as Mystic Lake. Population increases resulted in geographic and cultural trait diversification. The development of tribal identities occurred in spite of the fact that trade items were widely in evidence throughout southern California, from the Pacific coast to interior valleys such as the San Jacinto Valley (Moratto 1984).

The last major shift to a drier climate which occurred sometime around 1,500 BP appears to have resulted in an emphasis on hunting smaller land animals, reflected by the introduction of the bow and arrow. Projectile points became smaller arrow heads, as hunting strategies had to exploit smaller land mammals and birds. Adaptations to the drier climate resulted in shifting settlement patterns and migration. The Cahuilla and other tribal languages developed during this diversification of Uto-Aztecan populations throughout southeast California, spreading all the way to the Pacific Coast (Moratto 1984).

A cultural resources records search was conducted at the Eastern Information Center, California Historical Resources Information System, University of California, Riverside (Jacqueline Gutierrez, May 5, 2010) to determine the distribution of recorded archaeological sites and prior investigations completed within the SJWA. A total of 39 investigations, including 28 intensive surveys or excavations, have resulted in the recordation of 58 archaeological sites. These sites are characterized in confidential Appendix X.

2.5.2 Historic Land Use

The San Jacinto Valley was once a vast natural landscape utilized by Native American Tribes and early European Settlers. Historically, the San Jacinto Valley area was primarily used for family homesteads with ranching and agriculture practices. Additionally, the area historically provided uses for hunting, fishing, mining, grazing, dryland farming, and rocket motor testing. The vast lands were locally recognized by the many water resources, the rich soils, and the large amount of native wildlife in the area. The area supported over 50 natural springs, the Rinconada, and two small lakes (Quimby 1975). The water resources in the area provided potable water for people living on the land as well as attracting and supporting a large variety of waterfowl and other animals. The soils on the land were filled with nutrients and produced successful bumper crops of plentiful fruits and vegetables (e.g., peaches, apricots, plums, figs, olives) that were harvested routinely and consistently sold in nearby towns. Due to the abundance of wildlife (e.g., freshwater fish, many waterfowl species, mountain lions (*Felis concolor*), mule deer (*Odocoileus hemionus*), rabbits, black bears (*Ursus americanus*)) on the lands, the area was once considered a sportsman's paradise (Quimby 1975). Families and friends would often visit the area for vacation and social gatherings.

The Juan Bautista de Anza National Historic Trail is a 1,210-mile historic route from Nogales, Arizona to San Francisco, California and includes a segment through the Davis Unit of the SJWA. The trail is based on the route of a 1775–1776 Spanish Expedition, which included the establishment of the Mission and Presidio of San Francisco, the Mission in Santa Clara, and the Pueblo of San José.

Originally, the vast area was part of the six grants of land given to the San Luis Rey Mission by the King of Spain in 1798 and was initially known as the San Jacinto Rancho (CDFG 2000). In 1834, following Mexico's independence from Spain, the government took over the Mission San Luis Rey and granted its lands to private individuals. In 1842, Jose Antonio Estudillo and his family were granted over 110,000 acres of land in the area, including the 35,500-acre Rancho San Jacinto Viejo (City of San Jacinto 2015). The Estudillo family owned most of the San Jacinto Valley until the late 1880s, and developed several properties including two-story brick mansions in 1885, one of which is located on Main and Seventh Streets in San Jacinto. After California gained statehood in 1850, it took several years for other settlers to find the valley. The Estudillo family sold portions of the San Jacinto ranch in the late 1860s, following which the first American settlers moved into the valley. By 1868, one of the first communities developed was located near the San Jacinto River on the southern section of the valley. A school district was established during the following year, and the first store and post office were formed in 1870. San Jacinto was primarily an agricultural community for over 100 years. However, by the 1870s, the valley's local economy shifted from cattle ranching to horticulture. Local ranchers, who had begun by growing grains, later shifted to walnuts, apricots, and citrus, which became later the primary economic activity. Turkey ranching, dairy farming and local lime kilns were also among the valley's local economic activities (Warneke and Holtzclaw 2008).

With the expansion of colonization and the development of the City of Los Angeles (LA), the MWD and the State of California began surveys in 1931 for an aqueduct to transport water from within the region to LA The successful creation of the aqueduct depleted most of the water resources within the ranch and adjacent lands. The pastures all dried up, and the homestead became almost worthless. The Potrero Ranch owners at the time, Mr. and Mrs. Joseph Wolfskill, were given compensation by the MWD for the water loss. By 1938, most all of the water within the ranch was gone (Quimby 1975).

Because of the water loss, the majority of the ranch lands were leased out by the owners for cattle grazing use. The ranch continued to change ownership over the next several decades, yet remained a ranch-style setting until 1960 when the ranch lands were purchased from Mrs. Forrest Q. Stanton by the Lockheed Propulsion Company (LPC). LPC is a leader in large rocket motor technology. LPC converted the once pristine ranch setting into a facility for testing rocket

propulsion systems. Rocket-testing activities ceased in 1974, and the land was kept vacant to retain the option of continued rocket testing. In the years following, LPC entered into a series of agreements (e.g., 1985 Diamond Sheep Company Agreement) that allowed grazing and sharecrop dryland farming on parts of the ranch lands (Potrero Creek Specific Plan). Farming was primarily grains, and the rest was left for fallow succession.

All farming operations ceased in accordance with the Endangered Species Act (ESA) restrictions when it was determined that the SKR was present on the ranch lands, primarily within the designated and utilized farming areas (Potrero Creek Specific Plan). Additionally, ESA restrictions ended the International Union of Operating Engineers heavy equipment training in 1989 on the ranch (Potrero Creek Specific Plan). However; grazing throughout the Ranch remained in operation.

In addition to the ranch lands, the San Jacinto Valley has attracted and supported many settlers throughout history; and because of the newly developed aqueduct and the need for agriculture in the area, many settled near the San Jacinto River and the ephemeral Mystic Lake (a lake that appears during San Jacinto River flooding) (CDFG 2000). Although seasonal flooding associated with the San Jacinto River and Mystic Lake provided plentiful water for crops, livestock, and homesteads, flooding created continuous frustration and hardships for the residents. As a result, the San Jacinto River has been channelized with earthen levees in many sections over the past century. The channelizing and realigning of the San Jacinto River has forced the river to flow west away from the bed of Mystic Lake and is now directed toward Lake Elsinore. However, in years of high rain Mystic Lake and the surrounding areas still flood. When inundated, Mystic Lake remains for a period of 2 years on average (CDFG 2000).

The lands associated with the ranch, the San Jacinto River, and Mystic Lake have not only supported human inhabitants, but they have also supported large numbers and a wide variety of animal species. Recognition of this valuable resource within the San Jacinto Valley has led to the preservation of these lands and the establishment of the SJWA in 1980 (Clark 1996). The SJWA was purchased as partial compensation for the large amounts of water, habitat, and wildlife losses due to the development of aqueduct and other State Water Project facilities (DWR). Over the past 25 years, areas within the SJWA have been altered to enhance and enlarge wetland habitats for conservation and for native animal species. Several wildlife and hunting organizations/clubs (e.g., DU, Southern California Ducks, CDFW) have participated in the establishment and management of the SJWA. Presently, the SJWA is a large area filled with native habitats and species that provide educational and recreational uses (e.g., hiking, horseback riding, hunting) to the public.

2.6 Adjacent Ownership and Land Uses

This section describes both the current adjacent land uses and the proposed land uses adjacent to the SJWA both in terms of issues of management concern and a summary of relevant information from various applicable land use document.

Current Adjacent Land Uses

Davis Unit

Existing land uses adjacent to the Davis Unit include constructed facilities such as the Lake Perris Dam, roadways, and power lines and undeveloped lands at the Lake Perris State Recreation Area to the west and north, rural farm lands and rural residential uses to the north and south, and vacant land to the east. Water and energy infrastructure is also generally located to the north and west and the San Jacinto River traverses the southern boundary of the unit. The Lake Perris State Recreation Area is bounded on three sides by low ridges of the Russell Mountains, Apuma Mountains, and Bernasconi Hills, and the area provides a multitude of recreational opportunities including hiking, cycling, boating, camping, equestrian trails, and swimming. In addition, the majority of the eastern portion of the recreation area which shares a boundary with the Davis Unit is designated for seasonal upland game hunting. Agricultural production in the area surrounding the unit includes poultry/egg farms, dairy production, horse and goat breeding, flowers, vegetable seeds, and sod. The rugged, mountainous terrain of the Badlands area comprises the vacant lands located to the east of the Davis Unit. As the Badlands serves as a crucial wildlife corridor, more than 12,400 acres of area has been conserved and is recognized as the Badlands Conservation Area (County of Riverside 2015a). Lastly, part of the SJWA Davis Unit is within the historic floodplain of the San Jacinto River and is subject to periodic flooding. The resulting floodwater, known as Mystic Lake, has been known to inundate the area for months or years at a time.

Lands within the Davis Unit are located within the jurisdictional boundaries of the County of Riverside and City of Moreno Valley. For example, the portion of the Davis Unit located north of the Ramona Expressway is situated within the Reche Canyon/Badlands area of Riverside County. According to the County of Riverside General Plan's Reche Canyon/Badlands Area Plan, areas located east of Davis Road are primarily designated for Conservation Habitat and Conservation use; however, isolated tracts located adjacent to Davis Road and Gilman Springs Road and actively engaged in agricultural production are designated for agricultural use (County of Riverside 2015a).

In 2002, the CDFW and the Wildlife Conservation Board acquired approximately 1,000 acres in the southeast corner of the City of Moreno Valley. This northernmost portion of the SJWA is designated for development pursuant to the City of Moreno Valley Land Use Map (City of Moreno Valley 2014). The development allowed under the General Plan includes Residential (2 dwelling units per acre, 5 dwelling units per acre, and 10 dwelling units per acre), Open Space, and Public Facilities. While residential land use designations occur in the northernmost portion of the Davis Unit, this area is currently undeveloped. The CDFW assumes that land within the SJWA would not be developed consistent with the draft LMP.

Riverside County lands generally located south of the Ramona Expressway and the Davis Unit are governed by the County of Riverside General Plan's Lakeview/Nuevo Area Plan. In addition, the westernmost portion of the Davis Unit are governed by the City of Perris General Plan. According to the Lakeview/Nuevo Area Plan, land use designations adjacent to Ramona Expressway include Rural Mountainous, Agriculture, Conservation Habitat, Medium Density Residential, and Commercial Retail (County of Riverside 2015b). Existing uses include active agricultural operations (i.e., dairy farms, crop lands), the Amway Nutrilite distribution center, rural residences and ballfields, and a gas station. Lands located west of the Davis Unit and Ramona Expressway within the City of Perris are designated Villages of Avalon Specific Plan, May Ranch Specific Plan, and Residential 6,000 (City of Perris 2013). Existing land uses primarily consist of single-family residences but also include multifamily developments; neighborhood parks; and elementary, middle, and high schools.

Potrero Unit

The Potrero Unit of the SJWA is primarily located in the City of Beaumont with remaining SR-79 adjacent lands located within the County of Riverside General Plan's San Jacinto Valley Area Plan. Surrounding land uses include SR-79, agricultural uses, the Victory Ranch Baptist Camp, the County's Lamb Canyon Sanitary Landfill, undeveloped Badlands terrain to the west, and undeveloped Badlands terrain, residences, recreation (golf course), commercial business, and Interstate 10 to the north. The Potrero Unit is also bordered on the east by vacant BLM land and on the southeast by the Soboba Indian Reservation. The reservation encompasses nearly 7,000 acres, 400 of which are devoted to residential use. In addition the reservation includes a casino, a golf course and club house. Undeveloped mountainous terrain is located to the east, and the community of Gilman Hot Springs, comprised of residential, institutional, recreational, agricultural (dairy production and cropland), and educational (i.e., Mount San Jacinto College) uses are located to the south. With the exception of the residences within Gilman Hot Springs, land uses adjacent to the Potrero Unit are almost entirely vacant land (residences farther to the north of the Potrero Unit are buffered from the Potrero Unit by mountainous terrain) (County of Riverside 2015c). According to the City of Beaumont's General Plan land use map, the Potrero

Unit is designated for Recreation and Conservation use and the designation is intended for open space uses such as parks, trails, and golf courses (City of Beaumont 2007). City of Beaumont lands located immediately north of the Potrero Unit are designated for rural residential use.

The San Jacinto Valley Area Plan of Riverside County comprises the cities of Hemet and San Jacinto and the urbanized East Hemet and Valle Vista areas. The northern and eastern portions of the area plan adjacent to the Potrero Unit are largely rural and mountainous. As previously stated, a small portion of the Potrero Unit (portions of Subunits P1, P7, and P8) situated west and east of SR-79 and north of Gilman Hot Springs is located on County lands within the San Jacinto Valley Area Plan. This portion of the Potrero Unit is designated for Conservation and Rural Mountainous use (County of Riverside 2015b).

Proposed Adjacent Land Uses

The primary feature of the proposed adjacent land uses is the potential for suburban residential development adjacent to the Davis Unit. The number of potential adjacent residential land owners has the potential the change the types of edge conditions the Area Managers are required to manage. In particular, adverse edge conditions associated with suburban residential development include night-time lighting, human activity causing noise disruption and trash/litter dispersal, chemical pollutants including pesticides and rodenticides, establishment of exotic plant and animal species, and altered fire regimes due to either increased ignition sources or fire suppression.

County of Riverside

Proposed land use within the County of Riverside adjacent to the SJWA includes the adoption of The Villages of Lakeview Specific Plan 342 (SP342) adjacent to management subunits D7 and D13 (Figure 2-11). The proposed Motte Ranch Specific Plan (SP366) would abut management subunits D11 and D13 (Figure 2-11).

SP342 is located in the Lakeview/Nuevo area of Riverside County. SP342 proposes to build a maximum of 11,350 residential units in the rural communities of Lakeview and Nuevo. Approximately 1,800 units would be built on 300 acres that abut the southern boundary of the Davis Unit. The site has been divided into seven villages and a Lakeview mountain/conservation area on the basis of different land uses and densities in response to the land and its setting, existing adjacent uses, and the need for transitions. The number of residences allowed within each village could range from 500-3,500. The Resort Village is the only village located north of the Ramona Expressway and will be the only Village that directly abuts the Davis Unit. The Resort Village includes approximately 350 gross acres, and a target of 1,980 dwelling units. This village includes a variety of residential densities, the Greenbelt, open space, drainage facilities,

parks, and a potential K–8 school and joint-use park site. The Greenbelt and recreation center will be the main amenity of the village. There will also be a Transit Center offered at the western edge of the village. The other Villages south of Ramona Expressway include residential, commercial, and mixed use. CDFW has commented that the alternative without development on the north side of Ramona expressway will have the least amount of impacts to the SJWA.

The other proposed adjacent land use to the Davis Unit is the proposed Motte Ranch Specific Plan (SP366). SP366 proposes to locate 2,200 homes between the Davis Unit and the Ramona Expressway (Figure 2-11).

The two proposed specific plans, SP342 and SP366, lies within the Northeast Dairies Conversion Policy in the Riverside County General Plan, which is currently in the process of being updated and are proximate to the eastern portion of the Davis Unit.

Rancho Nuevo Specific Plan (SP183) and Lakeview Estates, also abutting the Davis Unit (management subunits D6, D7, and D15), include residential development and open space.

City of Moreno Valley

A portion of the Davis Unit is located in the City of Moreno Valley. This portion of the Davis Unit lies within the approved Moreno Highlands Specific Plan (Figure 2-12), which proposes 7,700 Units. Any projects proposed in the area of the SJWA within the City limits would need to be coordinated with CDFW, as residential uses within the SJWA are not be compatible with SJWA goals and policies.

City of Beaumont

The Potrero Unit, as mentioned earlier in the Current Adjacent Land Uses section, is primarily located in the City of Beaumont. According to the City of Beaumont's General Plan land use map, the planned adjacent land uses abutting the Potrero Unit is Rural Residential. Currently, approximately 737 acres adjacent to the management subunits P5 and P6 along Highland Springs Avenue is proposed for approximately 307 acres of residential development called the Potrero Creek Estates. Future projects proposed within proximity to the Potrero Unit would need to be coordinated with CDFW to ensure compliance.

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3.0 REGULATORY SETTING

This section outlines the federal, state, and local regulations pertinent to the biological resources located on the San Jacinto Wildlife Area (SJWA). Some of the biological resources that may be affected by future management are regulated by resource agencies, which often overlap in jurisdiction. This section identifies and discusses the various programs regulating state or federally listed threatened or endangered plants and wildlife and jurisdictional aquatic/hydrological features, such as drainages, streambeds, riparian habitat, and wetlands, as well as regional planning efforts affecting the area's resources.

In terms of organization, this section includes a description of applicable 1) federal regulations, policies, and regulating agencies; 2) state regulations, policies, and regulating agencies; 3) the Western Riverside County Multiple Species Habitat Conservation Plan; 4) the California Wildlife Action Plan; and 5) the Stephens' Kangaroo Rat Habitat Conservation Plan (SKRHCP). In addition to these regulations, the reader should refer to Sections 1.1 and 1.2 for descriptions of funding sources for acquisition and ongoing operations within the SJWA. Section 3.4 will summarize how these various regulations, in combination with funding sources, effect management and use of lands within the SJWA.

3.1 Federal Regulations, Policies, and Agencies

3.1.1 Federal Regulations and Policies

Applicable federal regulations and policies associated with land management activities largely involve the protection of U.S. continental resources, including species, habitats, and historical properties/structures. Numerous federal laws have been established to protect these resources and are regulated by federal agencies including the U.S. Army Corps of Engineers (ACOE), Bureau of Land Management (BLM), Environmental Protection Agency (EPA), and the U.S. Fish and Wildlife Service (USFWS). Federal regulations and policies relevant to the SJWA are described in this section and summarized in Table 3-1, Federal Regulations and Standards.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) process provides an overall framework for the evaluation of the environmental effects of federal actions. NEPA (42 U.S.C. 4321 et seq.) requires environmental statements for "major Federal actions significantly affecting the quality of the human environment" and states that the planning and decision-making process shall follow "a systematic, interdisciplinary approach." Federal agencies are required to identify and assess reasonable alternatives to proposed actions based on the Council on Environmental Quality (40 CFR 1500 et seq.). Alternatives must avoid or minimize adverse environmental

impacts and enhance the quality of the human environment. In addition, the NEPA process must integrate impact studies required by other environmental laws and Executive Orders to determine significant environmental issues in project planning. At this time, there is no federal action associated with the adoption of the draft LMP.

Federal Endangered Species Act

The federal Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.), as amended, is administered by the USFWS for most plant and animal species and by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS), for certain marine species. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide programs for the conservation of those species, thus preventing extinction of plants and wildlife. The ESA defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under ESA, it is unlawful to "take" any listed species; "take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

The ESA allows for the issuance of incidental take permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of Habitat Conservation Plans (HCPs) on private property without any other federal agency involvement. Upon development of an HCP, the USFWS can issue Incidental Take Permits for listed species where the HCP specifies, at a minimum, the following:

- The level of impact that will result from the taking
- Steps that will minimize and mitigate the impacts
- Funding necessary to implement the HCP
- Alternative actions to the taking considered by the applicant and the reasons why such alternatives were not chosen
- Such other measures that the Secretary of the Interior may require as being necessary or appropriate for the HCP.

The ESA (16 U.S.C. Section 1531 et seq.) is implemented by the USFWS through a program that identifies and provides for protection of various species of fish, wildlife, and plants deemed to be in danger of or threatened with extinction. As part of this regulatory scheme, ESA provides for designation of "critical habitat," defined in ESA Section 3(5)(A) as specific areas within the

geographical range occupied by a species where physical or biological features "essential to the conservation of the species" are found and "which may require special management considerations or protection." Critical habitat may also include areas outside the current geographical area occupied by the species that are nonetheless "essential for the conservation of the species." Specific ESA regulations are presented in Table 3-1.

Table 3-1
Federal Regulations and Standards

Source/ Section	Definition Summary
Endangered Species Act (16 U.S.C. 1531 et seq.)	
Section 6	Allows the Departments of Interior and Commerce to enter into management and cooperative agreements with states for the conservation of listed species.
Section 9	Prohibits the take of endangered species, except under provisions stated in Sections 4, 7, and 10. "Take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."
Section 4(d)	Consent to create regulations necessary to conserve threatened species. Allows Section 9 prohibition to apply to threatened species.
Section 7	Requires federal agencies to ensure that activities will not likely jeopardize the existence of any listed species or result in the destruction of designated or proposed critical habitat. Federal agencies must also consult with the USFWS and NMFS regarding the effects of federal actions on listed species and critical habitat.
Section 10 (a)	Allows USFWS and NMFS to authorize incidental take to a species in compliance with lawful activities. Specific approval criteria are described in the ESA federal regulations.
Migratory Bird Treaty Act (16 U.S.C. 703-712)	
—	It is illegal to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10. Also requires that project-related disturbance at active nest sites be reduced or eliminated during the active nesting period.
Bald Eagle and Golden Eagle Protection Act (16 U.S.C. 668–668d)	
—	It is illegal, except under specific conditions, to take, possess, buy, sell, purchase, or barter any bald or golden eagles. A special permit is required for take.
Clean Water Act (33 U.S.C. 1251-1387)	
Section 401	A project applicant must obtain a certification for any activity that may result in a discharge of a pollutant into waters of the U.S. In California, the Regional Water Quality Control Boards regulate Section 401 and govern the review process of water quality and wetlands matters.
Section 404	A project applicant must obtain a permit for any activities that may discharge fill, dredge materials, or adversely modify wetlands or other non-isolated waters of the U.S. ACOE regulates the permitting and compliance review process.
Protection of Wetlands Policy (24 CFR 50.4(b) and 58.5(b)) Executive Order 11990)	
—	Pursue the avoidance of adverse impacts on wetlands whenever there is a practicable alternative. Projects with federal actions or approvals must identify the proposed impacts and the avoidance measures considered in an environmental document.
National Historic Preservation Act (16 U.S.C. 470 et seq. and 36 CFR 800)	

Table 3-1
Federal Regulations and Standards

Source/ Section	Definition Summary
Section 106	Requires federal agencies to evaluate the effect of their undertakings on historic properties and affords the Federal Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The goal of the Section 106 review process is to offer a measure of management consideration to archaeological and architectural historical sites determined eligible for listing on the National Register of Historic Places (NRHP).
Archaeological and Historic Preservation Act (AHPA) (16 U.S.C. 469–469c)	
—	Requires federal agencies to follow and apply established historical and archaeological preservation requirements to any project that is expected to result in the loss or destruction of significant scientific, historical, and archaeological data and to avoid unnecessary damage to significant archaeological resources by modification of project design or recovery of threatened resources.
Archaeological Resources Protection Act (ARPA) (16 U.S.C. 470aa–470mm)	
—	Establishes more effective law enforcement to protect public archaeological sites, by providing a detailed description of prohibited activities and monetary and incarceration penalties associated with looting or vandalizing an archaeological site on federal lands. Regulates the legitimate archaeological investigation on public lands and the enforcement of penalties against those who loot or vandalize archaeological resources.
The Native American Graves Protection and Repatriation Act (25 U.S.C. 3001–3013)	
—	Establishes the rights of Native American lineal descendants, Indian tribes, and Native Hawaiian organizations regarding the treatment, repatriation, and disposition of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony (items all collectively referred to as cultural items) with which they can show a relationship of lineal descent or cultural affiliation. Require federal agencies to consult with applicable tribes regarding the disposition of Native American cultural items whenever cultural items are expected to be encountered during federal actions.
Executive Order 13007 (1996), Protection and Preservation of Native American Sacred Sites	
—	Establishes protocols to better protect important Indian sites and protect and preserve Indian religious practices. Including accommodating access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoiding adverse effects to the physical integrity of such sacred sites.

Critical habitat has been designated for spreading navarretia (*Navarretia fossalis*) and thread-leaved brodiaea (*Brodiaea filifolia*) within and in the vicinity of SJWA (Figure 3-1). No other areas support proposed and designated critical habitat.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 et seq.) was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The primary motivation for the international negotiations was to stop the "indiscriminate slaughter" of migratory birds by market hunters and others. Each of the treaties protects selected species of

birds and provides for closed and open seasons for hunting game birds. The MBTA protects over 800 species of birds.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668 et seq.) provides for protection of bald (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) by prohibiting, except under certain specified conditions, the taking and possession of or commerce in such birds (or the parts, eggs, or nests of the birds). The USFWS is responsible for implementing BGEPA. Under BGEPA regulations, a permit may be issued, pursuant to Endangered Species Act Section 1539 (also known as Section 10 of the ESA), for take of bald or golden eagles if "the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild" (16 U.S.C. 1531 et seq.).

Clean Water Act

Pursuant to Section 404 of the Clean Water Act, ACOE regulates the discharge of dredged or fill material into "waters of the United States." The term "waters of the United States" (waters) is generally defined to include navigable waters as well as other waters (such as streams and seeps) and wetlands that meet applicable regulatory criteria.

Section 401 requires an applicant to obtain certification for any activity that may result in a discharge of a pollutant into waters of the United States. In California, the Regional Water Quality Control Boards (RWQCBs) administer Section 401 and play a role in the review of water quality and wetlands issues.

Executive Order 11990 Protection of Wetlands

Executive Order 11990: Protection of Wetlands policy requires federal agencies and responsible entities to avoid undertaking or providing financial assistance for new construction located within wetlands, unless a finding is made that there is no practicable alternative to such construction. Wetlands are defined in Section 7(c) of the Executive Order as, "those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mudflats, and natural ponds" (24 CFR 50.4(b) and 58.5(b).

National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties, and to submit to a historic preservation review process by the Advisory Council on Historic Preservation.

Council on Environmental Quality Revised Draft National Environmental Policy Act Guidance

The Council on Environmental Quality released Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts for public review and comment in December 2014. The Revised Draft Guidance suggest that federal agencies, in their NEPA scoping process, consider both the potential effects of a proposed action on climate change, through greenhouse gas emissions, and an analysis of the implications of climate change on the impacts associated with the proposed action. The Revised Draft Guidance applies to all proposed federal agency actions, including land and resource management.

3.1.2 Federal Agencies

U.S. Army Corps of Engineers

The U.S. Rivers and Harbors Act of 1890 and 1899 granted ACOE the authority to regulate and permit alterations to navigable harbors and streams (i.e., non-isolated waters). Additionally, the Clean Water Act of 1972 gave ACOE the authority (i.e., 404 authority) to regulate and permit the dredge or fill of any waterway in association with the EPA. A permit from ACOE shall be required before the implementation of any proposed land management activities that fill or dredge any traditional navigable waters of the U.S. (TNW) or any tributary to a TNW.

Environmental Protection Agency

The EPA regulations incorporate a wide range of environmental and public health standards. Furthermore, the EPA focuses on preservation of regional and local site resources, such as water quality standards, noise levels of authorized activities, air quality, existing native habitats, and native species.

U.S. Fish and Wildlife Service

The USFWS focuses on the United States and specifically manages our ecosystems, protects endangered species, conserves migratory birds, preserves wildlife habitats, restores fisheries, combats invasive species, and promotes international wildlife conservation.

By signing the federal ESA in 1973, the United States granted the USFWS authority to determine and list species as endangered and threatened, prohibit the harassment of

endangered species (i.e., take, possession, sale, or transport), to acquire lands for the conservation of listed species, establish cooperative grants-in-aid to states that implement and maintain adequate programs for conserving listed species, and to regulate civil and criminal penalties for violating the ESA.

3.2 State Regulations, Policies, and Agencies

3.2.1 State Regulations and Policies

Applicable state regulations and policies associated with the public use of lands largely involve the protection of unique state resources, including species, habitats, and historical properties/structures. Numerous state laws, typically in accord with federal laws, have been established to protect these resources and are regulated by state agencies including the California Department of Fish and Wildlife (CDFW; prior to 2013 California Department of Fish and Game (CDFG)), California State Office of Historic Preservation (OHP), and the RWQCB. State regulations and policies relevant to the SJWA include the California Endangered Species Act (CESA), the conservation and hunting provisions of the California Fish and Game Code, state land regulations stated in Title 14 of the California Code of Regulations (CCR), portions of the State Land Resource Code (California PRC), the environmental compliance and mitigation requirements of the California Environmental Quality Act (CEQA) Guidelines Sections 15064.5 and 15126(b) related to cultural resources (14 CCR 15000 et seq.), and the policies of the California Department of Forestry and Fire Protection (CAL FIRE) regarding fire management. These regulations and policies are described in this section and summarized in Table 3-2, Summary of Important State Regulations and Standards Applicable to San Jacinto Wildlife Area.

Table 3-2
Summary of Important State Regulations and Standards
Applicable to San Jacinto Wildlife Area

Source/Section	Definition Summary
California Fish and Game Code	
450–460	Management of Deer. This encourages the conservation, restoration, maintenance, and utilization of the state's wild deer populations. This also establishes deer management units and plans, calls for preservation and management of critical deer habitat areas, and sets guidelines for annual considerations of deer hunting regulations.
1300–1352	Wildlife Conservation Law of 1947. Provides for the preservation, protection, and restoration of wildlife within the State through the acquisition of lands and facilities suitable for recreational purposes and adaptable for conservation, propagation, and utilization of fish and game resources. Established the Wildlife Conservation Board and Wildlife Restoration Fund.

Table 3-2
Summary of Important State Regulations and Standards Applicable to San Jacinto Wildlife Area

Source/Section	Definition Summary
1360–1372	Oak Woodlands Conservation Act. Provides landowners financial incentives to protect and promote biologically functional oak woodlands. Implemented by the Wildlife Conservation Board. Establishes the Oak Woodlands Conservation Fund. Requires Department of Forestry and Fire Protection to develop oak woodlands conservation process.
1385–1391	California Riparian Habitat Conservation Program. Established state program to acquire, preserve, restore, and enhance riparian habitat and coordinate activities with other resource protection activities.
1525–1530	Wildlife Management Areas and Game Farms. This authorizes CDFG to accept and acquire properties for wildlife management areas or public shooting areas. This requires multiple recreational uses of the wildlife management areas, with emphasis on hunting and fishing.
1745-1745.1	Department-Managed Lands. Provides for a nonprofit basis of operation by the department and department may enter into contracts and agreements. Defines compatible priority uses, desirable multiple recreational use, collection of fees, and department may lease land for agricultural activity.
1800–1802	Conservation of Wildlife Resources. A state policy pertaining to the management of wildlife resources on state lands, including the public access and use of these resources.
1900–1913	Native Plant Protection. Prohibits taking of endangered and rare plants from the wild. This requires state agencies to use their programs to conserve endangered or rare native plants.
1925–1926	California Desert Native Plants. Clarifies that the Department may import, propagate, and distribute native plants covered by the California Desert Native Plants Act.
1930–1940	Significant Natural Areas. Encourages cooperative actions with other agencies to maintain the state's most significant natural areas
2050–2115.5	Endangered Species. This covers the state listing and protection of endangered and threatened species. Prohibits the take of state-listed and state candidate species. Exceptions are discussed in Sections 2081, 2080.1, 2081, 2835, and the Native Plant Protection Act.
2800–2835	Natural Community Conservation Planning Act. Provides for the development and implementation of Natural Community Conservation Plans (NCCPs) to restore and sustain habitats and species on an ecosystem or landscape scale.
3500–3516	Birds—General Provisions. Allows for specific game bird hunting during regulated annual periods. Allows for the legal protection of almost all breeding bird species in California. This prohibits the killing, taking, collecting, selling, and purchasing of native bird species or their parts, nests, or eggs. Identifies "fully protected" bird species and prohibits any take of them.
3660	Pheasants. Prohibits any person to possess a carcass, in such condition that the sex or species cannot be easily determined, of a pheasant.
3680–3686	Other Species. Provides for legal take of upland game birds including defining upland game bird species, process of issuance of licenses, permits, reservations, tags, and other entitlements, and provision of related funds.
4650–4657	Wild Pigs. Provides for the preparation of a plan for the management of wild pigs. Requires the provision of a hunting license and pig tag for hunting of wild pigs.
4700	Mammals. Identifies "fully protected" mammal species, prohibits the take and possession of them except for necessary scientific research.

Table 3-2
Summary of Important State Regulations and Standards Applicable to San Jacinto Wildlife Area

Source/Section	Definition Summary
California Code of Regulations (Title 14)	
310–311	Establishes shooting hours and authorized methods for hunting upland game birds.
502	Establishes statewide and zone waterfowl hunting regulations.
506	Establishes shooting hours for migratory game birds.
507	Authorized methods for hunting migratory game birds, allows for the use of hunting dogs, prohibits the use of mechanic or electronic calling devices, and prohibits live decoys. Also requires the use of a nontoxic shot/bullet.
509	Incorporated federal Migratory Bird Treaty Act requirements.
550–551	Regulates public uses on all State Wildlife Areas. Identifies SJWA as a Type A facility and specifies allowed public uses.
753	States the Department's policies regarding the consideration of potential environmental impacts of all actions and early consultation and coordination with affected agencies.
15000 et seq.	Provides guidelines developed by the state Office of Planning and Research for state and local agencies in California to follow in the implementation of CEQA.
Fish and Game Commission Policy	
Multiple use	Lands under the administration of the Department of Fish and Game are to be made available to the public for fishing, hunting, or other forms of compatible wildlife dependent recreation use, and for scientific studies whenever such use or uses will not unduly interfere with the primary purpose for which such lands were acquired.
California Public Resources Code	
5024	State inventory of historical resources and requirements to sites that are or are potentially eligible for inclusion in the federal or state registry. Reporting requirements for impacts to historical resources are discussed.
5024.5	Prevents state agency from altering historical resources with first giving notice and a summary of the proposed action.
21083.4	Provides for the consideration of oak woodlands conservation as part of the CEQA evaluation.
21000–21177	California Environmental Quality Act. Evaluations of environmental effects from the CDFG actions. Also identifies project measures for avoidance and the reduction of impacts. Mitigation requirements to offset significant impacts are established. The approval and implementation of the SJWA LMP qualifies as a "project" as defined under CEQA.
5097	The Native American Historic Resources Protection Act (Public Resources Code Section 5097, et seq.) addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered.
California Native American Graves Protection and Repatriation Act	
—	Provides a process for the identification and repatriation of human remains or cultural items to the appropriate tribes.
CAL FIRE Joint Policy on Pre-Fire, During, and Post-Fire Activities and Wildlife Habitat (CAL FIRE 1994)	

Table 3-2
Summary of Important State Regulations and Standards
Applicable to San Jacinto Wildlife Area

Source/Section	Definition Summary
—	Presents measures that both the CDFW and CAL FIRE should follow to protect lives and property with considerations for natural resources.
2007 California Wildlife Action Plan (CDFG 2007)	
—	Discusses and evaluates major problems affecting the state's wildlife populations on a regional scale. The plan also identifies special-status wildlife species of concern for each region. The SJWA is within the designated South Coast Region.

California Endangered Species Act

The CDFW administers CESA (California Fish and Game Code, Section 2050 et seq.), which prohibits the "take" of plant and animal species designated by the Fish and Game Commission as endangered or threatened in the state of California. CDFW regulations are set forth in the Fish and Game Code. Under CESA, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Fish and Game Code, Section 2053, stipulates that state agencies may not approve projects that will "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy."

CESA defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease" (California Fish and Game Code, Section 2050 et seq.). CESA defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter" (California Fish and Game Code, Section 2050 et seq.). Candidate species are defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the Commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the Commission has published a notice of proposed regulation to add the species to either list" (California Fish and Game Code, Section 2050 et seq.). CESA does not list invertebrate species.

CESA authorizes the take of endangered, threatened or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met. These provisions also require CDFW to coordinate consultations with the USFWS for actions involving federally listed species that are also state-listed species. In certain circumstances, CESA allows CDFW to adopt an ESA incidental take authorization as satisfactory for CESA purposes based on findings that the federal permit adequately protects the species and is consistent with state law.

A CESA permit may not authorize the take of "fully protected" species that are protected in other provisions of the Fish and Game Code, discussed further as follows.

California Code of Regulations

Title 14, Section 551 of the CCR defines wildlife areas designated by the California Fish and Game Commission and identifies regulations and restrictions pertaining to allowable activities within wildlife areas, including hunting and use of recreational vehicles. The SJWA is defined as "Type A". Type A wildlife areas are defined as:

"wildlife areas which have restricted hunter access during waterfowl season, and require a hunting pass to be purchased in advance and exchanged for an entry permit at the wildlife area, per subsections 550.5(c) and 702(b) of these regulations. Reservations are available per subsection 550.5(a) of these regulations during waterfowl season. Species open for hunting are waterfowl, coots, moorhens, snipe, pheasant, and dove, unless otherwise specified in subsection 551(s). Except as provided in subsection 551(p) and Section 552 of these regulations, shoot days are Saturdays, Sundays, and Wednesdays during waterfowl season, youth waterfowl hunt days authorized in Section 502 of these regulations, and daily during the September dove season only. All Type A wildlife areas are closed to hunting on Christmas Day.

California Fish and Game Code

According to Sections 3511 and 4700 of the Fish and Game Code, which regulate birds and mammals, respectively, a "fully protected" species may not be taken or possessed at any time, and no licenses or permits may be issued for their take. The Department may authorize the taking of fully protected species for necessary scientific research and relocation of bird species for the protection of livestock.

Pursuant to Section 3503.5 of the Fish and Game Code, it is also unlawful to take, possess, or destroy any birds of prey; or to take, possess, or destroy any nest or eggs of such birds. "Birds of prey" refer to species in the orders Falconiformes and Strigiformes. Active nests of all other birds (except English sparrow (Passer domesticus) and European starling (Sturnus vulgaris)) are similarly protected under Sections 3503 and 3513 of the Fish and Game Code.

The Fish and Game Commission's statutory powers and duties generally relate to the take of fish and game including establishing, extending, shortening or abolishong open and closed seasons, establishing, changing or abolishing bag, possession and size limits, establishing and changing territorial limits for taking any or all species or varieties, and prescribing the manner and means of taking any species or variety.The Commission also considers petitions to list and delist species pursuant to the California Endangered Species Act and establishes policies, such as encouraging recreational hunting,. that may apply to the Commission and CDFW.

Natural Communities Conservation Planning Act

The statutory framework for the Natural Communities Conservation Planning (NCCP) Act was established by the California Legislature through its enactment of the NCCP Act (California Fish and Game Code, Section 2800 et seq.). The NCCP Program is designed to support voluntary, collaborative planning efforts involving landowners, local governments, state and federal agencies, environmental organizations, and interested members of the public in the formulation and approval of the NCCPs. The NCCPs provide long-term, large-scale protection of natural vegetation communities and wildlife diversity while allowing compatible land uses and appropriate development and growth. The NCCP process was initiated to provide an alternative to "single species" conservation efforts. The shift in focus from single species, project-by-project conservation efforts to large-scale conservation planning at the natural community level is intended to facilitate regional and subregional protection of a range of species (listed and unlisted) that inhabit a designated natural community or communities.

The program seeks to anticipate and prevent the controversies and gridlock that sometimes results from species' listing by focusing on the long-term stability of wildlife and plant communities and including key stakeholders in the process.

The 1991 NCCP Act was replaced with a substantially revised and expanded NCCP Act in 2002. The revised NCCP Act established new standards and guidance on many facets of the program, including scientific information, public participation, biological goals, interim project review, and approval criteria. The new NCCP Act took effect on January 1, 2003. Approval of an NCCP under the new NCCP Act requires CDFW to make the following findings:

- The Plan must be consistent with the Planning Agreement.
- The Plan must provide for the conservation and management of the covered species (*conservation* is defined to mean that the Plan must contribute to species recovery).
- The Plan must protect habitat, natural communities, and species diversity on the landscape level.

- The Plan must conserve the ecological integrity of large habitat blocks, ecosystem function, and biodiversity.
- The Plan must support sustainable populations of covered species.
- The Plan must provide a range of environmental gradients and habitat diversity to support shifting species distributions.
- The Plan must sustain movement of species among reserves.
- Mitigation and conservation must be roughly proportional to impacts in timing and extent.
- Funding for conservation, monitoring, and adaptive management must be adequately assured.

California Native Plant Protection Act

The Native Plant Protection Act of 1977 (California Fish and Game Code, sections 1900–1913) directed the CDFW to carry out the legislature's intent to "preserve, protect and enhance endangered or rare plants of this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and to protect endangered and rare plants from take. When CESA was passed in 1984, it expanded on the original Native Plant Protection Act and enhanced legal protection for plants and created the categories of "threatened" and "endangered" species to parallel the FESA. CESA converted all rare animals into the act as threatened species but did not do so for rare plants, which resulted in three listing categories for plants in California: rare, threatened, and endangered.

California Desert Native Plants Act

California Food and Agriculture Code, Division 23, sections 80001–80201, affords protection to desert native plants under the California Desert Native Plants Act passed in 1981. Sections 1925–1926 of the California Fish and Game Code agree to enforce the provisions of the act. The California Desert Native Plants Act prohibits the harvesting, transport, sale, or possession of designated native desert plants except for scientific or educational purposes (under a permit) or if the person has a valid permit, or wood receipt, and the required tags and seals. The provisions are applicable within the boundaries of Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego Counties.

Section 1801

Section 1801 of the Fish and Game Code is the primary State policy regarding California's wildlife resources. The ultimate goal of this policy is to encourage the preservation,

conservation, and maintenance of wildlife resources under the jurisdiction and influence of the State and includes the following objectives:

a. To maintain sufficient populations of all species of wildlife and the habitat necessary to achieve the objectives stated in subdivisions (b), (c), and (d)

b. To provide for the beneficial use and enjoyment of wildlife by all citizens of the state

c. To perpetuate all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to all persons

d. To provide for aesthetic, educational, and non-appropriative uses of the various wildlife species

e. To maintain diversified recreational uses of wildlife, including the sport of hunting, as proper uses of certain designated species of wildlife, subject to regulations consistent with the maintenance of healthy, viable wildlife resources, the public safety, and a quality outdoor experience

f. To alleviate economic losses or public health and safety problems caused by wildlife.

Water Regulations

As a Trustee and Responsible Agency under CEQA, the CDFW is responsible for adhering to California's wetland policy, which states that "no net loss in the short-term and an increase in wetlands in the long term" will occur (Executive Order W-59-93).

Under the Porter-Cologne Water Quality Control Laws in the California Water Code, the State Water Resources Control Board (SWRCB) and local RWQCB regulate state water resources, including streams and other surface waters, wetlands, and groundwater. These water quality requirements are designed to protect aquatic resources, including biological resources. Further information about these state water quality laws is included in Section 3.2.2.

Conservation of Oak Woodlands

California Public Resources Code (PRC), Section 21083.4, requires a county, as part of the CEQA process, to consider whether a project will impact oak woodlands, including oak trees (meaning a native tree species in the genus *Quercus*) that are 5 inches or more in diameter at breast height. If a project may have a significant effect on oak woodlands (defined in Fish and Game Code, Section 1361(h) as "an oak stand with a greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover"), the Code requires implementation of specific mitigation measures to reduce impacts to oak woodlands. Mitigation

options include conservation of existing oak woodlands, planting of new trees, contribution of funds to the Oak Woodlands Conservation Fund, or any other measures developed by the county.

The Oak Woodlands Conservation Act (OWCA) (California Fish and Game Code, Sections 1360–1372) was enacted to support and encourage voluntary, long-term private stewardship and conservation of oak woodlands by offering landowners financial incentives to protect and promote biologically functional oak woodlands. It provides incentives to farming and ranching operations that are operated in a manner that protects and promotes healthy oak woodlands, promotes the protection of oak trees, and encourages planning that is consistent with oak woodland preservation. OWCA is implemented by the Wildlife Conservation Board.

OWCA establishes the Oak Woodlands Conservation Fund for the preservation and restoration of oak woodlands, which provides grants for various activities that accomplish OWCA's purpose. It also requires the Department of Forestry and Fire Protection to develop an oak woodlands conservation process, including the elements that must be present in a city or county's oak woodlands management plan.

Wildlife Area Code and Regulations

Sections 550 and 551(q) of CCR Title 14 are the key regulations regarding uses of the wildlife area. These regulations are currently being review and are subject to potential future changes. Section 550 sets regulations for general public use activities on all state wildlife areas and includes the following provisions:

1. The regional manager or his designee for the area has the authority to further restrict public use of the wildlife area where such use is not specified in sections 550, 550.5, 551 or 552 of Title 14.
2. The CDFW may limit the number of persons entering the wildlife area during any period for safety reasons.
3. Where entry is limited, permits are issued on a first-come, first-served basis or by a drawing.
4. No person without a permit may enter areas where public entry has been limited. Permits must be completed and handed in upon exit.
5. Use permits are required for organized events or gatherings in wildlife areas, and events must be compatible with wildlife area objectives.
6. Motor vehicles and trailers are prohibited except on public or established roads or designated areas; motor vehicles must be driven and parked in a safe and lawful manner. Unless noted in 551(q) or 442(a), off-road vehicles are prohibited in wildlife areas.

7. Drivers of motor vehicles in wildlife areas must comply with posted signs; tampering with or removing any sign, barrier, or other posting is unlawful.
8. Boats are allowed to be operated subject to restrictions and must be launched and removed from designated sites.
9. Vandalism and littering is prohibited. Where there are no designated receptacles, refuse resulting from a person's use of the area must be removed by that person.
10. Persons using the area may not dig up, cut, damage, or remove trees, shrubs, vines, plants, or wood (except that vegetation may be cut to build blinds); dig up or remove humus, soil, sand, gravel, or rock.
11. Persons may not collect or remove bottles or artifacts, nor disturb the soil to locate bottles or artifacts.
12. Camping is restricted to designated areas and shall be limited to no more than 7 consecutive days and no more than 14 days total in any year. Personal property, including decoys, shall not be left unattended except in authorized locations or as provided in subsection 551(q).
13. Fires are restricted to portable gas stoves, charcoal briquette barbeques, or in designated fireplaces at sites developed by the CDFW. Fires must not be left unattended and must be extinguished with water before leaving the wildlife area.
14. Dogs are allowed only for hunting, training, and dog trials. While in parking lots or checking stations, dogs must be leashed. Special permits are required for field trials.
15. No pesticide use is allowed in wildlife areas except by authorized employees conducting pest control activities approved by the CDFW.
16. Livestock are not allowed in wildlife areas except under an authorized grazing permit issued by the CDFW.
17. Fish and frogs may not be taken for commercial purposes.
18. Hunting and trapping is allowed during regular open seasons subject to CDFW regulations.
19. Hunting and possession of firearms and archery equipment are prohibited in specified wildlife areas (this does not apply to the SJWA).
20. No fireworks or explosives are allowed except with written permission by the manager or as provided for in 551(b) or 551(q).
21. No person may possess alcohol or other controlled substances when hunting or other authorized recreational activities.

22. The CDFW may eject any person for violation of these regulations or because of disorderly conduct, intoxication, or any unsafe action or situation.
23. Users are responsible for knowledge of area-specific regulations (14 CCR 550(b)).

Section 551(q), as amended in October 2009, specifies the following for the SJWA (14 CCR 551). A current version can be found here, although these regulations are subject to change:

http://weblinks.westlaw.com/result/default.aspx?cite=14CAADCS551&db=1000937&findtype=L&fn=%5Ftop&pbc=DA010192&rlt=CLID%5FFQRLT46660293221810&rp=%2FSearch%2Fdefault%2Ewl&rs=WEBL12%2E10&service=Find&spa=CCR%2D1000&sr=TC&vr=2%2E0.

Davis Unit

1. Ammunition Restrictions: A hunter shall not possess more than 25 shot shells while in the field during the waterfowl season.
2. Hunt Days: Waterfowl, coots (Fulica spp.), and moorhens (Gallinula spp.): Saturdays and Wednesdays during the duck season. Upland game: Daily during respective seasons that fall within the period July 1 through January 31. Pheasant (Phasianus spp.): Mondays during the pheasant season.
3. Reservations, Entry Permits, and Day Use Pass Requirements for Public Access:
4. Reservations are available for waterfowl and pheasant hunting. In addition to a daily entry permit required for hunting waterfowl and pheasants, a day use pass or annual wildlife pass is required of all users except for users who possess a valid California sport fishing license, hunting license, or trapping license; users who are under 16 years of age; or users who are part of an organized youth or school group and who have had free permits issued by the appropriate regional office.
5. Reservations: Each reservation shall assure entry for up to two adults and two holders of junior hunting licenses.
6. Authorized Species: Waterfowl, coots, moorhens, doves (various genera in the family Columbidae), quail (Callipepla spp.), pheasants, snipe (Gallinago spp.), and rabbits (Sylvilagus spp.).
7. Camping and Trailers: Not allowed.
8. Special Restrictions: Upland game (doves, pheasants, quail, snipe, and rabbits) may be taken only in designated areas. A self-issued permit is required to enter the upland game hunting area.

Potrero Unit

1. Camping and Trailers: Camping and overnight use is not allowed.
2. Any person within the unit shall have in his or her immediate possession a current valid day use pass for the Potrero Unit. No person may be within the boundaries of the unit during hours or dates that the unit is closed to unrestricted public access.
3. No motorized vehicles allowed except by written permission of the regional manager.
4. Bicycle use is limited to designated trails and routes.
5. No person shall enter or leave the unit except at designated entry and exit points.
6. Alcoholic beverages may not be possessed or consumed on the premises.
7. Paintball guns, parts, or supplies may be not used or possessed.
8. Fires: Not allowed year-round.
9. Dogs must be kept on a leash and under the immediate control of the owner or owner's designee, unless actively involved in legal hunting or other authorized activity.
10. Authorized Species: Upland game birds and resident small game.
11. Special Restrictions: Upland game and resident small game species may be taken only in designated areas unless otherwise restricted or limited within the unit.

California Environmental Quality Act

CEQA is officially contained within PRC 21000–21177 and the CEQA Guidelines are provided in the California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387. CEQA is intended to inform state government and the public of the potential environmental damage of proposed projects and activities regulated by the state and the range of feasible alternatives to those actions. CEQA requires identification of a project's potentially significant environmental impacts and ways that such impacts can be avoided, minimized, or mitigated. The approval and implementation of the San Jacinto Wildlife Area Land Management Plan (SJWA LMP) qualifies as a "project" as defined under CEQA. A range of activities are proposed under the SJWA LMP, including project-specific activities that are well defined in scope and location as well as programmatic activities that will require future detailed evaluation. Section 5 of the LMP describes these proposed activities and identifies whether each can be evaluated at the project level or program level.

The following is a detailed discussion of CEQA guidelines relevant to the evaluation of biological and cultural resources, as these resources are the subject of this LMP. Other

environmental resources, such as land use, traffic, and air quality, for example, may be affected by implementation of the LMP however these resource areas will be evaluated separately in the appropriate CEQA document (e.g., Initial Study).

CEQA Guideline 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15000 et seq.). A rare animal or plant is defined in Guideline 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guideline 15380(c).

The CDFW has developed a list of "Special Species" as "a general term that refers to all of the taxa the California Natural Diversity Database (CNDDB) is interested in tracking, regardless of their legal or protection status." This is a broader list than those species that are protected under ESA, CESA, and other Fish and Game Code provisions, and includes lists developed by other organizations, including, for example, the Audubon Watch List Species. Guidance documents prepared by other agencies, including the BLM Sensitive Species and USFWS Birds of Special Concern, are also included on this CDFW Species list. Additionally, the CDFW has concluded that plant species included on the California Native Plant Society Lists 1 and 2, and potentially some List 3 plants, are covered by CEQA Guidelines Section 15380 (14 CCR 15000 et seq.).

CEQA also requires identification of a project's potentially significant impacts on riparian habitats (such as wetlands, bays, estuaries, and marshes) and other "sensitive natural communities" including habitats occupied by endangered, rare, and threatened species. CEQA Guidelines Section 15064.5 (PRC 21083.2 and 21084.1) requires lead agencies to carefully consider the potential effects of a project on historical resources. A "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript, which is historically or archaeologically significant (PRC 5020.1(j)).

CEQA Statutes Section 21083.2(g) defines criteria to determine if the significance of an archaeological site is considered "unique." CEQA Section 21083.2 indicates that a lead agency may make efforts to preserve unique archaeological resources by implementing avoidance strategies including redesign, dedication of permanent conservation easements, capping of archaeological sites, or incorporating archaeological sites in parks or other open spaces. If

avoidance is not possible, project impacts to those portions of the unique archaeological resources shall be mitigated. Provisions for the accidental discovery of archaeological sites during construction are recommended, including its immediate evaluation and, if considered to be unique, mitigation through implementing avoidance measures or archaeological data recovery excavations.

Section 15064.5 of the State CEQA Guidelines specifies criteria for determining the archaeological and architectural historical resources, mirroring criteria listed in the NRHP to determine NRHP listing eligibility. CEQA Guidelines, Section 15064.5(b), provides definitions as to when a project would potentially have significant impacts on cultural resources. CEQA Guidelines, Section 15064.5(b)(4), states that the lead agency shall identify potentially feasible measures to mitigate significant adverse changes in the significance of a historical resource. Section 15064.5(b)(3) also states that impacts on a historic resource may be reduced to a less-than-significant level if project design follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Weeks and Grimmer 1995). CEQA Guidelines, Section 15064.5(d), assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under PRC 5097.98. CEQA (CCR), Guidelines for Implementation of CEQA, Appendix G, Title 14, Chapter 3, Sections 15000–15387 and 21000–21178.

California Greenhouse Gas and Climate Change Policies

The Natural Resources Agency adopted the CEQA Guidelines Amendments on December 30, 2009 to address greenhouse gas emissions as part of the CEQA process. The amended guidelines establish several new CEQA requirements concerning the analysis of GHGs, including the following:

- Requiring a lead agency to "make a good faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of GHG emissions resulting from a project" (Section 15064(a))
- Providing a lead agency with the discretion to determine whether to use quantitative or qualitative analysis or performance standards to determine the significance of GHG emissions resulting from a particular project (Section 15064.4(a))
- Requiring a lead agency to consider the following factors when assessing the significant impacts from greenhouse gas emissions on the environment:

  - The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting
  - Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project
  - The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (Section 15064.4(b))
- Allowing lead agencies to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures, including offsets that are not otherwise required (Section 15126.4(c)).

The amended guidelines also establish two new guidance questions regarding GHG emissions in the Environmental Checklist set forth in CEQA Guidelines Appendix G:

- Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The adopted amendments do not establish a GHG emission threshold, and instead allow a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts.[1] The Natural Resources Agency also acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions.[2]

In addition to regulation of GHG emission through the CEQA process, CDFW operations and planning are also evaluated for potential effects and adaptation to climate change through DFG's participation on the state's Climate Action Team. CDFW has developed an overarching California Climate Adaptation Strategy for Biodiversity and Habitat as well as species- and regional-specific case studies and assessments regarding vulnerability and adaptation to climate

[1] "The CEQA Guidelines do not establish thresholds of significance for other potential environmental impacts, and SB 97 did not authorize the development of a statement threshold as part of this CEQA Guidelines update. Rather, the proposed amendments recognize a lead agency's existing authority to develop, adopt and apply their own thresholds of significance or those developed by other agencies or experts" (CNRA 2009, 84).

[2] "A project's compliance with regulations or requirements implementing AB 32 or other laws and policies is not irrelevant. Section 15064.4(b)(3) would allow a lead agency to consider compliance with requirements and regulations in the determination of significance of a project's greenhouse gas emissions" (CNRA 2009, 100).

change. Other related actions of the Climate Action Team include water planning, fire assessments, and education and outreach efforts.

3.2.2 State Agencies

California Department of Fish and Wildlife

CDFW maintains native fish, wildlife, plant species and natural communities for their intrinsic and ecological value and their benefits to people. This includes habitat protection and maintenance in a sufficient amount and quality to ensure the survival of all species and natural communities. CDFW is responsible for State environmental and resource regulations that are in the Fish and Game Code and Title 14 Sections 1 through 789.6 including the issuance of licenses, permits, stamps, and tags associated with the management of wildlife resources. CDFW also enforces State environmental resource regulations including habitat protection, maintenance of natural communities and their ecological benefits to people, and survival of native species.

Section 1801 of the California Fish and Game Code is the primary state policy regarding California's wildlife resources and their associated habitats. The ultimate goal of this policy is to maintain sufficient wildlife populations to accomplish the following goals:

a. To provide for the beneficial use and enjoyment of wildlife by all citizens of the state
b. To perpetuate all species of wildlife for their intrinsic and ecological values
c. To provide for aesthetic, educational, and non-appropriative uses
d. To maintain diversified recreational uses of wildlife, including sport hunting
e. To provide state recognition that wildlife is a renewable resource
f. To alleviate economic losses or public health and safety problems caused by wildlife.

Regional Water Quality Control Board

In 1969, the Porter-Cologne Water Quality Control Act was established to preserve, enhance, and restore the quality of California's water resources. The Porter-Cologne Act created the SWRCB and established nine RWQCB Basin Plan regional offices. SJWA is located in the Santa Ana Basin Plan, Region 8. The Region 8 branch is responsible for controlling water quality by specifically focusing on local scale issues. The RWQCB regional office branch manages water sources that are present within the SJWA. Construction activities within the SJWA may be subject to the current SWRCB General Construction Permit which regulate the type of storm water discharge that may be allowed from a construction site and generally requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) as well as evaluation of short- and long-term best

management practices (BMPs), which minimize adverse downstream water quality effects. The RWQCB also manages urban runoff through issuance of a countywide Urban Runoff Management Program pursuant to the federal Clean Water Act National Pollutant Discharge Elimination System requirements and the state Water Discharge Requirements under the Porter-Cologne Act. This program, also known as the MS4 (Municipal Separate Storm Sewer System) permit, requires that the County of Riverside and incorporated cities adopt policies and regulations that meet regional water quality standards. As such, management of urban runoff, including the use of recycled water, within the SJWA must meet these regional standards.

California Department of Forestry and Fire Protection (CAL FIRE)

Riverside County contracts with the CAL FIRE for fire protection services. Based on the authority afforded in California PRC 4142, CAL FIRE administers the Riverside County Fire Department. The SJWA is located within CAL FIRE's Riverside Unit. In Riverside County, CAL FIRE provides direct protection for over 1 million acres of wildland, including the SJWA.

CAL FIRE and CDFW have developed an Interim Joint Policy on Pre, During, and Post Fire Activities and Wildlife Habitat (CAL FIRE 1994; CDFG 1995c). This policy document calls for involvement of both agencies in the pre-fire, during fire, and post-fire periods with the intent of protecting lives and property while considering habitat and natural resources values at risk. The policy acknowledges that large-scale, hot wildfires can cause significant habitat damage and identifies pre-fire treatment of fuels (especially in the wildland urban interface) as a viable approach in minimizing damage potential. Efforts to manage vegetation on the SJWA shall adhere to the standards set forth in this policy in order to minimize habitat damage resulting from wildfire occurrence.

As a component of pre-fire management activities, CAL FIRE administers the Vegetation Management Program (VMP) in Riverside County. The VMP is intended to reduce fire hazard by implementing fuels reduction projects, including prescribed burns. Prescribed burning activities carried out under the VMP program have also been utilized in Riverside County for habitat management purposes (CAL FIRE 2009). Adjacent to the Davis Unit in the Lake Perris State Recreation Area, the Lake Perris VMP has implemented prescribed burns in 1990 (485 acres), 1998 (510 acres), 1999 (450 acres), and 2001 (133 acres) with the intent of creating conditions favorable to the Stephens' kangaroo rat (*Dipodomys stephensi*) and other native species by removing non-native annual grasses and promoting the growth of annual forbs and native grasses. Implementation of a VMP in the SJWA for habitat management purposes would need to occur in cooperation with CAL FIRE.

State Office of Historic Preservation

The California State OHP administers federally and state-mandated historic preservation programs pursuant to the Section 106 of the NHPA, with the objective of identifying, evaluating, registering and protecting California's archaeological and historical resources. OHP is involved with reviewing NRHP eligibility nominations, approving the assessment of project impacts and potential effects, and identifying appropriate mitigation to avoid potential adverse effects on significant historic resources.

3.3 Applicable Plans and Programs

3.3.1 Western Riverside County Multiple Species Habitat Conservation Plan

Western Riverside County Multiple Species Habitat Conservation Plan Background

The Western Riverside County (WRC) Multiple Species Habitat Conservation Plan (MSHCP) is a comprehensive, multijurisdictional plan that conserves endangered and threatened plant and animal species and associated habitats in western Riverside County. The plan was approved in June of 2003 by County of Riverside, and each of the 17 cities in the western county subsequently signed onto the MSHCP, as well as other local and state public entities. The USFWS and CDFW each issued a single umbrella permit to the plan participants for take authorization under federal and state endangered species acts.

The MSHCP Planning Area encompasses approximately 1.2 million acres or about 2,000 square miles in Western Riverside County. The Plan Area, larger than the State of Delaware, includes all of the unincorporated territory west of the crest of the San Jacinto Mountains to the Orange County line, as well as the cities of Temecula, Murrieta, Menifee, Wildomar, Lake Elsinore, Canyon Lake, Norco, Corona, Eastvale, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet, and San Jacinto.

The MSHCP calls for the acquisition of 153,000 acres of new conservation land (Additional Reserve Lands; ARL) to augment and enhance 347,000 acres of land presently conserved in the public domain (Public/Quasi-Public (PQP) Lands). Ultimately, the MSHCP goal is to form a 500,000-acre self-sustaining Reserve in Western Riverside County that protects, recovers, and sustains 146 species.

Generally, the Reserve created by the MSHCP is made up of cores (i.e., large blocks of habitat) connected by linkages (more linear features) that allow for genetic transfer and movement of species throughout the Plan Area (Figure 3-2). In order to provide the habitat necessary to protect and allow for the future viability of the 146 species covered under the MSHCP, the areas which

are not a part of the PQP Lands were overlaid with "Criteria Cells." It is from the area overlaid with Criteria Cells that the ARL (i.e., 153,000 acres) will be compiled, and ultimately the combination of the PQP Lands and ARL will form the 500,000-acre Reserve.

The SJWA is an important part of the MSHCP Reserve. The overall management of the SJWA needs to be coordinated with the long-term management goals that the MSHCP needs to accomplish in order to provide a sustained Reserve.

MSHCP Bioregions

The MSHCP is also divided into Bioregions, which were established to help describe the diversity of habitats on a regional scale within the MSHCP Plan Area. The SJWA is located within the northeast region of the Riverside Lowlands Bioregion and within the northwest corner of the San Jacinto Mountains Bioregion.

The Riverside Lowlands Bioregion characterizes areas east of the Santa Ana Mountain Bioregion, south of the Riverside/San Bernardino County line, west of Diamond Valley Lake, Lake Skinner, and Gilman Hot Springs, and north of the Riverside/San Diego County line. The Riverside Lowlands Bioregion generally occurs at elevations below 600 meters (2,000 feet) and is characterized by Riversidian sage scrub and annual grasslands. The relatively arid climate is in part the result of the rain shadow cast by the Santa Ana Mountains. A high level of disturbance and urbanization are noted within this Bioregion (RCTLMA 2007).

The San Jacinto Mountains Bioregion occurs in the eastern portion of the Plan Area and encompasses the San Bernardino National Forest, Pine Cove, Idyllwild, and the upper San Jacinto River and Bautista Canyon Creek. This Bioregion supports coniferous forests, montane chaparral, and broad-leaved forest; it generally occurs at elevations above 900 meters (3,000 feet). The San Jacinto Mountains Bioregion is floristically distinct from the San Bernardino Mountains Bioregion. This Bioregion has not been heavily disturbed or urbanized (RCTLMA 2007).

MSHCP Area Plans

The larger MSHCP Plan Area is divided into Area Plans. The Area Plan concept was created to allow the Plan Area to be divided into areas that not only represent similar biological conditions, but to have boundaries that are also based on jurisdictional boundaries. Having Area Plans based on jurisdictional boundaries aids in being able to focus implementation strategies around established planning boundaries.

Each Area Plan is then subdivided further into Subunits. Each Area Plan Subunit has identified target acreages for Conservation, Planning Species, and Biological Issues and Considerations. The SJWA is within the Lakeview/Nuevo, Reche Canyon/Badlands, and the Pass Area Plans.

Davis Unit Relationship to MSHCP

The Davis Unit contains both PQP Lands and areas overlaid with Criteria Cells. Some of the lands within the Davis Unit are considered ARL (see Figure 3-3a).

The Davis Unit is located in two Area Plans: the Lakeview/Nuevo Plan Area, Subunit 1, and in the Reche Canyon/Badlands Plan Area, Subunit 4.

Within Subunit 1 – San Jacinto River-Middle Reach of the Lakeview/Nuevo Plan Area, there are 15 Planning Species, which include arroyo toad (*Bufo californicus*), mountain plover (*Charadrius montanus*), tricolored blackbird (*Agelaius tricolor*), white-faced ibis (*Plegadis chihi*), Riverside fairy shrimp (*Streptocephalus woottoni*), vernal pool fairy shrimp (*Branchinecta lynchi*), Los Angeles pocket mouse (*Perognathus longimembris brevinasus*), western pond turtle (*Clemmys marmorata pallida*), Coulter's goldfields (*Lasthenia glabrata ssp. Coulteri*), Davidson's saltscale (*Atriplex serenana*), San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*), spreading navarretia, thread-leaved brodiaea, vernal barley (*Hordeum intercedens*), and Wright's trichocoronis (*Trichocoronis wrightii*).

The specific Biological Issues and Considerations for Subunit 1 – San Jacinto River-Middle Reach are to:

- Conserve Willow-Domino-Travers soils supporting sensitive plants such as spreading navarretia, San Jacinto Valley crownscale, Coulter's goldfields, Davidson's saltscale, vernal barley, and Wright's trichocoronis
- Conserve clay soils intermixed with or near vernal pool occurring in the middle reaches of the San Jacinto River (SJR) supporting core populations of thread-leaved brodiaea
- Conserve wetland habitats and floodplain along the SJR including existing vernal playas and vernal pools and associated watersheds
- Maintain watershed processes that contribute to and enhance water quality and hydrologic regime
- Maintain and enhance the linkage value of the SJR for wildlife movement and live-in habitat
- Maintain the floodplain habitat for mountain plover
- Determine the presence of Los Angeles pocket mouse

- Maintain core and linkage habitat for western pond turtle
- Maintain core for vernal pool fairy shrimp and the Riverside fairy shrimp.

The Reserve Features (i.e., Cores and Linkages) identified in the Davis Unit that are associated with the Lakeview/Nuevo Area Plan include:

- Existing Core H
- Extension of Existing Core 4.

See Figure 3-2 for relationship of the boundaries of the Davis Unit with these Reserve Features.

Existing Core H is composed of Lake Perris State Recreation Area, San Jacinto Wildlife Area, private lands, and lands with pre-existing conservation agreements. It provides Live-In Habitat for certain species, contains soils suitable for some Narrow Endemic Plant Species, supports vernal pool complexes, and may provide a connection to Core Areas in the Badlands and the middle reach of the San Jacinto River. Planning Species for which Habitat is provided within this Core Area include bobcat (*Lynx rufus*), Los Angeles pocket mouse, Stephens' kangaroo rat, smooth tarplant (*Centromadia pungens* ssp. *laevis*), San Jacinto Valley crownscale, spreading navarretia, California Orcutt grass (*Orcuttia californica*), vernal barley, and thread-leaved brodiaea. Maintenance of habitat quality, floodplain process along the San Jacinto River, and Conservation of vernal pool complexes are important for these species. This Core Area likely provides for Live-In Habitat for small rodents and common mammals, including bobcat and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*).

Proposed Extension of Existing Core 4 is composed of the middle reach of the San Jacinto River and is contiguous with Core Area in Lake Perris Recreation Area. It provides Habitat for a number of Narrow Endemic Plant Species and movement for species connecting to Lake Perris and areas downstream of the San Jacinto in Canyon Lake. Planning Species for which Habitat is provided for within this proposed Extension of Existing Core include San Jacinto Valley crownscale, thread-leaved brodiaea, arroyo toad, and Los Angeles pocket mouse. Maintenance of floodplain processes along the San Jacinto River, as well as maintenance of habitat quality of vernal pool complexes and the Travers-Willow-Domino soils supporting many of the special-status plant species noted in Table 3-3, are important for these species.

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Table 3-3
Summary of Western Riverside Multiple Species and Habitat Conservation Plan Covered Species, Cores, and Linkages Applicable to the San Jacinto Wildlife Area

MSHCP Covered Species within Cores and Linkages[1]			Davis Unit				Potrero Unit			
Taxon	*Scientific Name*	*Species*	*Core H*	*Core 4*	*Linkage 20*	*Core K*	*Core 5*	*Linkage 11*	*Linkage C*	*Core 3*
Amphibian	*Bufo californicus*	arroyo toad		√	√		√	√	√	
Amphibian	*Rana muscosa*	Sierra Madre yellow-legged frog					√			
Amphibian	*Spea hammondii*	western spadefoot	√							
Reptile	*Actinemys marmorata pallida*	western pond turtle	√		√	√	√			
Reptile	*Aspidoscelis [Cnemidophorus] hyperythrus beldingi*	Belding's orange-throated whiptail	√							
Reptile	*Aspidoscelis tigris stejnegeri*	coastal western whiptail	√							
Reptile	*Coleonyx variegatus abbotti*	San Diego banded gecko	√							
Reptile	*Crotalus ruber ruber*	northern red diamond rattlesnake	√			√				
Reptile	*Lampropeltis zonata (parvirubra)*	San Bernardino Mountain kingsnake				√				
Reptile	*Phrynosoma coronatum blainvillii*	San Diego horned lizard	√							
Reptile	*Sceloporus orcutti*	granite spiny lizard	√							
Reptile	*Xantusia henshawi*	granite night lizard	√							
Bird	*Accipiter cooperii*	Cooper's hawk	√			√	√			
Bird	*Accipiter gentilis*	northern goshawk				√				
Bird	*Accipiter striatus*	sharp shinned hawk	√							

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Taxon	*Scientific Name*	*Species*	*Core H*	*Core 4*	*Linkage 20*	*Core K*	*Core 5*	*Linkage 11*	*Linkage C*	*Core 3*
Bird	*Agelaius tricolor*	tricolored blackbird			√					
Bird	*Aimophila ruficeps canescens*	Southern California rufous-crowned sparrow	√					√		√
Bird	*Ammodramus savannarum*	grasshopper sparrow	√							
Bird	*Artemisiospiza belli*	Bell's sparrow	√					√		√
Bird	*Aquila chrysaetos*	golden eagle	√			√				
Bird	*Botaurus lentiginosus*	American bittern	√							
Bird	*Buteo regalis*	ferruginous hawk	√							
Bird	*Buteo swainsoni*	Swainson's hawk	√							
Bird	*Campylorhynchus brunneicapillus sandiegensis*	cactus wren	√					√		√
Bird	*Cathartes aura*	turkey vulture	√			√				
Bird	*Charadrius montanus*	mountain plover		√	√				√	
Bird	*Cypseloides niger*	black swift				√				
Bird	*Dendroica petechia brewsteri*	yellow warbler	√			√	√			
Bird	*Elanus leucurus*	white-tailed kite	√							
Bird	*Empidonax traillii extimus*	southwestern willow flycatcher	√				√			
Bird	*Falco peregrinus*	peregrine falcon	√							

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MSHCP Covered Species within Cores and Linkages[1]			Davis Unit				Potrero Unit			
Taxon	*Scientific Name*	*Species*	*Core H*	*Core 4*	*Linkage 20*	*Core K*	*Core 5*	*Linkage 11*	*Linkage C*	*Core 3*
Bird	*Haliaeetus leucocephalus*	bald eagle	√							
Bird	*Icteria virens*	yellow-breasted chat	√							
Bird	*Lanius ludovicianus*	loggerhead shrike	√					√		√
Bird	*Melospiza lincolnii*	Lincoln's sparrow	√			√				
Bird	*Nycticorax nycticorax*	black-crowned night heron	√							
Bird	*Oporornis tolmiei*	MacGillivray's warbler	√			√				
Bird	*Oreortyx pictus*	mountain quail				√				
Bird	*Pandion haliaetus*	osprey	√							
Bird	*Phalacrocorax auritus*	double-crested cormorant	√							
Bird	*Picoides pubescens*	downy woodpecker	√			√				
Bird	*Plegadis chihi*	white-faced ibis		√	√				√	
Bird	*Progne subis*	purple martin	√			√				
Bird	*Sphyrapicus thyroideus*	Williamson's sapsucker				√				
Bird	*Strix occidentalis*	California spotted owl								
Bird	*Tachycineta bicolor*	tree swallow	√			√				
Bird	*Vermivora ruficapilla*	Nashville warbler				√				
Bird	*Vireo bellii pusillus*	least Bell's vireo					√			
Bird	*Wilsonia pusilla*	Wilson's warbler				√				

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Taxon	*Scientific Name*	*Species*	*Core H*	*Core 4*	*Linkage 20*	*Core K*	*Core 5*	*Linkage 11*	*Linkage C*	*Core 3*
Mammal	*Chaetodipus fallax fallax*	northwestern San Diego pocket mouse	√							
Mammal	*Dipodomys merriami parvus*	San Bernardino kangaroo rat				√	√	√		
Mammal	*Dipodomys stephensi*	Stephens' kangaroo rat	√			√		√		
Mammal	*Lepus californicus bennettii*	San Diego black-tailed jackrabbit	√							
Mammal	*Lynx rufus*	bobcat	√				√	√		
Mammal	*Neotoma lepida intermedia*	San Diego desert woodrat	√							
Mammal	*Perognathus longimembris brevinasus*	Los Angeles pocket mouse	√	√	√			√	√	
Mammal	*Puma concolor*	mountain lion				√	√	√		
Plant	*Arabis johnstonii*	Johnston's rock cress				√				
Plant	*Atriplex coronata* var. *notatior*	San Jacinto Valley crownscale	√	√	√				√	
Plant	*Atriplex parishii*	Parish's brittlescale			√				√	
Plant	*Atriplex serenana* var. *davidsonii*	Davidson's saltscale	√	√	√				√	
Plant	*Berberis nevinii*	Nevin's barberry								
Plant	*Brodiaea filifolia*	thread-leaved brodiaea	√	√	√				√	
Plant	*Calochortus palmeri* var. *munzii*	Munz's mariposa lily				√				
Plant	*Calochortus plummerae*	Plummer's mariposa lily				√				

Table 3-3
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MSHCP Covered Species within Cores and Linkages[1]			Davis Unit				Potrero Unit			
Taxon	*Scientific Name*	*Species*	*Core H*	*Core 4*	*Linkage 20*	*Core K*	*Core 5*	*Linkage 11*	*Linkage C*	*Core 3*
Plant	*Centromadia pungens* ssp. *laevis*	smooth tarplant	√							
Plant	*Chorizanthe leptotheca Goodm.*	peninsular spineflower				√				
Plant	*Deinandra mohavensis*	Mojave tarplant				√				
Plant	*Dodecahema leptoceras*	slender-horned spineflower				√	√			
Plant	*Galium angustifolium* ssp. *jacinticum*	San Jacinto Mountains bedstraw				√				
Plant	*Galium californicum*	California bedstraw				√				
Plant	*Holocarpha virgata* ssp. *elongata*	graceful tarplant				√				
Plant	*Hordeum intercedens*	vernal barley			√					
Plant	*Lasthenia glabrata* ssp. *coulteri*	Coulter's goldfields	√	√	√				√	
Plant	*Monardella macrantha* ssp. *hallii*	Hall's monardella				√				
Plant	*Navarretia fossalis*	spreading navarretia	√	√	√				√	
Plant	*Orcuttia californica*	California Orcutt grass	√							
Plant	*Penstemon californicus*	California beardtongue				√				

Table 3-3
Summary of Western Riverside Multiple Species and Habitat Conservation Plan Covered Species, Cores, and Linkages Applicable to the San Jacinto Wildlife Area

MSHCP Covered Species within Cores and Linkages[1]			Davis Unit				Potrero Unit			
Taxon	*Scientific Name*	*Species*	*Core H*	*Core 4*	*Linkage 20*	*Core K*	*Core 5*	*Linkage 11*	*Linkage C*	*Core 3*
Plant	*Trichocoronis wrightii* var. *wrightii*	Wright's trichocoronis	√		√					

[1] Cores and Linkages referred to in the table are listed as follows in the MSHCP:
Existing Core K (San Jacinto Mountains)
Existing Core H (Lake Perris/Mystic Lake)
Proposed Core 3 (Badlands/Potrero)
Proposed Core 5 (Upper San Jacinto River)
Proposed Extension of Existing Core 4 (Middle San Jacinto River)
Existing Constrained Linkage C (Middle San Jacinto River)
Proposed Linkage 11 (Soboba/Gilman Springs)
Proposed Linkage 20 (from Existing Core H (Lake Perris/Mystic Lake) to Proposed Noncontiguous Habitat Block 5 (Lakeview Mountains))

Within Subunit 4 – SJWA/Mystic Lake of the Reche Canyon/Badlands Plan Area, 26 special-status planning species (i.e., 17 animals and 9 plants) are of conservation focus and they include American bittern (*Botaurus lentiginosus*), black-crowned night heron (*Nycticorax nycticorax*), western burrowing owl (*Athene cunicularia hypugaea*), California horned lark (*Eremophila alpestris actia*), double-crested cormorant (*Phalacrocorax auritus*), loggerhead shrike (*Lanius ludovicianus*), mountain plover, northern harrier (*Circus cyaneus*), osprey (*Pandion haliaetus*), peregrine falcon (*Falco peregrinus*), prairie falcon (*Falco mexicanus)*, tricolored blackbird, white-faced ibis, white-tailed kite (*Elanus leucurus*), bobcat, Los Angeles pocket mouse, Stephens' kangaroo rat, California Orcutt grass, Coulter's goldfields, Davidson's saltscale, San Jacinto, Valley crownscale, smooth tarplant, spreading navarretia, thread-leaved brodiaea, vernal barley, and Wright's trichocoronis.

The MSHCP (RCTLMA 2007) lists specific Biological Issues and Considerations for Subunit 4 SJWA/Mystic Lake, and they are to:

- Conserve alkali playa and other habitat to augment existing conservation in the San Jacinto Wildlife Area and Mystic Lake
- Conserve existing vernal pool complexes associated with the SJR floodplain, in the Mystic Lake/SJWA; conservation should focus on vernal pool surface area and supporting watersheds
- Provide for a connection of intact habitat between SJWA/Mystic Lake to adjacent Badlands area to the north
- Conserve Willow-Domino-Travers soils supporting sensitive plants such as San Jacinto Valley crownscale, Davidson's saltscale, Coulter's goldfields, spreading navarretia, vernal barley, and Wright's trichocoronis
- Provide for and maintain a continuous linkage along the SJR from the southern boundary of the Reche Canyon/Badlands Area Plan to the southeastern Area Plan boundary
- Maintain linkage habitat for bobcat
- Maintain linkage habitat for Stephens' kangaroo rat to SJWA
- Determine presence or potential core habitat for the Los Angeles pocket mouse in connection between Badlands and SJWA.

The Reserve Features (i.e., Cores and Linkages) identified in the Davis Unit that are associated with the Reche Canyon/Badlands Area Plan include:

- Existing Core H (see description above)

- Proposed Core 3.

Proposed Core 3 (Badlands/Potrero) is located in the northeast region of the Plan Area. This Core consists mainly of private lands but also contains a few PQP parcels including De Anza Cycle Park. The Core is connected to Proposed Linkage 12 (north San Timoteo Creek), Proposed Linkage 4 (Reche Canyon), Proposed Constrained Linkage 22 (east San Timoteo Creek), Existing Core H (Lake Perris/Mystic Lake), Existing Core K (San Jacinto Mountains), Proposed Linkage 11 (Soboba/Gilman Springs), and Proposed Constrained Linkage 21. The Core also functions as a Linkage, connecting the San Bernardino National Forest to the southwest with San Bernardino County and other conserved areas to the north of the Core. With a total acreage of approximately 24,920 acres, Proposed Core 3 is one of the largest MSHCP Core Areas. In addition, the Core is contiguous with Existing Core H (Lake Perris/Mystic Lake) and Existing Core K (San Jacinto Mountains), thus greatly enlarging the functional area of the Core. The Core has both a large proportion of its area unaffected by edge (approximately 23,420 acres of the total 24,940 acres) and is only partially constrained by existing agricultural use. Within the Core, important live-in and movement habitat is provided for Bell's sparrow (*Artemisiospiza belli*), loggerhead shrike, cactus wren (*Campylorhynchus brunneicapillus*), Stephens' kangaroo rat, southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), and mountain lion (*Puma concolor*), which have key populations in the Badlands (RCTLMA 2007, Section 3.2.3).

Potrero Unit Relationship to MSHCP

The Potrero Unit is entirely overlaid by Criteria Cells; no PQP Lands are within the Potrero Unit (see Figure 3-3b). The Potrero Unit is located in the southwest portions of the Pass Plan Area; specifically within Subunit 1.

Within Subunit 1 – Potrero/Badlands of the Pass Plan Area, there are 11 Planning Species, which include: arroyo toad, Bell's sparrow, cactus wren, least Bell's vireo (*Vireo bellii pusillus*), loggerhead shrike, Southern California rufous-crowned sparrow, bobcat, Los Angeles pocket mouse, mountain lion, San Bernardino kangaroo rat (*Dipodomys merriami parvus*), and Stephens' kangaroo rat.

The Biological Issues and Considerations for Subunit 1 – Potrero/Badlands are to:

- Provide for a new core reserve focused on the Potrero Creek area
- Maintain large blocks of undisturbed habitat for core reserve purposes
- Maintain large blocks of habitat for large mammal movement between northern and southern sections of the San Bernardino National Forest

- Conserve Potrero Creek and associated alluvial fan sage scrub for maintenance of key species such as Stephens' kangaroo rat, Los Angeles pocket mouse, and arroyo toad
- Maintain core habitat for bobcat
- Maintain core and linkage habitat for mountain lion
- Maintain core habitat in Potrero Valley for Stephens' kangaroo rat
- Determine presence of possible scattered populations of San Bernardino kangaroo rat in tributaries to SJR
- Determine presence of potential core habitat for Los Angeles pocket mouse in tributaries to San Timoteo Creek.

The Reserve features (i.e., Cores and Linkages) identified in the Potrero Unit that are associated with the Pass Area Plan include:

- Proposed Core 3 (see description above).

See Figure 3-2 for relationship of the boundaries of the Potrero Unit with this Reserve Feature.

Management Considerations for MSHCP

Both the Davis and Potrero Units will need to be managed in ways that augment the Planning Species identified in the MSHCP for those areas. As long as the SJWA is being managed in ways that aid the Planning Species listed above, and lands continue to be protected and habitat provided, the SJWA and its management activities will aid in the long-term viability of the MSHCP.

3.3.2 California's Wildlife Action Plan

California's Wildlife Action Plan (Plan) was prepared by the Wildlife Health Center at University of California, Davis, for CDFG in 2005 and was adopted in November 2006 (CDFG 2007). The plan specifically focuses on the stressors affecting wildlife and the additional actions needed to maintain wildlife diversity and abundance in the future. Three primary questions the plan intends to answer are:

- What are the species and habitats of greatest conservation need?
- What are the major stressors affecting California's native wildlife and habitats?
- What are the actions needed to restore California's wildlife, thereby reducing the likelihood that more species will approach the condition of threatened or endangered?

The Plan divides the state into ecoregions, identifies the various problems within each ecoregion, and addresses the problem by suggesting conservation actions. The majority of these conservation actions are applicable statewide and others are specific to the individual ecoregions.

Applicable Conservation Measures

The SJWA is located in the South Coast ecoregion of the Plan. The recommended conservation measures to restore and conserve wildlife in the South Coast ecoregion, relevant to the SJWA include the following:

- Wildlife agencies and local governments should work to improve the development and implementation of regional Natural Community Conservation Plans (NCCPs), which is the primary process to conserve habitat and species in the region's rapidly urbanizing areas.
- Wildlife agencies should establish regional goals for species and habitat protection and work with city, county, and state agency land-use planning processes to accomplish those goals.
- To address regional habitat fragmentation, federal, state, and local agencies, along with nongovernmental conservation organizations, should support the protection of the priority wildlands linkages.
- Federal, state, and local agencies, along with nongovernmental conservation organizations, should protect and restore the best remaining examples of wetlands that provide important wildlife habitat.
- Public agencies and nongovernmental conservation organization should invest in efforts to protect and restore the best remaining regional examples of ecology intact river systems.
- Federal, state, and local agencies should provide greater resources and coordinate efforts to eradicate or control existing occurrences of invasive species to prevent new introductions.
- Federal, state, and local public agencies should sufficiently protect sensitive species and important wildlife habitats on their lands and should be adequately funded and staffed to do so.
- Federal and state agencies and nongovernmental partners should collaborate to institute appropriate fire management policies and practices to restore the ecological integrity of the region's ecosystems while minimizing loss of property and life.
- State and federal wildlife agencies, the U.S. Forest Service, state and county parks, BLM, and nongovernmental partners should collaborate to develop a comprehensive Southern California Outdoor Recreation Program to provide recreational opportunities and access that do not conflict with wildlife habitat needs (CDFG 2007).

The Plan also discusses recommendations for statewide actions for wildlife conservation. Those relevant to management of the SJWA are:

- State and local agencies should allocate sufficient water for ecosystem uses and wildlife needs when planning for and meeting regional water supply needs.
- Federal, state, and local agencies and nongovernmental conservation organizations, working with private landowners and public land managers, should expand efforts to restore and conserve riparian communities.
- Federal, state, tribal, and local agencies, and nongovernmental organizations working with private landowners, should expand efforts to implement agricultural and rangeland management practices that are compatible with wildlife and habitat conservation.
- In their conservation planning and ecosystem restoration work, state and federal wildlife agencies and land managers should consider the most current projections of the effects of global warming.
- The state should strengthen its capacity to implement conservation actions and to assist local agencies and landowners with planning and implementation of wildlife and habitat restoration and conservation efforts.
- The state should provide scientific and planning assistance and financial incentives to local governments to develop and implement regional multispecies conservation plans for all of the rapidly developing areas.
- State and federal government should give greater priority to funding and staffing of wildlife and natural resource law enforcement efforts (CDFG 2007).

3.3.3 Stephens' Kangaroo Rat Conservation and Management Plans

The SJWA includes lands set aside for conservation of the federally endangered Stephens' kangaroo rat in accordance with 1996 Habitat Conservation Plan that allowed take of the species within certain areas of western Riverside County. As such, management of Stephens' kangaroo rat on the SJWA is required in accordance with this HCP as discussed below.

1996 Habitat Conservation Plan for the Stephens' Kangaroo Rat

The Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County (SKRHCP) was prepared by the Riverside County Habitat Conservation Agency (RCHCA) for the USFWS and in agreement with CDFG, and was approved in 1996. The SKRHCP covers approximately 533,954 acres within RCHCA jurisdiction and was developed in accordance with the California and federal ESAs to ensure the species' persistence in the plan area. The SKRHCP describes the proposed conservation, mitigation, and monitoring measures to be implemented for

the preservation of the federally endangered Stephens' kangaroo rat. The SKRHCP proposes to establish a regional system of seven core reserves for the specific conservation of Stephens' kangaroo rat and the ecosystem upon which it depends. The SKRHCP lists general conservation principals for core reserve management and they include:

- Large blocks of habitat, containing large populations of the target species, are superior to small blocks of habitat containing small populations
- Blocks of habitat located in close proximity to each other are superior to blocks far apart
- Habitat occurring in contiguous blocks is preferable to habitat which is fragmented
- Habitat patches that minimize edge-to-area ratios are superior to those that do not
- Interconnected blocks of habitat are superior to isolated blocks, and corridors or linkages function better when the habitat within them includes protected, preferred habitat for the target species
- Blocks of habitat without roads or other means of human access are superior to those traversed by roads or otherwise accessible (RCHCA 1996).

Primary goals of core reserve management stated in the SKRHCP are to:

- Maintain viable populations of SKR within the reserve system and each of the core reserves sufficient to ensure the long-term persistence of the species in the HCP area
- Maintain existing habitat values for SKR
- Enhance habitat values for SKR where not in conflict with other important biological resources
- Promote the maintenance and enhancement of the ecosystem upon which the SKR depends
- Maintain and enhance values for other species where not in conflict with other management goals
- Establish a core wildlife reserve system that is managed to enhance the conservation of biological diversity in western Riverside County
- Develop and continually refine management practices which identify and adapt to changing conditions both within the reserves and on lands adjacent to them
- Assist in determining future priorities to add lands that have definable conservation or management value to the reserve system
- Minimize the need for active management by allowing natural process to occur where not in conflict with other management goals

- Manage the reserve system adaptively by integrating existing knowledge with the results of ongoing experimental management and by refining management techniques in response to changing conditions
- Consistent with the primary goal of ensuring SKR persistence, establish programs which permit human access for activities deemed compatible with SKR habitat conservation by USFWS and CDFW (RCHCA 1996).

Applicable Core Reserves

The SJWA is located within the SKRHCP plan area, specifically within the San Jacinto-Lake Perris Reserve (Davis Unit) and Potrero Area of Critical Environmental Concern (ACEC) Reserve (Potrero Unit). Key issues to be addressed regarding the conservation and management of Stephens' kangaroo rat within these reserves, in addition to those mentioned above, include:

- Management of SKR within a multi-species context (e.g., sage scrub and wetlands habitats)
- Development of procedures to ensure the ability of public agencies to conduct recreational, operational, maintenance, and water quality activities
- Planning to anticipate and minimize potential habitat impacts resulting from future development in areas surrounding the reserve (RCHCA 1996).

The San Jacinto–Lake Perris Core Reserve encompasses approximately 10,932 acres located south of central Moreno Valley and north of the Ramona Expressway. This Core Reserve for Stephens' kangaroo rat is incorporated in the SJWA and labeled the Davis Unit according to this SJWA LMP. Within the Davis Unit, the SKRHCP identifies 14 species of concern (i.e., 5 reptiles, 6 birds, and 3 mammals), including Stephens' kangaroo rat. These species are listed here to ensure that species previously identified by the SKRHCP continue to be addressed in future management documents such as this LMP. The species of concern that are known to occur in the Davis Unit are coastal western whiptail (*Aspidoscelis tigris munda*), northern red diamond rattlesnake (*Crotalus ruber ruber*), Belding's orange-throated whiptail (*Aspidoscelis (Cnemidophorus) hyperythrus beldingi*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), southern rubber boa (*Charina bottae*), American peregrine falcon, bald eagle, Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), white-tailed kite [black-shouldered kite] (*Elanus caeruleus*), coastal California gnatcatcher, golden eagle, ringtail (*Bassariscus astutus),* San Diego black-tailed jackrabbit, and Stephens' kangaroo rat.

The Potrero ACEC Core Reserve is located south of Highway 60 and west of Gilman Springs Road. This core reserve is incorporated in the SJWA and labeled the Potrero Unit according to this SJWA LMP. The Potrero Unit was listed in the SKRHCP as supporting five species of concern (i.e., two reptiles, two birds, and one mammal), including Stephens' kangaroo rat. The

species of concern that are known to occur in the Potrero Unit are Coastal western whiptail, San Diego horned lizard, Bell's sparrow, Loggerhead shrike, and Stephens' kangaroo rat.

2007 RCHCA Stephens' Kangaroo Rat Habitat Management Plan

The 2007 RCHCA Stephens' Kangaroo Rat Habitat Management Plan (HMP) (Dudek 2007) was to provide the RCHCA with a plan for effective management of the SKR populations and habitat in the RCHCA-owned parcels that can be implemented and monitored in a fashion consistent with the framework of the SKRHCP. A summary of the plan is included in this LMP to represent current practices for management for Stephens' kangaroo rat, compliant with the SKRHCP and MSHCP and to address coordination with other regional habitat and species management efforts.

The following tasks were completed in preparation of the SKR HMP:

- Compiling the relevant information for developing the HMP, including baseline data for the Reserve areas that describe the biological context and setting of the HMP and scientific and unpublished literature regarding Stephens' kangaroo rat ecology and habitat management methods
- Consulting with other Reserve managers and agency personnel familiar with Stephens' kangaroo rat management
- Identifying critical uncertainties for managing Stephens' kangaroo rat habitat and populations;
- Developing a simple conceptual management model to facilitate plan implementation
- Developing the goals and objectives of the HMP
- Identifying appropriate strategies for implementing management and associated monitoring
- Integrating wildfire management into the HMP
- Developing data quality assurance, data management, analysis, and reporting strategies
- Estimating costs of the HMP
- Addressing public access and recreation, outreach, and education.

The HMP included a summary evaluation of management strategies. Considering this summary evaluation in the context of the SJWA LMP Study Area, the most appropriate techniques for Stephens' kangaroo rat habitat maintenance within the SJWA LMP Study Area are grazing, mowing, and burning.

3.4 Funding Sources and Requirements

3.4.1 Acquisition Funding

As summarized in Section 1.1, lands comprising the SJWA have been acquired through funding from a variety of private, local, state, and federal sources. These sources all generally include a mandate that lands be used for habitat and wildlife preservation, including habitat-related land uses such as passive recreation and hunting. Where acquisition funds are tied directly towards species conservation or mitigation, it is expected that the corresponding land or acreage be managed primarily for this species. Other compatible activities can also occur. This is the case for a number of parcel purchased as Stephens' kangaroo rat and special-status plant species mitigation, as identified in Table 1-1.

3.4.2 Funding of Operations and Maintenance

Operational funds are currently provided from federal and state sources. Federal sources account for approximately 75% of staff funding and are derived from Pittman-Robertson Wildlife Restoration Act, which obtains funds from taxes on firearm and ammunition sales. These funds are to be used for management of fish and game resources. The remainder of operational funds are provided by the state General Fund; the Fish and Game Preservation Fund, which derives funds from licenses, permits, service fees, and privilege taxes; and Special Deposit Funds.

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4.0 HABITAT AND SPECIES DESCRIPTION

4.1 Methods

The California Department of Fish and Game (CDFG)[1] contracted with the California Native Plant Society (CNPS) and Aerial Information Systems (AIS) to prepare an alliance-level vegetation classification and map for western Riverside County, which encompassed approximately 1.6 million acres. The final report, *Vegetation Alliances of Western Riverside County, California* (CNPS 2006), was initially published in 2005 and revised in April 2006. CNPS assessed vegetation resources quantitatively through field surveys, data analysis using specialized clustering software, and final vegetation classification (CNPS 2006). Each vegetation type sampled corresponds to the National Vegetation Classification System at either the alliance level or at the more detailed association level, when possible. A final key was produced to differentiate from 101 alliances, 169 associations, and 3 unique stands of vegetation (CNPS 2006).

In a separate but parallel process involving AIS, vegetation mapping was accomplished through interpretation of aerial photographs in both color infrared and in natural color imagery flown in the winter and summer. AIS created the detailed map using three primary processes: (1) hand-delineation of polygons on the base color infrared imagery, (2) digitization of those hand-delineated polygons, and (3) attribution of the vegetation types and overstory cover values. The map was created in a geographic information system (GIS) digital format, which was subsequently clipped to the SJWA boundary.

The vegetation mapping prepared by CNPS and AIS was intended to update the vegetation mapping that was prepared by Pacific Southwest Biological Services and KTU+A, Planning and Landscape Architecture, in 1995 for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The 1995 vegetation mapping is considered too general to identify unique vegetation, define special-status species habitats, and map vegetation at a fine scale. The updated CNPS/AIS vegetation map was used to prepare the draft Land Management Plan (LMP). Further information about the methods used to create this vegetation map and classification system can be found in the *Vegetation Alliances of Western Riverside County, California* (CNPS 2006).

[1] The California Department of Fish and Game (CDFG) was officially renamed the California Department of Fish and Wildlife (CDFW) as of January 1, 2013. Where references are made in this document to the agency for background information, documents, permits, consultations, etc. prior to January 1, 2013, the title "CDFG" is used and for references after January 1, 2013, "CDFW" is used.

In 2015 AIS published the *Western Riverside County Vegetation Mapping Update, Final Vegetation Mapping Report* (AIS 2015), which provided an update of the mapping provided in the *Vegetation Alliances of Western Riverside County, California* (CNPS 2006). Ground-based field data both within and nearby the western Riverside County mapping area has been acquired since the completion of the vegetation map in the CNPS (2006) vegetation report. An update to the original map was needed to address changes in vegetation due to fire, development and vegetation succession. The update adheres to the vegetation types as represented in *A Manual of California Vegetation* (Sawyer et al. 2009) and the standards set by the National Vegetation Classification System published in 2008 by the Federal Geographic Data Committee (FGDC-STD-005-2008, Vegetation Subcommittee, Federal Geographic Data Committee 2008; AIS 2015).

To analyze impacts to biological resources under CEQA, the vegetation mapping from the *Western Riverside County Vegetation Mapping Update, Final Vegetation Mapping Report* (AIS 2015) was used because it is the most current data available on vegetation communities on the SJWA.

4.2 Vegetation Communities Descriptions

The SJWA contains 13 high-level vegetation mapping categories. These categories are general and correspond to the MSHCP collapsed vegetation groups (RCTLMA 2007). Table 4-1 provides the acreage of each generalized vegetation group within the Davis and Potrero Units as assessed for the draft LMP. Table 4-2 lists the detailed vegetation community and land cover mapping provided in the AIS 2015 vegetation map. Included in Table 4-2 are current global and state rankings provided by CDFW (CDFG 2010). The rankings provide information regarding the "rarity and imperilment" of vegetation types, taking into account trends and threats that may be leading to a decline in a particular vegetation type. At this time, not all associations have been ranked. In these cases, the alliance- or general community-level ranking is applied to the association. In general, CDFW advises that vegetation communities with a state rank of 1-3 be evaluated further to determine if these are special-status communities. For purposes of this program Environmental Impact Report (PEIR), communities with state ranks 1-3 are considered special-status or sensitive natural communities.[3] While the vegetation community may not be considered special-status or sensitive, the habitat may be considered sensitive if special-status species use the community as habitat. An analysis of habitat sensitivity is described in sections discussing special-status species. Vegetation communities considered sensitive biological resources by CDFW

[3] It should be noted that the discussion here pertains strictly to vegetation communities as a resource in and of themselves. For example, a vegetation community with a state rank 4 or 5 may also be considered special-status as habitat for special-status species; however, habitat for special-status species is described in Section 4.2.7.2 for plants and Section 4.3.2 for wildlife.

(CDFG 2010) have an asterisk (*) at the end of the community name in Table 4-2. Figure 4-1A-4-1I shows the generalized vegetation communities.

Table 4-1
Generalized Vegetation Communities
Observed within the SJWA LMP Study Area

Generalized Vegetation Community	Acres on Davis Unit (On Site Only)	Acres on Potrero Unit (On Site Only)	Total Acres On SJWA
Agricultural Land	1377	—	1,377
Developed/Disturbed Land	149	13	162
Water	2,065	25	2,090
Rock Outcrop Mapping Unit	34	3	37
Subtotal	*3,625*	*41*	*3,666*
Coastal Sage Scrub	1,144	4,775	5919
Riversidian Alluvial Fan Sage Scrub	—	45	45
Desert scrub	5	—	5
Chaparral	6	1,769	1,774
Shrub-Overstory Subtotal	*1,155*	*6,588*	*7,743*
Grassland	4,477	2,212	6,689
Meadows and Marshes	24	—	24
Playas and Vernal Pools	1,580	—	1,580
Herbaceous Subtotal	*6,081*	*2,212*	*8,293*
Riparian Scrub, Woodland, Forest	135	277	411
Woodland and Forests	—	12	12
Tree-Overstory Subtotal	*135*	*288*	*423*
Total	**10,996**	**9,130**	**20,126**

Note:
* Totals do not precisely sum due to rounding.

Table 4-2
Specific Vegetation Communities
Observed within the San Jacinto Wildlife Area – Land Management Plan Study Area

MSHCP Vegetation/Land Cover Group	Common Name	Scientific Name	Global and State Rank	Davis (acres)	Potrero (acres)	Total (acres)
Agricultural Land	Agriculture MU	Agriculture	—	1,377	—	1,377
		Agriculture Total	—	*1,377*	—	*1,377*
Developed/Disturbed Land	Exotic Trees MU	Exotic Trees	—	10	6	16
	Urban or development MU	Urban or development	—	109	7	115
	Vacant (disturbed bare ground, <2% vegetative cover) MU	Vacant (disturbed bare ground, <2% vegetative cover)	—	31	—	31
		Developed/Disturbed Land Total	—	*149*	*13*	*163*
No equivalent	Rock Outcrop MU	Rock Outcrop	—	34	3	37
Coastal Sage Scrub	Black Sage Alliance	*Salvia mellifera*	G4 S4	—	6	6
	Brittlebush–California Buckwheat MU	*Encelia farinosa–Eriogonum fasciculatum*	G5 S4	821	896	1,717
	California Buckwheat Alliance	*Eriogonum fasciculatum*	G5 S5	98	1,126	1,224
	California Buckwheat–Brittlebush Alliance	*Eriogonum fasciculatum–Encelia farinosa*	G5 S5	6	—	6
	California Buckwheat–Sugar Bush Association	*Eriogonum fasciculatum–Rhus ovata*	G5 S5	—	487	487
	California Buckwheat–White Sage Alliance	Eriogonum fasciculatum–Salvia apiana	G4 S4	—	6	6
	California Buckwheat–White Sage–(California Sagebrush) MU	*Eriogonum fasciculatum–Salvia apiana–(Artemisia californica)*	G4 S4	—	31	31
	California Sagebrush Alliance	*Artemisia californica*	G5 S5	10	—	10
	California Sagebrush–(California Buckwheat)–Annual Grass–Herb MU	*Artemisia californica–(Eriogonum fasciculatum)*–Annual Grass–Herb	G4 S4	192	59	251
	California Sagebrush–California Buckwheat–(Black Sage–Yellow Bush Penstemon) MU	*Artemisia californica–Eriogonum fasciculatum–(Salvia mellifera–Keckiella antirrhinoides)*	G4 S4	—	12	12
	California Sagebrush/Menzies' Fiddleneck Association	*Artemisia californica / Amsinckia menziesii*	G4 S4	16	—	16
	Chamise–Coastal Sage Scrub Disturbance MU	*Adenostoma fasciculatum*–Coastal Sage Scrub	G5 S5	—	1,969	1,969
	Deerweed Alliance	*Lotus scoparius*	G5 S5	—	64	64
	Palmer's Goldenbush Alliance*	*Ericameria palmeri*	G3 S3	—	22	22
	Yellow Bush Penstemon Alliance*	*Keckiella antirrhinoides*	G3 S3	—	12	12
	Yerba Santa Alliance*	*Eriodictyon crassifolium*	G3 S3	—	84	84
		Coastal Sage Scrub Total	—	*1,144*	*4,775*	*5,919*
Riversidian Alluvial Fan Scrub	Scalebroom–(California Buckwheat–Mexican Elderberry–Mulefat) MU*	*Lepidospartum squamatum–(Eriogonum fasciculatum–Sambucus mexicana–Baccharis salicifolia)*	G3 S3	—	11	11
	Scalebroom–California Buckwheat Association*	*Lepidospartum squamatum–Eriogonum fasciculatum*	G3 S3	—	34	34
		Riversidian Alluvial Fan Scrub Total	—	—	45	45
Desert Scrub	Mixed Saltbush Alliance	*Atriplex* spp.	G5S4	5	—	5
		Desert Scrub Total	—	5	—	5
Chaparral	Chamise–Bigberry Manzanita Alliance	*Adenostoma fasciculatum–Arctostaphylos glauca*	G4 S4	—	19	19
	Chamise–Cupleaf Ceanothus Alliance*	*Adenostoma fasciculatum–Ceanothus greggii*	G4 S3	—	222	222
	Chamise–Hoaryleaf Ceanothus Alliance	*Adenostoma fasciculatum–Ceanothus crassifolius*	G5 S5	—	362	362
	Chamise Alliance	*Adenostoma fasciculatum*	G5 S5	—	16	16
	Chamise Pure Association	*Adenostoma fasciculatum* Pure	G5 S5	—	52	52
	Chamise–Hoaryleaf Ceanothus–(Sugarbush–Scrub oak–Black Sage) MU	*Adenostoma fasciculatum–Ceanothus crassifolius (Rhus ovata–Quercus berberidifolia–Salvia mellifera*)	G4 S4	—	4	4
	Chamise–Hoaryleaf Ceanothus–Sugar Bush Association	*Adenostoma fasciculatum–Ceanothus crassifolius–Rhus ovata*	G4 S4	—	125	125
	Hollyleaf Cherry Alliance*	*Prunus ilicifolia*	G3 S3	6	—	6
	Scrub Oak Alliance	*Quercus berberidifolia*	G4 S4	—	166	166
	Scrub Oak–(Birchleaf Mtn. Mahogany–Ash–Toyon) MU	*Quercus berberidifolia–(Cercocarpus betuloides–Fraxinus dipetala–Heteromeles arbutifolia)*	G4 S4	—	41	41

	Scrub Oak–Chamise Alliance	*Quercus berberidifolia–Adenostoma fasciculatum*	G4 S4	—	655	655
	Scrub Oak–Southern Mixed Chaparral Association	*Quercus berberidifolia*–Southern Mixed Chaparral	G4 S4	—	90	90
	Toyon–Scrub Oak–Birchleaf Mountain-mahogany–California Ash Association*	*Heteromeles arbutifolia–Quercus berberidifolia–Cercocarpus betuloides–Fraxinus dipetala*	G5 S3	—	18	18
		Chaparral Total	—	*6*	*1,769*	*1,774*
	California Annual Grassland Alliance	California Annual Grassland	—	4,477	2,212	6,689
		Grasslands Total	—	*4,477*	*2,212*	*6,689*
Woodland and Forests	Coast Live Oak Alliance	*Quercus agrifolia*	G4 S4	—	1	1
	Coast Live Oak / Annual Grass–Herb Association	*Quercus agrifolia*/Annual Grass–Herb	G5 S4	—	9	9
	Coast Live Oak / Chaparral Association	*Quercus agrifolia*/Chaparral	G5 S4	—	1	1
		Woodland and Forests Total	—	—	*12*	*12*
Playas and Vernal Pools	Alkaline Ephemeral Wetland MU*	Alkaline Ephemeral Wetland MU	—	1,580	—	1,580
		Playas and Vernal Pools Total	1,580	—	1,580	1,580
Meadows and Marshes	Bulrush–Cattail Alliance*	*Scirpus* spp.–*Typha* spp.	G1 S1, G2 S2, G3 S3 (depending on association) (CNPS 2006)	9	—	9
	Bulrush–Cattail MU*	*Scirpus* spp.–*Typha* spp.	G1 S1, G2 S2, G3 S3 (depending on association) (CNPS 2006)	15	—	15
		Meadows and Marshes Total	—	*24*	—	24
Water	Duck Ponds MU	Duck Ponds	—	1,363	—	1,363
	Riverine or Lacustrine flats, channels, streambeds, MU	Riverine or Lacustrine flats, channels, streambeds, MU	—	—	25	25
	Water MU	Water	—	702	—	702
		Water Total	—	2,065	25	2,090
Riparian Scrub, Woodland, Forest	California Sycamore Alliance*	*Platanus racemosa*	G3 S3	—	4	4
	Arroyo Willow Alliance	*Salix lasiolepis*	G5 S4	—	3	3
	Black Willow Alliance*	*Salix gooddingii*	G4 S3	4	3	7
	Black Willow/Mulefat Association*	*Salix gooddingii/Baccharis salicifolia*	G4 S3	41	—	41
	Blue Elderberry–(Mulefat) MU*	*Sambucus mexicana–(Baccharis salicifolia)*	G5 S3	—	71	71
	Emory's Baccharis MU*	*Baccharis emoryi*	G3 S2	38	—	38
	Fremont Cottonwood Dry MU*	*Populus fremontii*	G4 S3	—	20	20
	Fremont Cottonwood–Black Willow/Mulefat Association*	*Platanus racemosa–Salix gooddingii/Baccharis salicifolia*	G3 S3	1	13	14
	Fremont Cottonwood/Mulefat Association*	*Populus fremontii/Baccharis salicifolia*	G4 S3	—	45	45
	Fremont Cottonwood–Red Willow Association*	*Populus fremontii–Salix lasiandra*	G4 S3	—	25	25
	Fremont Cottonwood–Willow MU*	*Populus fremontii–Salix* spp.	G4 S3	—	48	48
	Mulefat Alliance	*Baccharis salicifolia*	G4 S4	9	41	50
	Willow MU*	*Salix laevigata*	G3 S3	41	5	46
		Riparian Scrub, Woodland, Forest Total	—	135	277	411
		Total	—	**10,996**	**9,130**	**20,126**

Note: Asterisk (*) denotes vegetation communities considered to be sensitive natural communities or special status by CDFW (CDFG 2010).
Zeros are acreages less than 0.5 acre.

4.2.1 Non-natural or Unvegetated

Agricultural Land

Agricultural lands on the SJWA include areas where crops were grown with an agricultural lease in the western portion of Subunit D2. D2 is the only unit that has been used for an agicultural lease in the past. Mapped agricultural lands also include former agricultural areas that are no longer in agricultural production but show legacy effects of soil manipulation and areas subject to food crop production by CDFW for wildlife management (Subunits D3, D4, D7, D10, and D11).

Status

Agricultural lands consist of non-native crops grown for commercial and non-commercial use and are not considered a sensitive biological resource by CDFW (CDFG 2010).

Developed/Disturbed Lands

Developed/disturbed lands within the SJWA include the following specific MUs: exotic trees MU, urban or development, and vacant MU. These MUs are principally composed of roads, houses, ornamental plantings, and vacant land. The San Jacinto River flood control channel likely contributes the most significant area to the developed/disturbed lands in the SJWA. Additional areas mapped within the developed/disturbed lands designation include former development pads, existing buildings, and annual grasslands with extremely low vegetative cover.

Status

Developed/disturbed land typically does not support any vegetation or is a landscaped area and is not considered a sensitive biological resource by CDFW (CDFG 2010).

Water

Areas mapped as water on the SJWA include the following more specific MUs: (1) Wetland ponds and marshes for waterfowl and other wetland species MU; (2) riverine or lacustrine flats, channels, streambeds MU; and (3) water MU. On the Davis Unit, this mapping type includes a large portion of the waterfowl ponds in Subunit D4, the northern portion of Subunits D7 and D9, and the northern portion of D10, as well as the former waterfowl ponds in D13. Mystic Lake in Management Subunit D3 is mapped as lacustrine water, although it is ephemeral. A few small guzzlers and ponds in Subunits D7, D11, and D12 are also included as water. On the Potrero Unit, water is mapped only as

the riverine or lacustrine flats, channels, streambeds MU and is primarily mapped in Subunit P5, but is also mapped in Subunits P7 and P10.

4.2.2 Shrub-Overstory

Coastal Sage Scrub

Coastal sage scrub is the most common vegetation community in the SJWA, covering approximately 10% of the total acreage within the Davis Unit and 52% of the total acreage within the Potrero Unit. It occurs in 6 of the 15 management Subunits of the Davis Unit (D1, D6, D8, D12, D14, and D15) and in every management subunit of the Potrero Unit.

Within the coastal sage scrub general vegetation group, the following specific MUs, alliances, and associations occur in the SJWA: black sage (*Salvia mellifera*); brittlebush–California buckwheat (*Encelia farinosa–Eriogonum fasciculatum*) MU; California buckwheat (*Eriogonum fasciculatum*) alliance; California buckwheat–brittlebush (*Eriogonum fasciculatum–Encelia farinosa*) alliance; California buckwheat–sugar bush (*Eriogonum fasciculatum–Rhus ovata*) association; California buckwheat–white sage (*Eriogonum fasciculatum–Salvia apiana*) alliance; California buckwheat–white sage–(California sagebrush) (*Eriogonum fasciculatum–Salvia apiana–*(*Artemisia californica*)) MU; California sagebrush (*Artemisia californica*) alliance; California sagebrush–(California Buckwheat)–annual grass–herb (*Artemisia californica–*(*Eriogonum fasciculatum*)*–annual grass–herb*) MU; California sagebrush–California buckwheat–(black sage–yellow bush penstemon) (*Artemisia californica–Eriogonum fasciculatum–*(*Salvia mellifera–Keckiella antirrhinoides*)) MU; California sagebrush/Menzies' fiddleneck (*Artemisia californica/Amsinckia menziesii*) association; chamise–coastal sage scrub (*Adenostoma fasciculatum–coastal sage scrub*) disturbance MU; deerweed (*Lotus scoparius*) alliance; Palmer's goldenbush (*Ericameria palmeri*) alliance; yellow bush penstemon (*Keckiella antirrhinoides*) alliance; and yerba santa (*Eriodictyon crassifolium*) alliance.

Status

Yellow bush penstemon, and yerba santa alliances are considered sensitive vegetation communities by CDFW (CDFG 2010). The yellow bush penstemon alliance occurs on Subunits P10 and P11 of the Potrero Unit. The yerba santa alliance occurs on Subunits P2, P9, P10, and P11 of the Potrero Unit.

Riversidean Alluvial Fan Scrub

The Riversidean alluvial fan sage scrub general group is mapped mainly along drainages in the eastern portion of the Potrero Unit (management Subunits P5, P6, P9, P10, and P11). It does not occur on the Davis Unit. Two specific MUs and associations occur within this general group on the SJWA:

scalebroom–(California buckwheat–Mexican elderberry–mulefat) (*Lepidospartum squamatum*–(*Eriogonum fasciculatum–Sambucus mexicana–Baccharis salicifolia*)) MU and scalebroom–California buckwheat (*Lepidospartum squamatum–Eriogonum fasciculatum*) association.

Status

Both of these communities are considered sensitive vegetation communities by CDFW (CDFG 2010) due to their state rank of S3.

Chaparral

Chaparral often occurs and is mapped on slopes opposite of coastal scrub. Given the wide distribution of coastal scrub on the Potrero Unit, it is not surprising that chaparral is also mapped throughout the Potrero Unit in all management Subunits. Chaparral is only found on 1 acre of the Davis Unit in Subunit D14 and is mapped as the hollyleaf cherry alliance.

Within the chaparral general group, the following specific MUs, alliances, and associations occur in the SJWA: chamise–bigberry manzanita (*Adenostoma fasciculatum–Arctostaphylos glauca*) alliance; chamise–cupleaf ceanothus (*Adenostoma fasciculatum–Ceanothus greggii*) alliance; chamise–hoaryleaf ceanothus (*Adenostoma fasciculatum–Ceanothus crassifolius*) alliance; chamise (*Adenostoma fasciculatum*) alliance; chamise pure (*Adenostoma fasciculatum* pure) association; chamise–hoaryleaf ceanothus–(sugarbush–scrub oak–black sage) (*Adenostoma fasciculatum–Ceanothus crassifolius* (*Rhus ovata–Quercus berberidifolia–Salvia mellifera*)) MU; chamise–hoaryleaf ceanothus–sugar bush (*Adenostoma fasciculatum–Ceanothus crassifolius–Rhus ovata*) association; hollyleaf cherry (*Prunus ilicifolia*) alliance; scrub oak–(birchleaf mountain mahogany–ash–toyon) (*Quercus berberidifolia*–(*Cercocarpus betuloides–Fraxinus dipetala–Heteromeles arbutifolia*)) MU; scrub oak–chamise (*Quercus berberidifolia–Adenostoma fasciculatum*) alliance; scrub oak–southern mixed chaparral (*Quercus berberidifolia*–southern mixed chaparral) association; scrub oak (*Quercus berberidifolia*) alliance; sugar bush (*Rhus ovata*) alliance; and toyon–scrub oak–birchleaf mountain mahogany–California ash (*Heteromeles arbutifolia–Quercus berberidifolia–Cercocarpus betuloides–Fraxinus dipetala*) association.

Status

The toyon–scrub oak–birchleaf mountain mahogany–California ash association and hollyleaf cherry alliance are considered sensitive biological resources by CDFW (CDFG 2010) with a state rank of S3.

The chamise alliance is not considered a sensitive vegetation community by CDFW (CDFG 2010); however, this alliance does contain associations that occur within the region of the SJWA but have not been documented on the SJWA. The scrub oak alliance is not considered a sensitive vegetation community by CDFW (CDFG 2010); however, this alliance does contain an association that is considered a sensitive community and that occurs within the region of the SJWA but has not been documented on the SJWA. The scrub oak–chamise alliance does not contain any sensitive vegetation associations (CDFG 2010). The sugar bush alliance is not considered a sensitive vegetation community by CDFW (CDFG 2010); however, this alliance contains an association that is considered a sensitive community and occurs within the region of the SJWA but has not been documented on SJWA. The following communities are not recognized vegetation communities by CDFW (CDFG 2010): chamise–bigberry manzanita alliance, chamise–cupleaf ceanothus alliance, and chamise–hoaryleaf ceanothus alliance. However, these are recognized and described in the *Vegetation Alliances of Western Riverside County* (CNPS 2006). The chamise–bigberry manzanita alliance does contain associations that are considered sensitive communities (CNPS 2006). Chamise–cupleaf ceanothus alliance is not considered a sensitive vegetation community by CDFW (CNPS 2006; CDFG 2010). Chamise–hoaryleaf ceanothus alliance is not considered a sensitive vegetation community by CDFW (CNPS 2006; CDFG 2010).

4.2.3 Herbaceous Vegetation

Grasslands

The grassland general group only includes the California annual grassland alliance. On both the Davis Unit and Potrero Unit, grasslands are mapped in every subunit.

Status

The California annual grassland alliance are not considered a sensitive biological resource by CDFW (CDFG 2010).

Playas and Vernal Pools

The playas and vernal pools general group includes the alkaline ephemeral wetland MU and occurs only on the Davis Unit. Playas and vernal pools support many special-status alkali plant species due to the highly specialized living conditions caused by seasonal inundation, heavy clay soils, and above average salinity. The vegetation community is mapped in some former agricultural sites (management Subunit D5) where very limited alkali species were detected during field surveys for the draft LMP. However, the majority of the sites were found to support alkali species in a mosaic with annual grasslands (CDFW 2016a). These sites are located in Subunits D3 and D5, east of Mystic Lake, in various interstitial areas in and between waterfowl

ponds in Subunit D4, and in the immediate vicinity of the San Jacinto River in Subunits D7, D11, and D13. Playas and vernal pools are also found in Subunit D1 and D12, and there are two acres or less in each of Subunits D2, D8, D9, and D15.

Status

The alkaline ephemeral wetland MU is considered a sensitive biological resource by CDFW (CNPS 2006).

Meadows and Marshes

The meadows and marshes general group includes the bulrush–cattail (*Scirpus* spp.–*Typha* spp.) alliance and bulrush–cattail MU and comprises one of the most limited vegetation communities on the SJWA. These communities are only mapped in Subunits D4, D7, and D8 on the Davis Unit. This community is not mapped on the Potrero Unit.

Status

Depending on the specific association within the bulrush–cattail alliance and bulrush–cattail MU, this community can be ranked G1S1, G2S2, or G3S3 (CNPS 2006), indicating that these communities would be considered a sensitive biological resource by CDFW (CDFG 2010).

4.2.4 Tree-Overstory Vegetation

Woodlands and Forests

The woodland and forests general group includes the coast live oak (*Quercus agrifolia*) alliance, the coast live oak/annual grass–herb association, and the coast live oak/chaparral association. These coast live oak communities occur in several small locations on the Potrero Unit (Subunits P2, P6, P9, and P10). Woodlands and forests are not found on the Davis Unit.

Status

None of the woodland and forests general groups are considered sensitive biological resources by CDFW (CDFG 2010).

Riparian Scrub, Woodland, Forest

Riparian communities are mapped along the historical San Jacinto River channel in Subunit D7; around waterfowl ponds in the northern portion of Subunit D4; and in scattered locations within Subunits D1, D2, D3, D5, and D14. On the Potrero Unit, riparian communities are present in every subunit, and occur along Potrero Creek through the central portion of the unit and several

tributaries. The following MUs, alliances, and associations occur within the riparian scrub, woodland, forest general group: California sycamore alliance; arroyo willow alliance; black willow alliance; black willow/mulefat association; Fremont cottonwood–black willow/mulefat association; Fremont cottonwood–red willow association; Fremont cottonwood–willow MU; Fremont cottonwood/mulefat association; Fremont cottonwood dry MU; blue elderberry–(mulefat) MU; Emory's baccharis MU; mulefat alliance; and willow MU.

Status

The following communities are considered sensitive biological resources by CDFW (CDFG 2010): California sycamore alliance; black willow alliance; black willow/mulefat association; Fremont cottonwood–black willow/mulefat association; Fremont cottonwood–red willow association; Fremont cottonwood–willow MU; Fremont cottonwood/mulefat association; Fremont cottonwood dry MU; Emory's baccharis MU; willow MU; and blue elderberry–(mulefat) MU.

4.2.5 Special-Status Vegetation Communities

As described in the above subsections, several of the vegetation communities occurring on-site are considered sensitive or special-status. Special-status vegetation communities are those identified by CDFW as high priority for inventory due to rarity in California (CDFG 2010). Vegetation communities ranked S1–S3 are considered special status. There are 22 vegetation communities that occur in the SJWA are considered special-status by CDFW, including the following:

- Alkaline Ephemeral Wetland MU
- California Sycamore Alliance
- Black Willow Alliance
- Black Willow/Mulefat Association
- Blue Elderberry–(Mulefat) MU
- Bulrush–Cattail Alliance
- Bulrush–Cattail MU
- Chamise–Cupleaf Ceanothus Alliance
- Emory's Baccharis MU
- Fremont Cottonwood Dry MU
- Fremont Cottonwood–Black Willow/Mulefat Association
- Fremont Cottonwood/Mulefat Association

- Fremont Cottonwood–Red Willow Association
- Fremont Cottonwood–Willow MU
- Hollyleaf Cherry Alliance
- Palmer's Goldenbush Alliance
- Scalebroom–(California Buckwheat–Mexican Elderberry–Mulefat) MU
- Scalebroom–California Buckwheat Association
- Toyon–Scrub Oak–Birchleaf Mountain-mahogany–California Ash Association
- Willow MU
- Yellow Bush Penstemon Alliance
- Yerba Santa Alliance

CDFW considers some of the associations in the California buckwheat, chamise, California buckwheat–white sage, black sage, scrub oak, arroyo willow, and coast live oak alliances to be sensitive associations. Because the sensitive associations would have been mapped if noted by CNPS (2006) and the Regional Conservation Authority (RCA) or SJWA biologists, and the study area would have been accessible to CNPS, it is assumed that in the study area the aforementioned alliances do not contain sensitive associations.

4.2.6 Jurisdictional Resources

4.2.6.1 Methods

A formal delineation of federal and state jurisdictional wetlands and waters as defined and regulated by Sections 401 and 404 of the Clean Water Act (CWA), Porter-Cologne Water Quality Protection Act, and Section 1602 of the California Fish and Game Code has not been conducted within the SJWA. However, potential jurisdictional aquatic features have been identified within the SJWA based on a review of available resources, including the National Hydrographic Database (NHD) (USGS 2016) and the *Western Riverside County Vegetation Mapping Update, Final Vegetation Mapping Report* (AIS 2015).

Based on this review, it was determined that the study area may support the following jurisdictional waters, and a set of data, referred to herein as "potentially jurisdictional waters," was created to analyze potential direct and indirect impacts to waters of the United States/state:

- Waters of the United States, including wetlands, under the jurisdiction of the U.S. Army Corps of Engineers (ACOE), pursuant to Section 404 of the federal CWA

- Waters of the state under the jurisdiction of the California Regional Water Quality Control Board, pursuant to Section 401 of the federal CWA and the Porter-Cologne Act, as wetlands or drainages
- Streambeds under the jurisdiction of the CDFW, pursuant to Section 1602 of the California Fish and Game Code

NHD stream data used for the potentially jurisdictional waters analysis included the streams/river, canal/ditch, and artificial paths that are mapped as occurring in the SJWA in the NHD dataset. Vegetation/land cover groups included in the potentially jurisdictional waters analysis include the associations and alliances in the following generalized MSHCP vegetation/land cover groups: meadows and marshes; playas and vernal pools; riparian scrub, woodland, forest; Riversidean alluvial fan sage scrub; and water. After review of these resources, it was concluded that the vegetation mapping data (AIS 2015) were more accurate and precise in the mapping of potentially jurisdictional waters; therefore, vegetation community data were used in the delineation of potentially jurisdictional waters that overlapped with the NHD data. NHD data for communities not included in the aforementioned vegetation communities were still considered potentially jurisdictional waters for purposes of this analysis. Any project with potential impacts to jurisdictional waters will conduct field surveys to verify that the all jurisdictional features were identified.

4.2.6.2 Potentially Jurisdictional Waters

There are approximately 4,150 acres of potentially jurisdictional waters within the SJWA. The majority of these potentially jurisdictional waters occur within the Davis Unit with approximately 3,804 acres of potentially jurisdictional waters in the unit (Table 4-3). The major resources identified include the alkaline ephemeral wetlands, waterfowl ponds, and water (e.g., San Jacinto River, Mystic Lake) MUs. Approximately 346 acres of potentially jurisdictional waters were identified within the Potrero Unit (Table 4-3). The major potentially jurisdictional waters include vegetation communities that are associated with Potrero Creek and associated tributaries. The Colorado River Aqueduct also occurs within the Potrero Unit; however, this feature was not considered a potentially jurisdictional water due to undergrounding of the pipeline through this area. Additionally, there are 29.3 linear miles of potentially jurisdictional waters outside of the vegetation communities listed in Table 4-4. The total linear miles of potentially jurisdictional waters by NHD features type are provided in Table 4-4. There are approximately 7.1 linear miles of potentially jurisdictional waters in the Davis Unit and approximately 22.2 linear miles of potentially jurisdictional waters in the Potrero Unit.

Table 4-3
Potentially Jurisdictional Waters Acreages by Unit

MSHCP Vegetation/ Land Cover Group	Alliance[1]/MU	Davis (acres)	Potrero (acres)	Total (acres)
Meadows and Marshes	Bulrush–Cattail Alliance	9	—	9
	Bulrush–Cattail MU	15	—	15
	Meadows and Marshes Total	*24*	—	*24*
Playas and Vernal Pools	Alkaline Ephemeral Wetland MU	1,580	—	1,580
	Playas and Vernal Pools Total	*1,580*	—	*1,580*
Riparian Scrub, Woodland, Forest	Arroyo Willow Alliance	—	3	3
	Black Willow/Mulefat Association	41	—	41
	Black Willow Alliance	4	3	7
	Blue Elderberry–(Mulefat) MU	—	71	71
	California Sycamore Alliance	—	4	4
	Emory's Baccharis MU	38		38
	Fremont Cottonwood–Black Willow/ Mulefat Association	1	13	14
	Fremont Cottonwood–Red Willow Association	—	25	25
	Fremont Cottonwood–Willow MU	—	48	48
	Fremont Cottonwood/Mulefat Association	—	45	45
	Fremont Cottonwood Dry MU	—	20	20
	Mulefat Alliance	9	41	50
	Tamarisk Alliance	0		0
	Willow MU	41	5	46
	Riparian Scrub, Woodland, Forest Total	*135*	*277*	*411*
Riversidean Alluvial Fan Sage Scrub	Scalebroom–(California Buckwheat–Mexican Elderberry–Mulefat) MU	—	11	11
	Scalebroom–California Buckwheat Association	—	34	34
	Riversidean Alluvial Fan Sage Scrub Total	—	*45*	*45*
Water	Duck Ponds MU	1,363	—	1,363
	Riverine or Lacustrine flats, channels, streambeds, MU		25	25
	Water MU	702		702
	Water Total	*2,065*	*25*	*2,090*
Grand Total		**3,804**	**346**	**4,150**

Note: 1. The alliance classification system was used - *A Manual of California Vegetation* (Sawyer et al. 2009).

Table 4-4
Potentially Jurisdictional Waters Linear Miles by Unit

NHD Feature Type	Davis Unit (Linear Miles)	Potrero Unit (Linear Miles)	Total (Linear Miles)
Artificial path	0.1	0.2	0.3
Canal/ditch	1.8	0.0	1.8
Stream/river	5.3	22.0	27.2
Total	7.1	22.2	29.3

4.2.7 Plant Resources

To prepare the draft LMP, a comprehensive plant and wildlife species list was compiled from several resources: the 2000 LMP (CDFG 2000); various research activities (conducted mostly on the Davis Unit); regional biological monitoring activities conducted under the MSHCP (RCA 2006, 2007, 2008a); other projects, mainly utility projects, that cross a portion of the Davis Unit; environmental documents for wetlands restoration, introduction of game species, and site acquisition on the Davis Unit; environmental documents for previous planned development on the Potrero Unit (City of Beaumont 2001); Dudek's 2008 general reconnaissance survey; the CDFW California Natural Diversity Database (CNDDB) (CDFG 2008b); the CNPS Online Inventory of Rare and Endangered Plants (CNPS 2011); and the U.S. Fish and Wildlife Service (USFWS) Occurrence Data (USFWS 2006).

To augment and update the species analysis provided in the draft LMP, the following sources were used to supplement the special-status plant data in the PEIR: regional biological monitoring activities associated with the MSHCP (RCA 2016) (2005–2015); the CDFW CNDDB (CDFW 2017a); the CNPS Online Inventory of Rare and Endangered Plants (CNPS 2017); and the USFWS Occurrence Data (USFWS 2016a). The CNPS Inventory and the CNDDB were queried based on the USGS 7.5-minute quadrangles on which the SJWA is located (i.e., Sunnymead, El Casco, Beaumont, Perris, Lakeview, and San Jacinto). The remaining databases were queried using GIS software based on the boundary of each unit.

4.2.7.1 Floral Diversity

Current documentation indicates that 282 plant species have been recorded on the Davis Unit, with 212 of those species (75%) being native. Current documentation indicates that 126 plant species have been recorded on the Potrero Unit, with 92 species being native (73%). Appendix A of the draft LMP provides a comprehensive list of plant species identified on each unit based on resources reviewed by Dudek for preparation of the draft LMP and Dudek's own field investigations.

4.2.7.2 Special-Status Plants

Endangered, rare, or threatened species, as defined in CEQA Guidelines Section 15380(b) (14 CCR 15000 et seq.), are referred to as "special-status species" in this draft LMP and include (1) endangered or threatened species recognized in the context of the California and federal Endangered Species Acts, and (2) plant species with a California Rare Plant Rank (CRPR) (CNPS 2016) (ranks 1A, 1B, and 2).

The discussion of special-status plants is organized by (1) Table 4-5, Special-Status Plants Species Observed within the San Jacinto Wildlife Area and recorded in the draft LMP; and (2) Table 4-6, Special-Status Plants Species not Observed but with a Moderate to High Potential to Occur within the San Jacinto Wildlife Area. Each table identifies whether the species is an alkali plant and its status, habitat, known range, and whether it was observed or has potential to occur in the unit. Eleven special-status plant species have been recorded within the SJWA in at least one of the units, and 23 special-status plant species have a moderate to high potential to occur in at least one of the units. Figures 4-2 – 4-2l shows the known occurrences of each special-status plant. An overview of the special-status plants on each management unit is provided below. Various special-status plant species known from the region have not been observed and are not expected to occur on the SJWA, and therefore, were not analyzed in this section.

Table 4-5
Special-Status Plants Species Observed within the San Jacinto Wildlife Area

Scientific Name	Common Name	Group	Federal Status*	State Status*	MSHCP*	CRPR*	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)[1]	Davis Unit	Potrero Unit	Potential to Occur
Allium marvinii	Yucaipa onion	Other	None	None	Covered	1B.2	Chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland; mesic, clay/perennial bulbiferous herb/Mar–May/974–3,510	—	X	Known within Subunit P6.Five occurrences were observed in 2008 and 2009 (MSHCP BMP 2014)
Astragalus pachypus var. *jaegeri*	Jaeger's bush milk-vetch	Other	None	None	Covered	1B.1	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; sandy or rocky/perennial shrub/Dec–June/1,198–3,002	—	X	Known within Subunits P4 and P5 in chamise–hoaryleaf ceanothus.
Atriplex coronata* var. *notatior	**San Jacinto Valley crownscale**	**Alkali**	**FE**	**None**	**Covered**	**1B.1**	**Playas, valley and foothill grassland (mesic), vernal pools; alkaline/annual herb/Apr–Aug/456–1,640**	**X**	**—**	**Known within Subunits D3, D4, D5, D7, D8, D9, D10, D13—all 38 locations are within alkali scrub/playa habitats.**
Atriplex serenana var. *davidsonii*	Davidson's saltscale	Alkali	None	None	Covered	1B.2	Coastal bluff scrub, coastal scrub; alkaline/annual herb/Apr–Oct/33–656	X	—	Known within Subunits D4, D7, and D13 – D11 locations within alkali scrub/playa habitats in the historical San Jacinto River floodplain. According to CNPS (2016), occurs in Subunit D15.
Brodiaea filifolia	**thread-leaved brodiaea**	**Alkali**	**FT**	**CE**	**Covered**	**1B.1**	**Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools; often clay/perennial bulbiferous herb/Mar–June/82–3,675**	**X**	**—**	**Known from Subunits D7 and D13 – 15 locations within California annual grassland and alkaline ephemeral wetland.**
Centromadia pungens ssp. *laevis*	smooth tarplant	Alkali	None	None	Covered	1B.1	Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland; alkaline/annual herb/Apr–Sep/0–2,100	X	X	Recorded within Subunits D1, D3, D4, D5, D7, D8, D10, D11, and D13 – 35 locations within agricultural land, alkaline ephemeral wetland MU, black willow alliance, bulrush–cattail MU, California annual grassland, and Fremont cottonwood/mulefat association, as well as around waterfowl ponds. Three additional locations adjacent to Potrero Creek in Subunit P10 and 5 locations in Subunit P5.
Chorizanthe parryi var. *parryi*	Parry's spineflower	Other	None	None	Covered*	1B.1	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; sandy or rocky, openings/annual herb/Apr–June/902–4,003	—	X	Known within Subunits P6 and P7 in brittlebush–California buckwheat and chamise–coastal sage scrub.

Table 4-5
Special-Status Plants Species Observed within the San Jacinto Wildlife Area

Scientific Name	Common Name	Group	Federal Status*	State Status*	MSHCP*	CRPR*	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)[1]	Davis Unit	Potrero Unit	Potential to Occur
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	Alkali	None	None	Covered	1B.1	Marshes and swamps (coastal salt), playas, vernal pools/annual herb/Feb–June/3–4,003	X	—	Known within Subunits D3, D4, D5, D7, D8, D9, D10, and D13 – 75 locations within agricultural land, playas and vernal pools, bulrush–cattail MU, California annual grassland, and areas around waterfowl ponds.
Nama stenocarpa	mud nama	Alkali	None	None	Covered	2B.2	Marshes and swamps (lake margins, riverbanks)/annual / perennial herb/Jan–July/16–1,640	X	(see Table 5.3-6)	Known from three locations within Subunit D5 within the alkaline ephemeral wetland MU and California annual grassland alliance south of Mystic Lake.
Navarretia fossalis	**Spreading navarretia**	**Alkali**	**FT**	**None**	**Covered**	**1B.1**	**Chenopod scrub, marshes and swamps (assorted shallow freshwater), playas, vernal pools/annual herb/Apr–June/98–2,149**	**X**	**—**	**Known from Subunits D7 and D13 in 16 locations within the alkaline ephemeral wetland MU and California annual grassland alliance and around waterfowl ponds.**
Trichocoronis wrightii var. *wrightii*	Wright's trichocoronis	Alkali	None	None	Covered	2B.1	Meadows and seeps, marshes and swamps, riparian forest, vernal pools; alkaline/annual herb/May–Sep/16–1,427	X	—	Known within Subunits D4 and D7 – 3 locations within the alkaline ephemeral wetland MU and around waterfowl ponds – CNDDB locations from 1980 and 1993 not recently confirmed, but one location is from 2011.

***Status Legend:**
None: No federal or state designation.
Federal:
FE: Federally listed as endangered.
FT: Federally listed as threatened.
State:
CE: State-listed as endangered.
MSHCP: Western Riverside Multiple Species Habitat Conservation Plan Covered Species
Footnote 1: Primary habitat associations, life form, blooming period, and elevation range information comes from CNPS Rare and Endangered Plant Inventory (CNPS 2017).

CRPR: California Rare Plant Rank
1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
Threat Rank:
.1:Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
.2:Fairly threatened in California (20%–80% occurrences threatened/moderate degree and immediacy of threat)
MSHCP: Western Riverside County Multiple Species Habitat Conservation Plan
Covered*: Considered adequately conserved when certain conservation requirements are met.

Table 4-6
Special-Status Plants Species not Observed but with a Moderate to High Potential to Occur within the San Jacinto Wildlife Area

Scientific Name	Common Name	Group	Federal Status	State Status	MSHCP	CRPR	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)[1]	Davis Unit	Potrero Unit	Potential to Occur
Abronia villosa var. *aurita*	chaparral sand-verbena	Other	None	None	—	1B.1	Chaparral, coastal scrub, desert dunes; sandy/annual herb/Jan–Sep/246–5,249	X	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
Allium munzii	**Munz's onion**	**Other**	**FE**	**CT**	**Covered**	**1B.1**	**Chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland; mesic, clay/perennial bulbiferous herb/Mar–May/974–3,510**	**—**	**X**	**Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.**
Atriplex parishii	Parish's brittlescale	Alkali	None	None	Covered	1B.1	Chenopod scrub, playas, vernal pools; alkaline/annual herb/June–Oct/82–6,234	X	—	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
California macrophylla	round-leaved filaree	Other	None	None	Covered	1B.1	Cismontane woodland, valley and foothill grassland; clay/annual herb/Mar–May/49–3,937	X	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
Chorizanthe parryi var. *parryi*	Parry's spineflower	Other	None	None	Covered	1B.1	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; sandy or rocky, openings/annual herb/Apr–June/902–4,003	X	(see Table 5.3-5)	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences. Occurs within the Potrero Unit.
Chorizanthe polygonoides var. *longispina*	long-spined spineflower	Other	None	None	Covered	1B.2	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools; often clay/annual herb/Apr–July/98–5,020	X	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
Deinandra mohavensis	**Mojave tarplant**	**Other**	**None**	**CE**	**Covered***	**1B.3**	**Chaparral, coastal scrub, riparian scrub; mesic/annual herb/(May) June–Oct (Jan)/2,100–5,249**	–	**X**	**Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.**
Dodecahema leptoceras	**slender-horned spineflower**	**Other**	**FE**	**CE**	**Covered**	**1B.1**	**Chaparral, cismontane woodland, coastal scrub (alluvial fan); sandy/annual herb/Apr–June/656–2,493**	**—**	**X**	**Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.**
Eriastrum densifolium* ssp. *sanctorum	**Santa Ana River woollystar**	**Other**	**FE**	**CE**	**Covered**	**1B.1**	**Chaparral, coastal scrub (alluvial fan); sandy or gravelly/perennial herb/Apr–Sep/299–2,001**	**—**	**X**	**Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.**

Table 4-6
Special-Status Plants Species not Observed but with a Moderate to High Potential to Occur within the San Jacinto Wildlife Area

Scientific Name	Common Name	Group	Federal Status	State Status	MSHCP	CRPR	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)[1]	Davis Unit	Potrero Unit	Potential to Occur
Horkelia cuneata var. *puberula*	mesa horkelia	Other	None	None	—	1B.1	Chaparral (maritime), cismontane woodland, coastal scrub; sandy or gravelly/perennial herb/Feb–July (Sep)/230–2,657	X	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
Imperata brevifolia	California satintail	Other	None	None	—	2B.1	Chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), riparian scrub; mesic/perennial rhizomatous herb/Sep–May/0–3,986	X	X	Moderate potential to occur. Suitable habitat exists, but elevation is at periphery of that which occurs on the Davis Unit.
Lepechinia cardiophylla	heart-leaved pitcher sage	Other	None	None	Covered	1B.2	Closed-cone coniferous forest, chaparral, cismontane woodland/perennial shrub/Apr–July/1,706–4,495	—	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
Lilium parryi	lemon lily	Other	None	None	Covered*	1B.2	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest; mesic/perennial bulbiferous herb/July–Aug/4,003–9,006	—	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
Lycium parishii	Parish's desert-thorn	Other	None	None	—	2B.3	Coastal scrub, Sonoran desert scrub/perennial shrub/Mar–Apr/443–3,281	X	—	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
Malacothamnus parishii	Parish's bush-mallow	Other	None	None	—	1A	Chaparral, coastal scrub/perennial deciduous shrub/June–July/1,001–1,493	X	X	Moderate potential to occur. Suitable habitat exists, but elevation is at periphery of that which occurs on the Davis Unit.
Monardella macrantha ssp. *hallii*	Hall's monardella	Other	None	None	Covered	1B.3	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland/perennial rhizomatous herb/June–Oct/2,395–7,201	—[2]	X	Moderate potential to occur. Suitable habitat exists in Potrero.
Nama stenocarpa	mud nama	Alkali	None	None	Covered	2B.2	Marshes and swamps (lake margins, riverbanks)/annual / perennial herb/Jan–July/16–1,640	(see Table 5.3-5)	X	Moderate potential to occur. Although species was observed on the Davis Unit, only a small amount of suitable habitat exists on the Potrero Unit.

Table 4-6
Special-Status Plants Species not Observed but with a Moderate to High Potential to Occur within the San Jacinto Wildlife Area

Scientific Name	Common Name	Group	Federal Status	State Status	MSHCP	CRPR	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)[1]	Davis Unit	Potrero Unit	Potential to Occur
Pseudognaphalium leucocephalum	white rabbit-tobacco	Other	None	None	—	2B.2	Chaparral, cismontane woodland, coastal scrub, riparian woodland; sandy, gravelly/perennial herb/Jul–Dec/0–6,890	X	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences. There are two CNDDB occurrences within 5 miles of the Potrero Unit.
Scutellaria bolanderi ssp. *austromontana*	southern mountains skullcap	Other	None	None	—	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest; mesic/perennial rhizomatous herb/June–Aug/1,394–6,562	—	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
Senecio aphanactis	chaparral ragwort	Other	None	None	—	2B.2	Chaparral, cismontane woodland, coastal scrub; sometimes alkaline/annual herb/Jan–Apr/49–2,625	X	—	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences
Sidalcea hickmanii ssp. *parishii*	Parish's checkerbloom	Other	None	CR	—	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest/perennial herb/June–Aug/3,281–8,199	—	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
Sidalcea neomexicana	Salt Spring checkerbloom	Other	None	None	—	2B.2	Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas; alkaline, mesic/perennial herb/Mar–June/49–5,020	X	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.
Symphyotrichum defoliatum	San Bernardino aster	Other	None	None	—	1B.2	Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic); near ditches, streams, springs/perennial rhizomatous herb/July–Nov/7–6,693	X	X	Moderate potential to occur. Suitable habitat exists and within elevation range of known species occurrences.

NOTE: Species in boldface are federally or state listed.
Status Legend:
None: No federal or state designation.
Federal:
FE: Federally listed as endangered.
FT: Federally listed as threatened.

State:
CE: State-listed as endangered.
CT: State-listed as threatened.
CR: State-listed as rare.
CRPR: California Rare Plant Rank
1A: Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

Threat Rank:
.1: Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
.2: Fairly threatened in California (20%–80% occurrences threatened/moderate degree and immediacy of threat)
.3: Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known).

MSHCP: Western Riverside County Multiple Species Habitat Conservation Plan
Covered*: Considered adequately conserved when certain conservation requirements are met. In the LMP, Mojave tarplant (*Deinandra mohavensis*), many-stemmed dudleya *(Dudleya multicaulis*), bristly sedge (*Carex comosa*), intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), Nevin's barberry (*Berberis nevinii*), horn's milk-vetch (*Astragalus hornii* var. *hornii*) were considered to have a moderate potential to occur. They have been removed from analysis and are considered either low potential or not expected to occur in this PEIR based on comments from the CNPS (2016).
Footnote 1: Primary habitat associations, life form, blooming period, and elevation range information comes from CNPS Rare and Endangered Plant Inventory (CNPS 2017). Footnote 2: Removed as moderate potential to occur on the Davis Unit per CNPS (2016).

Davis Unit

Alkali Plant Species

The Davis Unit represents an important conservation area for the unique alkali communities occurring in western Riverside County. Located along the San Jacinto River floodplain within the Willow-Domino-Travers soils complex, the Davis Unit supports alkali vegetation communities and numerous rare alkali plant species. Special-status alkali plants documented on the Davis Unit include smooth tarplant (*Centromadia pungens* ssp. *laevis*), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*), Davidson's saltscale (*Atriplex serenana* var. *davidsonii*), mud nama (*Nama stenocarpa*), the federally listed endangered San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*), and the federally listed threatened spreading navarretia (*Navarretia fossalis*). In addition, although not strictly alkali-dependent, the federally listed threatened and state-listed endangered thread-leaved brodiaea (*Brodiaea filifolia*) occurs on the Davis Unit. There is only one alkali plant species, Parish's brittlescale (*Atriplex parishii*), that is considered to have a moderate potential to occur but has not yet been documented on the SJWA. Collectively, the alkali special-status plant species that were observed occur in Subunits D1, D3, D4, D5, D7, D8, D9, D10, D11, and D13, with the highest concentrations in Subunits D4, D7, and D13.

Other Plant Species

The Davis Unit does not have any documented locations of non-alkali special-status plant species. However, based on an evaluation of existing vegetation communities, soils, geology, and geography of the Davis Unit, 12 non-alkali special-status plant species have potential to occur, and presence or absence should be determined by a focused species survey, as stated in the draft LMP.

Potrero Unit

Alkali Plant Species

The only special-status alkali plant species documented as occurring on the Potrero Unit is smooth tarplant. One other special-status alkali plant, mud nama, has a moderate or high potential to occur on the Potrero Unit. Smooth tarplant often occurs on the margin of riparian areas where soils are somewhat alkaline as opposed to the large alkali areas on the Davis Unit. Smooth tarplant occurs within Subunits P5 and P10.

Other Plant Species

A number of non-alkali special-status plant species have been documented on the Potrero Unit, including Jaeger's bush milk-vetch (*Astragalus pachypus* var. *jaegeri*) (located in chaparral in Subunits P4 and P5), Yucaipa onion (*Allium marvinii*) (a clay endemic located in Subunit P6), and Parry's spineflower (*Chorizanthe parryi* var. *parryi*) (located in coastal sage scrub openings in Subunits P6 and P7). An additional 18 non-alkali special-status plant species have a moderate to high potential to occur on the Potrero Unit.

4.3 Wildlife Resources

This section lists the sources used to prepare the comprehensive wildlife species list for the LMP. To augment and update the species analysis provided in the draft LMP, the following sources were used to supplement the special-status wildlife data: regional biological monitoring activities associated with the MSHCP (RCA 2016) (2005–2014), the CDFW CNDDB (2016), and the USFWS Occurrence Data (2016a). The CNDDB and USFWS databases were queried using GIS software based on the boundary of each unit.

4.3.1 Faunal Diversity

A complete list of wildlife species identified within the SJWA is contained in Appendix B. Current documentation indicates that 303 wildlife species have been recorded on the Davis Unit and 163 wildlife species on the Potrero Unit.

The following is a discussion of common wildlife species, organized by guild, observed on the SJWA. Categorization by guild identifies groups of species that rely on similar resources (e.g., general habitat categories) regardless of taxonomic position (Simberloff and Dayan 1991). The analysis by guild does not indicate that a particular species will not use other types of habitat for portions of its life history.

Upland Species

The upland species guild includes species that predominantly require upland habitats, such as sage scrub, including both coastal sage scrub and alluvial fan sage scrub; chaparral; grassland; oak woodlands; and even agricultural areas. Representative species from this guild known from the SJWA include American kestrel (*Falco sparverius*), ferruginous hawk (*Buteo regalis*), burrowing owl (*Athene cunicularia*), California horned lark (*Eremophila alpestris actia*), greater roadrunner (*Geococcyx californianus*), oak titmouse (*Baeolophus inornatus*), Bell's sparrow (*Artemisiospiza belli*), grasshopper sparrow (*Ammodramus savannarum*), wrentit (*Chamaea fasciata*), loggerhead shrike (*Lanius ludovicianus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), granite

spiny lizard (*Sceloporus orcutti*), and Blainville's horned lizard (*Phrynosoma blainvillii*). Upland game species such as California quail (*Callipepla californica*), ring-necked pheasant (*Phasianus colchicus),* and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) also are included in the upland species guild. This also includes the special-status species discussed in Section 4.3.2 (e.g., coastal California gnatcatcher (*Polioptila californica californica*) and Stephens' kangaroo rat (*Dipodomys stephensi*)). Annual grassland is the dominant habitat type for the federally endangered Stephens' kangaroo rat, and coastal sage scrub is the dominant habitat for the federally threatened coastal California gnatcatcher.

Wetland Species

The wetland species guild includes species that predominantly require wetland habitats, such as playa, cattail marsh, open meadows, and open water, to satisfy important life history needs. These species may benefit from manufactured wetlands, such as waterfowl ponds and seasonally inundated fields, at the SJWA. Representative species of the wetland species guild known from the SJWA include American coot (*Fulica americana*), American white pelican (*Pelecanus erythrorhynchos*), black-crowned night-heron (*Nycticorax nycticorax*), double-crested cormorant (*Phalacrocorax auritus*), Clark's marsh wren (*Cistothorus palustris clarkae*), tricolored blackbird (*Agelaius tricolor*), white-faced ibis (*Plegadis chihi*), Baja California treefrog (*Pseudacris hypochondriaca*), western spadefoot (*Spea hammondii*), versatile fairy shrimp (*Branchinecta lindahli*), and California vole (*Microtus californicus*). This group also includes waterfowl game birds such as mallard (*Anas platyrhynchos*), northern shoveler (*Anas clypeata*), white-fronted goose (*Anser albifrons*), and Canada goose (*Branta canadensis*). The Davis Unit marshes are actively managed to provide optimal nesting and foraging habitat for migratory waterfowl and shorebirds. Refer to Section 4.3.2 for discussion of special-status species.

Riparian Species

The riparian species guild includes species that predominantly require riparian habitats such as southern willow scrub, mulefat scrub, or cottonwood forest. Representative species within the riparian species guild known to be from the SJWA include downy woodpecker (*Picoides pubescens*), black-headed grosbeak (*Pheucticus melanocephalus*), Cooper's hawk (*Accipiter cooperii*), least Bell's vireo (*Vireo bellii pusillus*), tree swallow (*Tachycineta bicolor*), white-tailed kite (*Elanus leucurus*), and gray fox (*Urocyon cinereoargenteus*). Several other raptor species would nest within the guild area as well. Riparian communities on the SJWA provide suitable habitat for the state and federally endangered least Bell's vireo, fully protected white-tailed kite, and various other special-status riparian bird species. Refer to Section 4.3.2 for discussion of special-status species.

4.3.2 Special-Status Wildlife

With respect to wildlife, endangered, rare, or threatened species, as defined in CEQA Guidelines Section 15380(b) (14 CCR 15000 et seq.), are referred to as "special-status species" in this LMP and include (1) endangered or threatened species recognized in the context of the California and federal Endangered Species Acts; (2) California species of special concern (SSC), as designated by the CDFW (2016); (3) mammals and birds that are fully protected species, as described in the California Fish and Game Code, Sections 4700 and 3511; and (4) birds of conservation concern (BCC), as designated by the USFWS (USFWS 2008).

The discussion of special-status wildlife is organized by (1) Table 4-7, Special-Status Wildlife Observed or With a Moderate or High Potential to Occur on the Davis Unit, and (2) Table 4-8, Special-Status Wildlife Observed or With a Moderate or High Potential to Occur on the Potrero Unit. Each table includes the species' taxonomic groups, guild, status, habitat, known range, and whether it was observed or has potential to occur on the unit. As shown in Table 4-7, 45 special-status wildlife species were observed on the Davis Unit, and 13 special-status wildlife species have a moderate to high potential to occur on the Davis Unit. As shown in Table 4-8, 25 special-status wildlife species were observed on the Potrero Unit, and 19 special-status wildlife species have a moderate to high potential to occur. Figures 4-3 – 4-3l show wildlife species locations. Several species-status wildlife species known from the region have not been observed and are not expected to occur on the SJWA, and therefore, were not analyzed in this section.

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
1. Special-Status Wildlife Species Observed within the Davis Unit							
Amphibian/Wetland	*Spea hammondii*	western spadefoot	None	SSC	Covered	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture.	Observed adults in D1 (2012) and D7 (2013) and tadpoles in D12 (2013) and D13 (2013) (RCA 2016); and two locations in 1999 (age not specified) in D8 and D15 (CNDDB occurrence data).
Bird/Riparian	*Elanus leucurus*	white-tailed kite (nesting)	None	FP	Covered	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands.	Surveys for riparian birds, including white-tailed kite, were conducted in portions of the MSHCP in 2006, 2007 and 2011 (MSHCP BMP 2007a, 2008a, 2012a). Evidence of successful nesting was detected in the Lake Perris/Mystic Lake Core in 2011, and based on the survey routes, it likely occurred in the Davis Unit (MSHCP BMP 2012a). White-tailed kited has been incidentally observed during numerous surveys in the SJWA. Observed in D1 in 2006, 2009, 2011, and 2012; in D3 in 2009, 2011, 2012, and 2014; in D4 in 2005–2007 and 2010–2012; in D5 in 2008, 2009, 2011, and 2013–2015; in D7 in 2006–2012; in D8 in 2007 and 2012; in D9 in 2011 and 2012; in D10 in 2011 and 2012; in D11 in 2011 and 2015; in D13 2006, 2007, 2009, 2012, and 2014; in D14 in 2006; and in D15 in 2009 and 2011 (RCA 2016). There is suitable riparian, oak woodland, wetland, and grassland habitat for this species in the unit to support both nesting and foraging (CDFW 2016a). Suitable nesting habitat includes the riparian scrub, woodland, and forest habitat (see Figure 5.3-3A).

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Riparian	*Empidonax traillii extimus*	Southwestern willow flycatcher	FE	SE	Covered	Nests in wet meadow and montane willow riparian.	The southwestern willow flycatcher Core Areas[4] are outside of the Davis Unit and therefore this unit was not surveyed as part of the nest monitoring in 2008 (MSHCP BMP 2009a). Surveys for riparian birds, including southwestern willow flycatcher, were conducted in portions of the MSHCP in 2006, 2007, 2008 and 2011 (MSHCP BMP 2007a, 2008a, 2009a, 2012a). One individual was observed during the 2007 focused surveys (MSHCP BMP 2008a). Including incidental observations, this species was observed in D7 in 2007, 2011, and 2015, and in D15 in 2008 (RCA 2016). This species has only been documented in early June (in 2007, 2008, and 2011) or mid-May (in 2015) and may only occur as a migrant; nesting has not been observed. There is suitable foraging habitat in the unit for this species in the riparian areas (CDFW 2016a).
Bird/Riparian	*Icteria virens*	yellow-breasted chat (nesting)	None	SSC	Covered	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush.	The yellow-breasted chat Core Areas are outside of the Davis Unit, and therefore this unit was not surveyed as part of the nest monitoring in 2008 (MSHCP BMP 2009a). Observed in D4 in 2014 (RCA 2016). This species may both be an occasional migrant through the unit and may nest in riparian habitat although no nesting has been observed.

[4] Core Areas are defined in the MSHCP as blocks of habitat of appropriate size, configuration, and vegetation characteristics to generally support the life history requirements of one or more species covered by the MSHCP.

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Riparian	*Pyrocephalus rubinus*	vermilion flycatcher (nesting)	None	SSC	Not Covered	Nests in riparian woodlands, riparian scrub, and freshwater marshes; typical desert riparian with cottonwood, willow, mesquite adjacent to irrigated fields, ditches, or pastures.	Observed on site in D4 in the winter of 2011 and 2012 (RCA 2016). It is only expected to have a very low chance of nesting as it would only be a vagrant nester in this area. It is a more common nester along the Colorado River in eastern Riverside County.
Bird/Riparian	*Setophaga petechia*	yellow warbler (nesting)	BCC	SSC	Covered	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats.	The yellow warbler Core Areas are outside of the Davis Unit, and therefore this unit was not surveyed as part of the nest monitoring in 2008 (MSHCP BMP 2009a). Observed in D1 in 2005 and 2011; in D3 in 2009, 2014, and 2015; in D4 in 2007–2009 and 2011–2015; and in D7 in 2007, 2010, 2011, 2014, and 2015 (RCA 2016). Yellow warblers were observed at the Lake Perris/SJWA during the 2007 focused riparian bird surveys; however, no nesting was detected at this location (MSHCP BMP 2008a). There are small patches of suitable nesting habitat on the unit. It is expected that the species would at least occasionally nest on site and this species has been observed in April, May and June in most years it has been documented; nesting has not been confirmed. This species may winter in the unit based on fall and winter observations. This species may forage in the unit (CDFW 2016a).

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Riparian	*Vireo bellii pusillus*	least Bell's vireo (nesting)	FE	SE	Covered	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season.	Observed in D1 in 2007; in D3 in 2014; in D4 in 2005, 2010, 2012, 2014, and 2015; in D7 in 2011 and 2012; and in D14 in 2007 and 2008 (RCA 2016). There is suitable nesting and foraging habitat in willow riparian areas in the unit and this species has been observed in the unit during the nesting season (MSHCP BMP 2007a; RCA 2016). More information on these observations is provided in the text below the tables.
Bird/Upland	*Ammodramus savannarum*	grasshopper sparrow (nesting)	None	SSC	Covered*	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches.	Observed in D1 in 2011, D4 in 2009 and 2015, D7 in 2015, and D15 in 2005 (RCA 2016). The SJWA areas were not quantitatively surveyed in 2005 during the grasshopper sparrow surveys, but site visits detected 3 individuals in the SJWA and noted that there is suitable nesting and foraging habitat on the unit in the grassland and agricultural areas (MSHCP BMP 2006). The burrowing owl surveys incorporate concomitant surveys for this species since they occupy similar habitat.
Bird/Upland	*Aquila chrysaetos*	golden eagle (nesting, nonbreeding, and wintering)	BCC	FP, WL	Covered	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats.	Golden eagles have been observed in D1 in 2008, 2011, 2012, and 2014; in D2 in 2008; in D3 in 2011 and 2012; in D4 in 2008 and 2011-2013; in D7 in 2008, 2013, and 2014; in D8 in 2008 and 2012-2014; in D9 in 2007 and 2012; in D10 in 2011; in D12 in 2014; in D13 in 2009; and in D15 in 2011 and 2012 (RCA 2016). The observations of golden eagle are of flying or foraging individuals, including both adults and subadults (RCA 2016). There is suitable foraging habitat in the unit (CDFW 2016a). While nesting is feasible on Davis, golden eagles are not known to nest on the unit.

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Upland	*Artemisiospiza belli*	Bell's Sparrow (nesting)	BCC	WL	Covered	Nests and forages in coastal scrub and dry chaparral; typically in large, unfragmented patches dominated by chamise; nests in more dense patches but uses more open habitat in winter.	Observed in D6 in 2007 and 2014; in D14 in 2007; and D15 in 2001 and 2012 (RCA 2016). There is suitable nesting and foraging habitat in the unit in the chaparral and sage scrub habitats (CDFW 2016a).
Bird/Upland	*Asio flammeus*	short-eared owl (nesting)	None	SSC	Not Covered	Grassland, prairies, dunes, meadows, irrigated lands, and saline and freshwater emergent wetlands	Observed four individuals in D5 in 2010 during loggerhead shrike surveys (RCA 2016). Suitable nesting habitat present.
Bird/Upland	*Asio otus*	long-eared owl (nesting)	None	SSC	Not Covered	Nests in riparian habitat, live oak thickets, other dense stands of trees, edges of coniferous forest; forages in nearby open habitats.	Observed in D15 in 2012 during mountain plover surveys (RCA 2016). There is a marginal quantity of nesting habitat on the site for this species, which nests in riparian woodland areas. This species may forage in the unit in grasslands and agriculture.
Bird/Upland	*Athene cunicularia*	burrowing owl (burrow sites and some wintering sites)	BCC	SSC	Covered	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows.	CNDDB has records from 1982 in D7, D8 and D13. Focused burrowing owl surveys were conducted in 2006, 2007, 2011 (RCA 2007b, 2008b, 2012b), and 2015 (report not available yet), and this species was also recorded during other species' surveys. Burrowing owl are recorded nearly each year since 2005. They have been observed in D1 in 2006 and 2007; D4 in 2006, 2007, 2009, and 2011; D6 in 2007; in D7 in 2006 and 2007; in D9 in 2007; in D10 in 2005, 2014, and 2015; in D11 in 2012; in D13 2005-2007, 2009, 2011, 2012, 2014, and 2015; and in D15 in 2006 and 2009 (RCA 2016). There is suitable wintering, nesting, and foraging grassland, open scrub, and agriculture habitat in the unit (CDFW 2016a). More information on these observations is provided in the text below the tables.

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Upland	*Buteo regalis*	ferruginous hawk (nonbreeding/wintering)	BCC	WL	Covered	Winters and forages in open, dry country, grasslands, open fields, agriculture.	Observed in D1 in 2008, 2009, 2011, and 2012; in D2 in 2007 and 2011; in D3 in 2011, 2012, 2014; in D4 in 2008, 2009, and 2012; in D5 in 2008, 2009, and 2015; in D7 in 2009, 2011, and 2012; in D8 in 2010; in D10 in 2011 and 2015; in D12 in 2006, 2008, and 2011; and in D13 in 2014 (RCA 2016). This species is as an occasional winter migrant and forager throughout the site in grasslands and agriculture (CDFW 2016a).
Bird/Upland	*Buteo swainsoni*	Swainson's hawk (nesting)	BCC	ST	Covered	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture.	Observed in D3 in 2014, in D4 in 2011, D7 in 2012, D8 in 2010, D9 in 2008, D11 in 2007 and 2014, D12 in 2013, and D13 in 2009 (RCA 2016). This species is as an occasional spring or fall migrant on the site. There is suitable foraging habitat in the unit for this species in the grassland and agricultural areas (CDFW 2016a).
Bird/Upland	*Calypte costae*	Costa's hummingbird (nesting)	BCC	None	Not Covered	Nests and forages in desert wash, edges of riparian and valley–foothill riparian, coastal scrub, desert scrub, desert succulent scrub, lower-elevation chaparral, and palm oasis.	Observed in D6 and D14 in 2007 (RCA 2016). There is suitable habitat in the unit for this species.
Bird/Upland	*Chaetura vauxi*	Vaux's swift (nesting)	None	SSC	Not Covered	Late-stage conifer forest and mixed-conifer/deciduous forest; nests in redwood (*Sequoia sempervirens*), Douglas-fir (*Pseudotsuga* spp.), and other conifers, and occasionally buildings and chimneys.	Observed in D14 in 2007 (RCA 2016). Species was only observed foraging during the coastal sage scrub surveys. No nesting habitat is present within the unit.

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Upland	*Circus cyaneus*	northern harrier (nesting)	None	SSC	Covered	Nests in open wetlands including marshy meadows, wet lightly-grazed pastures, old fields, freshwater and brackish marshes, but also in drier habitats such as grassland and grain fields; forages in variety of habitats, including grassland, scrubs, rangelands, emergent wetlands, and other open habitats.	Observed on site in D1 in 2005, 2008, 2009, and 2012–2014; in D2 in 2007, 2008, 2011, and 2014; in D3 in 2007–2009, 2011, 2012, 2014, and 2015; in D4 between 2005 and 2015; in D5 in 2008, 2010, 2011, and 2014; in D6 in 2006, 2007, and 2011; in D7 between 2007 and 2015; in D9 in 2007, 2009 and 2011–2014; in D10 between 2011 and 2015; in D11 in 2007, 2009, 2011, 2014, and 2015; in D12 in 2008–2010; in D13 in 2008, 2009, and 2013–2015; in D14 in 2007 and 2009; and in D15 in 2006; 2009; 2011–2013 (RCA 2016). Focused nesting surveys were conducted in 2009; survey areas were selected by identifying primary breeding and secondary breeding habitat. Primary breeding habitat includes cismontane alkali marsh, freshwater marsh, playas and vernal pools, and grasslands; secondary foraging/wintering habitat includes agricultural land, Riversidean alluvial fan sage scrub and coastal sage scrub (MSHCP BMP 2010a). Two nests were observed in the unit, one in D3 and one in D11 in 2009 (MSHCP BMP 2010a). Potential breeding habitat in the unit include freshwater marsh, grassland, and alkali marsh. There is suitable foraging habitat in the unit in the uplands (CDFW 2016a).
Bird/Upland	*Cypseloides niger*	black swift (nesting)	BCC	SSC	Covered	Nests in moist crevices, caves, and cliffs behind or adjacent to waterfalls in deep canyons; forages over a wide range of habitats.	Observed in in month of May in D4 in 2007 and 2015, in D7 in 2015, and D13 in 2007 (RCA 2016). Not expected to nest on site due to lack of suitable nesting habitat; however, this species may migrate through the area on occasion and has been observed in the Davis Unit.

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Upland	*Falco mexicanus*	prairie falcon (nesting)	BCC	WL	Covered	Forages in grassland, savanna, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs.	Observed on site in D1 in 2008, 2011, 2012, and 2014; in D2 in 2008; in D3 in 2011, 2012, and 2014; in D4 in 2008, 2011, and 2012; in D7 in 2008, 2009, 2014, and 2015; in D8 in 2010; in D10 in 2011 and 2014; and in D12 in 2009 and 2013 (RCA 2016). There is suitable foraging habitat in the unit for this species in the grassland and agricultural areas. Prairie falcon rarely breeds within the MSHCP area (MSHCP BMP 2010b) and the majority of observations have been outside of the breeding season (RCA 2016).
Bird/Upland	*Lanius ludovicianus*	loggerhead shrike (nesting)	BCC	SSC	Covered	Nests and forages in open habitats with scattered shrubs, trees, or other perches.	Portions of the Davis Unit are within the loggerhead shrike Core Area of the MSHCP (MSHCP BMP 2011a). Based on the 2010 focused loggerhead shrike surveys, nesting was successful in the southern and southeastern portion of the Davis Unit (MSHCP BMP 2011a). Observed throughout the season in D1 in 2007 and 2011-2015; in D2 in 2007, 2012, 2014, and 2015; in D3 in 2007-2012, 2014, and 2015; in D4 in 2005, 2007-2009, 2011-2013, and 2015; in D5 in 2006-2011 and 2015; in D7 in 2006-2015; in D8 in 2007, 2010, 2011, 2012, and 2014; in D9 in 2005, 2007, 2009, 2011-2013, and 2015; in D10 in 2010-2015; in D11 in 2007, 2008, 2010, 2011, and 2015; in D12 in 2010; in D13 in 2009, 2011, and 2013-2015; in D14 in 2006 and 2007; and in D15 in 2005, 2007-2009 and 2011-2013 (RCA 2016). There is suitable nesting and foraging habitat for this species in the unit (CDFW 2016a).

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Upland	*Polioptila californica californica*	coastal California gnatcatcher (nesting)	FT	SSC	Covered	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet above mean sea level.	The California gnatcatcher Core Areas are outside of the Davis Unit and therefore this unit was not surveyed as part of the nest monitoring in 2008 (MSHCP BMP 2009a). No California gnatcatchers were observed in the unit during the coastal sage scrub surveys in 2006, 2007 or 2011 (MSHCP BMP 2007c, 2008c, 2012c). Observed in 2007 in D6 and D14 during burrowing owl surveys (RCA 2016). There is suitable coastal sage scrub nesting and foraging habitat the unit (CDFW 2016a).
Bird/Upland	*Progne subis*	purple martin (nesting)	None	SSC	Covered	Nests and forages in woodland habitats including riparian, coniferous, and valley foothill and montane woodlands; in the Sacramento region often nests in weep holes under elevated freeways.	Observed in D3 in 2006, in D4 in 2012, and in D9 in 2015 (RCA 2016). This species may forage in the riparian areas in the unit (CDFW 2016a). It is not expected to nest on site because known nesting range in southern California is limited to higher elevations of the Transverse, Peninsular, and Santa Ana Mountain Ranges.
Bird/Upland	*Spinus lawrencei*	Lawrence's goldfinch (nesting)	BCC	None	Not Covered	Nests and forages in open oak, arid woodlands, and chaparral near water.	Observed in D1 in 2011 (RCA 2016). This species is not expected to nest in the unit, due to the generally poor habitat quality. It would be expected to occasionally forage over the site though.
Bird/Wetland	*Agelaius tricolor*	tricolored blackbird (nesting colony)	BCC	State Candidate for Listed Endangered, SSC	Covered	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture.	Observed in D1 in 2008; in D2 in 2007; in D3 in 2015; in D4 in 2006, 2007, 2012, 2013, and 2015; in D5 in 2015; in D7 in 2007, 2011, 2014, and 2015; in D8 in 2007 and 2014; in D10 in 2011, 2013, and 2015; in D11 in 2010, 2011, 2013, 2014, and 2015; in D12 in 2007 and 2011; and in D13 in 2013, 2014 and 2015 (RCA 2016). There is suitable nesting and foraging habitat on the site in the riparian areas, agriculture, and grasslands (CDFW 2016a). More information on these observations is provided in the text below the tables.

Table 4-7
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Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Wetland	*Anser albifrons elgasi*	tule greater white-fronted goose (nesting)	None	SSC	Not Covered	Winters in marshes dominated by tules, bulrushes (*Scirpus* spp.), and cattails (*Typha* spp.); unlike most other geese, does not typically feed in agricultural fields	Observed in D3 and D4 in 2011 and 2012 during the Mountain Plover surveys (RCA 2016). The survey areas focused on plover habitat, such as short-grass habitats that are flat and nearly devoid of vegetation (MSHCP BMP 2013a).
Bird/Wetland	*Aythya americana*	Redhead (nesting)	None	SSC	Not Covered	Nests in relatively deep (>3 feet) permanent or semi-permanent wetlands of at least 1 acre, with about 75% open water and emergent tules, bulrushes (*Scirpus* spp.), and cattails (*Typha* spp.) up to about 3 feet in height; winters in coastal estuaries and large, deep ponds, lakes, and reservoirs of the interior.	Observed during a variety of surveys in D3 in 2011 and 2012, D4 in 2011 and 2012, D9 in 2011, and D11 in 2015 (RCA 2016).
Bird/Wetland	*Branta bernicla*	Brant (wintering and staging)	None	SSC	Not covered	Nesting habitat includes the edges of saltmarshes in the low Arctic region; migratory habitats include shallow marine lakes; winter range includes intertidal mudflats in shallow marine waters with abundant eelgrass or green algae.	Observed in D4 in 2009 during the northern harrier surveys (RCA 2016).
Bird/Wetland	*Falco peregrinus anatum*	American peregrine falcon	FD	SD; FP	Covered	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present.	Observed in D1 in 2008, 2011, and 2012; in D3 in 2008, 2011,, 2012; in D4 in 2006, 2007, and 2012-2015; in D5 in 2015; in D6 in 2006 and 2012; in D7 in 2007, 2011, 2012, and 2015; in D9 in 2005 and 2011-2013;in D10 in 2012; and in D13 in 2011 and 2014 (RCA 2016). There is suitable foraging habitat in the waterfowl ponds and Mystic Lake on the unit. During the 2009 focused Lake Birds Surveys, peregrine falcon was observed at every Core Area except the Mystic Lake/SJWA, although it was observed there earlier in 2009 (MSHCP BMP 2010c). This species likely would not nest on the site due to lack of suitable nesting habitat (CDFW 2016a).

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Wetland	*Gavia immer*	Common loon (nesting)	None	SSC	Not Covered	Extirpated as a breeder from California; winters in coastal waters such as bays, channels, coves, and inlets; also winters inland at large, deep lakes and reservoirs.	Observed in D3 in 2011 during the Mountain Plover Survey (RCA 2016).
Bird/Wetland	*Haliaeetus leucocephalus*	bald eagle (nesting and nonbreeding/wintering)	FD; BCC	SE; FP	Covered	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains.	Observed in D1 in 2008 and 2014; in D2 in 2008; in D3 in 2006, 2008, 2012; in D4 in 2010-2014; in D5 in 2009; in D8 in 2013 and 2014; in D9 2009 and 2014; in D12 in 2009; and in D13 in 2006 (RCA 2016). The majority of these observations have been outside of the breeding season and include both adults and juveniles/subadults. Bald eagles rarely breed in the MSHCP area and are primarily winter residents (MSHCP BMP 2010c). There is suitable winter foraging habitat for this species at the waterfowl ponds and Mystic Lake on the site (CDFW 2016a).
Bird/Wetland	*Hydroprogne caspia*	Caspian tern	BCC (nesting colony)	None	Not Covered	Coastal estuarine, saltmarsh, and barrier islands; nests on islands in rivers and salt lakes.	Observed in D5 in 2011 during burrowing owl surveys (RCA 2016).
Bird/Wetland	*Numenius americanus*	long-billed curlew (nesting)	BCC	WL	Not Covered	Nests in grazed, mixed grass, and short-grass prairies; localized nesting along the California coast; winters and forages in coastal estuaries, mudflats, open grassland, and cropland.	Observed in D1 in 2007, D3 in 2012, D4 in 2011 and 2012, D7 in 2011, D9 in 2011 and 2012, D10 in 2011 and 2012, and D15 in 2015 (RCA 2016). There is suitable nesting and foraging habitat on the project site in the grassland and meadow/marsh habitats (CDFW 2016a). However, this species typically nests much farther to the north and east, only entering California to nest in the extreme northeast. They would only be expected to rarely nest if ever, in Riverside County. To date, this species has only been observed during the winter months, with the exception of one observation in April 2007 (RCA 2016).

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Bird/Wetland	*Pelecanus erythrorhynchos*	American white pelican (nesting)	None	SSC	Not Covered	Nests colonially on isolated islands in freshwater lakes with sandy, earthen, or rocky substrates; minimal disturbance from humans or mammalian predators required, as is close access to productive foraging areas; forages on inland marshes, lakes, or rivers; winters on shallow coastal bays, inlets, and estuaries.	Observed in D3 in 2011 and 2014, D4 in 2012, D5 in 2007, D7 in 2011, and D10 in 2011 (RCA 2016). This species may migrate through the area in the spring and fall; but it is very unlikely that this species would nest on site. There is suitable resting and foraging habitat for this species on the waterfowl ponds on the site.
Bird/Wetland	*Xanthocephalus xanthocephalus*	yellow-headed blackbird (nesting)	None	SSC	Not Covered	Nests in marshes with tall emergent vegetation, often along borders of lakes and ponds; forages in emergent wetlands, open areas, croplands, and muddy shores of lacustrine habitat.	Observed in D7 in 2007, D8 in 2014, D9 in 2012, D10 in 2013, D11 in 2015, D12 in 2007, and D13 in 2014 and 2015 (RCA 2016). There is suitable foraging and nesting habitat for this species in the wetland areas and foraging habitat in the grasslands and agriculture in the unit (CDFW 2016a).
Mammal/Upland	*Chaetodipus fallax fallax*	northwestern San Diego pocket mouse	None	SSC	Covered	Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon–juniper, and annual grassland.	Captured during Los Angeles Pocket Mouse (MSHCP BMP 2007d, 2008d, 2011b, and 2012d) and Stephens Kangaroo Rat Surveys (MSHCP BMP 2007e, 2008e) in D1 in 2010 and 2011; in D14 in 2006 and 2007; and in D15 in 2006, 2007, 2010, and 2011 (RCA 2016). Also recorded in D6 and D7 in 1999 (CNDDB occurrence data). There is suitable habitat for this species in the sage scrub and grassland areas in the unit (CDFW 2016a). This species is expected to be common in suitable habitat.
Mammal/Upland	*Dipodomys stephensi*	Stephens' kangaroo rat	FE	ST	Covered	Annual and perennial grassland habitats, coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas.	Observed in D1 in 2006, 2007, 2010, and 2011; in D14 in 2006 and 2008; and in D15 in 2006, 2007, and 2011, with much higher numbers in D15 (RCA 2016). Also, there are USFWS occurrences for this species on the unit from 1990 (D1 and D2), 1991 (D3), 1999 (D1), and 2008 (D14). This species may be common to abundant in occupied areas. More information on these observations is provided in the text below the tables.

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Mammal/Upland	*Eumops perotis californicus*	western mastiff bat	None	SSC	Not Covered	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels.	This species was noted as observed in the LMP (CDFW 2016a); however, the most recent species occurrence data does not include as observed (RCA 2016). There is suitable foraging habitat on the site (CDFW 2016a).
Mammal/Upland	*Lepus californicus bennettii*	San Diego black-tailed jackrabbit	None	SSC	Covered	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, and rangelands.	Observed in D2 in 2014 and 2015; in D3 in 2010, 2011, and 2014; in D4 in 2005 and 2012; in D10 2014 and 2015; in D11 in 2010 and 2013; in D13 in 2014 and 2015; in D14 in 2006; and in D15 in 2006 and 2013 (RCA 2016). There is suitable habitat in the unit in the grassland and sage scrub habitats (RCA 2006).
Mammal/Upland	*Neotoma lepida intermedia*	San Diego desert woodrat	None	SSC	Covered	Coastal scrub, desert scrub, chaparral, cacti, rocky areas.	This species was noted as observed in the LMP (CDFW 2016a); however, the most recent species occurrence data does not include as observed (RCA 2016). There is suitable habitat in the unit in the sage scrub habitat (CDFW 2016a) and is expected to be fairly common in suitable habitat.
Mammal/Upland	*Perognathus longimembris brevinasus*	Los Angeles pocket mouse	None	SSC	Covered	Lower-elevation grassland, alluvial sage scrub, and coastal scrub.	Observed in D14 in 2010 and 2011 and D15 in 1991, 2006, 2007, 2010, and 2011 (RCA 2016). This species was noted as observed in the LMP in additional subunits (CDFW 2016a); however, the most recent species occurrence data does not include these locations (RCA 2016) There is suitable habitat for this species in the grassland and sage scrub habitats in the unit (CDFW 2016a). This species may be relatively common in suitable habitat.

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Mammal/Upland	*Taxidea taxus*	American badger	None	SSC	Not Covered	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils.	Observed in D12 and D15 in 1990 (RCA 2016). There is suitable grassland and sage scrub habitat in the unit (CDFW 2016a). This species may occur at a low density in suitable habitat throughout the site.
Reptile/Upland	*Aspidoscelis tigris stejnegeri*	San Diego tiger whiptail	None	SSC	Covered	Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas. Open areas in semiarid grasslands, scrublands, and woodlands.	Observed in D14 in 2008. There is suitable habitat in the SJWA for this species.
Reptile/Upland	*Crotalus ruber*	red-diamond rattlesnake	None	SSC	Covered	Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats.	Observed in D6 in 2010 and 2014 and in D8 in 2008; there are four records in D12 between 2008 and 2010; and observed in D15 in 1999 and 2011 (RCA 2016). There is suitable habitat for this species.
Reptile/Wetland	*Actinemys marmorata*	western pond turtle	None	SSC	Covered	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter.	Observed in D4 (RCA 2016) in June 2012 during visual assessments for pond turtle (MSHCP BMP 2012e).There is suitable habitat on the unit at the waterfowl ponds; however, an MSHCP BMP 2008 survey of E ponds was negative and only detected non-native turtles (MSHCP BMP 2009b). The 2012 monitoring report stated that there is probably only one female in the SJWA (based on surveys at that time), and proper management could lead to a successful repopulation. CDFW staff observed two pond turtles in 2016 (pers. com. CDFW 2017b)
2. Special-Status Wildlife Species Not Observed but with a Moderate to High Potential to Occur within the Davis Unit							
Reptile/Upland	*Anniella pulchra pulchra*	silvery legless lizard	None	SSC	Not Covered	Stabilized dunes, beaches, dry washes, chaparral, scrubs, and pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils.	Moderate potential to occur. Suitable sage scrub and riparian habitats exists within the unit for this species, but would likely be limited to scattered locations with friable soils and enough cover to maintain soil moisture. (e.g., shade, leaves and other surface debris).

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Reptile/Upland	*Coleonyx variegatus abbotti*	San Diego banded gecko	None	SSC	Covered	Rocky areas within coastal scrub and chaparral.	Moderate potential to occur based on suitable habitat present within the Davis Unit. RCA conducted focused nocturnal reptile surveys in 2008 that were negative (MSHCP BMP 2009c), although the species was detected in the northwestern corner of the Lake Perris area.
Reptile/Upland	*Phrynosoma blainvillii*	Blainville's horned lizard	None	SSC	Covered	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats.	High potential to occur at least at low densities. There is suitable coastal scrub, chaparral, and grassland habitat on the unit, and this species has been observed on the Potrero Unit (CDFW 2016a).
Reptile/Upland	*Salvadora hexalepis virgultea*	coast patch-nosed snake	None	SSC	Not Covered	Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites.	Moderate potential to occur in low densities. There is some suitable habitat for this species within the unit.
Reptile/Wetland	*Thamnophis hammondii*	two-striped garter snake	None	SSC	Not Covered	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools.	Moderate potential to occur. There is suitable habitat in the unit near the vernal pool and ponded areas, as well as perennial or seasonal drainages containing flowing or ponded water.
Bird/Upland	*Charadrius montanus*	mountain plover (wintering)	None	SSC	Covered	Winters in shortgrass prairies, plowed fields, open sagebrush, and sandy deserts.	High potential to occur. There is suitable habitat in the flat areas with low vegetation cover. Mountain plover has not observed in the unit. Focused mountain plover surveys were conducted within the Mountain Plover Core Areas identified in the MSHCP which includes the Mystic Lake/SJWA (MSHCP BMP 2013a).
Bird/Upland	*Spizella atrogularis*	black-chinned sparrow (nesting)	BCC	None	Not Covered	Nests and forages in mixed chaparral, chamise–redshank chaparral, sagebrush, and other brushy habitats.	High potential to occur. There is suitable nesting and foraging habitat in the unit in the chaparral and sage scrub areas.

Table 4-7
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Davis Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Davis Unit
Mammal/Upland	*Chaetodipus californicus femoralis*	Dulzura pocket mouse	None	SSC	Not Covered	Open habitat, coastal scrub, chaparral, oak woodland, chamise chaparral, mixed-conifer habitats; disturbance specialist; 0 to 3,000 feet amsl.	Moderate potential to occur. There is suitable habitat for this species in the sage scrub and chaparral areas in the unit. This species is much less common in the western Riverside County region than the closely related and similar-appearing northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*). Also, the subspecies of California pocket mouse on site, if present, could be the non-special status *C. c. dispar,*
Mammal/Upland	*Nyctinomops femorosaccus*	pocketed free-tailed bat	None	SSC	Not Covered	Pinyon–juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases; roosts in high cliffs or rock outcrops with dropoffs, caverns, and buildings.	Moderate potential to occur. There is suitable foraging habitat throughout the unit for this species, including grasslands, sage scrubs, chaparral, riparian and wetland areas.
Mammal/Upland	*Antrozous pallidus*	pallid bat	None	SSC	Not Covered	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees.	Moderate potential to occur. There is suitable foraging habitat throughout the unit for this species, including grasslands, sage scrubs, chaparral, riparian and wetland areas.
Invertebrate/ Wetland	*Branchinecta lynchi*	vernal pool fairy shrimp	FT	None	Covered	Vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats	Low to moderate potential to occur. There is suitable habitat on the project site for this species in the alkaline ephemeral wetlands. MSHCP BMP (2009d) included identification of five vernal pools on the Davis Unit. Three of the five pools support the non-listed versatile fairy shrimp.
Invertebrate/ Wetland	*Branchinecta sandiegonensis*	San Diego fairy shrimp	FE	None	Not Covered	Vernal pools, non-vegetated ephemeral pools.	Moderate potential to occur. MSHCP BMP (2009d) included identification of five vernal pools on the Davis Unit. Three of the five pools support the non-listed versatile fairy shrimp.
Invertebrate/ Wetlands	*Streptocephalus woottoni*	Riverside fairy shrimp	FE	None	Covered	Vernal pools, non-vegetated ephemeral pools.	Moderate potential to occur. MSHCP BMP (2009d) included identification of five vernal pools on the Davis Unit. Three of the five pools support the non-listed versatile fairy shrimp.

NOTE: Species in boldface are federally or state listed.
Status Legend:
None: No federal or state designation.
Federal:

BCC:	USFWS—Birds of Conservation Concern
FC:	Candidate species for federal listing as threatened or endangered
FE:	Federally listed as endangered
FT:	Federally listing as threatened
FD:	Federally delisted; monitored for 5 years

State:

FP:	CDFW Fully Protected Species
SE:	State listed as endangered
ST:	State listed as threatened
SSC:	California Species of Special Concern
WL:	CDFW Watch List Species
SD:	State delisted
MSHCP:	Western Riverside County Multiple Species Habitat Conservation Plan
Covered*:	Considered adequately conserved when certain conservation requirements are met

Table 4-8
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Potrero Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Potrero Unit
Special-Status Wildlife Species Observed within the Potrero Unit							
Amphibian/ Wetland	*Spea hammondii*	western spadefoot	None	SSC	Covered	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture.	Observed in P2 in 2009 and 2010; in P5 in 2007 and 2015; in P6 in 2009 and 2013; and in P10 in 2008 and 2009 (RCA 2016). There is suitable habitat for this species, and there are CNDDB occurrence data in the unit (observed on the Potrero and Davis Units – CDFG 2008b). Observed in P3 and P4 (CDFG 2000).
Bird/Riparian	*Elanus leucurus*	white-tailed kite	None	FP (nesting)	Covered	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands.	Surveys for riparian birds, including white-tailed kite, were conducted in portions of the MSHCP in 2006, 2007 and 2011 (MSHCP BMP 2007a, 2008a, 2012a). Observed in P2 in 2006, 2007, and 2010; in P5 in 2006; in P8 and P9 in 2006; and in P10 in 2006, 2010, 2012, and 2015 (mostly in P2 and P10) (RCA 2016). Successful reproduction of three pairs of white-tailed kites was detected at Potrero in 2006 (RCA 2007). Juveniles with adults detected in June and July 2012 in P10; and breeding activity observed in 2015 at prior nest location in P10 (RCA 2016). There is suitable riparian, oak woodland, wetland, grassland, and agriculture habitat in the unit (CDFW 2016a). Suitable nesting habitat includes the riparian scrub, woodland, and forest habitat (see Figures 5.3-3A and 5.3-3B.

Table 4-8
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Potrero Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Potrero Unit
Bird/Riparian	*Setophaga petechia*	yellow warbler (nesting)	BCC	SSC	Covered	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats.	Yellow warbler was observed during the focused riparian bird surveys in 2006 and 2007 (RCA 2007, 2008). The yellow warbler Core Areas are outside of the Potrero Unit but a nest was observed in the unit during the nest monitoring in 2008 (MSHCP BMP 2009a). Observed in P2 in 2006 and 2007; in P5 in 2006, 2007, and 2014; in P9 in 2007; and in P10 in 2006-2008 and 2013–2015 (RCA 2016). There is limited availability of suitable nesting riparian scrub habitat for this species in the unit, and it only occurs in sparse and isolated patches. There is foraging habitat on the unit (CDFW 2016a).
Bird/Riparian	*Vireo bellii pusillus*	least Bell's vireo (nesting)	FE	SE	Covered	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season.	The least Bell's vireo Core Areas are outside of the Potrero Unit, but a nest was observed in the unit during the nest monitoring in 2008 (RCA 2016; MSHCP BMP 2009a). It was also detected during nest monitoring in 2007 in P2 (RCA 2016). Overall, vireo has been observed in P2 in 2006–2008; in P8 and P9 in 2010; and in P10 in 1990 and 2008 (RCA 2016 and CNDDB/USFWS occurrence data). There is suitable willow riparian nesting and foraging habitat on the unit (CDFW 2016a). More information on these observations is provided in the text below the tables.
Bird/Upland	*Ammodramus savannarum*	grasshopper sparrow (nesting)	None	SSC	Covered*	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches.	Observed P5 in 2005, P6 in 2011, and P9 in 2006 (RCA 2016). Also observed in P2 (CDFG 2000). The Potrero Unit was not quantitatively surveyed in 2005 during the grasshopper sparrow surveys, but site visits detected 1 individual in the Potrero Unit and noted there is suitable habitat on the unit in the grassland areas (MSHCP BMP 2006).

Table 4-8
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Potrero Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Potrero Unit
Bird/Upland	*Aquila chrysaetos*	golden eagle (nesting, nonbreeding, and wintering)	BCC	FP, WL	Covered	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats.	Golden eagles have been observed in P1 in 2006; in P2 in 2008–2010; in P3 in 2006, 2008, and 2012; in P4 in 2009 and 2010; in P5 in 2005; in P6 in 2014; in P9 in 2008 and 2012–2015; and in P10 in 2008, 2009, 2010, and 2013 (RCA 2016 and CNDDB occurrence data). The 2012 golden eagle nest survey detected an active golden eagle nest on a cliff ledge at Potrero; the pair produced one nestling, but the area (and nest) were burned in June and the outcome of the nest could not be determined (MSHCP BMP 2013c). This cliff nest was used again in 2013, with a chick observed at the nest, and nesting activity at the nest in 2014 (RCA 2016). There is suitable foraging habitat on the unit for this species (CDFW 2016a).
Bird/Upland	*Artemisiospiza belli*	Bell's Sparrow (nesting)	BCC	WL	Covered	Nests and forages in coastal scrub and dry chaparral; typically in large, unfragmented patches dominated by chamise; nests in more dense patches but uses more open habitat in winter.	Observed in P1 in 2007; in P2 in 2012 and 2014; in P4 in 2008 and 2010; in P5 in 2014; in P6 in 2010 and 2012; in P8 in 2006 and 2009; in P10 in 2014 and 2015; and in P11 in 2015 (RCA 2016). There is suitable sage scrub, chaparral, and woodland habitat on the unit.
Bird/Upland	*Athene cunicularia*	burrowing owl (burrow sites and some wintering sites)	BCC	SSC	Covered	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows.	Focused burrowing owl surveys were conducted in 2006, 2007, 2011 (MSHCP BMP 2007b, 2008b, 2012b), and 2015 (report not available yet), but no burrowing owls were observed in this unit during those surveys. Observed during other surveys in P1 in 2008 and P5 in 2006 (RCA 2016 and CNDDB occurrence data). There is suitable habitat in the grassland and agricultural areas on the unit for this species (CDFW 2016a). More information on these observations is provided in the text below the tables.
Bird/Upland	*Baeolophus inornatus*	oak titmouse (nesting)	BCC	None	Not Covered	Nests and forages in oak woodlands; also open pine forest, pinyon woodland, and riparian and chaparral with oak.	Observed in P2 and P10 in 2006 and 2007 (RCA 2016). There is suitable woodland and riparian habitat on the unit.

Table 4-8
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Potrero Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Potrero Unit
Bird/Upland	*Buteo regalis*	ferruginous hawk (nonbreeding/wintering)	BCC	WL	Covered	Winters and forages in open, dry country, grasslands, open fields, agriculture.	Observed in P3 and P4 in 2008, P5 in 2010 and 2015, and P10 in 2006 and 2008 (RCA 2016 and CNDDB occurrence data). This species occurs as an occasional winter migrant forager on the unit (CDFW 2016a). There is suitable grassland foraging habitat on the unit.
Bird/Upland	*Circus cyaneus*	northern harrier (nesting)	None	SSC	Covered	Nests in open wetlands including marshy meadows, wet lightly-grazed pastures, old fields, freshwater and brackish marshes, but also in drier habitats such as grassland and grain fields; forages in variety of habitats, including grassland, scrubs, rangelands, emergent wetlands, and other open habitats.	Observed in P1 in 2008; in P2 in 2008–2010; in P3 in 2008 and 2012; in P4 in 2009–2010; in P5 in 2008–2010; in P6 in 2010; in P7 in 2012; in P9 in 2012 and 2014; in P10 in 2007, 2009, 2010, and 2014; and in P11 in 2008 and 2010 (RCA 2016). Focused nesting surveys were conducted in 2009; survey areas were selected by identifying primary breeding and secondary breeding habitat. Primary breeding habitat includes cismontane alkali marsh, freshwater marsh, playas and vernal pools, and grasslands; secondary foraging/wintering habitat includes agricultural land, Riversidean alluvial fan sage scrub and coastal sage scrub. No northern harrier nests were detected in the unit during the 2009 surveys (MSHCP BMP 2010a). There is suitable foraging habitat in the unit in the grassland and agricultural areas on the unit, but the site lacks wetland nesting habitat (CDFW 2016a).
Bird/Upland	*Falco mexicanus*	prairie falcon (nesting)	BCC	WL	Covered	Forages in grassland, savanna, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs.	Observed in P1 in 2008, P2 in 2006 and 2008, P4 in 2007, P5 in 2008 and 2012, P8 in 2009, P9 in 2012, and P10 in 2007 and 2014 (RCA 2016). There is suitable foraging habitat on the unit for this species in grassland and agricultural areas (CDFW 2016a). Prairie falcon rarely breeds within the MSHCP area (MSHCP BMP 2010b) and the majority of observations have been outside of the breeding season (RCA 2016).

Table 4-8
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Potrero Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Potrero Unit
Bird/Upland	*Lanius ludovicianus*	loggerhead shrike (nesting)	BCC	SSC	Covered	Nests and forages in open habitats with scattered shrubs, trees, or other perches.	The unit is within the loggerhead shrike Core Area of the MSHCP (MSHCP BMP 2011a). Based on the 2010 focused loggerhead shrike surveys, active nests were observed in the unit (MSHCP BMP 2011a) in P10 and P11 (RCA 2016). Observed in P2 in 2006-2008 and 2010; in P3 in 2007, 2010, and 2012; in P4 in 2007, 2008, and 2010; in P5 in 2005-2010, 2012, 2014, and 2015; in P6 in 2007, 2009-2012, 2014, and 2015; in P10 in 2010, 2011, and 2013-2015; and in P11 in 2009 and 2010 (RCA 2016 and CNDDB occurrence data). There is suitable nesting and foraging habitat in the unit, including grassland, agriculture, and sage scrub (CDFW 2016a).
Bird/Upland	*Polioptila californica californica*	coastal California gnatcatcher (nesting)	FT	SSC	Covered	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet amsl.	The California gnatcatcher Core Areas are outside of the Potrero Unit and therefore this unit was not surveyed as part of the nest monitoring in 2008 (MSHCP BMP 2009a). No California gnatcatchers were observed in the unit during the coastal sage scrub surveys in 2006, 2007 or 2011 (MSHCP BMP 2007c, 2008c, 2012c). Observed on site in P7 in 2010 during amphibian surveys (RCA 2016). The available sage scrub habitat on site is marginally suitable for this species due to the generally steep slopes of the available habitat.
Bird/Upland	*Spinus lawrencei*	Lawrence's goldfinch (nesting)	BCC	None	Not Covered	Nests and forages in open oak, arid woodlands, and chaparral near water.	Observed in P2 and P10 in 2006 and 2007 and in P8 and P9 in 2006 (RCA 2016 This species is not expected to nest in the unit, due to the generally poor habitat quality. It would be expected to occasionally forage over the site though.
Bird/Upland	*Spizella atrogularis*	black-chinned sparrow (nesting)	BCC	None	Not Covered	Nests and forages in mixed chaparral, chamise–redshank chaparral, sagebrush, and other brushy habitats.	Observed in P2 in 2006, P5 in 2014, P8 and P9 in 2006 and 2007, P10 in 2006-2007 and 2011, and P11 in 2007 (RCA 2016). There is suitable nesting and foraging habitat on the unit in sage scrub and chaparral (CDFW 2016a).

Table 4-8
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Potrero Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Potrero Unit
Bird/Upland	*Spizella breweri*	Brewer's sparrow (nesting)	BCC	None	Not Covered	Nests in treeless shrub habitat with moderate canopy, especially sagebrush; winters in open desert scrub and croplands in southern Mojave and Colorado Deserts.	Observed in P5 in 2007 and P9 in 2006 (RCA 2016). There have been historical migrant observations on the unit (CDFW 2016a); however, the unit is outside the typical known range for this species, which is mainly in the desert east of the unit in this region.
Bird/Wetland	*Agelaius tricolor*	tricolored blackbird (nesting colony)	BCC	State Candidate for Listing Endangered, SSC	Covered	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture.	RCA has documented a breeding colony within a small (0.5-acre) pond in P10 (MSHCP BMP 2006c). This species has been observed in P4 in 2007, P8 in 2006, and in P10 in 2005–2007 and 2009–2015 (RCA 2016). Suitable foraging habitat in grassland. More information on these observations is provided in the text below the tables.
Bird/Wetland	*Falco peregrinus anatum*	American peregrine falcon (nesting)	Delisted; S; BCC	Delisted; FP	Covered	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present.	Observed in P2 in 2006 (RCA 2016). There is suitable foraging habitat in the riparian areas of the unit. It is not likely that this species would nest on the unit due to lack of suitable nesting habitat (CDFW 2016a).
Mammal/Upland	*Lepus californicus bennettii*	San Diego black-tailed jackrabbit	None	SSC	Covered	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, and rangelands.	Observed in P3 in 2015; in P4 in 2008; in P5 2010 and 2013-2015; in P6 in 2010, 2012, and 2014; in P10 in 2006, 2011, and 2015; and in P11 in 2012 (RCA 2016). There is suitable grassland and sage habitat in the unit (CDFW 2012).
Mammal/Upland	*Chaetodipus fallax fallax*	northwestern San Diego pocket mouse	None	SSC	Covered	Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon–juniper, and annual grassland.	Captured during Los Angeles Pocket Mouse (MSHCP BMP 2007d, 2008d, 2011b, and 2012d) and Stephens Kangaroo Rat Surveys (MSHCP BMP 2007e, 2008e) in P2 in 2007, 2008, and 2010; in P3 in 2007, 2008, and 2010; in P4 in 2000, 2006, 2008, and 2010; in P5 in 2007, 2008, 2010, and 2014; in P6 in 2008, 2010, and 2014; in P9 in 2010; in P10 in 2007, 2008, 2010, and 2014; and in P11 in 2007 and 2010 (RCA 2016 and CNDDB occurrence data). There is suitable habitat for this species in the sage scrub, chaparral and grassland areas in the unit and it is expected to be common (CDFW 2016a).

Table 4-8
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Potrero Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Potrero Unit
Mammal/Upland	*Dipodomys stephensi*	Stephens' kangaroo rat	FE	ST	Covered	Annual and perennial grassland habitats, coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas.	Observed at numerous locations in P2 in 2006–2008 and 2013; in P3 in 2007, 2008, and 2014; in P4 in 2003, 2006–2008, and 2014; in P5 in 2005–2008, 2011, and 2014; in P6 in 2007, 2008, 2010, 2011, and 2014; in P10 in 2006–2008, 2010, and 2014; and in P11 in 2006, 2007, 2008, and 2010, with the highest counts in P2, P4, P5, and P10 (RCA 2016 and CNDDB occurrence data). There is suitable annual grassland habitat in the unit, and may be common to abundant in occupied habitat (CDFW 2016a). More information on these observations is provided in the text below the tables.
Reptile/Upland	*Aspidoscelis tigris stejnegeri*	San Diego tiger whiptail	None	SSC	Covered	Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas.	Observed in P6 in 2012, P7 in 2010 and P11 in 2008 (RCA 2016). There is suitable sage scrub, chaparral and woodland habitats on the unit.
Reptile/Upland	*Crotalus ruber*	red-diamond rattlesnake	None	SSC	Covered	Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats.	Observed in P3 in 2010 and P11 in 2005 (RCA 2016). There is suitable grassland, sage scrub, chaparral and woodland habitat on the unit. Also recorded in P1 (CDFW 2016a).
Reptile/Upland	*Phrynosoma blainvillii*	Blainville's horned lizard	None	SSC	Covered	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats.	Observed in P2 in 2008, P3 in 2008 and 2014, P4 in 2006 and 2008, and P10 in 2005 and 2013 (RCA 2016 and CNDDB occurrence data). There is suitable grassland, sage scrub, chaparral and woodland habitat in the unit (CDFW 2016a).
Special-Status Wildlife Species Not Observed but with a Moderate to High Potential to Occur within the Potrero Unit							
Bird/Riparian	*Empidonax traillii extimus*	southwestern willow flycatcher (nesting)	FE	SE	Covered	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	Moderate potential to occur as a migrant, but no potential as breeder due to small patchy breeding habitat. There is marginally suitable habitat along the willow riparian areas in the unit.

Table 4-8
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Potrero Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Potrero Unit
Bird/Riparian	*Icteria virens*	yellow-breasted chat (nesting)	None	SSC	Covered	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush.	Moderate potential to occur as a migrant but not for breeding. The habitat occurs in in patches that are too small to support nesting on the Unit. However, there is suitable foraging habitat in the unit for this species in the riparian areas.
Bird/Riparian	*Empidonax traillii*	willow flycatcher (nesting)	BCC	SE	Not covered	Nests in wet meadow and montane willow riparian.	Moderate potential to occur as a migrant but not for breeding. The habitat occurs in in patches that are too small to support willow flycatcher nesting on the unit. However, there is suitable foraging habitat in the unit for this species in the riparian areas.
Bird/Upland	*Buteo swainsoni*	Swainson's hawk (nesting)	BCC	ST	Covered	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture.	Moderate potential to occur. This species may occasionally occur as a spring or fall migrant on the unit. There is suitable foraging habitat in the unit in the grassland and agricultural areas.
Bird/Upland	*Charadrius montanus*	mountain plover (wintering)	None	SSC	Covered	Winters in shortgrass prairies, plowed fields, open sagebrush, and sandy deserts.	Moderate potential to occur. There may be some suitable habitat in the flat areas with low vegetation cover.
Mammal/Upland	*Antrozous pallidus*	pallid bat	None	SSC	Not Covered	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees.	Moderate potential to occur. This species may forage in the natural habitats on the unit. Suitable roosting habitat is limited on the unit.
Mammal/Upland	*Chaetodipus californicus femoralis*	Dulzura pocket mouse	None	SSC	Not Covered	Open habitat, coastal scrub, chaparral, oak woodland, chamise chaparral, mixed-conifer habitats; disturbance specialist; 0 to 3,000 feet amsl.	Moderate potential to occur. There is suitable habitat for this species in the sage scrub and riparian areas on the unit.
Mammal/Upland	*Chaetodipus fallax pallidus*	pallid San Diego pocket mouse	None	SSC	Not Covered	Desert wash, desert scrub, desert succulent scrub, and pinyon–juniper woodland.	Moderate potential to occur. There is suitable habitat in the grassland and sage scrub areas on the unit for this species.
Mammal/Upland	*Dipodomys merriami parvus*	San Bernardino kangaroo rat	FE	SSC	Covered	Sparse scrub habitat, alluvial scrub/coastal scrub habitats on gravelly and sandy soils near river and stream terraces.	Moderate potential to occur in alluvial fan sage scrub within lower Potrero Creek. Known locations exist west of the Potrero Unit.

Table 4-8
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Potrero Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Potrero Unit
Mammal/Upland	*Eumops perotis californicus*	western mastiff bat	None	SSC	Not Covered	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels.	Moderate potential to occur. This species may forage in the natural habitats on the unit. Suitable roosting habitat is limited on the unit. Species was observed on the nearby Davis Unit (CDFG 2008b).
Mammal/Upland	*Neotoma lepida intermedia*	San Diego desert woodrat	None	SSC	Covered	Coastal scrub, desert scrub, chaparral, cacti, rocky areas.	High potential to occur. There is suitable habitat on the unit in the sage scrub and chaparral, and this species has been observed on the nearby Davis Unit (CDFW 2012).
Mammal/Upland	*Onychomys torridus ramona*	southern grasshopper mouse	None	SSC	Not Covered	Grassland and sparse coastal scrub.	Moderate potential to occur in low densities. This species is typically found in the desert but has been recently found in the nearby and similar Shipley Reserve to the south.
Mammal/Upland	*Perognathus longimembris brevinasus*	Los Angeles pocket mouse	None	SSC	Covered	Lower-elevation grassland, alluvial sage scrub, and coastal scrub.	High potential to occur. There is suitable habitat for this species in the grassland and sage scrub habitats associated with sandy soils on the unit (CDFW 2016a).
Mammal/Upland	*Taxidea taxus*	American badger	None	SSC	Not Covered	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils.	Moderate potential to occur in low densities. There is suitable grassland, agricultural, and sage scrub habitat on the unit.
Reptile/Upland	*Coleonyx variegatus abbotti*	San Diego banded gecko	None	SSC	Covered	Rocky areas within coastal scrub and chaparral.	High potential to occur. There are suitable granite outcrops on the site for this species.
Reptile/Wetland	*Thamnophis hammondii*	two-striped garter snake	None	SSC	Not Covered	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools.	Moderate potential to occur. There is marginally suitable habitat for this species on the unit near the marsh areas.
Invertebrate/ Wetland	*Branchinecta lynchi*	vernal pool fairy shrimp	FT	None	Covered	Vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats	Low to moderate potential to occur. There is suitable habitat on the project site for this species in the alkaline ephemeral wetlands. MSHCP BMP (2011c) reported pools with fairy shrimp on the Potrero Unit and one pool supported the non-listed versatile fairy shrimp
Invertebrate/ Wetland	*Branchinecta sandiegonensis*	San Diego fairy shrimp	FE	None	Not Covered	Vernal pools, non-vegetated ephemeral pools.	Moderate potential to occur Moderate potential to occur. MSHCP BMP (2011c) reported pools with fairy shrimp on the Potrero Unit and one pool supported the non-listed versatile fairy shrimp

Table 4-8
Special-Status Wildlife Species Observed or with a Moderate to High Potential to Occur within the Potrero Unit

Taxon/Guild	Scientific Name	Common Name	Federal Status	State Status	MSHCP	Habitat	Observed or Potential to Occur on Potrero Unit
Invertebrate/ Wetlands	*Streptocephalus woottoni*	Riverside fairy shrimp	FE	None	Covered	Vernal pools, non-vegetated ephemeral pools.	Moderate potential to occur. MSHCP BMP (2011c) reported pools with fairy shrimp on the Potrero Unit and one pool supported the non-listed versatile fairy shrimp

NOTE: Species in boldface are federally or state listed.

Status Legend:
None: No federal or state designation.

Federal:
BCC: USFWS—Birds of Conservation Concern
FC: Candidate species for federal listing as threatened or endangered
FE: Federally listed as endangered
FT: Federally listing as threatened
FD: Federally delisted; monitored for 5 years

State:
FP: CDFW Fully Protected Species
SE: State listed as endangered
ST: State listed as threatened
SSC: California Species of Special Concern
WL: CDFW Watch List Species
SD: State delisted

MSHCP: Western Riverside County Multiple Species Habitat Conservation Plan
Covered*: Considered adequately conserved when certain conservation requirements are met.

Least Bell's Vireo

The least Bell's vireo Core Areas are outside of the Davis and Potrero Units and therefore were not surveyed as part of the nest monitoring in 2008 (MSHCP BMP 2009a). Least Bell's vireo were not observed at the Lake Perris/SJWA during the 2007 focused riparian bird surveys (MSHCP BMP 2008a). Vireo were observed at both the Lake Perris/Mystic Lake Core Area and Lake Perris/Mystic Lake non-core area during 2011 focused riparian bird surveys, although nesting was not documented at either area in the Davis Unit (MSHCP BMP 2012a). Overall, vireo has been observed in 2005 in Subunits D4, in 2007 and 2008 in D14, in 2010 in D4, in 2011 and 2012 in D1 and D7, in 2014 in D3 and D4, and in 2015 in D4 (RCA 2016 and CNDDB/USFWS occurrence data). The observations are concentrated along the riparian vegetation in the central and northern portions of the unit (Figure 5.3-5C.1). There is suitable nesting and foraging habitat in willow riparian areas in the unit and this species has been observed in the Davis Unit during the nesting season (RCA 2016).

A nest was observed in the Potrero Unit during the nest monitoring in 2008 (MSHCP BMP 2009a). It was also detected during nest monitoring in 2007 in P2 (RCA 2016). Overall, vireo has been observed in 1990 in Subunits P10, in 2006 and 2007 in P2, in 2008 in P2 and P10, and in 2010 in P8 and P9 (RCA 2016 and CNDDB/USFWS occurrence data). The observations are concentrated along the riparian vegetation in the central portion of the unit. There is suitable willow riparian nesting and foraging habitat on the unit (CDFW 2016a).

Vegetation sampling was done as part of the 2007 riparian bird survey. The percent cover of *Salix* spp. was positively correlated with least Bell's vireo occupancy, and vireo use could be increased by expanding the willow growth ((MSHCP BMP 2008a).

Tricolored Blackbird

1989–2005 Occurrence Data: According to the *Tricolored Blackbird Survey Report* (MSHCP BMP 2006c), tricolored blackbirds have historically occurred within the Davis Unit. Historical data shows populations in the SJWA ponds in the Davis Unit. Populations in Marsh A (D4) ranged from a nesting colony with approximately 6,000 individuals in 1989 (Beedy et al. 1991); 5,000 individuals in 1992, 1,000 individuals in 1993, 400 individuals in 1994, 750 individuals in 1996, and 350 individuals in 1997 (MSHCP BMP 2006c). Populations in Marsh B (D4) ranged from 1,000 in 1993 to between 75 and 300 individuals in 1994, between 2,000 and 2,500 individuals in 1996, and 400 individuals in 1997 (MSHCP BMP 2006c). Additionally, approximately 200 individuals in 1993 along the west side of Davis Road (D7) (MSHCP BMP 2006c). The single largest recorded nesting colony in Riverside County since 1997 has always occurred somewhere in the San Jacinto Valley, including in the SWJA in 2003, 2004, and 2005

(MSHCP BMP 2011d). The 2006 survey report noted that Colony 5 (located in D4) was the largest breeding colony found in the MSHCP, with an estimated 10,000 breeding adults historically (no date; MSHCP BMP 2006c). During the initial 2005 visit, a colony was observed nest building at Colony 5; however, a follow-up visit noted that the colony had disappeared, and no breeding success was observed in 2005 within SJWA (MSHCP BMP 2006c).

A smaller colony nests in the Potrero Unit. The Potrero colony was estimated as supporting 500 breeding adults in the Potrero Pond Colony (0.5-acre) in 2005 in P10.

2006–2015 Occurrence Data: Tricolored blackbirds were observed in the Davis Unit in 2006 in Subunits D4; in 2008 in D2, D4, D7, D8, and D12; and in 2010 in D11 according to GIS data from RCA (RCA 2016). No nesting colonies were observed in the Davis Unit during the 2009 or 2010 surveys (MSHCP BMP 2011d). In June 2011, a colony of approximately 450 birds were observed at the Bridge Street Pond (D11) in the provisional stage of nesting, and foraging in the grassland around Mystic Lake and to a lesser extent from the agricultural fields surrounding Bridge Street (MSHCP BMP 2012g). Nest building was observed in D4 in 2012 (RCA 2016), but no nesting colonies were described in the monitoring report (MSHCP BMP 2013d), and therefore it is assumed there was no successful nesting in 2012. No nesting colonies were observed in the Davis Unit in 2013 (MSHCP BMP 2014a), but individuals were documented in Subunits D4, D10, D11, and D13 in 2013, including at the Spring-Summers Wetland and Bridge Street Pond (RCA 2016). Two nesting colonies were observed in the Davis Unit in 2014: one colony of approximately 150 individuals in the San Jacinto River and another with approximately 250 individuals at the Spring-Summer Wetlands; neither location had previously recorded nesting colonies (MSHCP BMP 2015). These nesting colonies were the first in the Davis Unit since 2011 (MSHCP BMP 2015a). Three successful nesting colonies were confirmed in 2015 within the Davis Unit at the Spring-Summer Wetlands (D13), Bridge Street Pond (D11), and Ramona Hunt Club (D10) (MSHCP BMP 2016a). Tricolored blackbirds were also observed flying or foraging at Subunits D3, D4, D5, and D7 in 2015 (RCA 2016 and CNDDB data).

A colony was observed in the Potrero Pond Colony in 2009, 2010, 2012, 2013, and 2014 (RCA 2016). The 2009 surveys estimated the colony size on April 25, 2009 at 200 (+ 50) adults, occupying an area of approximately 900 square meters (0.2 acre). Adults were in the provisioning stage of nesting and collecting caterpillars and other insect prey from grasslands within the wildlife area. Breeding success was confirmed on a second visit to the colony on May 2 (MSHCP BMP 2011d). In 2010, Feenstra (2010, as cited in MSHCP BMP 2011d) reported 75 birds at this site in their April survey. On May 4, 2010, this colony had approximately 25 adults and was in the nestling stage; reproductive success was confirmed on May 9 (MSHCP BMP 2011d). The condition of the nesting substrate was generally poor, consisting of cattails that were mostly dry and bent over (MSHCP BMP 2011d). No colony was observed here in 2011 (or any

other area in the Potrero Unit), but several individuals were observed in Subunit P10 (RCA 2016). This area was colonized in 2012 and reproductive success was confirmed, although the colony was smaller (20 birds) compared to previous years (MSHCP BMP 2013d). Successful reproduction was confirmed at the Potrero Pond in 2013 (350 individuals) and in 2014 (200 individuals) (MSHCP BMP 2014; 2015). A colony was not observed here in 2015, but individuals were in Subunit P10 that year (RCA 2016) (see Figure 5.3-5G.2).

Suitable Habitat: Suitable breeding habitat includes upland and wetland habitat located within 0.5 kilometer (0.3 mile) of a water source and 1 kilometer to 5 kilometers (0.6 mile to 3.1 mile) from quality foraging habitat (RCA 2016). Nesting colonies have been observed in typical marsh habitat (e.g., *Typha* spp. and *Scirpus* spp.), as well as thistle and non-native vegetation (e.g., *Malva parviflora, Lactuca serriola, Urtica dioica,* etc.) (RCA 2016). Adults forage on grain and insects, and young depend on insects gathered from surrounding fields and vegetation. While foraging areas can vary and include many different types, adults averaged travel distances between 2.3 kilometers and 5 kilometers (1.4 miles and 3.1 miles) (RCA 2016).

Burrowing Owl

Focused burrowing owl surveys were conducted within specific areas of the MSHCP in 2006, 2007, and 2011 (MSHCP BMP 2007b; 2008b; 2012b). Based on the RCA (2016) and CNDDB data, approximately 6 burrowing owls were observed in the Davis Unit in 1982 in Subunits D7, D8, D13; 13 observed in 2005 in D10 and D13; 24 observed in 2006 in D1, D4, D7, D13, and D15; 41 observed in 2007 in D1, D4, D6, D7, D9, and D13; 12 observed in 2009 in D4, D13, and D15; 12 observed in 2011 in D4 and D13; 16 observed in 2012 in D11 and D13; 2 observed in 2014 in D10 and D13; and 8 observed in 2015 in D10 and D13 (RCA 2016). One burrowing owl location was recorded in Potrero Unit in 2006 in P5 (CNDDB) and one individual was observed in 2008 in P1 (RCA 2016). Twelve breeding pairs were observed in or near the Lake Perris/SJWA survey area in 2006 (MSHCP BMP 2007b) and three pairs in 2007 (RCA 2008b). One pair nested in 2006 and two pairs in 2007 in D13 (Peterson, per. comm. 2017b). None were observed nesting in the Potrero Unit in 2006 or 2007 based on the report figures. No breeding pairs were observed in the Lake Perris/SJWA during the 2011 surveys (MSHCP BMP 2012b). See burrowing owls on Figures 4-3a – 4-3l.

Stephens' Kangaroo Rat

Stephens' kangaroo rat was observed in the Davis and Potrero Units and may be common to abundant in occupied areas of both units. It was observed in the Davis Unit in Subunits D1, D14 and D15, with much higher numbers in D15 (RCA 2016). For example, in 2006, 1,177 individuals were recorded in D15 during Los Angeles pocket mouse (*Perognathus longimembris*

brevinasus) surveys (MSHCP BMP 2007d) and Stephens' Kangaroo Rat Surveys (MSHCP BMP 2007e) compared to 10 individuals in other subunits during the same year (RCA 2016). See Table 4-9.

Table 4-9
Stephens' Kangaroo Rat Population Data (Davis Unit)

Subunit	1990	1991	1999	2006	2007	2008	2010	2011
D1	2	—	2	6	15	—	9	34
D2	1	—	—	—	—	—	—	—
D3	—	1	—	—	—	—	—	—
D14	—	—	—	4	—	2	—	—
D15	—	—	—	1,177	291	—	—	39
Total	**3**	**1**	**2**	**1,187**	**306**	**2**	**9**	**73**

This species was observed in the Potrero Unit in P2, P3, P4, P5, P6, P10, and P11, with highest numbers recorded in P5 and P10. See Table 4-10.

Table 4-10
Stephens' Kangaroo Rat Population Data (Potrero Unit)

Subunit	2003	2005	2006	2007	2008	2010	2011	2013	2014
P2	—	—	67	722	427	—	—	1	—
P3	—	—	—	21	7	—	—	—	1
P4	1	—	14	538	407	—	—	—	2
P5	—	1	16	2,006	858	—	0	—	2
P6	—	—	—	27	11	25	0	—	22
P10	—	—	154	2,486	4,418	21	—	—	23
P11	—	—	9	249	6	10	—	—	—
Total	**1**	**1**	**260**	**6,049**	**6,134**	**56**	**0**	**1**	**50**

Wintering Raptors

Raptors have been well-documented on both units. Some raptors are year-round residents, such as golden eagle, Cooper's hawk, northern harrier, and white-tailed kite, while others are more concentrated in the non-breeding season, such as merlin, ferruginous hawk, prairie falcon, and Swainson's hawk. Common habitats frequented during the winter include open country habitats, such as grassland, agricultural land, and open scrub and woodland. These habitat types occur on both units, as well as surrounding the study area. Overwintering raptor surveys were conducted in 2007–2008 and 2008–2009 to record all Covered raptor species observed during the surveys (MSHCP BMP 2009e; 2010b). Raptors were more abundant within the Davis Unit during these surveys, with 75 observations recorded compared to 11 observations on the Potrero Unit (MSHCP BMP 2009e; 2010b). Northern harrier was recorded the most, with 56 observations on

the Davis Unit and 4 on the Potrero Unit (MSHCP BMP 2009e; 2010b). These species have also been recorded during other survey. For example, American peregrine falcon has been observed regularly on the Davis Unit during the winter, with observations ranging from 2 records in various years up to 13 records in 2012 (RCA 2016). See Tables 4-11 and 4-12 for observations of raptors[5] by month and year. While these observations were made during various surveys and do not represent results from one survey method or survey area, they provide an overview of observations between 2005 and 2015.

Table 4-11
Raptor Observation Data by Year (Davis Unit)

Year	Species	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
2005	American peregrine falcon	—	—	—	—	—	—	2	—	—	—	—	—
	northern harrier	—	—	—	—	1	—	—	—	—	—	1	—
	white-tailed kite	—	—	—	—	—	—	—	—	—	—	1	—
	Total	—	—	—	—	*1*	—	*2*	—	—	—	*2*	—
2006	American peregrine falcon	—	—	—	—	—	—	—	—	—	—	2	—
	bald eagle	—	—	—	2	—	—	—	—	—	—	—	—
	Cooper's hawk	—	—	—	—	—	—	—	—	—	—	1	—
	ferruginous hawk	—	—	—	—	—	—	—	—	—	—	1	—
	northern harrier	—	1	—	2	—	—	—	—	1	—	2	—
	sharp-shinned hawk	—	—	—	—	—	—	—	—	—	1	—	—
	white-tailed kite	—	1	1	—	—	1	3	—	—	—	—	—
	Total	—	*2*	*1*	*4*	—	*1*	*3*	—	*1*	*1*	*6*	—
2007	American peregrine falcon	—	—	—	—	—	2	—	—	—	—	—	—
	Cooper's hawk	1	—	1	—	—	4	—	—	—	—	—	—
	ferruginous hawk	—	—	—	—	—	—	—	—	—	—	1	—
	golden eagle	—	—	—	—	—	—	—	—	—	—	1	—
	merlin	—	—	1	—	—	—	—	—	—	—	—	—
	northern harrier	1	2	—	—	2	—	—	—	—	—	1	—
	Swainson's hawk	—	—	—	—	—	—	—	—	—	—	—	—
	white-tailed kite	—	—	—	—	1	—	3	—	—	—	—	—
	Total	*2*	*2*	*2*	—	*3*	*6*	*3*	—	—	—	*3*	—
2008	American peregrine falcon	—	—	—	1	—	—	—	—	—	—	—	1
	bald eagle	—	—	2	—	—	—	—	—	—	—	2	
	Cooper's hawk	1	1		—	—	—	—	—	—	—	1	2

[5] These tables include special-status or covered raptors.

Table 4-11
Raptor Observation Data by Year (Davis Unit)

Year	Species	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
	ferruginous hawk	—	1	1	—	—	—	—	—	—	—	1	4
	golden eagle	1	—	1	—	2	—	—	—	—	—	2	—
	merlin	—	1	1	—	—	—	—	—	—	—	—	1
	northern harrier	3	12	24	1	—	—	—	1	—	—	7	8
	prairie falcon	1	—	1	—	—	—	—	—	—	—	2	1
	sharp-shinned hawk	—	—	1	—	—	—	—	—	—	—	—	—
	Swainson's hawk	—	1	—	—	—	—	—	—	—	—	—	—
	white-tailed kite	—	1	1	—	—	—	—	1	—	1	2	—
	Total	*6*	*17*	*32*	*2*	*2*	—	—	*2*	—	*1*	*17*	*17*
2009	bald eagle	—	1	—	—	—	—	—	—	—	—	—	2
	Cooper's hawk	—	—	—	—	—	—	—	—	—	1	—	1
	ferruginous hawk	—	2	1	—	—	—	—	—	—	—	—	3
	golden eagle	—	—	1	—	—	—	—	—	—	—	—	—
	merlin	—	—	—	—	—	—	—	—	—	1	—	1
	northern harrier	5	8	17	11	—	—	—	—	—	1	—	3
	prairie falcon	—	1	—	—	—	—	—	—	—	—	—	1
	Swainson's hawk	—	—	1	—	—	—	—	—	—	—	—	—
	white-tailed kite	—	1	3	—	1	1	1	—	—	2	—	5
	Total	*5*	*13*	*23*	*11*	*1*	*1*	*1*	—	—	*5*	—	*16*
2010	bald eagle	—	—	—	—	—	—	—	—	—	—	—	1
	Cooper's hawk	—	—	—	—	—	—	—	—	—	1	—	—
	ferruginous hawk	—	—	—	—	—	—	—	—	—	1	—	—
	merlin	—	—	—	—	—	—	—	—	—	—	—	1
	northern harrier	—	3	2	—	—	—	—	—	—	—	1	1
	prairie falcon	—	—	—	—	—	—	—	—	—	1	—	—
	Short-eared owl	—	2	—	—	—	—	—	—	—	—	—	—
	sharp-shinned hawk	1	—	—	—	—	—	—	—	—	—	—	—
	Swainson's hawk	—	—	—	—	—	—	—	—	—	1	—	—
	white-tailed kite	—	—	—	—	—	—	—	—	—	1	1	1
	Total	*1*	*5*	*2*	—	—	—	—	—	—	*5*	*2*	*4*
2011	American peregrine falcon	—	—	—	—	—	—	—	—	—	—	—	6
	bald eagle	—	—	—	—	—	—	—	—	—	—	—	1
	Cooper's hawk	—	—	—	—	—	—	—	—	—	—	1	4
	ferruginous hawk	1	—	—	—	—	—	—	—	—	—	4	14
	golden eagle	—	—	—	—	—	—	—	—	—	—	—	6
	merlin	—	—	—	—	—	—	—	—	—	1	3	4
	northern harrier	—	—	2	2	1	1	1	—	9	3	39	72
	prairie falcon	—	—	—	—	—	—	—	—	—	—	1	5

Table 4-11
Raptor Observation Data by Year (Davis Unit)

Year	Species	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
	sharp-shinned hawk	—	—	—	—	—	—	—	—	—	—	1	2
	Swainson's hawk	—	—	—	—	—	—	—	—	1	—	—	—
	white-tailed kite	—	—	3	—	—	—	—	—	8	2	23	33
	Total	*1*	—	*5*	*2*	*1*	*1*	*1*	—	*18*	*6*	*72*	*147*
2012	American peregrine falcon	4	8	1	—	—	—	—	—	—	—	—	—
	bald eagle	2	2	—	—	—	—	—	—	—	—	—	—
	Cooper's hawk	2	1	—	—	—	—	—	—	—	—	—	—
	ferruginous hawk	5	10	—	—	—	—	—	—	—	—	—	—
	golden eagle	4	3	1	—	—	—	—	—	—	—	—	1
	merlin	4	2	—	—	—	—	—	—	—	—	—	—
	northern harrier	37	42	4	2	—	—	—	—	—	—	—	3
	prairie falcon	3	3	—		1	—	—	—	—	—	—	—
	Swainson's hawk	—	—	—	1	—	—	—	—	—	—	—	—
	white-tailed kite	22	14	1	—	—	—	—	—	1	—	—	—
	Total	*83*	*85*	*7*	*3*	*1*	—	—	—	*1*	—	—	*4*
2013	American peregrine falcon	1	—	1	—	—	—	—	—	—	—	—	—
	bald eagle	1	1	—	—	—	—	—	—	—	—	—	—
	golden eagle	1	1	—	1	—	—	—	—	—	1	—	1
	northern harrier	5	—	4	—	—	—	—	—	—	1	—	—
	prairie falcon	1	—	—	—	—	—	—	—	—	—	—	—
	Swainson's hawk	—	—	1	—	—	—	—	—	—	—	—	—
	white-tailed kite	—	—		—	—	—	—	—	—	—	—	1
	Total	*9*	*2*	*6*	*1*	—	—	—	—	—	*2*	—	*2*
2014	American peregrine falcon	1	1	—	—	—	—	—	—	1	—	—	—
	bald eagle	3	—	—	—	—	—	—	—	—	—	—	1
	Cooper's hawk	2	—	—	—	—	—	—	—	—	—	—	1
	ferruginous hawk	1	—	3	—	—	—	—	—	—	—	—	1
	golden eagle	3	—	1	—	—	—	—	—	1	—	—	—
	merlin	—	—	1	—	—	—	—	—	—	—	—	—
	northern harrier	12	5	20	—	2	—	—	—	1	—	—	5
	prairie falcon	1	1	1	—	—	—	—	—	—	—	—	2
	Swainson's hawk	—	—	4	—	—	—	—	—	—	—	—	—
	white-tailed kite	3	—	1	—	—	—	—	—	—	—	—	1
	Total	*26*	*7*	*31*	—	*2*	—	—	—	*3*	—	—	*11*
2015	American peregrine falcon	—	—	—	1	—	1	—	1	—	—	—	1
	bald eagle	3	1	—	1	—	—	—	—	—	—	—	—

Table 4-11
Raptor Observation Data by Year (Davis Unit)

Year	Species	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
	Cooper's hawk	—	—	1	—	—	—	—	—	—	—	—	—
	ferruginous hawk	—	—	2	—	1	—	—	—	—	—	—	2
	golden eagle	—	—	—	—	1	—	—	—	—	—	—	—
	northern harrier	6	15	6	2	1	—	—	1	1	—	1	3
	prairie falcon	1	—	—	—	—	—	—	—	—	—	—	—
	white-tailed kite	1	—	—	—	3	1	—	1	—	—	—	1
	Total	*11*	*16*	*9*	*4*	*6*	*2*	—	*3*	*1*	—	*1*	*7*

Table 4-12
Raptor Population Data by Year (Potrero Unit)

Year	Species	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
2005	golden eagle	—	—	—	1	—	—	—	—	—	—	—	—
	Total	—	—	—	*1*	—	—	—	—	—	—	—	—
2006	American peregrine falcon	—	—	—	—	—	1	—	—	—	—	—	—
	Cooper's hawk	—	—	—	—	2	3	4	—	—	1	—	—
	golden eagle	—	—	—	—	—	—	—	—	—	—	2	—
	merlin	—	—	—	—	—	—	—	—	—	—	—	1
	prairie falcon	2	—	—	—	1	1	—	—	—	—	—	—
	sharp-shinned hawk	—	—	—	—	4	—	1	—	—	—	—	—
	white-tailed kite	—	—	1	3	5	5	3	—	—	3	—	—
	Total	*2*	—	*1*	*3*	*12*	*10*	*8*	—	—	*4*	*2*	*1*
2007	Cooper's hawk	—	—	—	1	3	1	—	—	—	—	—	—
	merlin	—	—	—	—	—	—	—	—	—	—	1	1
	northern harrier	—	—	—	1	—	—	—	—	—	—	—	—
	prairie falcon	—	—	—	—	—	3	—	—	—	—	2	
	sharp-shinned hawk	—	—	—	1	1	—	—	—	—	—	—	—
	white-tailed kite	—	—	—	—	1	—	—	—	—	—	—	—
	Total	—	—	—	*3*	*5*	*4*	—	—	—	—	*3*	*1*
2008	Cooper's hawk	—	—	—	—	—	—	—	—	—	—	—	2
	ferruginous hawk	—	1	—	—	—	—	—	—	—	—	—	2
	golden eagle	—	—	1	—	—	3	—	—	1	—	—	1
	merlin	—	1	1	—	—	—	—	—	—	—	—	2
	northern harrier	—	1	1	—	—	—	—	—	—	—	—	7
	prairie falcon	—	2	—	—	—	—	—	—	—	—	—	2
	sharp-shinned hawk	—	1	—	—	—	—	—	—	—	—	—	—
	Total	—	*6*	*3*	—	—	*3*	—	—	*1*	—	—	*16*
2009	golden eagle	1	—	—	1	1	—	—	—	—	—	—	—
	northern harrier	1	1	1	1	—	—	—	—	—	—	—	—

Table 4-12
Raptor Population Data by Year (Potrero Unit)

Year	Species	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
	prairie falcon	1	—	—	—	—	—	—	—	—	—	—	—
	sharp-shinned hawk	1	—	—	—	—	—	—	—	—	—	—	—
	Total	*4*	*1*	*1*	*2*	*1*	—	—	—	—	—	—	—
2010	Cooper's hawk	—	—	2	—	—	—	—	—	—	—	1	—
	ferruginous hawk	1	—	—	—	—	—	—	—	—	—	—	—
	golden eagle	—	1	1	—	—	5	—	—	—	—	1	—
	northern harrier	1	4	1	2	—	—	—	—	—	—	1	—
	sharp-shinned hawk	—	1	—	—	—	—	—	—	—	—	—	—
	white-tailed kite	—	2	1	2	—	—	—	—	—	—	—	—
	Total	*2*	*8*	*5*	*4*	—	*5*	—	—	—	—	*3*	—
2011	Cooper's hawk	—	—	1	—	—	—	—	—	—	—	—	—
	Total	—	—	*1*	—	—	—	—	—	—	—	—	—
2012	Cooper's hawk	—	—	—	—	—	—	1	—	—	—	—	—
	golden eagle	1	2	2	1	2	4	1	—	—	—	—	—
	northern harrier	1	1	—	—	2	—	—	—	—	—	—	—
	prairie falcon	1	1	—	—	—	—	—	—	—	—	—	—
	sharp-shinned hawk	—	1	—	—	—	—	—	—	—	—	—	—
	white-tailed kite	1	—	1	—	—	1	1	—	—	—	—	—
	Total	*4*	*5*	*3*	*1*	*4*	*5*	*3*	—	—	—	—	—
2013	Cooper's hawk	—	—	—	—	4	—	—	—	—	—	—	—
	golden eagle	—	—	—	—	—	6	3	—	—	—	—	—
	Total	—	—	—	—	*4*	*6*	*3*	—	—	—	—	—
2014	golden eagle	3	1	1	1	1	3	1	1	—	—	—	—
	northern harrier	3	3	—	—	—	—	—	—	—	—	—	—
	prairie falcon	—	—	—	—	—	—	—	—	—	—	—	2
	Total	*6*	*4*	*1*	*1*	*1*	*3*	*1*	*1*	—	—	—	*2*
2015	ferruginous hawk	—	—	1	—	—	—	—	—	—	—	—	—
	golden eagle	—	—	1	—	—	—	—	—	—	—	—	—
	white-tailed kite	—	—	2	2	2	—	—	—	—	—	—	—
	Total	—	—	*4*	*2*	*2*	—	—	—	—	—	—	—

4.4 Rare, Threatened, and Endangered Species

The Davis Unit of SJWA LMP study area supports at least 10 rare, threatened, or endangered plant species and 50 rare, threatened, or endangered wildlife species. The Potrero Unit of SJWA LMP study area supports at least 5 rare, threatened, or endangered plant species and 38 rare, threatened, or endangered wildlife species. Figure 4-2 (Index Map + Sheets A–L) illustrates the distribution of special-status plant species within the SJWA LMP Study Area. Figure 4-3 (Index Map + Sheets A–L) illustrates the distribution of special-status wildlife species within the SJWA LMP Study Area. The determination of a species potential to occur includes consideration of the species known distribution, habitat preferences, and occurrence data, compared with known characteristics of the site.

4.5 Critical Habitat

USFWS-designated critical habitat for thread-leaved brodiaea (*Brodiaea filifolia*) occurs within portions of Subunits D7, D12, and D13 of the Davis Unit, and designated critical habitat for spreading navarretia (*Navarretia fossalis*) within portions of Subunits D7, D8, D9, D12, D13, and D15 of the Davis Unit. No USFWS-designated critical habitat occurs within the Potrero Unit (USFWS 2016b). USFWS-designated critical habitat for San Bernardino kangaroo rat (*Dipodomys merriami parvus*) occurs within portions of Subunits D9, D10, and D13 of the Davis Unit. No USFWS-designated critical habitat occurs within the Potrero Unit (USFWS 2016b).

4.6 Wildlife Movement

Wildlife movement on the SJWA was discussed in the MSHCP with respect to both existing habitat linkages and proposed linkages. A linkage is defined in the MSHCP as "[a] connection between Core Areas with adequate size, configuration, and vegetation characteristics to generally provide for "Live-In" Habitat or provide for genetic flow for identified Planning Species." A Core Area is defined in the MSHCP as "[a] block of Habitat of appropriate size, configuration, and vegetation characteristics to generally support the life history requirements of one or more Covered Species." Live-in Habitat is defined in the MSHCP as "Habitat that contains the necessary components to support key life history requirements of a species; e.g., year-round Habitat for permanent residents or breeding Habitat for migrant species." The MSHCP also defines Proposed Constrained Linkages as "A constricted connection expected to provide for movement of identified Planning Species between Core Areas, where options for assembly of the connection are limited due to existing patterns of use."

The Davis Unit is identified as Existing Core H in the MSHCP, and the Potrero Unit is identified as part of Proposed Core 3, which is a large proposed Core Area encompassing The Badlands to the northwest and which connects directly to Existing Core K (San Jacinto Mountains) to the

east. The Davis Unit connects directly with Proposed Core 3 along its eastern boundary at Gilman Springs Road. Both units are important contributors to regional connectivity for wildlife movement, both through their inter-connection and through connections with other important habitat areas in the region, as described below. Maintaining wildlife movement across Gilman Springs Road from the Davis Unit to the badlands is essential.

Proposed Constrained Linkage 20 is identified in the MSHCP at the southeastern corner of the Davis Unit that would connect to the Lakeview Mountains to the south. Proposed Constrained Linkage 20 crosses existing agricultural lands and the Ramona Expressway between the Davis Unit and the Lakeview Mountains, referred to as a "Noncontiguous Habitat Block" in the MSHCP. According to the MSHCP, maintaining this connection is important for reducing the chance of species extirpations in the Lakeview Mountains. Existing agricultural uses currently completely constrain this linkage, with the Ramona Expressway posing an additional obstacle to wildlife movement. The MSHCP identifies several special-status wildlife species (i.e., Planning Species in the MSHCP) potentially associated with Proposed Constrained Linkage 20, including arroyo toad (*Anaxyrus [=Bufo] californicus*), western pond turtle (*Actinemys marmorata [=Clemmys marmorata pallida]*), tricolored blackbird, mountain plover (*Charadrius montanus*), white-faced ibis, and Los Angeles pocket mouse. Species not covered by the MSHCP that may also use this linkage include American badger (*Taxidea taxus*) and mule deer (*Odocoileus hemionus*). This connection could also provide linkage habitat for movement by larger mobile species such as deer, coyotes, badgers, and bobcats, and smaller less mobile species such as native birds, reptiles and amphibians, and rodents.

The Davis Unit connects to the San Jacinto Mountains to the east via the middle segment of the San Jacinto River, referred to as Existing Constrained Linkage C in the MSHCP. Existing Constrained Linkage C also connects to Proposed Constrained Linkage 20. Much of Existing Constrained Linkage C is constrained by existing development bordering the San Jacinto River in the Cities of San Jacinto and Hemet, but its broad channel and natural vegetation provide habitat for special-status species such as arroyo toad, Los Angeles pocket mouse, and white-faced ibis. This connection also provides habitat for movement by larger mobile species such as coyotes, bobcats, mule deer, and smaller less mobile species such as native birds, reptiles and amphibians, and rodents.

Existing Core Area H is also proposed to be expanded to the southwest of the Davis Unit with Proposed Extension Core Area 4 along the middle reach of San Jacinto River, which then connects to Proposed Constrained Linkage 19 at I-215. The Proposed Extension Core Area 4 and Proposed Constrained Linkage 19 would connect to areas downstream of the San Jacinto River in the Canyon Lake area and would provide habitat and maintain floodplain processes for species such as Los Angeles pocket mouse. This connection would also provide linkage habitat for

movement by larger mobile species such as coyotes and smaller less mobile species such as native birds, reptiles and amphibians, and rodents.

The Potrero Unit is part of Proposed Core 3, also referenced in the MSHCP as "Badlands/Potrero". Proposed Core 3 supports both Live-In and northeast–southeast trending wildlife movement habitat connected to Existing Core K to the southeast for many special-status wildlife species addressed in the draft LMP, including Stephens' kangaroo rat, Bell's sparrow, loggerhead shrike, cactus wren (*Campylorhynchus brunneicapillus*), and southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*). Additional larger mobile species using Proposed Core 3 are mountain lions (*Puma concolor*), mule deer, coyotes, badger, and bobcats, as well as many smaller, less mobile native birds, amphibians, reptiles and rodents.

Conceptual linkages were also identified in the MSHCP to connect Proposed Core 3 to habitats in northern Riverside/San Bernardino Counties, including Proposed Linkage 4 (Reche Canyon); Proposed Linkages 5, 6, and 12 (San Timoteo Creek); Proposed Constrained Linkage 22 (San Timoteo Creek); and Proposed Constrained Linkage 23 (Cherry Valley). These linkages variously provide Live-In and movement habitat for a variety of special-status wildlife species that also may occur in, or move through, the Potrero Unit, including Stephens' kangaroo rat, San Bernardino kangaroo rat, Los Angeles pocket mouse, northwestern San Diego pocket mouse, San Diego desert woodrat, San Diego black-tailed jackrabbit, bobcat, Bell's sparrow, coastal California gnatcatcher, Cooper's hawk, yellow warbler, southwestern willow flycatcher, yellow-breasted chat, least Bell's vireo, white-tailed kite, loggerhead shrike, and southern California rufous-crowned sparrow. As noted above, Proposed Core 3 is directly connected to the Davis Unit in Existing Core H, separated only by Gilman Springs Road.

Two other studies have addressed landscape-level habitat connectivity in the SJWA region: (1) the California Essential Habitat Connectivity Project (Spencer et al. 2010) and (2) the South Coast Missing Linkages Project (South Coast Wildlands 2008).

The California Essential Habitat Connectivity Project (CEHC) is a collaborative effort commissioned by the CDFW and California Department of Transportation that developed a coarse-scale "Essential Connectivity Map" that shows large natural "Natural Landscape Blocks" throughout the state and areas considered essential for providing ecological connectivity between the blocks, called "Essential Connectivity Areas" (ECAs). According to the CEHC, ECAs are "placeholder polygons that can inform land-planning efforts, but that should eventually be replaced by more detailed Linkage Designs, developed at finer resolution based on the needs of particular species and ecological processes" (Spencer et al. 2010, p. xiii). The CEHC identifies the area encompassing the SJWA as an ECA in the South Coast Ecoregion.

The South Coast Missing Linkages Project (SCML) is a collaborative inter-agency effort including the South Coast Wildlands, National Park Service, U.S. Forest Service, California State Parks, The Wildlands Conservancy, The Resources Agency, California State Parks Foundation, The Nature Conservancy, Santa Monica Mountains Conservancy, Resources Legacy Foundation, Conservation Biology Institute, San Diego State University Field Stations Program, Environment Now, Mountain Lion Foundation, and the Zoological Society of San Diego's Conservation and Research for Endangered Species, and others. The South Coast Ecoregion linkage design evolved from participant workshops and GIS-generated linkage maps reviewed by experts. One of the linkages identified in the SCML is the "San Bernardino-San Jacinto Connection" that includes The Badlands, and which encompasses the Potrero Unit. The SCML notes that "the majority of unprotected land in the linkage could be conserved through the Western Riverside MSHCP..." (South Coast Wildlands 2008, p. 22).

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5.0 MANAGEMENT GOALS AND TASKS AND CEQA OBJECTIVES

The management of natural resources and public uses at the San Jacinto Wildlife Area (SJWA) is structured around the long-term protection of those resources and land uses, with specific management goals designed to achieve desired outcomes. These goals were developed through the following process:

1. Interviews with California Department of Fish and Wildlife (CDFW; formerly known as the California Department of Fish and Game (CDFG)) staff and review of CDFW files
2. Review and analysis of existing agreements and permit requirements
3. Solicitation of public input (Appendix C)
4. Analysis of management conflicts and development of recommended management areas
5. Development of a list of management goals and related tasks.

Management goals are discussed in terms of element groups. The elements are based on CDFW's Land Management Plan (LMP) Guidelines (CDFG 2007) and include Biological, Public Use, Facility Maintenance, and Biological Monitoring.

For each management element, several categories are identified generally pertaining to specific resources or land uses but also including more general categories such as agency coordination. Recommendations regarding implementation of resource and land use management measures are provided in terms of geographic locations within the SJWA as well as identified goals and task descriptions. Non-geographic categories, such as agency coordination, are described in terms of goals and task descriptions only. In total, Section 5 provides all of the management directives necessary to ensure ongoing protection and sustainable use of the resources provided by the SJWA.

The draft LMP management concepts are categorized in three hierarchical levels: elements, goals, and tasks. The elements contain the management categories or considerations; the goals identify the conditions management is designed to achieve; and the tasks are the steps that will be taken to attain the goals.

The draft LMP elements, goals and tasks are summarized below into basic project objectives. These objectives are used for the California Environmental Quality Act (CEQA) alternatives analysis that is set forth in section 15126.6(c) of the CEQA Guidelines. These CEQA objectives of the LMP's protection and management of lands within the SJWA, while allowing approved recreational uses, include:

- To guide the management of habitat, species, and programs described in the LMP, and achieve CDFW's mission to protect and enhance floral and faunal values:

- To preserve and enhance biological communities in the region including grassland, sage scrub, chaparral, wetlands, and alkali scrub, that protect habitat contributing to and sustaining the overall ecosystem health of the region. This habitat is necessary to support special status species, including Stephen's kangaroo rat, least Bell's vireo, tricolored blackbird, burrowing owl, and others covered by the MSHCP;

- To maintain habitat connectivity between the SJWA and MSHCP's core areas and linkages;

- To provide quality recreational opportunities, including hunting, wildlife observation, and hiking, for both existing and expanded activities and facilities, where compatible with biological resource protection objectives;

- To coordinate with state, federal, and local agencies, as appropriate, when implementing LMP management activities;

- To provide interpretive and educational programs for the natural diversity within the SJWA; and

- To provide an overview of the SJWA's operation and maintenance, and personnel requirements to implement management goals. The draft LMP will also serve as a budget planning aid for annual regional budget preparation.

5.1 Summary of Recommended Management Designations

Multiple resource management considerations were evaluated in the context of the regulatory requirements, public use demands, and funding sources to develop a set of recommended management areas for the SJWA (Table 5-1). In general, CDFW seeks to meet public demand for recreational facilities and opportunities as expressed in the solicitation of public input (see Appendix C). These interests include greater development of facilities that provide for multi-use trails, bird-watching/wildlife viewing, waterfowl and upland game hunting, and hunting dog training. Dudek evaluated existing regulatory requirements for management of the SJWA, which include the primary requirements to conserve and manage species covered under the Stephens' Kangaroo Rat Habitat Conservation Plan (SKRHCP) and Western Riverside County (WRC) Multiple Species and Habitat Conservation Plan (MSHCP) that occur within the SJWA (as summarized in Section 3). The lands within the SJWA were evaluated to determine the extent of suitable and potential habitats for the following resource management groups: SKR, alkali,

wetland, riparian, and upland. This evaluation was based on vegetation community mapping, species occurrence records, existing and planned restoration areas, reconnaissance surveys conducted by Dudek, and feedback from CDFW staff. These potential habitat and species resource areas were then compared with existing public use facilities and potential locations for future facilities, in the context of existing regulatory requirements and funding sources, to determine the locations and extent to which public recreational facilities can be developed in a compatible fashion with habitat and species conservation and management. Management recommendations include some overlapping considerations where management can be achieved in a compatible fashion, where resources are intermixed so that geographic distinction is infeasible, and where public use may require significant time to develop and implement and therefore, interim uses are designated. Thus the acreages presented in Table 5-1 represent the management recommendations developed through an iterative process of regulatory analysis, CDFW planning, and stakeholder input based on the best available data. The management areas are intended to guide future management of specific geographic areas within the SJWA, not necessarily to prescriptively develop specific habitat conditions, but to apply management goals and objectives described further in this section while refining resource and management area mapping precision over time.

Table 5-2 provides a summary of biological and public use management goals and indicates whether each pertains to the Davis Unit, Potrero Unit, or both. The subsequent subsections of this chapter discuss the existing and recommended management activities for biological elements (BE, Section 5.2) and public use elements (PUE, Section 5.3) followed by discussion of resulting needs in facilities management elements (FME, Section 5.4) and biological monitoring elements (BME, Section 5.5). The last section (Section 5.6) provides a discussion of recommended management activities for each subunit along with a description of particular species/habitat emphasis and potential future projects/developments applicable to each of those areas.

Table 5-1
Recommended Management Designations for the San Jacinto Wildlife Area Land Management Plan Area[1]

Unit	Subunit	Total Subunit Area	SKR	Alkali	Wetland	Riparian	Upland	Waterfowl Open Hunting[2]	Closed Zones & Agriculture	Small Game Hunting	Hunting Dog Training
Davis	D1	816	279	29		1	786	105	170	816	
	D2	715	428			1	715		288	715	
	D3	1,582	179	306	711	23	617	919[2]	66	279	
	D4	1,311		295	820	80	279	725	106	4	
	D5	774	422	322		4	525			772	
	D6	609	91			1	608			609	
	D7	953	32	462	80	101	446	71	150	845	105
	D8	166	82	23			155				
	D9	537	0		536		1	389	1		
	D10	459		219	51		240	51	1	71	
	D11	433			219	2	421	207	381	433	431
	D12	489	181		0		489			489	
	D13	839	30	415	179	39	442	180	541	839	267
	D14	708	446			33	675				
	D15	605	604	12			605			605	
	Davis Total[3]	*10,997*	*2,773*	*2,082*	*2,597*	*286*	*7,005*	*2,647[2]*	*1,705*	*6,479*	*803*
Potrero	P1	453				3	449			395	
	P2	1,044	66	21	1	30	993			1,044	
	P3	805	53			2	803			805	
	P4	1,301	119	13			1,288			1,301	
	P5	1,070	400	29		21	1,017			1,070	
	P6	436		3	6	6	427			436	
	P7	865		3		2	860			865	
	P8	908				2	906			908	

Table 5-1
Recommended Management Designations for the San Jacinto Wildlife Area Land Management Plan Area[1]

Unit	Subunit	Total Subunit Area	SKR	Alkali	Wetland	Riparian	Upland	Waterfowl Open Hunting[2]	Closed Zones & Agriculture	Small Game Hunting	Hunting Dog Training
	P9	1,127		10			1,117				
	P10	705	(62)[4]	60		84	561				
	P11	417		10		4	403			417	
Potrero Total[3]		*9,131*	*700*	*148*	*7*	*155*	*8,824*	*0*	*0*	*7,240*	*0*
Grand Total[3]		**20,128**	**3,411**	**2,230**	**2,603**	**449**	**15,829**	**2,647[2]**	**1,705**	**13,718**	**803**

[1] Recommended management areas overlap and may not currently support suitable habitat or recommended land uses but are considered suitable for the designated habitat or land use management (e.g., a recommended Stephens' kangaroo rat (SKR) management area, may also be recommended for Upland management and Small Game Hunting due to overlapping resources.
[2] Waterfowl hunting includes ponds, fields, and Mystic Lake. Mystic Lake acreage is the total within D3. Total waterfowl hunting areas, not including Mystic Lake, are 1,728 acres.
[3] Totals may not sum due to rounding.[4]Added when land cleared of contamination and hazards with the potential of adding an additional 500-600 acres.

Table 5-2
Recommended Management Goals and Tasks

Task #	Description	Davis	Potrero
BE1 – Biological Element 1: SKR – Goal: Efficiently and effectively provide for conservation of SKR pursuant to approved HCPs and mitigation requirements and ensure protection of SKR during development of future SJWA facilities and other potentially non-compatible uses.			
1.1	Consistent with the applicable requirements of the Stephens' Kangaroo Rat Habitat Conservation Plan (SKRHCP), Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), and conservation provision of parcels acquired specifically as SKR mitigation.	X	X
1.2	Implement adequate avoidance, minimization, and, if necessary, mitigation to offset potential future impacts to SKR within the SJWA LMP	X	X
1.3	Actively participate in the region's ongoing development of effective SKR management techniques by regionally coordinating management and monitoring activities.	X	X
BE2 – Biological Element 2: Alkali Communities – Goal: Develop and implement a program to monitor and conserve alkali community functions and services and ensure the protection of alkali resources during development of future SJWA facilities and other potentially non-compatible uses.			
2.1	Develop and maintain a repeatable inventory of special-status alkali species and an assessment of alkali habitat quality by community subtypes	X	X
2.2	Control adverse edge effects such as to maintain or improve habitat quality within existing alkali communities	X	X
2.3	Develop an alkali restoration program to incrementally increase alkali habitat quality and re-establish alkali communities in existing degraded areas supporting alkali soils	X	
2.4	Implement adequate avoidance, minimization, and, if necessary, mitigation, to offset potential future impacts to alkali habitat within the SJWA LMP and to specifically protect designated Critical Habitat for listed alkali species	X	X
BE3 – Biological Element 3: Wetland Communities – Goal: Enhance existing and develop new wetland resources for a variety of game and nongame species and ensure the protection of wetland resources during development of future SJWA facilities and other potentially non-compatible uses.			
3.1	Maintain and enhance conditions of existing open water and marsh habitats to balance vegetative cover with open water and maintain water quality within managed wetlands.	X	
3.2	Identify and manage non-native invasive plant and animal species affecting wetlands.	X	X
3.3	Expand open water, marsh, and green feed field habitats to support more productive wetland communities in terms of increased wildlife usage.	X	X
3.4	Identify opportunities and implement a program to provide adequate habitat for southwestern pond turtle.	X	X
3.5	Participate in regional efforts to develop and implement tricolored blackbird conservation measures.	X	X

Table 5-2
Recommended Management Goals and Tasks

Task #	Description	Davis	Potrero
3.6	Develop a program to manage existing vernal pool habitat to maximize habitat quality.	X	X
3.7	Identify breeding habitat for spadefoot toad and ensure protection of this resource.	X	
3.8	Identify properties for acquisition that promote conservation of wetlands resources in terms of special-status species locations and hydrologic resources such as Mystic Lake.	X	
3.9	Maintain the ability to use an adequate supply of recycled water at a reasonable cost to support existing and future wetlands habitats on the Davis Unit.	X	
3.10	Ensure the compatibility and coordination of SJWA management practices on both private and public lands.	X	X
3.11	Implement avoidance and minimization measures to protect sensitive species and habitats from adverse future wetland activities.	X	X
BE4 – Biological Element 4: Riparian Communities – Goal: Enhance existing and develop new riparian resources for a variety of game and nongame species and ensure the protection of riparian resources during development of future SJWA facilities and other potentially non-compatible uses.			
4.1	Maintain new and existing managed riparian habitats by providing appropriate spring/summer irrigations (March 30–November 1). Habitat maintenance includes irrigation for plant growth and water availability for wildlife species during appropriate times of the year.	X	
4.2	Develop plans for a joint wetlands/riparian restoration closed zone in D4 and strips of riparian habitat in D7 that will include plans for grading to achieve necessary hydrology, planting to establish riparian trees, shrubs, and herbaceous species, maintenance and monitoring to establish riparian resources in this area for the benefit of native plants, wildlife, and waterfowl.	X	
4.3	Evaluate the suitability of establishing a riparian restoration/mitigation program in D7, D13, and along Potrero Creek that expands riparian habitat and results in more stable habitat conditions. Such a restoration/mitigation program may potentially rely on funding partnerships with other entities (non-profits, municipalities, private applicants).	X	X
4.4	Control invasive exotics plant and animal species within riparian corridors, particularly tamarisk, brown-headed cowbird and European starling, to benefit native plant and wildlife species.	X	X
4.5	Implement adequate avoidance, minimization, and, if necessary, mitigation, to offset potential future impacts to riparian habitat within the SJWA.	X	X

Table 5-2
Recommended Management Goals and Tasks

Task #	Description	Davis	Potrero
BE5 – Biological Element 5: Upland Communities – Goal: Manage upland resources for a variety of game and nongame species and ensure the protection of upland resources during development of future SJWA facilities and other potentially non-compatible uses.			
5.1	Conduct qualitative refinements of the vegetation classification at the alliance level to establish a measure for monitoring and managing conversion between chaparral, sage scrub, and grassland vegetation types	X	X
5.2	Develop and implement wildfire management measures (discussed in PUE 6) that are consistent with optimum fire return intervals to maintain upland vegetation community diversity	X	X
5.3	Assess erosion and type-conversion issues within upland communities and develop appropriate vegetation management measures to minimize adverse effects, particularly with attention to sage scrub and chaparral post-fire recovery at the Potrero Unit	X	X
5.4	Control adverse edge effects, including establishment of invasive and exotic species, to protect upland habitats	X	X
5.5	Implement raptor protection measures including protection of prey, nesting, roosting, perching opportunities, and protection from electrocution	X	X
5.6	Maintain and manage suitable habitat for burrowing owl in a manner that allows life cycle activities for the species	X	X
5.7	Implement adequate avoidance, minimization, and, if necessary, mitigation, to offset potential future impacts to upland habitats supporting special-status species within the SJWA LMP	X	X
PUE1 – Public Use Element 1: Trail Use & Wildlife Viewing – Goal: Maintain and improve recreation opportunities, access, and education.			
1.1	Implement maintenance and improvements to existing opportunities and access for a diversity of authorized, trails recreation	X	X
1.2	Construct new facilities to access the SJWA and facilitate passive and active recreation while preserving natural resources, ecological functions, and overall biological, cultural, and recreational resources	X	X
1.3	Regularly solicit input and survey SJWA visitors regarding public use programs and recommendations for improvements	X	X
1.4	Continue to develop an education program that informs the public at all age levels and user interests	X	X
1.5	Utilize funding and volunteer opportunities from recreation groups	X	X
PUE2 –Public Use Element 2: Waterfowl Hunting – Goal: Safely manage existing and new waterfowl hunting opportunities, to meet public demands up to a level that does not compromise protection of other natural resource values within the SJWA.			
2.1	Safely operate and manage a waterfowl hunting program; conduct hunter education, program supervision, habitat monitoring, and maintain adequate records of hunter harvest, hunter satisfaction, and hunt quality to ensure that the hunting experience is sustainable and consistent with CDFW code	X	

Table 5-2
Recommended Management Goals and Tasks

Task #	Description	Davis	Potrero
2.2	Maintain and improve hunting infrastructure within waterfowl areas including blinds, parking areas, trash cans, etc.	X	
2.3	In coordination with PUE 1, consider development of non-motorized boat access to Mystic Lake from Gilman Spring Road through a new road, parking area, and dock structure.	X	
PUE3 – Public Use Element 3: Agriculture – Goal: Maintain and expand agricultural leases and CDFW food plots to provide multiple benefits to multiple wildlife species while protecting other biological, cultural, and recreational resources.			
3.1	Develop and maintain an agricultural lease such that contributions are made to overall management goals of the SJWA in terms of providing forage for wildlife and a financial resource to CDFW while protecting biological, cultural, and recreational resources.	X	
3.2	Continue, but reconfigure, existing CDFW food plots, to provide forage for wildlife while protecting SJWA biological, cultural, and recreational resources.	X	
3.3	Consider the expansion of leases to provide additional wildlife forage and a financial resource to CDFW while protecting biological, cultural, and recreational resources.	X	
3.4	Consider the expansion of CDFW food plots to provide additional wildlife forage while protecting SJWA biological, cultural, and recreational resources.	X	
3.5	Consider the development of grazing permits to maintain SKR habitat and to provide a financial resources to CDFW.	X	X
PUE4 – Public Use Element 4: Upland Small Game Hunting – Goal: Safely manage existing and new upland hunting opportunities, to meet public demands up to a level that does not compromise protection of other natural resource values within the SJWA.			
4.1	Safely operate and manage the upland small game hunting program in a manner that avoids or minimizes impacts to other resources.	X	X
4.2	Incrementally open portions of the Potrero Unit to upland small game hunting and evaluate the management requirement and environmental effects before future expansions.		X
4.3	Maintain and develop agricultural and wildlife food crop production as identified in PUE 3.1 - 3.4, to ensure the proper mixture of successional stages of vegetation is available to meet upland game food and cover needs throughout the year. Also, evaluate the adequacy of cover for upland game and utilize rock piles, tree planting, and brush piles, to provide cover.	X	
4.4	Maintain and install guzzlers to provide a water source for birds, small game and in some instances for big game, particularly during the summer months at locations throughout the SJWA.	X	X

Table 5-2
Recommended Management Goals and Tasks

Task #	Description	Davis	Potrero
4.5	Work cooperatively with the Department of Parks and Recreation staff to assist with their obligations of providing hunting opportunities, as required by the State Water Project mitigation, within the overall SJWA-Lake Perris State Recreation Area by monitoring hunter satisfaction and hunt quality.	X	
4.6	Evaluate the potential for two additional game programs: 1) supplementation of the ring-necked pheasant population on the Davis Unit; and 2) implementation of deer hunting on the Potrero Unit only.	X	X
PUE 5 – Public Use Element 5: Hunting Dog Training and Field Trials – Goal: Safely manage existing and new hunting dog training opportunities, to meet public demands up to a level that does not compromise protection of other natural resource values within the SJWA.			
5.1	Maintain and improve existing and proposed new hunting dog training facilities to provide adequate habitat types including open water, marsh, and upland areas.	X	
5.2	Manage hunting dog training events to ensure compatible use with other resource protection goals.	X	
5.3	Regularly solicit input and participation from field trial organizations and hunting dog trainers regarding recommendations for improvements.	X	
PUE6 – Public Use Element 6: Fire Management – Goal: Develop a fire management program to ensure readiness for wildfire, implement fire prevention measures, and maintain appropriate fire return intervals, to the extent feasible.			
6.1	Transfer critical SJWA site, habitat, access, and sensitive resources information to CAL FIRE and other likely fire responders.	X	X
6.2	Avoid catastrophic wildfires that negate the habitat management goals of the SJWA through fire prevention activities and targeted suppression activities.	X	X
6.3	Restore or enhance the quality of degraded vegetation communities and habitat types in a manner consistent with overall conservation goals for species and natural communities.	X	X
6.4	Develop fuel loading reduction methods that are consistent with overall SJWA management goals for habitat needs, wildlife sensitivities, and public safety, amongst others	X	X
6.5	Provide for public safety through pre-response plans and fire prevention activities	X	X
6.6	Provide for adaptive fire management should goal achievement be affected by uncontrollable or unforeseen factors	X	X
PUE7 – Public Use Element 2: Cultural Resources – Goal: Identify and protect cultural resources.			
7.1	Identify all potentially significant archaeological resources within proposed new grading and new agricultural use areas and provide avoidance or, if unavoidable, provide mitigation in consultation with the Native American community.	X	X

Table 5-2
Recommended Management Goals and Tasks

Task #	Description	Davis	Potrero
7.2	Provide communications to SJWA users regarding the sensitivity and importance of Native American and historical archaeological resources.	X	X
7.3	Monitor areas of likely significant archaeological resources and ensure that public access and natural environmental conditions do not adversely affect preservation of those resources.	X	
PUE8 – Public Use Element 8: Agency Coordination– Goal: Maximize multi-agency synergies and protect SJWA resources through cooperation and communication with other agencies.			
8.1	Maintain a mutually beneficial, cooperative relationship with RCA to allow ongoing monitoring of MSHCP species and to coordinate management with other regional reserve managers	X	X
8.2	Maintain communications with RCFCD to understand flood control requirements and potential for flood control maintenance and infrastructure development	X	X
8.3	Renew agreement with EMWD for recycled water and develop a potential water storage project on the Davis Unit..	X	
8.4	Establish and maintain active lines of communication with municipalities to advocate for compatible land uses adjacent and near the SJWA	X	X
8.5	Establish and maintain active lines of communication with utilities that maintain facilities within and adjacent to the SJWA to advocate for compatible facilities and operations and maintenance practice within and near the SJWA.	X	X
8.6	Establish and maintain lines of communication with private landowners within and adjacent to the SJWA to advocate for compatible land use practices within and near the SJWA	X	X

While each of the elements provides specific management tasks focused on specific resource and land use issues, there is an overarching management goal to sustainably protect the resource and public recreation within the SJWA in perpetuity. In order to achieve this goal, ongoing evaluation of management actions is required. The biological monitoring element, in particular, is designed to provide the information necessary to evaluate progress toward goals and the sustainability of resources given specific management actions and land uses. Thus, implicit in all of the goals and activities described in this LMP is the requirement for adaptive management through implementation of a cycle of management actions, collection of monitoring data, assessment of the data in view of the management actions carried out, and implementation of revised or adapted management actions. CDFW will coordinate with LMC and possibly DTSC prior to implementing activities on the Potrero Unit.

5.2 Biological Resource Management

Biological resource management is categorized into the following groups: Stephens' kangaroo rat (SKR, *Dipodomys stephensi*), alkali communities, wetlands communities, riparian communities, and upland communities (see Section 4 for descriptions of habitat and species placed within each management group). All special-status species utilize one or more of these management groups (as described in Section 4.4.3). A management goal has been developed for each biological resource management category based on evaluation of regulatory requirements, the intent and purpose of acquisition and management funding, and the interest of the public and stakeholders. In order to achieve these goals, specific tasks are described that may include monitoring, restoration, and management activities/strategies. Management areas are defined geographically within the SJWA LMP study area where appropriate. Management activities/strategies are described here to the greatest level of detail that can be achieved at this stage. Management activities include recommendations that are existing and ongoing as well as new activities that can be implemented immediately and be incorporated into ongoing activities. These activities are described in detail (i.e., project-level). Contrastingly, management strategies also include development of projects (such as habitat restoration) or responses to other land use activities (such as hunting). Many of these management strategies are described in the form of guidelines and procedures for future implementation and will be more fully developed over time (i.e., programmatic-level).

5.2.1 SKR (Biological Element 1)

Identified Management Goal

The management goal for SKR is derived from existing requirements of the SKRHCP, MSHCP, and parcels that are conserved specifically for SKR mitigation. The management goal also

reflects CDFW's, and the region's ongoing development of effective SKR management techniques through implementation of coordinated management and monitoring. Finally, methods to avoid, minimize, and, if necessary, mitigate potential future impacts to SKR within the SJWA LMP from projects/activities that are non-compatible with SKR (e.g., construction of new facilities) are incorporated into the management goal.

The management tasks for SKR on the SJWA are:

BE 1.1 – Maintain consistency with the requirements of the SKRHCP, MSHCP, and conservation provisions of parcels acquired specifically as SKR mitigation.

BE 1.2 – Implement adequate avoidance, minimization, and, if necessary, mitigation to offset potential future impacts to SKR within the SJWA LMP.

BE 1.3 – Actively participate in the region's ongoing development of effective SKR management techniques by regionally coordinating management and monitoring activities.

Under the SKRHCP and MSHCP, CDFW has the responsibility to conduct management activities that promote the following goals of these HCPs:

Table 5-3
HCP Goals and LMP Tasks

HCP Goal	SJWA LMP Tasks
Maintain viable populations of SKR within the reserve system and each of the core reserves sufficient to ensure the long-term persistence of the species in the HCP area.	BE 1.1 – SKR Habitat/Population Management
Promote the maintenance and enhancement of the ecosystem upon which the SKR depends.	BE 1.1 – SKR Habitat/Population Management
Develop and continually refine management practices that identify and adapt to changing conditions both within the reserves and on lands adjacent to them.	BE 1.1 – SKR Habitat/Population Management BE 1.3 – Regional SKR Coordination
Establish a core wildlife reserve system that is managed to enhance the conservation of biological diversity in Riverside County.	BE 1.1 – SKR Habitat/Population Management
Assist in determining future priorities to add lands that have definable conservation or management value to the reserve system.	BE 1.1 – SKR Habitat/Population Management BE 1.1 – Regional SKR Coordination
Consistent with the primary goal of ensuring SKR persistence, establish procedures that permit human access for activities deemed compatible with SKR conservation by USFWS and CDFW.	BE 1.2 – SKR Avoidance, Minimization and Mitigation

Task BE 1.1 – Maintain consistency with the applicable requirements of the SKRHCP, MSHCP, and conservation provision of parcels acquired specifically as SKR mitigation.

As described in Section 3.3.3, the SKRHCP does not specify the acreage of SKR habitat that is required to be managed within the Davis Unit. Within the Davis Unit, approximately 741 acres of lands were acquired specifically as SKR mitigation, although not all of these lands support suitable SKR habitat (Figure 5-1a). Currently, 863 acres on the Davis Unit are managed for SKR (Figure 5-1a).

The entire Potrero Unit was purchased with the intent of conserving and managing SKR-suitable habitat in exchange for a loss of habitat at March Air Force Base; although an exact acreage of required management is not provided in the documentation of the land purchase. Management of SKR has not yet been established on the Potrero Unit. An original estimate of 700 occupied acres at March Air Force Base would indicate that 700 acres of potential habitat at Potrero Unit requires management for SKR, with the potential for increasing management to cover up to 1,000 acres of suitable habitat. Suitable habitat will be identified on the Potrero unit and managed in similar ways to the Davis unit, with blocks of 100 to 300 acres managed on a 5-year rotation.

The 5-year rotation of management blocks consists of designation of geographic blocks of habitat that would receive management treatment to maintain suitable habitat conditions for SKR (e.g., vegetation management or grazing to reduce vegetative cover). Management would occur within each block, once every 5 years. Restoration will likely involve the removal of non-native plant cover through mowing or prescribed burn, seeding of native grasses, and at least 5 years of controlling broad-leaved non-native forbs such as mustard (*Brassica* spp.) and radish (*Raphanus* spp.).

Suitable and potentially suitable habitat for SKR, as identified and discussed in Section 4.4.2.1 was evaluated in the context of SKR regulatory requirements, land suitability, and conflicts with other management goals. In summary, all existing SKR management areas in D1, D3, D5, D6, D7, D8, D9, D12, D15, were recommended for ongoing management. In addition, areas of occupied suitable habitat and areas of suitable habitat with a high potential for occupation that were practical for management were added to the area of recommended SKR management. The determination of which areas were practical for management was principally based on the patch size of the suitable habitat and the location relative to existing access.

Recommended SKR management areas occur both on the Davis and Potrero Units and total 3,411 acres; 2,773 acres on Davis and 700 acres on Potrero (Figures 5-1a and 5-1b).

Within the Davis Unit, 863 acres are currently actively managed and are recommended for continued management. A total of 741 acres of land within the Davis Unit was acquired specifically as mitigation for SKR. Therefore, no increase in actively managed SKR lands is

required. However, Dudek identified up to 4,966 acres of potentially suitable habitat for SKR based on the most conservative estimates taking into account all potential habitat areas. This area was further refined to determine potential additional SKR active management areas (2,773 acres). CDFW may increase active management as mitigation for potential project impacts to SKR from new facilities or based on the availability of funding. If the active management area on the Davis Unit is expanded, recommended SKR management areas that are potential additions to current management areas, include lands in D14, west of Lake Perris, expand areas in D1, small areas of D7, several narrow bands of SKR habitat connecting existing management areas in D6, D8, D12 and D15, and large additions along Gilman Springs Road in D2, D3, and D5. These areas represent a 1,910-acre potential increase in active SKR management from current practices. Areas along Gilman Springs Road are recommended as the first priority addition if and when additional management can be conducted. The potential SKR management area should be more closely evaluated to determine the area suitable for active SKR management; it is estimated that the addition of this area will at least double the area of active management within the Davis Unit (i.e., at least 863 acres of additional active management).

On the Potrero Unit, Dudek identified approximately 5,203 acres of potentially suitable habitat using conservative estimates. That area was refined down to 2,867 acres that represents the likely densest area of SKR on site. The area was further refined to 700 acres, which represents practicable SKR management areas based mainly on accessibility but with considerations of habitat conditions and other management considerations such as hazards present in P10. The 700-acre recommended management area is geographically split into four management subareas within P2-P5. These areas including P10 are currently monitored by the RCA. CDFW intends to initiate active SKR management immediately using a rotational schedule similar to current practices on the Davis Unit. Once lands within P10 are cleared of contamination/hazards, it is expected that a majority of the lands within that subunit (approximately 600 acres) would be incorporated to the active management areas. Activities on the Potrero unit will be coordinated with LMC and possibly DTSC.

As is the current practice, management of SKR will be coordinated with the Riverside County Habitat Conservation Agency's (RCHCA's) SKR Habitat Management Plan (HMP), which details a variety of methods for maintaining suitable annual grassland habitat as well as methods for monitoring, reporting, and coordination (Table 5-4). As discussed in Section 3.3.3, the most appropriate techniques for habitat maintenance on the SJWA are grazing, mowing, and burning. The determination of what habitat management measures would be implemented will be made annually by the SJWA Area Manager (see Section 5.5, BME 1).

Table 5-4
Evaluation of Management Strategies for San Jacinto Wildlife Area

Treatment	Methods	Results	Pros	Cons
Sheep Grazing	• Run large herd of sheep for short period of time (a few hours), or • Run smaller herd for longer period of time • Control distribution with fencing or shepherds and dogs • Run sheep prior to grass seed set • Ensure that sheep are adapted to foraging on grass	• Reduced cover of non- native annual grasses and forbs • Lag time of about 3 years for measurable effect (Allen 2006) • Similar long-term effect • (3-5 years) as herbicide • Increased SKR population density (Kelt et al. 2005) similar to mowing	• Extent of treatment is controllable • Effective for reducing non-native grasses and forbs • Can be used at relatively large scale • Can be used in rocky and steep terrain	• If not controlled properly, can have unintended adverse effects on native shrubs and soils • Can be vector for non-native species • Potential adverse impacts on water quality? • Sheep prefer forbs to grasses under normal circumstances • Requires highly experienced shepherds and well- trained dogs if not fenced • Timing window for effective program is limited and dependent on precipitation patterns • Future of sheep grazing in western Riverside County is unknown
Mowing	• Tractor with mower deck set to lowest setting • Local areas hand- cleared with weed whackers	• Reduced cover of non- native annual grasses and forbs • Increased SKR population density (Kelt et al. 2005) similar to sheep grazing	• Extent of treatment is highly controllable • Effective for reducing non-native grasses and forbs • Can be used at relatively large scale • Flexibility in timing of application	• Limited to areas that are relatively level and without rocks • May result in inadvertent soil disturbance and mortality or injury to slow-moving species (e.g., rattlesnakes and rosy boas) • Potential Migratory Bird Treaty Act (MBTA) conflicts • Leaves thatch that could build up over time • Thatch buildup would increase fuel load and potential for a severe fire • Spark from mowing could start a fire • Cost of fuel, equipment repair, staff time

Table 5-4
Evaluation of Management Strategies for San Jacinto Wildlife Area

Treatment	Methods	Results	Pros	Cons
Herbicide	• Hand-application of grass-specific herbicide, such as Fusillade, at lowest manufacturer recommended dose • Application generally during peak growing season before grasses set seed (e.g., February-March)	• Reduced cover of non-native annual grasses for 3-4 years • Increased cover of native and non-native annual forbs	• Extent of treatment is highly controllable • Effective for reducing non-native grasses • Increases native and non-native forbs, which should encourage SKR occupation • Flexibility in timing of application • May ultimately be most efficient control method if aerial application is approved	• At present, likely limited in scale of application to small areas • Unknown adverse environmental effects? • Negative public reaction?
Prescribed Fire	• Prescribed burns to predetermined areas conducted in coordination with Cal fire • Generally applied in spring before grasses set seed, but see text for discussion of appropriate timing	• Reduced cover of nonnative annual grasses • Increased cover of native and non-native forbs and bare ground • Increased SKR population densities at least in periods immediately following burns	• Extent of treatment controllable if applied under appropriate conditions (e.g., calm conditions and higher humidity) • Can be applied at a relatively large scale over rugged and rocky terrain • Reduced cover of non-native annual grasses • Increased cover of native and non-native forbs and bare ground • Increased SKR Population densities, at least in periods immediately following burns	• Can result in inadvertent damage to shrub habitats if not controlled properly • Increased risk to public safety and property • Short-term air quality impacts • May result in long-term increase in non-native weeds if not applied at proper intervals; necessary intervals may be shorter than natural fire regime • Logistically complex and expensive to implement; may not be cost-effective and practical as a long-term management strategy

Table 5-4
Evaluation of Management Strategies for San Jacinto Wildlife Area

Treatment	Methods	Results	Pros	Cons
Wildfire Management	• Allow unplanned wildfires to opportunisticall y burn designated areas according to Fire Management Plan	• Reduced cover of nonnative annual grasses • Increased cover of native and non-native forbs and bare ground • Increased SKR population densities at least in periods immediately following burns	• Takes advantage of unplanned wildfires • Can be applied at a relatively large scale over rugged and rocky terrain • Reduced cover of non-native annual grasses • Increased cover of native and non-native forbs and bare ground • Increased SKR population densities at least in periods immediately following burns	• Inadvertent damage to shrub habitats if not controlled properly • Increased risk to public safety and property • Short-term air quality impacts • May result in long-term increase in non-native seeds if fire intervals are too short

Mowing to provide SKR habitat is expected to continue as is currently practiced, with CDFW operators separating SKR management areas into nine subunits and mowing each subunit every five years. This practice may be reduced with the implementation of grazing. If a SKR subunit is subject to recent grazing and vegetative growth does not need to be reduced, mowing would not occur. Each area is assessed qualitatively prior to mowing for vegetation density, height and soil conditions. The need and timing of the mowing usually depends on rainfall. The ideal time to mow is when grass seed heads are still green. The area is walked prior to mowing and areas with ground nesting birds are flagged and avoided. A variety of tractors (John Deere 8520 or 5510) and mowers (flail mower or rotary mower) are used based on conditions and availability (see Section 5.4, FME 1). Depending on conditions, areas are mowed in March–April or June or both depending on rainfall.

Grazing would likely occur through a permit for sheep grazing with species management and monitoring components (see Section 5.4, FME 2). Sheep grazing management and monitoring components include:

- Establishment of grazing lots with secure fencing
- Use of experienced shepherds and sheep dogs to appropriately size herds, place salt licks and manage sheep movement to maintain appropriate spread across grazing lots

- Monitoring of grazing stock to establish adequate spread of grazing and appropriate timing of rotation
- Timing of grazing so that grasses are preferred (generally can be achieved by grazing before grasses have developed rigid, bristle-like awns structures that sheep avoid).

Burning is done by the California Department of Forestry and Fire (CAL FIRE) crews in conjunction with vegetation management plans. The Bureau of Land Management (BLM) has shown interest in burning BLM owned adjoining parcels at Potrero and including portions of CDFW-owned lands. The preparation and update of vegetation management plans should be coordinated with the CAL FIRE and BLM for both Davis and Potrero Unit on an ongoing basis.

Task BE 1.2 – Implement adequate avoidance, minimization, and, if necessary, mitigation to offset potential future impacts to SKR within the SJWA LMP.

The development of restoration projects or new public use facilities, such as alkali playa restoration, waterfowl ponds or visitor's center, will be evaluated for impacts to SKR. These projects should be designed to avoid occupied SKR habitat where feasible. The location of SKR-occupied habitat is well established and should be maintained based on ongoing monitoring, research and maintenance of a current GIS database (see Section 5.5., BME 7). Where avoidance is infeasible, as demonstrated through environmental documentation and analysis required under CEQA, projects will be designed to minimize impacts and will include mitigation of any unavoidable impacts at a 1:1 ratio through the restoration of degraded potential SKR habitat with the same SJWA Unit as the impact.

Potential SKR habitat within and adjacent to SKR management areas should be evaluated for restoration opportunities. In most cases, suitable SKR restoration areas will consist of non-native grassland cover typically with non-native grasses and forbs and be located adjacent or near occupied SKR habitat. Restoration will likely involve the removal of non-native plant cover through mowing or prescribed burn, seeding of native grasses, and at least 5 years of controlling large non-native broad leaved forbs. A restoration plan would be prepared outlining the restoration goals, suitability of restoration lands, methods for habitat establishment, implementation plan, a monitoring and maintenance plan for at least the first 5 years, and success criteria to determine success of mitigation.

Task BE 1.3 – Actively participate in the region's, ongoing development of effective SKR management techniques by regionally coordinating management and monitoring activities.

A number of groups including the US Fish and Wildlife Service (USFWS), RCHCA, UC Riverside, and others conduct research on SKR. Managers of the SJWA should actively

participate in discussions that identify important research questions that can aid management and conservation of SKR. The Area Managers will attend the monthly Reserve managers and monitoring meeting hosted by the MSHCP Biological Monitoring Group (BMG). In addition the RCHCA holds a meeting quarterly to update the status of management on the core reserves of the SKRHCP of which CDFW is a member.

Current active research projects include translocation studies conducted at Lake Skinner by Dr. Debra Shier. Studies on use of grazing as a management tool are also being conducted at Lake Skinner and Lake Matthews. As appropriate, lands within the SJWA should be used to conduct these types of research.

5.2.2 Alkali Communities (Biological Element 2)

The goal for management of alkali communities was developed to ensure the long-term protection and viability of this important and unique biological community. The goal is to develop and implement a program to monitor and conserve alkali community functions and services and ensure the protection of alkali resources during development of future SJWA facilities and other potentially non-compatible uses. Specific tasks will ensure compliance with federal, state, and local regulations regarding listed and covered species. A total of 2,082 acres of lands within the Davis Unit and 148 acres within the Potrero Unit are considered likely areas of alkali habitat and are recommended for management based on the following tasks:

BE 2.1 – Develop and maintain a repeatable inventory of special-status alkali species and an assessment of alkali habitat quality by community subtypes.

BE 2.2 – Control adverse edge effects such as to maintain or improve habitat quality within existing alkali communities.

BE 2.3 – Develop an alkali restoration program to incrementally increase alkali habitat quality and re-establish alkali communities in existing degraded areas supporting alkali soils.

BE 2.4 – Implement adequate avoidance, minimization, and, if necessary, mitigation, to offset potential future impacts to alkali habitat within the SJWA LMP and to specifically protect designated Critical Habitat for listed alkali species.

Task BE 2.1 – Develop and maintain a repeatable inventory of special-status alkali species and an assessment of alkali habitat quality by community subtypes.

Consistent, repeatable data are needed to assess the health and long-term viability of special-status alkali species within the Davis Unit. These species have evolved, in part, based on the hydrology of the San Jacinto River floodplain. Given alteration of the floodplain and historical

agricultural practices, it is uncertain how viable these populations are in the long term. Adjacent land uses within the SJWA also present potential threats to alkali species including artificial discharges, grazing, and weed abatement. Artificial discharges include surface water storm drains from urban areas such as streets as well as agricultural storm drainage from dairies, irrigated fields, etc. There are some concerns, which are not well studied, that off-site water will modify the soil chemistry. Soil chemistry is an important habitat component for these species and should be incorporated into a monitoring program.

Given these concerns for alkali species and limited information regarding community dynamics, a monitoring program will be developed that provides data to detect changes in populations relative to these potential affects. The program may be developed, conducted, and maintained by CDFW, RCA, or independent researchers, but CDFW should have a role in ensuring that the monitoring program is designed to inform future management decisions. The program should include, at a minimum, all MSHCP covered species as well as any state- and federally listed in order to demonstrate ongoing compliance with MSHCP conservation goals. The term Covered Species refers to the 146 species within the MSHCP Plan Area that will be conserved by the MSHCP when the MSHCP is implemented. Use of this term does not indicate that CDFW is a permittee under the plan. First, an overall map of alkali habitat subtypes and quality needs to be developed so that protection and restoration efforts may be targeted to the most appropriate areas.

Current management in the form of avoidance occurs on D3, D4, D7, D8, D10, D11, D13 and D14. Recommended alkali management areas on the Davis Unit mainly occur within D3-D5, D7, D10 and D13, with smaller occurrences in D1, D8, D11 and D15 (Figure 5-2a). On the Potrero Unit, proposed alkali management areas include several small polygons within P2, P4-P7, and P9-P11 (Figure 5-2b). These are relatively conservative estimates of potential alkali habitat based on vegetation mapping and special-status species locations and should be verified/assessed in the initial phase of the monitoring program.

The initial assessment should include mapping of the limits of special-status species populations, community subtype mapping, and qualitative assessments of hydrology, soils, and areas of concern such as concentrations of non-native, invasive species, artificial hydrology, areas of regular human intrusion, etc. The classification of community subtypes should be based on the CDFW LMP (CDFG 2000) and utilize a low-cost approach such as qualitative visual assessments during the spring season. Although quantitative plot sampling of vegetation communities and aerial interpretation may be more effective in accurately classifying and mapping alkali community types, this level of survey is a higher cost, greater risk (in terms of potentially not providing data that informs management decisions in a significantly different way than qualitative data would) alternative and therefore not preferred given limited funding and the

need to implement the first step in establishing the overall alkali management program in the most cost-effective manner possible (see Section 5.5, BME 2).

The initial assessment should also include evaluation of potential alkali playa conditions that may support vernal pool animal species including San Diego fairy shrimp (*Branchinecta sandiegonensis*). The alkali management area should be surveyed according to USFWS survey protocols for San Diego fairy shrimp and if present, this species and the hydrologic conditions that it depends on, should be included in the overall alkali monitoring program (see Section 5.5, BME 3).

A long-term alkali monitoring plan should be developed in cooperation with other entities managing these resources in Western Riverside County and should be largely based on the conservation goals, objectives, and strategies identified in the MSHCP. The plan would be implemented within the alkali management areas and may include plant species inventories, population counts/estimates, seed production per plant, density of un-germinated seeds in the soil, relative cover of native versus non-native species, and a host of environmental factors such as hydrology, rainfall, soil chemistry, and land use. These data would likely be collected within plots or point locations distributed throughout the extent of alkali habitat on the Davis Unit to provide sufficient data to conduct statistical analysis (see Section 5.5, BME 2). As stated above, it is anticipated that this plan would be developed and implemented by the CDFW, RCA, or approved researchers. CDFW can facilitate the development and implementation of such a program by discussing the need for alkali monitoring to support management with other agency staff and the academic community.

Task BE 2.2 – Control adverse edge effects such as to maintain or improve habitat quality within existing alkali communities.

Adverse edge effects that may affect alkali communities include spread of non-native invasive species, the use of chemicals that may affect plants and soil chemistry (e.g., herbicides, pesticides, fertilizers, etc.), grazing, controlled burns, human activity/trampling, and altered hydrology.

Non-native invasive species are the principal threat to alkali species within the SJWA. A separate discussion of restoration through the removal and control of non-native invasive species is provided below. This task is focused on potential effects of non-native species located in proximity to alkali management areas.

Table 5-1 of the MSHCP includes management actions and special considerations which shall be taken with regards to exotic plant invasion. Special considerations include the presence of sensitive plant species, species reproductive biology, dispersal methods/timing, and the timing of

control measures. Management actions may include removal with hand equipment, chemical treatment, soil solarization, and direct removal/replacement.

Table 9-2 of the MSHCP states that for Coulter's goldfields, Davidson's saltscale, little mousetail, Parish's brittlescale, San Jacinto Valley crownscale, smooth tarplant, spreading navarretia, thread-leaved brodiaea, vernal barley, and Wright's trichocoronis, "Reserve Managers will ensure Habitat support functions within the MSHCP Conservation Area by maintaining and enhancing the floodplain processes of the San Jacinto River, Salt Creek and Mystic lake, including intermittent flooding and periodic pooling. Particular management emphasis will be given to preventing alteration of hydrology and floodplain dynamics, farming, fire and fire suppression activities, off-road vehicle use, grazing and competition from non-native plant species."

In general, it is expected that all areas within 500 feet of alkali management areas should be targeted for non-native invasive species control. As discussed in other sections, invasive species control should be developed through a conceptual plan that includes appropriate eradication techniques and method for follow-up treatment and monitoring (see Section 5.4, FME 3 and Section 5.5, BME 4). Based on reconnaissance surveys, it appears that broad-leaved forbs, such as mustard and radish, are the principal invasive species of concern; assuming these species are interspersed within populations of native alkali species, removal would typically be done by hand with extensive, regular follow-up treatment.

The use of chemicals within an approximately 300-foot buffer of alkali management areas will be prohibited, unless specifically approved by the CDFW Area Manager. The approximate 300-foot-buffer recommendation is based on a literature review that indicates that management of a 200- to 300-foot buffer is highly effective in controlling most edge effects (CBI 2000). The Area Manager shall determine the appropriate buffer using the best available information regarding the potential for adverse effects to alkali resources from chemical use. The discharge or seepage of contaminated water from sources adjacent to the SJWA will also be evaluated, especially with regards to dairy farms as these discharges may adversely affect alkali species either directly or through alterations of soil chemistry. If this is determined to adversely affect alkali species we will determine the appropriate course of action at that time.

Grazing and controlled burns that occur adjacent to alkali management areas will be monitored or actively controlled through fencing or equivalent means of exclusion. Grazing or controlled burns may be utilized as a management technique within alkali management areas, to reduce non-native cover for instance; but these are special circumstances that would be carefully monitored and directed.

Human activity and the potential for trampling within the alkali management areas will be minimized through evaluation of trails, signage, and information regarding alkali resources throughout the SJWA. If necessary, problem access areas will be barricaded (such as through fencing or gates) to prevent unauthorized access (see Section 5.4, FME 4). Information regarding alkali resources, including threats to survivorship, should be available for visitors to the SJWA (see Section 5.3.1, PUE 1.4).

Alterations to hydrology may have a positive or negative effect on alkali plant species. Table 5-1 of the MSHCP includes management actions and special considerations which shall be taken with regards to sedimentation and erosion. Special considerations include the presence of sensitive plant species, streambed gradient dynamics, native/non-native species propagule distribution upstream and downstream, likeliness of flooding to recur (i.e., return intervals and fluvial dynamics), water sources, and the extent of the effects. Management actions identified in the table include establishment of erosion control, exotic species control, establishment of weed control buffers, installation of appropriate wattled native plant material for stream bank stabilization, installation of geotextile fabric where unstable soil will limit plant reestablishment, installation of energy dissipating features where flow velocities are expected to be erosive, installation of grade stabilizing structures/vegetation, reseeding with appropriate native understory species, and installation of selected native container plant species.

Specific monitoring is needed to determine how hydrology should be managed to benefit this group of species. Based on recommendations developed through assessment of monitoring data, an appropriate regime of artificial hydrology may be implemented towards the benefit of the alkali community. This hydrology may include overflow or seepage from waterfowl ponds into alkali management areas or direct discharge of water into the alkali areas. Aside from areas that are designated specifically for the application of artificial water inputs, the majority of the alkali management areas that are near artificial water discharge locations should be protected from this artificial hydrology through grade separation or other barriers such that adverse runoff conditions do not occur within the alkali management areas.

Task BE 2.3 – Develop an alkali restoration program to incrementally increase alkali habitat quality and reestablish alkali communities in existing degraded areas supporting alkali soils.

An alkali restoration program will be developed to address what appears to be a degraded alkali community within the Davis Unit. A large component of the plan is likely to consist of non-native invasive species eradication and control. Hydrology is another major component of suitable habitat and the restoration program may include application of artificial irrigation to mimic natural conditions that support alkali species. Focus should be given to state and federally

listed species, especially in the southern portions of the D7 and D13 where areas have been designated as Critical Habitat for two species (Figure 5-2a). Areas that currently support alkali soils but very few native plants should be targeted for restoration through a plan that includes eradication of non-native plants, potentially re-grading of a site to achieve optimum hydrology and soil profile, planting of appropriate vegetation, maintenance, and monitoring. Such areas may include habitat around Mystic Lake in D3 and D5.

It is expected that the inventory and monitoring data developed in the initial tasks will inform the development of a restoration program. The monitoring data is expected to include classification and mapping of alkali community subtypes and metrics of alkali habitat health and therefore identify existing habitats that would benefit from restoration activities and areas that support certain alkali conditions (such as hydrology and soils) but do not support special-status species. These areas may require modification of hydrology, eradication/control of non-native, invasive plants, or other restoration treatments. These more intensive restoration sites would be more fully evaluated in a conceptual restoration plan to identify the specific target habitat conditions; methods of restoration including invasive species eradication, planting, and irrigation; manipulations of hydrology, topography, or soils; and the planned set of maintenance, monitoring, and reporting activities that would be implemented until the habitat is established.

Restoration of alkali communities is expected to occur both incrementally through relatively limited management activities conducted each year (such as invasive plant eradications) as well as, potentially, through relatively large intensive restoration efforts. The large intensive restoration efforts would likely be initiated through special funding for alkali restoration or as mitigation for specific project impacts that may or may not occur within the SJWA. As stated in BME 6 (Section 5.5), any mitigation installed on the SJWA requires development and maintenance of a permanent document record including a supplement to this LMP, and funding, to be provided by the applicant, for the long-term conservation of the mitigation site functions and services. Any mitigation shall also conform with CDFW Departmental Bulletin 2012-02 (CDFG 2012).

Task BE 2.4 – Implement adequate avoidance, minimization, and, if necessary, mitigation, to offset potential future impacts to alkali habitat within the SJWA LMP and to specifically protect designated Critical Habitat for listed alkali species.

A number of planned activities within the Davis, and potentially some activities in the Potrero Unit, may directly impact alkali plant species. In particular, planned development of waterfowl ponds in D13, green feed fields in D4 and D11, and agriculture plots in D3, D7, D11, and D13 will require evaluation for potential impacts to special-status alkali species and overall alkali habitat, including effects to hydrology of the alkaline system.

Special-status alkali plants and impacts to alkali habitat functions will be avoided through design modifications that allow for persistence of existing alkali habitat areas. If avoidance cannot be achieved, impacts will be minimized and any unavoidable impacts will be mitigated through implementation of proportionate areas of alkali restoration. In general, based on evaluation of the opportunities and constraints within the SJWA, it is assumed that unavoidable impacts would be limited to degraded, low-quality alkali habitat areas and would be mitigated through restoration of low-quality alkali habitat to high-quality alkali habitat. The assessment of impacts and required mitigation will result in the maintenance of minimum conservation areas/values of covered alkali species and habitats, as required within the SJWA under the MSHCP. As discussed above, restoration should specifically be directed to the southern portions of D7 and D13, especially within Critical Habitat for these species. However, areas around Mystic Lake in D3 and D5 have potential to support greater acreages of alkali restoration and may be desirable locations for mitigation in order to expand the number of special-status species populations on site.

5.2.3 Wetland Communities (Biological Element 3)

A total of 2,597 acres of the Davis Unit, currently managed in D4, D7, D9, D10, D11, D13, D15 and proposed in D3, D4, D7, D9, D10, D11, D13 and D15. In the Potrero Unit a total of seven acres currently managed in P9 and P10 and proposed in P2 and P6 have been identified as recommended wetlands management areas (Figures 5-2a and 5-2b). These areas include both managed wetlands, such as waterfowl ponds, as well as naturally occurring wetlands such as Mystic Lake. The goal for management of wetland communities is to enhance existing and develop new wetland resources for a variety of game and nongame species and ensure the protection of wetland resources during development of future SJWA facilities and other potentially non-compatible uses.

The management tasks to achieve this goal are as follows:

BE 3.1 – Maintain and enhance conditions of existing open water and marsh habitats to balance vegetative cover with open water and maintain water quality within managed wetlands.

BE 3.2 – Identify and manage non-native invasive plant and animal species affecting wetlands.

BE 3.3 – Expand open water, marsh, and green feed field habitats to support more productive wetland communities in terms of increased wildlife usage.

BE 3.4 – Identify opportunities and implement a program to provide adequate habitat for southwestern pond turtle (*Actinemys marmorata*).

BE 3.5 – Participate in regional efforts to develop and implement tricolored blackbird (*Agelaius tricolor*) conservation measures.

BE 3.6 – Develop a program to manage existing vernal pool habitat to maximize habitat quality.

BE 3.7 – Identify breeding habitat for spadefoot toad (*Spea [Scaphiopus] hammondii*) and ensure protection of this resource.

BE 3.8 – Identify properties within the CDFW's Conceptual Area Acquisition Plan (CAAP) that promote conservation of wetlands resources in terms of special-status species locations and hydrologic resources such as Mystic Lake.

BE 3.9 – Maintain the ability to use an adequate supply of recycled water at a reasonable cost to support existing and future wetlands habitats on the Davis Unit.

BE 3.10 – Ensure the compatibility and coordination of SJWA management practices on both private and public lands.

BE 3.11 – Implement avoidance and minimization measures to protect sensitive species and habitats from adverse future wetland activities.

Task BE 3.1: Maintain and enhance conditions of existing open water and marsh habitats to balance vegetative cover with open water and maintain water quality within managed wetlands.

Current wetland management areas include waterfowl ponds/marshes on the Davis Unit that support wetland vegetation communities and, in turn, support wetland species including game species, special-status species, and large variety of migratory and resident wildlife. These ponds are located in D4 and D9 and currently occupy approximately 1,129 acres (Figure 5-2a). The Potrero Unit may support approximately 4 acres of wetland habitat, but the location, extent, and quality of this habitat requires evaluation (Figure 5-2b).

Within the Davis Unit, wetlands are actively managed as permanent, seasonal, or semipermanent wetlands; each provides particular habitat conditions that support and benefit waterfowl and other wetland species.

Permanent wetlands are flooded year round to maintain open water within wetland basins. These basins also support marsh and adjacent riparian habitat on shelves rimming the basins as well as islands constructed within the basins. Management of waterfowl ponds is aimed at developing and maintaining approximately 50% open water/mudflat and 50% marsh habitat (see Section 5.5, BME 5). Within the Davis Unit, recycled water is discharged to these ponds periodically throughout the year to maintain these habitat conditions (see Section 5.4, FME 5).

Seasonal wetlands are generally flooded in the fall (beginning around September 1) and allowed to retain standing water throughout the winter until drawdown is started in late spring (beginning

around April 1). This process, followed by various habitat manipulations, allows for the most productive growth of annual plants that germinate within the exposed mudflats during drawdown periods. These annual plants are known as "moist-soil plants" and are an important food source for waterfowl and other wetland-dependent wildlife. Within the SJWA, a variety of species are actively grown in seasonal wetlands, with the emphasis being on swamp timothy (*Crypsis vaginiflora*). Other species grown within seasonal wetlands include watergrass (*Echinochloa crus-galli*), bulrush (*Schoenoplectus robustus*), and smartweed (*Polygonum amphibium*).

Seasonal wetlands are constructed to provide both deep water and shallow water habitat conditions. During the inundation period, deep water areas should be maintained at approximately 4- to 10-inch depth to provide feeding habitat for dabbling ducks (e.g., mallards, pintails, and green-winged teal). The shoreline of seasonal wetlands can provide valuable shorebird foraging habitat and water depths should not be greater than 6 inches in these areas, with a focus on creating habitat with 1 inch or less water depth. Disturbance of vegetation within these shallow fringes, through mowing or disking of vegetation, can provide valuable production of midges (Chironomidae). Mowing or disking typically occurs in the fall, prior to flooding, and provide roosting habitat for waterfowl. During spring and summer flooding, the shallow mudflat habitat may occur mainly along deeper swales within the seasonal wetland ponds.

The timing and duration of drawdown will determine which species are most apt to germinate within seasonal wetlands and the length of time that foraging resources will be available. Watergrass appears with later drawn down dates or with summer irrigations (CDFG 2008c). In general, slow drawdowns (over a period of 2 to 3 weeks) are optimum and tend to be the practice at the SJWA. This type of drawdown appears to produce the greatest invertebrate populations, concentrations of fish, and enhanced seed production. Rapid drawdowns (i.e., 2 to 3 days) may produce extensive stands of waterfowl food plants if timed correctly, but do not allow for extended shallow water habitat conditions associated with slow drawdowns (CDFG 2008c). Rapid drawdowns late in the growing season are preferably followed by a summer irrigation to ensure a good seed crop. Despite these generalities, the rate of drawdown at the SJWA should be based on site-specific circumstances and may vary year to year.

Semipermanent wetlands typically provide key brood habitat for breeding as well as spring/summer wetlands essential to both resident and migratory waterfowl and shorebirds. These ponds are flooded during the spring and summer and are dry for 3–6 months of the year. Vegetation may be cut or burned within these ponds to add organic matter to the wetland and for regenerating vegetative growth and generally benefiting invertebrate populations (see Section 5.4, FME 1). The ponds provide breeding ducks, ducklings, and other wetland wildlife protection from predators and abundant invertebrate food supplies.

Water is distributed through the various wetland ponds and fields through a system of pumps, pipeline, weirs, flood gates, etc.; the proper maintenance of these facilities is essential to management of wetlands on the Davis Unit (see Section 5.4, FEM 5).

Conditions within the existing waterfowl ponds/marshes were improved through a wetland enhancement and restoration program developed by CDFW and evaluated in a 2007 Mitigated Negative Declaration (MND). The MND described 239 acres of enhancement as well as 343 areas of new wetlands and associated upland habitat, known as the Walker ponds located in the southeast portion of D4 (ponds W1-W12, Figure 2-7a). Small portions of the enhancement and restoration program were halted in 2008 and may be completed following completion of this LMP. The enhancement program included the complete redesign of existing wetland units and infrastructure that will be added to allow for wetland management through a master delivery and drainage system. The systems will allow for independent water delivery and drainage of all of the new and renovated wetland units from any source. A lift pump and pipeline will be added to allow for recirculation of water throughout the units. Other enhancement activities include the reconstruction and improvement of existing levees, improvement of islands, submerged berms and peninsulas, installation of concrete water control structures, installation of a new electric pump to an existing well, additional irrigation valves and pipelines, transplantation of bulrush and additional waterfowl forage plantings.

The current management of these three wetland types is considered optimum for the targeted waterfowl and shorebird species typically found within the Davis Unit; therefore, the maintenance of current management practices is expected to continue to yield productive habitat for these species. A number of additional management measures are recommended to address the increased demand for hunting resources, need for greater waterfowl food sources, and management of special-status species; these are discussed under the remaining management tasks in this section.

In order to avoid potential adverse impacts to biological resources during the maintenance of managed wetlands on site, the following measures will be implemented. Vegetation removal will occur during the non-breeding season and will take into account the projected growth of the plant species during the following growing season. Seeding and planting shall be done with non-invasive species only and, where feasible, with native plants that benefit both waterfowl game species and other wildlife. Seeding and planting will account for projected growth during the following growing season in order to avoid creating vegetative cover that is too dense for target species. All wetland management activities must be implemented in a manner that protects native biological resources, and, in particular nesting birds. As such the majority of activities occur during the non-breeding season (September 1 through March 1, annually). In addition, infrastructure maintenance and improvements, especially on levees, have the potential to impact

existing burrowing owl (*Athene cunicularia*) burrows. Therefore, pre-activity surveys for burrowing owl are required and all active burrows are to be avoided by a 250-foot radius. Similarly, special-status alkali plant species may occupy areas within and around wetland management areas. These species locations need to be identified and monitored prior to maintenance/improvement activities. Any unavoidable impacts to special-status plant species will require restoration as discussed under BE 2.4.

Task BE 3.2 – Identify and manage non-native invasive plant and animal species affecting wetlands.

Invasive exotic animal species such as bullfrog (*Rana catesbeiana*), African clawed frog (*Xenopus laevis*), wild pigs, domestic dogs, crayfish, fish, and exotic turtles are potentially limiting native species presence and health within wetlands. Likewise, invasive exotic plant species within wetlands adversely affect native wetland plant communities.

For invasive exotic plant species occupying wetland areas, a variety of treatment methods may be utilized and should be selected based on site-specific characteristics. Table 5-1 of the MSHCP includes management actions and special considerations which shall be taken with regards to exotic plant invasion. Special considerations include the presence of sensitive plant species, species reproductive biology, dispersal methods/timing, and the timing of control measures. Management actions may include removal with hand equipment, chemical treatment, soil solarization, and direct removal/replacement. The most likely methods to be used within the SJWA include manual removal; foliar spray; cut stem/stump spray; cut, resprout, and spray; and mechanical removal (see Section 5.5, BME 4 and Section 5.4, FME 3). The main species targeted for eradication are giant reed (*Arundo donax*) and salt-cedar (*Tamarisk* spp.).

A non-native aquatic species control program will be initiated within the entire SJWA, and potentially upstream areas along the San Jacinto River, since species such as bullfrogs readily move between breeding sites. Implementation of any non-native invasive species control program should be coupled with follow-up monitoring to determine effectiveness. Potential control methods for aquatic invasive species, ranging from broad approaches to more labor-intensive specific methods, include:

- Pond draining with rescue of native species and then removal of all non-native species left behind, including those burrowing in banks
- Fencing to prevent invasive species movement from the pond area as it dries and future potential recolonization of the pond by these species
- Removing aquatic invasive species through gill netting and seining of water for adults and sifting of water for eggs
- Shooting, trapping, and gigging (spearing or hooking) of non-native aquatic invasive species

- Chemical application, such as rotenone (derived from an aquatic plant), to the water—this approach would not be used where native species co-occur unless it is absolutely needed and there is no alternative
- Electroshocking of fish and bullfrogs.

Public awareness and education also would be an important part of the non-native species control program (see Section 5.3.1, PUE 1.4). Signs and posted warnings of the risks of invasive plants and animals would be placed in key areas at risk for reintroductions of the bullfrog, turtles, and aquarium species.

Task BE 3.3 – Expand open water, marsh, and green field habitats to support more productive wetland communities for increased wildlife usage.

The expansion of wetlands, particularly on the Davis Unit, is necessary to address the increase in demand for hunting resources and to further conservation efforts in the region. This expansion has the joint benefit of providing increased habitat for waterfowl game species while also providing opportunities for non-game species, including important migratory and special-status species.

Expansion of Open/Water Marsh Habitat

The expansion of open water/marsh habitat is intended to provide resources through the construction of new waterfowl ponds with appropriate water management infrastructure. Four areas of potential expansion have been identified:

- West of Davis Road, in D7 (approximately 71 acres)
- The former Lovell Ponds in D13 (approximately 160 acres)
- The area north of existing field X in D4 (approximately 18 acres)
- The area north of existing fields V and W in D4 (approximately 48 acres).

These four wetlands will provide up to approximately 297 acres of additional wetland habitat (see Section 5.3.2). It is expected that three of these ponds will include blinds for waterfowl hunting and one will be a seasonal closed zone, similar to the Headquarters' pond. The increase in wetland creation is commensurate with the additional acreage of land acquired within the Davis Unit since constructed wetlands were last completed.

The new ponds will be developed in accordance with the following guidelines (see Minnesota Department of Natural Resources 2002 for more detail):

1. Keep depth to no more than 4 feet with plenty of shallower areas, design with 10:1 or shallower slopes, and include variable and undulating bottoms.

2. Design larger (minimum 2,500 square feet) and irregularly shaped ponds where able.
3. Design an irregular shoreline where able.
4. Place pond near existing shallow marshes. Space larger ponds between 100 and 300 feet apart, or closer if screened from adjacent ponds.
5. Include islands (permanent or floating) where feasible if they can be located 300 feet from shore to discourage predators.
6. Use spoil to enhance surrounding uplands.

Each of the ponds will undergo detailed engineering and environmental review. Engineering of the ponds will determine the exact location, proposed grading and infrastructure design, construction techniques, and maintenance requirements. Environmental review will include evaluation of underlying biological and cultural resources, effects on traffic, air quality, land use, and public recreation resources, and provide an opportunity for public review and comment.

The potential ponds in the area west of Davis Road (Subunit D7) are located in an area that is comprised mainly of non-native annual grasslands and the only identified biological management designation is for alkali resources. The area does not support any identified locations of special-status alkali plant species but does have appropriate soils and will require site-specific evaluation prior to implementation. If special-status alkali resources are confirmed within the footprint of the proposed ponds, including those resources assumed to be conserved under the MSHCP, avoidance and minimization will be incorporated into the design. Any unavoidable impacts to special-status alkali species will require mitigation in to the form of an on-site restoration plan (see BE 2.4).

The former Lovell ponds occur within alkali and upland management areas and pre-construction surveys and evaluation is required before ponds can be developed in this area. It is anticipated that a substantial degree of avoidance and minimization will be required to construct ponds in this area. The project may require a design that includes expansion of alkali resources in the area.

The potential ponds north of existing fields X, V, and W occur in an upland management area that is mapped as annual non-native grassland and is not expected to support special-status biological resources, although alkali resources are present immediately west of these sites and it is expected that potential for alkali resources is much higher in the western portion of this site. Site-specific review of potential biological impacts will be still be required as part of the planning for any of these potential waterfowl development sites.

Development of Green Feed Fields

In addition to these open zone waterfowl ponds, a series of green feed fields have been identified for development in order to increase forage for waterfowl and allow opportunities for hunting in a field setting. These new green feed fields could be developed in up to three areas occupying approximately 424 acres: one in D1, directly north of existing reservoir ponds in D4 (approximately 105 acres), one on the northeastern edge of D4 and adjacent to the northern portion of Mystic Lake (approximately 113 acres), and one in fields adjacent to the southwestern portion of Mystic Lake in D11 (approximately 207 acres) (see Section 5.3.2). These fields will provide an improved ratio of waterfowl pond to green feed fields (approximately 4:1), especially given the continued loss of agricultural resources in the greater region.

In order to develop these fields, water infrastructure may need to be installed to provide the proper outlets and drainage facilities. Minor grading may also be required to ensure adequate drainage/flooding throughout the field. Existing vegetation, which in all three areas is expected to consist primarily of non-native grasses and broad-leaved forbs, would need to be cleared and row crops of planted grains (wheat (*Triticum* spp.), barley (*Hordeum* spp.), rye (*Secale* spp.), corn (*Zea* spp.), sorghum (*Sorghum* spp.), and other grains). The fields would generally be flooded in the winter months to support crop production in the spring and summer.

Utilization of these fields by waterfowl may be improved through the installation of nest structures and incorporation of islands. Nest structures may consist of various materials. Islands are typically crescent or circular in shape and vary in size and consist of existing local soils.

No special-status species locations have been identified in the green feed field areas; however, site-specific surveys are required prior to construction of the waterfowl food fields. Green feed fields will only be implemented after surveys confirm the absence of covered species and habitat areas required to be conserved within the SJWA under the MSHCP. The use of these areas as green feed fields may be alternated with the use as upland food plots or the two types of forage production may be jointly planned within the same area.

Task BE 3.4 – Identify opportunities and implement a program to provide adequate habitat for southwestern pond turtle.

The waterfowl ponds on the Davis Unit, and potentially wetlands on the Potrero Unit, have the potential to support southwestern pond turtle.

For both units, suitable wetland and adjacent terrestrial breeding habitat will be evaluated for southwestern pond turtle suitability. Factors that may affect suitability include maintenance practices within the marshes and ponds (such as vegetation growth, vegetation removal,

flooding, draw down, etc.), water quality, and levels of human activity in the area. Adjacent upland areas may be unsuitable if moisture levels are too high (usually due to urban runoff) for incubation of eggs. In addition to suitable habitat, controlling other pressures including collection as pets, urban-related predation pressures (e.g., dogs (*Canis lupus familiaris*), raccoons (*Procyon lotor*), skunks (*Mephitis mephitis*), ravens (*Corvus corax*), and crows (*Corvus brachyrhynchos*)), grazing, off-road vehicle use and vehicle strikes on roads may be important to establishing and conserving a pond turtle population(s) within the SJWA.

Table 9-2 of the MSHCP requires implementation of management measures for southwestern pond turtle including that "Reserve Managers will maintain ecological processes within occupied habitat and suitable new areas…. Maintaining ecological processes may include: allowing for natural dynamic fluvial processes of flooding and Habitat regeneration within occupied and potentially suitable streams and ponds; maintaining natural hydrologic processes; limiting livestock access to streams, creeks, ponds, and pools; limiting recreational use of certain areas; altering water use; managing for urban-related predators; and removing exotic vegetation and aquatic species. Reserve Managers will ensure the continued use at a minimum of 75% of the conserved Core Areas as measured once every 3 years."

The San Joaquin marsh at the University of California, Irvine (UCI) includes a large population of southwestern pond turtle in a managed wetland setting similar to the Davis Unit that are well researched and tracked. CDFW managers could contact UCI researchers to help evaluate and manage southwestern pond turtles on the Davis Unit.

For the Potrero Unit, southwestern pond turtle will be considered in the development of any type of active management or expansion of wetlands in the area.

For both units, translocation of pond turtles can be considered in cooperation with the RCA and other regional management entities. Translocated individuals will only come from areas within the vicinity of the SJWA and from healthy, stable populations.

Task BE 3.5 – Participate in regional efforts to develop and implement tricolored blackbird conservation measures.

Both the Davis and Potrero Units support historical and current tricolored blackbird colonies. The Davis Unit in particular has historically supported large breeding colonies and is likely a critical breeding location for the species within Riverside County and perhaps southern California.

Table 9-2 of the MSHCP states that "Reserve Managers will manage this species in order to maintain (once every 5 years) the continued use of, and successful reproduction within at least one of the identified Core Areas. Reserve Managers will ensure habitat support functions within

the MSHCP Conservation Area by maintaining and preserving hydrological processes and habitat suitable for tricolored blackbird breeding within the San Jacinto River floodplain, Mystic Lake/San Jacinto Wildlife Area. Reserve Managers will manage known and future occurrences of this species. Reserve Managers will conserve, protect and buffer with a 100-meter distance around any known nesting locations. Particular management emphasis will be given to Habitat loss, predation, poisoning, human disturbance and pesticide use."

Regional management of tricolored blackbirds is focused on "creating and managing wetland and natural upland breeding habitat with suitable foraging habitat" (Kyle 2010). In the past, tricolored blackbirds have nested on SJWA in wetland managed habitats consisting of cattails (*Typha latifolia*). Wetland management should include growth of stands of cattails and bulrush, with an emphasis on cattails that are at least 4 to 6 feet tall and green (i.e., not dry or senescent). These conditions generally require flooding at least from January to June/July and vegetation removal every 2 to 5 years to encourage new growth. Stands should be at least 10-15 meters wide. Permanent standing water, at least 8–12 inches deep, also helps discourage predators from entering the colony site and can be facilitated by having deeper channels between patches of vegetation with an overall 50:50 or 60:40 ratio of vegetation to open space.

The typical upland component of breeding habitat for tricolored blackbird consists of spiny, thorny brambles such as California blackberry (*Rubus ursinus*), prickly lettuce (*Lactuca serriola*), nettles (*Urtica dioica*), California rose (*Rosa californica*), sandbar willow (*Salix exigua*), and mugwort (*Artemisia douglasiana*). Typical breeding habitat includes vegetation patches 4–10 feet in height and located near water and foraging resources. Agricultural wheat field, near water sources, can also act as upland breeding habitat for these species. Neither natural or agricultural upland breeding habitat for tricolored blackbird occurs on the SJWA.

Native vegetation restoration and enhancement plans within the SJWA could include plantings (such as listed above) to create upland breeding habitat for tricolored blackbird within suitable areas, most likely located on the banks of created waterfowl ponds or adjacent to agriculture fields.

Foraging habitat includes agricultural lands, including dairy farms, which are present around the SJWA but are a declining resource in the area. Irrigated agriculture fields within the SJWA are also a resource, although there is likely insufficient land within the SJWA to provide adequate forage for current levels of tricolored blackbirds visiting the San Jacinto Valley. Tricolored blackbirds depend on insects that are present in irrigated grain fields and pasturelands. The harvesting of fields must be delayed to allow blackbirds to complete their breeding cycle, which is usually complete by mid-June. CDFW managers will inform local farmers if tricolors are nesting in agricultural fields as there are several programs to compensate farmers for harvest losses due to delayed harvesting that protect tricolored blackbird breeding (see Section 5.3.8, PUE 8.6).

Task BE 3.6 – Develop a program to manage existing vernal pool habitat to maximize habitat quality.

The condition of vernal pool habitat in the SJWA is largely unknown. Five vernal pools were identified by RCA in 2008 on the Davis Unit; however, limited information regarding vernal pool habitat quality was obtained. Based on the information available, the vernal pools on site currently do not support any special-status species, except perhaps western spadefoot (not observed during RCA 2008 surveys; however, pools may provide breeding habitat). However, given the location of the pools in relation to the larger alkaline communities and San Jacinto River floodplain, it is likely that vernal pools on site can be managed towards the goal of supporting a greater number of special-status species. There are two created vernal pools on the Davis Unit in D4 that are managed for vernal pool plants. Existing management in the form of avoidance occurs in D3, D4 and D7-D10 and these areas have the potential for additional management.

No records of vernal pools are available at the Potrero Unit and given habitat and soil mapping, it is unlikely that vernal pools exist in that area. However, a survey during the winter season should be conducted to confirm whether vernal pools are present or absent. Potential vernal pool management areas exist in P4-P7 and P10-P11 by developing artificial vernal pools.

For the Davis Unit, the survey effort conducted by RCA BMG in 2008 was focused on particular areas considered to have the highest potential for vernal pools. A multi-year, comprehensive survey may need to be conducted throughout the wider Davis Unit to map the full extent and quality of vernal pools in that area.

Mapping vernal pool habitat quality includes evaluation of the watershed characteristics, vernal pool flora, ponding depth, frequency, duration, and water quality (see Section 5.5, BME 3). Once these data are collected, a determination should be made regarding the adequacy of the habitat for special-status vernal pool species and management measures should be implemented to improve habitat quality, if necessary, to create conditions that support special-status vernal pool species. Annual visual survey visits should be conducted during the inundation and spring-bloom periods to determine which special-status species are currently utilizing the habitat on site.

If special-status species are confirmed on site, any additional management of vernal pools will be coordinated with the USFWS, RCA, and other regional managers to include species-specific effectiveness monitoring and adaptive management, as currently conducted for occupied sites by the RCA BMG.

If appropriate, vernal pools within the SJWA may be considered as a translocation site for either a portion of a healthy population of listed fairy shrimp or vernal pool plant species or a population that will be impacted. Translocation would be conducted with follow-up monitoring and adaptive management (see Section 5.5, BME 3). If the translocation is provided pursuant to mitigation requirements, the program shall conform with CDFW Departmental Bulletin 2012-02 (CDFG 2012).

Task BE 3.7 – Identify breeding habitat for western spadefoot toad and ensure protection of this resource.

Western spadefoot toads occurs on both the Davis and Potrero Units; however, the precise breeding locations for the species are unverified. On the Davis Unit locations are located in D8 and D15. On the Potrero Unit the known locations are in P3 and P4.

For both sites, it is likely that breeding habitat is associated with intermittent streams or ponded areas, likely within either alkali playa areas or in disturbed areas (such as roads). Moist habitat areas (both riparian and wetland) are important for the species, and it is likely that management efforts towards other wetland and riparian species will benefit western spadefoot. It is not expected that waterfowl ponds provide breeding habitat for western spadefoot, although adjacent marshes and other areas hydrologically associated with artificial irrigation may contribute to some portion of the spadefoot toad lifecycle.

Identification and protection of breeding habitat is essential to maintain the species with the SJWA. A series of focused surveys should be conducted within suitable habitat areas both to determine adult and larval locations on each of the units of the SJWA (see Section 5.5, BME 3).

The MSHCP (Table 9-2) directs Reserve Managers, including the SJWA Area Manager, to "maintain or improve habitat quality at all locales within the MSHCP Conservation Area by preserving the watersheds and hydrological processes within the vernal pools, temporary ponds, and drainages that support the potential habitat and by selectively rehabilitating or revegetating all such areas that are currently fragmented or otherwise degraded by, for instance, infestations of exotic plants and animals." The Area Manager is to "evaluate the condition of the sites and vegetation…and maintain a program to enhance or create primary Habitats within the Core Areas. Reserve Managers will maintain successful reproduction at a minimum of 75% of the conserved breeding locations as measured by the presence/absence of tadpoles, egg masses, or juvenile toads once every 8 years. The hydrological processes and breeding population(s) will be maintained as a result of management measures with regard to alteration of hydrology, non-native plant species, farming, mining, grazing, off-road vehicle use and predation."

Once identified, the conditions that affect suitability of spadefoot toad breeding should be evaluated, including hydrology and the presence of invasive species. Hydrologic conditions to be considered include direct runoff contributing to breeding pools and soil substrate conditions that allow for ponding. These hydrologic conditions may be affected by grazing, off-road vehicles, or the spread of exotic plant species amongst other threats.

Threats to spadefoot toad include invasive and exotic aquatic animal species, urban-related predators, lighting, construction-related vibrations (which may affect timing of emergence (Dimmitt and Ruibal 1980)), grazing, off-road vehicles, and human-related degradation of habitat (e.g., trampling of vegetation). Invasive species that specifically threaten spadefoot toad breeding and are known to occur within waterfowl ponds on the Davis Unit include mosquito fish (*Gambusia* spp.), bullfrogs, African-clawed frog, crayfish, and fish. The spread of exotic plant species (e.g., tamarisk, giant reed, iceplant (*Mesembryanthemum* spp.), and pampas grass (*Cortaderia jubata*) may degrade western spadefoot toad habitat by contributing to altered hydrology, eliminating breeding pools, and restricting access to and quality of upland habitats. Urban-related predators that may affect breeding of spadefoot toad include raccoons, skunks, opossum, coyotes, dogs, and cats (*Felis catus*).

Based on general habitat conditions and species records that are subject to verification through additional survey data, it is expected that spadefoot toad populations can be maintained on both units with limited species-specific management; however, particular attention should be maintained by CDFW staff with regards to general habitat requirements and potential adverse activities.

Task BE 3.8 – Identify properties for acquisition that promote conservation of resources for special-status species and hydrologic resources.

CDFW has undertaken a substantial land acquisition program with regards to protection of wetland resources, particularly through the acquisition of lands comprising Mystic Lake. Other habitat areas that support special-status species or reduce adverse impacts to species within the SJWA will be considered for inclusion either through the existing CAAP or through CDFW's participation in the MSHCP. With the regards to wetlands resources, such properties may include those lands that support a portion of the lifecycle of species such as tricolored blackbird as well as lands that buffer the SJWA from urban-related adverse conditions, such as lighting, noise, cats and dogs.

Task BE 3.9 – Maintain the ability to use an adequate supply of recycled water at a reasonable cost to support existing and future wetland habitats on the Davis Unit.

Maintaining the ability to supply wetland habitat areas with irrigation and flooding is facilitated by maintaining an agreement with a water service provider, acquiring funds to purchase water, and incorporating water conservation into wetland management practices.

The current agreement (Agreement) between CDFW and Eastern Municipal Water District (EMWD)(CDFG and EMWD 1987) provides for delivery of up to 20 acre-feet per day (6.5 MGD) for the capacity rights in the pipeline during the 9-month period from September 1 through May 31 each fiscal year throughout the life of the pipeline project. The Agreement also provides 4,500 acre-feet per year at an agreed to maximum price. The Agreement expires in 2013–2014 and is currently being renegotiated and extended each year. This water delivery amount is sufficient to support existing wetland management practices on the SJWA and potentially can support additional wetlands development. As a rule of thumb, seven acre-feet of water annually is needed for every one acre of waterfowl pond developed. There are approximately 900 acres of waterfowl habitat (not including Mystic Lake) on the Davis Unit; this LMP identifies up to an additional estimated 300 acres of waterfowl ponds. A critical component of ongoing conservation of wetlands is securing future agreements that meet current and anticipated irrigation/flooding needs identified by CDFW (see Section 5.3.8, PUE 8.3). A storage pond has been proposed on the wildlife area, likely located in D1. Other potential locations are within existing agricultural areas in D2 due to the limited biological resources present in the area.If implemented this would provide additional waterfowl habitat and waterfowl hunting opportunities. The construction of new or expanded water-dependent projects on the Davis Unit will not occur if recycled water demand exceeds the 4,500 acre-feet per year limit identified in the Agreement and until a new long-term agreement is in place. Any water demands exceeding the 4,500 acre feet per year would also need to be addressed in a new long term agreement, and be subject to the availability of future EMWD recycled water supply. Water demands could also be met with CDFW well water supply.

The Davis Unit annually used variable amounts of EMWD recycled water for management (Table 5-5). During wet years less recycled water is needed than in dry years. The increased usage in recent years reflects the four-year drought in California and additional funding acquired for water purchases for rare plant management, changes in crop species supporting tricolored blackbirds and other wildlife management tactics. Additional funding has been secured for long term water use.

Existing ponds, crops and other water management during a drought year would require 3500 acre feet of water from EMWD. Approximately 300 acres of additional ponds have been

proposed which would require an additional 2000 acre feet of water from EMWD. The cost of water will determine the feasibility of additional ponds. An existing well may provide some of the needed water but the cost to run the pump would determine the feasibility of this source. Future water saving projects include water pump back systems to reuse water after the waterfowl season.

Table 5-5
Historical Recycled Water Usage at the Davis Unit

Year	Water Usage (acre feet)
2016	3340.25
2015	3493.24
2014	3480.69
2013	3054.54
2012	2538.13
2011	2254.11
2010	1998.85
2009	2805.13
2008	3068.47
2007	2392.69
2006	1298.13
2005	2027.53
2004	1387.35
2003	2029.70
2002	2632.71
2001	2623.57
2000	2316.10
1999	2385.04
1998	921.90
1997	1760.01
1996	1466.85
1995	604.64
1994	1113.58
1993	675.56
1992	106.98

Currently, CDFW funds the purchase of water through Pittmann-Robertson funds. This funding has recently declined; this source, and any future sources, should be evaluated for potential volatility. Other funding sources for water may need to be used.

Finally, water conservation practices are an important component of maintaining a secure water supply. Water conservation is primarily achieved through the efficient drainage of ponds and re-use of water, especially during draw down where water within ponds can be used to flood irrigate adjacent fields. In the future, upgrades to the existing water infrastructure may be needed to improve efficiency in water management.

Wetland management practices are continually improved by research and experimental management, which includes varying the amount of water used in certain situations. The results of these learning efforts are disseminated to interested parties by the agencies and organizations involved in waterfowl management. However, it is to the advantage of all wetland managers to keep accurate records of habitat manipulations (e.g. dates of flooding, irrigation, drawdown, disking). Managers should eventually be able to predict how the vegetation on their property will respond to specific management practices; this in turn will allow them to provide high-quality waterfowl habitat with the most efficient use of water. The Davis Unit uses recycled water to flood-up the various wetland types. Moist soil wetlands includes crops grown to attract tricolored blackbirds. There are 1129 acres of various wetlands and 233 acres of riparian habitat maintained with recycled water. Only 20% of riparian habitat is actually flooded with an estimated 24-acre feet/month.

The average loss of water to evaporation is estimated at 7-acre feet per surface acre per year. The highest loss of water to evaporation occurs in the summer months when ponds are typically drained. Even in a drought year, some of this loss is decreased with precipitation. It is estimated that half of the loss to evaporation will be offset by rainfall. Therefore, the evaporative water loss is adjusted to be 0.29-acre feet per surface acre per month, or about 3.5 feet per year. The following table (Table 5-6) is a rough estimate of recycled water use in a given year for various wetland types. The table does not include the proposed 297 acres of new wetlands. The amount of water used depends on weather conditions and may not match the actual totals of water used historically in Table 5-5.

Table 5-6
Estimated Annual Recycled Water Use For Various Wetlands Types on Davis Unit

	Surface Area (acres)	Depth (feet)	Months	Flood-up (acre feet)	Evaporative Loss* (acre feet)	Total (acre feet per year)
Seasonal Wetlands	200	2	4	400	232	632

Semi-permanent Wetlands	404	2	9	808	1054	1862
Permanent Wetlands	100	2	12	----	348	348
Reverse Cycle Wetlands	160	1	5	160	232	392
Moist Soil Wetlands	270	0.5	3	135	----	135
Riparian Habitat	(233) 47	0.5	12	24	----	282
Total	1,181					3,651

* Evaporative water loss adjusted rate = 0 .29 acre feet/month-surface acre

Task BE 3.10 – Ensure the compatibility and coordination of SJWA management practices on both private and public lands.

The wetlands within the SJWA occur both on CDFW-owned and privately owned lands. Most of the private lands in the area are under conservation easements that require coordinated management, especially for the benefit of waterfowl, migratory birds, and specific special-status species. It is expected that coordinated management between CDFW and private land owners will occur on private lands that have conservation easements. Some species-specific management, for example for tricolored blackbird, would be expected within private lands under conservation easement, and CDFW should ensure protection of this species, to the extent feasible, both under current and future easements.

Development of new wetlands or flooded/green feed fields supporting sensitive species on private lands should be reviewed by CDFW to ensure that resources within the SJWA are being allocated towards appropriate habitat requirements. The desired goal is have a healthy mosaic/ratio of permanent water/marshes, semipermanent wetlands, flood-irrigated/green feed fields, and closed zones.

As discussed under BE 3.2, managing non-native invasive species will likely require cooperative actions from private lands owners in order to eradicate problem species from the entire SJWA.

Task BE 3.11 – Implement avoidance and minimization measures to protect sensitive species and habitats from adverse future wetland activities.

Existing wetland resources within the SJWA are managed to protect sensitive resources and would only be impacted during rehabilitation and retrofitting of existing infrastructure. Such actions should be self-mitigating where wetlands are re-established following construction. When permanent impacts may occur, as a result of the development of restoration projects or new facilities, such projects will be designed to avoid wetlands, and in particular, jurisdictional waters under state or federal regulation and covered species and habitats under the MSHCP. Where avoidance is infeasible, projects should be designed to minimize impacts and, if possible, allow only temporary impacts that can be restored in-place.

Any unavoidable permanent impact would require mitigation. Mitigation would have to be determined based on the severity and extent of impact (see Section 5.5, BME 6).

Potential wetland habitat should be evaluated for restoration opportunities. In most cases, suitable wetland restoration areas will consist of non-native grassland or agricultural fields adjacent to existing stream channels, pipelines, or riparian habitat and removal of exotic species from within an existing wetland or riparian habitat area. If restoration is proposed, a restoration plan will be prepared outlining the restoration goals, suitability of restoration lands, methods for habitat establishment, an implementation plan, a monitoring and maintenance plan for at least the first 5 years, and success criteria to determine success of restoration (see Section 5.5, BME 6).

5.2.4 Riparian Communities (Biological Element 4)

Riparian communities are an important resource on both the Davis and Potrero Units. A total of 286 acres of riparian habitat are recommended for management within the Davis Unit; a total of 155 acres are recommended for riparian habitat in the Potrero Unit (Figures 5-2a and 5-2b). Riparian habitat on the Davis Unit is mostly dependent on irrigation that requires ongoing management (i.e., seasonal flooding with recycled water) in D3, D4, D7, D9, D10, D11, D13 and D15. On the Potrero Unit, natural hydrologic conditions are present, which support a varied and dynamic riparian system. The goal for management of riparian communities within the SJWA is to enhance existing and develop new riparian resources for a variety of game and nongame species and ensure the protection of riparian resources during development of future SJWA facilities and other potentially non-compatible uses. This goal for management is proposed on the Davis Unit in D1, D2, D3, D4, D7, D9, D10, D11, D13, D14 and D15, and on the Potrero Unit in P1-P11.

The management tasks identified to achieve this goal are:

BE 4.1 – Maintain new and existing managed riparian habitats by providing appropriate spring/summer irrigations (March 30–November 1). Habitat maintenance includes irrigation for plant growth and water availability for wildlife species during appropriate times of the year.

BE 4.2 – Develop plans for a joint wetlands/riparian restoration closed zone in D4 and strips of riparian habitat in D7 that will include plans for grading to achieve necessary hydrology, planting to establish riparian trees, shrubs, and herbaceous species, maintenance and monitoring to establish riparian resources in this area for the benefit of native plants, wildlife, and waterfowl. Develop potential riparian habitat in D1-D3, D9-D11 and D13-D15.

BE 4.3 – Evaluate the suitability of establishing a riparian restoration/mitigation program in D7, D13, and along Potrero Creek that expands riparian habitat and results in more stable habitat conditions. Such a restoration/mitigation program may potentially rely on funding partnerships with other entities (non-profits, municipalities, private applicants).

BE 4.4 – Control invasive exotics plant and animal species within riparian corridors, particularly tamarisk, brown-headed cowbird (*Molothrus ater*), and European starling (*Sturnus vulgaris*), to benefit native plant and wildlife species.

BE 4.5 – Implement adequate avoidance, minimization, and, if necessary, mitigation, to offset potential future impacts to riparian habitat within the SJWA LMP.

Task BE 4.1 – Maintain new and existing managed riparian habitats by providing appropriate spring/summer irrigations (March 30–November 1). Habitat maintenance includes irrigation for plant growth and water availability for wildlife species during appropriate times of the year.

The Davis Unit includes approximately 233 acres of actively managed riparian habitat in D4 and D7 (Figure 5-2a). The riparian habitat in the northern portion of D4 is supported by irrigation using recycled water within the reservoir ponds in that area. These ponds are maintained as permanent water areas with the fringes of the ponds supporting marsh and riparian habitat. A meandering flow path is established downstream and east of the ponds, which supports mature riparian habitat due to spring and summer irrigation that occur approximately four times a year.

Riparian habitat in D7 receives irrigation through water control structures that are separate from the waterfowl ponds and marshes in D4. Typically, riparian habitat is irrigated over the course of 2 to 3 months in the late spring/early summer. The water is visually tracked to determine the level of discharge downstream and water input is manipulated so that surface water dissipates at or directly north of Ramona Expressway. This hydrologic regime has been effective in

establishing and maintaining dense willow–cottonwood riparian forest along D7 that includes a diverse understory structure necessary to support special-status species such as least Bell's vireo (see Section 5.4, FME 5 and Section 5.5, BME 5).

Task BE 4.2 – Develop plans for a joint wetlands/riparian restoration closed zone in D4 and strips of riparian habitat in D7 that will include grading to achieve necessary hydrology, planting to establish riparian trees, shrubs, and herbaceous species, maintenance and monitoring to establish riparian resources in this area for the benefit of native plants, wildlife, and waterfowl. Develop potential habitat in D1-D3, D9-D11 and D13-D15.

New waterfowl habitats in D4 include the establishment of riparian habitat (approximately 42 acres) in the generalized configuration shown on Figure 5-2a. Plans for the construction of this area are expected to be prepared at the same time as the new waterfowl pond to the south and green feed fields to the east. It is expected that the new riparian area would connect with the existing riparian area to the north to establish a wider band of riparian habitat and enhance resources for waterfowl and other riparian species in the area. In addition, three narrow strips of riparian habitat, totaling 11 acres, are proposed within D7, to the west of existing riparian habitat, to utilize an existing water source and provide beneficial habitat for wildlife. Other potential areas for developing riparian habitat are located within D1-D3, D9-D11 and D13-D15.

Construction plans will include grading plans that result in hydrologic conditions suitable for riparian habitat (typically a continuous grade of approximately 1% through a meandering channel defined by banks that are sloped at approximately 4:1) as well as water infrastructure plans that allow for the most efficient use/re-use of water through the riparian, wetlands, ponds, and fields that are developed in this area. The plans will include a planting and irrigation plan that include a diverse native plant palette to establish canopy, shrub, and herbaceous species within the riparian area. The installation of the riparian habitat will be followed by a maintenance and monitoring program. The monitoring program will ensure that non-native invasive species are not present within the area and that water inputs are of appropriate duration/frequency to promote and maintain native habitat conditions.

Both areas in D4 and D7 have the potential to support special-status species. One location of smooth tarplant is recorded on the edge of the proposed riparian restoration area in D4 and both smooth tarplant and vernal barley are recorded near the proposed riparian restoration in D7. Prior to implementation of grading, these areas will be surveyed to determine the extent of special-status species and plant communities, and appropriate avoidance, minimization, and if necessary, mitigation, will be incorporated into the restoration program such that significant impacts to biological resources are avoided or offset.

Task BE 4.3 – Evaluate the suitability of establishing a riparian restoration/mitigation program in D7, D13, and along Potrero Creek that expands riparian habitat and results in more stable habitat conditions. Such a restoration/mitigation program may potentially rely on funding partnerships with other entities (non-profits, municipalities, private applicants).

Existing riparian habitat occurs along the San Jacinto River flood control channel in D7, D13, and along Potrero Creek and tributaries in areas P1-P11. In the Potrero Unit, flows are natural and hydrologic manipulation is not proposed. However, these areas may support riparian restoration/mitigation through the development of wider floodplains to allow natural hydrology to establish expanded riparian habitat. Such restoration may be desirable to expand the extent of riparian habitat available in the SJWA; however, restoration should not result in loss of SKR or alkali habitat.

Riparian restoration may be planned to address specific erosion or sedimentation issues. Table 5-1 of the MSHCP includes management actions and special considerations which shall be taken with regards to sedimentation and erosion. Special considerations include the presence of sensitive plant species, streambed gradient dynamics, native/non-native species propagule distribution upstream and downstream, likeliness of flooding to recur (i.e., return intervals and fluvial dynamics), water sources, and the extent of the effects. Management actions identified in the table include establishment of erosion control, exotic species control, establishment of weed control buffers, installation of appropriate wattled native plant material for stream bank stabilization, installation of geotextile fabric where unstable soil will limit plant reestablishment, installation of energy dissipating features where flow velocities are expected to be erosive, installation of grade stabilizing structures/vegetation, reseeding with appropriate native understory species, and installation of selected native container plant species.

Currently, riparian habitat exists along a manufactured flood control channel in D7 and D13. The trapezoidal earthen channel is approximately 15 feet wide and supports consistent willow and mulefat scrub due to storm flows and urban runoff, which results in surface water conveyance through the channels mainly during the winter months, and presumably, a shallow water table in the area. It is possible that expansion of the earthen channel could allow for expanded riparian habitat; however, a trapezoidal channel configuration would need to be maintained in order to convey storm flows through the site and confine the water sufficiently to support riparian habitat (as opposed to marsh or alkaline floodplain habitat that may develop if flows are allow to spread out over a large field). A hydrologic study would need to be developed to determine the extent to which the channels could be expanded and the plans will need to be approved by Riverside County Flood Control and Water Conservation District prior to construction.

Potrero Creek is an example of a natural riparian system since the upstream watershed is largely undeveloped and un-manipulated and therefore the introduction of artificial irrigation is not appropriate. However, similar to the discussion above, specific areas along Potrero Creek may support expanded riparian habitat if existing grasslands adjacent to Potrero Creek (which do not support special-status species) are graded to expand the floodplain of the creek. The creek currently exists within a relatively wide channel providing an active, natural floodplain with a meandering flow path that allows for the establishment of extensive cottonwood canopy and varied willow and mulefat understory. Any manipulation of the topography should be planned in a manner that minimizes hydromodification and results in more stable hydraulic conditions (i.e., minimizes erosion and sedimentation and maintains an active, natural floodplain).

With either project, a specific restoration plan would need to be developed prior to implementation. The restoration plan would include target habitat objectives, a description of the restoration activity in terms of grading, plant installation, seeding, erosion control, irrigation, maintenance, and monitoring to ensure establishment. If the activity is associated with mitigation, a permanent record should be established and funding be provided for long-term management (see Section 5.5, BME 6). Any mitigation shall also conform with CDFW Departmental Bulletin 2012-02 (CDFG 2012).

Task BE 4.4 – Control invasive exotic plant and animal species within riparian corridors, particularly tamarisk, brown-headed cowbird, and European starling, to benefit native plant and wildlife species.

Control of invasive exotic plant species and particular wildlife pest species are important components of maintaining the functions and services of riparian habitat within the SJWA.

Table 5-1 of the MSHCP includes management actions and special considerations which shall be taken with regards to exotic plant invasion. Special considerations include the presence of sensitive plant species, species reproductive biology, dispersal methods/timing, and the timing of control measures. Management actions may include removal with hand equipment, chemical treatment, soil solarization, and direct removal/replacement.

Substantial efforts have been made on the Davis Unit to eradicate invasive riparian plant species including giant reed and tamarisk. Riparian habitat on the Davis Unit, especially along D7, requires annual surveys for presence of tamarisk, control by cutting the trees at the stump and application of appropriate herbicide stump paint, and follow-up monitoring and treatment if necessary (see Section 5.4, FME 3). Riparian habitat areas will also be surveyed for establishment of any concentrations of non-native plants; typically any areas greater than ¼-acre

in size should be targeted for restoration through exotic species control and, if appropriate, planting of native plants.

Brown-headed cowbirds parasitize native bird nests and therefore can greatly reduce the viability of native populations of vulnerable species, including least Bell's vireo. Cowbirds are typically controlled through establishment and maintenance of cowbird traps during the breeding season. Cowbird traps are currently established annually at 3 locations within riparian habitat on the Davis Unit. The traps are not currently being operated but are available for operation in the future. Operation involves daily checks during the breeding season to remove non-target species and to dispose of cowbirds (see Section 5.4, FME 3).

For least Bell's vireo in particular, Table 9-2 of the MSHCP requires that "Reserve Managers will ensure (once every 3 years) the continued use of, and successful reproduction at, 75% of the known vireo occupied habitat (including any nesting locations identified in the MSHCP Conservation Area in the future). Reserve Managers will manage the known and future occurrences of this species with regard to flood control measures, altered hydrology, competition with non-native species, parasitism by brown-headed cowbird, mining, grazing, and habitat fragmentation. Reserve Managers will buffer known and future nest sites from disturbance within a 100-meter buffer. Reserve Managers will manage future-identified nesting localities within the MSHCP Conservation Area."

Large winter flocks of European starlings could affect nesting of species such as purple martin (*Progne subis*) and Lewis's woodpecker (*Melanerpes lewis*). Winter surveys by CDFW managers should be conducted in and around riparian management areas to determine the presence and extent of the European starling population on site (see Section 5.5, BME 4). Control of starlings would require capture through mist nets and euthanization according to American Veterinary Medical Association Guidelines.

Management of other MSHCP covered species occupying riparian habitat areas shall be implemented as needed in order to maintain the conservation levels required within the SJWA.

Task BE 4.5 – Implement adequate avoidance, minimization, and, if necessary, mitigation, to offset potential future impacts to riparian habitat within the SJWA LMP.

There are no planned activities that would directly impact riparian habitat. However, if such activities were to occur in the future such as conversion of an existing riparian area to a waterfowl pond or field, such activities will be designed and planned in a manner that avoids impacts to riparian habitat. If avoidance cannot be achieved, impacts will be minimized and unavoidable impacts mitigated through restoration. Restoration may include activities discussed in BE 4.2 or

4.3 or similar proposal. Depending on the location of the impact, permits may be required under the federal Clean Water Act (from the U.S. Army Corps of Engineers and Regional Water Quality Control Board). Any mitigation installed on the SJWA should follow BME 6 as described in Section 5.5 which includes a requirement of conformance with CDFW Departmental Bulletin 2012-02 (CDFG 2012).

5.2.5 Upland Communities (Biological Element 5)

Uplands communities compose the majority of the SJWA and support numerous special-status species including California gnatcatcher (*Polioptila californica*) (Davis only), burrowing owl, several reptiles, small mammals, and raptors. A total of 7,005 acres of the Davis Unit are designated for upland community management, including 2,773 acres that are specifically identified for SKR management (Figure 5-3a). A total of 8,824 acres of the Potrero Unit are identified for upland community management, including 700 acres that are specifically identified for SKR management (Figure 5-3b). Additionally, Of the 882 acres of habitat for wetland guild special-status species that would be managed for a different resource than the proposed management activity, 103 acres, or 12%, managed for upland game hunting are proposed to change to upland communities management. The goal of management of the upland communities resource is to manage upland resources for a variety of game and nongame species and ensure the protection of upland resources during development of future SJWA facilities and other potentially non-compatible uses.

The management tasks identified to achieve this goal are as follows:

BE 5.1 – Conduct qualitative refinements of the vegetation classification at the alliance level to establish a measure for monitoring and managing conversion between chaparral, sage scrub, and grassland vegetation types.

BE 5.2 – Develop and implement wildfire management measures (discussed in PUE 6) that are consistent with optimum fire return intervals to maintain upland vegetation community diversity.

BE 5.3 – Assess erosion and type-conversion issues within upland communities and develop appropriate vegetation management measures to minimize adverse effects, particularly with attention to sage scrub and chaparral post-fire recovery at the Potrero Unit.

BE 5.4 – Control adverse edge effects, including establishment of invasive exotic species, to protect upland habitats.

BE 5.5 – Implement raptor protection measures including protection of prey, nesting, roosting, perching opportunities, and protection from electrocution.

BE 5.6 – Maintain and manage suitable habitat for burrowing owl in a manner that allows life-cycle activities for the species.

BE 5.7 – Implement adequate avoidance, minimization, and, if necessary, mitigation, to offset potential future impacts to upland habitats supporting special-status species within the SJWA LMP.

Task BE 5.1 – Conduct qualitative refinements of the vegetation classification at the alliance level to establish a measure for monitoring and managing conversion between chaparral, sage scrub, and grassland vegetation types.

Currently, the vegetation classification for both the Davis and Potrero Units is the CNPS (2006) regional classification and includes alliance and association level mapping based on samplings and aerial photographic interpretation. This mapping indicates that on the Davis Unit, upland areas are dominated by agriculture and annual (non-native) grasslands (approximately 5,600 acres) and the second most dominant type is sage scrub occupying approximately 1,000 acres. The Potrero Unit is dominated by sage scrub with 5,200 acres mapped as that vegetation community. A total of 1,700 acres are mapped as chaparral, and 1,500 are mapped as annual (non-native) grassland. Although mapping at this level of vegetation types is likely to be accurate, current mapping at the alliance level to determine vegetation community subtypes, based on Dudek's 2008 field assessment of the classification, still requires considerable refinement with regards to chaparral and sage scrub mapping at the Potrero Unit.

Currently the RCA BMG has been unable to develop protocols that quantitatively "measure the change in mean percent cover of functional groups, specifically non-native grasses and forbs across years" (RCA 2010). After conducting 2 years of pilot studies within coastal sage scrub and chaparral in Western Riverside County (including the BLM Potrero ownership south of the Potrero Unit), existing protocols that utilize quadrat data are too intensive, given the availability of survey crew members, to collect sufficient data. Efforts are currently being directed to utilizing only point-intercept data and incorporating accessibility into the selection of sampling sites to improve overall sampling rates. Quantitative vegetation classification and assessments are expected to be refined by the RCA BMG and should be utilized by CDFW managers to understand trends within the SJWA.

In order to obtain a current assessment of conditions, it is recommended that the Potrero Unit be re-mapped at the alliance level to develop a baseline condition for the dynamic between chaparral, sage scrub, and grassland (see Section 5.5, BME 3). This mapping should be compared with aerial photography to identify the relative aerial cover of these types (i.e., mapped extent of vegetation communities) under different post-fire successional stages. This mapping should then be used to develop a general range of acreages of these types that would be

expected at various successional stages. This information would then be used in grazing management plans, ongoing vegetation assessments, SKR management, and upland game management. Maintaining appropriate relative acreages of sage scrub, chaparral, and grassland communities, along with management for edge effects and species-specific management measures list below, is expected to be sufficient to maintain populations of all of the special-status species observed or expected to occur within the SJWA, including those upland species and habitat covered under the MSHCP. These include species such as Belding's orange-throated whiptail (*Aspidoscelis [Cnemidophorus] hyperythrus beldingi*), California horned lark (*Eremophila alpestris*), California gnatcatcher, and Los Angeles pocket mouse (*Perognathus longimembris brevinasus*).

Task BE 5.2 – Develop and implement wildfire management measures (discussed in PUE 6) that are consistent with optimum fire return intervals to maintain upland vegetation community diversity.

The fire management component of this LMP outlines a number of physical alterations to upland communities that help manage fire risk. Grazing, mowing, and other means of maintaining fire buffers and fire breaks as well as development of the response plan will determine the fire return intervals that are maintained within the SJWA, to the extent manageable by CDFW (i.e., not taking into account climatic and anthropogenic causal factors). These measures will be implemented in a manner necessary to protect the public and existing infrastructure, etc. However, these measures will also be implemented in a manner that is consistent with expected fire return intervals for various areas within the SJWA.

The Davis Unit is subject to fire and needs to be managed towards a fire regime with a return interval of 20–30 years. On the Davis Unit, the current management practice is to leave some of the ponds full as an emergency source of water for CAL FIRE. The Potrero Unit has recently been subject to high frequency fires, and fire suppression is an important component of maintaining sage scrub and chaparral habitats, although the effectiveness of minimizing fire frequency is relatively low given the context of the site within a high frequency fire corridor.

Task BE 5.3 – Assess erosion and type-conversion issues within upland communities and develop appropriate vegetation management measures to minimize adverse effects, particularly with attention to sage scrub and chaparral post-fire recovery at the Potrero Unit.

The vegetation classification mapping effort discussed as BE 5.1 will provide an assessment of sage scrub and chaparral alliances and the relative distribution and abundance of those communities. As evidenced in the assessment of SKR, available habitat and population dynamics of that species indicate that conditions within the first few years post-fire yield higher abundances for that species due to expansion of grassland habitat conditions. The degree to which sage scrub and chaparral communities are recovering following fire is likely decreasing as

recent fire return intervals within the Potrero Unit are well beyond estimated natural fire return intervals. Although erosion is a natural part of the landscape within the badlands portion of the Potrero Unit (mainly north of Potrero Creek), the increased fire return interval has likely exacerbated typical erosion conditions reducing the cover of sage scrub and chaparral vegetation.

Table 5-1 of the MSHCP provides a list of management actions and special considerations that should be taken in response to disturbance regimes. For fire, consideration should be given to sensitive plant species, fire-following native species, hydrophobic soil conditions, availability of irrigation, acreage of disturbance, proximity to undisturbed habitat, proximity of sensitive wildlife habitat, potential for resprouting, and determination of target vegetation to reestablished (pioneer, seral, and climax communities). Management actions may include establishment of erosion control, exotic species control, establishment of a weed control buffer, reseeding with appropriate native species combined with exotics control, and installation of selected native species with container plants.

Increased fire return intervals generally result in declining aerial cover of sage scrub and chaparral communities. Active measures to restore sage scrub and chaparral communities are limited. Traditional active restoration in terms of planting, usually with irrigation, consistent with management practices throughout the arid southwest and likely other regions, is not expected to be feasible given the priorities and staff limitations present within the SJWA. The practice of planting seeds with *mycorrhizae* in small divots has been shown to be successful in restoration projects. Programs of large-scale seeding coupled with active weed management are also being attempted and should be monitored to determine feasibility for application within the SJWA. An example of this is the Irvine Ranch Conservancy Restoration and Resiliency program within Orange County. It is likely that activities within the SJWA for the next several years will be limited to small-scale (<5 acres) erosion control treatments and compatible vegetation management coordination through grazing permits, SKR management, fire management, and upland game management (see Section 5.4, FME 3, and Section 5.5, BME 4). Such activities, to extent feasible, should be designed to minimize erosion risk and reduce the likelihood for conversion of sage scrub to chaparral. For example, grazing of sage scrub and chaparral during early post-fire recovery should be avoided; erosion control should include establishment of native plant communities through application of native seed mixes and weed management during the maintenance period; and planting of hedgerows or other upland game measures should utilize native species to the extent feasible.

Task BE 5.4 – Control adverse edge effects, including establishment of invasive exotic species, to protect upland habitats.

Upland communities in the SJWA are mainly threatened by fire issues discussed in the previous BE's in this section. Adverse edge effects are somewhat limited, compared with some of the

other resource management areas, but do include widespread invasive exotic plant and animal species. Invasive exotic plants include a variety of forbs and grasses including mustard, grasses, star-thistle (*Centaurea melitensis*), and tamarisk that occur throughout upland communities, particularly during post-fire succession. Eradication of these species is not feasible and treatment is generally limited to specific concentrated areas and would be followed up by planting or seeding with native species to prevent reestablishment. Efforts can be made to minimize the spread of these species through targeted eradications, but it is recognized that such efforts would be implemented on a limited basis relative to the distribution of the species (see Section 5.4, FME 3, and Section 5.5, BME 4).

Table 5-1 of the MSHCP includes management actions and special considerations which shall be taken with regards to exotic plant invasion. Special considerations include the presence of sensitive plant species, species reproductive biology, dispersal methods/timing, and the timing of control measures. Management actions may include removal with hand equipment, chemical treatment, soil solarization, and direct removal/replacement.

Argentine ants (*Linepithema humile*) are an invasive exotic animal species, associated generally with artificial irrigation, which can result in adverse conditions for native reptiles, by out-competing the native ant and thereby reducing an important food source for some reptiles. Although no specific information was obtained regarding Argentine ants within the SJWA, the species is expected to occupy both units of the SJWA, particularly the central portion of the Davis Unit. Management of Argentine ants is directed towards limiting the extent that artificial irrigation affect adjacent coastal sage scrub communities. It is likely that coastal sage scrub near the central portion of the Davis Unit is subject to higher moisture conditions, which provides suitable conditions for Argentine ants. Therefore limiting the extent to which artificial irrigation affects moisture conditions within upland communities would include such things as avoiding excessive watering and uncontrolled discharges. Particular infestations of Argentine ants may be targeted for removal under certain conditions (see Section 5.4, FME 3, and Section 5.5, BME 4). For example, if a population or Argentine ants became established but the conditions that provided habitat suitability are no longer present, the non-native ants would not be expected to re-establish following treatment. In these situations, the nest/mound would be treated using an appropriate treatment method as established by current literature.

Wild pigs are another existing exotic animal species issue that adversely effects upland communities. CDFW has developed guidance for the control of wild pigs. Area managers will assess wild pig populations within the SJWA, determine if they are causing adverse conditions to native upland communities (i.e., species and habitats), and determine the efficacy of implementing CDFW's guidance or other legal means to eradicate, or, at a minimum, control wild pig populations. CDFG (2001) provides guidelines for hunting of wild pigs in California.

The guidelines cover safety, approved hunting methods (e.g., firearms, archery) and techniques (e.g., stand hunting (posting), spotting and stalking, still hunting, group hunting, hunting with dogs, and tracking), care of game, and legal considerations.

Task BE 5.5 – Implement raptor protection measures including protection of prey, nesting, roosting, perching opportunities, and protection from electrocution.

Management of raptors and other birds of prey includes maintaining and enhancing prey resources and protecting nesting and perching locations. Prey resources are diverse and include small mammals, fish, and birds. The availability of these resources is generally supported by the habitat management measures that are incorporated into most of the activities that occur at the SJWA, and no specific measures are envisioned to further enhance prey resources. Nest sites will be identified if they occur during active hunting/training season or are within 500 feet of agricultural activities (see Section 5.5, BME 3). These activities should be limited and monitored to ensure that nesting activity is protected. Unusual nesting, such as nesting golden eagle (*Aquila chrysaetos*), will be particularly monitored, and even passive recreation within these nesting areas will be avoided. Roosting and perching opportunities should be maintained and enhanced by minimizing the cutting of trees or removal of snags and maintaining and installing artificial nest/perch structures. There are currently 75 raptor poles on the Davis Unit.

CDFW has historical records that golden eagles have been electrocuted in association with Southern California Edison (SCE) high voltage transmission poles traversing the SJWA (CDFG 2000). SCE should maintain all transmission poles and lines within the SJWA in accordance with current standards that protect wildlife from electrocution (see Section 5.3.8, PUE 8.5).

Task BE 5.6 – Maintain and manage suitable habitat for burrowing owl in a manner that allows life-cycle activities for the species.

The Davis Unit supports at least two breeding pair of burrowing owl (RCA 2008b). In 2007 burrowing owl were located within the Wildlife Area. As a result, construction of ponds was modified to protect habitat including occupied and unoccupied burrows. There are artificial burrows on the Davis Unit that need to be monitored and maintained annually. Additional burrows may be added in the future if appropriate.

Burrowing owl has been identified on the Potrero Unit at one location recorded in CNDDB in 2006. RCA BMG has attempted to verify the presence of burrowing owl but has been unsuccessful in identifying the presence of the species within the unit despite numerous monitoring stations within the unit (RCA 2008b).The RCA BMG is expecting to conduct surveys throughout the MSHCP Reserve approximately every 5 years following initial surveys that did not detect population changes/trends.

Table 9-2 of the MSHCP states that "Reserve Managers will manage known and future occurrences of this species with regard to habitat loss and use of rodenticides and pesticides. Reserve Managers will conduct presence/absence surveys for burrowing owl where potential habitat occurs within the MSHCP Conservation Area prior to conducting activities that may negatively affect the burrowing owl. Surveys will be conducted within 30 days prior to disturbance. Take of active nests will be avoided through implementation of BMPs as listed in Appendix C of the MSHCP. Passive relocation (use of one way doors and collapse of burrows) will occur when owls are present outside the nesting season. Translocation sites for the burrowing owl will be created in the reserve for the establishment of new colonies. Translocation sites will be identified, taking into consideration unoccupied habitat areas, presence of burrowing mammals, existing colonies and effects to other Covered Species. The Wildlife Agencies will concur with the site selection prior to translocation site development."

Any active land uses including construction, levee rehabilitation, hunting, training, etc. will be evaluated for potential impacts to burrowing owl. If suitable habitat is present and activities are timed during a period that may disrupt owl activities, pre-activity surveys will be conducted to determine current status of owls. If owls are present, modifications to planned activities will be implemented to the extent necessary to avoid and minimize impacts to burrowing owl. No direct impacts to occupied burrowing owl burrows will be permitted within the SJWA (see Section 5.5, BME 6).

Conditions in the area near active burrowing owl nest sites should be managed in a manner that promotes burrowing owl suitability (see Section 5.5, BME 3). These conditions are generally consistent with how upland communities areas are currently managed and most land management activities, such as SKR management, can be continued with minimal modification to consider protection of burrowing owl resources.

Task BE 5.7 – Implement adequate avoidance, minimization, and, if necessary, mitigation, to offset potential future impacts to upland habitats supporting special-status species within the SJWA

A number of planned activities and management measures have the potential to impact upland resources. Fire management activities, new structures, and development of wetland habitats have the potential to eliminate native upland communities that may support special-status species. In most cases, these activities and management measures will be directed towards wetland, riparian, or alkali resources as priority management areas and thereby result in unavoidable impacts to upland resources. As such, the activities and measures should be implemented in a manner that avoids the highest priority upland resources. Impacts to special-status species occurrences and areas that exhibit high habitat resiliency (e.g., areas of high native plant recruitment following fires) should be avoided. Some unique special-status occurrences within the SJWA include:

- Burrowing owl nesting areas (currently in the south-central portion of the Davis Unit and northeastern portion of the Potrero Unit)
- Los Angeles pocket mouse (D7 of the Davis Unit)
- Golden eagle (currently in the central portions of both the Davis and Potrero Units without any confirmed nesting)
- Ferruginous hawk (*Buteo regalis*) (currently known from the central portion of the Davis Unit)
- Bell's sparrow (*Artemisiospiza belli*) (currently known from central portion of D7 on the Davis Unit and P2, P5 and P9 on the Potrero Unit)
- Rufous-crowned sparrow (*Aimophila ruficeps*) (western portion of the Davis Unit)
- Oak woodlands (especially Engelmann oak on the Potrero Unit)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*) (Potrero Unit)
- Rock outcrops.

Given the planned activities and management measures described in this LMP, it is expected that most of these resources can be avoided. Significant impacts to burrowing owl and other special-status species are expected to be avoided. However, if there are unavoidable impacts to special-status upland resources, mitigation would be provided through resource-specific restoration efforts within the SJWA, consistent with the requirements under the MSHCP for any impacts to covered species or habitats. Mitigation may consist of more active management of particular areas to provide additional suitable habitat for a particular species or resource (see Section 5.5, BME 6). Any mitigation shall also conform with CDFW Departmental Bulletin 2012-02 (CDFG 2012).

5.3 Public Use Management

5.3.1 Trail Use and Wildlife Viewing (Public Use Element 1)

The goal related to management of trail use and wildlife viewing is to maintain and improve recreational opportunities, access, and education. The management tasks related to this goal are:

PUE 1.1 – Implement maintenance and improvements to existing opportunities and access for a diversity of authorized trails recreation.

PUE 1.2 – Construct new facilities to access the SJWA and facilitate passive and active recreation while preserving natural resources, ecological functions, and overall biological, cultural, and recreational resources.

PUE 1.3 – Regularly solicit input and survey SJWA visitors regarding public use programs and recommendations for improvements.

PUE 1.4 – Continue to develop an education program that informs the public at all age levels and user interests.

PUE 1.5 – Utilize funding and volunteer opportunities from recreation groups.

Task PUE 1.1 – Implement maintenance and improvements to existing opportunities and access for a diversity of authorized trails recreation.

Recreational activities utilizing trails include hunting, general nature experience/educational use, passive trail use (i.e., hiking, walking, running, bird watching) and active trail use (i.e., non-motorized vehicles cycling, equestrian riding). Active trail use is appropriate on the designated roads and pathways. . The Davis Unit is visited by groups as well as individuals throughout the year with peak non-hunting recreational use during spring and summer months. Trail use opportunities are currently facilitated through Davis Road and parking areas in D4, D7, and D15 with trailheads that offer access to trails that traverse the Davis Unit (Figure 5-4). Trails consist of maintained roads that are open to the public and regularly maintained as part of normal operations at the SJWA. Parking areas and trailheads are also well maintained. An Americans with Disabilities Act (ADA) compliant viewing structure is established in the northern portion of D4, overlooking the reservoir ponds in that area.

A day use pass or annual pass is required for non-consumptive users to access SJWA. Those that are exempt must have a valid fishing, hunting or trapping license (Fish and Game Code sections 1528, 1764, and 1765). As of October 3, 2011, visitors must make an advance purchase of a daily CDFW Land pass or an annual Land pass, either online at www.dfg.ca.gov/licensing or at one of the CDFW's 1,500 license agents or license sales offices. After providing proof of a pre-paid pass, visitors will be issued a daily entry permit at the SJWA Headquarters Office on Davis Road. Visitors who have a valid California hunting, fishing, or trapping license may obtain an entry permit by presenting their license at the Headquarters Office, and are not required to purchase a pre-paid daily or annual pass. No hunting, fishing, or trapping licenses are sold at the San Jacinto Wildlife Area; licenses must be purchased ahead of time in the same fashion as the daily and annual lands pass (either online or from an agent or sales office).

Access for organized groups shall occur pursuant to a group use permit issued by the Area Manager (Title 14, Fish and Game Code). Scheduled group events require a request in writing at least 14 days in advance to obtain the use permit. There is no fee for the group permit but individuals are still responsible to comply with day use fees. Tours by organized youth and school groups are exempt from payment of those fees. These special events will occur in appropriate areas of the wildlife area, however, some special events, such as Christmas bird count would be appropriate in areas D1-D8 and D10-D15 for the Davis Unit and P1-P9 and P11

for the Potrero unit. Private Duck clubs located in D9 participate in special events such as youth waterfowl hunts.

Public use facilities on the Davis Unit of the SJWA include the headquarters area entrance kiosk, which includes a walk through interpretive display. The headquarters' parking area also includes a public restroom building having four unisex restrooms. The public parking area adjacent to Davis Road and just west of the headquarters entrance way provides a self-registration booth. These lands are used mostly by upland game hunters, but many hikers, bicyclists, horseback riders, and birdwatchers use these lands located south of the headquarters. Additional parking sites adjacent to Davis Road are provided to the south, and a vehicle parking site is maintained off the Ramona Expressway to allow pedestrian access to the southwestern Davis Unit.

Beginning at the Headquarters entrance kiosk, a self -guided auto-tour loop is available to introduce new visitors to the SJWA. The self-guided auto-tour provides a tour map and numbered tour stations along the route, allowing the new visitor to stop at various stations and read interpretive information about that particular SJWA location. The 5-mile round-trip auto-tour which begins and ends at the headquarters entrance kiosk provides a good introduction to the SJWA. The auto-tour also includes a stop at the wildlife viewing station that overlooks the northern wetland enhancement area. Additional interpretive display panels are located throughout the northern portion of the Davis Unit and more are planned for the future.

Additional visitor use facilities are envisioned and would be constructed by the SJWA staff. This would include the construction of several shade shelters with picnic tables. They would be located in the headquarters area and available for visitor use. In addition, CDFW plans to construct an SJWA entrance sign that would be located at the intersection of Marvin Road and Davis Road. The sign would be constructed of appropriate weather-resistant materials; it would serve to both welcome visitors to the SJWA and designate the SJWA boundary.

Currently, there are no public use facilities on the Potrero Unit. Recently, Lockheed Martin Corporation (LMC) installed a kiosk at the Highland Springs Road entrance that explains the dangers of unexploded ordnances and what to do if a visitor finds one. The kiosk may also be used for interpretive displays and regulations for the SJWA.

Where existing infrastructure can be upgraded to facilitate enhanced public recreation, such measures should be considered for implementation. In particular, improvements to signage and available literature would be helpful additional services that could be provided. Potential improvements include installation/upgrades of interpretative displays, trails maps, species checklists, cultural resources, history of the SJWA, and sustainable resource protection practices (see Section 5.4, FME 4).

The joint use of roads by several types of recreational users has generally required minimal management; however, increased use in the future may require more specific signage or other control measures to ensure that the trails can continue as joint use areas (see Section 5.4, FME 4).

Currently geocaching and rock-climbing are prohibited public uses in the SJWA. These activities have been determined to be disruptive to native plant communities and require management that is beyond the staffing levels that are present within the SJWA. These prohibitions and others should be regularly considered to determine if they are needed.

Task PUE 1.2 – Construct new facilities to access the SJWA and facilitate passive and active recreation while preserving natural resources, ecological functions, and overall biological, cultural, and recreational resources.

Existing trails, parking areas, and staging areas accommodate existing users within the Davis Unit but offer limited access to Mystic Lake. No formal recreational infrastructure has been developed for the Potrero Unit. In order to establish access to these areas for both active and passive recreation users, new access locations are proposed for Gilman Springs Road, Highway 79, and Highland Springs Road (Figure 5-4). A trails system is proposed around Mystic Lake as well as throughout the Potrero Unit (Figure 5-4). The development and implementation of this infrastructure will allow greater access to the full variety of recreational opportunities offered by the SJWA (see Section 5.4, FME 4).

The goal of establishing access is to facilitate the management objectives identified through the LMP. These objectives include establishing public access for multi-use trails, wildlife viewing, education, and nature enjoyment, as well as habitat management, hunting, and hunting dog training. Some of the considerations that should be given during the design and development of new facilities include protecting natural resources, limiting the capital and long-term maintenance and management costs, providing multiple use, meeting the objectives of various stakeholders, providing access to the high value recreation areas (areas that offer active uses as well as high value areas for passive users, such as wildlife viewing areas), providing adequate vegetative screening at viewing areas to protect wildlife while enhancing wildlife viewing, and offering the highest value opportunities for natural resources interpretation. Also, all new facilities, to the extent feasible, should be compliant with the ADA. Particular subjects that are lacking from existing interpretive signage and information offered at the SJWA include historical and cultural resources information. The Anza Trail (see Section 2.5.2) is a specific example of an historical use of the land that is of interest to the public and that should be specifically addressed on the SJWA through signage or information that is available to the public to allow visitation for this purpose.

The Gilman Springs Road access proposal requires additional traffic studies to determine the feasibility of the project. If feasible, the road would offer additional access to Mystic Lake and opportunities for passive trail use and interpretation. Trails proposed along the shoreline of Mystic Lake would be for pedestrian use only and be an approximately 4' trail with no improved surface. Because the establishment of this trail may have adverse effects on alkali resources, these effects would require avoidance and minimization, and significant unavoidable impacts may require mitigation through alkali restoration in the area.

Access to the Potrero Unit is proposed to utilize existing roads and gates with parking provided at two locations (on the northern edge of the unit in P5 and in the central portion of the unit in P2) (Figure 5-4). The access points and northern parking area can be established without any impacts to special-status species since these are existing roads/cleared areas that are suitable for public access. Establishment of the central parking lot area would require additional evaluation of potential impacts. Illegal access points need to be better secured with stronger fencing and barriers (Figure 5-4) (see Section 5.4, FME 4).

In order to provide management and interpretative services to the public a visitor's center at the Potrero Unit is planned as a future facility within the Unit. A suggested location has been selected but no funding has been identified nor site planning initiated. Development of a visitor's center (along with maintenance, office, and residence facilities discussed separately) would need to undergo environmental evaluation in order to be constructed. There is the potential of restoring or using existing on-site structures for these buildings. A self-check station for day use fee or hunting passes would be needed on the Potrero Unit. Avoidance, minimization, and, if necessary, mitigation would need to be incorporated into the project (see Section 5.5, BME 6). The project site construction should be designed to serve as many purposes as is practical. Consideration should be given to allowing enough space for interpretive/educational displays, office space, classroom/meeting space, and restrooms. Other improvements planned for the Potrero Unit include at least one bird watching platform, additional interpretive displays, parking and picnic areas, and restrooms.

Testing of contaminated soils and groundwater by LMC is ongoing in the Potrero Unit. Unexploded Ordnance (UXO) may also be present as part of previous operations. As such, the public could be exposed to contamination or UXO in the Potrero Unit. In order to control public access to potentially hazardous areas, CDFW would implement a phased opening of the Potrero Unit over time (e.g. public access initially only on established roadways, followed by passive recreation use in approved areas).

To protect the public from the ongoing remediation activities on the LMC conservation easement (Subunits P10 and P11), upon LMP approval CDFW will construct a fence along the boundary

of the conservation easement boundary prior to CDFW allowing public access on Potrero. In addition, CDFW will include hazard warning signage within 100 feet of the constructed fence to alert the public of the ongoing remediation activities on the LMC property.

Other less severe potential safety hazards are largely associated with historical operations buildings and surrounding areas, and it may be appropriate to restrict access to these areas until they are adequately demolished, refurbished, or otherwise managed to remove safety hazards.

Once CDFW, in association with LMC, determine areas on the Potrero Unit are safe to open to passive recreational use, CDFW will post signage and prepare educational materials with maps placed at all kiosks to direct the public to open areas on the Potrero Unit.

Task PUE 1.3 – Regularly solicit input and survey SJWA visitors regarding public use programs and recommendations for improvements.

In order to continue to manage the resources within the SJWA in a manner consistent with passive recreation use, information from the users themselves must be regularly solicited and collected. Feedback regarding public use programs and information such as trails and interpretative signage should be solicited as well as recommendations for improvements and accommodating new activities. Comment cards should be available as well as solicitation of input through the SJWA website. CDFW managers should utilize the stakeholder database developed during the LMP preparation to provide a regular publication (newsletter, website, email) to inform the public of current issues and information at the SJWA. Communication through meetings, emails, and correspondence with recreational groups should be maintained with the subject of public feedback raised on a minimally annual basis. Such feedback should be recorded and cataloged and reviewed during updates to this LMP.

Task PUE 1.4 – Continue to develop an education program that informs the public at all age levels and user interests.

It is the policy of the California Fish and Game Commission that, to the maximum extent practicable, CDFW shall disseminate information to the public regarding conservation, protection, and management of the state's fish and wildlife resources. It is also the policy that CDFW shall encourage education programs that increase the public's respect and concern for wild animals and expand their knowledge of the interrelationships between wild animals, their environment, and their human neighbors (CDFG 2008c). Staffing is needed to implement an interpretive and volunteer program.

The interpretive program at the SJWA should focus on providing a practical understanding of wetlands, local history, wildlife, hydrology, and unique plant communities through

communications with a variety of interest groups and organizations. This program should be expanded to include school groups similar to the "Discover the Flyway" program operated by CDFW at the Yolo Bypass Wildlife Area. The program is conducted with several school districts and includes training workshops for teachers. Another similar program run by the County of Riverside is in place at the Santa Rosa Plateau Ecological Reserve that could serve as a local example. Currently, the only interpretive program in place at SJWA is the self-guided auto tour.

The proposed public outreach program would include a variety of communication media including web, newsletter, CDFW participation/communication with stakeholder groups, on-site signage, interpretive literature, etc. Communications should articulate the overall goals and compatible use objectives that guide management of the SJWA and encourage the responsible use and participation of the public.

Events open to the general public should also be part of the overall education program. Nature walks and lectures and other forms of docent-guided tours that provide information should be a regular part of SJWA operations.

Task PUE 1.5 – Utilize funding and volunteer opportunities from recreation groups.

A number of recreation groups actively work within the SJWA to improve resources for wildlife and recreational use. Managers of the SJWA should continue to work cooperatively with a variety of recreation groups to fund, manage, maintain, and improve passive recreation facilities and values within the SJWA. The CDFW currently schedules volunteer days to help maintain the wildlife area. Examples of improvements that could be funded or implemented by volunteers include trail maintenance, signage development and installation, removal of non-native vegetation, trash removal, and installation and maintenance of nest boxes. These opportunities are facilitated through active communication and participation in meetings with clear indication of the goals for improvements and management of the SJWA. Future volunteer programs will consist of volunteers and docents under the guidance of a departmental interpreter or existing staff.

5.3.2 Waterfowl Hunting (Public Use Element 2)

The goal of the waterfowl hunting program at the SJWA is to safely manage existing and new waterfowl hunting opportunities to meet public demands up to a level that does not compromise protection of other natural resource values within the SJWA. The waterfowl hunting season occurs between the third week of October to the first week of February. The management tasks for wetlands (Section 5.2.3) were developed with the joint use of wetland species and waterfowl hunting in mind. Waterfowl habitat currently exists in D3-D5, D7-D11 with the potential to expand in D1, D3, D4, D7-D11 and D13. Expansion of waterfowl habitat on the Potrero Unit is

recommended in P2, P9 and P10. BE 3.1 and BE 3.3 in particular call for the continued management and future development of wetland habitats that would support current and future waterfowl hunting demands. Existing waterfowl hunting is recommended to be maintained in its current locations and through current management practices in D3-D5 and D9-D11 (Figure 5-5). The expansion of waterfowl hunting was recommended in D1, D3-D5, D7, D9-D11 and D13, due to the increased demand for hunting opportunities, loss of hunting opportunities in surrounding areas, requirements of the Lake Perris mitigation, and availability of grants and partnerships provided by NGOs and other similar organizations (Figure 5-5). Table 5-7 lists the various types of existing and recommended waterfowl hunting areas including open and close zones, ponds, fields, and lakes.

Table 5-7
Existing and Recommended Wetlands Suitable for Supporting Waterfowl Hunting (Davis Unit)

Unit	Sub-unit	Open Hunting Zones				Closed Zones		Total
		Existing Ponds	*Potential New Ponds*	*Potential New Fields*	*Existing Lake*	*Existing Ponds*	*Potential New Ponds*	
Davis	D1			105				105
	D3	1		75	844			920
	D4	669	18	38			48	773
	D7		71			9		80
	D9	389						389
	D10	51						51
	D11	10		207				217
	D13	10	160					170
Total		**1,130**	**249**	**425**	**844**	**9**	**48**	**2,705**

Given the management of wetland resources that support waterfowl hunting already discussed in Section 5.2.3, the remaining management issues related to waterfowl hunting include:

PUE 2.1 – Safely operate and manage a waterfowl hunting program; conduct hunter education, program supervision, habitat monitoring with relation to hunting activities; and maintain adequate records of hunter harvest, hunter satisfaction, and hunt quality to ensure that the hunting experience is sustainable and consistent with CDFW code.

PUE 2.2 – Maintain and improve hunting infrastructure within waterfowl areas including blinds, parking areas, trash cans, etc.

PUE 2.3 – In coordination with PUE 1, consider development of non-motorized boat access to Mystic Lake from Gilman Spring Road through a new road, parking area, and dock structure.

Task PUE 2.1 – Safely operate and manage a waterfowl hunting program; conduct hunter education and outreach, program supervision and habitat monitoring with relation to hunting activities; and maintain adequate records of hunter harvest, hunter satisfaction, and hunt quality to ensure that the hunting experience is sustainable and consistent with CDFW code.

Based on stakeholder outreach conducted as part of preparation of this LMP, current management of waterfowl hunting is consistent with State policy, compatible with natural resources identified on the SJWA, and largely satisfactory to the hunting public. This includes restrictions on the number of hunters, timing of hunting (time of year, days of week, and time of day), type of hunting/firearms allowed, cost of permits, game species hunted, allowable bag count, and methods for distributing passes and available resources. The exception to this is the restriction on the number of days when hunting is allowed during the hunting season. Although many members of the hunting recreational users would like to open hunting to both Saturday and Sunday during the hunting season, CDFW believes that, given the high value of wetlands for non-waterfowl hunting recreation uses, it is important to maintain the current restriction allowing hunting only on Wednesdays, Saturdays, and during special event Sundays, in order to allow a weekend day (Sunday) for passive recreation uses throughout the SJWA during the hunting season.

Hunter education classes/clinics will continue to be offered at least annually, typically in the summer and fall, and CDFW staff is available to answer questions and offer orientations year round. CDFW staff will continue to actively supervise hunting activities such that the laws and regulations of the State are ensured.

CDFW currently maintains records of hunter harvest through the issuance of permits and the inspection of hunter bags. The number of hunters and the number and kind of game species collected are recorded and tabulated to identify the total and daily average count of waterfowl per hunter per day and per season.

In order to maintain consistent records of hunter satisfaction and hunt quality, CDFW should prepare a standardized survey form and encourage hunters to fill out the form at least once per season. CDFW should review forms currently available from other hunting facilities, especially those managed by the State of California. The form should be available on the SJWA website, and communications from the SJWA (e.g., newsletters, email updates) should remind the hunting community of the importance of the surveys. The survey information collected should be compiled, analyzed, and reviewed annually to determine where improvements should be made to

the overall hunting program in accordance with this and future LMPs. A written analysis of public input and CDFW's response should be prepared and distributed/available to the public to inform the public as to how the survey information was utilized and the reasons why certain improvements will be made and others not.

Task PUE 2.2 – Maintain and improve hunting infrastructure within waterfowl areas including blinds, parking areas, trash cans, etc.

Infrastructure primarily dedicated to facilitating waterfowl hunting is mainly limited to hunting blinds, although blinds are also occasionally used by photographers and researchers. There are 54 blinds currently in place on the Davis Unit. Most of these are constructed of various materials such as hog-wire and palm fronds. These blinds have a useful life of approximately 5 to 10 years and require maintenance every year. CDFW should consider future installation of more permanent blind structures to reduce maintenance costs. Other infrastructure that supports waterfowl hunting, including parking areas, trash cans, etc., also facilitate other uses/activities within the SJWA and are discussed jointly in Section 5.3.1, PUE 1.

Task PUE 2.3 – In coordination with PUE 1, consider development of non-motorized boat access to Mystic Lake from Gilman Spring Road through a new road, parking area, and dock structure.

Mystic Lake is currently not managed to allow hunting from non-motorized boats when the lake is full. In the future, the goal is to include access to Mystic Lake for hunting using non-motorized boats. PUE 1.2 includes evaluation for the future development of access to the Davis Unit from Gilman Springs Road including a road, parking area and boat launch. As part of this potential future project, a small dock should be considered to enhance access for waterfowl hunting and other recreational uses within Mystic Lake. As discussed in PUE 1.2, a number of environmental impacts would need to be evaluated prior to construction of the dock, including impacts to jurisdictional wetlands regulated by the US Army Corps of Engineers, Regional Water Quality Control Board, and CDFW itself.

5.3.3 Agriculture (Public Use Element 3)

The goal of management for agricultural activities on the SJWA is to maintain and expand agricultural leases and CDFW food plots to provide multiple benefits to multiple wildlife species while protecting other biological, cultural, and recreational resources. The management tasks for agricultural use of the SJWA are as follows:

PUE 3.1 – Develop and implement an agricultural lease such that contributions are made to overall management goals of the SJWA in terms of providing forage for wildlife and a financial resource to CDFW while protecting biological, cultural, and recreational resources.

PUE 3.2 – Continue, but reconfigure, existing CDFW food plots, to provide forage for wildlife while protecting SJWA biological, cultural, and recreational resources.

PUE 3.3 – Consider the expansion of leases to provide additional wildlife forage and a financial resource to CDFW while protecting biological, cultural, and recreational resources.

PUE 3.4 – Consider the expansion of CDFW food plots to provide additional wildlife forage while protecting SJWA biological, cultural, and recreational resources.

PUE 3.5 – Consider the development of grazing permits to maintain SKR habitat and to provide a financial resources to CDFW.

Existing and future potential agricultural-use areas are depicted on Figure 5-5, and the acreage and subunit location for these uses are provided in Table 5-8.

Task PUE 3.1 – Develop and implement an agricultural lease such that contributions are made to overall management goals of the SJWA in terms of providing forage for wildlife and a financial resource to CDFW while protecting biological, cultural, and recreational resources.

Currently there are no agricultural leases. Leases will be implemented in the future to provide program income and a resource for wildlife. A future lease is recommended to be limited to the northwestern portion of the Davis Unit (D2) in an area of limited biological, cultural, or recreational resource value so that activities in the area do not substantially diminish overall resource value within the Davis Unit in terms of indirect impacts on adjacent areas (e.g., limited dust, pesticides, noise, etc.). The eastern portion of the lease area, however, is identified for SKR management and therefore is recommended to be removed from any future lease. A future lease should provide that 20% of the crop remain in the field that can be utilized by waterfowl and upland game species as well as migratory birds and other wildlife. An additional lease opportunity exists in D11 where ongoing efforts to attract tricolored backbirds by replacing dry farmed wheat with triticale and alfalfa. This lease would have the lease holder pay for planting, water, fees, etc. and be able to harvest the crop after tricolored blackbirds have fledged.

Table 5-8
Potential New/Expanded Agricultural Areas Considered – Davis Unit

Management Subunits (Davis Unit)	CDFW				CDFW or Lease	Total
	10% Production	*20% Production*	*50% Production*	*100% Production*	*20% Retention*	
D1		1682				168
D2					2881	288
D3			662			66
D4				583		58
D7	1301			114		141
D11					3813	381
D13		1442			3972	541
Total	**130**	**312**	**66**	**69**	**1,066**	**1,643**
Forage Available for Wildlife	**13**	**62**	**33**	**69**	**213**	**391**

[1] Represents a reduction in area and intensity from current practices.
[2] Represents a new potential agricultural area.
[3] Represents a reconfiguration/expansion of existing agricultural areas.
[4] Represents an existing agricultural area that is recommended to continue.

Task PUE 3.2 – Continue, but reconfigure, existing CDFW food plots, to provide forage for wildlife while protecting SJWA biological, cultural, and recreational resources.

Existing CDFW-managed agricultural fields/food plot areas occur in D1, D2, D3, D4, D7, D11 and D13. Modifications are required to the existing food plot area in one portion of D4 due to a proposed closed zone pond in that location. The existing food plot areas in D1, D2, D4, D7, D11 and D13 may have an opportunity to be expanded. New food plot areas may be implemented in D9 and D10.

The food plot areas in D4 are highly valuable due to their proximity to the principal waterfowl use areas on the SJWA. The reconfiguration proposed would allow an existing food plot area (west of the main access road) to be used as a closed zone/brood pond. This minor change in the location of the food plot area is not expected to substantially affect any special-status biological resources; however, the new food plot area would need to be evaluated prior to implementation, especially with regards to special-status alkali species.

The large food plot area in D7 is not fully utilized under current operational practices. Within the larger western area shown, small strips of grain are seeded each year to enhance wildlife forage, up to a maximum of 20% production each year. Existing vegetation in this area is mowed and grain seed is broadcast through the area. Although this practice does enhance forage for a number of wildlife species, the effects on potential alkali resources may be adverse. In consideration of designation of this area as critical habitat for Moran's [spreading] navarretia

(*Navarretia fossalis*), it is recommended that this food plot area be reduced in size and intensity. The food plot area would be reduced to the southern one-third of the current extent and intensity would be reduced from 20% to 10%. Even with this reduction, surveys for alkali plants and evaluation of overall alkali community integrity (i.e., functional value of the area in supporting overall alkali community function such as through contribution of watershed area, hydrology, buffers, etc.) shall be performed before these food plots are continued. Food plots will only be installed after such an evaluation is completed and if the evaluation concludes that food plots will not adversely affect special-status alkali resources.

The existing narrow food plot area on the eastern side of D7 does not impact any biological resources and is of high value to general wildlife and therefore is recommended for continuation according to current practices, which fully utilize (i.e., 100% production) the area. The food plot area in D7 may be expanded.

The food plot/grain production areas currently occurring in D11 have been changed to triticale and alfalfa to attract tricolored black birds to the area. This area could be expanded to occupy up to 20% of the expanded area shown on Figure 5-6.

There may be opportunities for new food plot areas at the Potrero Unit in P2-5.

Management of equipment necessary to implement CDFW-managed agriculture is discussed in Section 5.4, FME 6.

Task PUE 3.3 – Consider the expansion of leases to provide additional wildlife forage and a financial resource to CDFW while protecting biological, cultural, and recreational resources.

Three potential additional lease areas are recommended for consideration, occupying approximately 922 acres in D11 and D13 (two locations), based on the limited value of this area for biological, cultural, or recreational resources. These areas, southwest of Mystic Lake, east of the Lovell ponds, and southwest of the Lovell ponds, are areas of historic agricultural use. These areas may be alternatively utilized by CDFW for production of green feed fields for food plots; however, in the interim, it should be considered as an agricultural lease until such time that CDFW has the resources to develop and maintain a green feed field in this area. Existing biological resources identified in these portions of D11 and D13 are limited to upland resource management. The potential financial and wildlife forage gains from an agricultural lease in this area would likely outweigh potential impacts to special-status resources; however, a site-specific evaluation, followed by avoidance, minimization, and mitigation for any unavoidable significant impacts, will be required prior to implementation.

Task PUE 3.4 – Consider the expansion of CDFW food plots to provide additional wildlife forage while protecting SJWA biological, cultural, and recreational resources.

In addition to the reconfiguration of the two existing food plot areas, a number of additional areas were identified as potential locations for additional grain and crop production to enhance forage opportunities for upland and waterfowl game species as well as other wildlife. These food plot areas include 20% production within D1 and D13, occupying a potential total of at least 40–80 acres of upland and wetland food plots. In addition, a 50% production area on the western shoreline of Mystic Lake is proposed. Many of these food plot areas occupy areas that may be developed in the future as waterfowl ponds/marshes or have other uses, and therefore the production of food plots may be an interim use.

The 20% production areas would likely be operated similar to the existing large food plot in D7 in that particular areas would be mowed and grains planted with no irrigation provided. The location of the planting may be rotated throughout the designated food plot area with a maximum of 20% utilized each year.

The 50% production area would be more formally established in a single location and would include more intensive food plots, including potentially row crops similar to the 100% production area in D4. The focus of crop production in this area would be mainly on waterfowl forage.

These areas are also being considered for food plots under the wetland component of this LMP; such uses maybe alternative or complimentary uses within each area. The use of these areas as green feed fields may be alternated with the use as food plots or the two types of forage production may be jointly planned within the same area.

All of the proposed new agricultural production areas would be evaluated for special-status species prior to implementation. It is expected that all special-status species, including SKR and alkali plants, would be avoided through establishment of restricted areas within the currently designated areas. For example, within the southern-most proposed CDFW 20% food plot area in D13, locations of thread-leaved brodiaea and other alkali plants would be identified, a protective buffer, typically at least 100’ wide would be established, and these areas would be restricted from agricultural uses. The protected areas would be monitored and evaluated as adjacent agriculture is implemented to determine if there are adverse effects associated with the agricultural production, and if necessary, practices will be modified to avoid these adverse effects.

Task PUE 3.5 – Consider the development of grazing permits to maintain SKR habitat and to provide a financial resources to CDFW.

As discussed in Section 5.2.1 grazing will be considered as a means to maintaining habitat for SKR both on the Davis and Potrero Units. As an agricultural activity, the grazing will be managed to provide the maximum benefit to SKR while avoiding and minimizing potential adverse effects such as soil degradation. Grazing areas will be inspected and monitored to determine effects on the environment in accordance with a grazing management plan that identifies potential threats, monitoring requirements to monitor those threats, and an adaptive management program to avoid and minimize those threats and monitor the effectiveness of the program. It is estimated that up to 800 acres may be open to grazing leases on the Davis Unit and 1,000 acres on the Potrero Unit generally located within identified suitable habitat for SKR (see Section 5.4, FME 2).

5.3.4 Upland Game Hunting (Public Use Element 4)

The goal of the upland game hunting program at the SJWA is to safely manage existing and new upland hunting opportunities, to meet public demands up to a level that does not compromise protection of other natural resource values within the SJWA. Similar to the waterfowl hunting program, the Davis Unit offers a unique upland small game hunting program given the location of the SJWA in proximity to major population centers. The program is utilized by approximately 3,000 hunters annually. The hunting season dates for each species are subject to change from year to year. The hunting program includes:

- Black-tailed jackrabbit (*Lepus californicus*) and rock pigeon (*Columba livia*) – year round
- Cottontail rabbit (*Sylvilagus floridanus*) – July 1 to the last Sunday in January
- Dove – September 1 to September 15 and starting the second Saturday in November and the following 45 days
- Snipe (family Scolopacidae) and quail (*Coturnix coturnix*) – third Saturday in October and extends to the last Sunday in January; snipe season continues to the first week in February
- Crow (*Corvus brachyrhynchos*) – first Saturday in December to the second Sunday in April
- Ring-necked pheasant (*Phasianus colchicus*) second Saturday in November and running for six consecutive Mondays. CDFW currently limits the pheasant season (normally November through December 22) and number of pheasant hunters (1,200 annually) on the SJWA due to low populations

The following tasks currently are part of ongoing management at the Davis Unit. These same tasks would be applied to the Potrero Unit, under this LMP, and provide for ongoing management of resources that sustain this hunting program throughout the SJWA by CDFW.

PUE 4.1 – Safely operate and manage the upland small game hunting program in a manner that avoids or minimizes impacts to other resources.

PUE 4.2 – Incrementally open portions of the Potrero Unit to upland small game hunting and evaluate the management requirement and environmental effects before future expansions.

PUE 4.3 – Maintain and develop agricultural and wildlife food crop production as identified in PUE 3.1 – 3.4, to ensure that the proper mixture of successional stages of vegetation is available to meet upland game food and cover needs throughout the year. Also, evaluate the adequacy of cover for upland game and utilize rock piles, tree planting, and brush piles to provide cover.

PUE 4.4 – Maintain and install guzzlers to provide a water source for birds, small game and in some instances for big game, particularly during the summer months at locations throughout the SJWA.

PUE 4.5 – Work cooperatively with the Department of Parks and Recreation staff to assist with their obligations of providing hunting opportunities, as required by the State Water Project mitigation, within the overall SJWA-Lake Perris State Recreation Area by jointly monitoring hunter satisfaction and hunt quality.

PUE 4.6 – Evaluate the potential for two additional game programs: 1) ring-necked pheasant on the Davis Unit; and 2) mule deer (*Odocoileus hemionus*) hunting on the Potrero Unit only.

Existing small game hunting areas in D1-D13 and D15 (6,479 acres) on the Davis Unit are recommended for continuation under current management practices. There may be an opportunity to expand upland game hunting to D14. A total of 7,240 acres of the Potrero Unit are recommended as new potential upland small game and deer hunting areas (Figure 5-7).

Task PUE 4.1 – Safely operate and manage the upland small game hunting program in a manner that avoids or minimizes impacts to other resources.

The safe operation and management of upland small game hunting requires the maintenance and operation of check-in stations; other facilities that offer access to the SJWA such as roads and parking lots; hunter education training including literature regarding rules and regulations; and monitoring of conditions within the hunt areas and surrounding habitats. Also, because upland game hunters freely roam within large hunt areas, the number of allowed hunters must be monitored to ensure safe use. In general, upland small game hunting has been found to be a compatible joint use with management for SKR, alkali, and upland communities. All hunters are required to comply with state and federal laws and regulations.

Task PUE 4.2 – Incrementally open portions of the Potrero Unit to upland small game hunting and evaluate the management requirement and environmental effects before future expansions.

The Potrero Unit was acquired as part of the SJWA with the intention of expanding small game hunting opportunities consistent with CDFW management of Wildlife Areas throughout the State. As discussed in Section 2.3.4.4, upland game hunting is compatible with most biological resources including SKR, alkali communities, and upland communities, all of which will be subject to activities related to the hunting program. That said, management of a hunting program requires field staff, even with self-check-in stations, to monitor hunting activities and assess environmental conditions including game species populations to ensure sustainable use in accordance with CDFW regulations. Given current CDFW staffing levels, only a limited portion of the Potrero Unit is proposed for initial opening of upland small game hunting. P5 was selected following evaluation of resources within the Potrero Unit and accessibility. P5 offers a variety of habitat conditions that support all of the upland game species found at the Davis Unit with the exception of ring-necked pheasant. Hunting would occur at the Potrero Unit in a manner consistent with current practices at the Davis Unit in terms of hours of operation, season, and other restrictions. Access would be from Highland Springs Road with hunters parking and checking in at the existing gate at the northern edge of the unit. P1-P4 areas could be open to upland game hunting incrementally.

Game taken from this portion of the Potrero Unit was studied for potential health hazards by the California Environmental Protection Agency in 2005. Tissue samples from California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), black-tailed jackrabbit, and desert cottontail rabbit (*Sylvilagus audubonii*) were collected and analyzed to determine the presence of perchlorate. The testing determined that health hazards from consuming these game species from the Potrero Unit are well below a level of human health concern (CalEPA 2005).

In future years, especially if CDFW staff and facilities at the Potrero Unit are expanded, it is likely that upland small game hunting could be expanded across the Potrero Unit within the full 7,240 acres recommended on Figure 5-7. Prior to the opening of any areas for hunting or other public uses, existing hazards and toxic items need to be evaluated and appropriate signage, fencing, and other precautions need to be made to ensure that the public can safely traverse the site.

Task PUE 4.3 – Maintain and develop agricultural and wildlife food crop production as identified in PUE 3.1–3.4, to ensure the proper mixture of successional stages of vegetation is available to meet upland game food and cover needs throughout the year. Also, evaluate the adequacy of cover for upland game and utilize rock piles, tree planting, and brush piles, to provide cover.

The agricultural program outlined in PUE's 3.1–3.4 would provide a variety of resources for upland game throughout the central and southeastern portions of the Davis Unit. Most of the crop production benefits both waterfowl and upland game. In particular, row crops in D7 and planned crop production in D7, D11, and D13 consist of mowed strips of vegetation followed by irrigation or seeding and irrigation. Seeding may include legumes and grains that provide improved nesting and foraging habitat respectively. Providing a variety of these resources along with measures discussed here and in PUE 4.4 will ensure that management for upland game resources provides the most potential benefit to upland game species within the Davis Unit.

Currently agricultural production at the Potrero Unit is not a planned activity due to the limited nature of historical crop production and unavailability of staff/resources to develop and maintain such production.

In some areas, such as D6, D15, the western portion of the D1, and the most accessible portions of P5, rock piles, trees, and brush piles should be evaluated for current distribution and abundance and levels should be maintained or improved to ensure adequate cover for game species. Protecting cover resources enhances game populations and therefore the hunting experience.

Task PUE 4.4 – Maintain and install guzzlers to provide a water source for birds, small game and in some instances for big game particularly during the summer months at locations throughout the SJWA.

Currently six guzzlers are available in the central portion of the Davis Unit and are in various states of condition. These guzzlers are currently maintained by CDFW staff and volunteers from Quail Unlimited Riverside Chapter and Trout Unlimited Riverside Chapter with monitoring provided by CDFW. These guzzlers will require replacement over time; in addition, five new locations are proposed for guzzler installation to enhance resource availability for upland species, both game and non-game (Figure 5-7). Where possible, new and replacement guzzlers should be constructed of steel or concrete for better durability (see Section 5.4, FME 5). The guzzlers should be situated in ways that are most optimal for wildlife enhancement. Environmental compliance in terms of avoidance and minimization of impacts to special-status resources, disclosure to the public pursuant to CEQA, and other compliance issues will be performed prior to construction of new and replacement guzzlers.

Task PUE 4.5 – Work cooperatively with the Department of Parks and Recreation staff to assist with their obligations of providing hunting opportunities, as required by the State Water Project mitigation, within the overall SJWA-Lake Perris State Recreation Area by monitoring hunter satisfaction and hunt quality.

The SJWA currently collects hunter information in a manner consistent with the adjacent Lake Perris State Recreation Area so that upland game resources can be jointly managed across the larger reserve area. Input from the hunting community is regularly solicited to obtain feedback regarding the present hunt programs on the Wildlife Area and recommendations for improvement.

Infrastructure and procedures that should be evaluated for potential improvements include check-in stations, hunting literature/information, bag count procedures, training opportunities, junior hunt days, and hunting-related rules and regulations (see Section 5.4, FME 4).

Task PUE 4.6 – Evaluate the potential for two additional game programs: 1) ring-necked pheasant on the Davis Unit; and 2) mule deer hunting on the Potrero Unit only.

These three potential programs need to be further evaluated in the context of CDFW regulations and game population conditions within the SJWA. Ring-necked pheasants have been introduced on the Davis Unit in the past, but currently populations are considered to be low and declining such that hunting opportunities are limited. Implementation of additional guzzlers and food plots, as recommended previously, may be sufficient to increase the population, but if the population does not increase, re-introduction may be warranted.

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The Potrero Unit should be assessed for potential mule deer hunting according to CDFW regulations. As discussed previously for small game hunting, open hunting areas will first be cleared of hazards and toxic conditions such that areas can be safely accessed by hunters. CDFW regularly monitors deer populations throughout the state to determine allowable tag quotas and season dates.

5.3.5 Hunting Dog Training and Field Trials (Public Use Element 5)

The existing hunting dog training area located in D13 at SJWA is a highly valued resource among hunting dog enthusiasts in southern California. Existing and recommended potential new hunting dog training areas within the Davis Unit are located in D5, D7, D11 and D13 and are illustrated on Figure 5-8. The goal at the SJWA is to safely manage existing and new hunting dog training opportunities, to meet public demands up to a level that does not compromise

protection of other natural resource values within the SJWA. The management tasks for hunting dog training are:

PUE 5.1 – Maintain and improve existing and proposed new hunting dog training facilities to provide adequate habitat types including open water, marsh, and upland areas.

PUE 5.2 – Manage hunting dog training events to ensure compatible use with other resource protection goals.

PUE 5.3 – Regularly solicit input and participation from field trial organizations and hunting dog trainers regarding recommendations for improvements.

Task PUE 5.1 – Maintain and improve existing and proposed new hunting dog training facilities to provide adequate habitat types including open water, marsh, and upland areas.

Hunting dog training is currently conducted within a 300- to 400-acre size field and marsh area in the southern portion of D13, east of Davis Road (Figure 5-8). Artificial irrigation allows flooding of the central portion of the field. Participants park and stage events in the southern portion of the SJWA and utilize the remainder of the area for field trials.

There is considerable public interest to expand hunting dog training facilities within the Davis Unit. An area along Bridge Street in D11 (500 acres) is likely the best location for such a facility (Figure 5-8). Two additional smaller sites were identified in D7 (30 acres and 70 acres) (Figure 5-8). The area in D11 does not support special-status biological resources, according to current data, and is designated as an agriculture lease until such time as a hunting dog training area is established. When established, in accordance with public comment, fields should be at least 10 acres in size; ponds would be optimally 60 yards by 100 yards and approximately two to four feet deep. Consideration should be given to points, dikes, and islands to allow dogs to exit and re-enter the water during a single retrieve. Optimally two to three ponds of this size would be developed in the area. Ponds should include shoreline undulations.

Development of such a resource would have multiple benefits to wetland species, passive recreation users, as well as the hunting dog training community. Site specific design and evaluation of potential impacts to alkali communities (especially for potential sites in D7), burrowing owl, and other sensitive resources need to be completed prior to installation of this facility.

Existing and future facilities require minimal maintenance. Water infrastructure requires maintenance and operation to maintain ponds and green feed fields and the overall area requires monitoring, especially before and after hunting dog training events. The monitoring should

identify areas where trash may need to be removed and ensure conditions are adequate to minimize adverse effects (e.g., dry roads/parking lots) (see Section 5.4, FME 4 and 5).

Task PUE 5.2 – Manage hunting dog training events in a manner that is compatible with other resource protection goals.

CDFW currently controls the number of events and monitors event activities to ensure compatibility with other resource protection goals and compliance with wildlife area regulations. Group hunting dog training events require authorization of and coordination with the Area Manager. Alkali resources in D13 require particular attention and focused monitoring to ensure that current and future hunting dog training does not result in impacts to special-status species (see Section 5.4, FME 4). If substantial impacts are occurring, then hunting dog training would need to be moved or otherwise modified to avoid such impacts. In general, the timing of the hunting dog training season, which occurs during the winter and early spring months, prior to the breeding season for most birds, would serve to avoid potential adverse effects because it would not disrupt seed dispersal and bird breeding activity.

Task PUE 5.3 – Regularly solicit input and participation from field trial organizations and hunting dog trainers regarding recommendations for improvements.

As with other public uses, regular solicitation of input from the users, in this case field trial organizations and dog trainers, regarding recommendations for improvement should be made. CDFW managers should work cooperatively with interested field trial organizations to maintain and improve facilities and develop and provide informational literature/signage, etc. This may provide an opportunity for volunteers to help maintain and improve hunting dog training facilities.

5.3.6 Fire Management (Public Use Element 6)

Fire management in the SJWA considers strategic fire prevention activities, fire suppression with regard to effects on habitat, and post-fire monitoring and rehabilitation. As discussed in the Joint Policy on Pre, During, and Post Fire Activities and Wildlife Habitat (CAL FIRE 1994 and CDFG 1995c), fire planning for the SJWA must prioritize public and firefighter safety while meeting habitat management goals.

Fire is a natural component of many of the vegetation types present within the SJWA. However, increasing human populations in the surrounding areas have increased fire occurrence through alterations to natural ignition sources and an increase in fire frequency. Alterations to natural fire regimes can affect natural resource and habitat values of the SJWA, requiring additional human involvement to correct. For instance, fire occurring too frequently within SKR habitat can

degrade the habitat through conversion to non-native grassland, conversely, fires occurring too infrequently can also degrade habitat through accumulated biomass. However, fire suppression should be the primary fire management tool since the biological resources of the SJWA are far more likely to experience more adverse conditions due to frequent fires rather than the adverse conditions associated with vegetation senescence.

In addition, the threat wildfires pose to public safety is an important consideration in fire management planning. These factors influence the fire management goal to develop a fire management program to ensure readiness for wildfire, implement fire prevention measures, and maintain appropriate fire return intervals, to the extent feasible. Specific tasks identified to achieve this goal are:

PUE 6.1 – Transfer critical SJWA site, habitat, access, and sensitive resources information to CAL FIRE and other likely fire responders.

PUE 6.2 – Avoid the adverse effects of catastrophic wildfires that run counter to the habitat management goals of the SJWA through fire prevention activities and targeted suppression activities.

PUE 6.3 – Restore or enhance the quality of degraded vegetation communities and habitat types in a manner consistent with overall conservation goals for species and natural communities.

PUE 6.4 – Develop fuel loading reduction methods that are consistent with overall SJWA management goals for habitat needs, wildlife sensitivities, and public safety, amongst others.

PUE 6.5 – Provide for public safety through pre-response plans and fire prevention activities.

PUE 6.6 – Provide for adaptive fire management to addressed changed conditions caused by uncontrollable or unforeseen factors.

The following objectives have been formulated for achievement of the long-term fire management goals for the SJWA. These objectives integrate important strategies for maintaining habitat value, desired levels of public safety, and protection of valuable assets:

- Utilize available fuel reduction techniques such as grazing, mowing, herbicide application, and prescribed fire, consistent with SJWA goals for habitat preservation, enhancement, and restoration and to avoid catastrophic, site-wide habitat loss from wildfire.
- Identify high value resources (structures, high value habitats, cultural resources, and critical ingress/egress routes) that are to be protected from fire and distribute to CAL FIRE and other fire agencies.

- Ensure that structures on adjacent properties are protected with fuel modification buffers that are located on offsite, adjacent properties and are not dependent on vegetation management within the SJWA.
- Where necessary and where protected resources would not be adversely affected and where feasible, perform long-term, ongoing vegetation management in buffer areas on the edge of the SJWA and developed areas (residential areas, roadways) to prevent wildfire from impacting urban areas and to protect the SJWA from fire originating in urban areas.
- Coordinate with CAL FIRE and identify the presence and location of sensitive resources to be avoided/protected, as possible, during wildfire suppression and prevention efforts.
- Provide CAL FIRE with maps and digital data, consistent with their *in-cab* computer systems, of high-value assets, sensitive biological resources, and cultural resources to be avoided, to the maximum extent feasible (*In-cab* refers to on-board computer systems housed in CAL FIRE engines and other response vehicles. These mobile computer systems contain valuable map information for use in emergency response. Providing reserve data to CAL FIRE for use in these systems increases the chances of avoiding sensitive resources during an emergency).
- Provide maps of high-value assets and sensitive resources within *Knox boxes* at access points for retrieval and use by responding fire fighters. (A *Knox box* is a small, mountable safe that can hold access keys and valuable site maps or documents. Local fire agencies carry master keys for all Knox boxes in their response area for use during emergencies.)
- Provide appropriate contact information to responding fire personnel and regularly update this information and keep active in the event fire suppression activities may affect valuable resources.

For purposes of this plan, the fire management program for the SJWA is divided into three components:

- Pre-Fire Management
- Fire Suppression (During Fire)
- Post-Fire Management.

Pre-Fire Management

Successful pre-fire management requires planning and utilization of fire prevention techniques and strategies. High-value resource areas should be identified, and appropriate wildfire

hazard/fuel reduction practices should be implemented and maintained. CAL FIRE should be consulted in the development of fuel reduction plans intended to minimize occurrence of devastating wildfires on the SJWA. Fuel reduction plans should be developed that are consistent with the Riverside Unit's 2009 Fire Management Plan.

The following management recommendations are provided for Pre-Fire Management purposes:

- Fuel Load Reduction – Coordinate with CAL FIRE in identifying an appropriate fuel management regime for the various vegetation types present on the SJWA. Potential fuel reduction techniques are presented below.
- Staging Areas – Staging areas should be identified prior to initiating fuel reduction work. Staging areas should be contained within already disturbed areas and should account for vehicle/equipment parking/storage locations, removed vegetation storage (prior to transport or chipping), chipping operation locations, chip storage locations, and debris/refuse storage areas (short term).
- Gate and Access Road Signage – Gates and signs with access road names, road types (e.g., paved, dirt, weight capacity or limitations), and road widths will benefit CAL FIRE responders, resulting in more efficient responses. Knox boxes containing important site information only accessible by fire department personnel will improve the likelihood that sensitive resources are protected during a wildfire emergency.
- Illegal Access – Ignition sources including off-highway vehicles and shooting must be managed through restricting access (e.g., fence, gates), more frequent patrols, and higher profile presence of management staff.
- Public Education – Private property owners in the interface or intermix (located adjacent to or surrounded by open space areas) can be encouraged to play an active role in reducing the potential hazard. It will also be beneficial if the public understands the management actions occurring on the SJWA, such as grazing, mowing, herbicides, and prescribed fire.
- Ignition Reduction – It is well documented that anthropogenic sources are compressing the fire return interval and resulting in shrubland conversion to largely non-native annual grassland in Southern California. Fuel modification buffers can be provided for all primary and secondary roads that may affect the SJWA.

Potential fuel reduction techniques include:

- Grazing – An effective fuel reduction method and can be compatible with management goals. Important to avoid introduction of exotic plant species.

- Mowing – A common and successful method for reducing fuel loads. It may be of limited use in rocky and rugged terrain. Important to avoid wet soils and provide measures to reduce potential for ignition and extinguish small fires.
- Mastication – Machinery that results in lower costs, reduced vegetation size, mulch, use on slopes up to 35%.
- Herbicides – Can be used in limited geographic areas to treat specific problems (e.g., exotic species invasion).
- Prescribed Fire – Can only be implemented by CAL FIRE under their VMP program, or via a similar fire authority with experience and certifications to conduct burns. Prescribed fire can be the least expensive but overall least feasible form of fuel management. The advantages of prescribed fire must be weighed against difficulties in getting burns implemented, potential for escape, air quality issues, public opposition, and propensity to result in non-native grass and weed reestablishment if implemented too frequently or wildfire follows within a few years after a burn. It is important to identify proper burn area size so that wildlife species have the ability to use adjacent unburned areas for habitat immediately following fire.
- Hand Tools/Thinning – Can reduce fuel continuity and loading by selective removal of dead and dying, overly dense, horizontal and vertical bunches, and exotics. Thinning is most useful in the wildland–urban interface and intermix areas and around high-value resources.
- Fuel or Firebreaks – Provide areas of removed or reduced fuels that play an important role in helping firefighting resources to contain or slow the spread of wildfires, enable access, and serve as anchor points. The SJWA currently includes numerous roads from which firefighting personnel can conduct operations.

Fire Suppression

Wildfire response efforts must address a full range of factors, including protection of firefighters, public health and safety, protection of "assets," environmental protection, and consistency with resource management objectives. These recommendations are intended to provide guidance for emergency fire response within and immediately adjacent to the SJWA. The following recommendations are provided for wildfire response and suppression efforts within the SJWA:

- Structural protection of adjacent homes or other on-site structures should be focused within the defensible space zones outside of the SJWA boundaries. During extreme weather conditions, this may not be possible, but should be given first consideration.

- Access to the SJWA for fire suppression purposes should primarily be via existing paved or dirt roads.
- Necessary fire suppression actions within the SJWA may include one or more of the following: direct attack with engines, fire crews, rotary and fixed wing aircraft, and firing operations. Heavy equipment should be limited to roads whenever possible within the SJWA to minimize ground disturbance and impacts to cultural or biological resources.
- Fire-line construction activities within the SJWA should be carried out by hand crews whenever possible.
- Bulldozers/road graders may be activated but should not be put into operation in the SJWA itself unless SJWA's Area Manager or sensitive resource maps have been consulted and use is necessary for improving existing roads for engine access or constructing line or secondary line for preservation of high-value resources. Bulldozers/graders should not be used in riparian areas or within 100 feet of stream channels, known cultural sites, or sensitive biological areas.
- Staging areas for wildfire response should be outside of the SJWA, or within pre-determined locations on roads or other currently disturbed areas.
- Reserve staff should be available during a fire incident to provide information to CAL FIRE about known archaeological and historical resources that may be damaged as a result of fire suppression activities. Location and status of known archaeological/historical resources should be communicated to the CAL FIRE Archaeologist assigned to the incident.

Note: CAL FIRE may, at its discretion and following standard incident command procedures, deviate from these recommendations in order to protect public or firefighter safety.

Post Fire Management

The following management recommendations are provided for managing SJWA lands following a fire event:

- Erosion Control – One of the first concerns following wildfire is stabilization of soils in the burn area, especially if sloped areas are included in a burn. Goals should be to have erosion-control best management practices in place as soon as possible and before the onset of the winter rainy season. There are various erosion-control practices available for slowing the rate of erosion. Recent research indicates that mechanical rehabilitation treatments, including straw mulch, hay bales, and jute rolls, are more predictable for reducing soil erosion and post-fire hydrologic problems than seeding or other treatments

(Robichard et al. 2000). Mulching may introduce exotics (Kruse et al. 2004), so erosion potential should be high before deciding to use these erosion-mitigating techniques.

- Fire Retardant – If Phos-Chek fire retardant is applied to the SJWA during a wildfire event, management staff should wash it from unburned vegetation within the first several days following the fire.
- Grading – If significant soil movement occurred during fire suppression efforts, soil should be re-contoured to natural conditions. Additionally, re-installation or repair of road drainage features (culverts, waterbars, rolling dips) should be completed prior to the onset of the winter rainy season.
- Revegetation – Conduct revegetation efforts in critical areas that are at risk of conversion to exotic/invasive species cover.
- Infrastructure – Repair or replace infrastructure damaged as a result of fire suppression operations, including gates, fences, signs, or other pertinent infrastructure.

Keeler-Wolf (1995) provides guidelines for emergency seeding and land conservation measures post-fire response in southern California shrublands.

Additional Tasks

The following recommendations are included as either pre- or post-fire management techniques and are intended to assist in effective wildfire response and suppression efforts:

- At least one SJWA management staff member should have a wildland firefighting Red Card, which will allow him or her access to the SJWA during a wildfire event.
- Existing dirt roads and utility easements within the SJWA should be routinely monitored and maintained to allow emergency vehicle access. Such roads should be closed to the public during extreme fire weather conditions.
- All road or other SJWA access gates should be equipped with a fire department or Knox lock, and a Knox box.
- A SJWA Fire Response Map should be developed. The map should be contained to one sheet and should depict critical site features, including SJWA boundary locations, access roads and type (paved/dirt), gate locations, fence locations, adjacent fuel modification zone locations, fire hydrant locations, and sensitive biological or archaeological avoidance areas. Further, the map should include up-to-date emergency contact information for SJWA management staff. The map should be updated at least annually (or more frequently to reflect necessary site or contact information changes), and multiple

copies of this map should be available year-round and should be provided by SJWA management staff to responding fire personnel during a wildfire event. A copy of the map should be kept within the Knox box at primary Davis and Potrero Unit entrances.

Research and Monitoring: As this Plan is based on strategies that are commonly utilized for fire management and for habitat enhancement but are untested on the SJWA and may require additional experimentation, pre- and post-fire research and monitoring are strongly recommended. The following list identifies primary areas for potential research, experimentation, and monitoring:

Research

- Identify areas that are in particular need for disturbances and in need of re-burning to maintain designated habitat value.
- Experimentally determine the optimal disturbance frequency.
- Experiment with 4-, 5-, and 7-year mowing, grazing, and burning cycles.
- Determine efficacy of "guided or controlled" wildfires to provide the benefits associated with prescribed burning.
- Determine mowing and grazing effects on annual grasslands.
- Implement low-cost native grass reestablishment.
- Maintain fire frequency between 4 and 8 years to control non-native grasses.
- Study protocol to be adjusted or terminated after determining whether fire frequencies are detrimental or are suitable.

Monitoring

- Implement pre- and post-fire monitoring of plant and animal community responses using qualitative and quantitative data collection.
- Coordinate with MSHCP monitoring group to collect data.

Data Management

Data management is an important aspect for fire management on the SJWA. Assuming research and monitoring information is collected as recommended in this section, it will be necessary to house that information within a secure database in a format that is compatible with statistical and trend analysis software applications. Over time, data analysis results will become the basis for fire management adaptations to more closely match SJWA management goals should current

recommendations prove inadequate. Data collected before, during, and after disturbance events should be made available to neighboring open space preserve managers with similar habitat management goals so that larger data sets can be evaluated. Optimal disturbance return intervals may vary by site, and comparisons among SJWA data will be important for long-term fire and habitat management within the region.

5.3.7 Cultural Resources (Public Use Element 7)

The goal of cultural resources management is to identify and protect cultural resources. Management of cultural resources is directed toward the following three management tasks:

PUE 7.1 Identify all potentially significant archaeological resources within proposed new grading and new agricultural use areas and provide avoidance or, if unavoidable, provide mitigation in consultation with the Native American community.

PUE 7.2 Provide communications to SJWA users regarding the sensitivity and importance of Native American and historical archaeological resources.

PUE 7.3 Monitor areas of likely significant archaeological resources and ensure that public access and natural environmental conditions do not adversely affect preservation of those resources.

Task PUE 7.1 – Identify all potentially significant archaeological resources within proposed new grading and new agricultural use areas and provide avoidance or, if unavoidable, provide mitigation in consultation with the Native American community.

A qualified archaeologist will systematically survey all proposed areas of new grading and new agricultural use (not including grazing). This includes areas graded for habitat creation as well as for trails and development pads (e.g., for a new visitor's center). Because proposed agricultural areas may be located in areas close to fresh water sources where Native American settlement has occurred, a qualified archaeologist will systematically survey all proposed areas of new disking, tilling, irrigation, etc. Any potentially significant archaeological resources identified will be either avoided through project redesign, or mitigated through a combination of preservation and data recovery excavation. Mitigation of impacts to archaeological resources shall be developed in consultation with the Native American community.

Task PUE 7.2 – Provide communications to SJWA users regarding the sensitivity and importance of Native American and historical archaeological resources.

The sensitivity, importance, and uniqueness of Native American and historical archaeological resources shall be communicated to all potential users within the SJWA. This advisory, including

a listing of penalties resulting from looting, desecration, or destruction of archaeological resources shall be provided when all hunting permits within the SJWA are issued. Cultural resource areas should be regularly monitored by CDFW staff to ensure that they are adequately protected from adverse impacts.

Task PUE 7.3 – Monitor areas of likely significant archaeological resources and ensure that public access and natural environmental conditions do not adversely affect preservation of those resources.

CDFW staff should be aware of the most significant archaeological resource areas within the SJWA and monitor these areas to ensure that public access does not result in vandalism, erosion, or other adverse impacts to those resources. Similarly, these areas should be monitored to determine whether natural environmental conditions such as erosion and fire are creating conditions that expose or otherwise adversely affect preservation of significant archaeological resources. If adverse conditions are identified, remedial measures should be implemented, including potential public access closures or data recovery. Any data recovery shall be developed in consultation with the Native American community.

5.3.8 Agency and Stakeholder Coordination (Public Use Element 8)

An important component of management is local agency coordination. This coordination effort allows for the efficient and effective management of resources through avoidance or duplication of effort, and leveraging information and resources across the region to address concerns within and near the SJWA. The goal for agency coordination is to maximize multi-agency synergies and protect SJWA resources through cooperation and communication with other agencies. The management tasks identified to achieve this goal are:

PUE 8.1 – Maintain a mutually beneficial, cooperative relationship with RCA to allow ongoing monitoring of MSHCP species and to coordinate management with other regional reserve managers.

PUE 8.2 – Maintain communications with RCFCD to understand flood control requirements and potential for flood control maintenance and infrastructure development.

PUE 8.3 – Renew agreement with EMWD for recycled water and work with EMWD on potential water storage project on the Davis Unit as part of the agreement.

PUE 8.4 – Establish and maintain active lines of communication with municipalities to advocate for compatible land uses adjacent and near the SJWA.

PUE 8.5 – Establish and maintain active lines of communication with utilities that maintain facilities within and adjacent to the SJWA to advocate for compatible facilities and operations and maintenance practice within and near the SJWA.

PUE 8.6 – Establish and maintain lines of communication with private land ownership within and adjacent to the SJWA to advocate for compatible land use practices within and near the SJWA.

Task PUE 8.1 – Maintain a mutually beneficial, cooperative relationship with RCA to allow ongoing monitoring of MSHCP species and to coordinate management with other regional reserve managers.

The RCA provides a number of functions within the SJWA related to biological monitoring. SJWA managers should be aware of the types of monitoring being conducted and planned for future efforts by the RCA. CDFW should coordinate with the RCA to provide the best possible information to inform management of the SJWA. CDFW's database of biological resources and survey information should be compatible with information provided by RCA so that a current record is maintained of the results of biological surveys. This information includes both sightings of species and vegetation communities and also trends in survey results to monitor if target species are declining or increasing.

CDFW managers currently meet with other regional reserve managers on a regular basis to discuss management of species and habitats in the region. Participation in this forum should be an ongoing priority for managers at the SJWA in order to ensure that management efforts are coordinated, information is shared, and best practices are employed.

Task PUE 8.2 – Maintain communications with RCFCD to understand flood control requirements and potential for flood control maintenance and infrastructure development.

The Riverside County Flood Control District (RCFCD) has the potential to affect resources along the San Jacinto River flood control channel in D7 and D13. CDFW managers should maintain communication with RCFCD at a minimum on an annual basis to understand the current objectives of the agencies, available information, and anticipated future activities. Any flood control maintenance or infrastructure development should be coordinated with CDFW to avoid and minimize impacts and provide opportunities for restoration of high-value resources such as riparian and alkali habitats.

Task PUE 8.3 – Renew agreement with EMWD for recycled water and work with EMWD on potential water storage project on the Davis Unit as part of the agreement.

Section 3.F. in the Agreement provides, "While the term of this Agreement is Twenty-five (25) years . . . providing water for the [SJWA] is a long term mutually beneficial program for both the State and [EMWD]. This program will result in the production of valuable wildlife habitat that will support resident and migratory populations of wildlife and provide long-term benefits to the public. The State and [EMWD] realize wildlife populations and public benefits will become dependent upon habitat supported by the [recycled] water delivery program. In recognition thereof, the State and [EMWD] consider this program to be a long-term commitment, to be extended beyond the initial term of this agreement and in good faith, and consistent with their legal authority, intend to periodically extend this agreement with such amendments as are at the time deemed necessary." Similarly, as discussed in the wetlands and waterfowl management sections, CDFW recognizes that securing an ongoing source of recycled water for irrigation and wetlands development is a vital requirement to continue to provide resources and services currently available at the Davis Unit.

The Agreement entered into on August 18, 1987, and expires on June 30, 2014. Consistent with the above, CDFW and EMWD have been meeting periodically to discuss the terms of annual amendments each year to extend the Agreement until a new agreement is entered into that would allow the recycled water delivery program to continue beyond the initial term of the Agreement. The first amendment of June 18, 2014, extended the Agreement for one year (CDFW and EMWD 2014). The second amendment of June 26, 2015, extended the Agreement another year (CDFW and EMWD 2015). The third amendment of June 30, 2016, extended the Agreement another year (CDFW and EMWD 2016). The fourth amendment of May 22, 2017, extended the Agreement another year until June 30, 2018 (CDFW and EMWD 2017). CDFW and EMWD plan to extend this Agreement each year indefinitely until after the draft LMP is approved, at which time an agreement will be requested that covers a longer time period for the 4,500 acre feet per year of recycled water allocation and CDFW and EMWD will reach agreement on an equitable rate. The new agreement may require additional CEQA review by CDFW. As a way to potentially lower the cost of water CDFW may build a storage pond to potentially purchase water at a lower rate and store it until needed. Existing agricultural areas in D2 and D1 are considered potential locations for the reservoir due to the limited biological resources present in the area To preserve this proposal, CDFW is including it herein.

Task PUE 8.4 – Establish and maintain active lines of communication with municipalities to advocate for compatible land uses adjacent and near the SJWA.

The County of Riverside, City of Moreno Valley, and City of Beaumont have the potential to influence the types of activities and resources that will be viable within the SJWA through land use decisions on properties adjacent and near the SJWA. As has been done to date, CDFW should advocate for buffers to be provided on private lands adjacent to the SJWA when development occurs so that no (or limited) restrictions on activities within the SJWA are necessary when development occurs. For example, state law requires that hunting only occur in areas at least 150 yards from any dwelling or occupied structure. If development is approved adjacent to the SJWA, a minimum buffer distance of a 150 yards should be provided as part of the private development so that hunting uses within the SJWA are not precluded by the development. Impacts to nesting birds and other wildlife may require a larger buffer. Development buffers should be designed to minimize project impacts such as noise, lighting, trespass, pollution on wildlife, encroachment on wildlife habitat, and land uses. This is especially relevant along the northern and southern boundaries of the Davis Unit.

Habitat conservation in the region has largely been coordinated through the MSHCP; implementation of the MSHCP through reserve dedications near the SJWA should be coordinated with CDFW Area Managers so that the maximum value is provided when considerations of final reserve design are made.

Task PUE 8.5 – Establish and maintain active lines of communication with utilities that maintain facilities within and adjacent to the SJWA to advocate for compatible facilities and operations and maintenance practice within and near the SJWA.

CDFW managers should ensure that communication with utility owners and operators is adequate such that facilities including pipelines, transmission poles, etc. are maintained in accordance with this LMP, including transmission lines that are installed and maintained in accordance with current standards that protect wildlife from electrocution.

PUE 8.6 – Establish and maintain lines of communication with private land owners within and adjacent to the SJWA to advocate for compatible land use practices within and near the SJWA.

There are a number of adjacent land use issues including invasive species, polluted runoff, noise, trespass, and trash that can be ameliorated through cooperative partnership with adjacent land owners. CDFW managers should identify potential adverse conditions and communicate with adjacent land owners to develop cooperative solutions. In particular, CDFW should inform local farmers if tricolored blackbirds are nesting in agricultural fields as there are several programs to

compensate farmers for harvest losses due to delayed harvesting that protect tricolored blackbird breeding.

5.4 Facilities Maintenance Element

The facilities maintenance elements focuses on existing facilities maintenance needs in order to continue existing management practices in accordance with this LMP. As such, planning, construction, and operations of potential new facilities are not considered in this section. The following facilities maintenance elements have been identified based on the list of management requirements for the resources and goals discussed previously:

- FME 1 – Vegetation Management
- FME 2 – Grazing Permits
- FME 3 – Invasive Species Management
- FME 4 – Roads, Access, and Trail Infrastructure
- FME 5 – Water Infrastructure
- FME 6 – Agriculture
- FME 7 – Administrative Facilities and Equipment.

Facilities Maintenance Element 1 –Vegetation Management

This management element refers to mechanical vegetation management, principally achieved through mowing. Vegetation management specific to invasive species and restoration is discussed separately in FME 3. A variety of tractors (John Deere 8520 or 5510) and mowers (flail mower or rotary mower) are used based on conditions and availability. Vegetation management is recommended as a means of maintaining habitat for SKR and wetlands (see Section 5.2.1 and 5.2.3). CDFW staff should ensure that adequate equipment is maintained in operable order and is sufficient for the area of mowing that needs to be conducted on an annual basis. If sufficient equipment is not maintained with CDFW ownership, private lease agreements and cost sharing with the California Department of Parks and Recreation, Lake Perris should be evaluated to determine the least cost option for mowing.

Facilities Maintenance Element 2 – Grazing Permits

Grazing permits would be established between CDFW and private parties and are expected to be conditional on a number of monitoring and management elements as described in Section 5. Grazing permits may have varied terms, including several year terms, but the operation of the

permit and compliance with conditions will be monitored by CDFW staff on an ongoing basis. It is expected that the permit-holder will provide the majority of the equipment required to operate a grazing operation including animal feed, tractors, fencing, etc. CDFW should monitor and inspect this equipment and its use within the SJWA to ensure compliance with this LMP.

Facilities Maintenance Element 3 – Invasive Species Control/Vegetation Management

Invasive plant species control is required within a number of habitats and includes eradication and herbicide treatment of a variety of species including large shrubs and trees such as tamarisk as well as small herbaceous species such as non-native annual grasses and forbs. The equipment required to implement invasive species control may include a backhoe, dozer/front-end loader, hauling truck/trailer, chainsaws, backpack sprayers, temporary fencing, and erosion control materials including straw wattles, silt fence, etc. Invasive species control areas may also require habitat restoration through planting and seeding of native species that would require similar equipment as is listed above for invasive species control. Similar equipment would be utilized for vegetation management within semi-permanent wetlands, as described in Section 5.2.3.

Invasive animal species may require control and would involve additional equipment for trapping purposes (see Section 5.2.3, BE 3.2, and Section 5.2.4, BE 4.4).

Facilities Maintenance Element 4 – Roads, Access, and Trail Infrastructure

Roads, access points, and trails throughout the SJWA will require ongoing maintenance and improvements that require equipment operation and infrastructure purchases. In addition, signage, information kiosks, check-in stations, and the headquarters' office itself require maintenance. The types of equipment and infrastructure expected to be needed include a dozer/front-end loader, a backhoe, split-rail fencing, interpretative signage, access barricades, gates, and pipe culverts. The SJWA Area Manager will project expected needs in terms of equipment and infrastructure and ensure that adequate funding is in place to obtain and maintain these facilities in adequate conditions according to the needs identified in this LMP. Targeted monitoring and maintenance should occur before and after group events including hunting dog training to ensure adequate conditions and to clean trash and monitoring compliance. In addition, the Area Manager should coordinate with Wildlife Protection Officers to ensure enforcement of Wildlife Area regulations (Title 14, Sections 550, 551) and prevent habitat resource damage arising from trespass or unauthorized use of the Wildlife Area.

If habitat resource damage occurs, Table 5-1 of the MSHCP includes management actions and special considerations, which shall be taken with regards to habitat disturbance. Special considerations include the presence of sensitive plant species, presence of fire-following native

species, availability of irrigation, extent of disturbance, proximity to undisturbed habitat, proximity to sensitive wildlife habitat, potential for resprouting, determination of the target vegetation to reestablish (pioneer, seral, and climax communities), and the biological value of appropriately timed grazing for non-native-dominated areas. Management actions may include fencing, signage, erosion control, backfilling with appropriate local native soil, establishing a weed control buffer, installing temporary irrigation, reseeding, and container planting.

Facilities Maintenance Element 5 – Water Infrastructure

Water management facilities within the Davis Unit are extensive and require inventory, monitoring, and maintenance. This infrastructure supports wetlands management, agriculture, hunting dog training, and a variety of biological resources. Infrastructure includes levees and berms, pipelines, pumps, valves, reservoirs, weirs, flood gates, and guzzlers, all of which will be inspected (either through visual inspection or monitoring of operation) on an annual basis to determine any maintenance or replacement needs. Levees and berms that are subject to erosion should be maintained through mechanical grading conducted during the non-breeding season. Equipment should be maintained by CDFW staff to allow for as-needed repair and replacement of water infrastructure. Collaboration with private landowners who operate similar facilities should be utilized to the extent feasible to maximize cost efficiencies within the total SJWA.

Facilities Maintenance Element 6 – Agriculture

Agricultural production requires a variety of tractors, irrigation, and planting equipment similar to many of those listed for vegetation management, invasive species, and water infrastructure above. CDFW staff should ensure that adequate equipment is available and is maintained in good working condition such that agricultural production areas are kept in expected production levels in order to provide forage for wildlife.

Facilities Maintenance Element 7 – Administrative Facilities and Equipment

Although not directed to a specific resource, overall management of the SJWA requires administrative facilities in order to conduct business. The existing Headquarters' Office and shop/utility building provides office space and storage for management staff at the Davis Unit. These facilities should be maintained in good condition and include addressing repairs such as paint, plumbing, and electrical service. Regular inspection and janitorial services must be conducted in order to maintain the space in a clean, safe condition. Records should be kept including personnel records, accounting and business records, annual budgets and work plans, and visitor use services.

5.5 Biological Monitoring Element

The Biological Monitoring Element is developed based on the management goals identified for the various biological resources listed in Section 5.2 and is designed to provide the necessary information for managers to evaluate progress toward those goals and effectively adapt management actions in order to achieved desired outcomes. The Biological Monitoring Element serves as the basis for adaptive management of the SJWA including adaptation to future potential changes such as climate change. Although the bulk of biological species and habitat monitoring is conducted by the RCA BMG, this LMP includes specific monitoring recommendations that are necessary to determine trends and inform management decisions. The following are the Biological Monitoring Elements identified for the SJWA LMP:

- BME 1 – SKR Habitat Management
- BME 2 – Alkali Resources Assessment and Long-Term Management Plan
- BME 3 – Targeted Resource Surveys/Evaluation
- BME 4 – Invasive Species Control
- BME 5 – Irrigation Management
- BME 6 – Regulatory Compliance
- BME 7 – Data Storage and Management
- BME 8 – Conservation Easements.

Biological Monitoring Element 1 – SKR Management Assessments

A determination regarding SKR habitat manipulations including mowing, grazing, or burning shall be made on an annual basis by CDFW staff based on review of monitoring results, consultation with regional working group and experts, and visual assessment of habitat conditions.

Biological Monitoring Element 2 – Alkali Resources Assessment and Long-Term Management Plan

The element initially includes development of a baseline assessment of the extent and quality of existing and potential alkali habitat utilizing existing species occurrence mapping (including historical occurrences), vegetation mapping, aerial imagery, and field verification. Following compilation of the baseline, a long-term management plan should be formulated to guide future management and monitoring. See Section 5.2.2, Biological Element 2.1 for a more detailed description of the management context related to this assessment. This monitoring element may be implemented by CDFW, the RCA, or another party but will be coordinated through CDFW to

ensure that adequate information is obtain to inform future management actions. If CDFW or RCA funding does not allow for an adequate assessment, the SJWA Area Manager should pursue grant funding or third-party research to complete the assessment.

Biological Monitoring Element 3 – Targeted Resources Surveys/Evaluation

Targeted species surveys and habitat evaluations are recommended in Section 5.2 for the following species:

- Vernal pools and San Diego fairy shrimp
- Southwestern pond turtle
- Tricolored blackbird
- Western spadefoot
- Chaparral/sage scrub/grassland (Potrero Unit)
- Raptor nests
- Burrowing owl burrows.

Refer to Section 5.2 regarding more specifics on each resource. Surveys and habitat evaluations should be conducted in a manner relevant to the management concerns described in Section 5.2. In the case where species are identified on site and management measures are implemented, additional monitoring should be conducted to determine management effectiveness.

This biological monitoring element may be implemented by CDFW, the RCA, or another party but will be coordinated through CDFW to ensure that adequate information is obtain to inform future management actions. If CDFW or RCA funding does not allow for an adequate assessment, the SJWA Area Manager should pursue grant funding and third-party research to complete the assessment.

In addition, the following species for which conservation on the SJWA is required to maintain coverage for species take under the MSHCP would require monitoring implemented by CDFW or RCA (from Table 9-2 of the MSHCP).

- Grasshopper sparrow (maintain occupancy within 3 large Core Areas and at least 3 of the 4 smaller Core Areas in at least 1 year out of any 5 consecutive year period. Conserve at least 8,000 acres in 7 Core Areas. Three of the 7 Core Areas will be large, consisting of a minimum of 2,000 acres of grassland habitat or grassland-dominated habitat (<20% shrub cover). The other 4 Core Areas may be smaller but will consist of at least 500 acres of contiguous grassland habitat or grassland-dominated habitat (<20% shrub cover). Five of

the 7 Core Areas will be demonstrated to support at least 20 grasshopper sparrow pairs with evidence of successful reproduction within the first 5 years after permit issuance. Successful reproduction is defined as a nest which fledged at least one known young.)

- American bittern (Reserve Managers will enhance or create additional habitat or nesting areas. Reserve Managers will identify, protect, buffer from disturbance with a 100-meter buffer, and monitor through time existing and future-identified nesting and foraging habitat. In order to assure the continued presence of American Bittern at a minimum of 50% of the locations in the MSHCP Conservation Area where the species has been known to occur, Reserve Managers will demonstrate presence/ absence at least once every 8 years. Reserve Managers will ensure Habitat support functions within the MSHCP Conservation Area by maintaining, preserving, and enhancing hydrological processes on the Santa Ana River and any other river systems important to maintain the integrity of nesting sites in the MSHCP Conservation Area. Particular management emphasis will be given to grazing, recreation and hunting activities, as well as pesticide use.
- Bald eagle, black-crowned night heron, osprey, peregrine falcon (Reserve Managers will manage known and future occurrences of bald eagle for hunting and recreational activities, as well as pesticide use. Reserve Managers will identify, protect, buffer from disturbance with a 100-meter buffer, and monitor through time existing and future-identified nesting and foraging habitat in the MSHCP Conservation Area.
- Double-crested cormorant (Reserve Managers will ensure habitat support functions by maintaining, preserving, and enhancing hydrological processes within Mystic Lake. Reserve Managers will manage known double-crested cormorant rookeries as well as future rookeries. Particular management emphasis will be given to pesticide use, flood control measures and habitat destruction, and human persecution.
- Loggerhead shrike (Reserve Managers will manage Habitat Linkages and movement corridors between Core Population Areas in order to allow for dispersal and movement of loggerhead shrikes throughout the Plan Area and to areas outside of the planning area. Reserve Managers will manage known and future occurrences of this species for habitat conversion and fertilizer and pesticide use. Reserve Managers will ensure (once every 8 years) the continued use of, and successful reproduction at, 75% of the Core Areas.
- Northern harrier (Reserve Managers will manage this species in order to maintain (once every 5 years) the continued use of, and successful reproduction at, 75% of the known nesting areas (including any nesting locations identified in the MSHCP Conservation Area in the future). Reserve Managers will conserve and buffer from disturbance the known nesting locations. Buffering will include the Conservation of Habitat within a 250 meter radius around each of the nest site locations and may include a variety of Habitats.

Particular management emphasis will be given to habitat loss and conversion, fire and fire abatement measures during the early stages of the breeding cycle.

- Los Angeles pocket mouse (Reserve Managers will ensure that each of the 7 Core Areas shall support a stable or increasing population that occupies at least 30% of the suitable Habitat (at least 4,200 acres) as measured over any 8-consecutive year period (i.e., the approximate length of the weather cycle). Particular management emphasis will be given to flood control, farming, mining, and invasive non-native plant species.
- Englemann's oak (Reserve Managers will avoid or minimize adverse effects to Engelmann's oak to the maximum extent practicable. Reserve Managers will manage known and future occurrences of this species in order to maintain recruitment at a minimum of 80% of the conserved populations as measured by the presence/absence of seedlings or saplings across any consecutive five years. Individual seedlings or saplings will be followed in order to assemble demographic data.

Biological Monitoring Element 4 – Invasive Species Control

Several biological resources require invasive species control to achieve various goals and objectives. In particular, alkali resources are expected to require invasive species control and monitoring in order to maintain and restore habitat functions especially in edge conditions (See Section 5.2.2, BE 2.2). It is expected that any invasive species control areas are assessed through at least qualitative monitoring according to this schedule following the initial control efforts: quarterly for the first year, biannually for the next 4 years, and annually thereafter. Assessments should determine the effectiveness of the control effort and the need for any remedial measures in order to maintain invasive species controls.

Invasive animals may require biological monitoring within wetlands and riparian habitats as described in Sections 5.2.3, BE 3.2 and 5.2.4, BE 4.4.

One of the more likely potential outcomes of climate change is that ecological communities may become more susceptible to establishment of non-native, invasive species. In particular, climate change is predicted to convert some woodland and shrubland communities to open savannah and grassland communities that are dominated by non-native grasses. Monitoring of invasive species should be designed in coordination with regional, statewide, and national efforts to detect changes that may be the result of climate change and develop, implement, and assess adaptation strategies to address those changes.

This monitoring element is expected to be conducted by CDFW staff.

Biological Monitoring Element 5 – Irrigation Management

A number of habitats are actively managed through irrigation, mainly in the form of flooding with recycled water. Each of these habitats must be monitored to ensure that the timing, duration, and results of irrigation inputs are adequate and appropriate to meet habitat goals. Section 5.2.3 provides a detailed description of management goals and objectives with regards to managed wetlands including distinct habitat requirements within permanent, seasonal, and semipermanent wetlands.

Climate change is predicted to result in altered hydrologic patterns that may affect areas of the SJWA supported by natural hydrology but also may affect water supply and in turn affect the ability to irrigate portions of the SJWA. Thus, the overall water use and hydrologic condition of the SJWA should be assessed through the collection and assessment of data with particular attention to identifying long-term trends and developing adaptation strategies that determine what hydrological conditions will be sustainable in the future.

Biological Monitoring Element 6 – Regulatory Compliance

Regulatory compliance includes project specific assessments for potentially significant impacts under CEQA and applicable state and federal laws including existing SKRHCP and MSHCP and incorporation of avoidance and minimization practices during operation and maintenance activities. There are a number of operations and maintenance activities described in Section 5.2 and 5.3 including habitat management through mowing, burning, grazing, flooding, and vegetation clearing that require implementation of avoidance and minimization measures such as avoidance of activities that may adversely affect nesting birds during the breeding season. Potentially significant impacts to the following species/resources are identified in this document and, if unavoidable, implementation would require mitigation, which in most cases consists of on-site species- or resource-specific restoration: SKR, special-status alkali plants, jurisdictional wetlands, riparian habitats, and several native upland plant and animal communities including coastal sage scrub, oak woodland, raptors, and burrowing owl. This element will be conducted by CDFW staff and consultants responsible for implementation of specific projects within the SJWA.

Biological Monitoring Element 7 – Data Storage and Management

A geographic information system (GIS) was created for this LMP and includes nearly all of the current and historical special-status species occurrence information, existing property boundary/ownership, geology, soils, hydrology, and vegetation mapping, as well as all of the recommended resource management and land use designations. As such, this resource can be of great value to CDFW managers and should be maintained and updated. The RCA BMG provides

annual monitoring data in a GIS format and this information can be easily integrated with the GIS. Non-geographic data should also be organized and maintained in computer databases. These data include species checklists, biological surveys and research efforts, hunting data, agricultural data, lease agreement, and easement compliance. Managers should also encourage and maintain a database of volunteer-collected species data such as a Raptor Survey Route to be run during the fall and spring seasons utilizing citizen volunteers, continued participation in the Annual Audubon Christmas Bird Count, possible participation in the U.S. Geological Survey North American Amphibian Monitoring Program, and recording of observations made by users.

Once established, guidelines should be developed for maintaining and updating the databases in order to develop annual work plans, provide communication updates to stakeholders and other resource agencies.

Biological Monitoring Element 8 – Conservation Easement

In cooperation with the landowners, CDFW managers should monitor and resolve issues of compliance with the terms and conditions of conservation easements and foster a coordinated and cooperative approach to the management of wildlife and plant resources. Existing wildlife management plans should be maintained and new plans developed for all properties under conservation easement. Plans should include a provision for annual meeting between property owner/manager and SJWA staff. Existing remnant concrete pads, fences, and other unusable structures should be removed and habitat restoration should be pursued where appropriate.

5.6 Subunit Descriptions

The following subunit descriptions are provided to aid in review by the public and implementation of management by the Area Manager. Each subunit is described in terms of ongoing existing and newly proposed management priorities as well as applicable regulatory requirements.

Subunit D1

The grasslands and slopes west of Davis Road within D1 are currently managed for SKR (mowing) in the lower slopes and has upland small game hunting throughout the subunit. Monitoring should be directed towards determining conditions within sage scrub habitat on the upper slopes of this area and tracking those conditions to determine if management is necessary. A proposed guzzler in this area is recommended for implementation to benefit the upland small game hunting program and will also benefit other upland species.

East of Davis Road, upland management should occur within the area where Riversidean sage scrub has been restored and native grassland restoration has been considered as well as the slopes

adjacent to Davis Road. Immediately north of the existing hunting areas in D4, a band of green feed fields for waterfowl hunting is recommended with the caveat that alkali resources within the area are first identified and either avoided or mitigated through restoration elsewhere on the Davis Unit. These alkali resources are not expected to support threatened or endangered species but may have the potential to support some CNPS-listed species. North of this area is another band of land recommended for dry land agricultural farming, to be operated by CDFW, with 20% production for game species. No impacts to biological resources are expected with implementation of agriculture in this area. Although SKR management was considered in this area, the potential for SKR is low and restoration of SKR habitat in this area would require substantial effort especially as compared to other potential areas where current SKR management may be expanded and lands restored. SKR management is recommended in the eastern portion of D1 contiguous with a large area in the eastern portion of D2 and northern portion of D3.

Subunit D2

Existing agricultural production east of Davis Road would be maintained. SKR management would occur directly east of this area extending to Gilman Springs Road with a small area of riparian habitat that should be monitored and considered for management in the eastern portion. Again, SKR management that was considered within the current agricultural production area in this subunit is not recommended due to the low potential for SKR and poor conditions compared to other sites on the Davis Unit. The SKR management area should be closely monitored to determine if the area is still occupied and if management efforts to reduce vegetative cover and promote grasslands are effective in increasing the population size in this area. There is no substantial evidence of alkali resources or wetlands resources even though a small amount of land was considered within D1 for each of these resource management designations. Upland management should be considered jointly with SKR management, but there are no sage scrub or chaparral resources and therefore the SKR management would likely benefit other grassland species and a separate designation for upland management is not warranted. Upland small game hunting is recommended to continue across the entire subunit.

Subunit D3

The northern portion of D3 is designated for SKR management within the existing suitable habitat north of Mystic Lake. Immediately south of these grasslands, are potential alkali resources that are recommended for management. These two areas would also remain open for upland small game hunting. The recommended alkali management area stretches across the northern shoreline and the northern half of both the eastern and western shorelines. In the northwestern corner, existing restored riparian habitat should be managed according to riparian management objectives.

Mystic Lake itself is treated mainly as a closed zone and wetlands management area. However the "closed zone" designation is applicable only to waterfowl hunting, Passive recreation is not permitted on Subunit D3 on Wednesdays and Saturdays during waterfowl hunting seasons. The potential for alkali resources is present but currently no species data indicates that alkali species occur in the lake bed and therefore alkali management is not recommended. Opening the lake to hunting from non-motorized boats, during the hunting season is considered a compatible use and is part of the recommended management designations. This use may require the development of facilities east of the lake, discussed under management subunit D5. A small irrigated green feed field/food plot is recommended, to be implemented by CDFW, along the western shore if alkali resources can be avoided or adequately mitigated. The southern fringe of Mystic Lake is recommended as an uplands management area given the lack of alkali or SKR resources.

Subunit D4

The existing waterfowl hunting areas in D4 are designated as waterfowl hunting and wetlands management areas. As such, levees, water management infrastructure, and public use facilities would be expected to be maintained and periodically improved throughout this subunit. The Horse Ranch in the western portion of this subunit, if acquired, is recommended for uplands management. The lands to the east of the Horse Ranch extending between the northern and central hunting areas are recommended for upland and alkali management. The development of ponds or expansion of food plots were considered north of ponds A and U but are not recommended for implementation due to the extent of alkali resources in this area. New waterfowl ponds are recommended for further development north of existing ponds X, V, and W with the ponds north of V and W being managed as a closed zone. This area was selected because of the limited impacts that would be expected to occur and the benefit this production would have on waterfowl productivity.

East of the main road connecting the northern and central ponds, the development of a joint riparian/wetlands restoration area that would function as a closed zone between the D ponds and G ponds is recommended. Immediately east of this area, a green feed field is recommended for implementation that would extend towards Mystic Lake. This areas is thus designated both as riparian and wetlands management. Alkali management considered in this area was removed based on the lack of any alkali species point locations. A riparian management area is recommended in the narrow strip of land between Pond 4 and F6.

Subunit D5

The northern portion of D5, directly east of Mystic Lake, is recommended as an alkali management area where some resources appear to be present on the lower slopes in the northern

portion of this area. A SKR management area is recommended in the upper slopes where suitable habitat exists but SKR has not been previously identified. Development of public facilities in the area is carried forth as a recommendation due to benefits to public education and access but would require further analysis of impacts such as traffic and direct loss of biological resources that may need to be replaced through restoration activities elsewhere in the subunit.

The southern portion of D5 contains fringe areas along Gilman Springs Road that are recommended for SKR management based on suitable habitat conditions. The extreme southern area of former agricultural fields is recommended as an alkali management area where alkali resources may be restored. The remainder of the area is designated as an upland management area and the entire area is also designated as a small game hunting area.

Subunit D6

Current practices within this management subunit are largely maintained under the recommended management program. This includes maintenance of existing upland small game hunting across the subunit. Proposed guzzlers in this area are recommended for implementation to benefit the upland small game hunting program. The majority of the lands would also be managed for upland biological resources (445 of 609 acres). Approximately 204 acres SKR management lands are recommended in the northern portion D6 and a small area (1 acre) of riparian management is designated where the vegetation map indicates that those resources are present.

Subunit D7

Beginning in the northern portion of this subunit, a restored riparian corridor is recommended for ongoing maintenance and management. A small area of wetland management is also identified in this corridor but requires field verification to determine if separate management is warranted. Further south, near the main office and maintenance yard area, alkali resources require management along with some uplands management areas. The existing 16-acre waterfowl closed zone is recommended to be maintained as is currently practiced.

West of Davis Road, several large areas of alkali resources are presented and recommended for management. A potential issue in this area is the waterfowl ponds proposed for the central area. These ponds are recommended for construction but would require avoidance, minimization, and possibly mitigation for any unavoidable impacts to alkali resources. Potential hunting dog training areas in this alkali habitat would require similar avoidance and minimization. Existing dryland farming conducted by CDFW in the western portion of the D7 is recommended for reduction due to potential adverse effect on alkali resources. Future dryland farming would be limited to 10% of an area in the southwestern portion of the subunit where few alkali plant locations are recorded.

Agricultural production conducted by CDFW in the eastern portion of D7 is recommended to be maintained as currently managed. The remainder of this area is supported by recommended upland management and riparian management along the narrow existing restored riparian area and the confluence with the San Jacinto River flood control channel (more completely discussed in subunit D13). Upland small game hunting is recommended to continue across the entire subunit.

Subunit D8

This subunit includes CDFW's existing buildings and maintenance yard that are recommended for maintenance in their current configuration and management as per current practices. Non-developed lands within this subunit include a mosaic of recommended SKR management, uplands management, and alkali management.

Subunit D9

This subunit is largely comprised of wetlands management as part of management of existing waterfowl ponds on the private hunting club properties. As such, levees, water management infrastructure, and public use facilities would be expected to be maintained and periodically improved throughout this subunit. A small area of upland management is also present within this subunit.

Subunit D10

These private lands support potential alkali resources (246 acres) and a 70-acre waterfowl hunting area/wetland. Alkali resources are recommended for active management; the waterfowl hunting area would be managed as is currently practiced.

Subunit D11

This subunit, on the southwestern banks of Mystic Lake, currently supports upland small game hunting and former agricultural lands. Management recommendations for this area include two potential projects: implementation of an agricultural lease of CDFW-implemented agricultural fields occupying up to 587 acres or implementation of a new hunting dog training facility occupying 428 acres overlapping with the recommended agricultural lease. It is expected that the agricultural lease could be implemented relatively quickly and run during the interim period until a hunting dog training area is developed. The northern portion of the agricultural area may be jointly used to develop green feed fields totaling 413 acres. Upland small game hunting could be maintained within the currently designated 640-acre area. Two small wetlands occur in this area and should be managed for wetlands resources (22 acres). For the majority of the lands, if

agriculture and hunting dog training are not implemented, they are being recommended for upland management (618 acres).

Subunit D12

This area would largely be managed per current practices with SKR management along the lower slopes (211 acres) and small game hunting throughout the subunit (527 acres). Proposed guzzlers in this area are recommended for implementation to benefit the upland small game hunting program. The upper slopes are recommended for uplands management (517 acres). An upland hunting dog training area in this subunit is not recommended due to its limited size and utility and potential impacts to SKR and upland habitats that are not warranted given the availability of other sites for hunting dog training that do not support these resources.

Subunit D13

This area supports the current hunting dog training area as well as the site of former Lovell duck ponds that were considered for development of waterfowl ponds, at least partially using mitigation funds provided by the Lake Perris Dam Project. The 161-acre proposed waterfowl hunting area in the northeastern portion of the subunit is recommended for development pending avoidance, minimization, and mitigation for unavoidable impacts to alkali resources (among other potentially significant biological resources). Agricultural production is designated in three areas including an overlap with the potential new waterfowl hunting area as a potential interim management practice. The development of agricultural production in this area would be through the careful design of food plots to avoid alkali resources. It is expected that any agricultural production in this area would be conducted by CDFW staff and not leased.

Hunting dog training uses in the southern portion of the site would be maintained with some modification to minimize impacts to alkali habitat under the management recommendations. The remainder of the area includes alkali resource management, uplands management, and a strip of riparian management (mainly geared toward riparian restoration) along the San Jacinto River flood control channel.

There is significant overlap between alkali, wetland, waterfowl hunting, and hunting dog training management designations throughout this subunit. It is expected that alkali resources will be more closely evaluated, new waterfowl hunting will be implemented in a manner that avoids and minimizes impacts to alkali resources and hunting dog training will be modified to do the same. Once developed, the waterfowl hunting areas would be managed as wetlands and remaining, highest quality alkali resources will be part of the alkali management area. Upland small game hunting is recommended to continue across the entire subunit.

Subunit D14

This subunit, west of Lake Perris Dam, would be managed based on existing vegetation mapping and SKR occurrence areas so the SKR management occurs over 488 acres and the remainder of the area is mainly uplands management (178 acres) with patches of riparian management (33 acres).

Subunit D15

This subunit would be maintained as an upland small game hunting area (825 acres) with the remainder of the area supporting either SKR management or alkali resource management.

Potrero Unit

The public use management designations recommended for the Potrero Unit, include trail access on existing roads and the 1,041-acre upland small game hunting area in P2. A conceptual SKR management area was drawn to focus management in the eastern portion of the site. This includes a total 6,848 acres of management occurring in P2-6 and P10-11 with the largest portions in P5 and P10. The remainder of the site is recommended for management largely based on existing vegetation communities that are mostly upland communities (8,833 acres) but also includes a relatively small amount of alkali resources (313 acres), wetlands resources (10 acres), and riparian resources (318 acres). While SKR may occur in these areas, it is important to focus management efforts in areas where management is most feasible and the SKR population would receive the most benefit. Therefore, SKR management is recommended in the eastern portion of the Potrero Unit only.

Public use facilities considered for the Potrero Unit are recommended for implementation and have been sited in locations where impacts to biological resources would be minimized. That said, a number of environmental review and design steps are needed to allow these facilities to be developed. Maintenance of the existing roads within the unit is also recommended to implement proper management of the area. A potential water storage tank for any facilities would most likely be located in P5.

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6.0 OPERATION AND MAINTENANCE SUMMARY

This section of the San Jacinto Wildlife Area (SJWA) Land Management Plan (LMP) addresses operation and maintenance requirements for implementation of existing and future management activities identified in Section 5.0, Management Goals and Tasks. Section 6.1 consists of a list of operation and maintenance tasks to be implemented, Section 6.2 provides a list of annual tasks to be completed each month as well as a schedule for future plans and programs to be development, and Section 6.3 provides a summary of existing staff and additional personnel needs.

6.1 Operation and Maintenance Tasks to Implement Plan

Operation and maintenance tasks are grouped according to three categories: habitat management activities, public use facilities, and administrative facilities. For each category, tasks are listed as pertaining to the Davis Unit, Potrero Unit, or both; a description of related personnel requirements is provided; and current and anticipated future needs are described in as much detail as is possible at the current stage of planning. Equipment needs are described in Section 5.4, Facilities Maintenance Element. Given that the LMP describes potential future long-term development of facilities and management practices (approximately 30-year planning horizon) that may or may not be implemented, depending on funding availability, for certain activities, this section includes assumptions regarding potential near-term expansions of operation and maintenance activities (approximately 5-year planning horizon).

6.1.1 Habitat/Species Management – Maintenance Activities

Habitat/species management is described in Section 5.1 and includes measures aimed toward the goals developed for each of five habitat/species categories: Stephens' kangaroo rat (SKR, *Dipodomys stephensi*), alkali, wetlands, riparian, and upland, as well as waterfowl and upland small game management. The following list of habitat/species maintenance tasks are either currently being implemented or will be implemented through management actions recommended in this LMP.

Task 1: Conduct habitat manipulations (mowing, grazing, disking, herbicide application, or prescribed fire) to maintain optimum grassland habitat values.

> ***Davis Unit (Current):*** Currently, approximately 863 acres of SKR habitat are actively managed through habitat manipulations on the Davis Unit. This area is managed on a 5-year cycle so that an average of approximately 150 acres is managed each year (typically, 100 to 300 acres per year). Currently, mowing and disking are the predominant form of habitat management.

Davis Unit (Future): An additional 1,910 acres were identified for potential active SKR management. It is undetermined at this point if and when additional areas will be added to the active SKR management area. Development of facilities that result in the loss of SKR habitat would require the expansion of active SKR management areas; however, the development of facilities is expected to include avoidance of SKR habitat to the maximum extent practicable. The California Department of Fish and Wildlife (CDFW; prior to 2013 known as California Department of Fish and Game (CDFG)) currently manages more acreage than has been allocated as mitigation for SKR on the Davis Unit, and therefore, no expansion is required. However, with confirmation of SKR occurrence on lands adjacent to Gilman Springs Road, if funding is available, CDFW would prioritize active management of lands in this area, effectively doubling the active management area on the Davis Unit. This habitat would be managed on the same 5-year cycle as is currently conducted; therefore, annual habitat manipulations would be expected to be approximately 300 acres (200 to 600 acres per year); allowing for between 1,000 to 3,000 acres of habitat that could be actively managed for SKR on a 5-year cycle within the Davis Unit.

With or without expansion of the active SKR management area on the Davis Unit, it is expected that a greater variety of management practices will be employed, with an emphasis on grazing as likely the most cost-effective management methodology.

Potrero Unit (Current): No habitat manipulations are currently being conducted on the Potrero Unit. The need for SKR management has been decreased as the area has had several large wildfires over the years, the most recent being the Manzinita fire in 2017.

Potrero Unit endowment for SKR management: On March 5, 2013, an endowment of $1,501,005 was set up with the National Fish and Wildlife Foundation. At the end of 2016 the endowment had $1,636,466. No funds have been withdrawn to date except for administrative fees. There are currently $136,466 in earnings. It is recommended to allow the earnings to build for several more years to allow for funding during years when earnings are low or negative. The CDFW file number for this endowment is: 1-6-90-F-29 with a sub file number IL.A018.

Potrero Unit (Future): This LMP includes a recommendation for development of 638 acres of active SKR management areas to be managed in a similar 5-year rotational pattern as currently conducted on the Davis Unit. Annual management areas are expected to average 125 acres and would typically be 100 to 300 acres in size. As previously discussed, an emphasis will be placed on utilizing grazing as a method for habitat

maintenance; however, mowing, disking, prescribed fire, and herbicide application may also be used.

Additional management areas, especially within Subunit P10, may be added to the active management area in the future, following cleanup of the area. Such an addition has the potential to increase the active SKR management area by another approximately 600 acres.

Summary: Future management of SKR habitat may increase by approximately 200% (doubling of acreage on the Davis Unit and addition of the Potrero Unit); however, with greater emphasis on grazing as a management method, it is expected that habitat maintenance can be achieved in a more efficient manner compared with current practices. Nonetheless, the overall management efforts for SKR are expected to increase by at least 100% (i.e., double the current effort).

Task 2: Construct and install numerous water management structures such as levees, water control structures, and an extensive water distribution pipeline system, all of which require annual maintenance actions.

Task 3: Periodically clear monotypic cattail communities to maintain long-term wetland productivity using prescribed fire or mechanical treatments (disking or mowing) and potentially grazing.

Tasks 2 and 3 are discussed concurrently because they both pertain to the same wetland habitat areas described as follows:

Davis Unit (Current): Water management structures are currently in place on the Davis Unit and require ongoing maintenance to ensure reliability and functionality. These structures allow for the management of irrigation water that supports the majority of wetland and riparian habitats on the Davis Unit. Wetland ponds require management of cattail growth and other vegetation to maintain the proportion of marsh to open water/mudflat area that is optimum for waterfowl use and breeding.

Davis Unit (Future): A number of new water management structures may be constructed to develop new wetland ponds (including closed zones), flooded fields, or riparian zones. These new water management structures would be expected to require the same types of operations and maintenance activities as currently required for existing water management facilities. Wetland ponds would require management of marsh habitat including periodic clearing of cattail growth. This LMP identifies up to a 25% increase in the area of wetland ponds that could be developed on the Davis Unit. Currently, there are no flooded fields on the Davis Unit, whereas the LMP identifies up to 425 acres that

could be developed for such a use. This LMP identifies up to an approximately 80% increase in the area of riparian habitat in two general locations (D4 and D7). This LMP also identifies a potential new hunting dog training area that would require water management. A typical flooded field, hunting dog training area, or riparian zone would require less maintenance than a typical wetland pond, and in general, all new facilities should require less maintenance than existing facilities. Therefore, the new facilities represent an approximately 30% to 40% increase in operation and maintenance requirements from existing conditions.

Potrero Unit (Current and Future): Wetland management facilities on the Potrero Unit exist in P9 and P10. Wetland management facilities are proposed for expansion in P9 and P10 and proposed for development in P2 and P6.

Task 4: Plant and irrigate of wildlife food crops

Davis Unit (Current): Planting and irrigation of wildlife food crops currently occur in several areas of the Davis Unit. These plantings include areas adjacent to wetlands where crops are geared toward waterfowl and migratory bird use as well as planting in grasslands adjacent to sage scrub habitats where plantings are directed toward upland game and wildlife. There are currently approximately 70 acres of lands in active food crop production each year on the Davis Unit in three areas requiring soil preparation, planting/seeding, and sprinkler irrigation. This area does not include the area currently under an agricultural lease, where the lease requires the farmer to retain 20% of the crop in the field for wildlife use.

Davis Unit (Future): The total planting area to be implemented by CDFW has the potential to expand to nearly 400 acres of active production. This represents a greater than fivefold expansion from existing practices. In reality, a portion of this area may be operated by leaseholders and represent multiple alternative, potential agricultural-use areas, some of which would be interim uses prior to the development of facilities planned for the same location. For planning purposes, it is expected that the near-term expansion of agricultural production by CDFW staff will be two to three times existing levels.

Potrero Unit (Current and Future): No current food plot areas occur but potential future food ploteas are proposed in P2-P5 for the Potrero Unit.

Task 5: Control exotic and invasive species such as salt cedar (*Tamarix*), brown-headed cowbirds (*Molothrus ater*), bullfrogs, etc.

Davis Unit (Current): CDFW currently manages invasive exotic plant species through physical removal and herbicide applications as needed. Annual inspections are conducted, and control measures are implemented on an as-needed basis. Currently, control measures aimed at exotic animal species are not regularly scheduled or implemented.

Davis Unit (Future): Sections 5.2.3 and 5.2.4 include goals and management recommendations directed toward the assessment and control of invasive exotic plant and animal species on both the Davis and Potrero Units. Following assessments of various habitats, including alkali and wetlands as priority areas, an exotic species control program or habitat restoration program would be developed and implemented, and it is expected to include a variety of control methods for both plant and animal species.

It is expected that control of exotic plant species within riparian habitats would be maintained at or near current levels of practice. However, if and when alkali management areas are developed, it is expected that exotic plant species controls within this habitat would be established, and they would represent an approximately 50% increased maintenance requirement from current levels.

As discussed previously, exotic animal control measures are not regularly conducted at this time. The need for future exotic animal control measures will be determined through assessment of special-status species populations and suitable habitat. If it is determined that special-status species occurring within the SJWA are adversely affected by exotic animals, or that existing habitats have the potential to support special-status species that are currently being prevented from occurrence within the SJWA due to exotic animal species, then it is likely that exotic animal control measures will be implemented according to a control program that would be established and implemented. Any such program would be an increase in management from current practices.

Potrero Unit (Current): No exotic animal and plant control measures are currently being implemented on the Potrero Unit other than removal of salt cedar.

Potrero Unit (Future): As described previously for the Davis Unit, this LMP recommends the assessment of various habitats and special-status species to determine the need for establishment and implementation of an exotic animal and plant species

control program. It is expected that, at a minimum, control measures for exotic invasive plant species will be implemented within riparian habitats on the Potrero Unit.

6.1.2 Habitat Management – Staff Operations

In addition to the physical maintenance activities described previously, the following staff operational activities will be conducted to achieve the goals outlined for habitat management. These operational activities include coordination with other land managers; analysis of current practices, habitat, species, and land use conditions; training; and documentation necessary to ensure that habitat management is being conducted in accordance with this LMP, as follows:

- Maintain sufficient personnel and equipment to implement and monitor habitat management measures as described in Section 6.1.1, including management of SKR, alkali, wetland, riparian, and upland resources. Staff should be aware of management goals, habitat assessment techniques, and various habitat management methodologies. Documentation of management measures implemented and results in terms of assessed habitat conditions should be recorded and maintained. Coordination with species monitoring groups, including the Western Riverside County Biological Monitoring Group, and researchers from various educational institutions and volunteer/amateur users should be incorporated into the review and documentation of habitat/species management practices.
- Maintain sufficient personnel and coordinate with other entities to implement the biological monitoring elements described in Section 5.5, Biological Monitoring Element, including assessments of SKR and alkali resources, targeted species surveys, invasive species control, and irrigation management.
- Maintain sufficient personnel or consultant contracts to implement future development projects including new wetland ponds, flooded fields, riparian zones, and agricultural areas. CDFW staff is responsible for the development of plans and specifications for construction projects and ensuring compliance with applicable local, state, and federal regulations during the planning and implementation phases of new projects. This may include surveys for biological and cultural resources, public review, permitting, monitoring, and documentation.
- Obtain the necessary wildland prescribed fire training and experience to enable SJWA personnel to implement a prescribed fire habitat management program in appropriate upland locations and for wetland cattail (Typha ssp.) management. Obtain necessary prescribed fire equipment including personnel, fire-protective clothing, firefighting hand tools, drip-torches, and the necessary firefighting water transport apparatus.

- Investigate opportunities and means to establish habitat partnerships with adjacent private landowners and nonprofit organizations. Where possible, develop additional semi-permanent wetlands, riparian habitat developments, and other feasible cooperative habitat management programs with willing neighboring private landowners.
- Investigate opportunities for establishing grazing and agricultural leases that can also be used as management tools for SKR and upland game, respectively.

6.1.3 Public Use Facilities – Maintenance Activities

Public use management is described in Section 5.2 and includes measures aimed at the goals developed for the following categories: wildlife viewing, passive trail use (i.e., hiking, walking, running, bird watching) and active trail use (i.e., non-motorized vehicles cycling, equestrian riding), waterfowl hunting, agriculture, upland small game hunting, hunting dog training, and fire management. Cultural resources and agency coordination are listed under the public use element, but there are no maintenance activities associated with these elements; there are operations associated with these elements and those are discussed in Section 6.1.4. The habitat management and maintenance measures described in Section 6.1.1 address many of the habitat requirements related to waterfowl hunting, agriculture, upland small game hunting, and hunting dog training. This section focuses on the public use facilities such as roads, trails, signage, check stations, and blinds. The following list of public use facilities maintenance tasks are either currently being implemented or will be implemented through management actions recommended in this LMP; the task numbers are continued from Section 6.1.1.

Task 6 – Maintain and develop roads, access, and trail infrastructure.

Davis Unit (Current): The Davis Unit currently includes multi-use roads, parking areas, gates, fencing, and signage that serve to facilitate recreational use of the SJWA while protecting habitat from inappropriate access and adverse edge effects. These facilities require regular inspections and maintenance with particular emphasis on areas where trespass and illegal dumping occur.

All the above public use facilities require regular maintenance to keep them safe, clean, and accessible to the public. Visitor displays and panels require regular updating of the interpretive information. The maintenance of the 5-mile auto-tour loop road is particularly important because it provides the primary means of visitor access to the SJWA. The northern loop road at the Davis Unit also provides primary access for waterfowl hunters to the northern waterfowl hunt sites. The road is difficult to maintain during the rainy season and efforts to improve road accessibility are currently underway.

Davis Unit (Future): New road, access, and trail infrastructure within the Davis Unit includes approximately 5 miles of new trails around Mystic Lake, a new parking and access area from Gilman Springs Road, and new interpretive signage throughout the unit. Improvement to the auto-tour loop road providing primary visitor access to the SJWA may include elevating and graveling the roadway to facilitate year-round public access. Multiple shade structures with picnic tables in the headquarters area are also planned to improve visitor use. A new SJWA entrance sign is planned for the intersection of Marvin Road and Davis Road. Following construction, these new facilities would represent a 10% to 20% increase in maintenance requirements from current practices.

Potrero Unit (Current): Although there are over 20 miles of existing roads on the Potrero Unit, maintenance is limited to maintaining access to the site and not currently geared toward facilitating recreation. Additionally, gates and fencing, particularly along the northern and western borders of the property, are of particular maintenance concerns to prevent/minimize illegal access, trash dumping, and theft of metal wires/cables.

Potrero Unit (Future): No new roads are recommended for the Potrero Unit, and only a small loop trail is recommended as a new trail facility. New facilities within the unit will primarily consist of a fence along the boundary of the conservation easement (Subunits P10 and P11), other access control (i.e., gates and fences), parking, educational materials, and signage (hazard warning, boundary and interpretive signage). These new facilities are expected to require a one- to two-fold increase in maintenance requirements from current practices.

Task 7 – Maintain and develop hunter check stations and blinds.

Davis Unit (Current): The Davis Unit currently operates a check station within the headquarters office and a self-check station on Davis Road for upland game hunting, as well as 54 blinds within the waterfowl hunting areas. These facilities will be maintained in accordance with current practices, which include at least annual inspections and as-needed repairs and improvements. Hunter check-station staffing at the headquarters office and at Lake Perris during the waterfowl hunting season requires substantial staff time.

Davis Unit (Future): No new check stations are proposed; however, several new blinds may be installed if new wetland ponds or flood fields are developed. The increase may be as much as 25% from current levels.

Potrero Unit (Current): Because there is currently no hunting allowed on the Potrero Unit, there are no check stations or blinds.

Potrero Unit (Future): This LMP recommends the addition of small game hunting to the Potrero Unit, and as such, a check-in station will need to be developed and maintained. Maintenance of this station would be similar to the self-check-in station on the Davis Unit.

Task 8 – Maintain and improve fire management facilities and implement fire control measures.

Davis Unit (Current): Current fire management measures include maintenance of roads as firebreaks and maintenance of fuel reduction zones around existing structures within the Davis Unit. These measures consist of maintenance of cleared zones along the sides of existing roadways, maintenance of roads themselves in a condition suitable for use by fire-response personnel and equipment, and maintenance of fuel reduction zones within 100 feet of the headquarters office, maintenance warehouse, and residence buildings. There are approximately 28 miles of roads within the Davis Unit currently maintained per these conditions.

Davis Unit (Future): Future fire management measures include installation and maintenance of Knox boxes containing important site information only accessible to fire department personnel; installation and maintenance of signage and gates specifically designed in coordination with CAL FIRE to aid fire responders; implementation of fuel reduction measures potentially including grazing, mowing, herbicides, prescribed fire, vegetation thinning using hand tools, and implementation of new fuel or firebreaks; designation and maintenance of staging areas to be used by fire respondents during a fire incident; implementation of post-fire management potentially including erosion control, washing of fire retardant from unburned vegetation, and re-grading and re-vegetation of fire damaged areas; and implementation of research measures including experimental fire control plots. These measures represent an increase of existing fire management practices.

Potrero Unit (Current): As previously discussed for the Davis Unit (Current), existing fire management is limited to maintenance of roads as potential fire breaks. There are approximately 22 miles of roads within the Potrero Unit currently maintained per these conditions. There are currently no structures that are actively protected through implementation of fuel reduction zones.

Potrero Unit (Future): As discussed previously for the Davis Unit (Future), similar fire management practices would be implemented on the Potrero Unit, including implementation of fuel reduction zones within 100 feet of proposed structures once developed.

6.1.4 Public Use Element – Staff Operations

In addition to the maintenance activities discussed previously, staff operations will be conducted to achieve the goals outlined for the public use element (Section 5.3, Public Use Management), as follows:

- Maintain sufficient personnel and equipment to inspect, maintain, and improve infrastructure and the equipment required to implement maintenance of infrastructure.
- Special events held on the SJWA often require staff time to assist with event setup or with cleanup at the conclusion of the event.
- Dispensing visitor information and responding to visitor requests at the headquarters office represent ongoing staff duties.
- Dedicate sufficient staff resources toward coordination with public use groups including passive recreation users, hunters, hunting dog training groups, and CAL FIRE required to inform groups of management practices, rules, and regulations, and to solicit feedback regarding management of the SJWA.
- Maintain personnel or contract with consultants to inspect and monitor cultural resource areas to ensure that resources are adequately protected.
- Dedicate sufficient staff resources to establish and maintain communication with the agencies are identified in Section 5.3.8, Agency Coordination, regarding facilities within and adjacent to the SJWA and the resources (e.g., water, electricity) that support management.
- Maintain sufficient personnel or consultant contracts to implement future development projects including new facilities within the Potrero Unit (visitors' center, residence, maintenance warehouse, etc.) and improved facilities within the Davis Unit (staging/parking areas, trails, interpretive signage, etc.). CDFW staff is responsible for the development of plans and specifications for construction projects and ensuring compliance with applicable local, state, and federal regulations during the planning and implementation phases of new projects. This may include surveys for biological and cultural resources, public review, permitting, monitoring, and documentation.
- Continue to operate the waterfowl and pheasant hunter check-stations at the SJWA and potentially restore the waterfowl hunting opportunities at Lake Perris recreational area.
- Continue to provide visitor services from the headquarters office and respond expeditiously to mail and telephone recreational inquiries from the public. Continue to facilitate visitor use of the SJWA consistent with the wildlife conservation goals identified herein.

6.1.5 Administrative Facilities – Maintenance Activities

Administrative facilities include office, equipment yard/storage, and residences used and needed by CDFW staff to operate the SJWA. Existing facilities are located on the Davis Unit, and new facilities are planned for the Potrero Unit. A single maintenance task pertaining to administrative facilities is listed below (with task numbering continued from Sections 6.1.1 and 6.1.3), followed by a summary of staff operations.

Task 9 – Maintain and improve administrative buildings to facilitate management of the SJWA.

Davis Unit (Current): Administrative facilities for the SJWA are currently located at 17050 Davis Road in D8. This headquarters area includes a 1,600-square-foot office/check-station built in 1984. The building provides administrative work space for the SJWA staff. It also functions as a year-round visitor information site. During the fall hunting seasons, the building serves as a hunter check-station. Directly east of the office/check-station, a 4,000-square-foot shop and utility building was constructed in 1986. The utility building is partitioned with one side being utilized for equipment storage for a John Deere backhoe, two wheel tractors, farming implements, irrigation pumps, and general maintenance equipment. SJWA vehicles include two Dodge Pickup Trucks, one Stake-side Truck, and a Ford pickup truck. The utility building also includes an equipped shop area. The shop/utility building is surrounded by a 6-foot chain-link fence. From time to time, when not in use, a surplus Caltrans motor grader is parked within the fenced maintenance area. Diesel fuel for equipment operation is delivered to a 1,000-gallon aboveground tank (with containment *vessel)* located within the maintenance compound.

Two residences are located on the slope directly behind the headquarters area. Two employees live on the SJWA and perform site security functions and ensure the area is safe and accessible to the public every day of the year during daylight hours. A headquarters entrance gate is closed and locked each day, an hour or so after sundown. The older of the two mobile home residences was purchased in 1973 (R5-95). The other, a 1980 Flamingo Model (R5-105) was purchased with the property on which it is presently located. Southern California Edison provides electrical power for the entire facility. Telephone service is provided by Verizon. Three propane tanks on site provide gas for heating the residences and office/check-station. Domestic water for residences, office/check-station, and public restrooms is obtained from a domestic well located 300 yards south of the headquarters office.

Some private cabins for hunters located in D9. A private horse ranch is located in D4. An upland game self check-in structure exists in D7.

Davis Unit (Future): Recommended improvements to existing administrative facilities on the Davis Unit include replacement of the two current employee residences and the addition of one new residential building. New buildings are anticipated to be similar to existing buildings in terms of location and size. Maintenance requirements would be expected to be reduced in the initial years following replacement/installation. A new domestic water system is also recommended, which will reduce maintenance of the existing system.

Potrero Unit (Current): At present there are no administrative facilities on the Potrero Unit.

Potrero Unit (Future): In the future, two new residences are recommended for the Potrero Unit along with an office, workshop, and warehouse potentially located in P2, P3, P4, P5 and P10. Currently there are abandoned structures on the site that were used in the past by Lockheed Martin located in P2, P3, P4, P5 and P10. These structures will have to be evaluated to determine whether they may provide a compatible use for the SJWA or whether they need to be closed or removed. Once structures are installed, the same maintenance will be carried out as on the Davis Unit structures.

6.1.6 Administrative Element – Staff Operations

The administrative duties necessary to operate the SJWA are largely carried out by the present on-site staff. A summary of staff operations related to administration of the SJWA is provided as follows:

- Routinely maintain the interior and exterior of the existing administrative facilities located on the SJWA including the office/check-station, shop/utility building, employee residences, and the headquarters area public restrooms. Regularly inspect and perform janitorial services to ensure employee work areas and public use spaces are clean, safe, and accessible. Routinely maintain employee residences to ensure safe and healthy living spaces.
- Regularly maintain and service all SJWA equipment including all vehicles, tractors, backhoe, utility vehicles, and all other maintenance equipment to ensure reliable operation. As necessary, provide employee training to ensure safe and efficient operation of all maintenance equipment and tools used on the SJWA.
- Maintain sufficient support staff to perform administrative duties necessary to efficiently operate the SJWA; maintain personnel records; accomplish accounting and business services functions; administer annual budgets; implement management plans and programs; maintain data records, including information regarding biological monitoring, habitat management, public uses, and agency coordination; and provide visitor use services. When necessary, initiate and administer outside contracts for work to be performed on the SJWA.

6.1.7 Mitigation Measures For Biological Resources

These mitigation measures avoid, minimize, or reduce potentially significant biological impacts to less-than-significant levels consistent with the California Environmental Quality Act (CEQA). The California Department of Fish and Wildlife (CDFW) is responsible for implementation of each of the mitigation measures. The CDFW regulatory group will review implementation of Land Management Plan (LMP) activities on the San Jacinto Wildlife Area (SJWA) prior to their initiation, throughout the activity implementation process, and during post-construction monitoring, as appropriate. A biological monitor can be a staff person that is qualified to perform needed tasks. If CDFW staff does not have the expertise and qualifications to perform the task, they will hire outside consultants or other qualified individuals to perform the work on their behalf.

The mitigation measures identified for air quality, water quality, and hazards would also avoid, minimize, and mitigate impacts to biological resources. Particularly, mitigation measures to address fugitive dust and other air quality impacts during construction and operation, or mitigation measures to address surface water quality and hydromodification impacts would avoid, minimize, and mitigate potential impacts to sensitive biological resources that could be affected by degradation of air and water quality. Additionally, the mitigation measures to avoid and minimize the risk of wildfire are addressed in Section 5.6, Hazards and Hazardous Materials, of this PEIR, and would mitigate potential impacts to biological resources from prescribed burning, ignitions by the public, and other ignition sources.

The following is a full list of mitigation measures in alphanumeric order:

MM-BIO-1a (general construction-related avoidance and minimization measures)

MM-BIO-1b (restoration of temporary impacts)

MM-BIO-1c (environmental awareness training)

MM-BIO-1d (pre-construction surveys and avoidance and minimization measures)

MM-BIO-1e (siting and design criteria)

MM-BIO-1f (restrictions on landscaping or restoration palettes and plants)

MM-BIO-1g (restrictions on the use of motor vehicle and aircraft use)

MM-BIO-1h (preparation and implementation of a GMP)

MM-BIO-1i (practices for the control of invasive and non-native species)

MM-BIO-1j (preparation and implementation of an alkali habitat management plan)

MM-BIO-1k (management and monitoring of trail use)

MM-BIO-1l (management and monitoring of hunting)

MM-BIO-1m (minimize effect of repeated surveys)

MM-BIO-1n (compliance with existing regulations)

MM-BIO-1o (reduce raptor electrocution)

MM-BIO-1p (restrictions on lighting)

MM-BIO-1q (trash abatement)

The mitigation measures are organized into the following sections by topic:

Section 6.1.7.1: general requirements

Section 6.1.7.2: construction or other ground-disturbance-related measures

Section 6.1.7.3: pre-activity surveys and avoidance and minimization measures

Section 6.1.7.4: measures related to siting and design

Section 6.1.7.5: operations-related measures

6.1.7.1 General Requirements

MM-BIO-1n Compliance with Existing Regulations

CDFW will coordinate with other resource agencies with permit approval authority over aspects of management activities undertaken within the SJWA to identify the relevant permit practices and to ensure compliance with applicable state and federal regulations. Additionally, management activities undertaken in accordance with the Land Management Plan shall meet the applicable permitting and regulatory practices of local, state, and federal agencies, including the following:

CDFW

U.S. Fish and Wildlife Service (USFWS)

Regional Water Quality Control Board

U.S. Army Corps of Engineers

The best management practices and measures described herein will be revised or updated if USFWS or CDFW issue new or revised species survey or protection

guidelines. Additionally, the hunting season for all species would be restricted to designated areas.

6.1.7.2 Construction or Other Ground-Disturbance-Related Measures

MM-BIO-1a General Construction-Related Avoidance and Minimization Measures

Construction Work Hours

Construction activities will not occur during evening or nighttime hours, with the exception of an emergency situation, when crepuscular and nocturnal special-status species are active and vulnerable to injury or mortality from vehicles or equipment. If evening or nighttime construction is required due to an emergency (defined by an imminent threat to life or significant property), CDFW will ensure that all activities requiring vehicle or equipment use during evening and nighttime hours are conducted to minimize impacts to special-status species.

Flagging/Fencing/Demarcation

Prior to initiating any new construction activities within the SJWA, CDFW will clearly delineate the boundaries of the work area and any off-road access routes with fencing, stakes, flags, or other visible boundaries. CDFW will restrict activities that may disturb special-status species and their habitats to the fenced, staked, or flagged areas. CDFW will maintain all fencing, stakes, and flags until the management activity is complete and then carefully remove and either reuse or dispose of the materials used.

Vehicle and Equipment Restrictions and Maintenance

- CDFW will confine all parking, storage areas, staging, laydown sites, equipment storage, and any other surface-disturbing activity to designated, existing disturbed areas or areas that do not represent sensitive habitat, as determined by a qualified CDFW staff member.
- Workers will inspect for wildlife under vehicles and equipment before vehicles and equipment are moved. If wildlife is present, the worker will allow the wildlife to move unimpeded to a safe location without assistance or capture. If the wildlife does not move without assistance (i.e., passively), qualified staff will move the wildlife to a safe location.

Other Restrictions on Construction Activities and Personnel

No pets belonging to construction personnel will be allowed on the SJWA during construction activities.

CDFW will prohibit the use of all erosion-control materials that are potentially harmful to wildlife, such as monofilament netting (erosion-control matting) or similar material.

The ends of pipes, culverts, and similar structures with a diameter of 3 inches or more that are staged for construction or other management activity will be capped prior to being left on SJWA overnight. If that is infeasible for some reason, all such pipes, culverts, or similar structures left uncapped overnight, will be thoroughly inspected for entrapped animals before being moved, capped, or buried. Any animals found inside will be allowed to passively escape before the pipe or culvert is moved, capped, or buried. If the wildlife does not, or cannot, escape without assistance within 30 minutes of detection, a qualified biologist will move the wildlife to a safe location. During construction or other relevant management activity, all partially installed pipe ends, culverts, and similar structures will remain covered unless closely attended by a monitor designated by CDFW. In addition, pipe, culverts, and similar material to be stored on site will have their ends covered prior to being stored or left on site. The ends of pipes stored on site will have ends capped before or immediately after off-loading. In all cases, pipes will be inspected for presence of wildlife before moving or use. If a species has taken occupancy in a section of pipe, a qualified staff person will remove it prior to the pipe being used.

MM-BIO-1b Restoration of Temporary Impacts

Upon completion of construction or restoration activities, CDFW will ensure unused roads and work sites will be restored with non-invasive native species, and signs or barriers will be installed to prevent continued travel on construction roads. Restoration can include control of invasive, non-native species rather than replanting or seeding the area. CDFW will ensure that the species used in the restoration are appropriate to the region and the vegetation community being restored.

MM-BIO-1c Environmental Awareness Training

Prior to conducting work on site for new activities, and at least annually thereafter, CDFW will ensure all personnel involved in operation or performance

of routine maintenance and management tasks and volunteers will attend a species awareness training program specific to the potentially affected species, habitat or resource in the area where such work will take place. The awareness training program will consist of a presentation by persons who are knowledgeable about local species biology and applicable regulatory protections. The information communicated during the training program will be posted in an easily accessible area for all workers and work-site visitors to review as needed. The training program will be provided to contractors and persons conducting work to address concerns pertaining to special-status species and other species of management concern (e.g., nesting birds). The program will include the special-status species that may be present in the area of disturbance. Information presented will include species' habitat needs, generalized location information, an explanation of the species' legal status and their protection under federal or state law, and a list of measures being taken to reduce impacts to the species during site activities. A fact sheet conveying a summary of this information will be prepared for distribution to the aforementioned people and anyone else who may enter the construction site.

If potential adverse biological issues have been identified, a biological monitor will be designated by CDFW to minimize impacts as part of CEQA compliance. The biological monitor will be responsible for field crews to ensure compliance with protection measures, performing surveys in front of crews as needed to locate and avoid sensitive species and habitat features, and monitoring for mitigation compliance. Biological monitors will be required to be present on site during initial ground-surface-disturbing actions and any other activities that have a potential for "take" of federal or state listed species.

6.1.7.3 Pre-Activity Surveys and Species-Specific Avoidance and Minimization Measures and Management Plans

MM-BIO-1d Pre-Activity Surveys and Avoidance and Minimization Measures

The following pre-activity surveys will be conducted to avoid and minimize impacts to special-status plant and wildlife species. Any person handling special-status species must have all appropriate permits issued by CDFW and the U.S. Fish and Wildlife Service (USFWS), also referred to herein as a "qualified biologist."

Special-Status Plants

The following procedures will be followed where ground-disturbance, construction, demolition, maintenance, vegetation management, or restoration has the potential to adversely impact special-status plant occurrences. Where applicable, CDFW will also consider implementation of these measures for species not considered special-status and for those that are covered by the Multiple Species Habitat Conservation Plan (MSHCP) and are therefore not subject to additional mitigation requirements.

1. CDFW will review existing surveys and any other species data available for the area of potential disturbance to determine if a focused survey inventory of special-status plants has been conducted in the disturbance area within the prior two years and, if so, whether special-status plants were detected. If an inventory has not been conducted in the area of potential disturbance within the prior two years, a qualified CDFW biologist will perform a field reconnaissance of the area of potential disturbance to determine whether there are any special-status plants or suitable habitat present in the potential disturbance area. At the discretion of CDFW, and with concurrence from USFWS for federally listed species, existing information, in lieu of a site-specific survey (item 2), may be used to determine the presence of federally listed species and appropriate measures to be undertaken to protect such resources.
2. If there are special-status plants present in the disturbance area or if there is suitable habitat for special-status plants in an area where an adequate inventory has not been conducted, CDFW will avoid these areas when feasible. If avoidance is not feasible, CDFW will conduct a special-status plant survey in accordance with the most recent and applicable guidelines from CDFW, USFWS, and the California Native Plant Society. The survey will identify and map special-status plants.

If avoidance of impacts to special-status plants is not feasible, the following procedures will be followed:

1. If federally listed species are documented in the disturbance area and the plants cannot be avoided, CDFW will consult with USFWS regarding the appropriateness of avoidance, minimization, and mitigation for potential impacts to federally listed plant species, as described below.

2. In cases where disturbance to special-status plant species cannot be avoided, a mitigation plan will be developed that includes restoration activities, which could include reseeding or translocation. Prior to implementation, a mitigation and monitoring plan will be submitted to the CDFW regulatory group and USFWS (only for federally listed species) for review. Prior to ground disturbance to occupied habitat and an agreement by resource agencies of the mitigation plan, the plan will be implemented by CDFW. Habitat replacement/enhancement will be at a 1:1 ratio (occupied acres restored/enhanced to occupied acres impacted).

   The mitigation and monitoring plan for the special-status plant(s) will describe habitat improvement/restoration measures to be completed. Habitat improvement/ restoration will be based on native special-status plant occupied habitat. The plan will specify the following, if applicable, to the mitigation activity: (1) the location of mitigation sites; (2) a description of "target" vegetation that includes estimated cover and abundance of native shrubs and grasses in occupied habitat; (3) site preparation measures to include topsoil treatment, soil decompaction, erosion control, temporary irrigation systems, seed collection, or other measures as appropriate; (4) methods for the removal of non-native plants (e.g., mowing, weeding, raking, herbicide application, or burning); (5) the source of all plant propagules (seed, potted nursery stock, etc.), the quantity and species of seed or potted stock of all plants to be introduced or planted into the restoration/enhancement areas; (6) a schedule and action plan to maintain and monitor the enhancement/restoration areas, to include at minimum, qualitative annual monitoring for revegetation success and site degradation due to erosion, trespass, or animal damage for a period no less than two years; (7) as needed where sites are near trails or other access points, measures such as fencing, signage, or security patrols to exclude unauthorized entry into the restoration/enhancement areas; and (8) adaptive management and contingency measures such as replanting, weed control, or erosion control to be implemented if habitat improvement/restoration efforts are not successful. In addition, the plan will specify methods to collect special-status plants and introduce them into this mitigation site.

3. CDFW personnel familiar with the subject special-status plant or a biological monitor designated by CDFW will be required to be present during ground-disturbing and construction activities. Special-status plants near planned activities will be temporarily fenced or prominently flagged to prevent inadvertent encroachment by vehicles and equipment during the activity.

Ground surface disturbance will be scheduled after seed set and prior to germination. Collection of seed, with reseeding undertaken at the site following the activity, during seasonal timeframes and when weather conditions are favorable for germination and growth may also be required. If deemed appropriate, topsoil will be stockpiled and replaced, or topsoil translocated, as soon as practicable after project completion.

Special-Status Wildlife

In addition to the species-specific best management practices (BMPs) listed below, the following procedures will be followed where construction, demolition, maintenance, vegetation management, or restoration have the potential to adversely impact special-status wildlife. Where applicable, CDFW will also consider implementation of these measures for species not considered special-status and for those that are covered by the MSHCP and are therefore not subject to additional mitigation requirements.

1. CDFW will review existing survey and any other species data available for the area of potential disturbance to determine if a focused survey inventory of special-status wildlife has been conducted within the prior two years in the disturbance area and, if so, whether special-status wildlife are present. If an inventory has not been conducted in the area of potential disturbance within the prior two years, a qualified biologist will perform a field reconnaissance of the area of potential disturbance to assess whether there is suitable habitat present in the potential disturbance area. At the discretion of CDFW, and with concurrence from USFWS for federally listed species, existing information, in lieu of a site-specific survey (item 2), may be used to determine the presence of federally listed species and the appropriate measures to be undertaken to protect such resources.
2. If special-status wildlife are present or potentially present, CDFW will avoid these areas when feasible. If avoidance is not feasible, CDFW will conduct surveys following appropriate protocols established by CDFW and relevant USFWS protocols or those established by the Regional Conservation Authority (RCA) for the MSHCP. Additionally, species-specific surveys will be conducted in accordance with current guidelines for each rare, threatened, and endangered animal species potentially occurring at the site.
3. If federally listed wildlife species are found to occupy or use the existing habitat within a proposed area of disturbance, CDFW will confer with

USFWS regarding appropriate avoidance, minimization, and mitigation prior to undertaking such activity.

4. Mitigation measures may include avoidance of the habitat and implementation of project-specific measures designed to reduce potential impacts for individual wildlife species. These measures will be based on the biological requirements of each species found at, or potentially using, a disturbance area, and the proposed impact and its potential impacts to the subject special-status wildlife species.
5. As determined necessary by the CDFW regulatory group, CDFW personnel or a designated biological monitor (e.g., authorized to capture and handle the subject species), familiar with the subject special-status wildlife, will be required to be present during construction activities.

General Clearance Surveys for Special-Status Reptiles

Impacts to special-status reptiles will be avoided and minimized during clearing, grading, and grubbing activities through one of the following:

a. A qualified biologist, if necessary, will perform daily pre-activity surveys prior to clearing, grading, and grubbing by walking through suitable habitat to clear the area of special-status and non-special-status reptiles and relocate them to suitable habitat safely outside of the disturbance area; OR
b. In lieu of a daily monitor prior to ground-disturbing activities, an exclusion plan will be developed that could include a silt fence or other blocking device around the work zone. After erection of the fence or other device(s), CDFW personnel or a designated biological monitor will perform an initial clearance survey followed by periodic checks to verify that the fencing/device(s) are intact and functioning. Once an area has been cleared completely, additional daily monitoring and fencing/device(s) will not be required.

   Pre-activity surveys or clearance surveys followed by exclusion methods (e.g., silt fence) will include species-specific surveys as appropriate to increase the chance of detection and capture of certain reptile species, such as placement of boards or other surface covers and pitfall or other traps to attract or capture various reptiles, and raking for silvery legless lizards (*Anniella pulchra*). The CDFW regulatory group will determine the most suitable methods for the clearance surveys.

Nesting Bird Surveys and Nest Buffers

Ground- and vegetation-disturbing activities as well as hunting on the Potrero Unit will be scheduled to avoid the bird breeding season (generally late winter through summer) to the extent feasible, but vegetation management on the SJWA may be required March through June, depending on rainfall patterns. CDFW may also extend the upland small game hunting season on the Potrero Unit which could overlap with nesting bird activity. If ground- and vegetation-disturbing activities or hunting on the Potrero Unit occur during the nesting season, the measures listed below will be implemented to protect nesting special-status bird and other common species protected under the Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code.

Pre-Activity Survey

CDFW or a designated qualified biologist will conduct pre-activity nesting bird surveys no more than 72 hours prior to conducting activities that could affect a nesting birds, including vegetation management and extending the upland small game hunting season on the Potrero Unit which may overlap with nesting birds. Nesting bird surveys will be conducted February through September.

Avoidance Measures

If occupied nests are found during pre-activity surveys, an appropriate protective buffer will be established by CDFW in the field with flagging, fencing, or other appropriate barriers between the nest and work activities. For any state or federally listed bird species (e.g., coastal California gnatcatcher (*Polioptila californica californica*) and least Bell's vireo (*Vireo bellii pusillus*)) and raptors, if an active nest is confirmed, at least a 500-foot disturbance-free buffer between the nest and the nearest work activities will be established and demarcated by fencing or flagging. For other nesting birds, without species-specific requirements noted herein, at least a 300-foot disturbance-free buffer between the nest and the nearest work activities will be established and demarcated by fencing or flagging. No activities may occur in these areas unless otherwise authorized by USFWS and CDFW. The CDFW regulatory group may adjust the distance of the protective buffer from the nest at its discretion, and with concurrence from USFWS for a federally listed species, depending on the species, the location of the nest (e.g., if the nest is well protected in an area buffered by dense vegetation),

and the nature of the work activity. Once the nest is no longer occupied for the season, the activity may proceed in the protective buffer area.

Burrowing Owl

To reduce significant impacts to burrowing owl (*Athene cunicularia*) from construction or management activities, a Burrowing Owl Management Plan will be developed to detail the avoidance, relocation, habitat management, monitoring, and reporting measures that will avoid impacts to and loss of burrowing owls and increase burrowing owl populations within the Davis and Potrero Units.

The purpose of the Burrowing Owl Management Plan is to provide measures to avoid impacts to burrowing owls when feasible, provide a mechanism to improve the probability of success of passively relocated owls, and to improve the process of establishing new territories or augmenting existing territories through active relocations and habitat management within areas designated for uplands management in the Davis or Potrero Unit.

The Burrowing Owl Management Plan will include the following information and criteria:

1. ***Avoidance and Minimization*.** If burrowing owls occupy a site where construction or management activities are planned, but direct or substantial indirect impacts to owl burrows can be avoided (e.g., burrows are not directly in the footprint of planned impact or management activity), then buffer zones will be implemented to avoid disturbance during the breeding and non-breeding seasons. A substantial indirect impact would be a situation where a burrow is not directly impacted during construction, but construction activities could result in injury or mortality of owls (e.g., collisions with nearby construction equipment or vehicles). Nest buffer areas may be marked in the field using pin flags, or stakes, or orange safety fencing to help construction personnel avoid owl nests during construction activities. Baseline nest or burrow buffers are as follows:
    a. Breeding season (February 1 through August 31): 150 meters (500 feet)
    b. Non-breeding season (September 1 through January 31): 50 to 75 meters (164 to 246 feet)
2. ***Relocation*.** If it is not feasible to avoid or buffer around occupied burrowing owl burrows, passive or active relocation will be implemented to avoid owl

take. Owls that occupy burrows that are outside the direct disturbance footprint but close to construction activities (e.g., within the 50- to 150-meter buffer area), will be left in place to make their own decision whether to abandon the occupied burrow or not. Owls that voluntarily vacate a burrow are expected to have more success in relocating to suitable off-site areas than owls that are physically excluded through passive or active relocation. A qualified CDFW biologist will work with construction personnel to identify feasible measures to maximize the likelihood that owls either shelter in place or can safely voluntarily abandon roost burrows (e.g., working as far from the occupied burrows as feasible for as long as possible, gradually moving construction equipment closer to occupied burrows, or providing for escape routes). For owls that refuse to vacate burrows close to construction activities (e.g., birds that are tolerant of human activities, noise, vibration), the qualified CDFW biologist will assess the risk of injury or mortality of the owl (e.g., due to collisions with construction equipment or vehicles, collapse of burrows). If the qualified CDFW biologist determines that the imminent risk of injury or mortality is high, passive or active relocation will be implemented, as described below.

a. Passive Relocation.

When take of burrowing owls will occur as a result of construction, owls may be passively relocated to conserved lands within the areas designated for uplands management. The passive relocation method assumes owls will find and move to an alternate burrow on their own. The Burrowing Owl Management Plan will outline the following criteria for passive relocation:

i. Circumstances when passive relocation is the appropriate method used for burrowing owl.

ii. Description of the relocation site and criteria to allow for long-term success of relocated owls.

iii. Description of enhancement activities at the relocation site, such as installation of artificial burrows or habitat restoration/management.

iv. Success criteria parameters for the relocated owls.

v. Monitoring and management of the relocation site.

b. Active Relocation.

Active relocation will be used when avoidance or passive relocation options are not feasible. Active relocation involves capturing owls from the original burrow scheduled to be destroyed by construction activities, taking them to a new site generally well-removed from the original site, holding them in a temporary field enclosure, and then releasing them into a new burrow (Smith and Belthoff 2001; Trulio 1995). The Burrowing Owl Management Plan will outline the following criteria for active relocation:

i. Circumstances when active relocation is the appropriate method used for burrowing owl.

ii. Description of the relocation site and criteria to allow for long-term success of relocated owls.

iii. Description of enhancement activities at the relocation site, such as installation of artificial burrows or habitat restoration/management.

iv. Success criteria parameters for the relocated owls.

v. Monitoring and management of the relocation site.

3. ***Habitat Enhancement and Restoration***. In addition to or as part of the relocation efforts, management of designated upland areas should identify areas for burrowing owl habitat enhancement or restoration. This includes managing upland areas for low vegetation cover that provides visibility for foraging and predator detection, that support fossorial species that create burrows that owls use for roosts and nest burrows, that have available prey species, and that are large enough to support the home range of burrowing owls. Enhancement should also focus on installing artificial burrows. The Burrowing Owl Management Plan will outline the following criteria for habitat enhancement and restoration:

a. Vegetation communities, soil types, and micro-habitat characteristics that are suitable for burrowing owl.

b. Description of acceptable or compatible conservation status, management activities/responsibilities, human disturbance, and edge effects for the proposed habitat areas.

c. Baseline data collection for the proposed habitat areas, including a description of the number and location of existing burrowing owls/owl pairs, burrowing owl predators, ground squirrels (or other burrowing

mammals), and estimates of prey population size (e.g., arthropods, reptiles, and small mammals).

d. Appropriate artificial burrow design and installation.

e. The quantity and siting criteria for artificial burrows.

f. Monitoring and success criteria for habitat enhancement and restoration.

4. ***Monitoring Reports***. Reports and data will be submitted to the Regional Conservation Authority (RCA) and wildlife agencies before, during, and after passive and active burrowing owl relocations. In general, all reports must provide a discussion of avoidance buffers, relocation methods and actions, results of relocation activities, maps and GPS locations of owls and burrows (artificial and natural) used by owls, and habitat enhancement or restoration activities.

Tricolored Blackbird

To reduce direct or indirect significant effects to tricolored blackbird (*Agelaius tricolor*) from construction or management activities, a Tricolored Blackbird Management Plan will be developed to detail the avoidance, foraging and nesting habitat management, monitoring, and reporting measures that will avoid loss of tricolored blackbirds and increase tricolored blackbird populations within the Davis and Potrero Units.

The purpose of the Tricolored Blackbird Management Plan is to provide measures to avoid direct and indirect impacts to tricolored blackbirds when feasible, increase nesting and foraging habitat, and monitor the success of tricolored blackbirds within the Davis and Potrero Units.

The Tricolored Blackbird Management Plan will include the following information and criteria:

1. ***Avoidance and Minimization (Breeding Season).*** If tricolored blackbirds are nesting at a site where construction or management activities are planned, then buffer zones will be implemented until the colony has completed its nesting cycle and young have fledged. The baseline avoidance buffer for active nesting colonies is 300 feet. Baseline buffers can be reduced depending on the activity and at the discretion of the CDFW regulatory group. CDFW will inform local farmers if tricolored blackbirds are nesting in agricultural fields, as there are several programs to compensate farmers for harvest losses due to

delayed harvesting that protect tricolored blackbird breeding. Areas where direct or substantial indirect impacts to tricolored blackbirds can occur will be avoided during the breeding and non-breeding seasons. A substantial indirect impact would be a situation where tricolored blackbirds are not directly impacted during construction but construction activities could result in mortality or reduced nesting success of the birds (e.g., pesticide application or harvesting adjacent field crops). All avoidance buffers identified in the Tricolored Blackbird Management Plan will be applied to upland small game hunting.

Travel distances measured at the SJWA between nest sites and foraging areas averaged 2.3 kilometers (1.4 miles), with a maximum of 5 kilometers (3.1 miles - RCA 2016). Therefore, activities within 5 kilometers (3.1 miles) will have limited uses, including the following:

a. Pesticide Application.

   Adult tricolored blackbirds feed on grain and invertebrate prey throughout the year; young up to 9 days old depend entirely on insects and other invertebrates gathered from upland areas and agricultural fields (Cook 2016). Low reproductive success in the Central Valley has been documented associated with low insect abundance (Meese 2013). Pesticide application eliminates or reduces invertebrates (Beedy and Hamilton 1997; Graves et al. 2013), which could affect tricolored blackbird success in the SJWA. Therefore, pesticide application will be prohibited within 5 kilometers (3.1 miles) of active nesting colonies, or applied in such a manner that it does not decrease the colonies' overall source of prey (e.g., hand spraying from a small container). Pesticide application during the non-breeding season will be approved and monitored by the CDFW regulatory group.

b. Vegetation Clearing or Crop Harvesting.

   In Riverside County, triticale (*Triticale hexaploide*) and alfalfa (*Medicago sativa*) are used by tricolored blackbirds as foraging due to the abundant insects at these crops (Cook 2016). Complete failure of breeding colonies has been observed when nearby alfalfa fields were plowed (Cook 2016). Therefore, clearing of habitat that provide significant invertebrate sources will be prohibited within 5 kilometers (3.1 miles) of active nesting colonies, or limited in such a manner that it does not decrease the colonies' overall source of prey (e.g., hand clearing). CDFW will inform

local farmers if tricolored blackbirds are nesting near agricultural fields, as there are several programs to compensate farmers for harvest losses due to delayed harvesting that protect tricolored blackbird breeding.

2. ***Avoidance and Minimization (Non-Breeding Season).*** Roosting colonies in non-dairy-farm areas during the non-breeding season will be avoided where feasible, and management activities will be implemented in such a manner to avoid long-term displacement due to disturbance to roosting habitat and reduction in foraging areas. All avoidance buffers identified in the Tricolored Blackbird Management Plan should be applied to upland small game hunting.
3. ***Habitat Creation, Enhancement and Restoration***. CDFW and the RCA have ongoing measures to enhance tricolored blackbird habitat in the SJWA. Preliminary studies show increases in the colonies as a result of these habitat enhancement efforts (Cook 2016). To better increase tricolored blackbird populations in the SJWA, the Tricolored Blackbird Management Plan will outline the following criteria for habitat creation, enhancement, and restoration:
    a. Suitable microhabitat, including a mosaic of habitat features (e.g., protective nesting substrate, shallow pools for bathing/drinking, taller shrubs for perching, and access to a wide variety of invertebrate prey).
    b. Description of acceptable or compatible conservation status, management activities/responsibilities, human disturbance, and edge effects for the proposed habitat enhancement areas.
    c. Baseline data collection for the proposed habitat areas, including a description of the number and location of existing tricolored blackbirds, tricolored blackbird predators, estimates of prey type and abundance, and distance to foraging areas.
    d. Surveys to better understand the foraging habitat and prey base of the colonies, during both the breeding and non-breeding seasons.
    e. Monitoring and success criteria for habitat enhancement and restoration.
4. ***Monitoring Reports.*** Reports and data documenting avoidance of direct or indirect impacts to tricolored blackbird colonies will be prepared. Annual monitoring reports will document the methods and results of implementing the Tricolored Blackbird Management Plan.

Bat Roosts

Although no occupied bat roosts are known from the SJWA, rock outcrops, large trees, and buildings that could provide bat roosting habitat are present in some areas. These measures apply to all bat species.

Pre-Activity Surveys

No earlier than 30 days prior to the commencement of construction or operations and maintenance/management activities[1] a bat roosting habitat suitability assessment of all structures, trees, and/or rock outcrops that may be removed, altered, or indirectly impacted by the proposed activities will be completed by CDFW. The survey will include an appropriate combination of structure/habitat inspection, sampling, exit counts, and acoustic surveys. Surveys will be conducted during the appropriate time of day/night to ensure detection of bats. Detected bats will be identified to species level, and the size of any colony will be evaluated to determine its size and significance. The type of roost will also be determined (i.e., a night or day roost; maternity/non-maternity, etc.). Because bats are highly mobile species that may change roosting locations, pre-activity surveys will be completed each time activities are proposed at a location, regardless of whether surveys were previously completed.

Avoidance Measures

If bats are detected during pre-activity surveys, the following avoidance measures will be implemented.

Maternity Roosts

If an active maternity roost is identified, the maternity roost will not be directly disturbed, and any activities that generate vibration, dust, and/or exhaust (above ambient, pre-activity-levels) will not occur within 300 feet of the maternity roost until the maternity roost is vacated and juveniles have fledged, as determined by the CDFW regulatory group or a designated qualified biologist with concurrence from CDFW.

Non-Maternity Roosts

If non-breeding bat roosts are found within a disturbance area, and work must be performed, the following avoidance and minimization measures will be implemented:

For night roosts (measures to be implemented if night work is necessary):

1. Night lighting will be focused on the work area only, and will be shielded away from roosting habitat to the greatest extent practicable.
2. Air space to/from the roost will not be obstructed, except in direct work areas.
3. Internal combustion equipment such as vehicles, generators, etc., will not be parked or operated beneath or adjacent to the roost, unless placement at that specific location cannot be avoided.
4. Personnel working on the activity will limited their physical presence to the specific work location, and will not be present in non-active areas near roosting habitat.

For day roosts:

1. If work must be performed at or in the vicinity of a day roost, bats will be humanely evicted/excluded from the affected work location plus a buffer. Eviction/exclusion should be limited to fall (September or October) preceding activities to avoid impacting non-volant pups and/or hibernating bats.
2. If roosting habitat will be permanently impacted, new roosting habitat will be created to replace lost habitat. Created habitat may include bat roosting habitat panels or other structures documented to provide suitable roosting habitat for bats.
3. All exclusion/eviction will be completed under the direction of CDFW.
4. Exclusion/eviction will only occur during appropriate weather conditions.
5. All exclusionary materials will be removed once activities are complete. No materials will be left in place after activities have been completed.

Western Spadefoot Toad

Pre-Activity Surveys

Prior to the initiation of ground-disturbing activities in suitable habitat for western spadefoot toad (*Spea hammondii*), pre-activity surveys (including aboveground visual searches) will be conducted for western spadefoot in suitable breeding habitat within the disturbance areas and within 300 feet of the disturbance areas. Surveys will be conducted during a time of year when the species can be detected aboveground at suitable breeding sites. Suitable breeding habitat is defined as areas of temporarily ponded water, including within creeks and vernal pools and other ephemeral water features within uplands. Suitable breeding sites should support ponded water for at least 3 weeks. To ensure that diseases are not conveyed

between work sites by CDFW biologists' or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force (DAPTF 2009) will be followed at all times.

Avoidance Measures

If western spadefoot is detected within the disturbance area, measure "a," below, will be implemented. If western spadefoot is detected outside the disturbance areas, but within 300 feet of the disturbance area boundary, measure "b" will be implemented.

a. If western spadefoot toad is detected (including egg masses, larvae) in water within a disturbance area and cannot be avoided, suitable breeding habitat will be created within suitable natural sites in areas with biological resource management activities that would allow the species to continue breeding. The amount of occupied breeding habitat to be disturbed will be replaced at a 2:1 ratio. The habitat creation location will be in suitable habitat and located away from public use areas, as feasible. The created breeding habitat will be designed such that it only supports standing water for no more than 3 months following winter rains so that aquatic predators (e.g., fish, bullfrogs, and crayfish) cannot become established. Terrestrial habitat surrounding the proposed relocation site will be as similar in type, aspect, and density to the location of the impacted breeding site as feasible. No disturbance will be permitted within 300 feet of the vicinity of the impacted breeding site until the design and construction of the pool habitat in the mitigation area has been completed, and all detected western spadefoot tadpoles, egg masses, and adults are moved to the created breeding habitat.

   CDFW will monitor the relocation site for a cumulative total of 5 years in which environmental conditions are conducive for western spadefoot to successfully complete the breeding cycle (i.e., adequate rain for pools to hold water for a sufficient period). Monitoring will be conducted during and immediately following the peak breeding season such that surveys can be conducted for adults, egg masses, and larval and metamorphic western spadefoot. Success criteria for the monitoring program will include verifiable evidence of western spadefoot reproduction at the relocation site during 5 years with suitable breeding conditions.

b. If western spadefoot is detected (including egg masses, larvae) in water within 300 feet of the disturbance area, but not within the impact area itself, an exclusion fence will be constructed along the boundary between the

disturbance area and the occupied breeding site to prevent western spadefoots from moving into and aestivating within the disturbance area. The exclusion fencing will consist of 16-inch metal flashing, or an equivalent material, which will be buried at least 6 inches below the ground surface and extend at least 8 inches above the ground. The fencing will cover a sufficient length of the boundary to inhibit western spadefoots from entering the disturbance area. The necessary length and appropriate location of the exclusion fence relative to the occupied breeding site will be determined by a CDFW biologist.

No construction activities involving heavy equipment generating noise, ground vibration, or dust will be allowed within 300 feet of occupied breeding sites until western spadefoots have metamorphosed and are no longer present in the breeding pool, as determined by a CDFW biologist or a designated qualified biologist. Acceptable construction activities (e.g., quiet or low-impact activities) within 300 feet of the occupied breeding site will be allowed at the discretion of CDFW or a designated qualified biologist with CDFW concurrence.

American Badger

Pre-Construction Surveys (Wintering)

During the colder months (generally from early November through early March), when American badgers (*Taxidea taxus*) may use winter dens during torpid periods, pre-activity surveys will be conducted in suitable habitat no more than 14 days prior to disturbance to determine whether American badger winter dens are present within the disturbance area or within 50 feet of the disturbance area boundary.

Avoidance Measures (Wintering)

If an occupied American badger winter den is within the disturbance area or within 50 feet of the disturbance area, the den location will be clearly marked with fencing or flagging to avoid inadvertent impacts on the den.

Pre-Activity Surveys (Natal Dens)

During the late winter and summer (generally mid-March through late July), when American badgers may use natal dens for birthing and cub rearing, pre-activity surveys will be conducted no more than 14 days prior to ground-disturbing activities to determine whether American badger natal dens are present within the disturbance area or within 200 feet of the disturbance area.

Avoidance Measures (Natal Dens)

If active natal dens are located within these areas during pre-activity surveys, construction activities will be postponed. If natal dens are detected during the ground-disturbing activity, any activity within 200 feet of the natal den will be halted. This buffer may be reduced based on the location of the den or type of activity, and the direction of the CDFW regulatory group. Construction activities will not preclude the ability of the badgers to disperse when the natal den is vacated. Work activity will be postponed or halted in these areas until it is determined that the young are no longer dependent on the natal den. To avoid inadvertent impacts during work activities and to ensure that such activities are at least 200 feet from active natal dens, any active natal dens within the survey area will be clearly marked with fencing or flagging in a manner that will not inhibit normal behavioral activities (e.g., foraging and dispersing from the site) by the mother and cubs.

San Diego Black-Tailed Jackrabbit

Pre-Activity Surveys

Prior to ground-disturbing activities in suitable habitat for San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), CDFW personnel, a designated biological monitor, or qualified biologist will conduct daily surveys for the species within the disturbance area and within 200 feet of the disturbance area.

Avoidance Measures

If San Diego black-tailed jackrabbits are present, non-breeding rabbits will be flushed from areas to be disturbed prior to work. Dens, depressions, nests, or burrows occupied by kits will be flagged, and ground-disturbing activities avoided within a minimum of 200 feet during the kit-rearing season (generally mid-February through early July). This buffer may be reduced based on the location of the den upon direction by the CDFW regulatory group. Occupied maternity dens, depressions, nests, or burrows will be flagged for avoidance, and CDFW personnel, a designated biological monitor, or qualified biologist will be present during work activities. If unattended young are discovered, they will be relocated to suitable habitat by a qualified biologist.

San Diego Desert Woodrat

Pre-Activity Surveys

No more than 30 days prior to ground-disturbing activities in suitable habitat for San Diego desert woodrat (*Neotoma lepida intermedia*), a CDFW biologist or a designated qualified biologist will conduct daily surveys for the species within the disturbance area and within 200 feet of the disturbance area.

Avoidance Measures

If active San Diego desert woodrat nests (stick houses, rocky areas) are identified within the disturbance area or within 100 feet of the disturbance area, a fence will be erected around the nest site adequate to provide the woodrat sufficient foraging habitat at the direction of a CDFW biologist. Clearing and disturbance within the fenced area will be postponed or halted until young have left the nest. CDFW or a designated qualified biologist will monitor ground-disturbing activities during those periods when disturbance activities occur near active nest areas to ensure that no inadvertent impacts to these nests will occur.

If avoidance is not possible, CDFW will take the following sequential steps: (1) all understory vegetation will be cleared in the area immediately surrounding active nests followed by a period of one night without further disturbance to allow woodrats to vacate the nest; (2) each occupied nest will then be disturbed by CDFW or a designated qualified biologist until all woodrats leave the nest and seek refuge outside of the disturbance area; and (3) to the extent feasible, the nest will be removed from the disturbance area and piled in suitable nearby habitat. Relocated nests will not be less than 100 feet apart, unless it is determined by CDFW that a specific habitat can support a higher density of nests.

Stephens' Kangaroo Rat and San Bernardino Kangaroo Rat

Pre-Activity Surveys

Prior to the start of ground-disturbing activities, a qualified biologist will conduct a habitat assessment in potentially suitable habitat to determine the presence of burrows for Stephens' kangaroo rat (*Dipodomys stephensi*) (SKR) and San Bernardino kangaroo rat (*Dipodomys merriami parvus*) (SBKR), or diagnostic surface sign (e.g., scat, tracks, tail drags, runways) of kangaroo rat. The habitat assessment surveys will be conducted 7 to 14 days before the start of ground-

disturbing activities. If no burrows or other surface sign of SKR or SBKR presence are detected, no further measures will be required.

Avoidance Measures

If burrows or sign are detected, a qualified biologist will conduct a visual survey for burrows occupied or potentially occupied by SKR or SBKR. Active burrows will be marked with exclusionary fencing and avoided to the maximum extent practicable. A qualified biologist will be present for all work within 50 feet of marked burrows. If earthwork (clearing and grubbing, grading, blading, filling) must occur within active burrows areas, these areas will be live-trapped by CDFW or a designated qualified biologist for no less than 3 consecutive nights and up to 5 consecutive nights prior to the initiation of ground-disturbing activities in these areas to minimize direct mortality. Trapping may be terminated if no captures occur in 3 consecutive nights (i.e., nights 4 and 5 would not be required if no SKR or SBKR are captured). Any captured SKR or SBKR will be relocated to an appropriate release site determined in coordination with USFWS such that return of individuals to the disturbance area prior to earthwork activities is unlikely (e.g., moving individuals more than 500 meters [1,640 feet]).

Los Angeles, Northwestern San Diego, and Dulzura Pocket Mice, and Grasshopper Mouse

Pre-Activity Surveys

Before the start of any ground-disturbing activities, a qualified biologist will conduct a habitat assessment in potentially suitable habitat within the disturbance areas to determine potential presence of Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) (LAPM), northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*) (NSDPM), Dulzura pocket mouse (*Perognathus californicus femoralis*) (DPM), and grasshopper mouse (*Onychomys torridus*) (GM). These surveys may be conducted concurrent with surveys for SKR and SBKR, but will be primarily habitat-based because diagnostic burrows and surface sign for these species cannot be detected with any certainty. The habitat assessment surveys will be conducted 7 to 14 days before the start of ground-disturbing activities. If no suitable habitat for LAPM, NSDPM, DPM, or GM is detected, no further measures will be required.

Avoidance Measures

If suitable habitat is present for LAPM, NSDPM, DPM, or GM, CDFW or a designated qualified biologist will establish non-disturbance exclusion zones (i.e., wildlife exclusion fencing [e.g., a silt fence or similar material]) in habitat areas where these species may be present. Non-disturbance exclusion areas will be established 7 to 14 days before the start of ground-disturbing activities. The non-disturbance exclusion fence with one-way exit/escape points will be placed to exclude these special-status small mammals from the disturbance area in a passive manner. The wildlife exclusion fence will be established around potential habitat in a manner that allows state-listed species to leave the disturbance area.

Additional measures, such as one or both of the following, will be implemented after the exclusion fencing with one-way exit/escape points is installed:

1. A CDFW biologist or a designated qualified biologist will trim and clear vegetation to the ground by hand or using hand-operated equipment to discourage the presence of LAPM, NSDPM, DPM, or GM in the disturbance areas. The cleared vegetation will remain undisturbed for 14 days to allow species to passively relocate through the one-way exit/escape points along the wildlife exclusion fencing.
2. A CDFW biologist or a designated qualified biologist will conduct live-trapping and relocation of individuals for up to 5 nights prior to ground-disturbing activities in suitable habitat for LAPM, NSDPM, DPM, or GM. Live-trapping and relocation of these species may be conducted concurrent with live-trapping for SKR and SBKR.

Jurisdictional Waters of the United States/State

The following procedures will be followed where construction, demolition, maintenance, vegetation management, or restoration has the potential to adversely impact jurisdictional waters of the United States/State:

1. CDFW will review existing jurisdictional waters, if available, in the area of potential disturbance to determine if an adequate baseline is available in the disturbance area and, if so, whether jurisdictional areas are present or absent. If an adequate survey has not been conducted in the area of potential disturbance, CDFW will perform a field reconnaissance of the area of

potential disturbance to assess whether there are potentially jurisdictional waters in the disturbance area.

2. If there is the potential for waters of the U.S./State to be present in the disturbance area, CDFW will avoid these areas when feasible. If avoidance is not feasible, CDFW will conduct a formal jurisdictional delineation in accordance with the most recent and applicable guidelines from the U.S. Army Corps of Engineers (ACOE), CDFW, and the Regional Water Quality Control Board (RWQCB). The survey will identify and map jurisdictional waters of the U.S./State under the jurisdiction of ACOE, CDFW, or RWQCB.

If avoidance of impacts to potentially jurisdictional areas is not feasible, then CDFW will obtain the applicable permits to impact these resources, such as a 404 permit from ACOE and a 401 Water Quality Certification from the RWQCB. For impacts to waters subject to CDFW jurisdiction, the activity will be reviewed by qualified CDFW staff for avoidance and minimization measures. Where impacts are not avoidable, appropriate mitigation measures with concurrence of CDFW regulatory staff will be identified. Final mitigation requirements for the impact will be established by these agencies, and a final wetlands/waters mitigation plan will be prepared. The following requirements could be included, as appropriate:

1. A mitigation program will be designed to replace the functions and values of the jurisdictional resources impacted. The mitigation areas will be designed to have similar vegetative characteristics (excluding exotic species) to those of the affected areas. If establishment or creation is provided, the site will be designed to emulate the density and structure of the affected areas once the establishment areas have met the mitigation success criteria. As applicable, the designated restoration biologist will determine the appropriate planting and seeding palettes.
2. The mitigation plan will include measures to be taken to ensure a performance criterion of 70% survival of plantings for a period of 5 consecutive years, including up to 3 years with supplemental irrigation and a minimum of 2 years without such assistance. Performance standards for percent cover will be developed by the designated restoration biologist based on the observed cover of the areas to be impacted.
3. Minimum growth, survivorship, and cover performance at the mitigation site(s) will be measured based on random samples taken during Years 3 and 5. Plant survivorship requirements apply to tree and shrub species that are planted from

containers. Tree and shrub species used in the mitigation areas will have a minimum of 80% survivorship after 3 years and 70% survivorship after 5 years. Natural recruitment of native species may be used to offset percent survivorship of planted trees and shrubs to achieve standards. If the minimum growth, survivorship, or cover are not achieved at the time of the 3- and 5-year evaluations, CDFW will be responsible for taking the appropriate corrective measures to achieve the specified growth, survivorship, or cover criteria. If natural disasters, such as flood, fires, or drought, occur after the habitats have met the success criteria, CDFW will not be responsible for replanting damaged areas. If these events occur prior to the plants meeting the success criteria, CDFW will be responsible for replanting the area one time only.

4. Mitigation sites will be weeded to prevent an infestation of perennial, non-native, invasive weeds. Weeding can be accomplished using the following methods: hand removal, use of herbicides in accordance with federal and state laws governing the use of herbicides, or mechanically in coordination with the designated biologist or restoration biologist. All perennial, non-native, invasive weed species will be controlled for 5 years after the initial mitigation, or until the 5-year mitigation success criteria described in the detailed final wetlands/waters mitigation plan are met. The cover of annual, non-native plant species at the mitigation sites will not exceed 10% at any time during the period of documenting successful restoration.
5. Supplemental irrigation will only be used during plant establishment, as the goal of the restoration effort is to create native, self-sustaining communities. The irrigation schedule will be set to promote deep rooting of plant materials, with infrequent, long-duration cycles. Irrigation use will be discontinued at least 2 years before the end of the 5-year maintenance period to demonstrate the vegetation community's ability to survive without supplemental water.
6. Annual monitoring reports will be submitted to the applicable resource agencies during the 5-year maintenance and monitoring period of the mitigation site(s). Annual reports outlining the results of the monitoring will describe the existing conditions of the mitigation areas derived from qualitative field observations and quantitative data collection. The reports will provide a comparison of annual success criteria with field conditions, identify all shortcomings of the mitigation site, and recommend remedial measures necessary for the successful completion of the mitigation. Each yearly report will provide a summary of the accumulated data.

7. Temporary impacts to unvegetated jurisdictional resources will be re-contoured and revegetation will be limited to passive restoration and application of a native seed mix, if necessary. The low-flow channel will be returned as nearly as practical to pre-project topographic conditions and contours. If temporary impacts to vegetated jurisdictional resources are required, the mitigation program outlined above for permanent impacts will apply, but the mitigation ratio will be 1:1 regardless of vegetation type.

6.1.7.4 Measures Related to Siting and Design

MM-BIO-1e Siting and Design Criteria

BMPs for Siting and Timing of Management Activities

- The following best management practices (BMPs) will be implemented when scheduling or siting required management activities.
- When considering the authorization of new ground-surface-disturbing activities, CDFW will encourage the use of previously or existing disturbed areas, thereby minimizing impacts to special-status biological resources.
- Vegetation removal and ground surface disturbance will be minimized. CDFW will apply surface rehabilitation measures (e.g., light ripping of compacted soils) as necessary to protect the soil surface. CDFW will emphasize hand clearing over heavy equipment use.
- Construction activities near intermittent or perennial waters or streams will be avoided whenever possible. This restriction is intended to minimize wildlife disturbance at key water locations and to limit impacts to sensitive watersheds.
- The timing of activities with the potential to disturb sensitive resources will be planned to minimize impacts to such resources to the extent practical and as a take avoidance strategy.
- Activities with the potential to disturb raptor nest sites will have seasonal restrictions imposed within a 0.5-mile radius around such sites. Seasonal restrictions will allow for undisturbed courtship, nest building, incubation, and fledging. This seasonal restriction could last as long as 6 months, depending on the species. Restrictions could be imposed around high-use areas during other seasons.

Trail Design Criteria

- New trails within the SJWA will have the following:
- Be consistent with all relevant BMPs and consistent with the overall objectives of the SJWA.
- Be designed to avoid sensitive resources.
- Follow the natural topography wherever possible.
- Minimize ground surface disturbance, removal of vegetation, and grading by using existing roads for trails wherever possible.
- Minimize or avoid the use of culverts, bridges, and retaining walls.
- Incorporate connections to existing parking areas.
- Not modify existing water flow patterns, including sheet flow.

Parking Design Criteria

- New or expanded parking areas will do the following:
- Be located and designed to provide adequate pullout and turnaround area, sight distance, and spacing between parking areas and other driveways to ensure public safety.
- Be consistent with all relevant BMPs and consistent with the overall objectives of the SJWA.
- Incorporate signage and visitor information as necessary.
- Avoid sensitive resources.
- Be located at existing established parking areas or disturbed areas wherever possible.
- Minimize ground surface disturbance, removal of vegetation, and grading.
- Incorporate a permeable surface to minimize erosion and to protect surface water quality.
- Take advantage of natural topography, vegetation, and other physical features to provide screening from public view.
- Incorporate features to screen parked vehicles from public view.

Fencing Design Criteria

To avoid attracting Argentine ants, footings from fence posts will be constructed to avoid collecting moisture at the base (e.g., earthen footings, not concrete footings).

Watering Facility Design Criteria

New watering facilities will incorporate design features to protect wildlife, including the following:

- Effective escape structures.
- Unobstructed access to the water surface.
- A minimum length or diameter of at least 6 feet, with a longer length or diameter preferred.

MM-BIO-1f Restrictions on Landscaping or Restoration Palettes and Plants

- Prior to installation of plants for landscaping or restoration, the plant palettes proposed will be reviewed by the CDFW regulatory group to minimize the effects that proposed landscape plants could have on native vegetation and wildlife within the SJWA. Landscape plants will not include invasive plant species, as identified by the most recent version of the California Invasive Plant Inventory for the region as published by the California Invasive Plant Council. Landscape plans will include a plant palette composed of California native species that do not require high irrigation rates.
- Immediately prior to installation of container plants, container plants to be installed within 100 feet of open space will be inspected by the biologist for the presence of disease, weeds, and pests, including Argentine ants. Plants with pests, weeds, or diseases will be rejected.

MM-BIO-1o Reduce Raptor Electrocutions

CDFW will work with utility companies to configure or modify power lines to eliminate raptor electrocutions to the greatest extent practicable.

MM-BIO-1p Restrictions on Lighting

To reduce the adverse impacts of light and glare, CDFW will require new light sources to be shielded and hooded to focus lighting downward, and only on the area in need of illumination.

6.1.7.5 Operations-Related Measures

MM-BIO-1g Restrictions on the Use of Motor Vehicles and Aircraft

The following restrictions on the use of motor vehicles and aircraft in the SJWA will be required:

- Vehicle speed will not exceed 15 miles per hour. Speed limits will be posted at roadway entrances to the SJWA.
- Vehicle travel for operation and maintenance purposes will be limited to existing roadways except in the case of an emergency or as determined through project design. Appropriate biological surveys will be conducted prior to off-road-vehicle travel, including travel that does not result in habitat disturbance. Construction of new roads will be avoided if existing roads can be used.
- Fish and Game Code Title 14 section 550 (aa) states "No visitor shall operate any aircraft, hovercraft or hot air balloon within Department lands except as authorized by a special use permit issued by the Department." This has been interpreted to include drones and to exclude official duties such as those performed by CalFire.
- Fish and Game Code Title 14 section 251.1 intentional harassment of wildlife states "Except as otherwise authorized in these regulations or in Fish and game Code, no person shall harass, herd or drive any game or non-game bird or mammal or furbearing mammal. For purposes of this section, harass is defined as an intentional act which disrupts an animal's normal behavior patterns, which includes, but is not limited to, breeding, feeding or sheltering."
- CDFW will coordinate with appropriate federal agencies to restrict low-altitude flights over the SJWA to protect sensitive resources.

MM-BIO-1h Preparation and Implementation of a Grazing Management Plan

Any authorization or reauthorization of new or expanded grazing activities will be preceded by the adoption of a Grazing Management Plan for that area, subject to the review and concurrence by the CDFW regulatory group, following compliance with the California Environmental Quality Act. The grazing management planwill, at a minimum, include the following information and criteria:

- Specific goals, objectives, and targets that define the desired habitat conditions to be achieved through grazing as a management tool that are based on the resource protection and enhancement goals of the LMP.

- Performance standards will be measurable, objective, and relevant to grazing management while incorporating the flexibility necessary for effective adaptive management.
- Grazing prescriptions will identify how grazing will be conducted to attain the various goals, objectives, and performance standards. Grazing prescriptions will include the following:
  - Animal class: the kind of animals, in terms of species, breed, and age
  - Spatial distribution: which portions of the SJWA will be grazed
  - Temporal distribution: when animals will be grazing
  - Density of animals: the number of grazing animals within each area to be grazed
- Grazing prescriptions and methods developed based on a review of the best available scientific literature examining the effects of various types of grazing (based on the seasonality, intensity, and frequency) on biological systems and the site-specific conditions of the SJWA.
- Grazing facilities, such as water and fencing, that are currently present or that would be needed.
- Performance standards such as minimum standards for residual dry matter or grass height to ensure the protection of water and soil quality, which will be important considerations for determining the performance standards that define future conditions.
- Monitoring protocols and performance standards that will be used to assess effective implementation of the grazing prescriptions.
- Lease management requirements to ensure compliance and cooperation between the lessee and CDFW staff.

The Grazing Management Plan will address the methods to avoid or minimize impacts of grazing on sensitive species, special communities, cultural resources, and public uses. More specifically, CDFW will implement appropriate measures to protect special-status biological resources that could be negatively affected from the potential impacts of grazing activities based on resource-specific information. Such measures will include one or more of the following:

- Excluding livestock from areas where special-status plants that may be negatively impacted by grazing, or have the potential to occur but have not been surveyed, including through the construction of exclusion fencing.

- Excluding livestock from areas where special-status plants are known to occur, or have the potential to occur, during the flowering/fruiting period (generally March through June).
- CDFW will adjust grazing prescriptions or eliminate grazing following restoration treatments, if necessary, to protect populations of vulnerable species or facilitate establishment of newly planted sites.
- Where possible, water for livestock will be piped away from the riparian zone. If possible, livestock water sources will be kept on year-round for use by wildlife.
- Use livestock that had previously grazed locally to reduce the probability of invasive species.

MM-BIO-1i Practices for the Control of Invasive and Non-Native Species

- All uses of compounds for pest control will comply with the application restrictions mandated by the U.S. Environmental Protection Agency and the California Department of Pesticide Regulation.
- CDFW will implement an Integrated Pest Management (IPM) program to establish criteria and methods for control of invasive species, including mechanical, chemical, and other accepted control methods.
- CDFW will develop an invasive plant species control strategy designed to minimize herbicide use and associated impacts on non-target species, consistent with the IPM program.
- The IPM program will establish a prioritized ranking of invasive plant species targeted for control based on potential threats to managed natural resources. The ranking will give special consideration to species with the ability to rapidly invade and establish within the habitat on site, including stinknet (*Oncosiphon piluliferum*), slenderleaf iceplant (*Mesebranthemum nodiflorum*), and Sahara mustard (*Brassica tournefortii*).
- The IPM program will include a detailed description of triggers for initiating invasive plant species control measures, methods of control, and monitoring and reporting protocols.
- CDFW will encourage other authorized users (e.g., fire crews, researchers) and visitors to employ management practices that minimize the spread of weeds, such

as cleaning equipment prior to entering the SJWA and requiring the use of certified weed-free hay and feed on the SJWA.

- CDFW will prohibit the release of non-native animal species other than those introduced specifically for the purpose of control of specific noxious weeds, or those released for legal hunts if authorized by the Fish and Game Commission. If individuals of non-native animal species are discovered, CDFW will attempt to eradicate them before the species becomes established.

MM-BIO-1j Preparation and Implementation of an Alkali Habitat Management Plan

An alkali habitat management plan will be prepared to complement the existing LMP and provide operational guidelines for managing alkali habitat resources within the Davis Unit. The following contents will, at a minimum, include the following information and criteria:

- A delineation of alkali habitats within the reserve subject to management described in the plan (e.g., alkali vernal pool, alkali playa, native alkali grassland, and alkali scrub).
- An analysis of the use of recycled water for seasonal ponding in alkali habitats and measures to address management of the water resources within the reserve as it relates to alkali habitat management.
- A review process to be implemented prior to modifying management measures in alkali habitat areas that considers the presence of alkali habitats and associated alkali-soil-dependent plant species.
- Guidelines for planning and implementing alkali habitat enhancement and restorationactivities, including evaluating site suitability based on appropriate soils (e.g., Willows, Trever, and Chino soils), existing and modified hydrology, and existing and modified surface topography.
- An adaptive management strategy to address the variable conditions and management actions expected within the Davis Unit.

The following criteria will be incorporated into the alkali habitat management plan:

- Specific goals, objectives, and targets that define the desired habitat conditions to be maintained through alkali habitat management, which are based on the resource protection and enhancement goals of the LMP.

- Measurable performance standards that are objective and relevant to alkali habitat management while incorporating the flexibility necessary for effective adaptive management.
- Conditions for operational constraints for actions that could potentially negatively affect alkali habitat conditions (e.g., seasonal flooding, mowing, grazing, and pipe and drainage repairs).
- Specifications for invasive species control that include details on timing and methods to effectively control target species within alkali habitats.
- Measures for revegetating alkali habitats, where needed.

The list of performance standards by which to measure the success of the alkali habitat management plan will be as follows:

a. Non-native plant species cover will be no more than 5% absolute cover at the alkali management areas.

b. Any species listed on the California State Agricultural list (CDFA 2009) or Cal-IPC list of noxious weeds (Cal-IPC 2017) will not be present on the alkali management areas within one year of plan implementation.

c. Non-native wildlife species at the alkali management areas will be controlled through management activities.

- Measures to exclude unauthorized entry into the alkali habitat management areas.
- Contingency measures such as erosion control, replanting, or weeding to implement in the event that management efforts are not successful.

The plan will include a monitoring program to consistently evaluate the status of alkali habitats and the vegetation and species dependent on these habitats. The monitoring program will include the following:

- Monitoring protocols for alkali habitat quality, including species diversity, cover, and non-native plant species presence and abundance.
- Monitoring protocols for special-status plant species that occur within alkali habitats and provide a measure of habitat quality, such as thread-leaved brodiaea (*Brodiaea filifolia*), spreading navarretia (*Navarretia fossalis*), and San Jacinto Valley crown-scale (*Atriplex coronata* var. *notatior*), among others.

- Monitoring protocols for water level inundation and ponding duration within alkali habitats.

MM-BIO-1k Management and Monitoring of Trail Use

CDFW will install trailhead and trail signage every mile indicating the SJWA is a biological conservation area and that people and their animals are required to stay on existing trails at all times. Signage will also be posted stating that no deliberate feeding of wildlife is allowed. CDFW will provide quarterly maintenance patrols to remove litter and monitor trail expansion, erosion, and fire hazards within the SJWA. Off-trail use detected during inspections will be monitored by CDFW. Management actions triggered by excessive off-trail use will include increased educational materials, signage, or information; temporary or partial closure of trails; trail repair; increased patrol; or if off-trail use is noted in biologically sensitive areas, then permanent fencing or signage along limited segments of trails or closing trails located within 100 feet of these biologically sensitive areas.

MM-BIO-1l Management and Monitoring of Hunting

All hunters will receive environmental awareness training annually. The environmental awareness training will include a description of the SJWA and the conservation values of the lands. Additionally, the restrictions on hunting activities will be described. Maps will be provided that show the existing trails/roads where driving, hiking, and equestrian uses are allowed. These maps will also display where hunting uses are allowed and where they are restricted. In new areas designated for hunting, CDFW will monitor hunting activities weekly from February 15 through September 1 and monthly for the remainder of the year to ensure compliance with this mitigation measure. If guidelines on the SJWA are not adhered to, CDFW will ban the offending parties from public opportunities in the area. In addition, the environmental awareness training program will cover the following information:

- Non-lead ammunition will be used at all times.
- Non-permitted hunting of any wildlife species will be strictly prohibited.
- Feeding wildlife is prohibited.
- Nesting birds must be avoided.
- Unauthorized capturing (i.e., poaching) of wildlife is prohibited and could result in negative effects.

- The collection of rocks, plants, trees (including branches, logs), or any other natural objects or materials is prohibited.
- Native animals (e.g., coyote, bobcat, and mountain lion) may be present on the SJWA.
- All trash must be packed out and deposited in wildlife-proof trash cans.
- Vehicles must travel on existing roads.
- Vehicles must maintain a speed of 15 miles per hour or slower.

In new areas designated for hunting areas (e.g., Potrero Unit), from February 15 to September 1, during upland game hunting and the nesting bird season, riparian areas and a 500-foot buffer from the edge of the riparian areas will be off limits to hunters. CDFW will install signage 500 feet from the riparian edge during this season, indicating that the area is off limits to hunting. The signage will be spaced out at 500-foot or greater intervals if signage is visible from a greater distance. If the 500-foot buffer from the riparian edge cannot be avoided by hunters, CDFW or a designated qualified biologist will conduct pre-activity nesting bird surveys no more than 72 hours prior to hunting activities. If occupied nests are found during pre-activity surveys, an appropriate protective buffer will be established by CDFW in the field with flagging, fencing, or other appropriate barriers between the nest and hunting activities. For any state or federally listed bird species and raptors, if an active nest is confirmed, at least a 500-foot disturbance-free buffer between the nest and the nearest hunting activity will be established and demarcated by fencing or flagging. For other nesting birds, without species-specific requirements noted herein, at least a 300-foot disturbance-free buffer between the nest and the hunting will be established and demarcated by fencing or flagging. No hunting may occur in these areas unless otherwise authorized by USFWS and CDFW. The CDFW regulatory group may adjust the distance of the protective buffer from the nest at its discretion, and with concurrence from USFWS for a federally listed species, depending on the species and the location of the nest (e.g., if the nest is well protected in an area buffered by dense vegetation). Once the nest is no longer occupied for the season, the hunting may proceed in the protective buffer area for 72 hours. After the 72 hours, another nesting bird survey would be required to hunt within 500 feet of the riparian areas.

MM-BIO-1m BMPs to Minimize Effect of Repeated Surveys

Prior to starting and ending field work, biologists will remove seeds from their boots or shoes. Field equipment and vehicles will be cleaned once a month or immediately prior to taking equipment to another unit. During field surveys, biologists will drive and park on established roads. If vegetation becomes trampled in a survey area, biologist will modify survey methods to avoid effects of repetitive surveys. Field boots or shoes will be sterilized with chlorine bleach before each visit to a vernal pool. As feasible, field work will be scheduled and performed to avoid disturbing nesting birds.

MM-BIO-1q Trash Abatement Program

To protect wildlife, CDFW will initiate a trash abatement program for the SJWA that establishes at least the following conditions: trash and food items are contained in animal-proof containers and removed regularly to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs; no deliberate feeding of wildlife will be allowed.

6.2 Monthly Task Schedule and Future Plan Implementation

6.2.1 Monthly Task Schedule

The following is a list of basic work plan tasks that is amended yearly depending upon the conditions and status of various management goals, objectives, funding, and environmental conditions.

January

- Waterfowl and upland hunting seasons in progress
- Waterfowl hunt program, check station operation
- Water management on ponds
- Hunt test field trial area in use and management
- Conduct burrowing owl (*Athene cunicularia*) maintenance and projects
- Conduct tricolored blackbird (*Agelaius tricolor*) habitat management
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance

- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Repairing and posting signage
- Other duties as required.

February

- Waterfowl and upland hunting seasons ending
- Water management on ponds
- Youth waterfowl hunt
- Hunt test field trial area in use and management
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance
- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Repairing and posting signage
- Other duties as required.

March

- Beginning of SKR habitat management if weather allows; mowing, grazing, or prescribed burns
- Water drawdowns at ponds depending upon weather conditions and pond levels
- Watering riparian areas if needed
- Brooding habitat of designated wetlands units
- Tricolored blackbird habitat management
- Start MLDC water per agreement (150 acre-feet/year)
- Beginning of mowing for weed abatement depending upon weather conditions

- Spring/summer wetland management
- Hunt test field trial area ending and management
- Raptor poles management
- Blue bird and wood duck boxes maintenance
- Riparian habitat enhancement
- Invasive vegetation species removal – herbicide/pesticide, grazing, or prescribed burns
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance
- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Repairing and posting signage
- Other duties as required.

April

- SKR habitat management if weather allows; mowing, grazing, or prescribed burns
- Beginning of mowing for weed abatement depending upon weather conditions
- Tricolored blackbird habitat management
-
- Brooding habitat of designated wetlands units
- Spring/summer wetland management
- Water drawdowns at ponds depending upon weather conditions and pond levels
- Raptor poles management
- Riparian habitat enhancement
- Invasive vegetation species removal – herbicide/pesticide, grazing, or prescribed burns
- Bluebird and wood duck boxes maintenance
- Hunter education course

- Volunteer work days
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance
- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Watering riparian areas if needed
- Repairing and posting signage
- Other duties as required.

May

- SKR habitat management; mowing, grazing, or prescribed burns
- Upland game crop management – mowing, disking, planting, and irrigating
- Flood irrigation of wetland habitat for waterfowl food production, depending upon conditions
- Tricolored blackbird habitat management
- Brooding habitat of designated wetlands units
- Planting forage for waterfowl
- Raptor poles management
- Spring/summer wetland management
- Riparian habitat enhancement
- Invasive vegetation species removal – herbicide/pesticide, grazing, or prescribed burns
- Bluebird and wood duck boxes maintenance
- Mowing for weed abatement depending upon weather conditions
- Volunteer work days
- Maintaining kiosks
- Area roads maintenance

- State facilities maintenance
- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Watering riparian areas when needed
- Upland game water guzzler maintenance
- Repairing and posting signage
- Other duties as required.

June

- Redoing SKR habitat management if needed; mowing, grazing, or prescribed burns
- Maintaining upland food plots
- Tricolored blackbird habitat management
- Riparian habitat enhancement
- Spring/summer wetland management
- Invasive vegetation species removal – herbicide/pesticide, grazing, or prescribed burns
- Flood irrigation of wetland habitat for waterfowl food production depending upon conditions
- Planting forage for waterfowl
- Maintenance of levees, ponds, and marshes; repairs to water distribution lines and valves; mowing, disking, and reshaping levees and ponds where needed
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance
- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Watering riparian areas when needed
- Upland game water guzzler maintenance

- Repairing and posting signage
- Other duties as required.

July

- Redoing SKR habitat management if needed; mowing, grazing, or prescribed burns
- Maintaining upland food plots
- Spring/summer wetland management
- Conduct tricolored blackbird (*Agelaius tricolor*) habitat management
- Flood irrigation of wetland habitat for waterfowl food production depending upon conditions
- Maintenance of levees, ponds, and marshes; repairs to water distribution lines and valves; mowing, disking, and reshaping levees and ponds where needed
- Invasive vegetation species removal – herbicide/pesticide, grazing, or prescribed burns
- Start of hunting season, rabbits
- Volunteer work days
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance
- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Watering riparian areas when needed
- Upland game water guzzler maintenance
- Repairing and posting signage
- Other duties as required.

August

- Early fall flood up to ponds ready to receive water
- Maintaining upland food plots
- Mowing upland plots for dove season

- Maintenance of levees, ponds, and marshes; repairs to water distribution lines and valves; mowing, disking, and reshaping levees and ponds where needed
- Conduct tricolored blackbird (*Agelaius tricolor*) habitat management
- Preparing fields for wildlife forage winter crops
- Volunteer work days
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance
- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Watering riparian areas when needed
- Upland game water guzzler maintenance
- Repairing and posting signage
- Other duties as required.

September

- Dove season opens
- Maintaining upland food plots
- Water management on wetlands units
- Conduct burrowing owl (*Athene cunicularia*) maintenance and projects
- Conduct tricolored blackbird (*Agelaius tricolor*) habitat management
- Preparing fields for wildlife forage winter crops
- Volunteer work days
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance
- Repairs to water control structures

- Repairs to gates and fences
- Shop and equipment maintenance
- Watering riparian areas when needed
- Repairing and posting signage
- Other duties as required.

October

- Water management on wetlands units
- Conduct burrowing owl (*Athene cunicularia*) maintenance and projects
- Conduct tricolored blackbird (*Agelaius tricolor*) habitat management
- Hunting season open for waterfowl, quail, snipe, etc.
- Planting upland food plots depending upon the weather
- Planting winter forage for waterfowl
- Mowing pheasant strips
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance
- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Watering riparian areas when needed
- Repairing and posting signage
- Other duties as required.

November

- Waterfowl and upland hunting seasons in progress
- Waterfowl hunt program, check station operation
- Water management on wetlands units
- Conduct burrowing owl (*Athene cunicularia*) maintenance and projects

- Conduct tricolored blackbird (*Agelaius tricolor*) habitat management
- Pheasant season – check station operation
- Planting winter forage for waterfowl
- Planting upland food plots depending upon the weather
- Second season of dove
- Mowing pheasant strips
- Youth pheasant hunt
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance
- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Watering riparian areas when needed
- Repairing and posting signage
- Other duties as required.

December

- Waterfowl and upland hunting seasons in progress
- Waterfowl hunt program, check station operation
- Pheasant season – check station operation
- Water management on wetlands units
- Conduct burrowing owl (*Athene cunicularia*) maintenance and projects
- Conduct tricolored blackbird (*Agelaius tricolor*) habitat management
- Flooding rare and endangered plant species ponds
- Youth pheasant hunt
- Maintaining kiosks
- Area roads maintenance
- State facilities maintenance

- Repairs to water control structures
- Repairs to gates and fences
- Shop and equipment maintenance
- Watering riparian areas when needed
- Repairing and posting signage
- Other duties as required.

6.2.2 Future Plan Implementation

This section addresses future plans and programs that are not currently part of the regular, ongoing management practices of the SJWA. This section is intended to provide a general schedule for implementation of these various future plans and programs, however, actual implementation will depend on future management priorities, funding, environmental and regulatory conditions (Table 6-1).

Table 6-1
Approximate Implementation Schedule for Future Plans and Tasks

Task – Approximate Implementation Schedule
One to Five Years following Adoption of the LMP
Conduct alkali resource assessment
Implement alkali resource protection
Conduct vernal pool and San Diego fairy shrimp assessment
Conduct southwestern pond turtle assessment
Conduct tricolored blackbird assessment
Conduct western spadefoot assessment
Conduct chaparral/sage scrub/grassland vegetation assessment
Conduct raptor nesting assessment
Conduct burrowing owl nesting assessment
Prepare guidelines for data management
Implement active SKR habitat management at Potrero Unit
Develop plans and conduct regulatory compliance review for expanded/new wetlands projects (i.e., ponds, green feed fields)
Implement a portion of the planned expanded/new wetlands projects (i.e., pond, green feed fields)
Develop plans and conduct regulatory compliance review for a joint wetlands/riparian restoration closed zone project
Implement a joint wetlands/riparian restoration closed zone project
Develop wildfire management measures
Develop plans and conduct regulatory compliance review for planned expanded trail/interpretive services projects
Implement a portion of the planned expanded trail/interpretive services projects
Develop stakeholder outreach methods
Develop plans and conduct regulatory compliance review to reconfigure CDFW-managed food plots

Table 6-1
Approximate Implementation Schedule for Future Plans and Tasks

Task – Approximate Implementation Schedule
Implement re-configuration of CDFW-managed food plots
Evaluate and potentially implement expansions of current agricultural leases
Evaluate and potentially implement a grazing lease(s)
Open portions of the Potrero Unit to upland game hunting
Develop plans and conduct regulatory compliance review to replace existing and install new guzzlers
Implement replacement of existing guzzlers and installation of new guzzlers
Evaluate and potentially implement two new game programs: ring-necked pheasantand mule deer
Develop plans and conduct regulatory compliance review for planned new hunting dog training project
Implement fire management tasks including agency coordination, developing and implementing fuel reduction methods, and preparation of a fire plan
Identify potentially significant archaeological resources; implement measures to protect those resources
Five to Ten Years following Adoption of the LMP
Implement long-term alkali resources management
Re-evaluate LMP goals, tasks, and management designations
Implement remaining planned expanded/new wetlands projects (i.e., pond, green feed fields)
Implement remaining portions of the planned expanded trail/interpretive services projects
Implement new hunting dog training project
Ongoing – Minimum Annual Basis
Evaluate areas where invasive species control measures have been implemented
Evaluate effects of proposed projects for regulatory compliance including resource avoidance, minimization, and mitigation
Review compliance with conservation easements
Coordinate with other agencies, organizations, and institutions
Identify potential acquisition and new conservation easement areas
Evaluate potential mitigation opportunities/proposals

6.3 Future Staffing and Capital Outlay

Staff levels at the SJWA have not kept up with the increasing size of the SJWA; the expanding public use; and multiple habitats, plants, and animal management responsibilities. Currently, the SJWA is funded for five permanent positions and one temporary seasonal aid position. Based on the management responsibilities identified in this LMP, it is anticipated that two additional fish and wildlife technicians, one additional habitat supervisor I, and one additional tractor operator/laborer will be necessary to initiate operation of the Potrero Unit. The full implementation of all the management goals identified herein will require staff increases as outlined in Table 6-2.

Table 6-2
Existing and Recommended Staffing Allocations for the San Jacinto Wildlife Area Land Management Plan

	Existing Staff	Recommended Future Staff
Permanent Positions		
Senior Fish, Wildlife and Habitat Supervisor	1	1
Interpreter I	—	1
Biologist	—	1
Habitat Supervisor I	1	2
Fish and Wildlife Technician	2	6
Tractor Operator/Laborer	1	2
Office Technician	—	1
Total personnel years (PY)	5	14
Temporary Positions		
Seasonal Aide	1	4
Scientific Seasonal Aide	—	2
Total temporary positions	**1**	**6**

Anticipated future capital expenditures for the SJWA would include additional land acquisitions, the construction of a Visitor Use/Interpretive facility, replacement of the two current employee residences, and the installation of another residence on the SJWA at Davis Road. Two new residences will need to be installed at Potrero, along with an office, workshop, and warehouse. Vehicles will be needed for each new position. Both areas will need the development of a new domestic water system. A power system will also need to be developed at the Potrero Unit.

Annual budget allotments for SJWA operation and maintenance activities will also require periodic adjustment to keep pace with increasing land management and public use responsibilities.

Future land acquisitions are based on an existing Conceptual Area Acquisition Plan (CAAP) for the SJWA. The CAAP document seeks to identify those lands having the highest wildlife conservation and public use values for inclusion within the SJWA. All land purchases are from willing sellers for the appraised fair market value of the land.

Implementation of the management plan goals for Interpretive Programs and Educational Outreach Programs will necessarily require the construction and staffing of an on-site Visitor Use Interpretive Center. The two employee residences on site are currently deteriorating and subject to recurring rodent infestation. It is recommended that future employee residences be established on a slab foundation and include design features compatible with the wildlands nature of the site. The present domestic water well serving the entire SJWA has a limited output. Future growth of facilities and public uses will require the development of a higher capacity domestic water system.

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APPENDIX A

Plant Species Recorded within the SJWA

TABLE A-1. PLANT SPECIES RECORDED WITHIN THE SJWA – DAVIS UNIT

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Aizoaceae	Fig-marigold	*Mesembryanthemum nodiflorum*	slender-leaved iceplant	Y
Alismataceae	Water plantain	*Echinodorus berteroi*	Upright burrhead	N
Alismataceae	Water plantain	*Sagittaria latifolia*	broad leaf arrowhead	N
Alliaceae	Lily	*Allium praecox*	early onion	N
Amaranthaceae	Amaranth	*Amaranthus retroflexus*	rough pigweed	Y
Amaranthaceae	Amaranth family	*Atriplex coronata var. notatior*	San Jacinto Valley crownscale	
Amaranthaceae	Amaranth family	*Atriplex lentiformis*	big saltbush	N
Amaranthaceae	Amaranth family	*Atriplex pacifica*	South Coast saltscale	
Amaranthaceae	Amaranth family	*Atriplex parishii*	Parish's brittlescale	N
Amaranthaceae	Amaranth family	*Atriplex suberecta*	peregrine saltbush	Y
Amaranthaceae	Amaranth family	*Chenopodium album*	pigweed, lamb's quarters	Y
Amaranthaceae	Amaranth family	*Chenopodium californicum*	California goosefoot	N
Amaranthaceae	Amaranth family	*Chenopodium murale*	nettle-leaf goosefoot	Y
Amaranthaceae	Amaranth family	*Monolepis nuttalliana*	poverty weed	N
Amaranthaceae	Amaranth family	*Suaeda nigra*	bush seepweed	N
Anacardiaceae	Sumac	*Rhus aromatica*	skunkbrush	N
Anacardiaceae	Sumac	*Schinus molle*	Peruvian pepper-tree	Y
Apiaceae	Carrot family	*Bowlesia incana*	hoary bowlesia	N
Apiaceae	Carrot family	*Tauschia arguta*	southern umbrellawort	N
Apocynaceae	Dogbane	*Funastrumcynanchoides*	climbing milkweed	N
Apocynaceae	Dogbane	*Nerium oleander*	common oleander	Y
Asteraceae	Sunflower	*Acourtia microcephala*	sacapellote	N
Asteraceae	Sunflower	*Anthemis cotula*	mayweed chamomile	Y
Asteraceae	Sunflower	*Artemisia biennis*	biennial sagewort	Y
Asteraceae	Sunflower	*Baccharis emoryi*	Emory’s baccharis	N

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Asteraceae	Sunflower	*Bebbia juncea*	rush sweetbush	N
Asteraceae	Sunflower	*Brickellia desertorum*	brickellbush	N
Asteraceae	Sunflower	*Centaurea benedicta*	blessed thistle	Y
Asteraceae	Sunflower	*Centromadia pungens*	spiny tarweed	N
Asteraceae	Sunflower	*Centromadia pungens ssp. Laevis*	common tarweed	N
Asteraceae	Sunflower	*Centromadia pungens ssp. laevis*	smooth tarplant	N
Asteraceae	Sunflower	*Chaenactis artemisiifolia*	Artemisia pincushion	N
Asteraceae	Sunflower	*Cirsium occidentale var. californicum*	California thistle	N
Asteraceae	Sunflower	*Corethrogyne filaginifolia*	common sand-aster	N
Asteraceae	Sunflower	*Crassula connata*	pygmy-weed	N
Asteraceae	Sunflower	*Deinandra fasciculata*	fascicled tarweed	N
Asteraceae	Sunflower	*Deinandra kelloggii*	Kellogg's tarweed	N
Asteraceae	Sunflower	*Ericameria pinifolia*	pine bush	N
Asteraceae	Sunflower	*Erigeron foliosus var. foliosus*	fleabane daisy	N
Asteraceae	Sunflower	*Gnaphalium bicolor*	bicolor cudweed	N
Asteraceae	Sunflower	*Gutierrezia californica*	California matchweed	N
Asteraceae	Sunflower	*Hazardia squarrosa var. grindelioides*	saw-toothed goldenbush	N
Asteraceae	Sunflower	*Helianthus annuus*	common sunflower	N
Asteraceae	Sunflower	*Isocoma menziesii*	spreading goldenbush	N
Asteraceae	Sunflower	*Isocoma menziesii var. vernonioides*	spreading goldenbush	N
Asteraceae	Sunflower	*Laennecia coulteri*	Coulter's horseweed	N
Asteraceae	Sunflower	*Lasthenia californica*	California goldfields	N
Asteraceae	Sunflower	*Lasthenia glabrata*	yellow rayed goldfields	N
Asteraceae	Sunflower	*Lasthenia glabrata ssp. coulteri*	Coulter's goldfields	N
Asteraceae	Sunflower	*Microseris douglasii ssp. Douglasii*	Douglas' microseris	N
Asteraceae	Sunflower	*Porophyllum gracile*	odora	N
Asteraceae	Sunflower	*Pseudognaphalium beneolens*	white everlasting	N
Asteraceae	Sunflower	*Pseudognaphalium canescens*	Wright's cudweed	N

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Asteraceae	Sunflower	*Psilocarphus brevissimus var. brevissimus*	dwarf woolly-heads	N
Asteraceae	Sunflower	*Stebbinsoseris heterocarpa*	grassland stebbinsoseris	N
Asteraceae	Sunflower	*Stephanomeria exigua ssp. deanei*	small wreath-plant	N
Asteraceae	Sunflower	*Tetramydia comosa*	cotton-thorn	N
Asteraceae	Sunflower	*Xanthium strumadum*	cocklebur	N
Asteraceae	Sunflower family	*Achyrachaena mollis*	blow-wives	N
Asteraceae	Sunflower family	*Ambrosia confertiflora*	weakleaf burr ragweed	N
Asteraceae	Sunflower family	*Artemisia dracunculus*	tarragon	N
Asteraceae	Sunflower family	*Brickellia californica*	California brickel bush	N
Asteraceae	Sunflower family	*Chaenactis glabriuscula var. glabriuscula*	yellow pincushion	N
Asteraceae	Sunflower family	*Chamomilla suaveolens*	pineapple weed, rayless chamomile	N
Asteraceae	Sunflower family	*Cirsium vulgare*	bull thistle	Y
Asteraceae	Sunflower family	*Conyza bonariensis*	asthmaweed	Y
Asteraceae	Sunflower family	*Gnaphalium californicum*	California cudweed	N
Asteraceae	Sunflower family	*Gnaphalium palustre*	lowland cudweed	N
Asteraceae	Sunflower family	*Hypochaeris glabra*	smooth cat's-ear	Y
Asteraceae	Sunflower family	*Lactuca serriola*	prickly lettuce	Y
Asteraceae	Sunflower family	*Lasthenia glabrata ssp. coulteri*	Coulter's goldfields	
Asteraceae	Sunflower family	*Layia platyglossa*	tidy-tips	N
Asteraceae	Sunflower family	*Matricaria matricarioides*	pineapple weed, rayless chamomile	N
Asteraceae	Sunflower family	*Sonchus asper*	prickly sow thistle	Y
Asteraceae	Sunflower family	*Sonchus asper ssp. asper*	prickly sow thistle	Y
Asteraceae	Sunflower family	*Sonchus oleraceus*	common sow thistle	Y
Asteraceae	Sunflower family	*Stylocline gnaphaloides*	everlasting nest straw	N
Asteraceae	Sunflower family	*Taraxacum officinale*	common dandelion	Y
Asteraceae	Sunflower family	*Trichocoronis wrightii var. wrightii*	Wright's trichocoronis	

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Asteraceae	Sunflower family	*Xanthium spinosum*	spiny cocklebur	N
Asteraceae	Sunflower family	*Xanthium strumarium*	cocklebur	N
Azollaceae	Mosquito fern family	*Azolla filiculoides*	mosquito fern	N
Boraginaceae	Borage	*Amsinckia intermedia*	rancher's fiddleneck	N
Boraginaceae	Borage	*Cryptantha c.f. intermedia*	Nievitas cryptantha	N
Boraginaceae	Borage	*Heliotropium curassavicum var. oculatum*	seaside heliotrope	N
Boraginaceae	Borage	*Pectocarya peninsularis*	peninsular pectocarya	N
Boraginaceae	Borage	*Phacelia longipes*	long stalk phacelia	N
Boraginaceae	Borage	*Phacelia minor*	wild canterbury-bell	N
Boraginaceae	Borage	*Phacelia parryi*	Parry's phacelia	N
Boraginaceae	Borage	*Phacelia ramosissrma var. latifolia*	branching phacelia	N
Boraginaceae	Borage	*Plagiobothrys collinus var. gracilis*	Cooper's popcornflower	N
Boraginaceae	Borage	*Plagiobothrys leptocladus*	alkali plagiobothrys	N
Boraginaceae	Borage family	*Amsinckia menziesii var. intermedia*	common fiddleneck	N
Boraginaceae	Borage family	*Cryptantha intermedia*	common cryptantha	N
Boraginaceae	Borage family	*Eucrypta chrysanthemifolia*	spotted hideseed	N
Boraginaceae	Borage family	*Eucrypta chrysanthemifolia var. chrysanthemifolia*	spotted hideseed	N
Boraginaceae	Borage family	*Nama stenocarpum*	mud nama	
Boraginaceae	Borage family	*Nemophila menziesii var. menziesii*	baby blue-eyes	N
Boraginaceae	Borage family	*Pectocarya linearis ssp. ferocula*	pectocarya	N
Boraginaceae	Borage family	*Phacelia cicutaria var. hispida*	caterpillar phacelia	N
Boraginaceae	Borage family	*Phacelia ciliata*	Valley phacelia	N
Boraginaceae	Borage family	*Plagiobothrys canescens*	valley popcornflower	N
Boraginaceae	Borage family	*Plagiobothrys tenellus*	slender popcornflower	N
Brassicaceae	Mustard	*Brassica rapa*	field mustard	Y
Brassicaceae	Mustard	*Lepidium dictyotum var. acutidens*	alkali pepper-grass	N
Brassicaceae	Mustard	*Lepidium lasiocarpum var.lasiocarpum*	sand pepper-grass	N

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Brassicaceae	Mustard	*Sinapis arvensis*	charlock mustard	Y
Brassicaceae	Mustard family	*Brassica tournefortii*	African mustard	Y
Brassicaceae	Mustard family	*Capsella bursa-pastoris*	shepherd's purse	Y
Brassicaceae	Mustard family	*Descurainia sophia*	tansy mustard	Y
Brassicaceae	Mustard family	*Isomeris arborea*	bladderpod	N
Brassicaceae	Mustard family	*Raphanus sativus*	radish	Y
Brassicaceae	Mustard family	*Rorippa nasturtium-aquaticum*	water cress	N
Brassicaceae	Mustard family	*Sisymbrium altissimum*	tumble mustard	Y
Brassicaeae	Mustard	*Lepidium pinnatifidum*	wayside pepper-grass	Y
Cactaceae	Cactus	*Cylindropuntia californica var. parkeri*	California cholla	N
Cactaceae	Cactus	*Opuntia sp.*		
Caprifoliaceae	Honeysuckle family	*Lonicera subspicata var. denudata*	Santa Barbara honeysuckle	N
Caryophyllaceae		*Spergularia marina*	salt marsh sand spurrey	N
Caryophyllaceae	Pink	*Spergularia bocconii*	Boccon's sand spurry	Y
Caryophyllaceae	Pink	*Spergularia sp.*		
Chenopodiaceae	Goosefoot	*Atriplex argentea*	silverscale	N
Chenopodiaceae	Goosefoot	*Atriplex canescens ssp. canescens*	four-wing saltbush	N
Chenopodiaceae	Goosefoot	*Atriplex lentiformis ssp. torreyi*	big saltbush	N
Chenopodiaceae	Goosefoot	*Atriplex pacifica*	south coast saltbush	N
Chenopodiaceae	Goosefoot	*Atriplex semibaccata*	Australian saltbush	Y
Chenopodiaceae	Goosefoot	*Atriplex serenana var. serana*	bractscale	N
Chenopodiaceae	Goosefoot	*Atriplex triangularis*	triangle spearscale	N
Chenopodiaceae	Goosefoot	*Beta vulgaris*	common beet	Y
Chenopodiaceae	Goosefoot	*Chenopodium c.f. macrospermum var. halophilum*	large seed goosefoot	Y
Chenopodiaceae	Goosefoot	*Chenopodium rubrum*	red goosefoot	N
Chenopodiaceae	Goosefoot	*Salsola tragus*	Russian thistle	Y
Chenopodiaceae	Goosefoot	*Suaeda nigra*	black sea-blite	N

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Chenopodiaceae	Goosefoot family	*Atriplex serenana var. davidsonii*	Davidson's saltscale	
Chenopodiaceae	Goosefoot family	*Bassia hyssopifolia*	five-hooked bassia	Y
Chenopodiaceae	Goosefoot family	*Kochia scoparia*	summer cypress	Y
Chenopodiaceae	Goosefoot family	*Salicornia subterminalis*	Parish's glasswort	N
Cleomaceae	Cleome	*Isomeris arborea var. arborea*	bladderpod	N
Convolvulaceae	Morning-glory	*Cressa truxillensis*	alkali weed	N
Convolvulaceae	Morning-glory family	*Calystegia macrostegia*	island false bindweed	N
Convolvulaceae	Morning-glory family	*Cressa truxillensis*	alkali weed	N
Crassulaceae	Stonecrop family	*Crassula connata*	dwarf stonecrop	N
Cucurbitaceae	Gourd family	*Marah macrocarpus*	wild cucumber	N
Cuscutaceae		*Cuscuta californica*	California dodder	N
Cyperaceae	Sedge	*Bolboschoenus maritimus*	seaside bulrush	N
Cyperaceae	Sedge	*Bolboschoenus robustus*	robust bulrush	N
Cyperaceae	Sedge	*Cyperus involucratus*	African umbrella plant	Y
Cyperaceae	Sedge	*Eleocharis bella*	pretty spike rush	N
Cyperaceae	Sedge family	*Eleocharis macrostachya*	common spike rush	N
Cyperaceae	Sedge family	*Schoenoplectus acutus*	common tule	N
Cyperaceae	Sedge family	*Schoenoplectus acutus var. occidentalis*	tule	N
Cyperaceae	Sedge family	*Scirpus californicus*	California bulrush	N
Elatinaceae	Waterwort	*Bergia texana*	Texas bergia	N
Euphorbiaceae	Spurge	*Chamaesyce albomarginata*	rattlesnake weed	N
Euphorbiaceae	Spurge	*Croton californicus*	California croton	N
Euphorbiaceae	Spurge	*Croton setigerus*	doveweed	N
Euphorbiaceae	Spurge	*Ricinus communis*	castor bean	Y
Euphorbiaceae	Spurge	*Stillingia linearifolia*	linear-leaf stillingia	N
Euphorbiaceae	Spurge family	*Chamaesyce albomarginata*	rattlesnake weed	N
Fabaceae	Legume	*Acmispon micranthus*	grab lotus	N
Fabaceae	Legume	*Lupinus bicolor*	miniature lupine	N

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Fabaceae	Legume	*Lupinus truncatus*	collar lupine	N
Fabaceae	Legume	*Parkinsonia aculeata*	Mexican palo verde	Y
Fabaceae	Pea family	*Astragalus didymocarpus*	two-seeded milkvetch	N
Fabaceae	Pea family	*Lotus argophyllus*	silver bird's-foot trefoil	N
Fabaceae	Pea family	*Lotus scoparius*	deerweed	N
Fabaceae	Pea family	*Lotus strigosus*	strigose calf lotus	N
Fabaceae	Pea family	*Lupinus albifrons*	silver lupine	N
Fabaceae	Pea family	*Lupinus bicolor*	miniature lupine	N
Fabaceae	Pea family	*Lupinus sp.*	lupine	N
Fabaceae	Pea family	*Lupinus succulentus*	arroyo lupine	N
Fabaceae	Pea family	*Melilotus indica*	sourclover	Y
Fabaceae	Pea family	*Prosopis glandulosa var. torreyana*	honey mesquite	N
Fabaceae	Pea family	*Trifolium depauperatum var. depauperatum*	cowbag clover	N
Fabaceae	Pea family	*Trifolium sp.*	clover	U
Fagaceae	Oak	*Quercus agrifolia var. agrifolia*	coast live oak	N
Frankeniaceae	Frankenia	*Frankenia salina*	alkali heath	N
Geraniaceae	Geranium family	*Erodium botrys*	broad-leaf filaree	Y
Grossulariaceae	Currant	*Ribes indecorum*	white flowering currant	N
Hydrophyllaceae	Waterleaf family	*Eriodictyon crassifolium*	thickleaf yerba santa	N
Iridaceae		*Sisyrinchium bellum*	blue eyed-grass	N
Juncaceae		*Juncus bufonius var. bufonius*	Toad rush	N
Lamiaceae	Mint	*Salvia columbariae var. columbariae*	chia	N
Lamiaceae	Mint	*Stachys ajugoides ssp. lanata*	rigid hedge nettle	N
Lamiaceae	Mint family	*Trichostema lanceolatum*	vinegar weed	N
Liliaceae	Lily family	*Calochortus splendens*	mariposa lily	N
Lythraceae	Loosestrife	*Ammannia coccinea*	purple ammannia	N
Lythraceae	Loosestrife	*Ammannia robusta*	robust ammannia	N
Malvaceae	Mallow	*Malacothamnus fasciculatus var. fasciculatus*	chaparral bushmallow	N

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Malvaceae	Mallow	*Malvella leprosa*	alkali mallow	N
Malvaceae	Mallow family	*Malvella leprosa*	alkali-mallow	N
Marsileaceae		*Marsilea vestita ssp. vestita*	hairy pepperwort	N
Marsileaceae	Pepperwort	*Marsilea vestita*	hairy clover fern	N
Marsileaceae	Pepperwort	*Pilularia americana*	American pillwort	N
Montiaceae	Montia	*Calaridrinia ciliata*	red maids	N
Myrtaceae	Myrtle	*Eucalyptus cladocalyx*	sugar gum	Y
Myrtaceae	Myrtle	*Eucalyptus globulus*	blue gum	Y
Nyctaginaceae	Four o'clock	*Abronia sp.*	sand verbena	
Nyctaginaceae	Four o'clock	*Abronia villosa var. villosa*	hairy sand verbena	N
Nyctaginaceae	Four o'clock	*Mirabilis laevis var. crassifolia*	California four o'clock	N
Nyctaginaceae	Four o'clock family	*Mirabilis californica*	wishbone bush	N
Oleaceae	Olive family	*Fraxinus velutina*	velvet ash	N
Onagraceae	Evening-primrose	*Epilobium canum ssp. canum*	California fuchsia	N
Onagraceae	Evening-primrose	*Ludwigia peploides*	water primrose	N
Onagraceae	Evening-primrose family	*Camissonia campestris*	Mojave suncup	N
Onagraceae	Evening-primrose family	*Camissonia strigulosa*	strigose sun cup	N
Onagraceae	Evening-primrose family	*Epilobium ciliatum*	northern willow herb	N
Onagraceae	Evening-primrose family	*Epilobium pygmaeum*	smooth spike-primrose	N
Oxalidaceae	Wood sorrel	*Oxalis californica*	California woodsorrel	N
Papaveraceae		*Eschscholzia californica*	California poppy	N
Phrymaceae		*Mimulus floribundus*	monkeyflower	N
Phrymaceae		*Mimulus guttatus*	common monkey flower	N
Phrymaceae	Hopseed	*Mimulus aurantiacus*	coast monkey flower	N
Phrymaceae	Hopseed	*Mimulus longiflorus*	southern bush monkey flower	N
Phrymaceae	Hopseed	*Mimulus puniceus*	red bush monkey flower	N
Plantaginaceae	Plantain	*Antirrhinum nuttallianum*	Nuttall's snapdragon	N
Plantaginaceae	Plantain	*Keckiella antirrhinoides*	climbing bush penstemon	N

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Plantaginaceae	Plantain	*Plantago elongata ssp. Californica*	annual coast plantago	N
Plantaginaceae	Plantain	*Veronica peregrinia ssp.xalapnis*	purslane speedwell	N
Poaceae	Grass	*Achanatherum coronatum*	giant needlegrass	N
Poaceae	Grass	*Bromus hordaceus*	soft brome	Y
Poaceae	Grass	*Crypsis vaginiflora*	African prickle grass	Y
Poaceae	Grass	*Deschampsia danthonioides*	annual hairgrass	N
Poaceae	Grass	*Hordeum depressum*	low barley	N
Poaceae	Grass	*Hordeum murinum ssp. leporinum*	foxtail barley	Y
Poaceae	Grass	*Hordeum vulgare*	common barley	Y
Poaceae	Grass	*Leptochloa uninervia*	Mexican sprangletop	N
Poaceae	Grass	*Leymus condensatus*	giant rye grass	N
Poaceae	Grass	*Nassella cernua*	nodding needlegrass	N
Poaceae	Grass	*Nassella pulchra*	purple needlegrass	N
Poaceae	Grass	*Phalaris minor*	littleseed canary grass	Y
Poaceae	Grass	*Setaria verticillata*	hooked bristlegrass	Y
Poaceae	Grass	*Triticum aestivum*	common wheat	Y
Poaceae	Grass	*Vulpia myuros var. hirusta*	foxtail fescue	Y
Poaceae	Grass	*Vulpia octoflora*	slender fescue	N
Poaceae	Grass family	*Avena fatua*	wild oat	Y
Poaceae	Grass family	*Avena sativa*	culitvated oat	Y
Poaceae	Grass family	*Bromus diandrus*	ripgut grass	Y
Poaceae	Grass family	*Bromus rubens*	foxtail chess	Y
Poaceae	Grass family	*Crypsis schoenoides*	prickle grass	Y
Poaceae	Grass family	*Cynodon dactylon*	Bermuda grass	Y
Poaceae	Grass family	*Distichlis spicata*	saltgrass	N
Poaceae	Grass family	*Echinochloa crus-galli*	barnyard grass	Y
Poaceae	Grass family	*Hordeum intercedens*	vernal barley	
Poaceae	Grass family	*Hordeum murinum ssp. glaucum*	foxtail	Y

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Poaceae	Grass family	*Melica imperfecta*	coast or small-flowered melic grass	N
Poaceae	Grass family	*Muhlenbergia rigens*	deergrass	N
Poaceae	Grass family	*Sporobolus airoides*	alkali scation	N
Polemoniaceae	Phlox	*Gilia angelensis*	grassland gilia	N
Polemoniaceae	Phlox family	*Allophyllum gilioides*	dense false gilyflower	N
Polemoniaceae	Phlox family	*Eriastrum sp.*	wollystar	N
Polemoniaceae	Phlox family	*Navarretia fossalis*	Spreading navarretia	
Polemoniaceae	Phlox family	*Navarretia fossalis*	Spreading navarretia	
Polemoniaceae	Phlox family	*Navarretia sp.*	pincushion plant	N
Polygonaceae	Buckwheat	*C Lastarriaea coriacea*	leather spineflower	N
Polygonaceae	Buckwheat	*Eriogonum fasciculatum var. fasciculatum*	California buckwheat	N
Polygonaceae	Buckwheat	*Persicaria lapathifolia*	willow weed	N
Polygonaceae	Buckwheat	*Polygonum argyrocoleon*	Persian knotweed	Y
Polygonaceae	Buckwheat	*Rumex pulcher*	fiddle dock	Y
Polygonaceae	Buckwheat	*Rumex salicifolius*	willow dock	N
Polygonaceae	Buckwheat family	*Eriogonum fasciculatum var. polifolium*	gray california buckwheat	N
Polygonaceae	Buckwheat family	*Polygonum aviculare*	prostrate knotweed	?
Portulacaceae		*Calandrinia ciliata*	red maids	N
Portulacaceae		*Claytonia perfoliata*	miner's lettuce	N
Potamogetonaceae		*Zannichellia palustris*	horned-pondweed	N
Pteridaceae		*Pellaea mucronata var. mucronata*	bird’s-foot fern	N
Pteridaceae	Brake fern	*Aspidotis californica*	California lace fern	N
Pteridaceae	Brake fern	*Cheilanthes newberryi*	Newberry’s lipfern	N
Pteridaceae	Brake fern	*Cheilanthes newberryi*	Newberry’s lipfern	N
Pteridaceae	Brake fern	*Pellaea andromedifolia*	coffee fern	N
Pteridaceae	Brake fern	*Pentagrammaa triangulads ssp. viscosa*	goldback fern	N
Ranunculaceae		*Delphinium parryi*	blue larkspur	N

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Ranunculaceae	Crowfoot	*Clematis pauciflora*	ropevine	N
Ranunculaceae	Crowfoot	*Ranunculus sceleratus*	cursed buttercup	N
Rosaceae	Rose family	*Prunus ilicifolia*	holly-leafed cherry	N
Saliaceae	Willow	*Populus fremontii*	Fremont cottonwood	N
Saliaceae	Willow	*Salix lasiolepis*	arroyo willow	N
Saxifragaceae		*Lithophragma affine*	woodland star	N
Scrophulariaceae	Figwort	*Castilleja exserta ssp. exserta*	common owl's-clover	N
Scrophulariaceae	Figwort	*Castilleja exserta var. exserta*	common owl's clover	N
Scrophulariaceae	Figwort family	*Penstemon spectabilis*	showy penstemon	N
Scrophulariaceae	Figwort family	*Scrophularia californica ssp. floribunda*	bee plant	N
Selaginellaceae	Spikemoss	*Selaginerlla bigelovii*	Bigelow's spikemoss	N
Solanaceae	Nightshade	*Datura stramonium*	common jimson weed	Y
Solanaceae	Nightshade	*Datura wrightii*	jimson weed	N
Solanaceae	Nightshade	*Petunia parviflora*	wild petunia	N
Solanaceae	Nightshade	*Solanum americanum*	white nightshade	N
Solanaceae	Nightshade	*Solanum douglasii*	Douglas' nightshade	N
Solanaceae	Nightshade	*Solanum parishii*	Parish's nightshade	N
Solanaceae	Nightshade family	*Nicotiana bigelovii*	Indian tobacco	N
Tamaricaceae	Tamarisk family	*Tamarix ramosissima*	saltcedar	Y
Tamaricaceae	Tamarisk family	*Tamarix sp.*	tamarisk	Y
Themidaceae		*Dichelostemma capitatum*	blue dicks	N
Themidaceae		*Dichelostemma capitatum ssp. capitatum*	blue dicks	N
Themidaceae	Lily family	*Brodiaea filifolia*	thread-leaved brodiaea	
Themidaceae	Lily family	*Brodiaea sp.*	brodiaea	N
Typhaceae	Cattail family	*Typha domingensis*	southern cattail	N
Typhaceae	Cattail family	*Typha latifolia*	broad-leaved cattail	N
Verbenaceae	Vervain family	*Verbena bracteata*	bracted vervain	N
Zygophyllaceae		*Tribulus terrestris*	puncture vine	Y

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Poaceae	Grass family	*Lamarckia aurea*	goldentop	Y
Poaceae	Grass family	*Melica imperfecta*	coast or small-flowered melic grass	N
Poaceae	Grass family	*Muhlenbergia rigens*	deergrass	N
Poaceae	Grass family	*Polypogon monspeliensis*	rabbit's-foot grass	Y
Poaceae	Grass family	*Schismus barbatus*	abumashi	N
Poaceae	Grass family	*Sporobolus airoides*	alkali scation	N
Poaceae	Grass family	*Vulpia myuros*	rattail fescue	Y
Polemoniaceae	Phlox	*Gilia angelensis*	grassland gilia	N
Polemoniaceae	Phlox family	*Allophyllum gilioides*	dense false gilyflower	N
Polemoniaceae	Phlox family	*Eriastrum sp.*	wollystar	N
Polemoniaceae	Phlox family	*Navarretia fossalis*	Spreading navarretia	
Polemoniaceae	Phlox family	*Navarretia fossalis*	Spreading navarretia	
Polemoniaceae	Phlox family	*Navarretia sp.*	pincushion plant	N
Polygonaceae	Buckwheat	*C Lastarriaea coriacea*	leather spineflower	N
Polygonaceae	Buckwheat	*Eriogonum fasciculatum var. fasciculatum*	California buckwheat	N
Polygonaceae	Buckwheat	*Persicaria lapathifolia*	willow weed	N
Polygonaceae	Buckwheat	*Polygonum argyrocoleon*	Persian knotweed	Y
Polygonaceae	Buckwheat	*Rumex pulcher*	fiddle dock	Y
Polygonaceae	Buckwheat	*Rumex salicifolius*	willow dock	N
Polygonaceae	Buckwheat family	*Eriogonum elongatum*	long-stemmed buckwheat	N
Polygonaceae	Buckwheat family	*Eriogonum fasciculatum ssp. foliolosum*	California buckwheat	N
Polygonaceae	Buckwheat family	*Eriogonum fasciculatum var. polifolium*	gray california buckwheat	N
Polygonaceae	Buckwheat family	*Polygonum aviculare*	prostrate knotweed	?
Polygonaceae	Buckwheat family	*Rumex crispus*	curly dock	Y
Portulacaceae		*Calandrinia ciliata*	red maids	N
Portulacaceae		*Claytonia perfoliata*	miner's lettuce	N
Potamogetonaceae		*Zannichellia palustris*	horned-pondweed	N

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Pteridaceae		*Pellaea mucronata var. mucronata*	bird's-foot fern	N
Pteridaceae	Brake fern	*Aspidotis californica*	California lace fern	N
Pteridaceae	Brake fern	*Cheilanthes newberryi*	Newberry's lipfern	N
Pteridaceae	Brake fern	*Cheilanthes newberryi*	Newberry's lipfern	N
Pteridaceae	Brake fern	*Pellaea andromedifolia*	coffee fern	N
Pteridaceae	Brake fern	*Pentagrammaa triangulads ssp. viscosa*	goldback fern	N
Ranunculaceae		*Delphinium parryi*	blue larkspur	N
Ranunculaceae	Crowfoot	*Clematis pauciflora*	ropevine	N
Ranunculaceae	Crowfoot	*Ranunculus sceleratus*	cursed buttercup	N
Rosaceae	Rose family	*Prunus ilicifolia*	holly-leafed cherry	N
Rubiaceae	Madder family	*Galium angustifolium*	narrow-leaved bedstraw	N
Rubiaceae	Madder family	*Galium aparine*	goose grass	N
Saliaceae	Willow	*Populus fremontii*	Fremont cottonwood	N
Saliaceae	Willow	*Salix lasiolepis*	arroyo willow	N
Salicaceae	Willow family	*Populus fremontii*	Fremont's cottonwood	N
Salicaceae	Willow family	*Salix exigua*	narrow-leaved willow	N
Salicaceae	Willow family	*Salix gooddingii*	Goodding's willow	N
Salicaceae	Willow family	*Salix lasiolepis*	arroyo willow	N
Saxifragaceae		*Lithophragma affine*	woodland star	N
Scrophulariaceae	Figwort	*Castilleja exserta ssp. exserta*	common owl's-clover	N
Scrophulariaceae	Figwort	*Castilleja exserta var. exserta*	common owl's clover	N
Scrophulariaceae	Figwort family	*Mimulus aurantiacus*	bush monkeyflower	N
Scrophulariaceae	Figwort family	*Penstemon spectabilis*	showy penstemon	N
Scrophulariaceae	Figwort family	*Scrophularia californica*	California figwort	N
Scrophulariaceae	Figwort family	*Scrophularia californica ssp. floribunda*	bee plant	N
Selaginellaceae	Spikemoss	*Selaginerlla bigelovii*	Bigelow's spikemoss	N
Solanaceae	Nightshade	*Datura stramonium*	common jimson weed	Y
Solanaceae	Nightshade	*Datura wrightii*	jimson weed	N

TABLE A-1 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Solanaceae	Nightshade	*Petunia parviflora*	wild petunia	N
Solanaceae	Nightshade	*Solanum americanum*	white nightshade	N
Solanaceae	Nightshade	*Solanum douglasii*	Douglas' nightshade	N
Solanaceae	Nightshade	*Solanum parishii*	Parish's nightshade	N
Solanaceae	Nightshade family	*Datura wrightii*	western jimsonweed	N
Solanaceae	Nightshade family	*Nicotiana bigelovii*	Indian tobacco	N
Solanaceae	Nightshade family	*Nicotiana glauca*	tree tobacco	N
Tamaricaceae	Tamarisk family	*Tamarix ramosissima*	saltcedar	Y
Tamaricaceae	Tamarisk family	*Tamarix sp.*	tamarisk	Y
Themidaceae		*Dichelostemma capitatum*	blue dicks	N
Themidaceae		*Dichelostemma capitatum ssp. capitatum*	blue dicks	N
Themidaceae	Lily family	*Brodiaea filifolia*	thread-leaved brodiaea	
Themidaceae	Lily family	*Brodiaea sp.*	brodiaea	N
Typhaceae	Cattail family	*Typha domingensis*	southern cattail	N
Typhaceae	Cattail family	*Typha latifolia*	broad-leaved cattail	N
Verbenaceae	Vervain family	*Verbena bracteata*	bracted vervain	N
Zygophyllaceae		*Tribulus terrestris*	puncture vine	Y

TABLE A-2. PLANT SPECIES RECORDED WITHIN THE SJWA – POTRERO UNIT

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Amaranthaceae	Amaranth family	*Amaranthus albus*	tumbleweed	Y
Anacardiaceae	Sumac family	*Rhus integrifolia*	lemonade berry	N
Anacardiaceae	Sumac family	*Rhus ovata*	sugar-bush	N
Anacardiaceae	Sumac family	*Toxicodendron diversilobum*	poison-oak	N
Apiaceae	Carrot family	*Lomatium utriculatum*	common lomatium	N
Asteraceae	Sunflower family	*Ambrosia acanthicarpa*	annual burweed	N
Asteraceae	Sunflower family	*Artemisia californica*	California sagebrush	N
Asteraceae	Sunflower family	*Artemisia douglasiana*	California mugwort	N
Asteraceae	Sunflower family	*Baccharis pilularis*	coyote brush	N
Asteraceae	Sunflower family	*Baccharis salicifolia*	mule fat	N
Asteraceae	Sunflower family	*Centaurea melitensis*	star thistle	Y
Asteraceae	Sunflower family	*Centromadia pungens ssp. laevis*	smooth tarplant	
Asteraceae	Sunflower family	*Centromadia pungens ssp. pungens*	common spikeweed	N
Asteraceae	Sunflower family	*Conyza canadensis*	horseweed	N
Asteraceae	Sunflower family	*Cotula coronopifolia*	African brass-buttons	Y
Asteraceae	Sunflower family	*Deinandra kelloggii*	Kellogg's tarplant	N
Asteraceae	Sunflower family	*Encelia farinosa*	brittlebush, incensio	N
Asteraceae	Sunflower family	*Ericameria palmeri var. pachylepis*	goldenbush	N
Asteraceae	Sunflower family	*Erigeron foliosus*	leafy daisy	N
Asteraceae	Sunflower family	*Eriophyllum confertiflorum*	long-stem golden yarrow	N
Asteraceae	Sunflower family	*Filago gallica*	narrow-leaf filago	Y
Asteraceae	Sunflower family	*Gutierrezia californica*	Californica matchweed	N
Asteraceae	Sunflower family	*Helianthus annuus*	common sunflower	N
Asteraceae	Sunflower family	*Heterotheca grandiflora*	telegraph weed	N
Asteraceae	Sunflower family	*Isocoma menziesii*	goldenbush	N

TABLE A-2 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Asteraceae	Sunflower family	*Lepidospartum squamatum*	scale-broom	N
Asteraceae	Sunflower family	*Lessingia filaginifolia*	California aster	N
Asteraceae	Sunflower family	*Malacothrix saxatilis var. tenuifolia*	cliff malacothrix	N
Asteraceae	Sunflower family	*Senecio vulgaris*	common groundsel	Y
Asteraceae	Sunflower family	*Stephanomeria exigua*	small wreathplant	N
Asteraceae	Sunflower family	*Tetradymia comosa*	cotton-thorn	N
Boraginaceae	Borage family	*Amsinckia menziesii var. menziesii*	yellow fiddleneck	N
Boraginaceae	Borage family	*Cryptantha sp.*	forget-me-not	N
Boraginaceae	Borage family	*Heliotropium curassavicum*	wild heliotrope	N
Boraginaceae	Borage family	*Phacelia cicutaria*	caterpillar phacelia	N
Boraginaceae	Borage family	*Plagiobothrys fulvus*	common popcorn flower	N
Brassicaceae	Mustard family	*Brassica nigra*	black mustard	Y
Brassicaceae	Mustard family	*Descurainia pinnata*	tansy mustard	N
Brassicaceae	Mustard family	*Hirschfeldia incana*	short-podded mustard	Y
Brassicaceae	Mustard family	*Lepidium nitidum*	peppergrass	N
Brassicaceae	Mustard family	*Sisymbrium irio*	London rocket	Y
Brassicaceae	Mustard family	*Sisymbrium orientale*	Oriental mustard	Y
Cactaceae	Cactus family	*Cylindropuntia californica*	valley cholla	N
Cactaceae	Cactus family	*Opuntia littoralis*	coastal prickly-pear	N
Caprifoliaceae	Honeysuckle family	*Sambucus mexicana*	Mexican elderberry	N
Caprifoliaceae	Honeysuckle family	*Symphoricarpos c.f. mollis*	spreading snowberry	N
Chenopodiaceae	Goosefoot family	*Atriplex canescens*	four-winged saltbush	N
Chenopodiaceae	Goosefoot family	*Atriplex rosea*	tumbling oracle	Y
Chenopodiaceae	Goosefoot family	*Salsola tragus*	Russian-thistle	Y
Convolvulaceae	Morning-glory family	*Convolvulus arvensis*	bindweed	Y
Cucurbitaceae	Gourd family	*Cucurbita foetidissima*	coyote-melon, calabazilla	N
Euphorbiaceae	Spurge family	*Croton californicus*	California croton	N
Euphorbiaceae	Spurge family	*Croton setigerus*	doveweed	N

TABLE A-2 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Euphorbiaceae	Spurge family	*Dudleya lanceolata*	lanceleaf Dudleya	N
Euphorbiaceae	Spurge family	*Dudleya pulverulenta*	chalky live forever	N
Euphorbiaceae	Spurge family	*Euphorbia polycarpa var. polycarpa*	small-seed sandmat	N
Fabaceae	Pea family	*Astragalus pachypus var. jaegeri*	Jaeger's bush milk-vetch	
Fabaceae	Pea family	*Lathyrus vestitus*	wild pea	N
Fabaceae	Pea family	*Lotus scoparius var. scoparius*	deerweed	N
Fabaceae	Pea family	*Lupinus hirsutissimus*	stinging lupine	N
Fabaceae	Pea family	*Medicago polymorpha*	California burclover	Y
Fagaceae	Beech family	*Quercus agrifolia*	coast live oak	N
Fagaceae	Beech family	*Quercus berberidifolia*	scrub oak	N
Fagaceae	Beech family	*Quercus engelmannii*	Engelmann oak	
Geraniaceae	Geranium family	*Erodium cicutarium*	red-stemmed filaree	Y
Hydrophyllaceae	Waterleaf family	*Emmenanthe penduliflora*	whispering bells	N
Hydrophyllaceae	Waterleaf family	*Eriodictyon trichocalyx var. trichocalyx*	hairy yerba santa	N
Hydrophyllaceae	Waterleaf family	*Phacelia distans*	blue fiddleneck	N
Lamiaceae	Mint family	*Marrubium vulgare*	horehound	Y
Lamiaceae	Mint family	*Salvia apiana*	white sage	N
Lamiaceae	Mint family	*Salvia columbariae*	chia	N
Lamiaceae	Mint family	*Salvia mellifera*	black sage	N
Liliaceae	Lily family	*Allium marvinii*	Yucaipa onion	
Liliaceae	Lily family	*Dichelostemma pulchellum var. pulchellum*	blue dicks	N
Liliaceae	Lily family	*Yucca schidigera*	Mojave Yucca	N
Liliaceae	Lily family	*Yucca whipplei*	Our Lord’s candle	N
Malvaceae	Mallow family	*Malacothamnus fasciculatus ssp. laxiflorus*	chaparral bush mallow	N
Malvaceae	Mallow family	*Malva parviflora*	cheeseweed	Y
Myrtaceae	Myrtle family	*Eucalyptus sp.*	eucalyptus	Y
Oleaceae	Olive family	*Olea europaea*	olive	Y
Onagraceae	Evening-primrose family	*Camissonia bistorta*	southern sun cup	N

TABLE A-2 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
Onagraceae	Evening-primrose family	*Camissonia californica*	mustard primrose	N
Plantaginaceae	Plantain family	*Plantago major*	common plantain	Y
Platanaceae	Sycamore family	*Platanus racemosa*	western sycamore	N
Poaceae	Grass family	*Avena barbata*	slender oat	Y
Poaceae	Grass family	*Bromus grandis*	tall brome	N
Poaceae	Grass family	*Bromus hordeaceus*	soft chess	Y
Poaceae	Grass family	*Bromus madritensis ssp. rubens*	foxtail chess	Y
Poaceae	Grass family	*Bromus tectorum*	cheat grass	Y
Poaceae	Grass family	*Cortaderia jubata*	pampas grass	Y
Poaceae	Grass family	*Hordeum murinum*	glaucous foxtail barley	Y
Poaceae	Grass family	*Lamarckia aurea*	goldentop	Y
Poaceae	Grass family	*Lolium perenne*	perennial ryegrass	Y
Poaceae	Grass family	*Poa annua*	annual bluegrass	Y
Poaceae	Grass family	*Poa secunda*	Malpais bluegrass	N
Poaceae	Grass family	*Polypogon monspeliensis*	rabbit's-foot grass	Y
Poaceae	Grass family	*Schismus barbatus*	abumashi	N
Poaceae	Grass family	*Stipa speciosa*	desert needlegrass	N
Poaceae	Grass family	*Vulpia myuros*	rattail fescue	Y
Polemoniaceae	Phlox family	*Gilia capitata*	globe gilia	N
Polygonaceae	Buckwheat family	*Ceanothus crassifolius*	hoary-leaved ceanothus	N
Polygonaceae	Buckwheat family	*Eriogonum elongatum*	long-stemmed buckwheat	N
Polygonaceae	Buckwheat family	*Eriogonum fasciculatum ssp. foliolosum*	California buckwheat	N
Polygonaceae	Buckwheat family	*Eriogonum nudum*	naked buckwheat	N
Polygonaceae	Buckwheat family	*Eriogonum wrightii var. subscaposum*	Wright’s buckwheat	N
Polygonaceae	Buckwheat family	*Rhamnus crocea*	redberry	N
Polygonaceae	Buckwheat family	*Rumex crispus*	curly dock	Y
Rosaceae	Rose family	*Adenostoma fasciculatum*	chamise	N
Rosaceae	Rose family	*Cercocarpus betuloides var. betuloides*	birch-leaf mountain-	N

TABLE A-2 (CONTINUED)

Scientific Family Name	Common Family Name	Scientific Species Name	Common Species Name	Non-Native
			mahogany	
Rosaceae	Rose family	*Heteromeles arbutifolia*	toyon	N
Rosaceae	Rose family	*Prunus ilicifolia var. ilicifolia*	holly-leaf cherry	N
Rubiaceae	Madder family	*Galium angustifolium*	narrow-leaved bedstraw	N
Rubiaceae	Madder family	*Galium aparine*	goose grass	N
Salicaceae	Willow family	*Populus fremontii*	Fremont's cottonwood	N
Salicaceae	Willow family	*Salix exigua*	narrow-leaved willow	N
Salicaceae	Willow family	*Salix gooddingii*	Goodding's willow	N
Salicaceae	Willow family	*Salix laevigata*	red willow	N
Salicaceae	Willow family	*Salix lasiolepis*	arroyo willow	N
Scrophulariaceae	Figwort family	*Keckiella antirrhinoides subsp. antirrhinoides*	yellow bush penstemon	N
Scrophulariaceae	Figwort family	*Mimulus aurantiacus*	bush monkeyflower	N
Scrophulariaceae	Figwort family	*Scrophularia californica*	California figwort	N
Solanaceae	Nightshade family	*Datura wrightii*	western jimsonweed	N
Solanaceae	Nightshade family	*Nicotiana glauca*	tree tobacco	N
Solanaceae	Nightshade family	*Nicotiana quadrivalvis*	Indian tobacco	N
Tamaricaceae	Tamarisk family	*Tamarix ramoissima*	tamarisk	Y
Urticaceae	Nettle family	*Urtica urens*	dwarf nettle	Y

APPENDIX B

Wildlife Species Recorded within the SJWA

Table B-1. Wildlife Species Recorded within the SJWA – Davis Unit

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Invertebrates	Butterflies and Moths	*Junonia coenia*	Buckeye	
Vertebrata	Amphibians	*Batrachoceps pacificus*	Channel Islands slender salamander	
Vertebrata	Amphibians	*Spea hammondii*	Western spadefoot	
Vertebrata	Birds	*Anthus spinoletta*	American pipit	
Vertebrata	Birds	*Calamospiza melanocorys*	Lark bunting	
Vertebrata	Birds	*Calcarius mccownii*	McCown's longspur	
Vertebrata	Birds	*Calidris bairdii*	Baird's sandpiper	
Vertebrata	Birds	*Calidris himantopus*	Stilt sandpiper	
Vertebrata	Birds	*Contopus borealis*	Olive-sided flycatcher	
Vertebrata	Birds	*Cygnus columbianus*	Tundra swan	
Vertebrata	Birds	*Icterus galbula*	Franklin's gull	Y
Vertebrata	Birds	*Larus pipixcan*	Baltimore oriole	
Vertebrata	Birds	*Melospiza georgiana*	Swamp sparrow	
Vertebrata	Birds	*Pipilo fuscus*	Canyon towhee	Y
Vertebrata	Birds	*Tringa solitaria*	Solitary sandpiper	
Vertebrata	Birds	*Zonotrichia albicollis*	White-throated sparrow	
Vertebrata	Mammals	*Felis rufus*	Bobcat	
Vertebrata	Mammals	*Odocoileus hemionus*	Mule deer	
Vertebrata	Mammals	*Perognathus californicus*	California pocket mouse	
Vertebrata	Mammals	*Perognathus fallax*	San Diego pocket mouse	
Vertebrata	Mammals	*Procyon lotor*	Commoon raccoon	
Vertebrata	Reptiles	*Clemmys marmorata*	Southern Pacific pond turtle	
Vertebrata	Reptiles	*Cnemidophorus hyperythrus*	Orange-throated whiptail	
Vertebrata	Reptiles	*Cnemidophorus tigris*	Tiger whiptail	
Vertebrates	Amphibians	*Bufo boreas*	Western toad	
Vertebrates	Amphibians	*Hyla regilla*	Pacific treefrog	

TABLE B-1 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Amphibians	*Rana catesbeiana*	Bullfrog	X
Vertebrates	Amphibians	*Spea [Scaphiopus] hammondii*	Western spadefoot	
Vertebrates	Birds	*Accipiter cooperii*	Cooper's hawk	
Vertebrates	Birds	*Accipiter striatus*	Sharp-shinned hawk	
Vertebrates	Birds	*Actitis macularia*	Spotted sandpiper	
Vertebrates	Birds	*Aeronautes saxatalis*	White-throated swift	
Vertebrates	Birds	*Agelaius phoeniceus*	Red-winged blackbird	
Vertebrates	Birds	*Agelaius tricolor*	Tricolored blackbird	
Vertebrates	Birds	*Aimophila ruficeps*	Rufous-crowned sparrow	
Vertebrates	Birds	*Aix sponsa*	Wood duck	
Vertebrates	Birds	*Ammodramus savannarum*	Grasshopper sparrow	
Vertebrates	Birds	*Amphispiza belli*	Sage sparrow	
Vertebrates	Birds	*Amphispiza bilineata*	Black-throated sparrow	
Vertebrates	Birds	*Anas acuta*	Northern pintail	
Vertebrates	Birds	*Anas americana*	American widgeon	
Vertebrates	Birds	*Anas crecca*	Green-winged teal	
Vertebrates	Birds	*Anas cyanoptera*	Cinnamon teal	
Vertebrates	Birds	*Anas discors*	Blue-winged teal	
Vertebrates	Birds	*Anas penelope*	Eurasian widgeon	
Vertebrates	Birds	*Anas platyrhynchos*	Mallard	
Vertebrates	Birds	*Anas strepera*	Gadwall	
Vertebrates	Birds	*Anser albifrons*	Greater white-fronted goose	
Vertebrates	Birds	*Anthus rubescens*	American pipit	
Vertebrates	Birds	*Aquila chrysaetos*	Golden eagle	
Vertebrates	Birds	*Archilochus alexandri*	Black-chinned hummingbird	
Vertebrates	Birds	*Ardea alba*	Great egret	
Vertebrates	Birds	*Ardea herodias*	Great blue heron	
Vertebrates	Birds	*Asio otus*	Long-eared owl	

TABLE B-1 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Birds	*Athene cunicularia*	Burrowing owl	
Vertebrates	Birds	*Aythya affinis*	Lesser scaup	
Vertebrates	Birds	*Aythya americana*	Redhead	
Vertebrates	Birds	*Aythya collaris*	Ring-necked duck	
Vertebrates	Birds	*Aythya marila*	Greater scaup	
Vertebrates	Birds	*Aythya valisineria*	Canvasback	
Vertebrates	Birds	*Bombycilla cedrorum*	Cedar waxwing	
Vertebrates	Birds	*Branta canadensis*	Canada goose	
Vertebrates	Birds	*Bubo virginianus*	Great horned owl	
Vertebrates	Birds	*Bucephala albeola*	Bufflehead	
Vertebrates	Birds	*Bucephala clangula*	Common goldeneye	
Vertebrates	Birds	*Buteo jamaicensis*	Red-tailed hawk	
Vertebrates	Birds	*Buteo lagopus*	Rough-legged hawk	
Vertebrates	Birds	*Buteo lineatus*	Red-shouldered hawk	
Vertebrates	Birds	*Buteo regalis*	Ferruginous hawk	
Vertebrates	Birds	*Buteo swainsoni*	Swainson's hawk	
Vertebrates	Birds	*Calcarius lapponicus*	Lapland longspur	
Vertebrates	Birds	*Calcarius ornatus*	Chestnut-collared longspur	
Vertebrates	Birds	*Calidris alpina*	Dunlin	
Vertebrates	Birds	*Calidris mauri*	Western sandpiper	
Vertebrates	Birds	*Calidris minutilla*	Least sandpiper	
Vertebrates	Birds	*Callipepla californica*	California quail	
Vertebrates	Birds	*Calypte anna*	Anna's hummingbird	
Vertebrates	Birds	*Calypte costae*	Costa's hummingbird	
Vertebrates	Birds	*Campylorhynchus brunneicapillus*	Cactus wren	
Vertebrates	Birds	*Carduelis pinus*	Pine siskin	
Vertebrates	Birds	*Carduelis psaltria*	Lesser goldfinch	
Vertebrates	Birds	*Carduelis tristis*	American goldfinch	

TABLE B-1 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Birds	*Carpodacus mexicanus*	House finch	
Vertebrates	Birds	*Cathartes aura*	Turkey vulture	
Vertebrates	Birds	*Catharus guttatus*	Hermit thrush	
Vertebrates	Birds	*Catharus ustulatus*	Swainson's thrush	
Vertebrates	Birds	*Catherpes mexicanus*	Canyon wren	
Vertebrates	Birds	*Catoptrophorus semipalmatus*	Willet	
Vertebrates	Birds	*Ceryle alcyon*	Belted kingfisher	
Vertebrates	Birds	*Chaetura vauxi*	Vaux's swift	
Vertebrates	Birds	*Charadrius montanus*	Mountain plover	
Vertebrates	Birds	*Charadrius semipalmatus*	Semipalmated plover	
Vertebrates	Birds	*Charadrius vociferus*	Killdeer	
Vertebrates	Birds	*Chen caerulescens*	Snow goose	
Vertebrates	Birds	*Circus cyaneus*	Northern harrier	
Vertebrates	Birds	*Cistothorus palustris*	Marsh wren	
Vertebrates	Birds	*Colaptes auratus*	Northern flicker	
Vertebrates	Birds	*Columba livia*	Rock pigeon	X
Vertebrates	Birds	*Contopus sordidulus*	Western wood-pewee	
Vertebrates	Birds	*Corvus brachyrhynchos*	American crow	
Vertebrates	Birds	*Corvus corax*	Common raven	
Vertebrates	Birds	*Cypseloides niger*	Black swift	
Vertebrates	Birds	*Dendroica coronata*	Yellow-rumped warbler	
Vertebrates	Birds	*Dendroica nigrescens*	Black-throated gray warbler	
Vertebrates	Birds	*Dendroica occidentalis*	Hermit warbler	
Vertebrates	Birds	*Dendroica petechia brewsteri*	Yellow warbler	
Vertebrates	Birds	*Dendroica townsendi*	Townsend's warbler	
Vertebrates	Birds	*Egretta thula*	Snowy egret	
Vertebrates	Birds	*Elanus leucurus*	White-tailed kite	
Vertebrates	Birds	*Empidonax difficilis*	Pacific-slope flycatcher	

TABLE B-1 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Birds	*Empidonax hammondii*	Hammond's flycatcher	
Vertebrates	Birds	*Empidonax traillii*	Willow flycatcher	
Vertebrates	Birds	*Eremophila alpestris*	California horned lark	
Vertebrates	Birds	*Eremophila alpestris actia*	California horned lark	
Vertebrates	Birds	*Euphagus cyanocephalus*	Brewer’s blackbird	
Vertebrates	Birds	*Falco columbarius*	Merlin	
Vertebrates	Birds	*Falco peregrinus*	Peregrine falcon	
Vertebrates	Birds	*Falco sparverius*	American kestrel	
Vertebrates	Birds	*Fulica americana*	American coot	
Vertebrates	Birds	*Gallinago gallinago*	Common snipe	
Vertebrates	Birds	*Gallinula chloropus*	Common moorhen	
Vertebrates	Birds	*Geococcyx californianus*	Greater roadrunner	
Vertebrates	Birds	*Geothlypis trichas*	Common yellowthroat	
Vertebrates	Birds	*Guiraca caerulea*	Blue grosbeak	
Vertebrates	Birds	*Haliaeetus leucocephalus*	Bald eagle	
Vertebrates	Birds	*Himantopus mexicanus*	Black-necked stilt	
Vertebrates	Birds	*Hirundo rustica*	Barn swallow	
Vertebrates	Birds	*Icterus bullockii*	Bullock’s oriole	
Vertebrates	Birds	*Icterus cucullatus*	Hooded oriole	
Vertebrates	Birds	*Icterus parisorum*	Scott’s oriole	
Vertebrates	Birds	*Ixoreus naevius*	Varied thrush	
Vertebrates	Birds	*Junco hyemalis*	Dark-eyed junco	
Vertebrates	Birds	*Lanius ludovicianus*	Loggerhead shrike	
Vertebrates	Birds	*Larus californicus*	California gull	
Vertebrates	Birds	*Larus delawarensis*	Ring-billed gull	
Vertebrates	Birds	*Larus philadelphia*	Bonaparte’s gull	
Vertebrates	Birds	*Limnodromus griseus*	Short-billed dowitcher	
Vertebrates	Birds	*Limnodromus scolopaceus*	Long-billed dowitcher	

TABLE B-1 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Birds	*Melanerpes formicivorus*	Acorn woodpecker	
Vertebrates	Birds	*Melospiza lincolnii*	Lincoln's sparrow	
Vertebrates	Birds	*Melospiza melodia*	Song sparrow	
Vertebrates	Birds	*Mergus merganser*	Common merganser	
Vertebrates	Birds	*Mimus polyglottos*	Northern mockingbird	
Vertebrates	Birds	*Molothrus ater*	Brown-headed cowbird	
Vertebrates	Birds	*Myiarchus cinerascens*	Ash-throated flycatcher	
Vertebrates	Birds	*Numenius americanus*	Long-billed curlew	
Vertebrates	Birds	*Numenius phaeopus*	Whimbrel	
Vertebrates	Birds	*Nycticorax nycticorax*	Black-crowned night-heron	
Vertebrates	Birds	*Oporornis tolmiei*	MacGillivray's warbler	
Vertebrates	Birds	*Oreoscoptes montanus*	Sage thrasher	
Vertebrates	Birds	*Oxyura jamaicensis*	Ruddy duck	
Vertebrates	Birds	*Pandion haliaetus*	Osprey	
Vertebrates	Birds	*Passer domesticus*	House sparrow	X
Vertebrates	Birds	*Passerculus sandwichensis*	Savannah sparrow	
Vertebrates	Birds	*Passerella iliaca*	Fox sparrow	
Vertebrates	Birds	*Passerina amoena*	Lazuli bunting	
Vertebrates	Birds	*Pelecanus erythrorhynchos*	American white pelican	
Vertebrates	Birds	*Pelecanus occidentalis*	Brown pelican	
Vertebrates	Birds	*Petrochelidon pyrrhonota*	Cliff swallow	
Vertebrates	Birds	*Phainopepla nitens*	Phainopepla	
Vertebrates	Birds	*Phalacrocorax auritus*	Double-crested cormorant	
Vertebrates	Birds	*Phalaropus lobatus*	Red-necked phalarope	
Vertebrates	Birds	*Phalaropus tricolor*	Wilson's phalarope	
Vertebrates	Birds	*Phasianus colchicus*	Ring-necked pheasant	
Vertebrates	Birds	*Pheucticus melanocephalus*	Black-headed grosbeak	
Vertebrates	Birds	*Picoides nuttallii*	Nuttall's woodpecker	

TABLE B-1 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Birds	*Picoides pubescens*	Downy woodpecker	
Vertebrates	Birds	*Picoides villosus*	Hairy woodpecker	
Vertebrates	Birds	*Pipilo crissalis*	California towhee	
Vertebrates	Birds	*Pipilo maculatus*	Spotted towhee	
Vertebrates	Birds	*Piranga ludoviciana*	Western tanager	
Vertebrates	Birds	*Plegadis chihi*	White-faced ibis	
Vertebrates	Birds	*Pluvialis squatarola*	Black-bellied plover	
Vertebrates	Birds	*Podilymbus podiceps*	Pied-billed grebe	
Vertebrates	Birds	*Polioptila caerulea*	Blue-gray gnatcatcher	
Vertebrates	Birds	*Polioptila californica californica*	Coastal California gnatcatcher	
Vertebrates	Birds	*Pooecetes gramineus*	Vesper sparrow	
Vertebrates	Birds	*Porzana carolina*	Sora	
Vertebrates	Birds	*Progne subis*	Purple martin	
Vertebrates	Birds	*Psaltriparus minimus*	Bushtit	
Vertebrates	Birds	*Rallus limicola*	Virginia rail	
Vertebrates	Birds	*Recurvirostra americana*	American avocet	
Vertebrates	Birds	*Regulus calendula*	Ruby-crowned kinglet	
Vertebrates	Birds	*Riparia riparia*	Bank swallow	
Vertebrates	Birds	*Salpinctes obsoletus*	Rock wren	
Vertebrates	Birds	*Sayornis nigricans*	Black phoebe	
Vertebrates	Birds	*Sayornis saya*	Say’s phoebe	
Vertebrates	Birds	*Selasphorus rufus*	Rufous hummingbird	
Vertebrates	Birds	*Selasphorus sasin*	Allen's hummingbird	
Vertebrates	Birds	*Sialia currucoides*	Mountain bluebird	
Vertebrates	Birds	*Sialia mexicana*	Western bluebird	
Vertebrates	Birds	*Sitta carolinensis*	White-breasted nuthatch	
Vertebrates	Birds	*Spizella atrogularis*	Black-chinned sparrow	
Vertebrates	Birds	*Spizella breweri*	Brewer’s sparrow	

TABLE B-1 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Birds	*Spizella passerina*	Chipping sparrow	
Vertebrates	Birds	*Stelgidopteryx serripennis*	Northern rough-winged swallow	
Vertebrates	Birds	*Sterna caspia*	Caspian tern	
Vertebrates	Birds	*Sterna forsteri*	Forster's tern	
Vertebrates	Birds	*Streptopelia chinensis*	Spotted dove	
Vertebrates	Birds	*Sturnella neglecta*	Western meadowlark	
Vertebrates	Birds	*Sturnus vulgaris*	European starling	X
Vertebrates	Birds	*Tachycineta bicolor*	Tree swallow	
Vertebrates	Birds	*Tachycineta thalassina*	Violet-green swallow	
Vertebrates	Birds	*Thryomanes bewickii*	Bewick's wren	
Vertebrates	Birds	*Toxostoma bendirei*	Bendire's thrasher	
Vertebrates	Birds	*Toxostoma redivivum*	California thrasher	
Vertebrates	Birds	*Tringa flavipes*	Lesser yellowlegs	
Vertebrates	Birds	*Tringa melanoleuca*	Greater yellowlegs	
Vertebrates	Birds	*Troglodytes aedon*	House wren	
Vertebrates	Birds	*Tyrannus tyrannus*	Western kingbird	
Vertebrates	Birds	*Tyrannus verticalis*	Western kingbird	
Vertebrates	Birds	*Tyrannus vociferans*	Cassin's kingbird	
Vertebrates	Birds	*Vermivora celata*	Orange-crowned warbler	
Vertebrates	Birds	*Vermivora ruficapilla*	Nashville warbler	
Vertebrates	Birds	*Vireo bellii pusillus*	Least Bell's vireo	
Vertebrates	Birds	*Vireo cassinii*	Cassin's vireo	
Vertebrates	Birds	*Vireo gilvus*	Warbling vireo	
Vertebrates	Birds	*Vireo solitarius*	Blue-headed vireo	
Vertebrates	Birds	*Wilsonia pusilla*	Wilson's warbler	
Vertebrates	Birds	*Xanthocephalus xanthocephalus*	Yellow-headed blackbird	
Vertebrates	Birds	*Zenaida macroura*	Mourning dove	
Vertebrates	Birds	*Zonotrichia atricapilla*	Golden-crowned sparrow	

TABLE B-1 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Birds	*Zonotrichia leucophrys*	White-crowned sparrow	
Vertebrates	Mammals	*Canis latrans*	Coyote	
Vertebrates	Mammals	*Chaetodipus fallax fallax*	Northwestern San Diego pocket mouse	
Vertebrates	Mammals	*Didelphis virginiana*	Virginia opossum	X
Vertebrates	Mammals	*Dipodomys agilis*	Agile (Pacific) kangaroo rat	
Vertebrates	Mammals	*Dipodomys merriami parvus*	San Bernardino Merriams' kangaroo rat	
Vertebrates	Mammals	*Dipodomys simulans*	Dulzura kangaroo rat	
Vertebrates	Mammals	*Dipodomys stephensi*	Stephens' kangaroo rat	
Vertebrates	Mammals	*Eumops perotis californicus*	Western mastiff bat	
Vertebrates	Mammals	*Felis concolor*	Mountain lion	
Vertebrates	Mammals	*Lepus californicus*	Black-tailed jackrabbit	
Vertebrates	Mammals	*Lepus californicus bennettii*	San Diego black-tailed jackrabbit	
Vertebrates	Mammals	*Lynx rufus*	Bobcat	
Vertebrates	Mammals	*Mephitis mephitis*	Striped skunk	
Vertebrates	Mammals	*Microtus californicus*	California vole	
Vertebrates	Mammals	*Mus musculus*	House mouse	X
Vertebrates	Mammals	*Mustela frenata*	Long-tailed weasel	
Vertebrates	Mammals	*Neotoma lepida*	Desert woodrat	
Vertebrates	Mammals	*Neotoma lepida intermedia*	San Diego desert woodrat	
Vertebrates	Mammals	*Notiosorex crawfordi*	Desert shrew	
Vertebrates	Mammals	*Perognathus Longimembris*	Little pocket mouse	
Vertebrates	Mammals	*Perognathus longimembris brevinasus*	Los Angeles pocket mouse	
Vertebrates	Mammals	*Peromyscus eremicus*	Cactus mouse	
Vertebrates	Mammals	*Peromyscus maniculatus*	Deer mouse	
Vertebrates	Mammals	*Reithrodontomys megalotis*	Western harvest mouse	
Vertebrates	Mammals	*Spermophilus beecheyi*	California ground squirrel	
Vertebrates	Mammals	*Sylvilagus audubonii*	Desert cottontail	
Vertebrates	Mammals	*Sylvilagus bachmani*	Brush rabbit	

TABLE B-1 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Mammals	*Taxidea taxus*	American badger	
Vertebrates	Mammals	*Thomomys bottae*	Botta's pocket gopher	
Vertebrates	Reptiles	*Arizona elegans*	Glossy snake	
Vertebrates	Reptiles	*Aspidoscelis hyperythra*	Orange-throated whiptail	
Vertebrates	Reptiles	*Crotalus ruber*	Red-diamond rattlesnake	
Vertebrates	Reptiles	*Crotalus ruber ruber*	Northern red-diamond rattlesnake	
Vertebrates	Reptiles	*Crotalus viridis*	Western rattlesnake	
Vertebrates	Reptiles	*Gerrhonotus multicarinatus*	Southern alligator lizard	
Vertebrates	Reptiles	*Hypsiglena torquata*	Night snake	
Vertebrates	Reptiles	*Lampropeltis getulus*	Common kingsnake	
Vertebrates	Reptiles	*Lichanura trivirgata*	Rosy boa	
Vertebrates	Reptiles	*Masticophis flagellum*	Coachwhip	
Vertebrates	Reptiles	*Masticophis lateralis*	California whipsnake	
Vertebrates	Reptiles	*Pituophis melanoleucus*	Gopher snake	
Vertebrates	Reptiles	*Sceloporus occidentalis*	Western fence lizard	
Vertebrates	Reptiles	*Sceloporus orcutti*	Granite spiny lizard	
Vertebrates	Reptiles	*Thamnophis couchii*	Western aquatic garter snake	
Vertebrates	Reptiles	*Trimorphodon biscutatus*	Lyre snake	
Vertebrates	Reptiles	*Uta stansburiana*	Side-blotched lizard	
Vertebrates	Reptiles	*Xantusia henshawi*	Granite night lizard	

TABLE B-2. WILDLIFE SPECIES RECORDED WITHIN THE SJWA – POTRERO UNIT

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Amphibians	*Bufo boreas*	Western toad	
Vertebrates	Amphibians	*Spea hammondii*	Western spadefoot	
Vertebrates	Birds	*Accipiter cooperii*	Cooper's hawk	
Vertebrates	Birds	*Accipiter striatus*	Sharp-shinned hawk	
Vertebrates	Birds	*Agelaius phoeniceus*	Red-winged blackbird	
Vertebrates	Birds	*Agelaius tricolor*	Tricolored blackbird	
Vertebrates	Birds	*Aimophila cassinii*	Casin's sparrow	
Vertebrates	Birds	*Aimophila ruficeps*	Rufous-crowned sparrow	
Vertebrates	Birds	*Ammodramus savannarum*	Grasshopper sparrow	
Vertebrates	Birds	*Amphispiza belli*	Sage sparrow	
Vertebrates	Birds	*Amphispiza belli belli*	Bell's sage sparrow	
Vertebrates	Birds	*Aphelocoma californica*	Western scrub-jay	
Vertebrates	Birds	*Aquila chrysaetos*	Golden eagle	
Vertebrates	Birds	*Archilochus alexandri*	Black-chinned hummingbird	
Vertebrates	Birds	*Athene cunicularia*	Burrowing owl	
Vertebrates	Birds	*Baeolophus inornatus*	Oak titmouse	
Vertebrates	Birds	*Bubo virginianus*	Great horned owl	
Vertebrates	Birds	*Bucephala clangula*	Common goldeneye	
Vertebrates	Birds	*Buteo jamaicensis*	Red-tailed hawk	
Vertebrates	Birds	*Buteo lineatus*	Red-shouldered hawk	
Vertebrates	Birds	*Buteo regalis*	Ferruginous hawk	
Vertebrates	Birds	*Callipepla californica*	California quail	
Vertebrates	Birds	*Calypte anna*	Anna's hummingbird	
Vertebrates	Birds	*Calypte costae*	Costa's hummingbird	
Vertebrates	Birds	*Carduelis lawrencei*	Lawrence's goldfinch	
Vertebrates	Birds	*Carduelis psaltria*	Lesser goldfinch	

TABLE B-2 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Birds	*Carduelis tristis*	American goldfinch	
Vertebrates	Birds	*Carpodacus mexicanus*	House finch	
Vertebrates	Birds	*Cathartes aura*	Turkey vulture	
Vertebrates	Birds	*Catharus guttatus*	Hermit thrush	
Vertebrates	Birds	*Catharus ustulatus*	Swainson's thrush	
Vertebrates	Birds	*Chamaea fasciata*	Wrentit	
Vertebrates	Birds	*Chondestes grammacus*	Lark sparrow	
Vertebrates	Birds	*Circus cyaneus*	Northern harrier	
Vertebrates	Birds	*Colaptes auratus*	Northern flicker	
Vertebrates	Birds	*Columba livia*	Rock pigeon	X
Vertebrates	Birds	*Contopus sordidulus*	Western wood-pewee	
Vertebrates	Birds	*Corvus brachyrhynchos*	American crow	
Vertebrates	Birds	*Corvus corax*	Common raven	
Vertebrates	Birds	*Dendroica coronata*	Yellow-rumped warbler	
Vertebrates	Birds	*Dendroica nigrescens*	Black-throated gray warbler	
Vertebrates	Birds	*Dendroica petechia brewsteri*	Yellow warbler	
Vertebrates	Birds	*Elanus leucurus*	White-tailed kite	
Vertebrates	Birds	*Empidonax difficilis*	Pacific-slope flycatcher	
Vertebrates	Birds	*Eremophila alpestris*	California horned lark	
Vertebrates	Birds	*Eremophila alpestris actia*	California horned lark	
Vertebrates	Birds	*Euphagus cyanocephalus*	Brewer's blackbird	
Vertebrates	Birds	*Falco columbarius*	Merlin	
Vertebrates	Birds	*Falco mexicanus*	Prairie falcon	
Vertebrates	Birds	*Falco peregrinus*	Peregrine falcon	
Vertebrates	Birds	*Falco sparverius*	American kestrel	
Vertebrates	Birds	*Fulica americana*	American coot	
Vertebrates	Birds	*Geococcyx californianus*	Greater roadrunner	
Vertebrates	Birds	*Geothlypis trichas*	Common yellowthroat	

TABLE B-2 (CONTINUED)

Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Birds	*Guiraca caerulea*	Blue grosbeak	
Vertebrates	Birds	*Icterus bullockii*	Bullock's oriole	
Vertebrates	Birds	*Icterus cucullatus*	Hooded oriole	
Vertebrates	Birds	*Junco hyemalis*	Dark-eyed junco	
Vertebrates	Birds	*Lanius ludovicianus*	Loggerhead shrike	
Vertebrates	Birds	*Melanerpes lewis*	Lewis's woodpecker	
Vertebrates	Birds	*Melospiza melodia*	Song sparrow	
Vertebrates	Birds	*Mimus polyglottos*	Northern mockingbird	
Vertebrates	Birds	*Molothrus ater*	Brown-headed cowbird	
Vertebrates	Birds	*Myiarchus cinerascens*	Ash-throated flycatcher	
Vertebrates	Birds	*Oreortyx pictus*	Mountain quail	
Vertebrates	Birds	*Passerculus sandwichensis*	Savannah sparrow	
Vertebrates	Birds	*Passerina amoena*	Lazuli bunting	
Vertebrates	Birds	*Petrochelidon pyrrhonota*	Cliff swallow	
Vertebrates	Birds	*Phainopepla nitens*	Phainopepla	
Vertebrates	Birds	*Phalacrocorax auritus*	Double-crested cormorant	
Vertebrates	Birds	*Phalaenoptilus nuttallii*	Common poorwill	
Vertebrates	Birds	*Pheucticus melanocephalus*	Black-headed grosbeak	
Vertebrates	Birds	*Picoides nuttallii*	Nuttall's woodpecker	
Vertebrates	Birds	*Picoides pubescens*	Downy woodpecker	
Vertebrates	Birds	*Pipilo crissalis*	California towhee	
Vertebrates	Birds	*Pipilo maculatus*	Spotted towhee	
Vertebrates	Birds	*Piranga ludoviciana*	Western tanager	
Vertebrates	Birds	*Polioptila caerulea*	Blue-gray gnatcatcher	
Vertebrates	Birds	*Pooecetes gramineus*	Vesper sparrow	
Vertebrates	Birds	*Psaltriparus minimus*	Bushtit	
Vertebrates	Birds	*Regulus calendula*	Ruby-crowned kinglet	
Vertebrates	Birds	*Salpinctes obsoletus*	Rock wren	

TABLE B-2 (CONTINUED)

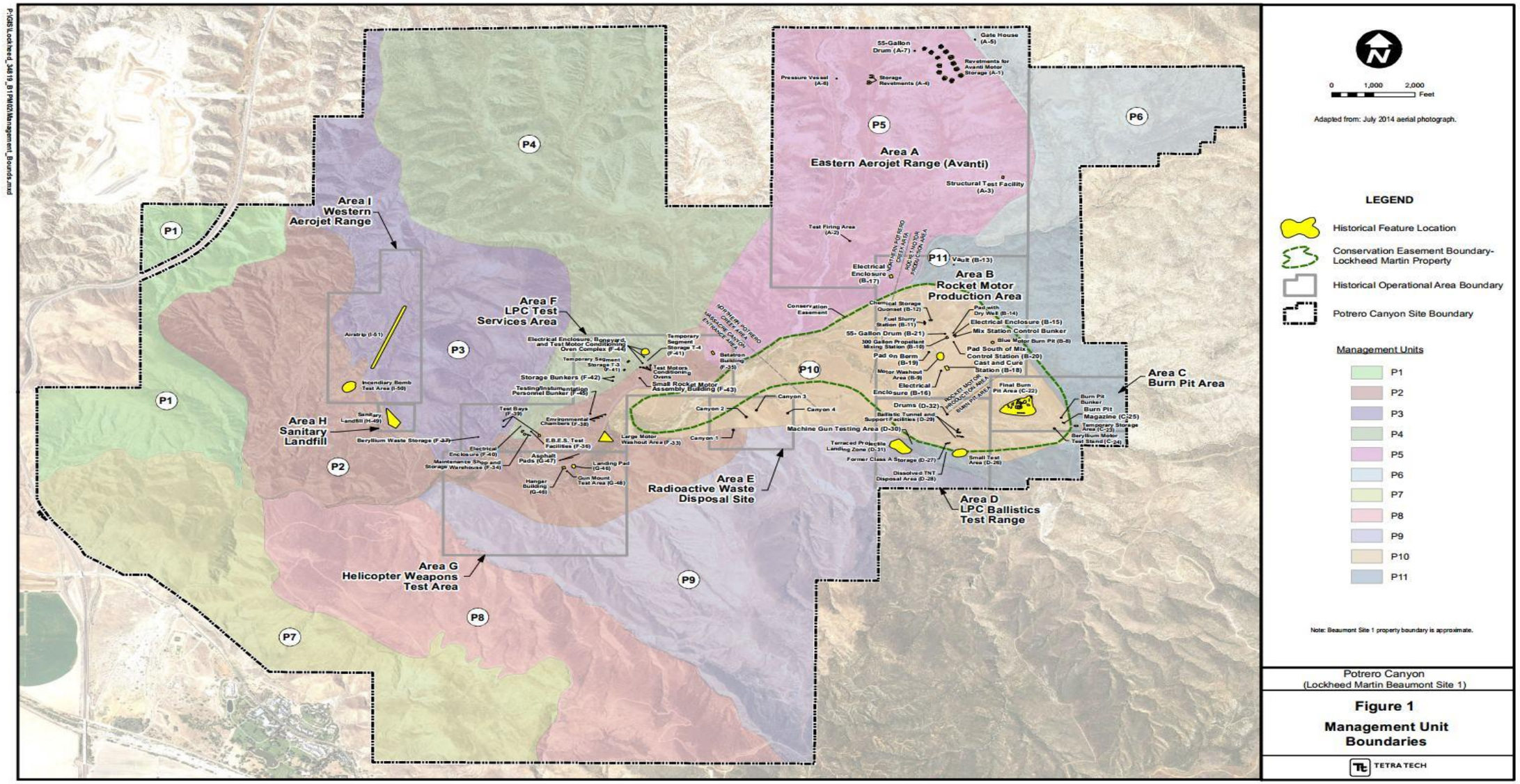
Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Birds	*Sayornis nigricans*	Black phoebe	
Vertebrates	Birds	*Sayornis saya*	Say's phoebe	
Vertebrates	Birds	*Sialia mexicana*	Western bluebird	
Vertebrates	Birds	*Sitta carolinensis*	White-breasted nuthatch	
Vertebrates	Birds	*Spizella atrogularis*	Black-chinned sparrow	
Vertebrates	Birds	*Spizella breweri*	Brewer's sparrow	
Vertebrates	Birds	*Stelgidopteryx serripennis*	Northern rough-winged swallow	
Vertebrates	Birds	*Sturnella neglecta*	Western meadowlark	
Vertebrates	Birds	*Sturnus vulgaris*	European starling	X
Vertebrates	Birds	*Tachycineta bicolor*	Tree swallow	
Vertebrates	Birds	*Tachycineta thalassina*	Violet-green swallow	
Vertebrates	Birds	*Thryomanes bewickii*	Bewick's wren	
Vertebrates	Birds	*Toxostoma redivivum*	California thrasher	
Vertebrates	Birds	*Troglodytes aedon*	House wren	
Vertebrates	Birds	*Tyrannus tyrannus*	Western kingbird	
Vertebrates	Birds	*Tyrannus vociferans*	Cassin's kingbird	
Vertebrates	Birds	*Tyto alba*	Barn owl	
Vertebrates	Birds	*Vermivora celata*	Orange-crowned warbler	
Vertebrates	Birds	*Vermivora ruficapilla*	Nashville warbler	
Vertebrates	Birds	*Vireo bellii pusillus*	Least Bell's vireo	
Vertebrates	Birds	*Vireo gilvus*	Warbling vireo	
Vertebrates	Birds	*Vireo huttoni*	Hutton's vireo	
Vertebrates	Birds	*Wilsonia pusilla*	Wilson's warbler	
Vertebrates	Birds	*Zenaida asiatica*	White-winged dove	
Vertebrates	Birds	*Zenaida macroura*	Mourning dove	
Vertebrates	Birds	*Zonotrichia leucophrys*	White-crowned sparrow	
Vertebrates	Mammals	*Canis latrans*	Coyote	
Vertebrates	Mammals	*Chaetodipus fallax fallax*	Northwestern San Diego pocket mouse	

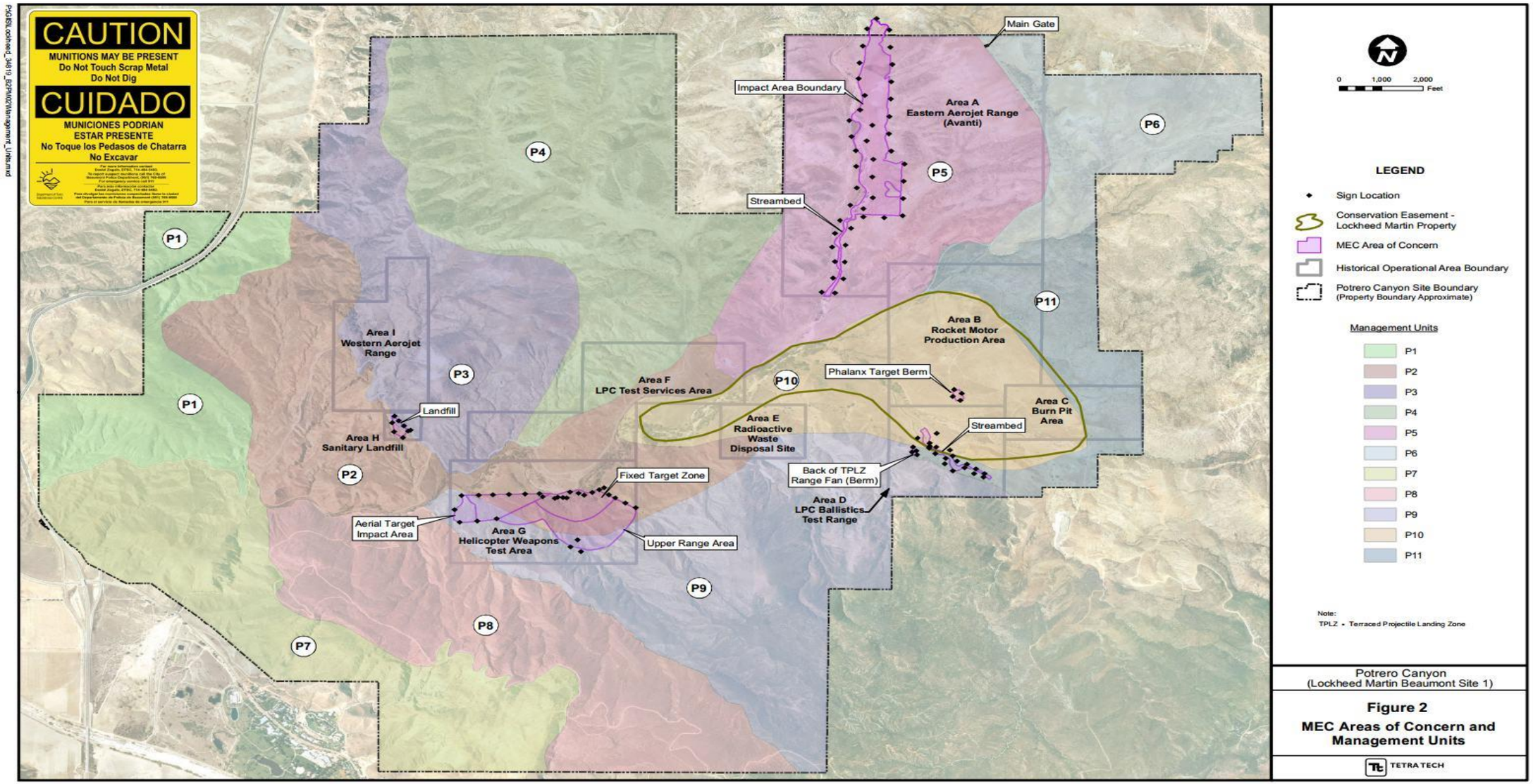
TABLE B-2 (CONTINUED)

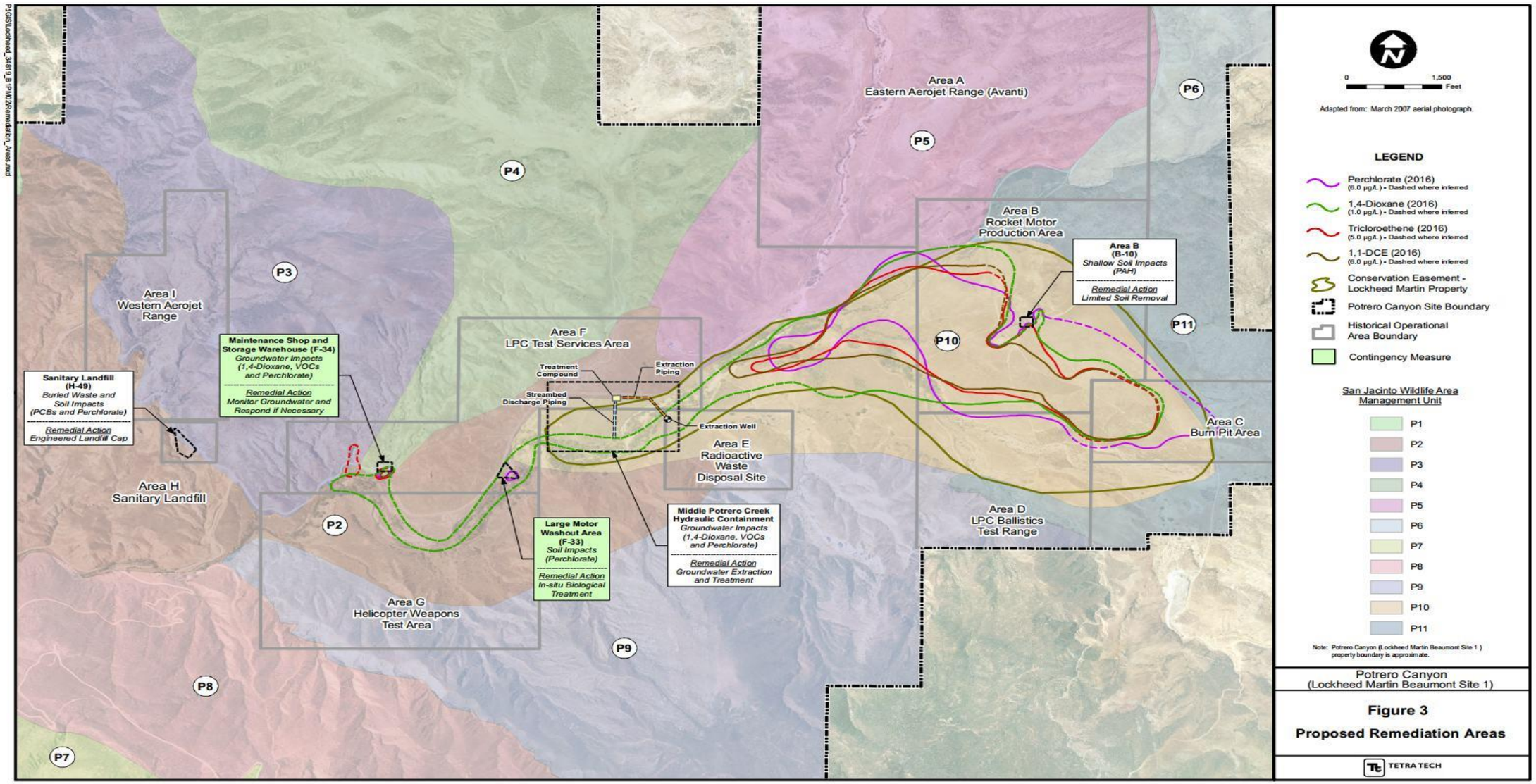
Subphylum	Class	Species Observed on SJWA	Common Species Name	Non-Native
Vertebrates	Mammals	*Dipodomys simulans*	Dulzura kangaroo rat	
Vertebrates	Mammals	*Dipodomys sp.*	kangaroo rat	
Vertebrates	Mammals	*Dipodomys stephensi*	Stephens' kangaroo rat	
Vertebrates	Mammals	*Lepus californicus bennettii*	San Diego black-tailed jackrabbit	
Vertebrates	Mammals	*Lynx rufus*	Bobcat	
Vertebrates	Mammals	*Microtus californicus*	California vole	
Vertebrates	Mammals	*Mustela frenata*	Long-tailed weasel	
Vertebrates	Mammals	*Neotoma sp.*	Woodrat	
Vertebrates	Mammals	*Peromyscus eremicus*	Cactus mouse	
Vertebrates	Mammals	*Peromyscus maniculatus*	Deer mouse	
Vertebrates	Mammals	*Procyon lotor psora*	Common raccoon	
Vertebrates	Mammals	*Reithrodontomys megalotis*	Western harvest mouse	
Vertebrates	Mammals	*Spermophilus beecheyi*	California ground squirrel	
Vertebrates	Mammals	*Sylvilagus audubonii*	Desert cottontail	
Vertebrates	Mammals	*Thomomys bottae*	Botta's pocket gopher	
Vertebrates	Mammals	*Urocyon cinereoargenteus californicus*	Gray fox	
Vertebrates	Reptiles	*Aspidoscelis hyperythra*	Orange-throated whiptail	
Vertebrates	Reptiles	*Crotalus ruber ruber*	Northern red-diamond rattlesnake	
Vertebrates	Reptiles	*Phrynosoma coronatum blainvillii*	Coast horned lizard	
Vertebrates	Reptiles	*Sceloporus orcutti*	Granite spiny lizard	

APPENDIX C

Maps of Lockheed Martin Corporation Management Areas, MEC Areas, and Remediation Areas


P:\GIS\Lockheed_34619_B1PM02\Management_Bounds.mxd
Area I
Western
Aerojet Range
Area F
LPC Test
Services Area
Area H
Sanitary
Landfill
Area G
Helicopter Weapons
Test Area
Area E
Radioactive Waste
Disposal Site
Area A
Eastern Aerojet Range (Avanti)
Area B
Rocket Motor
Production Area
Area C
Burn Pit Area
Area D
LPC Ballistics
Test Range
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
55-Gallon
Drum (A-7)
Gate House
(A-5)
Revetments for
Avanti Motor
Storage (A-1)
Pressure Vessel
(A-6)
Storage
Revetments (A-4)
Structural Test Facility
(A-3)
Test Firing Area
(A-2)
Vault (B-13)
Electrical
Enclosure
(B-17)
Conservation
Easement
Chemical Storage
Quonset (B-12)
Pad with
Dry Well (B-14)
Fuel Slurry
Station (B-11)
Electrical Enclosure (B-15)
Mix Station Control Bunker
55- Gallon Drum (B-21)
Blue Motor Burn Pit (B-8)
300 Gallon Propellant
Mixing Station (B-10)
Pad South of Mix
Control Station (B-20)
Pad on Berm
(B-19)
Cast and Cure
Station (B-18)
Motor Washout
Area (B-9)
Electrical
Enclosure (B-16)
Final Burn
Pit Area (C-22)
Drums (D-32)
Ballistic Tunnel and
Support Facilities (D-29)
Machine Gun Testing Area (D-30)
Burn Pit
Bunker
Burn Pit
Magazine (C-25)
Temporary Storage
Area (C-23)
Beryllium Motor
Test Stand (C-24)
Terraced Projectile
Landing Zone (D-31)
Former Class A Storage (D-27)
Small Test
Area (D-26)
Dissolved TNT
Disposal Area (D-28)
Airstrip (I-51)
Incendiary Bomb
Test Area (I-50)
Sanitary
Landfill (H-49)
Beryllium Waste Storage (F-33)
Electrical
Enclosure (F-40)
Maintenance Shop and
Storage Warehouse (F-34)
Test Bays
(F-39)
Environmental
Chambers (F-38)
E.B.E.S. Test
Facilities (F-36)
Asphalt
Pads (G-47)
Landing Pad
(G-46)
Gun Mount
Test Area (G-48)
Hangar
Building
(G-45)
Electrical Enclosure, Boneyard,
and Test Motor Conditioning
Oven Complex (F-44)
Temporary
Segment
Storage T-4
(F-41)
Temporary Segment
Storage T-3
(F-41)
Test Motors
Conditioning
Ovens
Storage Bunkers (F-42)
Testing/Instrumentation
Personnel Bunker (F-45)
Small Rocket Motor
Assembly Building (F-43)
Beatron
Building
(F-35)
Large Motor
Washout Area (F-33)
Canyon 1
Canyon 2
Canyon 3
Canyon 4
NORTHERN POTRERO
CREEK AREA
ROCKET MOTOR
PRODUCTION AREA
NORTHERN POTRERO
MAGAZINE CANYON
ENTRANCE AREA
ROCKET MOTOR
PRODUCTION AREA
BURN PIT AREA
0
1,000
2,000
Feet
Adapted from: July 2014 aerial photograph.
LEGEND
Historical Feature Location
Conservation Easement Boundary-
Lockheed Martin Property
Historical Operational Area Boundary
Potrero Canyon Site Boundary
Management Units
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
Note: Beaumont Site 1 property boundary is approximate.
Potrero Canyon
(Lockheed Martin Beaumont Site 1)
Figure 1
Management Unit
Boundaries
TETRA TECH


CAUTION
MUNITIONS MAY BE PRESENT
Do Not Touch Scrap Metal
Do Not Dig
CUIDADO
MUNICIONES PODRIAN
ESTAR PRESENTE
No Toque los Pedasos de Chatarra
No Excavar
Main Gate
Impact Area Boundary
Area A
Eastern Aerojet Range
(Avanti)
Streambed
Area I
Western Aerojet
Range
Area F
LPC Test Services Area
Area B
Rocket Motor
Production Area
Phalanx Target Berm
Area C
Burn Pit
Area
Area E
Radioactive
Waste
Disposal Site
Landfill
Area H
Sanitary Landfill
Fixed Target Zone
Back of TPLZ
Range Fan (Berm)
Area D
LPC Ballistics
Test Range
Aerial Target
Impact Area
Area G
Helicopter Weapons
Test Area
Upper Range Area
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
0
1,000
2,000
Feet
LEGEND
Sign Location
Conservation Easement -
Lockheed Martin Property
MEC Area of Concern
Historical Operational Area Boundary
Potrero Canyon Site Boundary
(Property Boundary Approximate)
Management Units
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
Note:
TPLZ - Terraced Projectile Landing Zone
Potrero Canyon
(Lockheed Martin Beaumont Site 1)
Figure 2
MEC Areas of Concern and
Management Units
TETRA TECH


Area A
Eastern Aerojet Range (Avanti)
Area B
Rocket Motor
Production Area
Area I
Western Aerojet
Range
Area F
LPC Test Services Area
Area E
Radioactive
Waste
Disposal Site
Area C
Burn Pit Area
Area H
Sanitary Landfill
Area G
Helicopter Weapons
Test Area
Area D
LPC Ballistics
Test Range
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
Sanitary Landfill (H-49)
Buried Waste and Soil Impacts (PCBs and Perchlorate)
Remedial Action
Engineered Landfill Cap
Maintenance Shop and Storage Warehouse (F-34)
Groundwater Impacts (1,4-Dioxane, VOCs and Perchlorate)
Remedial Action
Monitor Groundwater and Respond if Necessary
Area B (B-10)
Shallow Soil Impacts (PAH)
Remedial Action
Limited Soil Removal
Treatment Compound
Extraction Piping
Streambed Discharge Piping
Extraction Well
Large Motor Washout Area (F-33)
Soil Impacts (Perchlorate)
Remedial Action
In-situ Biological Treatment
Middle Potrero Creek Hydraulic Containment
Groundwater Impacts (1,4-Dioxane, VOCs and Perchlorate)
Remedial Action
Groundwater Extraction and Treatment
0
1,500
Feet
Adapted from: March 2007 aerial photograph.
LEGEND
Perchlorate (2016)
(6.0 µg/L) - Dashed where inferred
1,4-Dioxane (2016)
(1.0 µg/L) - Dashed where inferred
Tricloroethene (2016)
(5.0 µg/L) - Dashed where inferred
1,1-DCE (2016)
(6.0 µg/L) - Dashed where inferred
Conservation Easement - Lockheed Martin Property
Potrero Canyon Site Boundary
Historical Operational Area Boundary
Contingency Measure
San Jacinto Wildlife Area Management Unit
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
Note: Potrero Canyon (Lockheed Martin Beaumont Site 1) property boundary is approximate.
Potrero Canyon
(Lockheed Martin Beaumont Site 1)
Figure 3
Proposed Remediation Areas
TETRA TECH

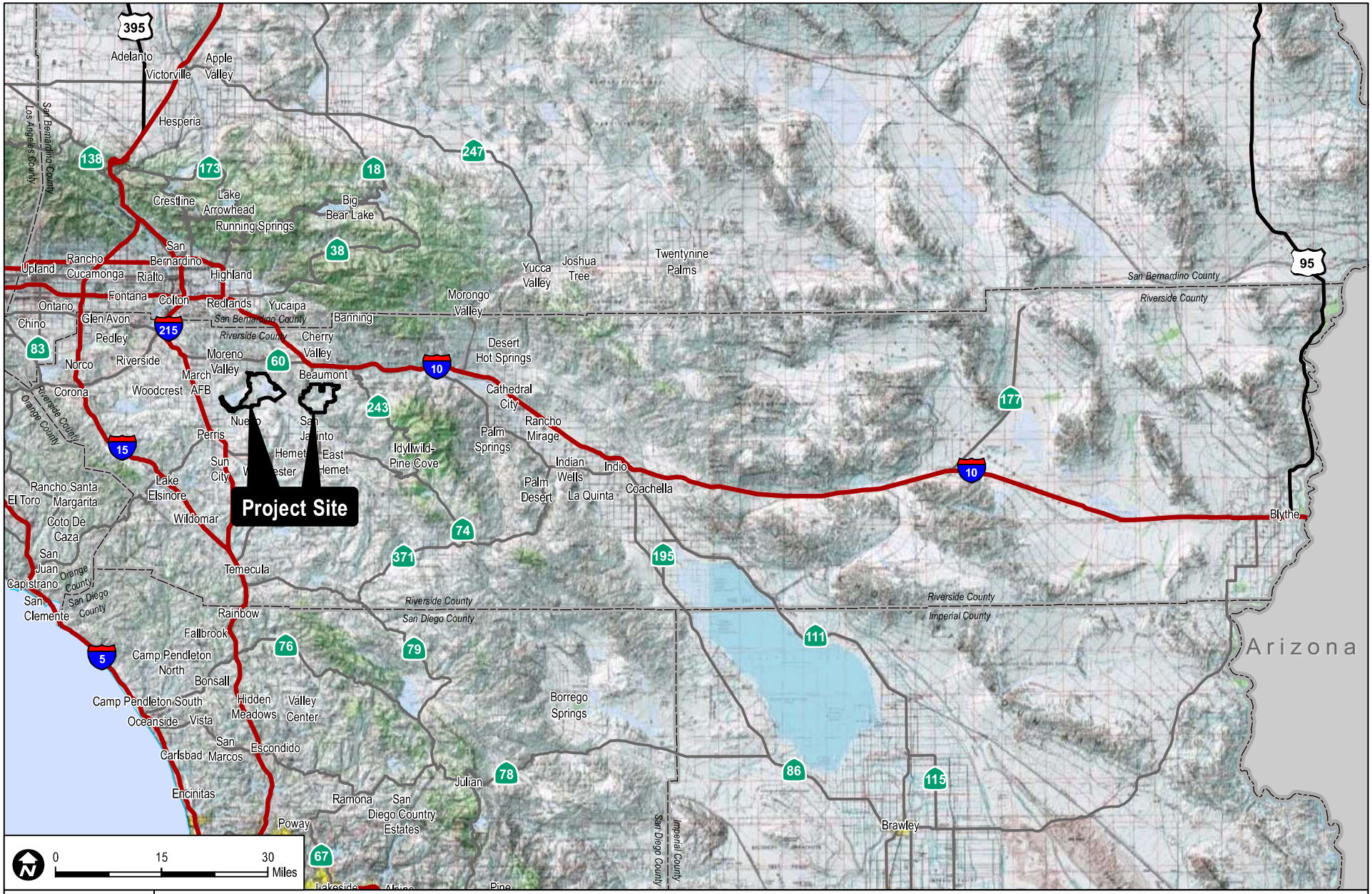


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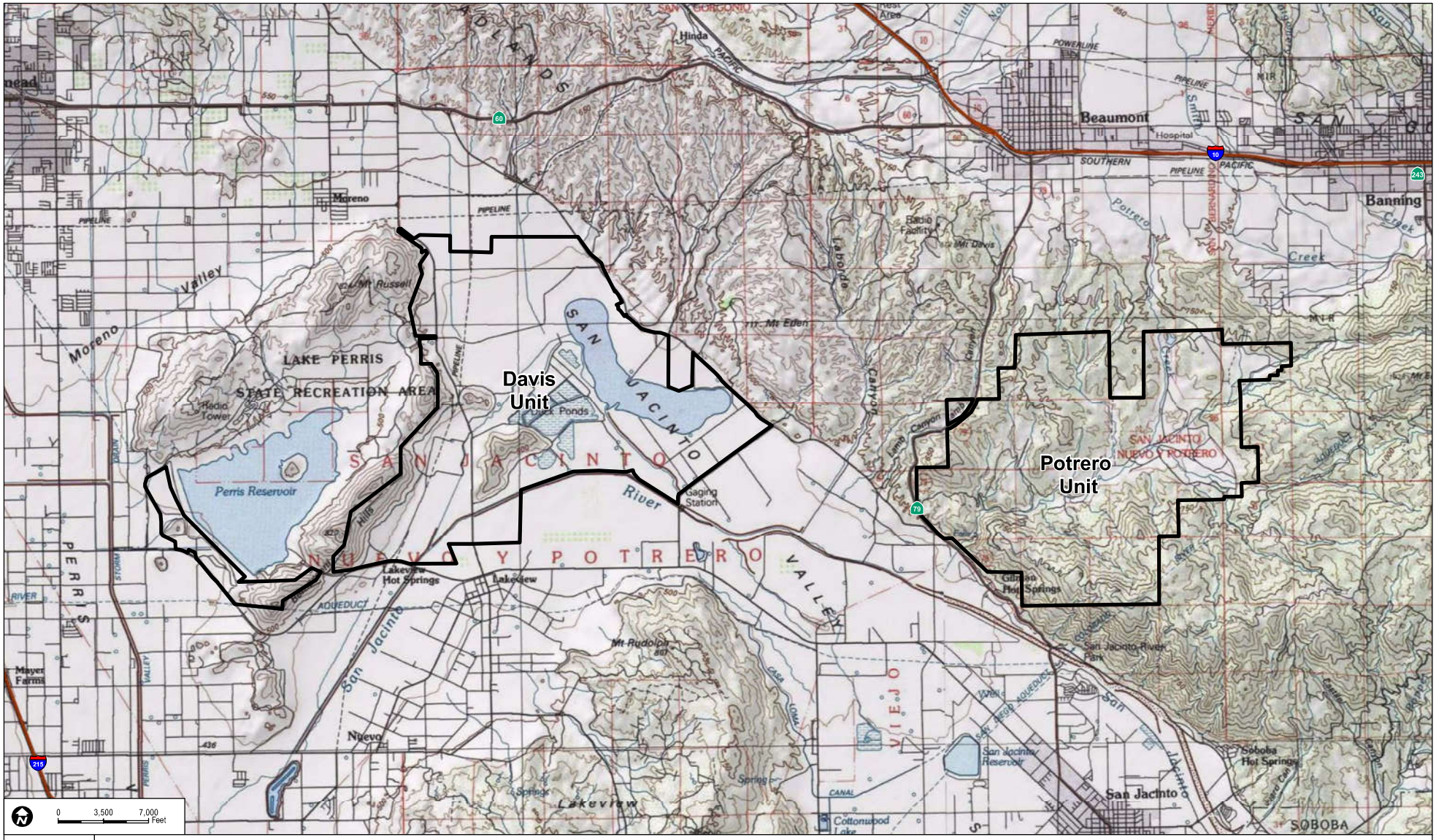
FIGURE 1-1

Regional Map

San Jacinto Wildlife Area - Land Management Plan



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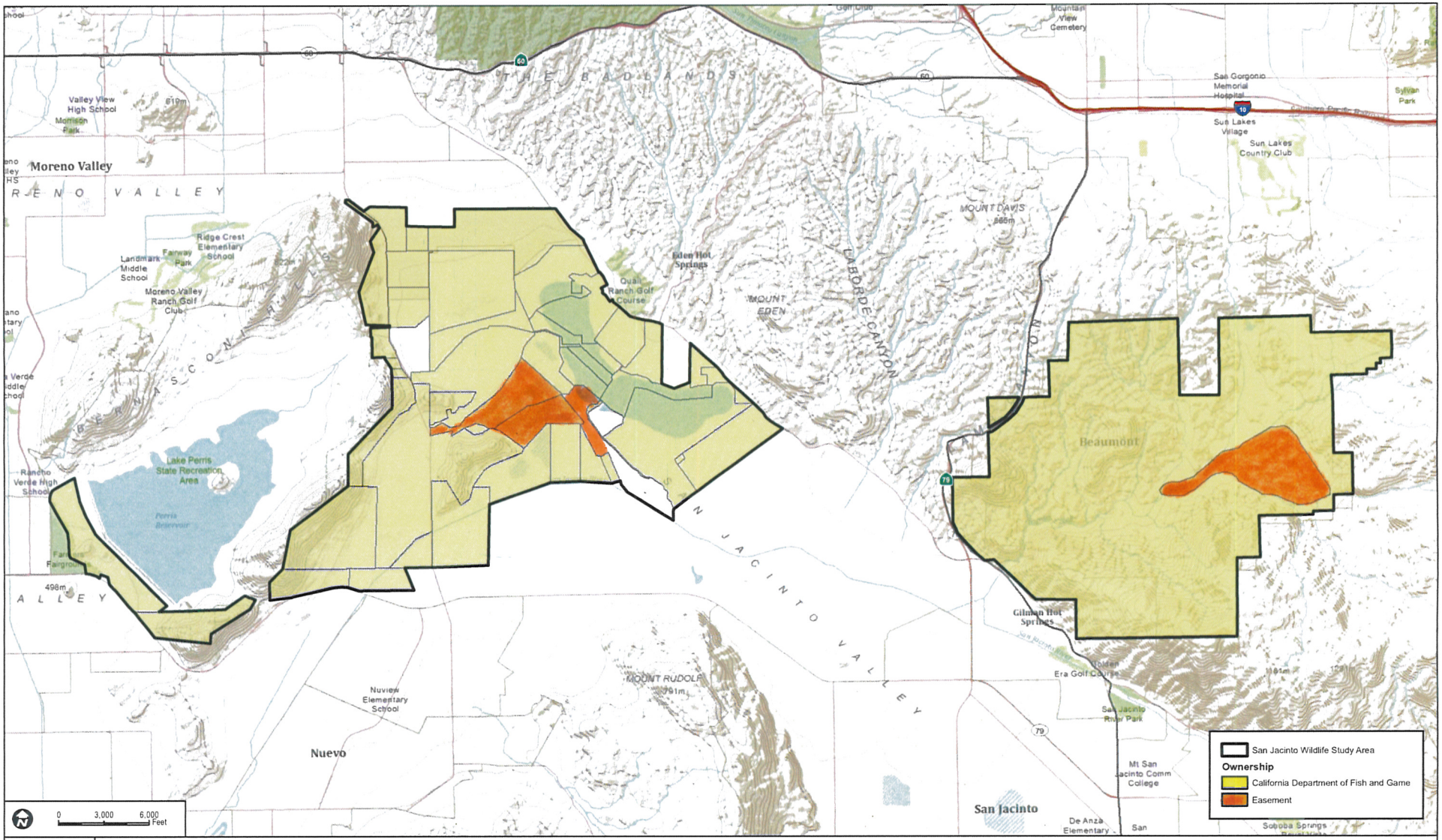
SOURCE: USGS 7.5 Minute Series Sunnymead, El Casco, Beaumont, Perris, Lakeview, and San Jacinto Quadrangles.

FIGURE 1-2
Vicinity Map



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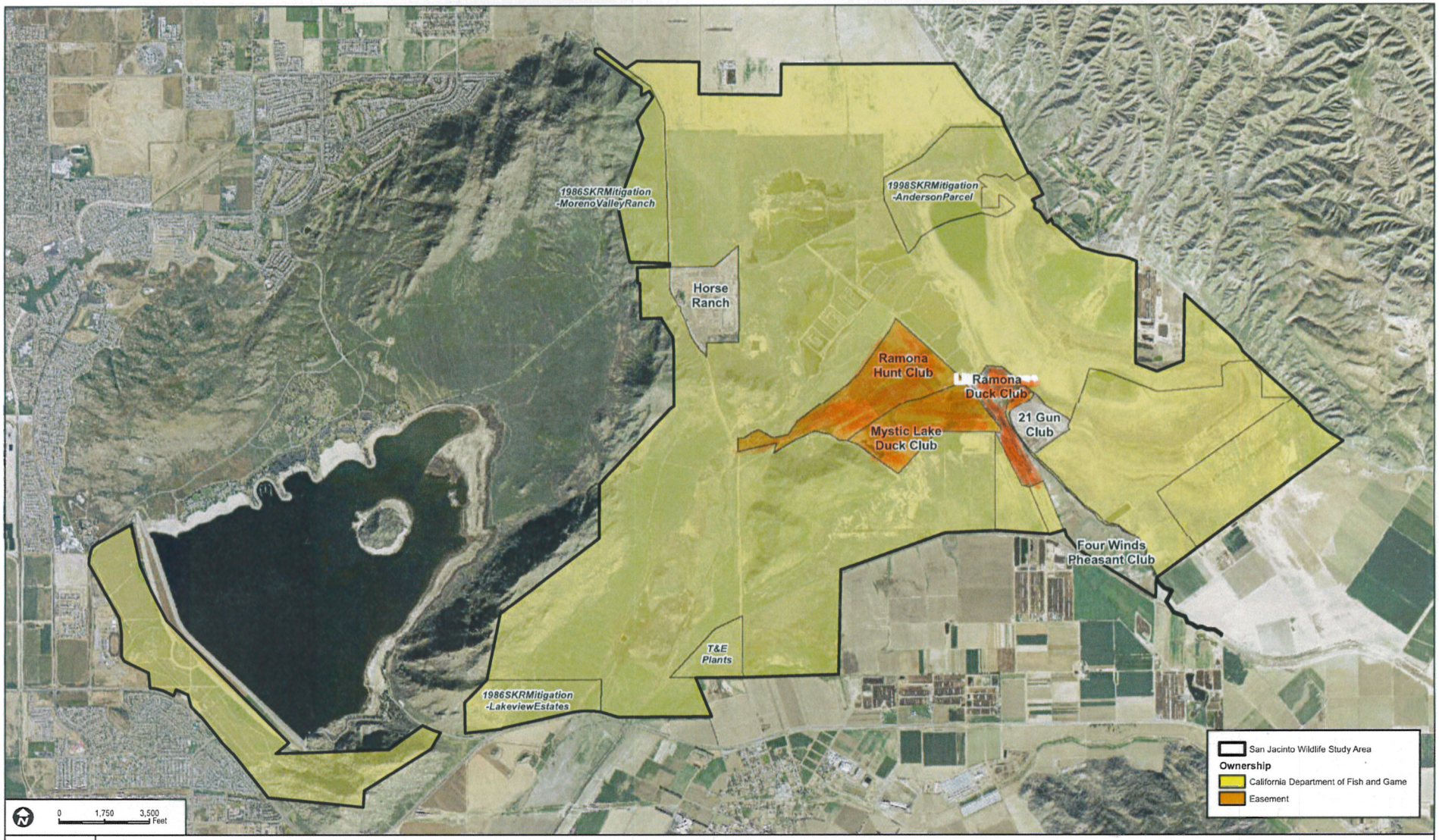
SOURCE: USGS 7.5 Minute Series Quadrangle.

1-3

Ownership Map



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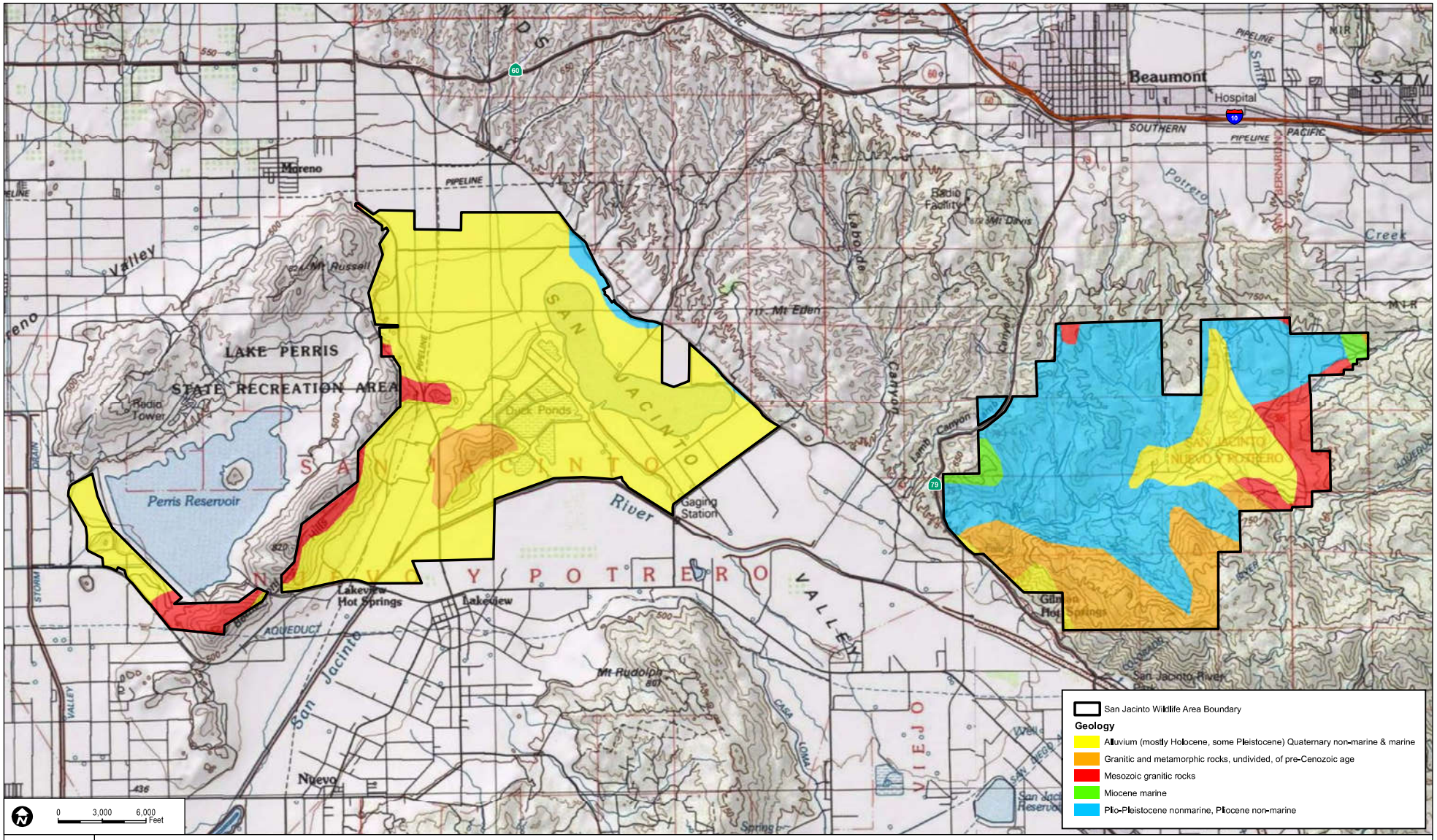
SOURCE: USGS 7.5 Minute Series Quadrangle.

FIGURE 1-4

Ownership Map - Davis Unit



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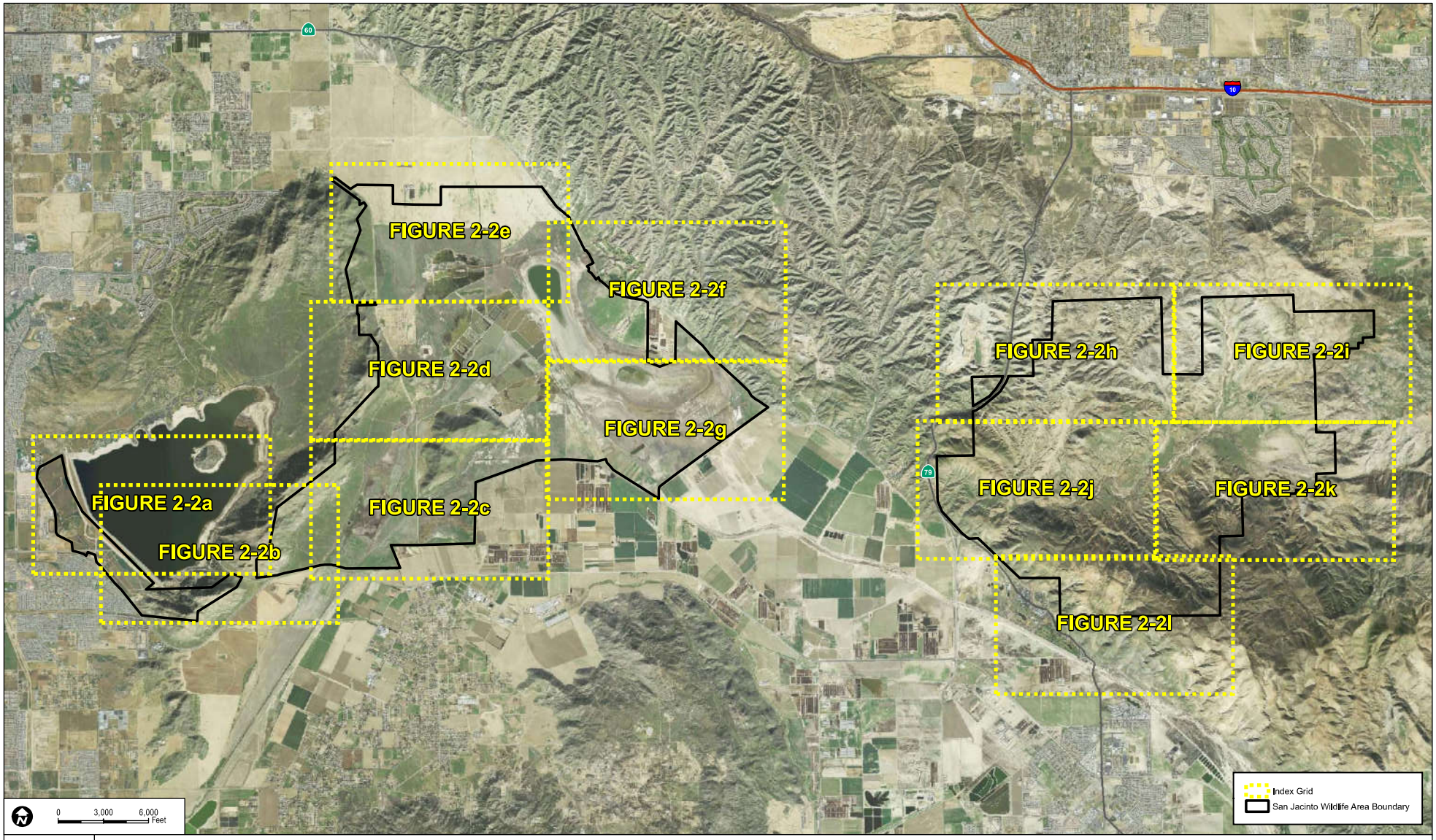
SOURCE: USGS 2000

FIGURE 2-1
Geology Map

San Jacinto Wildlife Area - Land Management Plan



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SOURCE: Digital Globe 2008

FIGURE 2-2

Soils Map - Index Map

San Jacinto Wildlife Area - Land Management Plan

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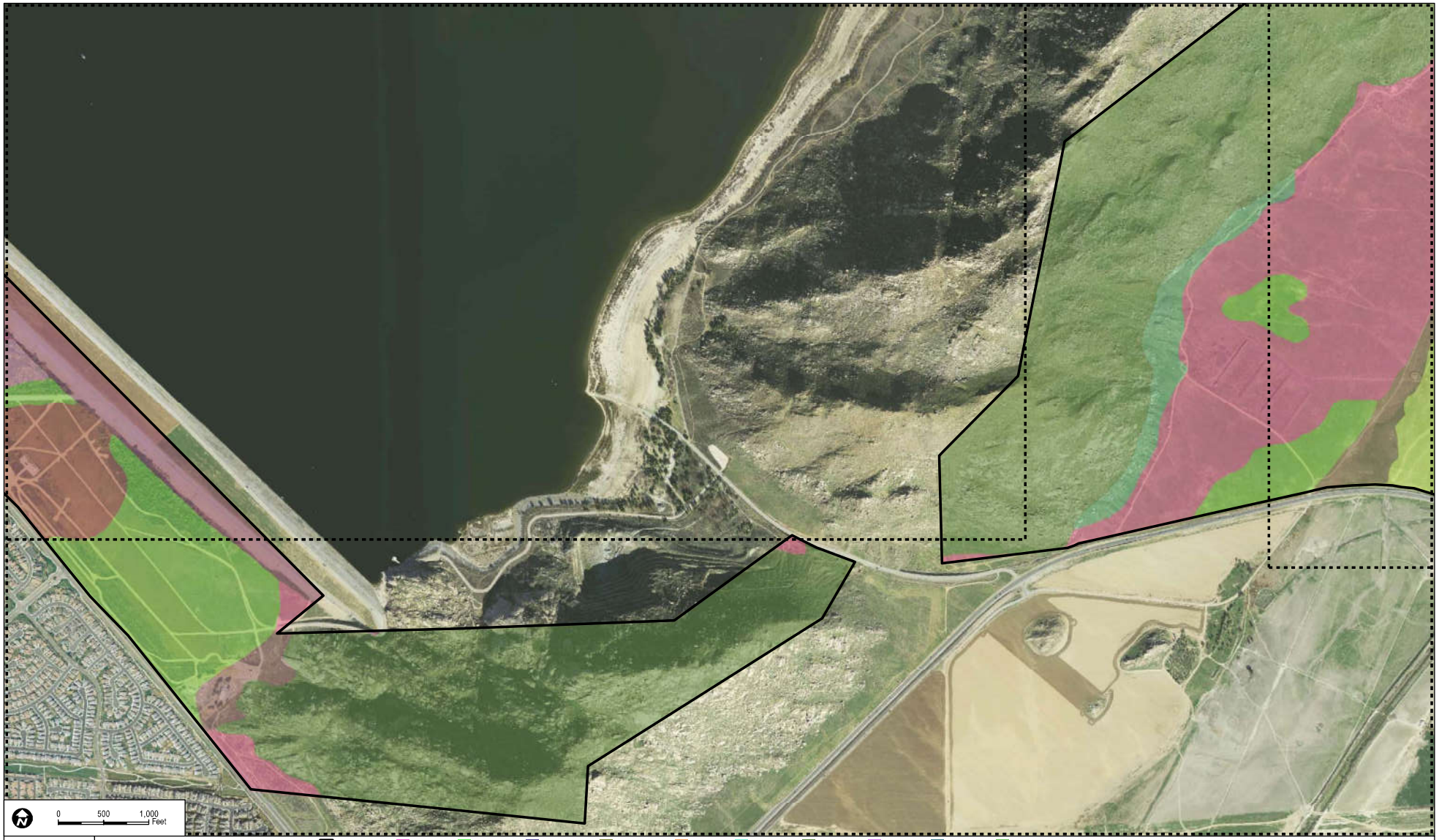
JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2a
Soils

San Jacinto Wildlife Area - Land Management Plan



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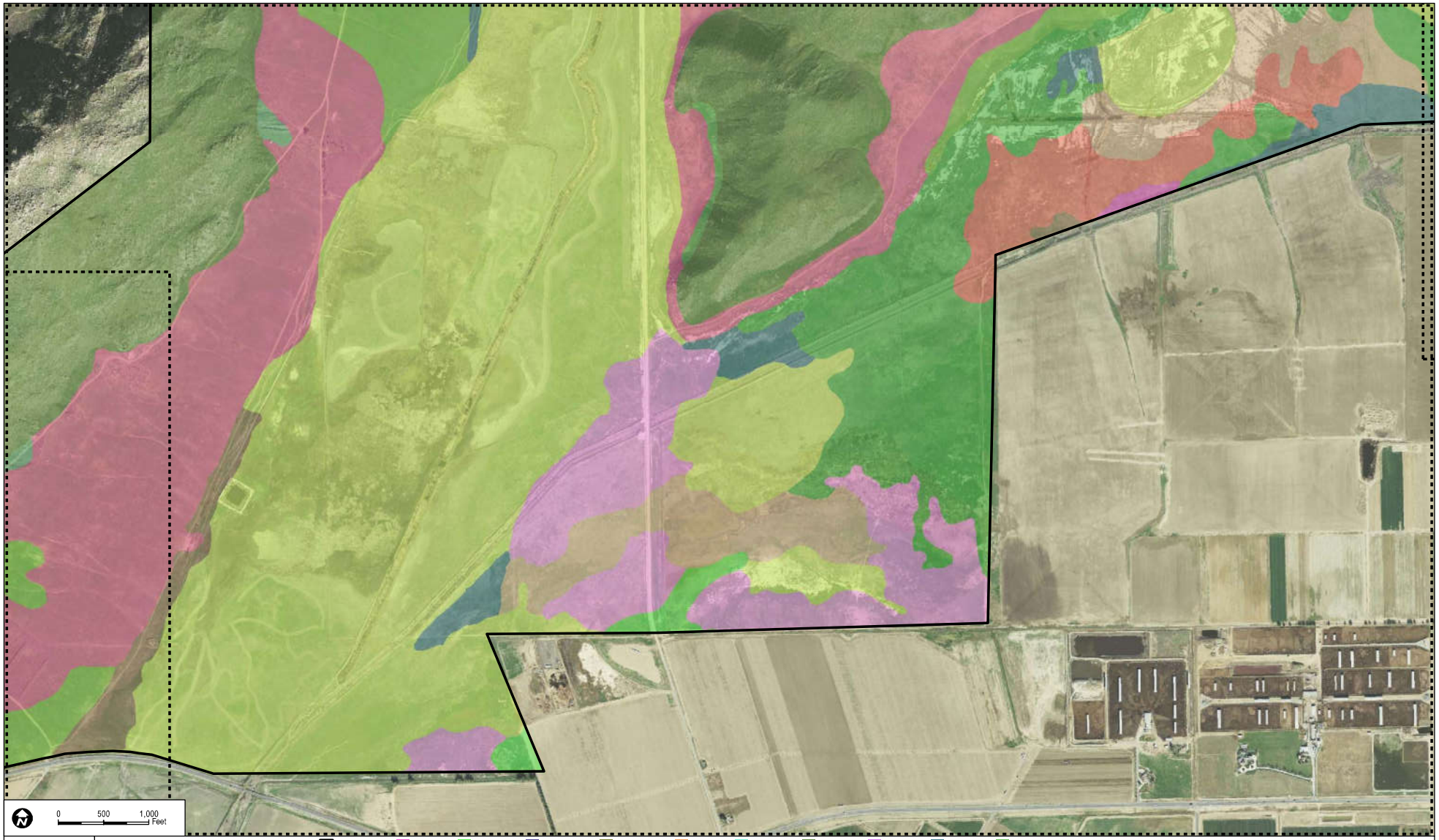
JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2b
Soils

San Jacinto Wildlife Area - Land Management Plan



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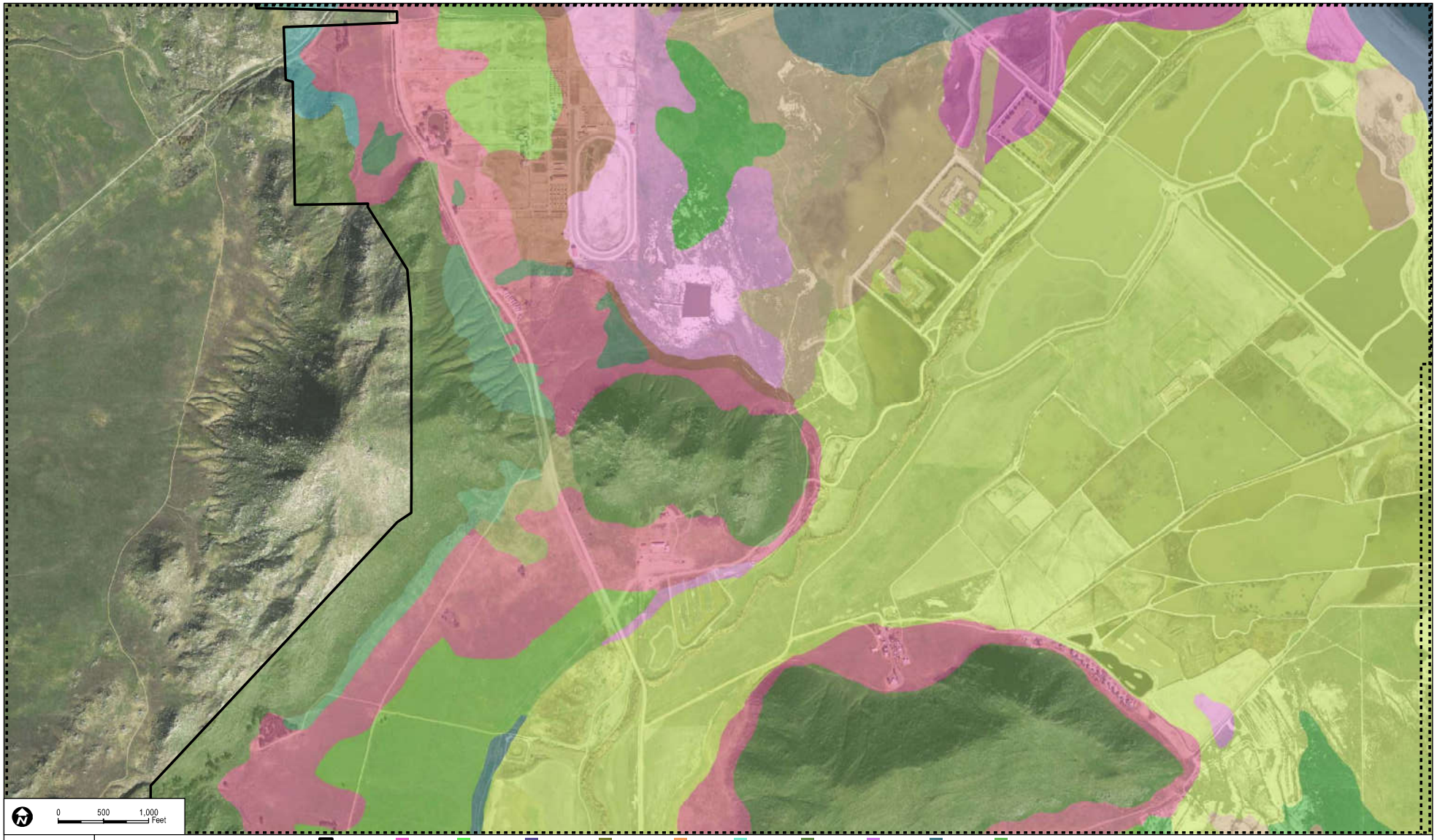
JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2c
Soils

San Jacinto Wildlife Area - Land Management Plan



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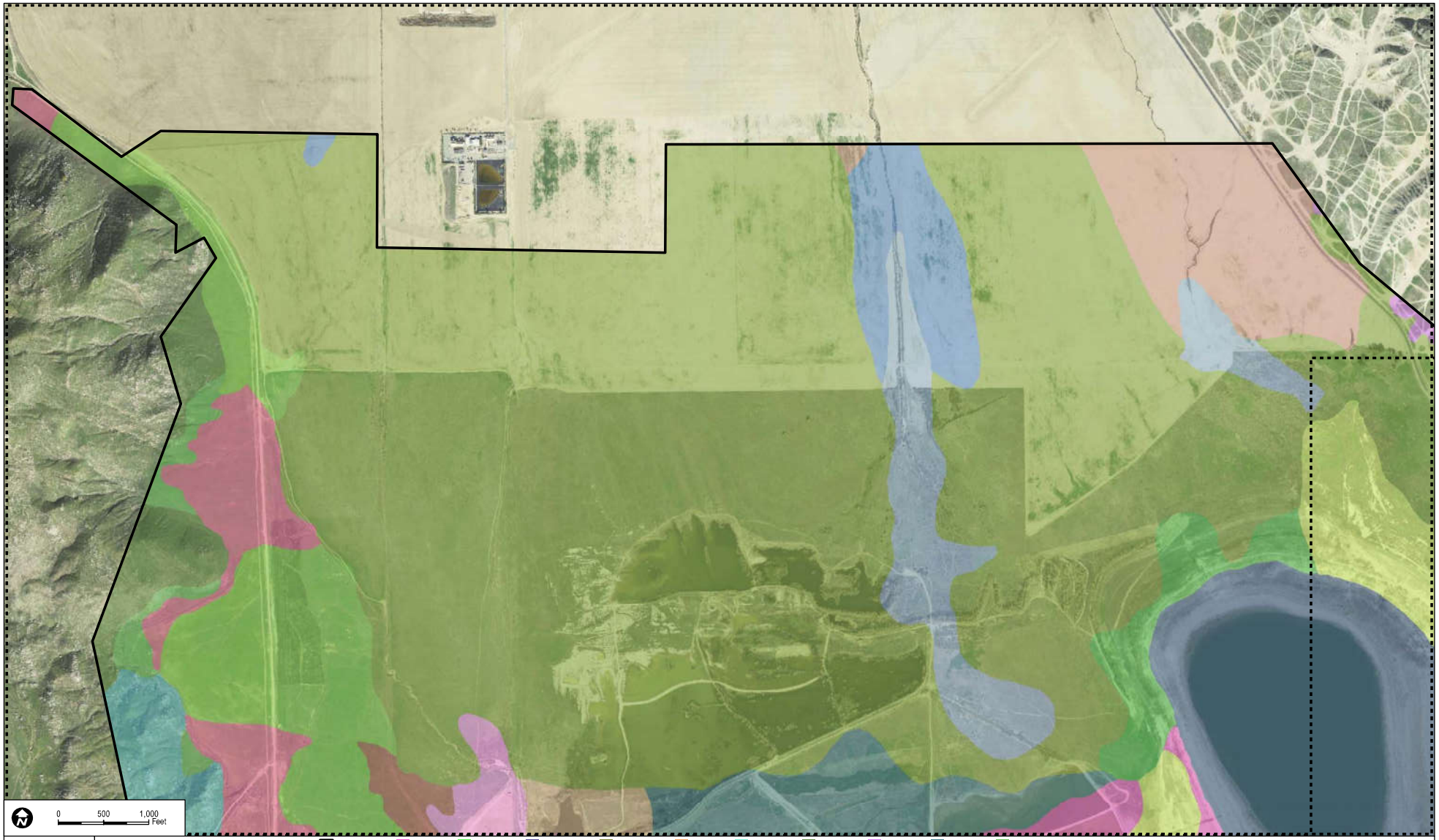
JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2d
Soils

San Jacinto Wildlife Area - Land Management Plan



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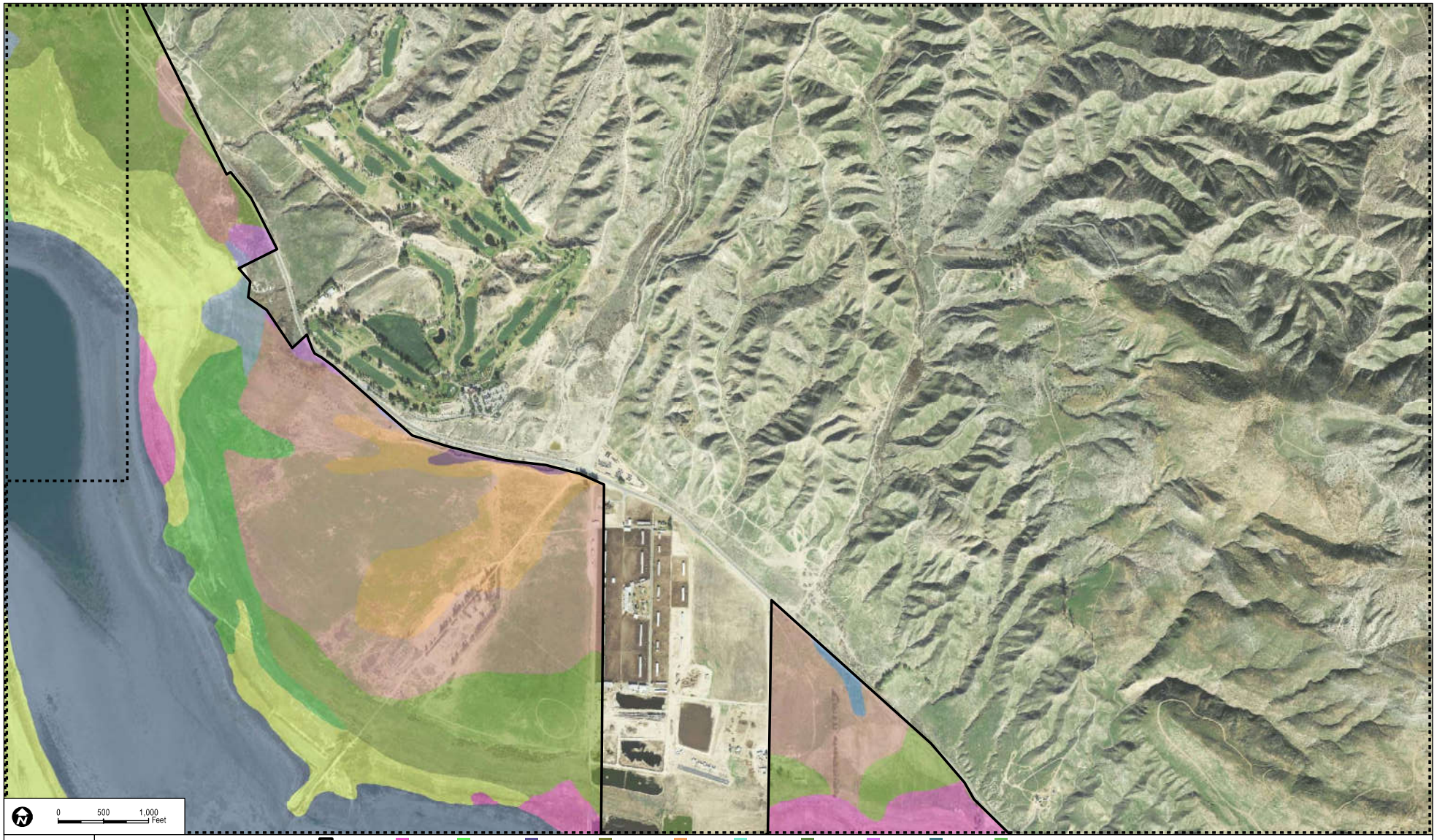
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2e
Soils

San Jacinto Wildlife Area - Land Management Plan



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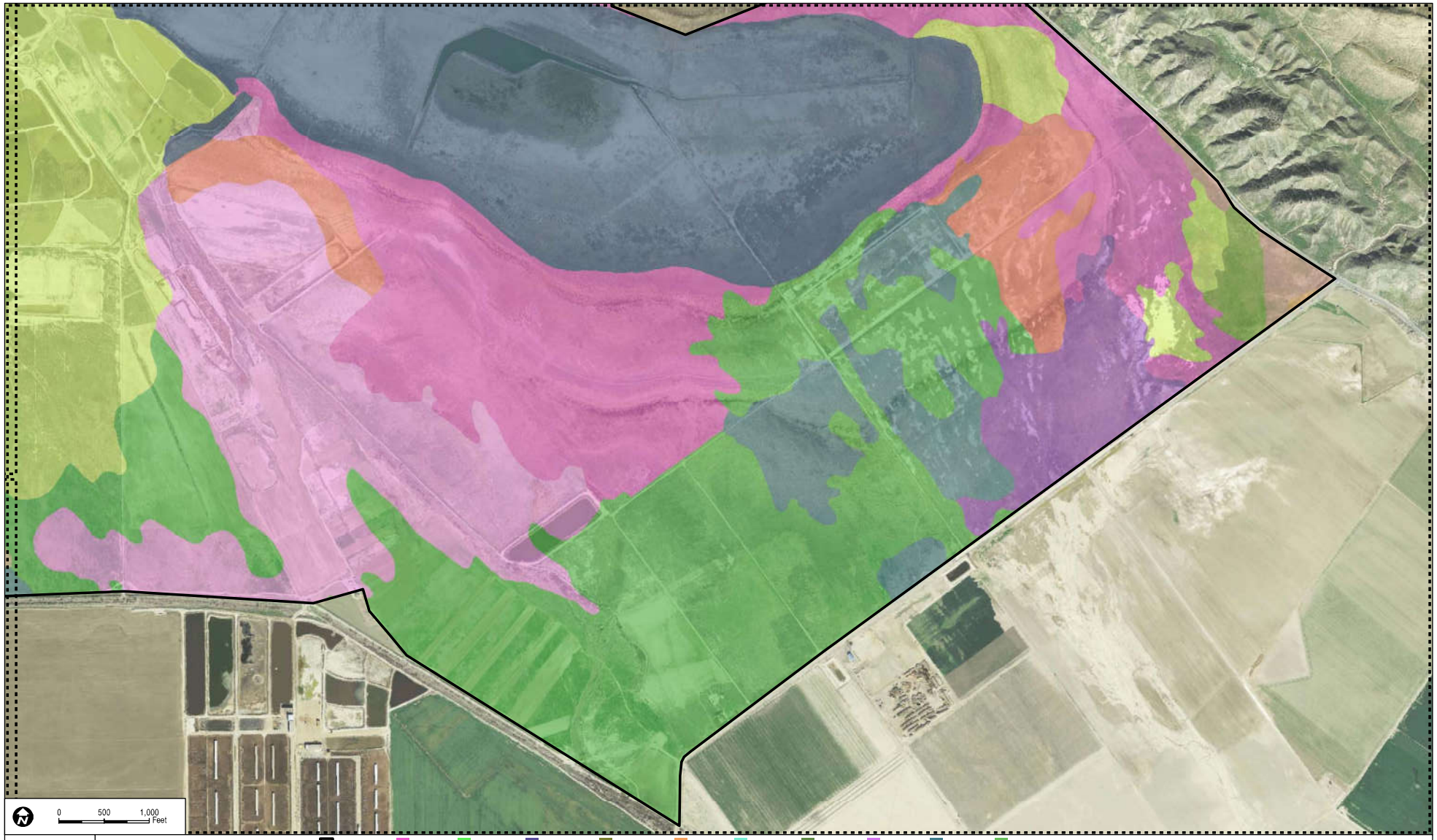
JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2f
Soils

San Jacinto Wildlife Area - Land Management Plan



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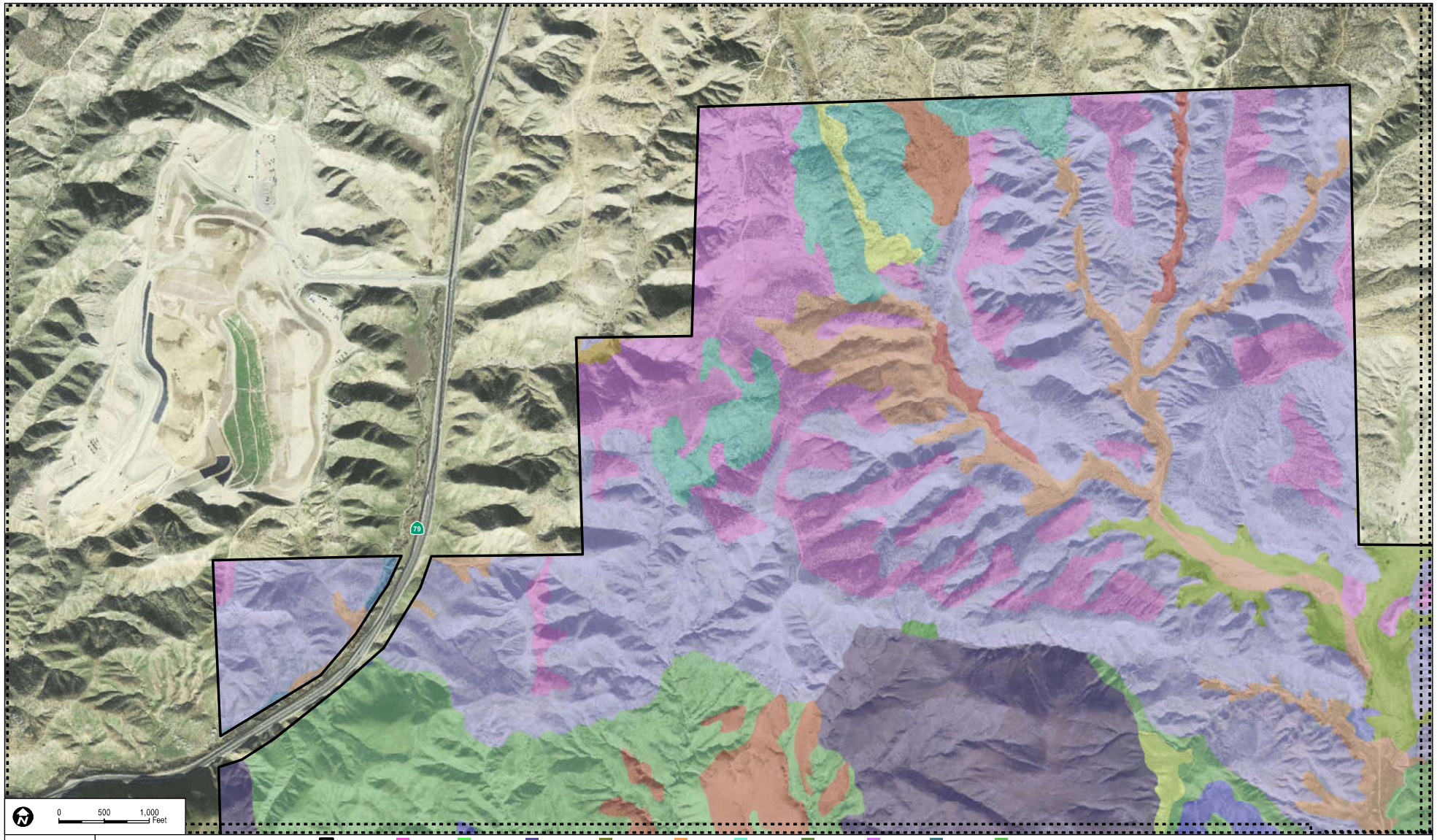
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2g
Soils

San Jacinto Wildlife Area - Land Management Plan



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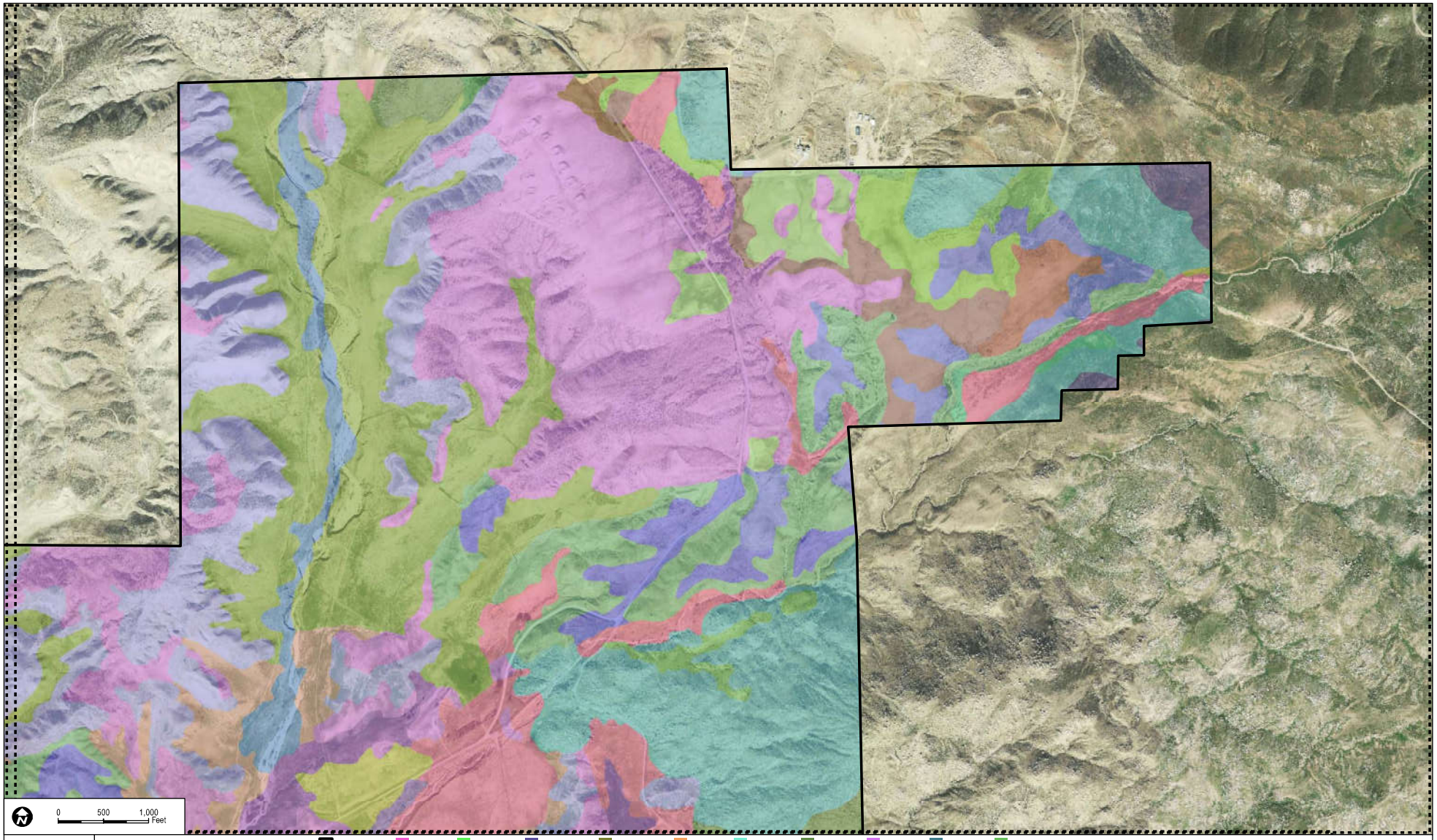
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2h
Soils

San Jacinto Wildlife Area - Land Management Plan



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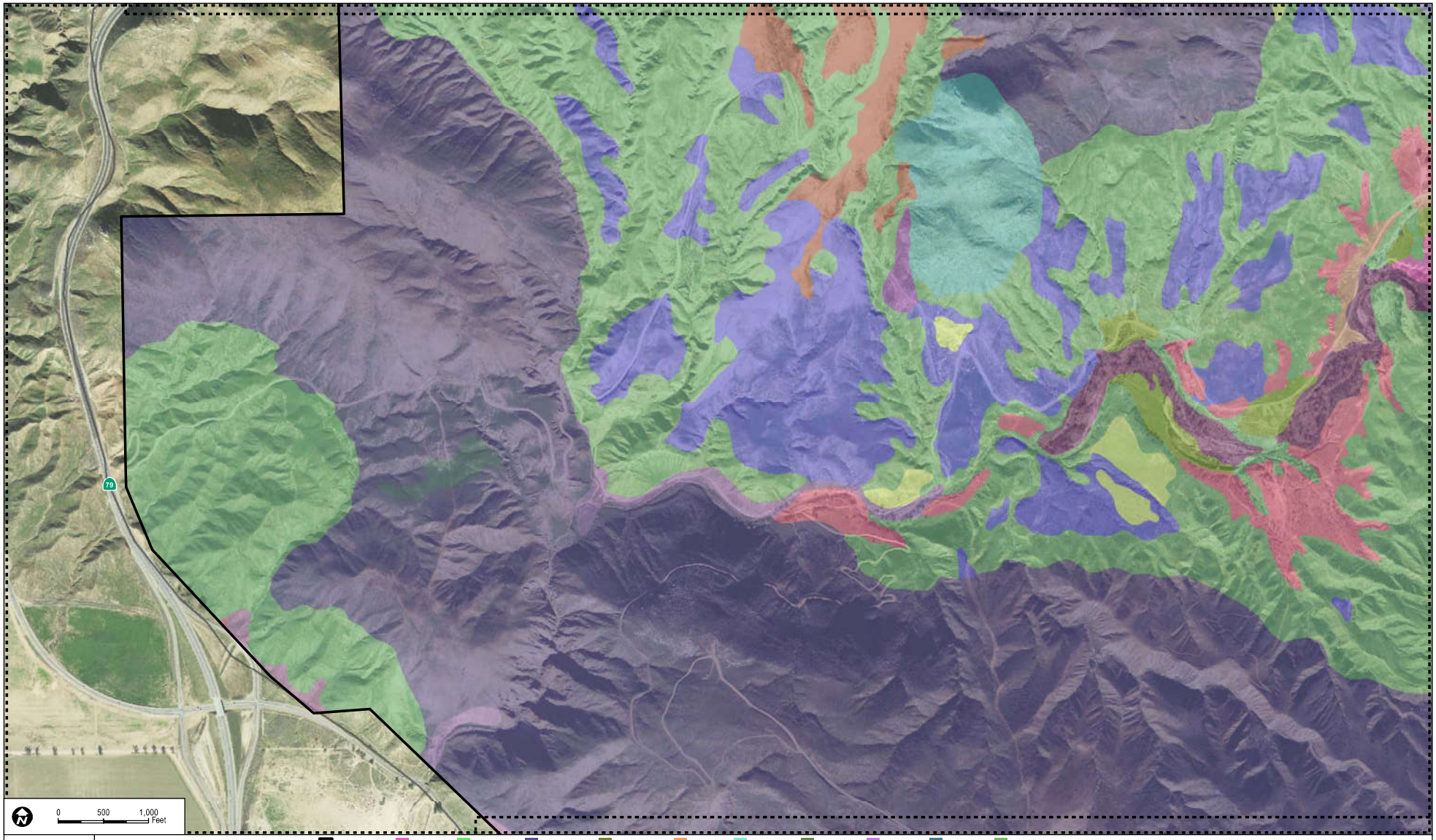
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2i
Soils

San Jacinto Wildlife Area - Land Management Plan



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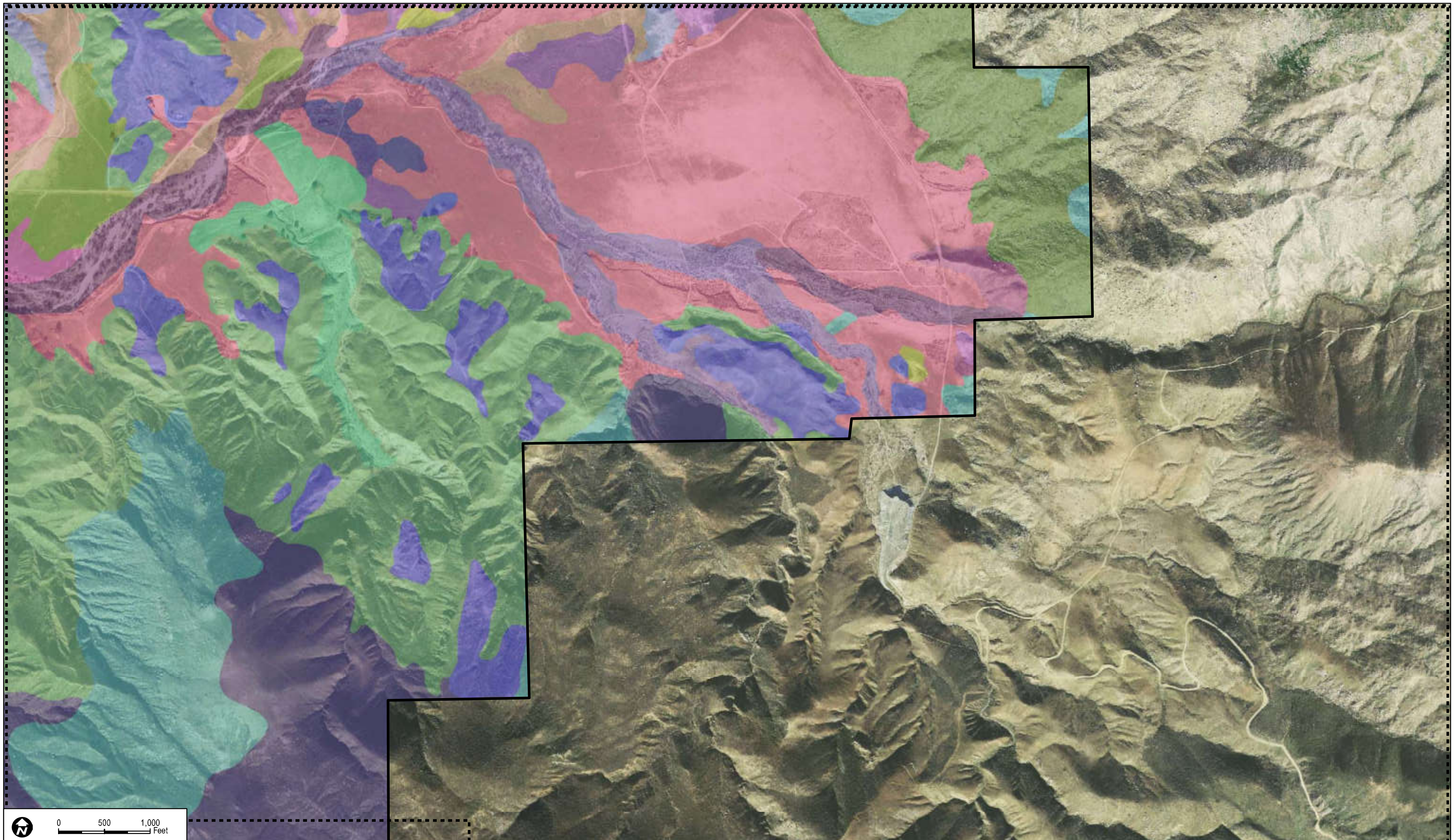
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2j
Soils

San Jacinto Wildlife Area - Land Management Plan



San Jacinto Wildlife Area Boundary

Soils

- Altamont clay
- Badland
- Chino silt loam
- Chino silt loam
- Cieneba rocky sandy loam
- Cieneba sandy loam
- Dams
- Domino fine sandy loam
- Domino silt loam
- Escondido fine sandy loam
- Exeter sandy loam
- Fallbrook rocky sandy loam
- Fallbrook sandy loam, shallow
- Friant rocky fine sandy loam
- Gorgonio cobbly loamy fine sand
- Gorgonio gravelly loamy fine sand
- Gorgonio loamy sand, deep
- Grangeville fine sandy loam
- Grangeville loamy fine sand
- Grangeville sandy loam
- Greenfield sandy loam
- Hanford coarse sandy loam
- Hanford cobbly coarse sandy loam
- Metz gravelly sandy loam
- Metz loamy fine sand
- Metz loamy sand
- Monserate sandy loam
- Monserate sandy loam
- Pachappa fine sandy loam
- Placentia fine sandy loam
- Ramona sandy loam
- Ramona very fine sandy loam
- Riverwash
- Rockland
- Rough broken land
- San Emigdio fine sandy loam
- San Emigdio loam
- San Emigdio sandy loam
- San Timoteo loam
- Soboba cobbly loamy sand
- Soboba stony loamy sand
- Terrace escarpments
- Traver fine sandy loam
- Traver loamy fine sand
- Tujunga gravelly loamy sand
- Tujunga loamy sand
- Visalia sandy loam
- Vista coarse sandy loam
- Vista rocky coarse sandy loam
- Water
- Waukena fine sandy loam
- Waukena loam
- Willows silty clay

DUDEK

6096-01

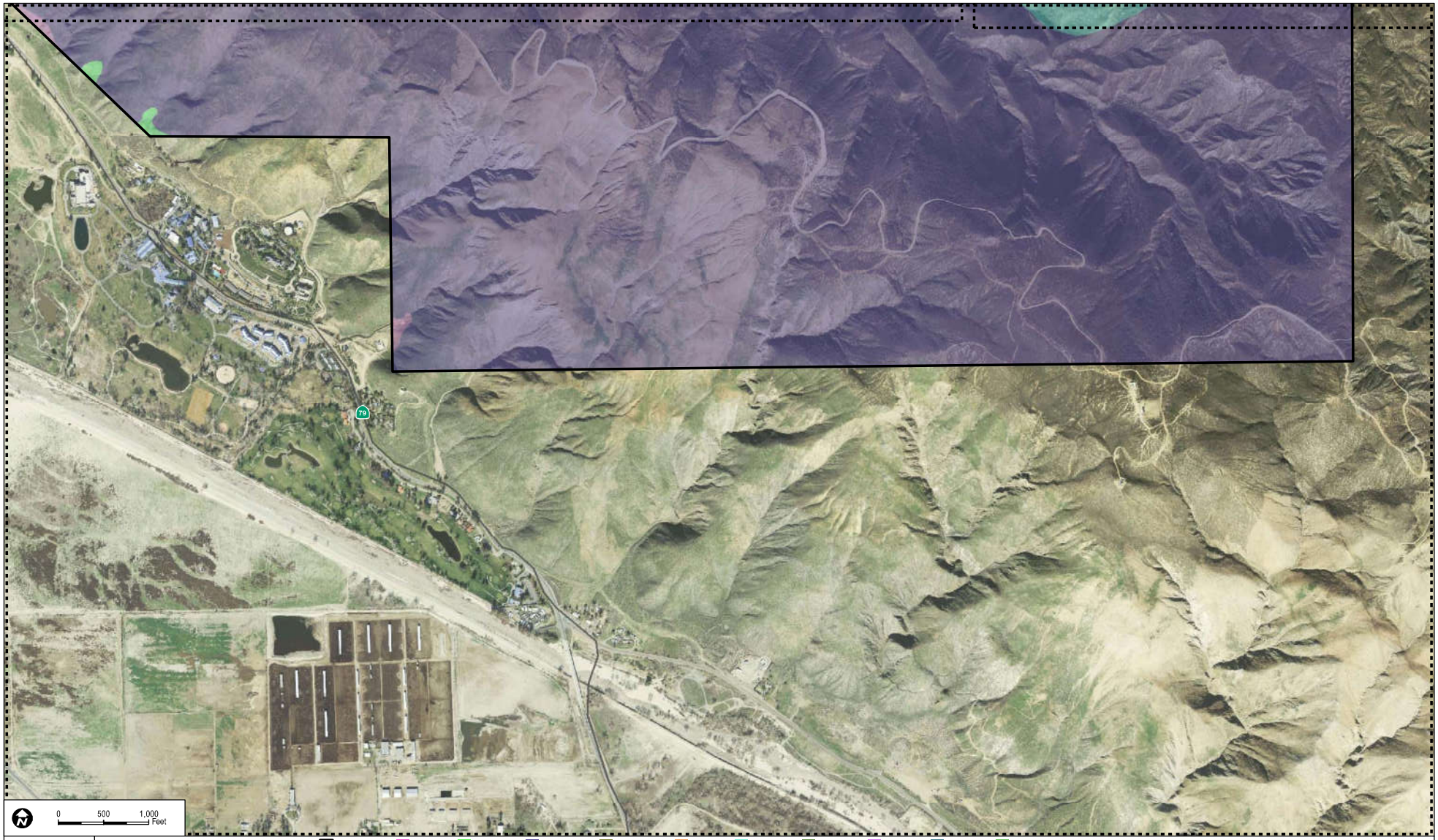
JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2k

Soils

San Jacinto Wildlife Area - Land Management Plan



DUDEK

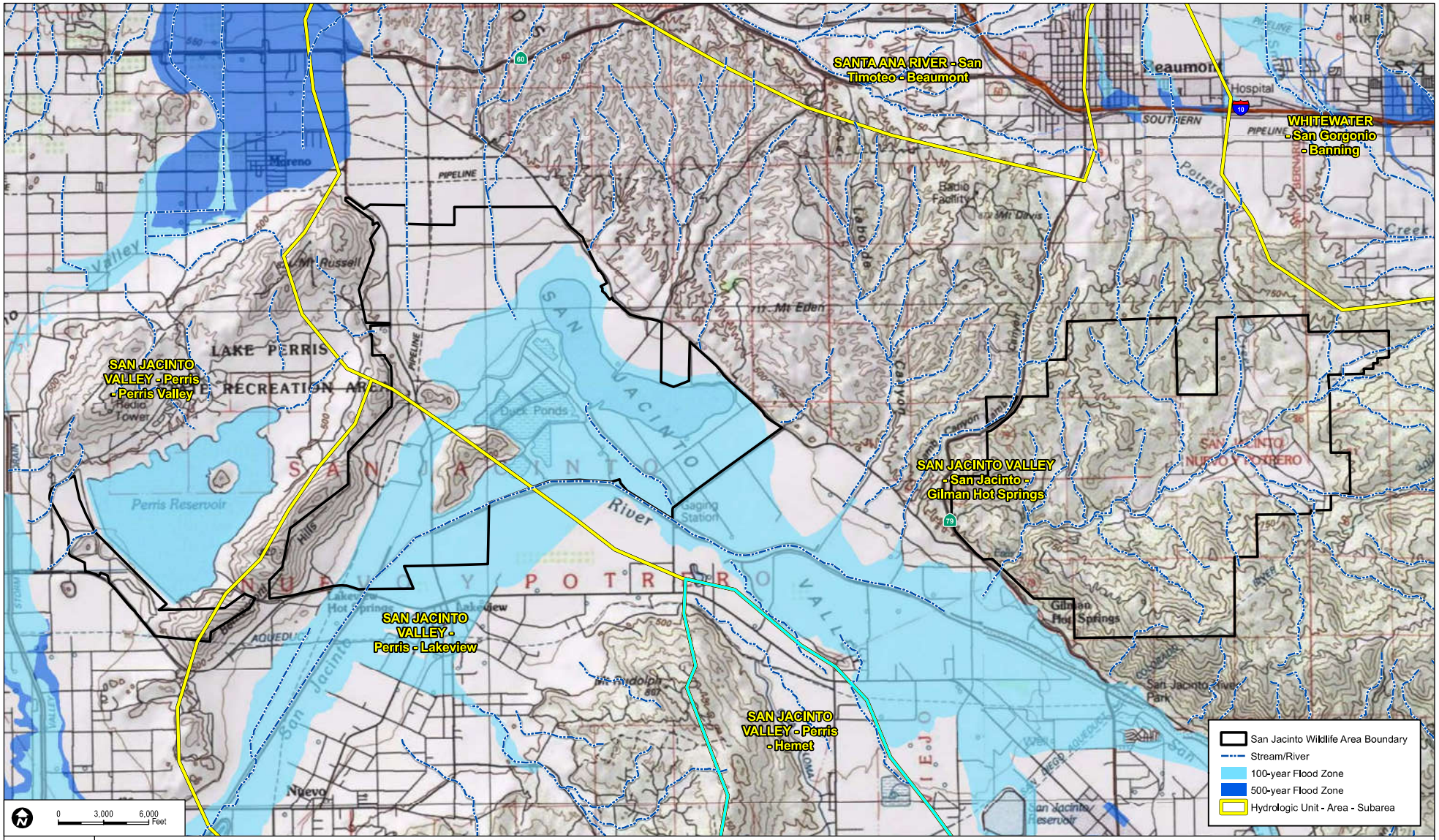
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
USDA 1971

FIGURE 2-2I
Soils

San Jacinto Wildlife Area - Land Management Plan



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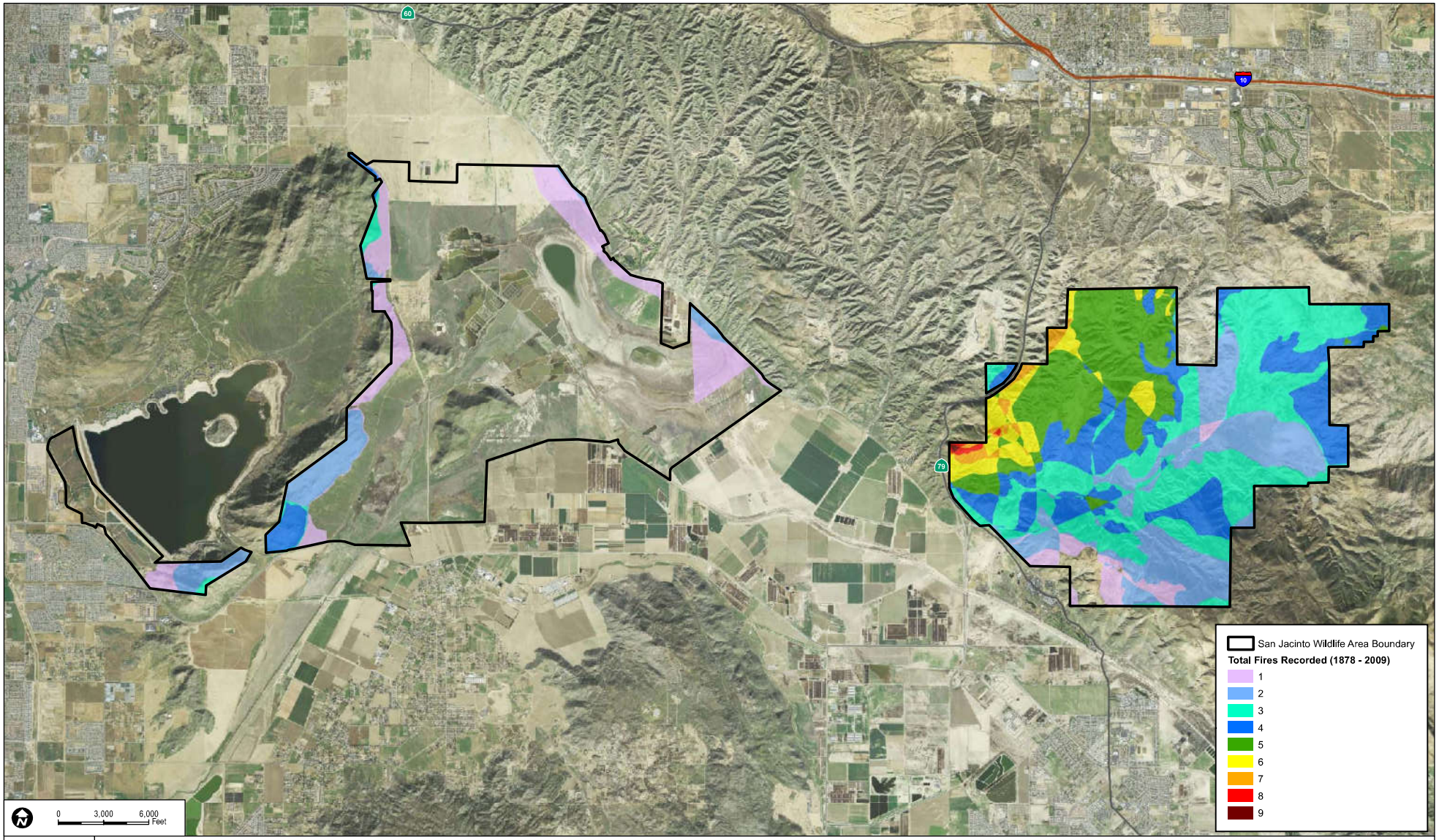
6096-01

JANUARY 2012

SOURCE: USGS 7.5 Minute Series Quadrangle.
USGS NHD 2010
FEMA 2010

FIGURE 2-3

Hydrology Map



DUDEK

6096-01

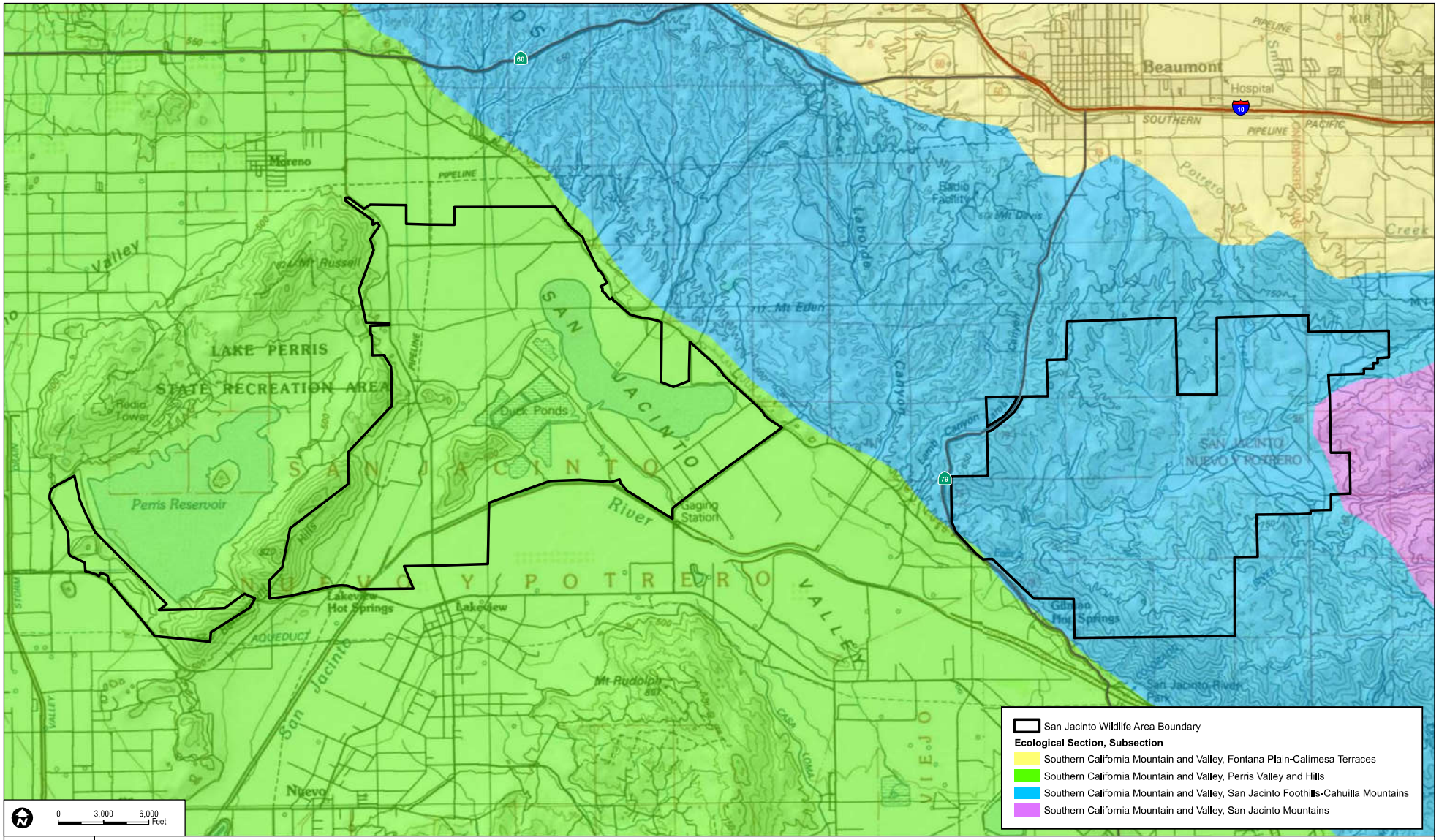
JANUARY 2012

SOURCE: USGS 7.5 Minute Series Quadrangle.
FRAP 2010

FIGURE 2-4

Fire History

San Jacinto Wildlife Area - Land Management Plan

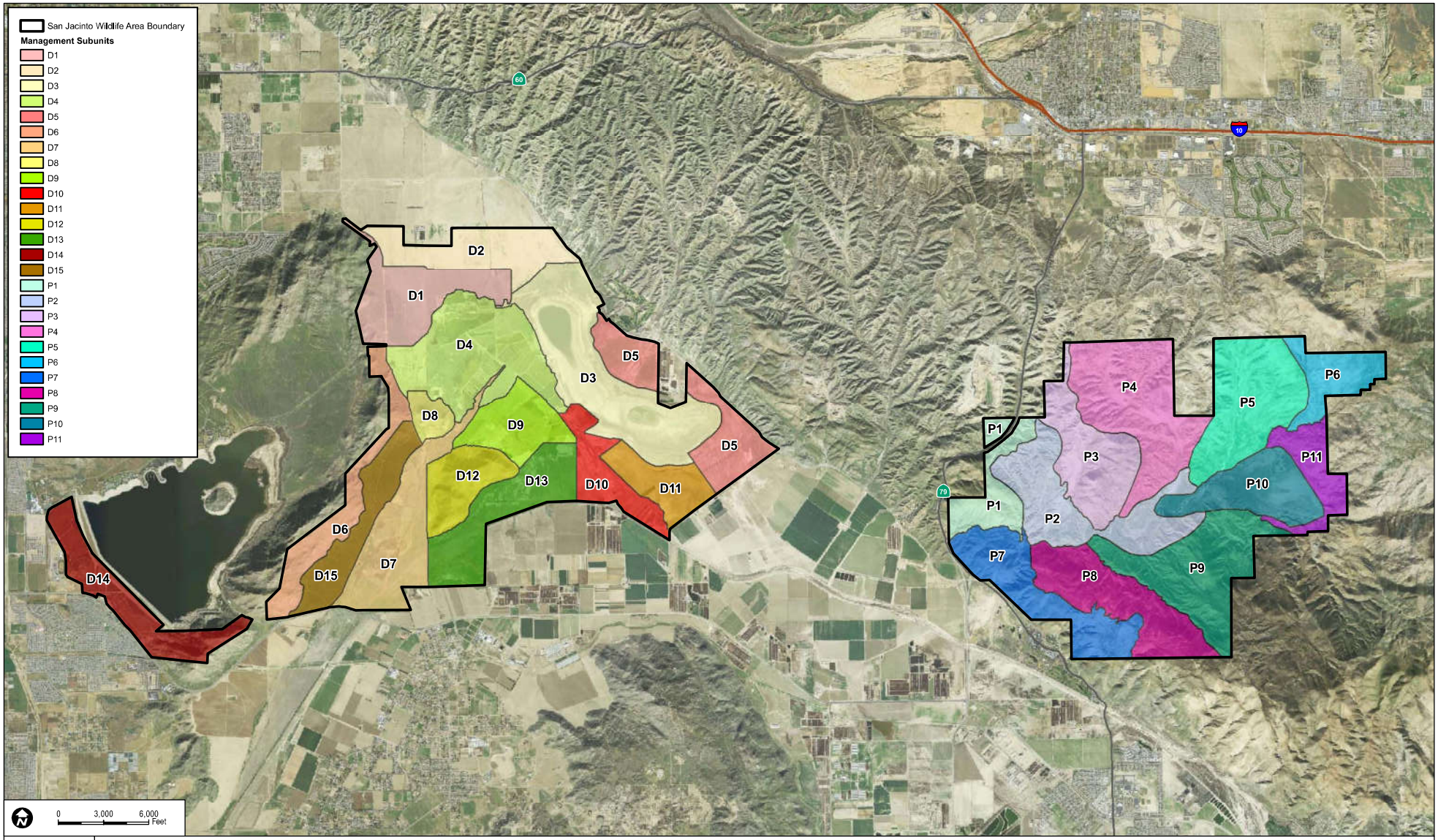


DUDEK

6096-01
JANUARY 2012

SOURCE: USGS 7.5 Minute Series Quadrangle
USFS 2005

FIGURE 2-5
Regional Ecological Setting



DUDEK

6096-01

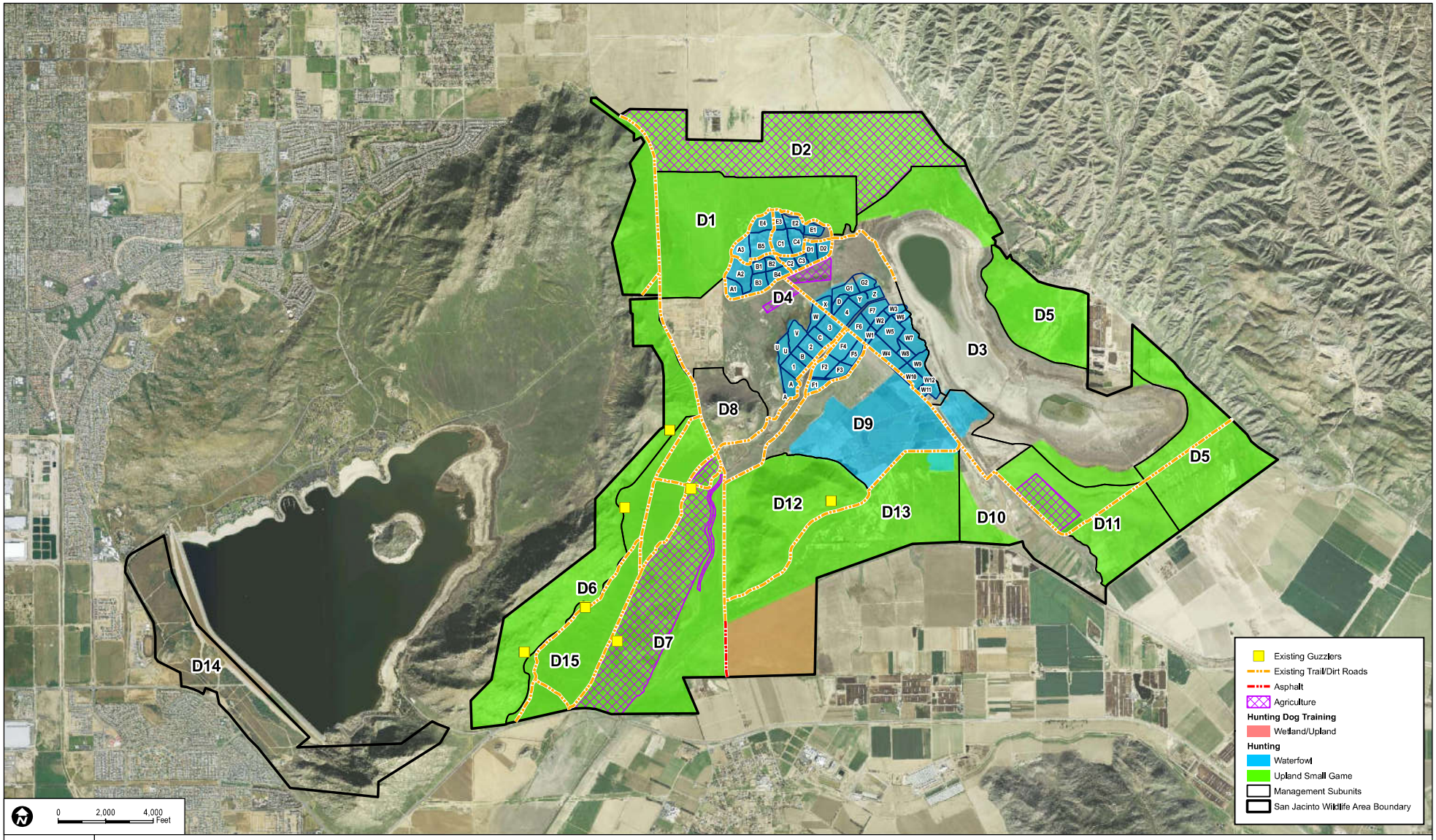
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 2-6

Management Subunits

San Jacinto Wildlife Area - Land Management Plan



DUDEK

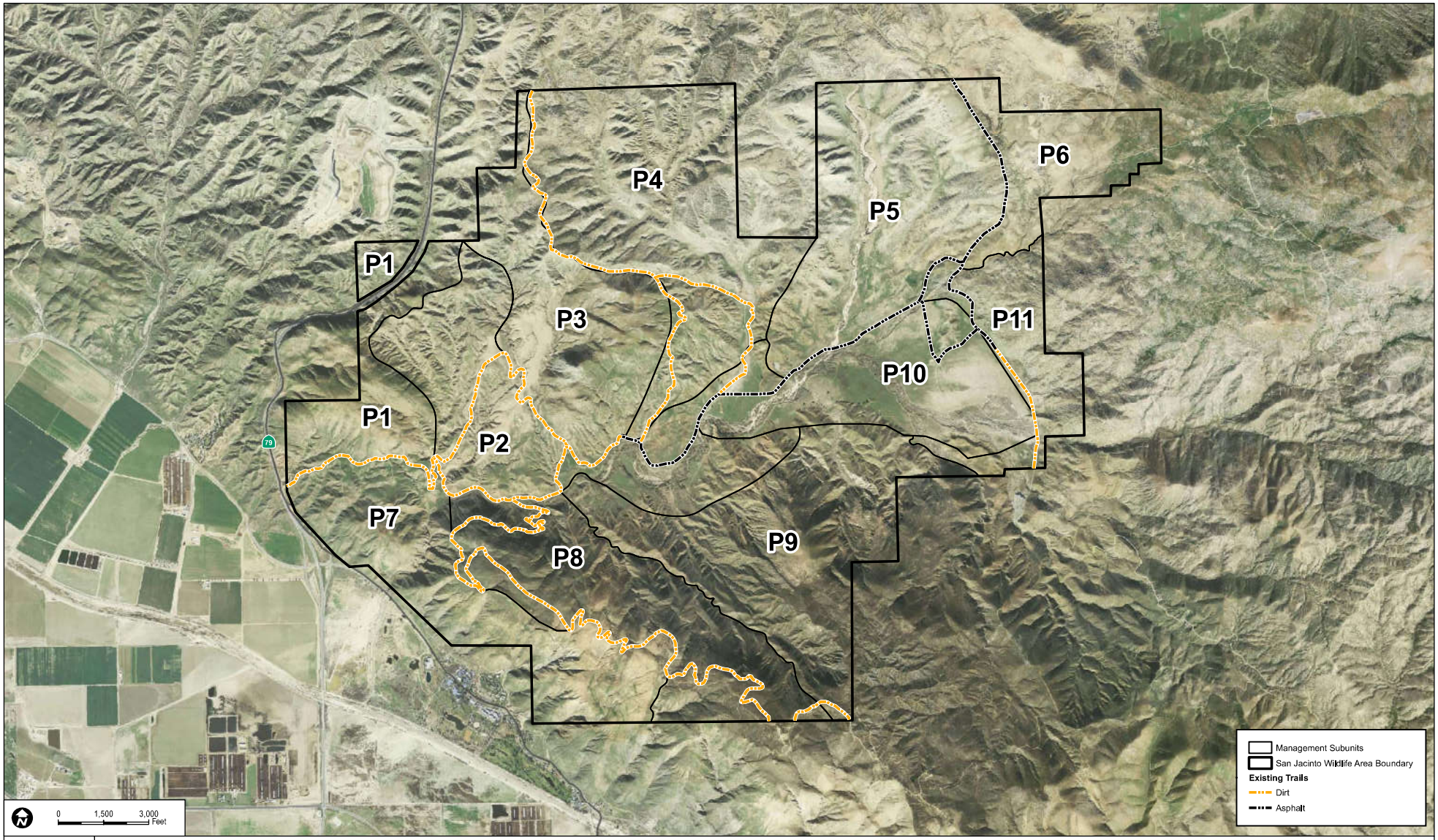
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 2-7a

Existing Land Uses - Davis Unit



DUDEK

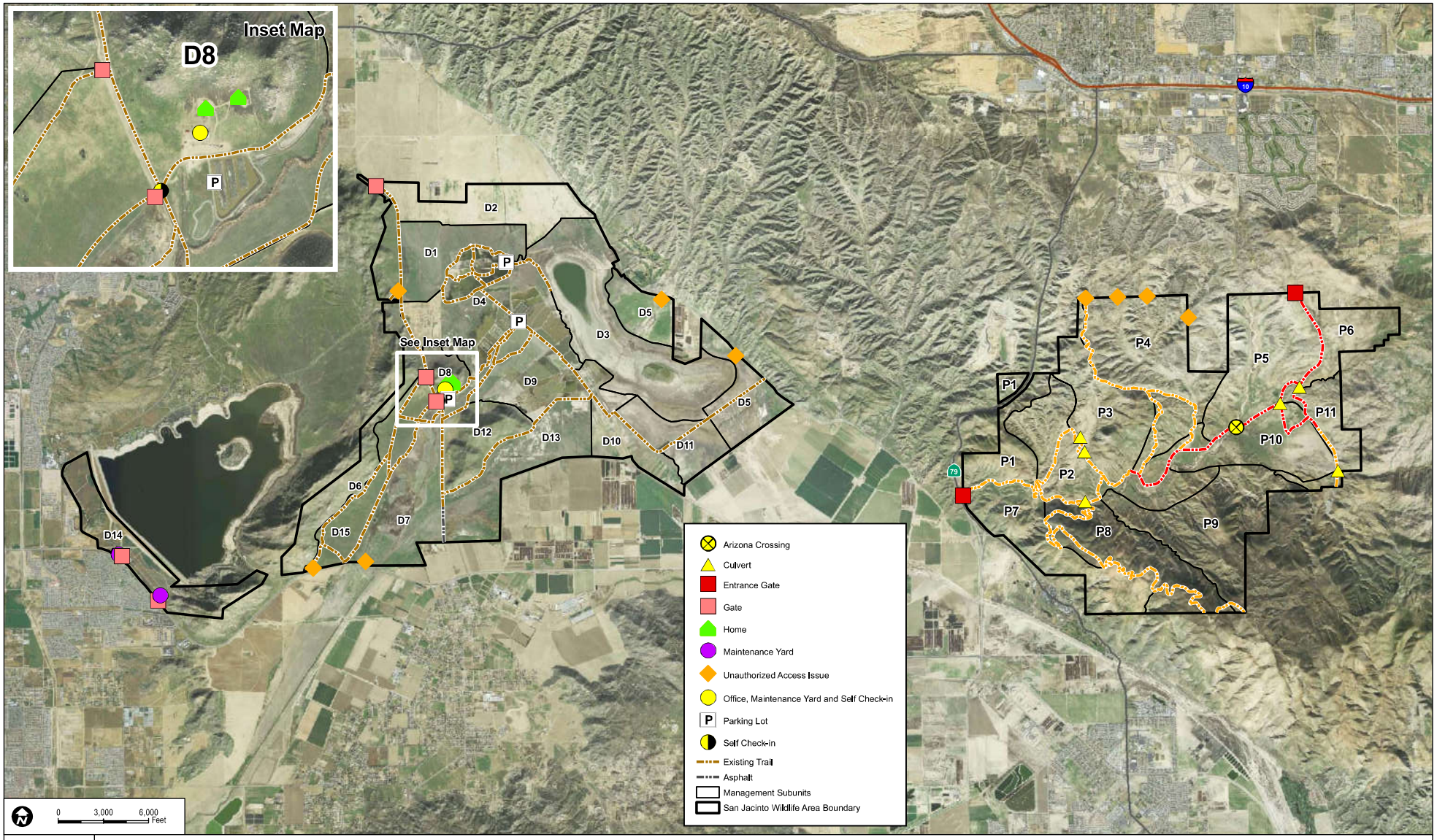
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 2-7b

Existing Land Uses - Potrero Unit



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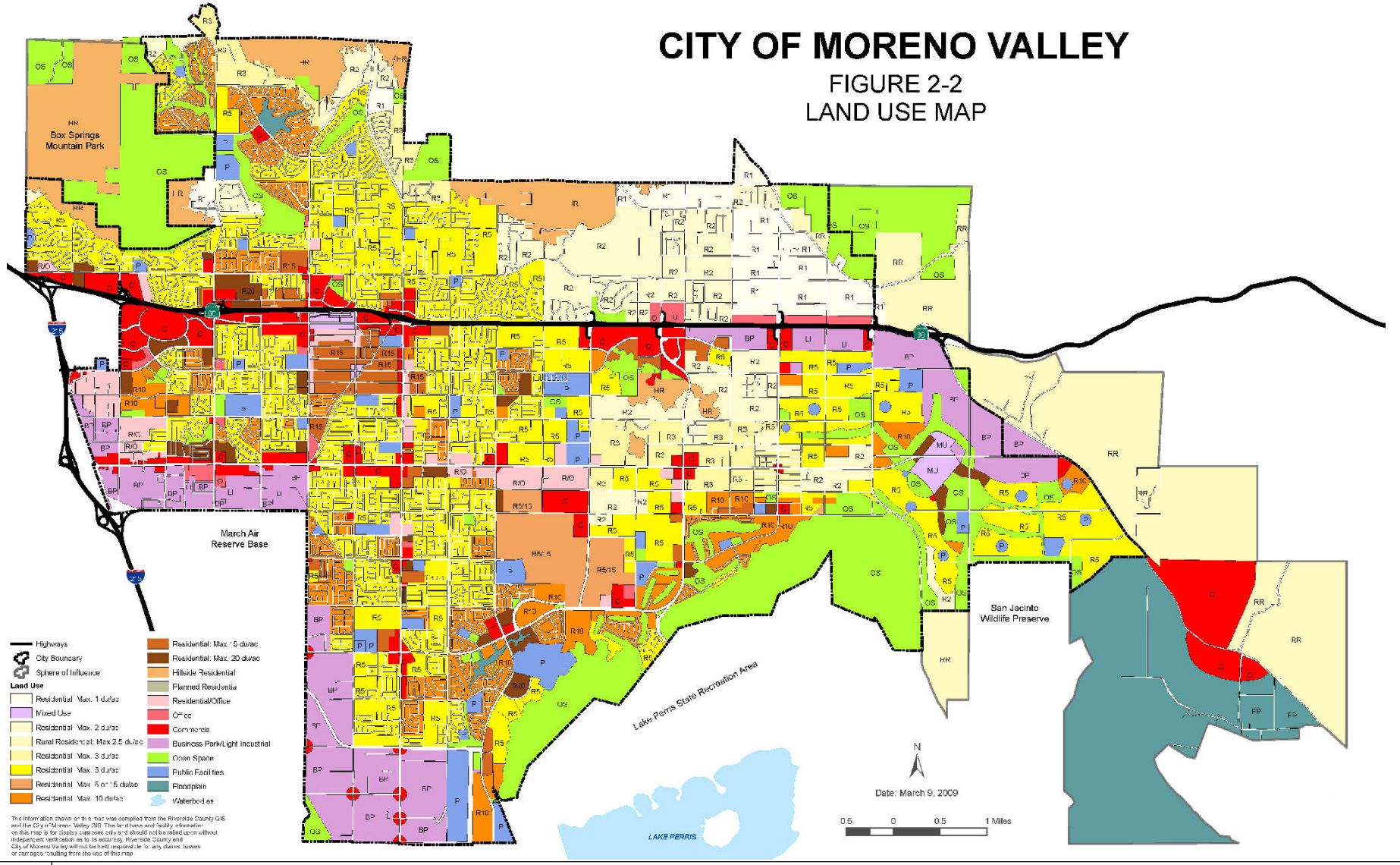
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 2-8

Existing Structures, Roads, Water Management Facilities, and Unauthorized Access Issue Areas



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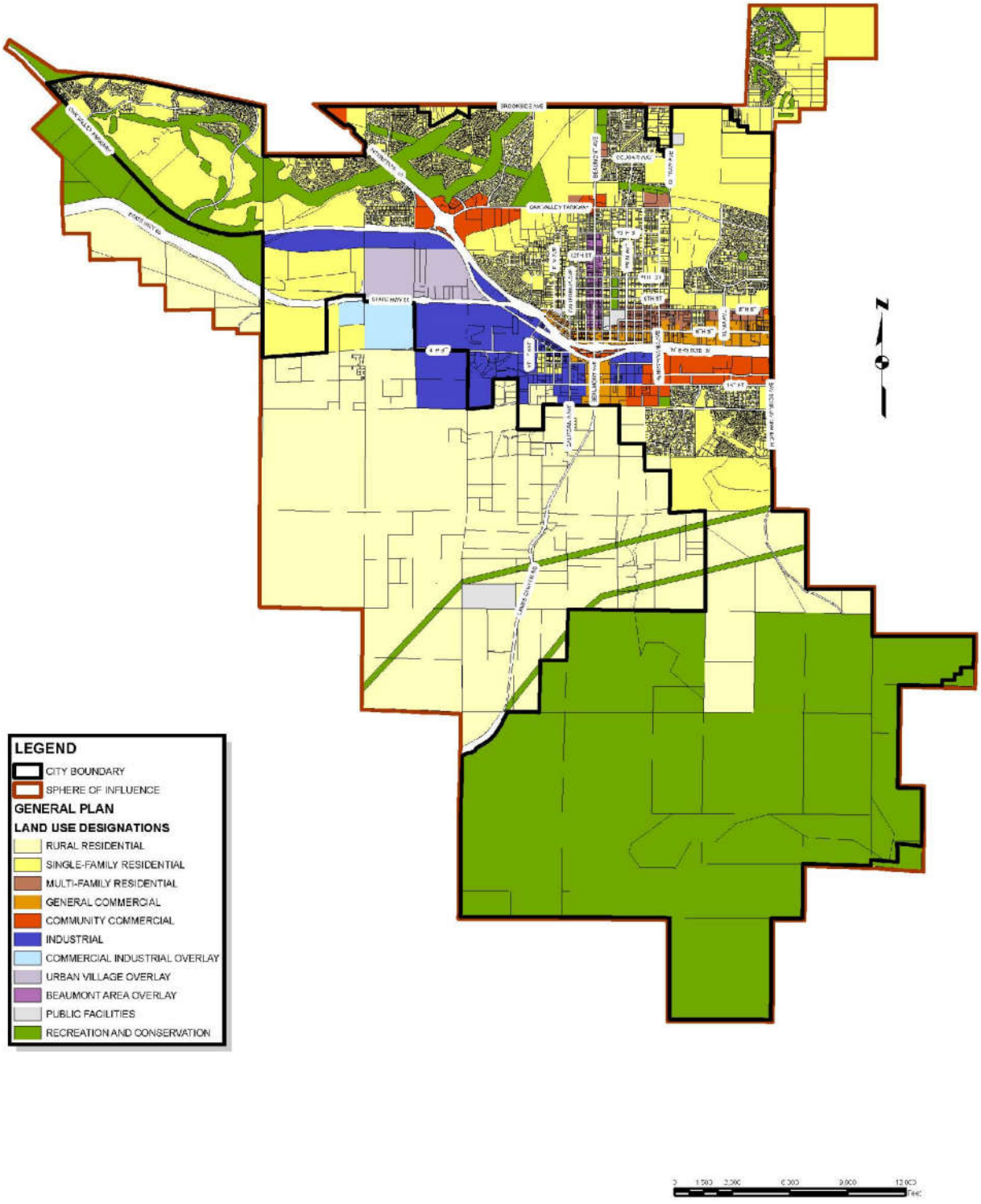
SOURCE: City of Moreno Valley 2009

FIGURE 2-9
City of Moreno Valley General Plan Land Use Map



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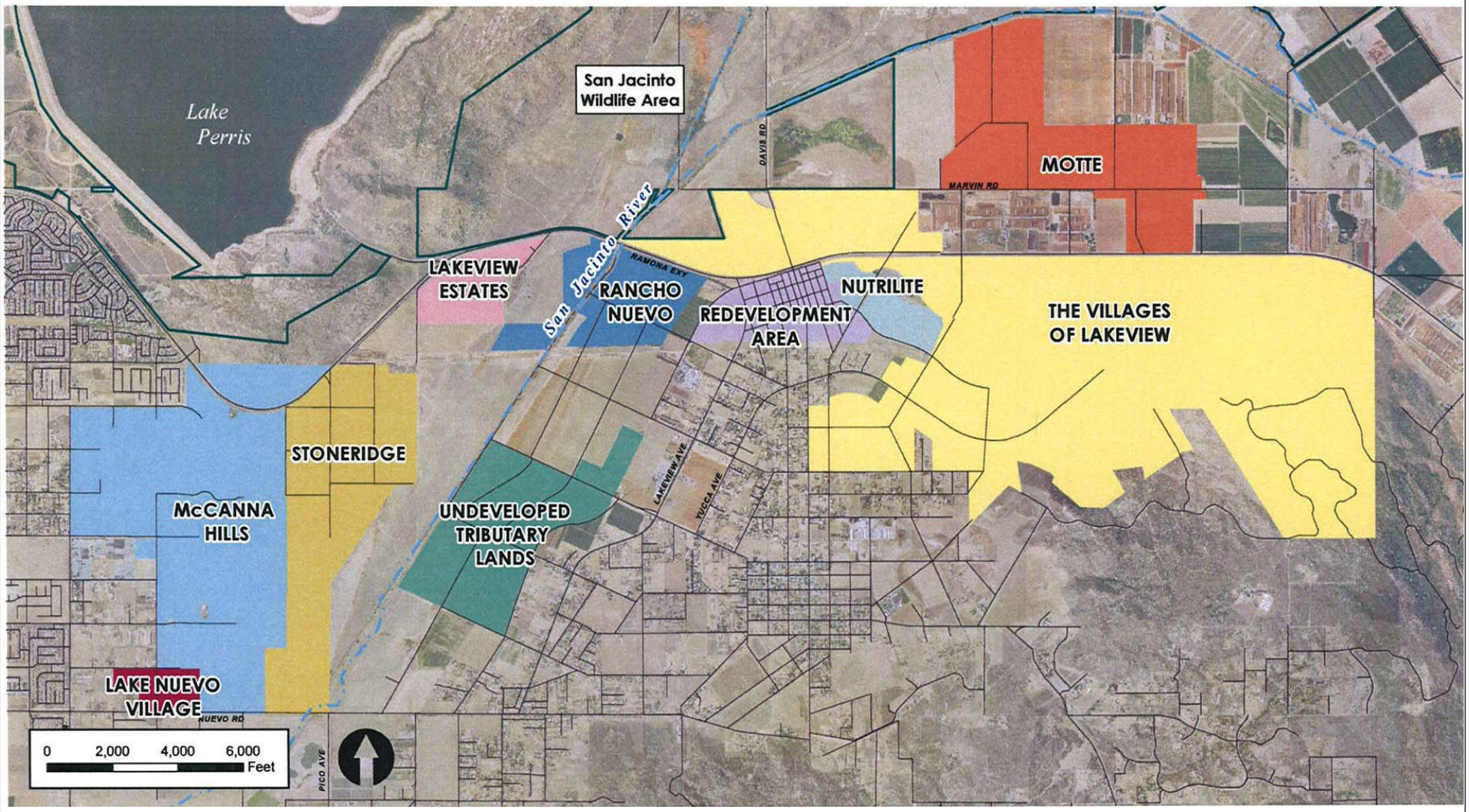
JANUARY 2012

SOURCE: City of Beaumont 2009

FIGURE 2.10
City of Beaumont General Plan Land Use Map



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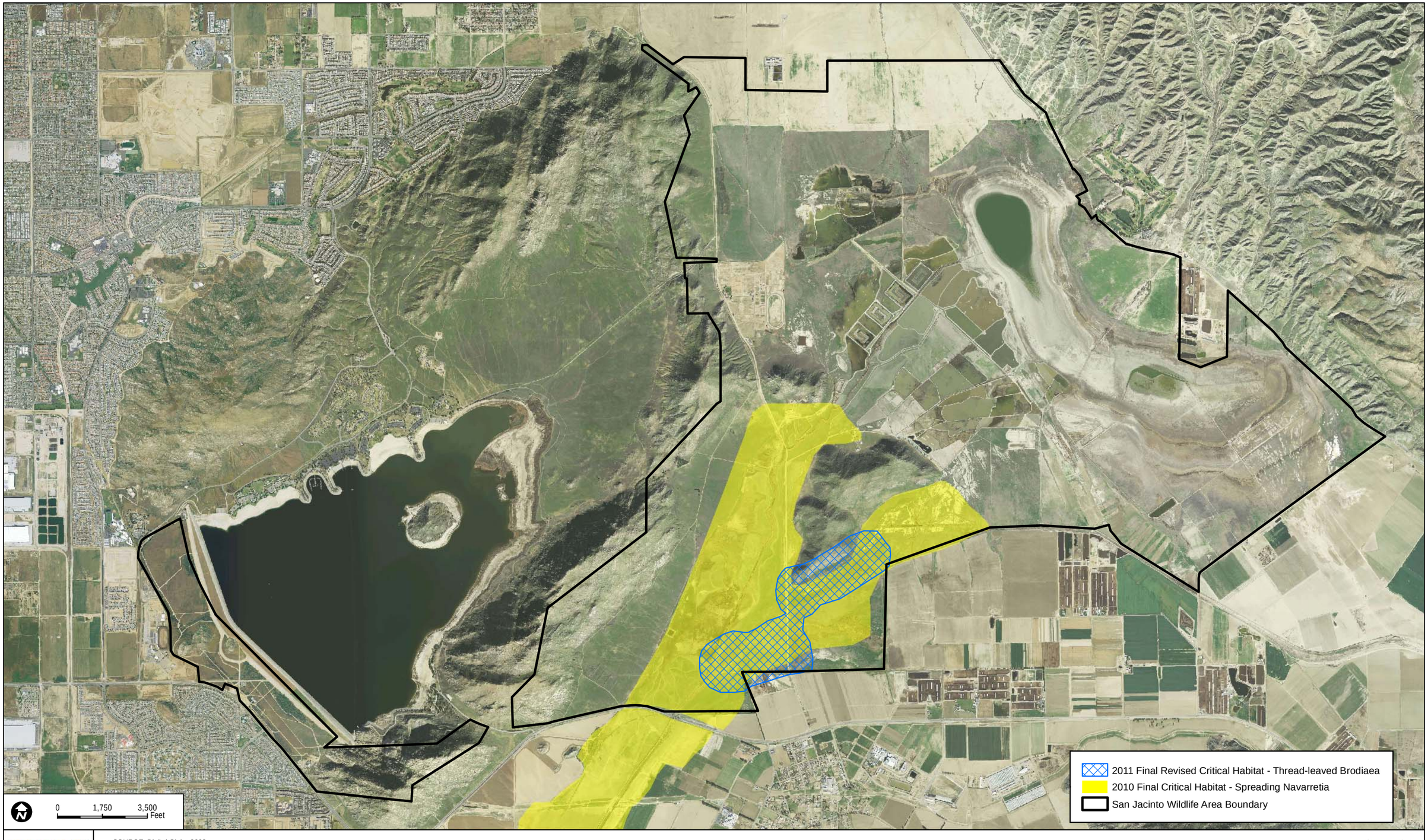
JANUARY 2012

SOURCE: Albert A. Webb Associates

FIGURE 2-11
Riverside County - Planned Land Use Map



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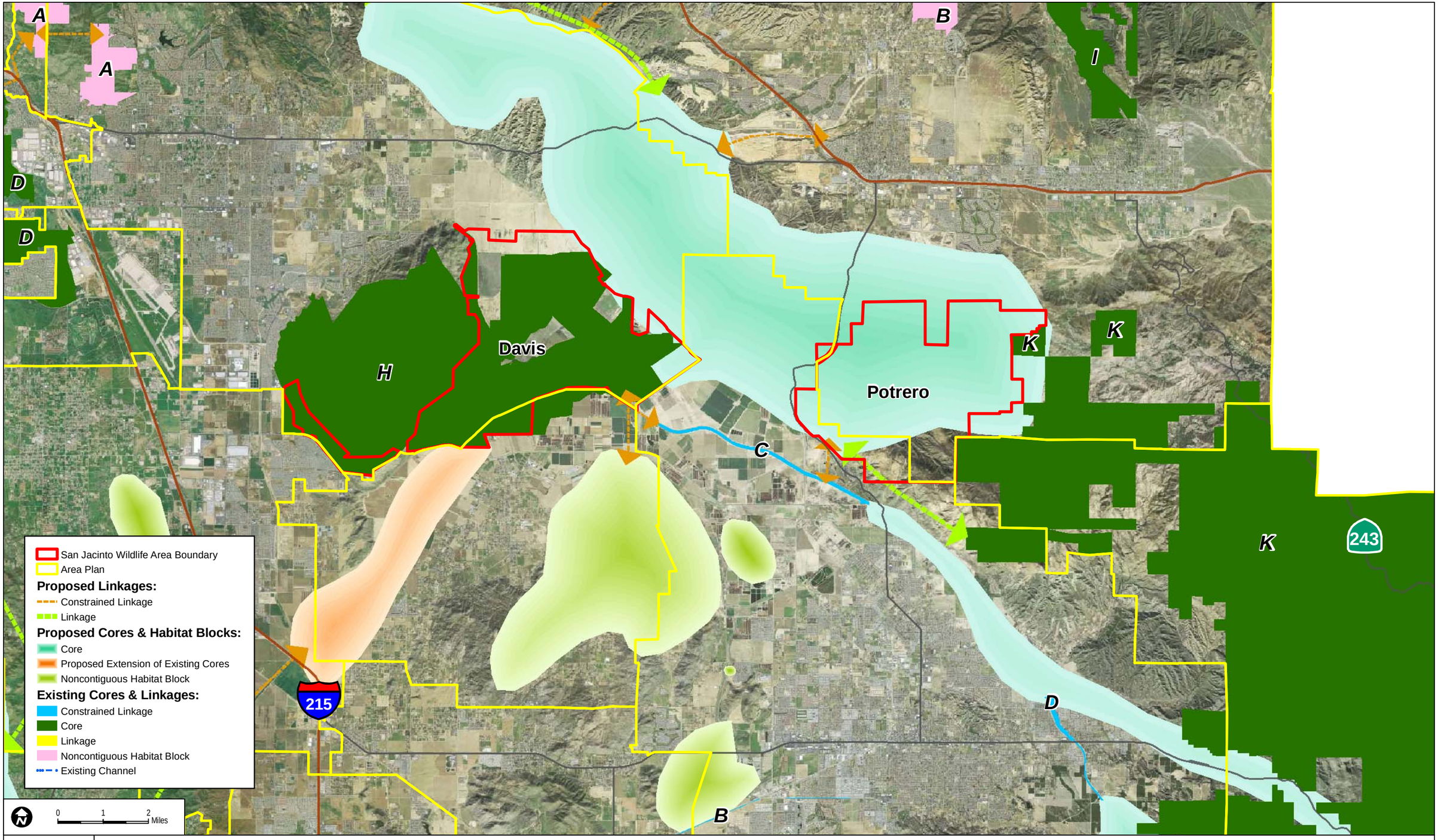
JANUARY 2012

SOURCE: Digital Globe 2008
USFWS 2010; 2011

FIGURE 3-1

Critical Habitat



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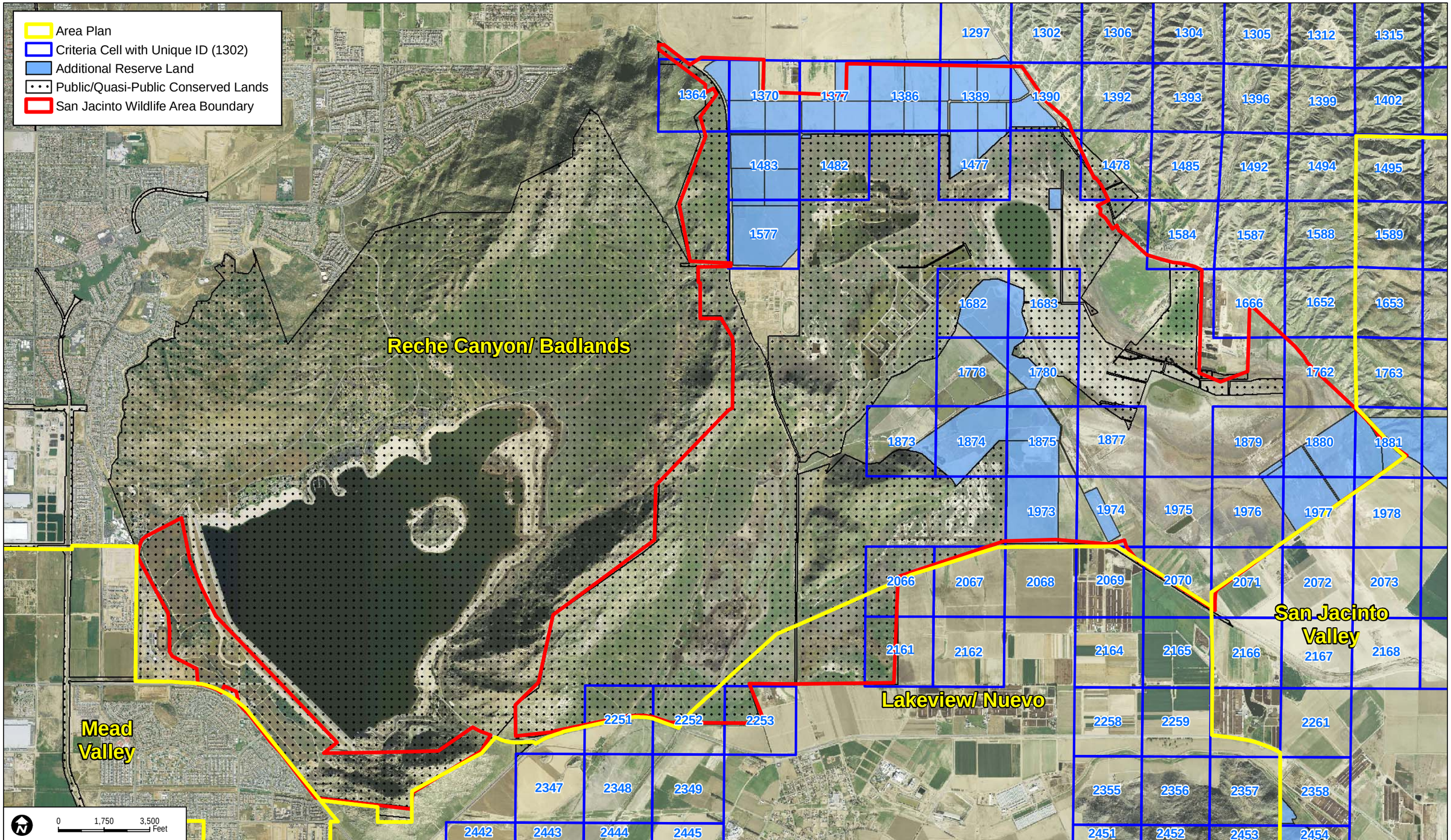
JANUARY 2012

SOURCE: Digital Globe 2008
RCTLMA MSHCP 2007

FIGURE 3-2

MSHCP Core/Linkage



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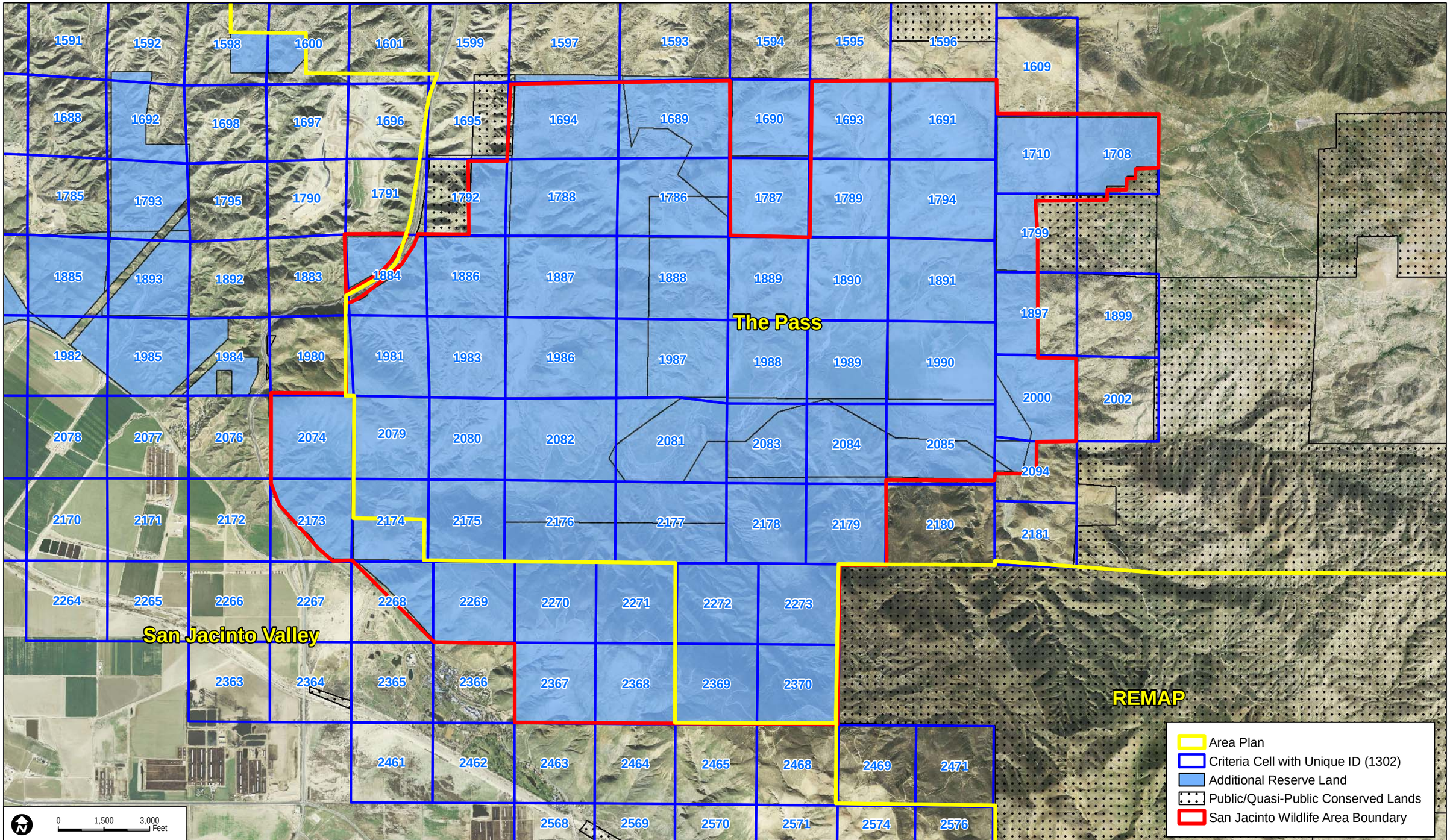
JANUARY 2012

SOURCE: Digital Globe 2008
RCTLMA MSHCP 2007

FIGURE 3-3a

MSHCP Conservation Overlay - Davis Unit



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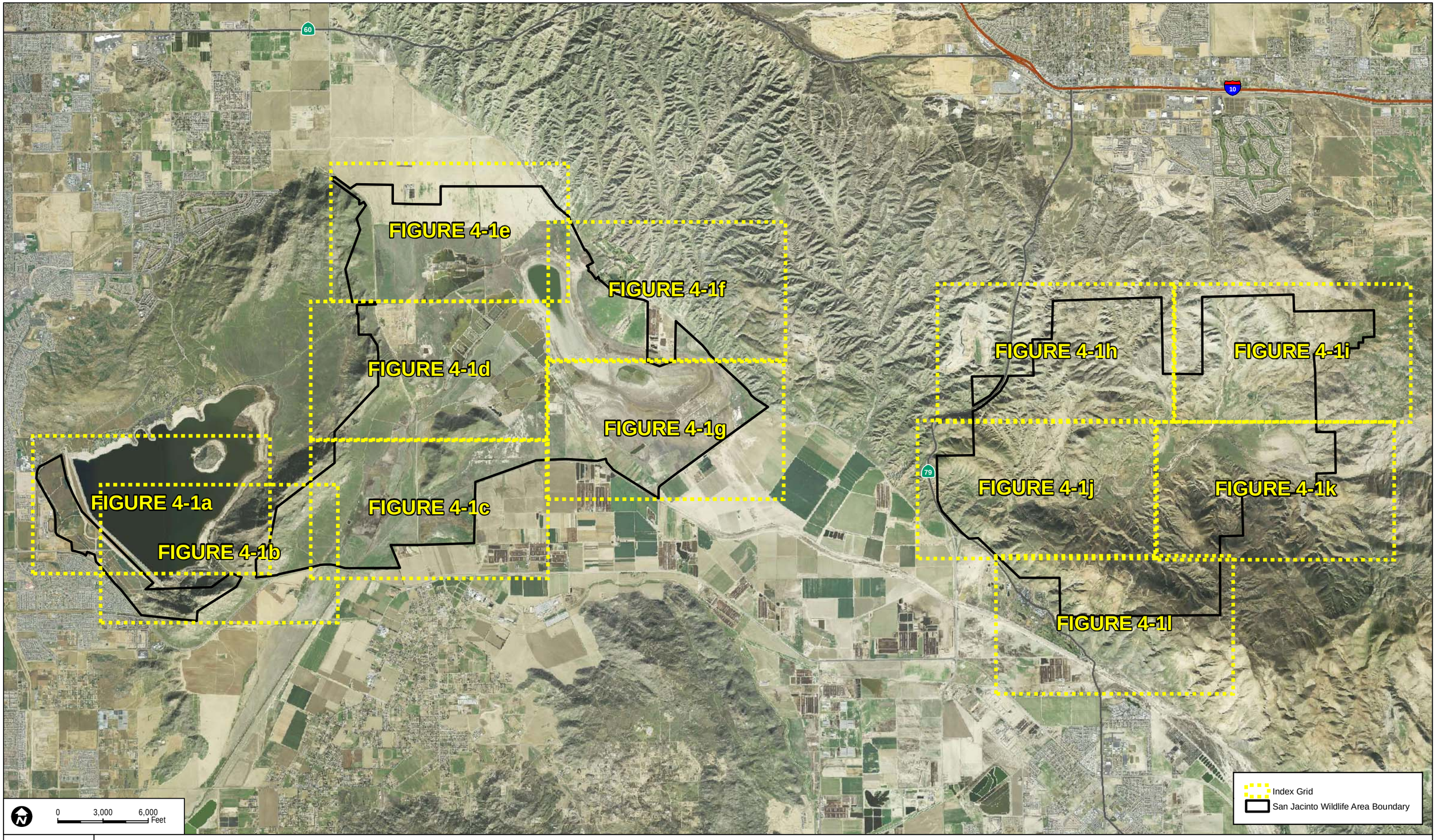
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
RCTLMA MSHCP 2007

FIGURE 3-3b

MSHCP Conservation Overlay - Potrero Unit



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6096-01

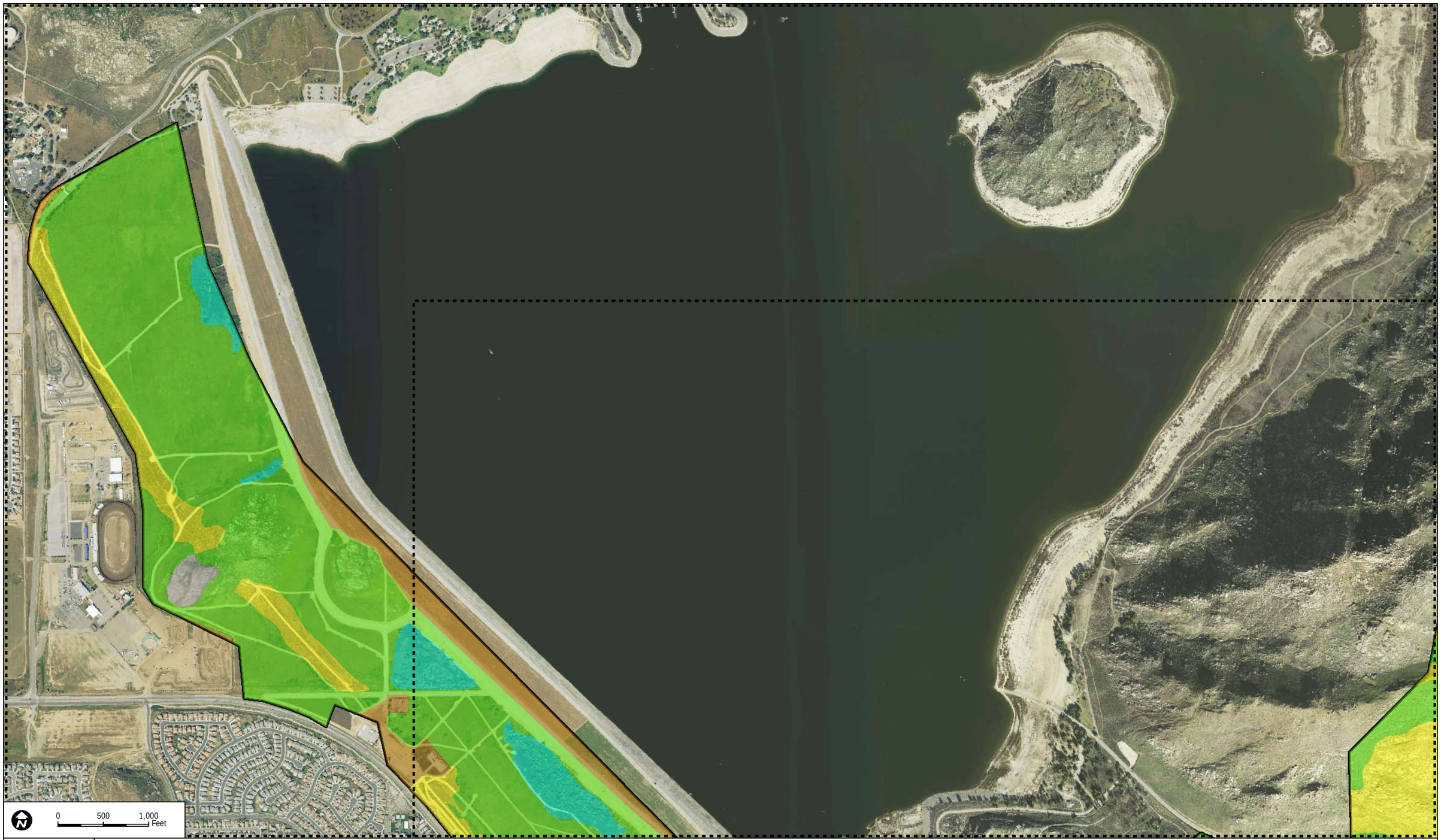
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 4-1

Vegetation Community Mapping - Index Map

San Jacinto Wildlife Area - Land Management Plan



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6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
CNPS 2006

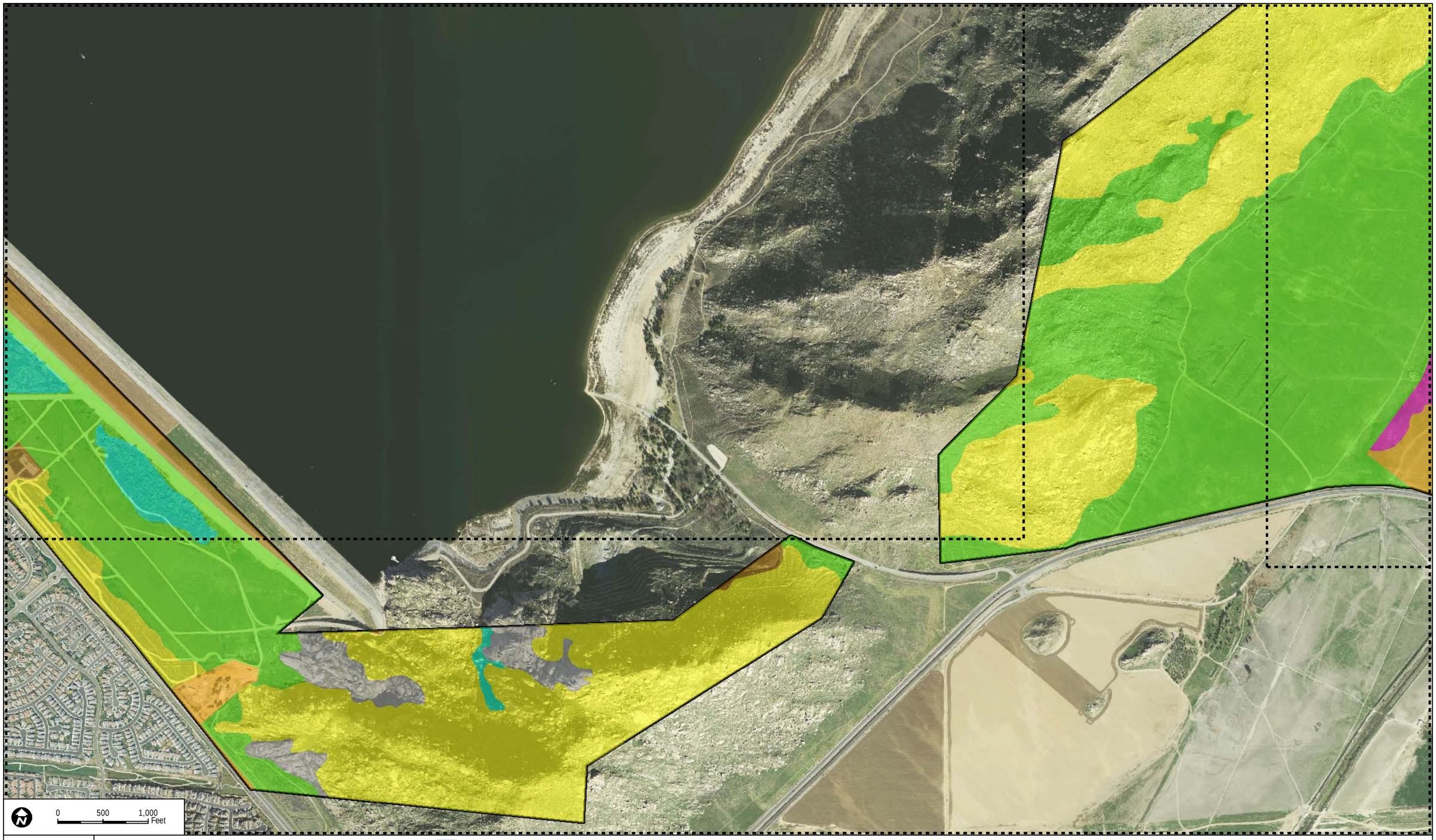
San Jacinto Wildlife Area Boundary

Vegetation Types

- Agricultural Land
- Chaparral
- Coastal Sage Scrub
- Developed/Disturbed Land
- Grasslands
- Meadows and Marshes
- Rock Outcrop
- Playas and Vernal Pools
- Riparian Scrub, Woodland, Forest
- Riversidian Alluvial Fan Scrub
- Water
- Woodland and Forests

FIGURE 4-1a

Vegetation Community Mapping

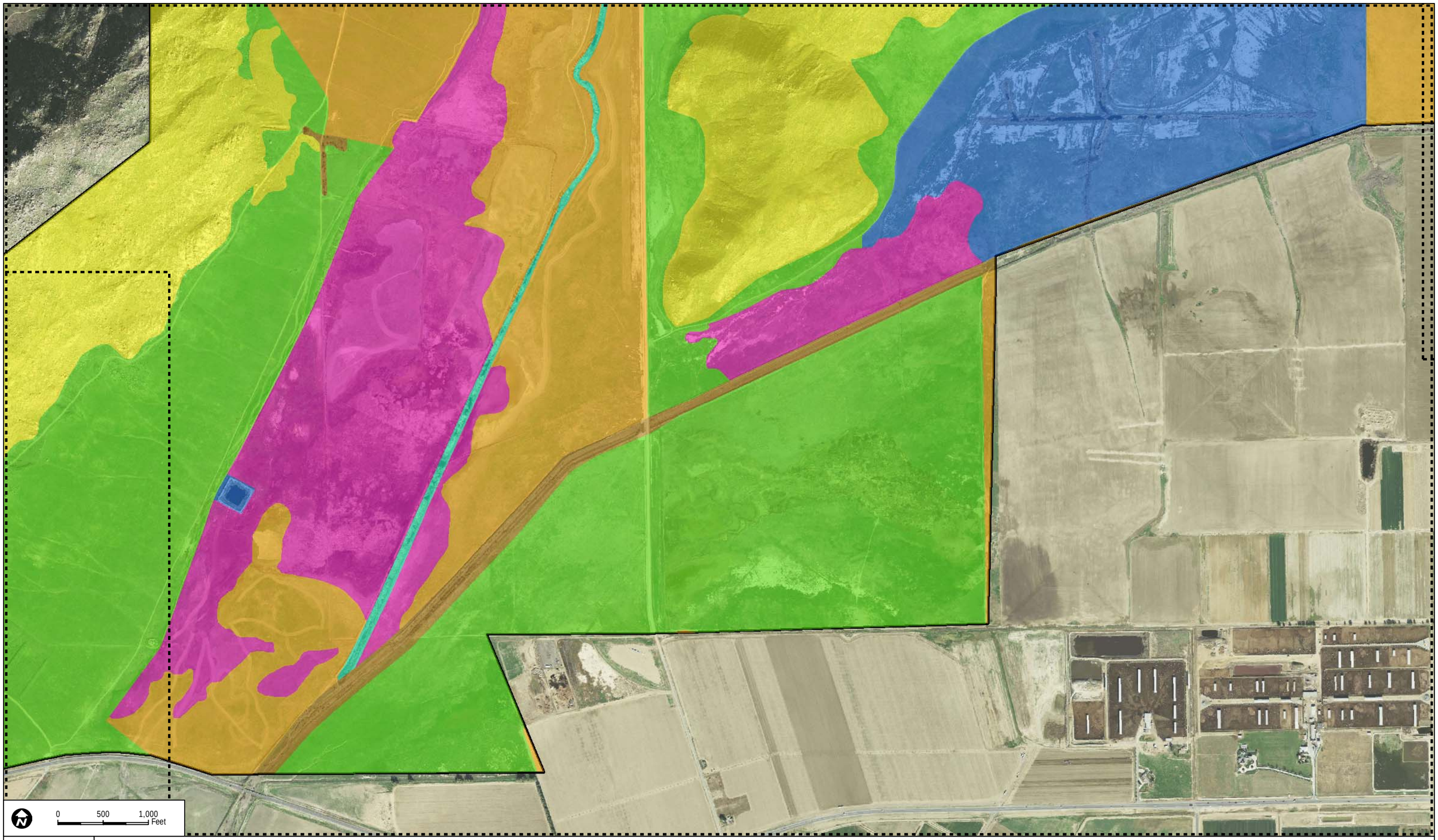


DUDEK

SOURCE: Digital Globe 2008
CNPS 2006

6096-01
JANUARY 2012

FIGURE 4-1b
Vegetation Community Mapping



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
CNPS 2006

San Jacinto Wildlife Area Boundary

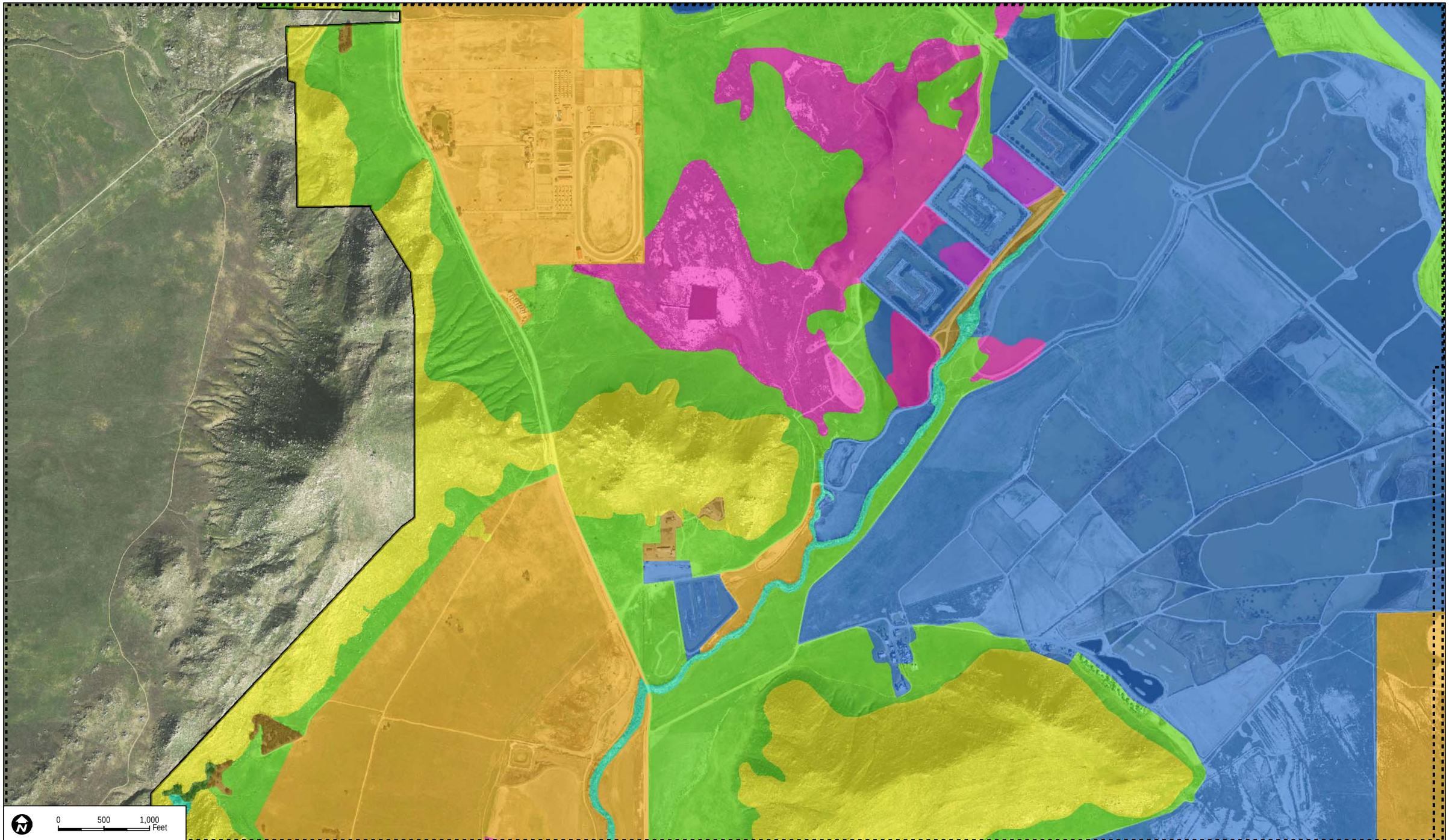
Vegetation Types

- Agricultural Land
- Chaparral
- Coastal Sage Scrub
- Developed/Disturbed Land
- Grasslands
- Meadows and Marshes
- Rock Outcrop
- Playas and Vernal Pools
- Riparian Scrub, Woodland, Forest
- Riversidian Alluvial Fan Scrub
- Water
- Woodland and Forests

FIGURE 4-1c

Vegetation Community Mapping

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
CNPS 2006

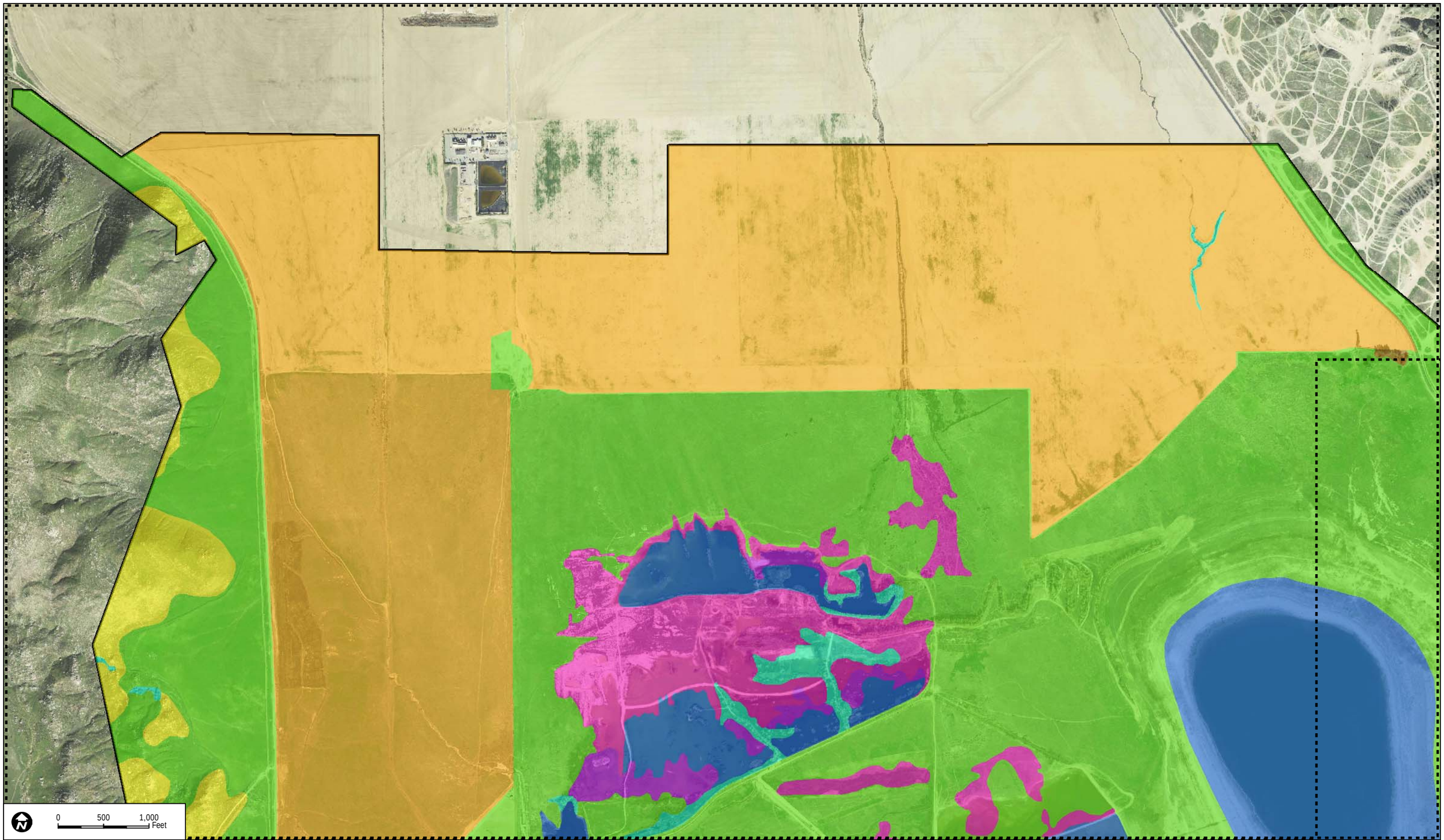
San Jacinto Wildlife Area Boundary

Vegetation Types

- Agricultural Land
- Chaparral
- Coastal Sage Scrub
- Developed/Disturbed Land
- Grasslands
- Meadows and Marshes
- Rock Outcrop
- Playas and Vernal Pools
- Riparian Scrub, Woodland, Forest
- Riversidian Alluvial Fan Scrub
- Water
- Woodland and Forests

FIGURE 4-1d

Vegetation Community Mapping



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
CNPS 2006

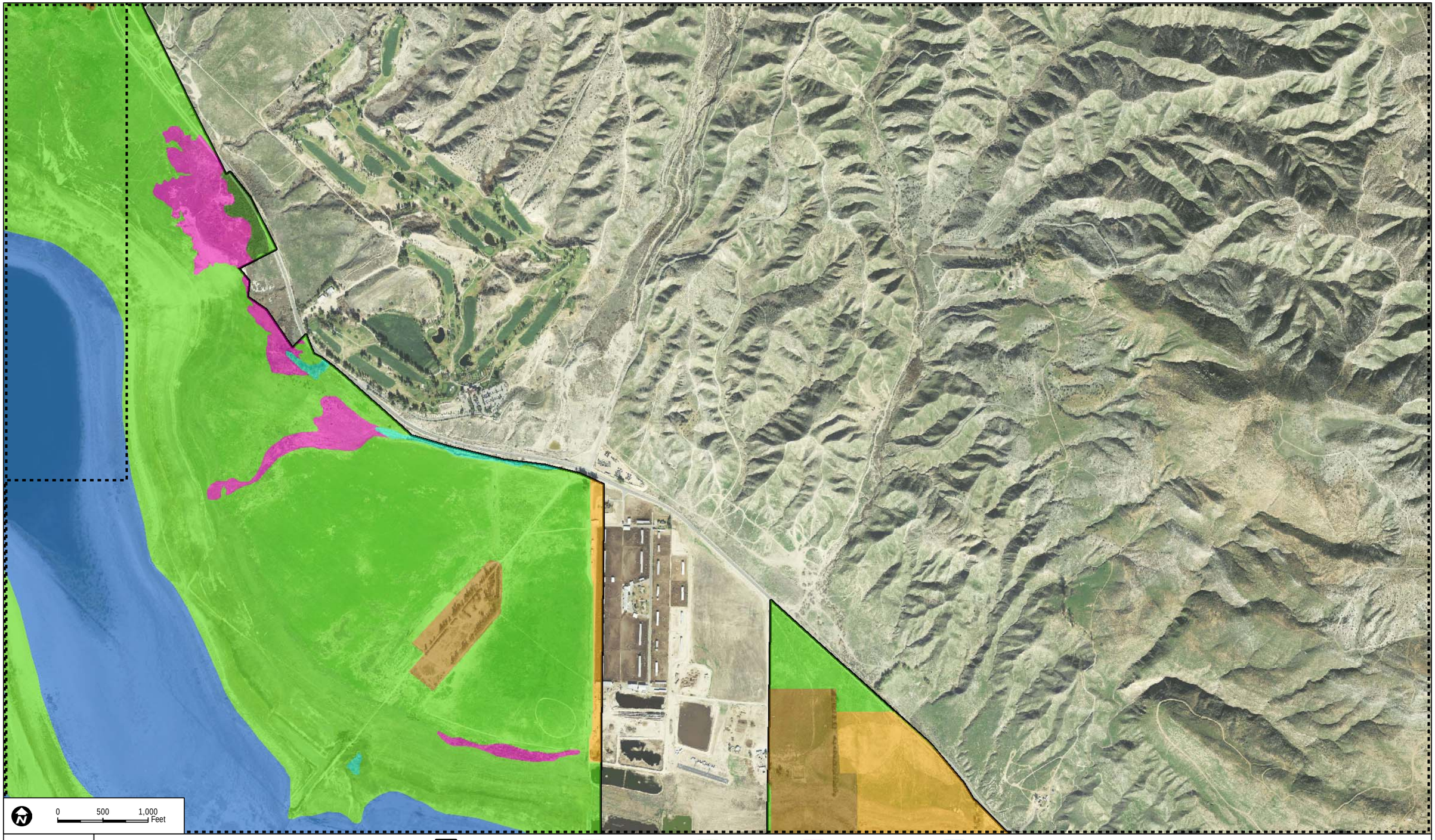
San Jacinto Wildlife Area Boundary

Vegetation Types

- Agricultural Land
- Chaparral
- Coastal Sage Scrub
- Developed/Disturbed Land
- Grasslands
- Meadows and Marshes
- Rock Outcrop
- Playas and Vernal Pools
- Riparian Scrub, Woodland, Forest
- Riversidian Alluvial Fan Scrub
- Water
- Woodland and Forests

FIGURE 4-1e

Vegetation Community Mapping



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
CNPS 2006

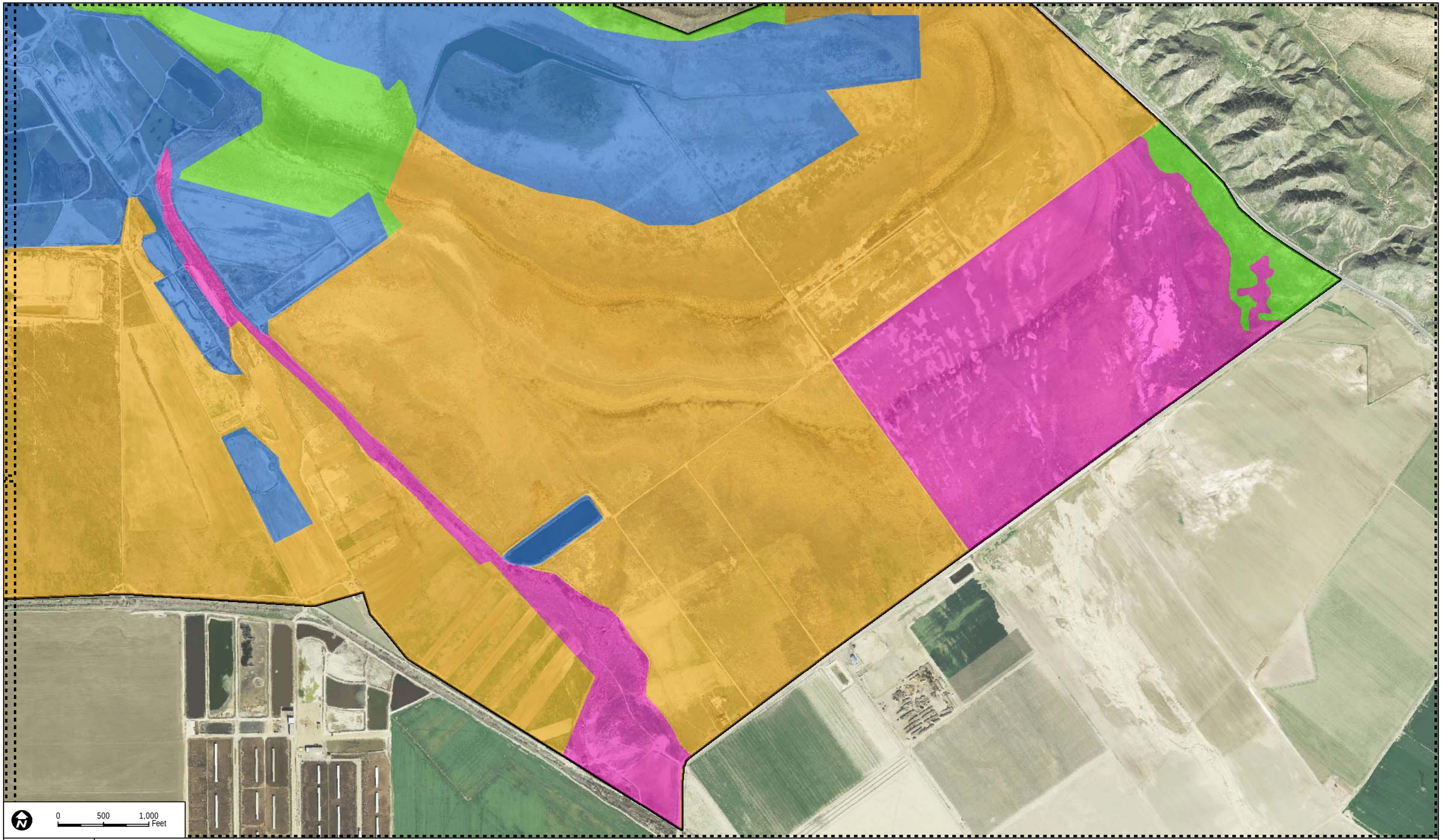
San Jacinto Wildlife Area Boundary

Vegetation Types

- Agricultural Land
- Chaparral
- Coastal Sage Scrub
- Developed/Disturbed Land
- Grasslands
- Meadows and Marshes
- Rock Outcrop
- Playas and Vernal Pools
- Riparian Scrub, Woodland, Forest
- Riversidian Alluvial Fan Scrub
- Water
- Woodland and Forests

FIGURE 4-1f

Vegetation Community Mapping



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
CNPS 2006

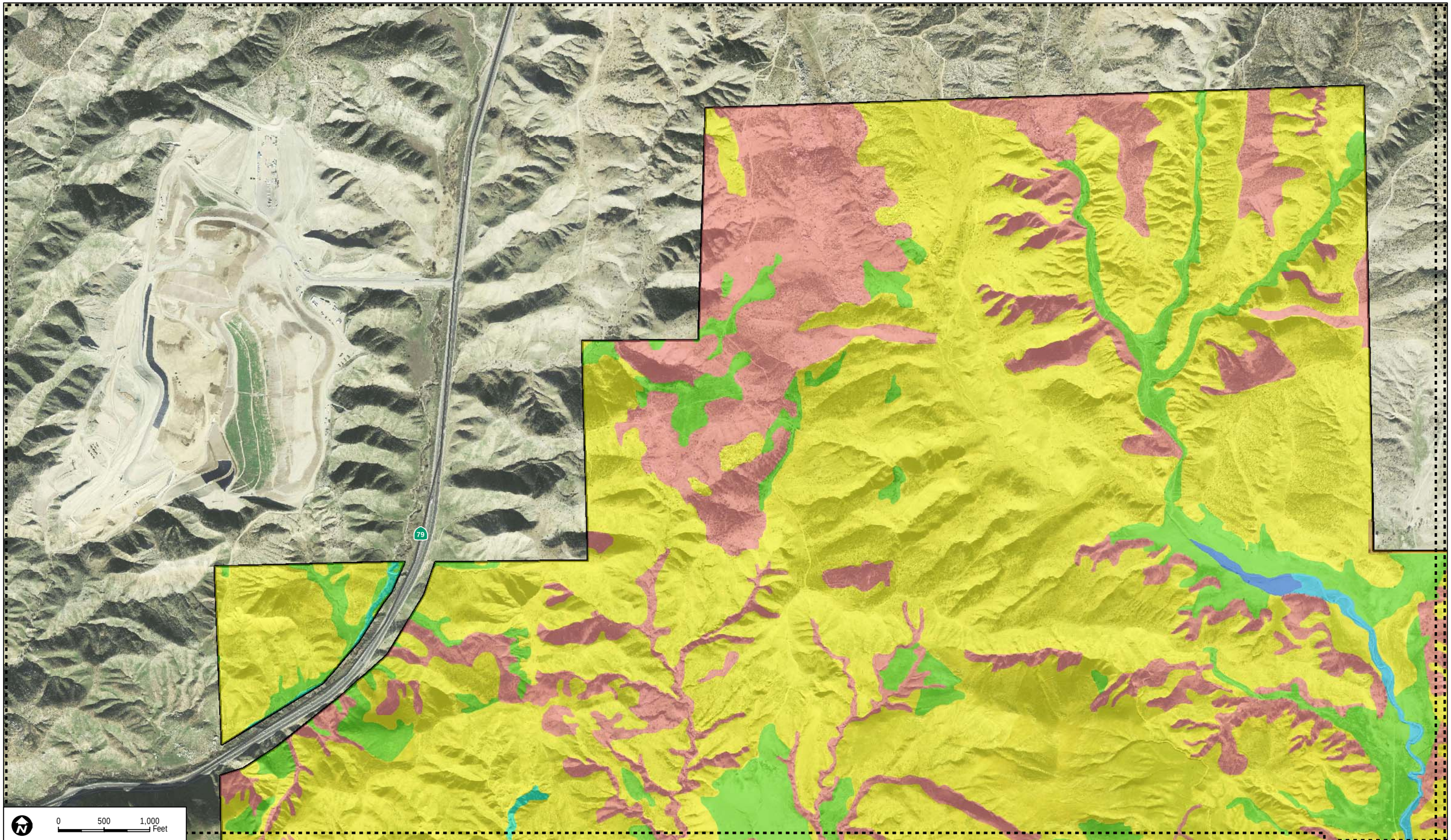
San Jacinto Wildlife Area Boundary

Vegetation Types

- Agricultural Land
- Chaparral
- Coastal Sage Scrub
- Developed/Disturbed Land
- Grasslands
- Meadows and Marshes
- Rock Outcrop
- Playas and Vernal Pools
- Riparian Scrub, Woodland, Forest
- Riversidian Alluvial Fan Scrub
- Water
- Woodland and Forests

FIGURE 4-1g

Vegetation Community Mapping



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
CNPS 2006

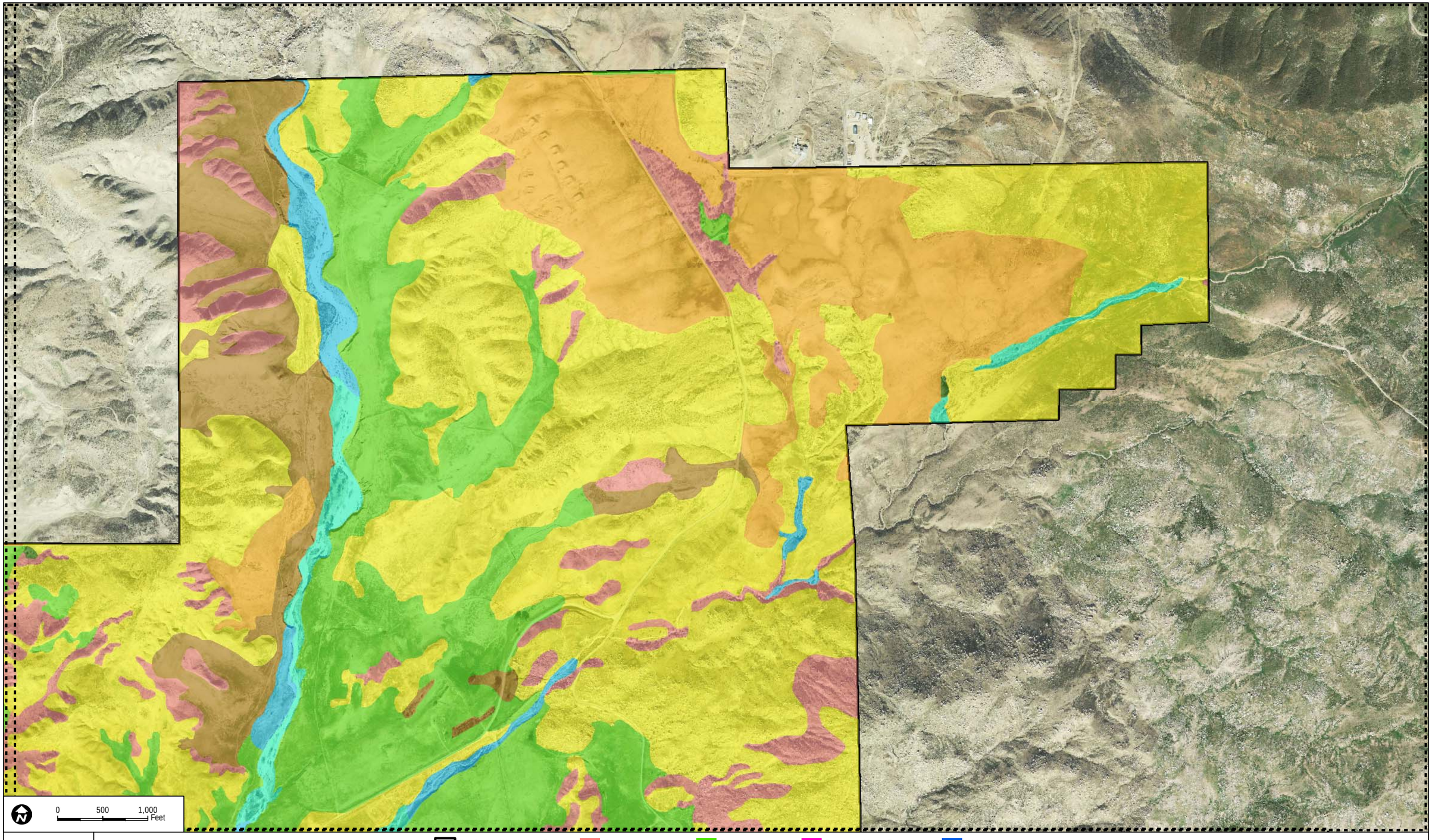
San Jacinto Wildlife Area Boundary

Vegetation Types

- Agricultural Land
- Chaparral
- Coastal Sage Scrub
- Developed/Disturbed Land
- Grasslands
- Meadows and Marshes
- Rock Outcrop
- Playas and Vernal Pools
- Riparian Scrub, Woodland, Forest
- Riversidian Alluvial Fan Scrub
- Water
- Woodland and Forests

FIGURE 4-1h

Vegetation Community Mapping



DUDEK

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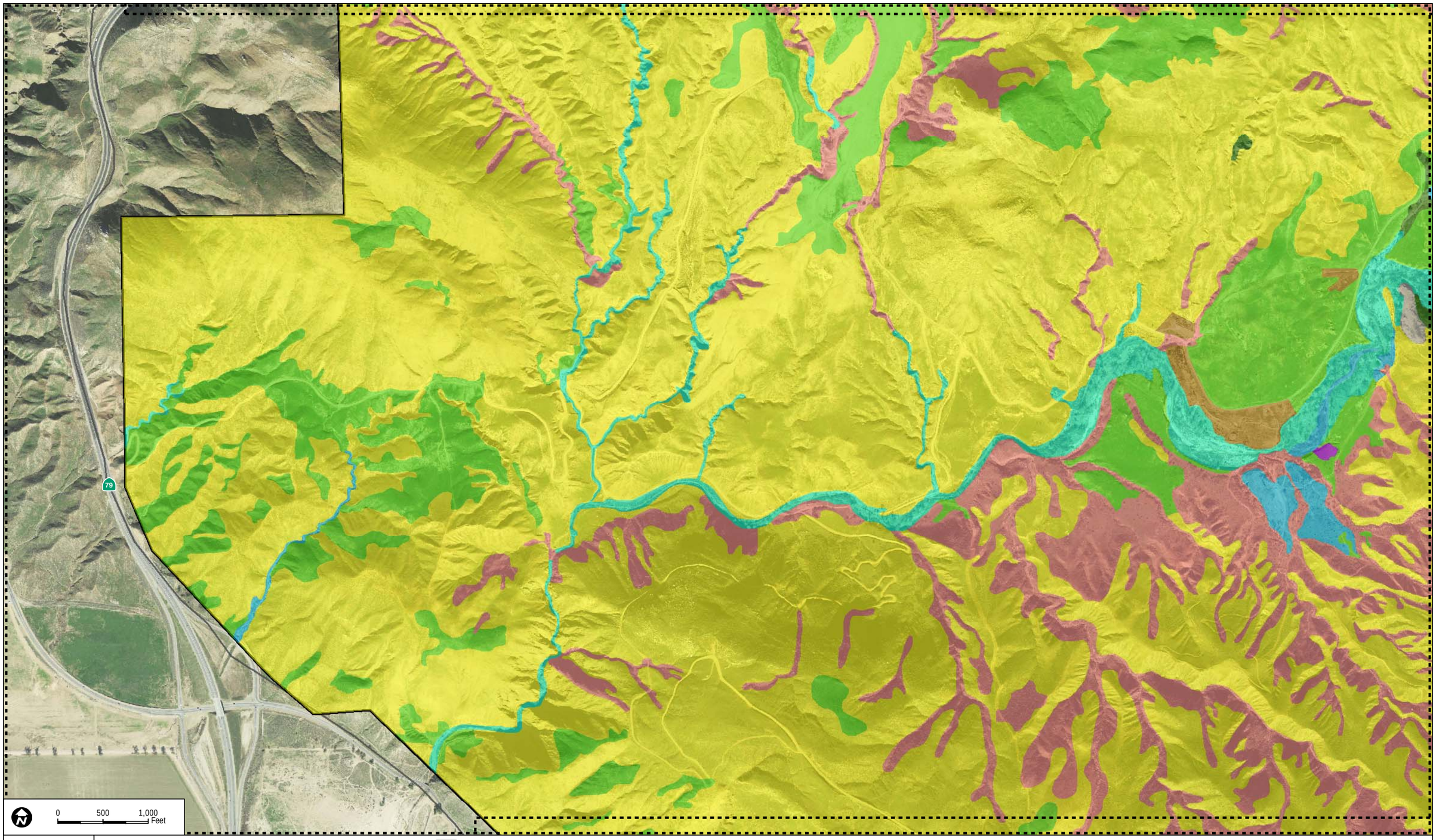
JANUARY 2012

SOURCE: Digital Globe 2008
CNPS 2006

FIGURE 4-1i

Vegetation Community Mapping



SOURCE: Digital Globe 2008
CNPS 2006

San Jacinto Wildlife Area Boundary

Vegetation Types

- Agricultural Land
- Chaparral
- Coastal Sage Scrub
- Developed/Disturbed Land
- Grasslands
- Meadows and Marshes
- Rock Outcrop
- Playas and Vernal Pools
- Riparian Scrub, Woodland, Forest
- Riversidian Alluvial Fan Scrub
- Water
- Woodland and Forests

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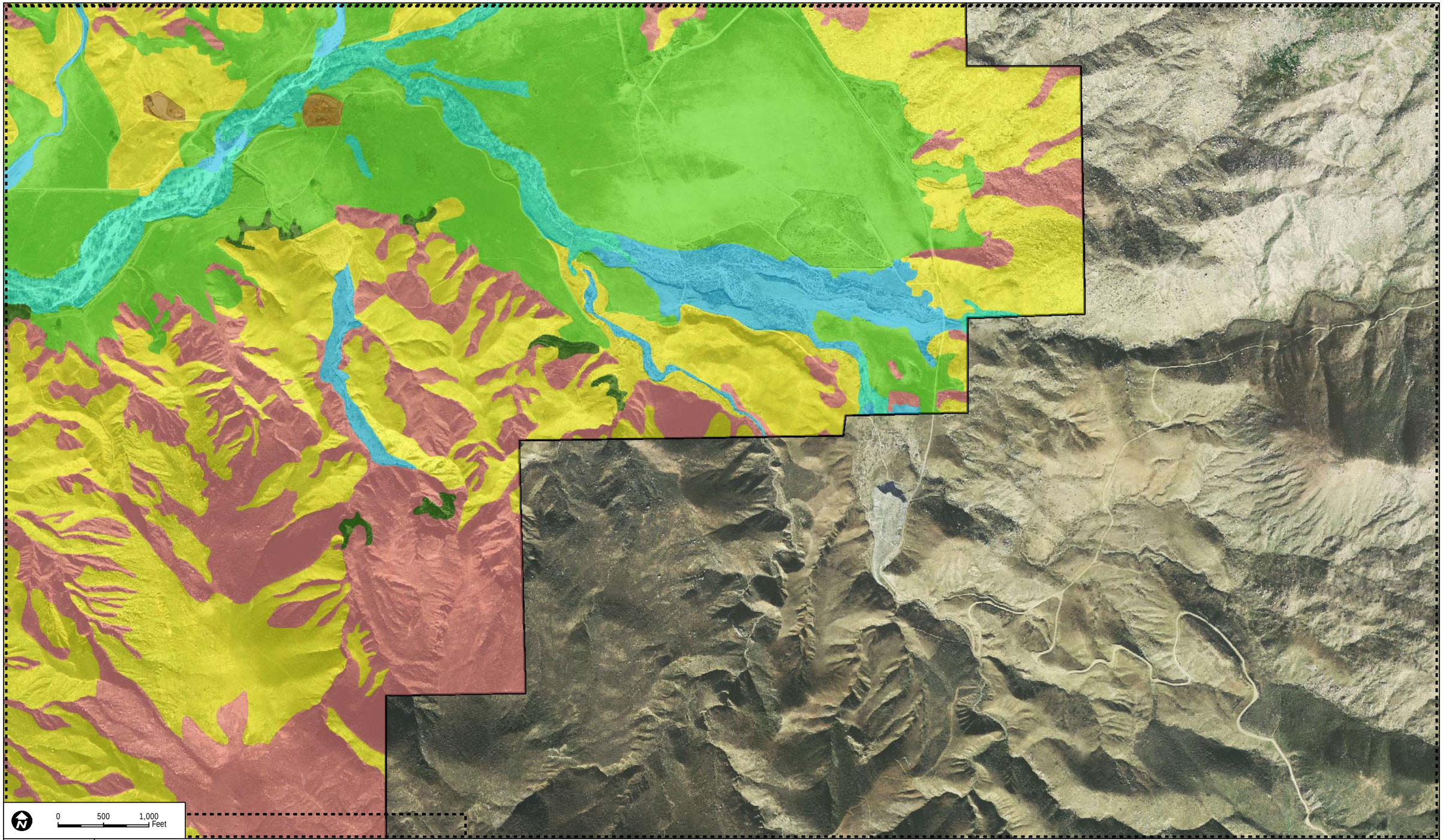
FIGURE 4-1j

Vegetation Community Mapping



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
CNPS 2006

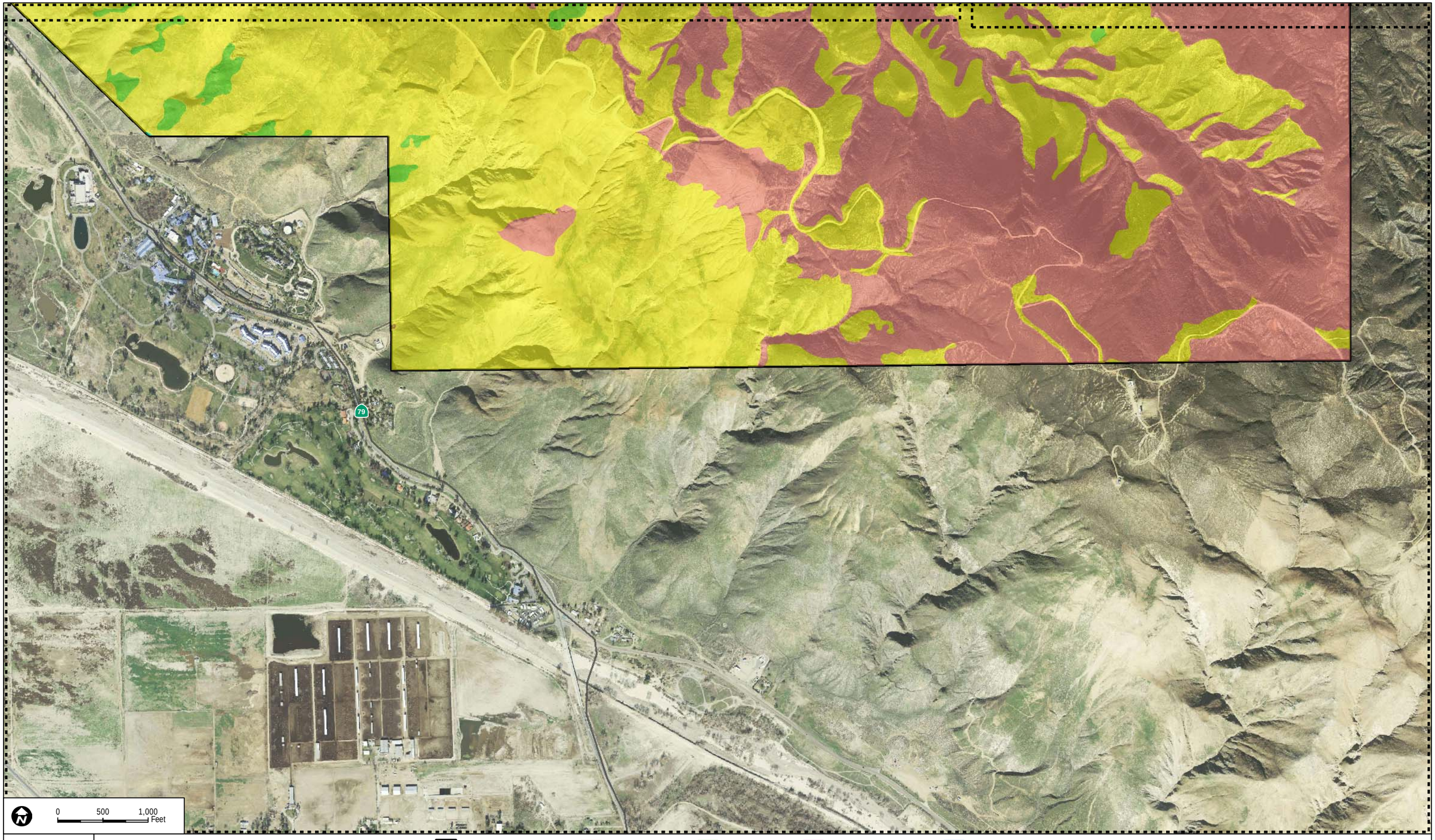
San Jacinto Wildlife Area Boundary

Vegetation Types

- Agricultural Land
- Chaparral
- Coastal Sage Scrub
- Developed/Disturbed Land
- Grasslands
- Meadows and Marshes
- Rock Outcrop
- Playas and Vernal Pools
- Riparian Scrub, Woodland, Forest
- Riversidian Alluvial Fan Scrub
- Water
- Woodland and Forests

FIGURE 4-1k

Vegetation Community Mapping



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
CNPS 2006

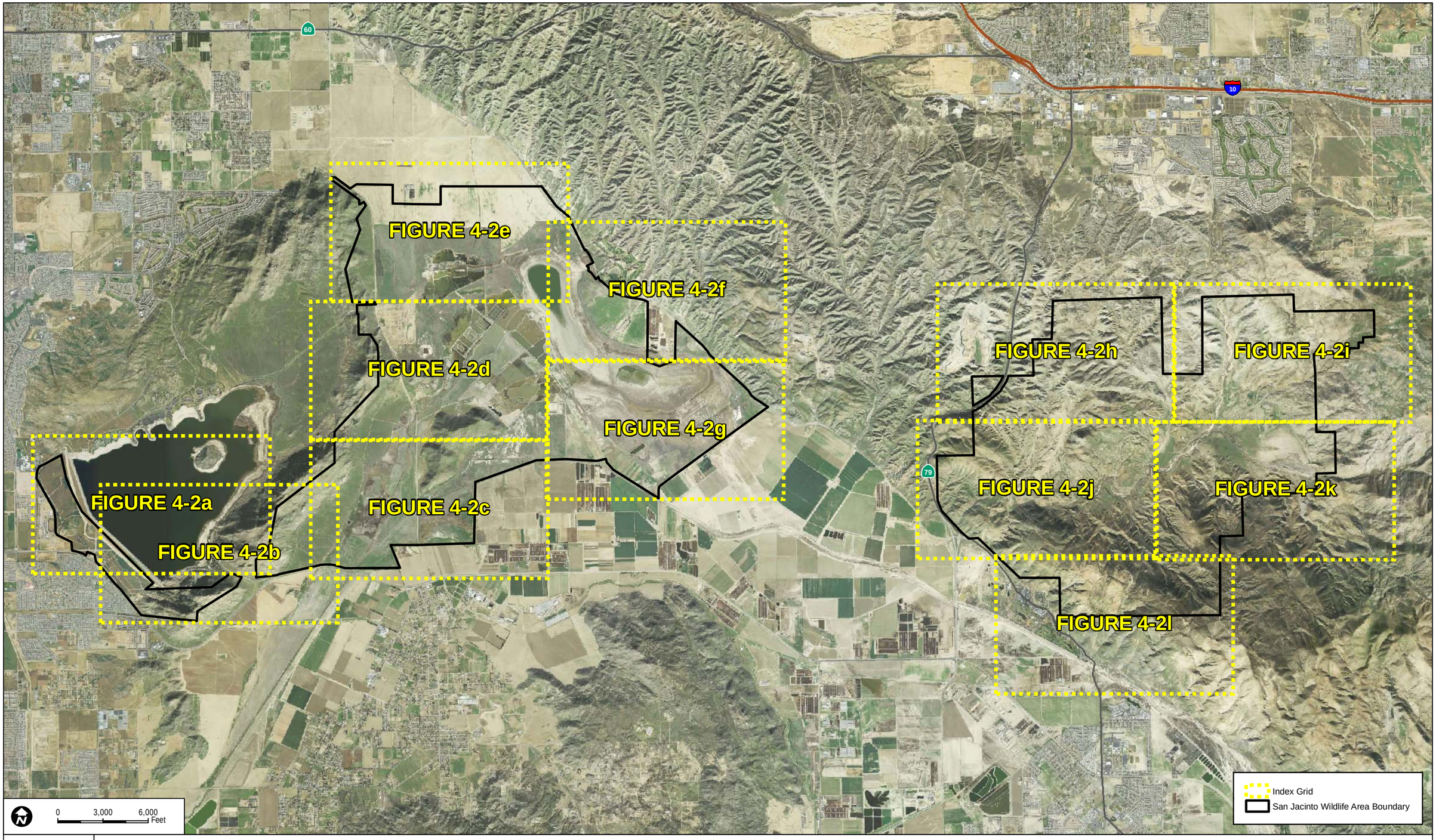
San Jacinto Wildlife Area Boundary

Vegetation Types

- Agricultural Land
- Chaparral
- Coastal Sage Scrub
- Developed/Disturbed Land
- Grasslands
- Meadows and Marshes
- Rock Outcrop
- Playas and Vernal Pools
- Riparian Scrub, Woodland, Forest
- Riversidian Alluvial Fan Scrub
- Water
- Woodland and Forests

FIGURE 4-1l

Vegetation Community Mapping



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SOURCE: Digital Globe 2008

FIGURE 4-2

Special-Status Plant Species Locations - Index Map

San Jacinto Wildlife Area - Land Management Plan

DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2a

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan

DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

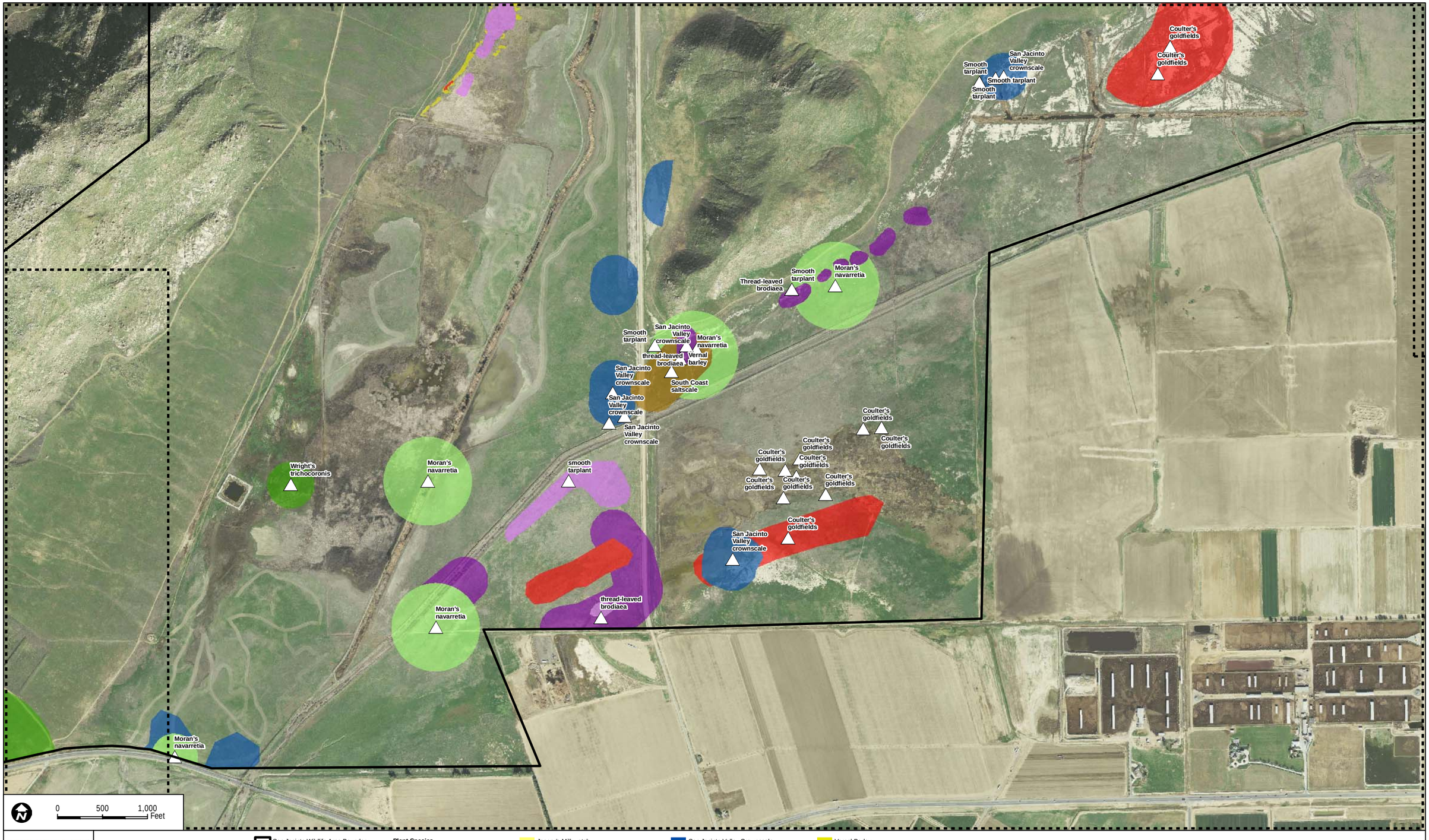
Plant Species

- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2b

Special-Status Plant Species Locations



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

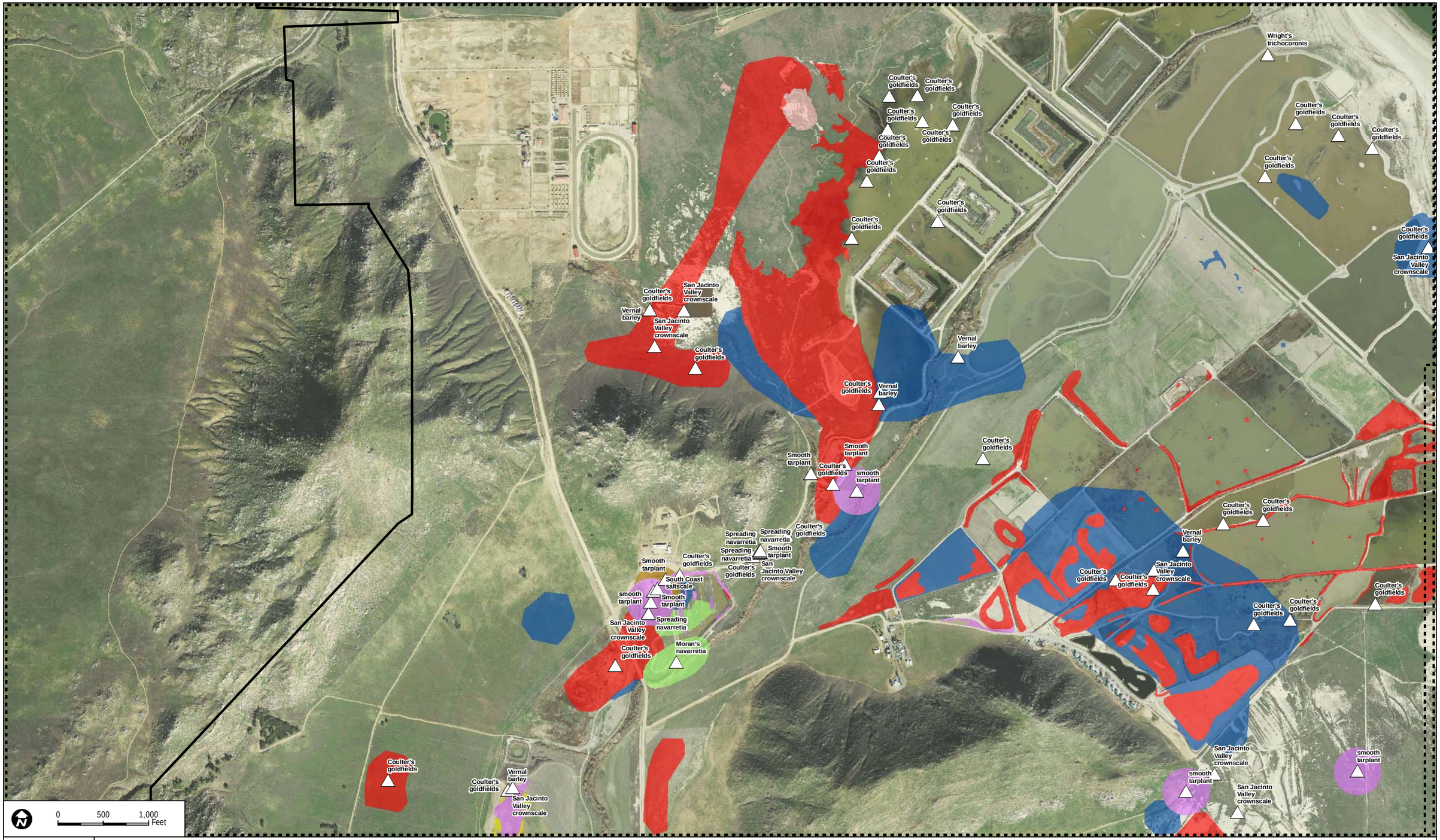
- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2c

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea

Wright's Trichocoronis*

Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2d

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan

DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

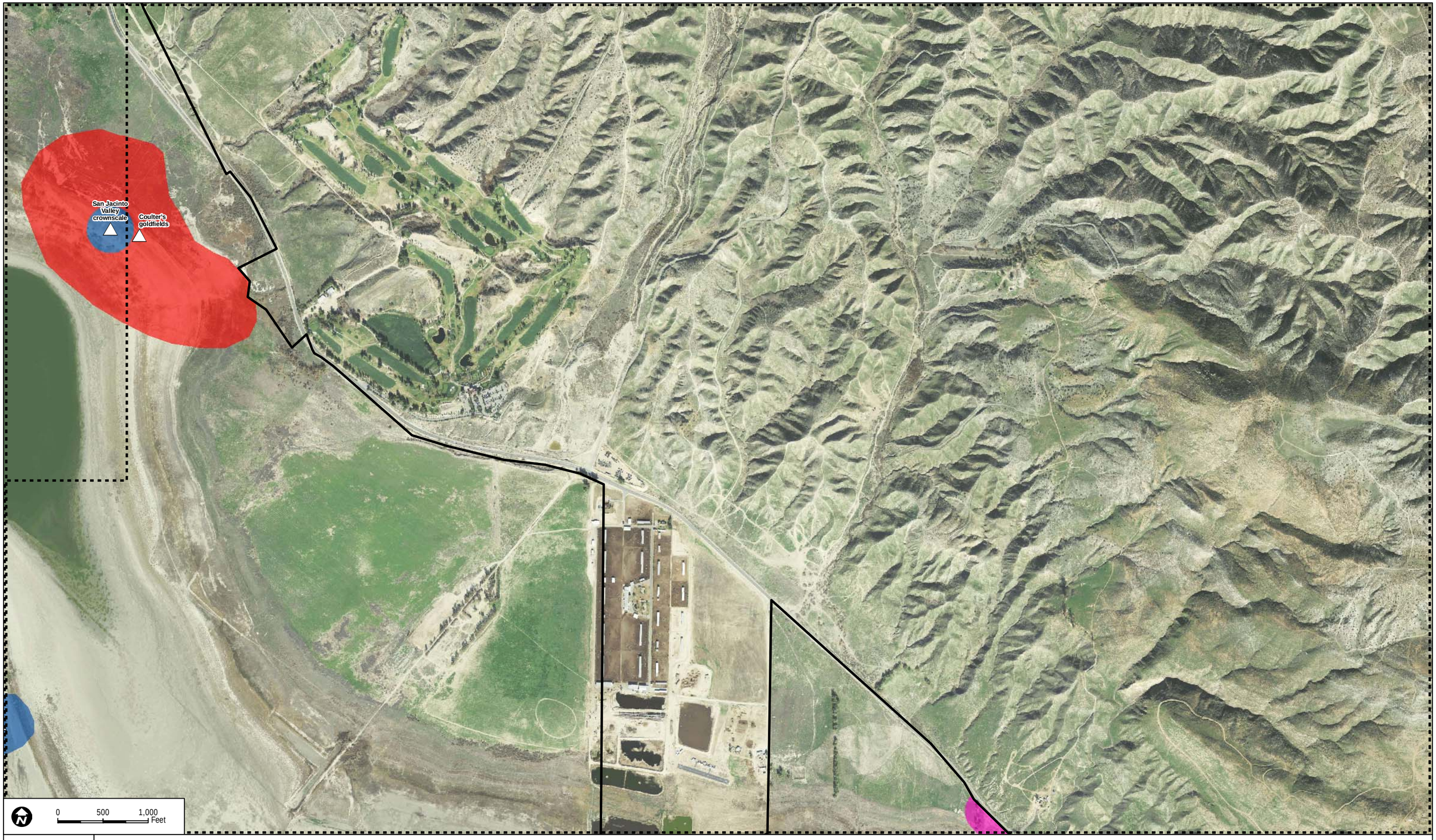
- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2e

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2f

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan

DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2g

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan

DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

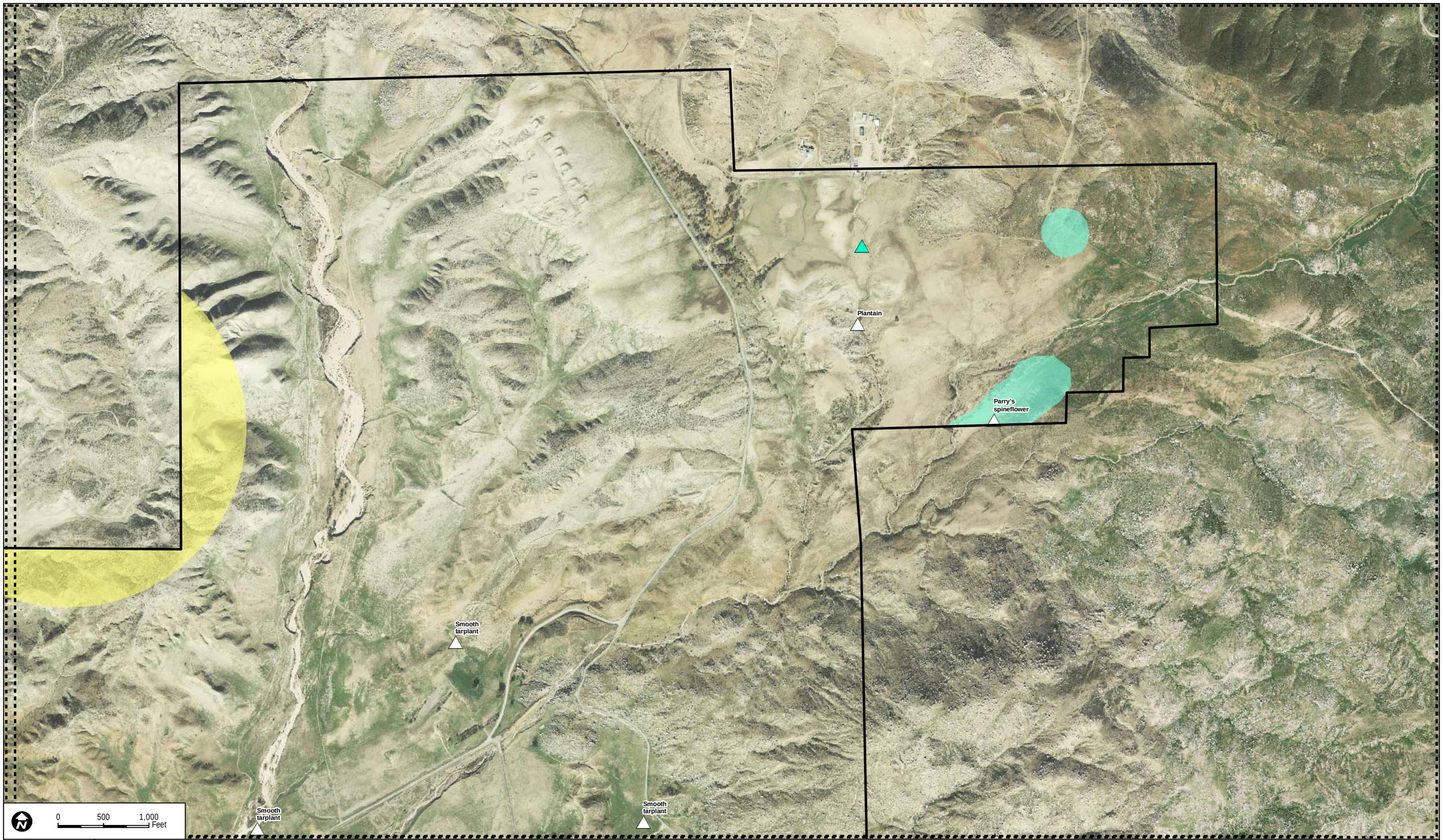
- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2h

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

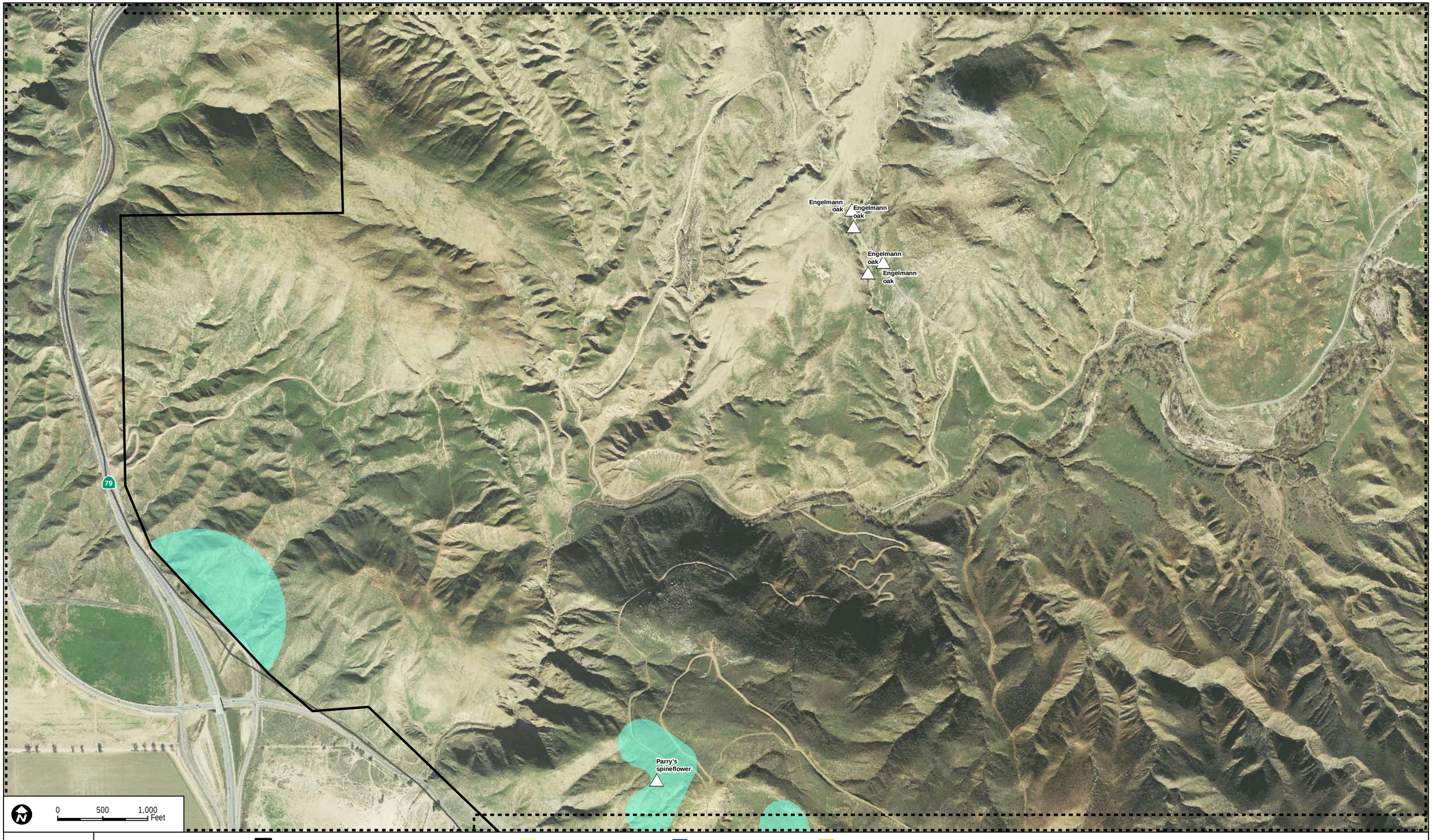
- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2i

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

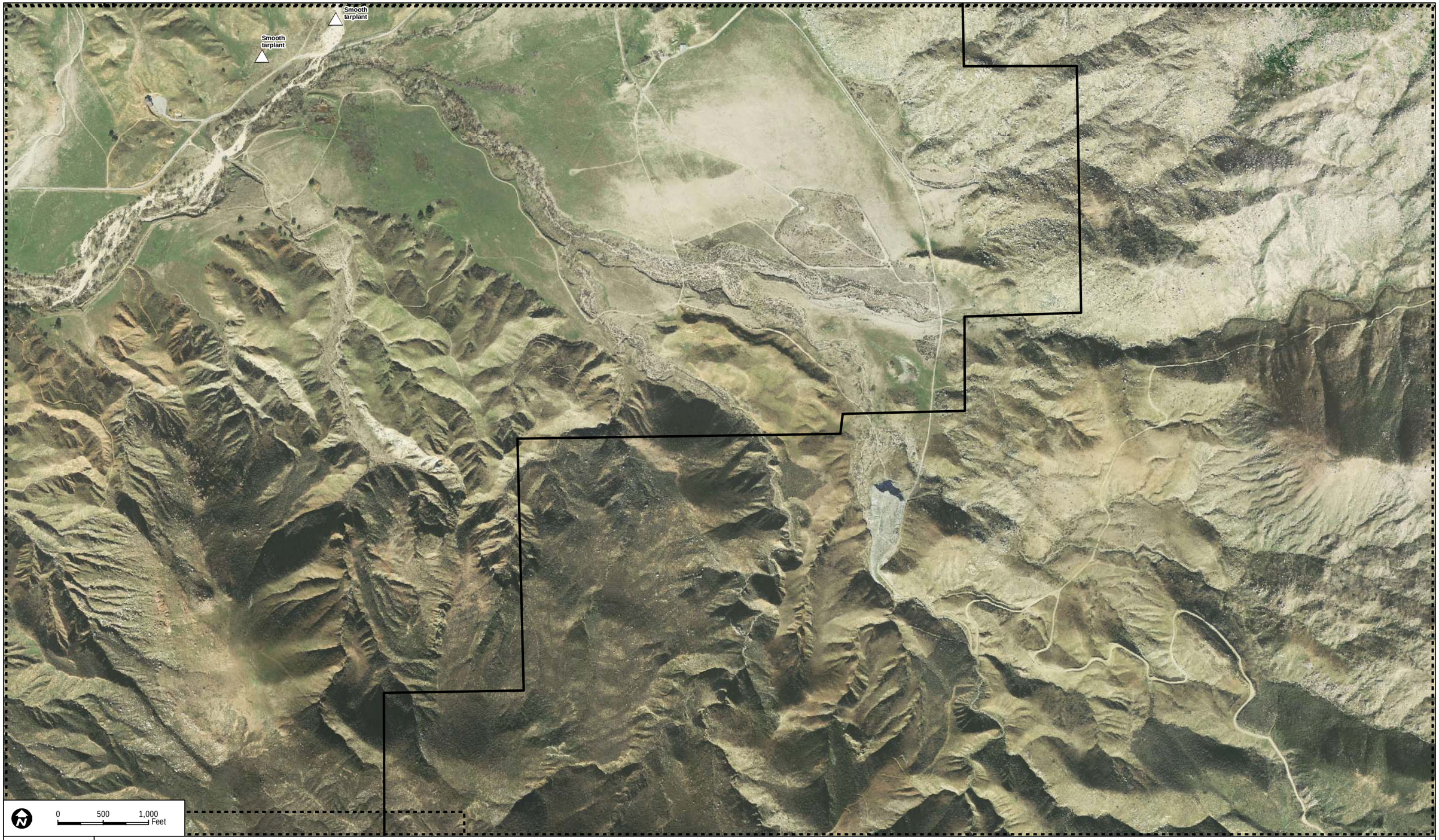
- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2j

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

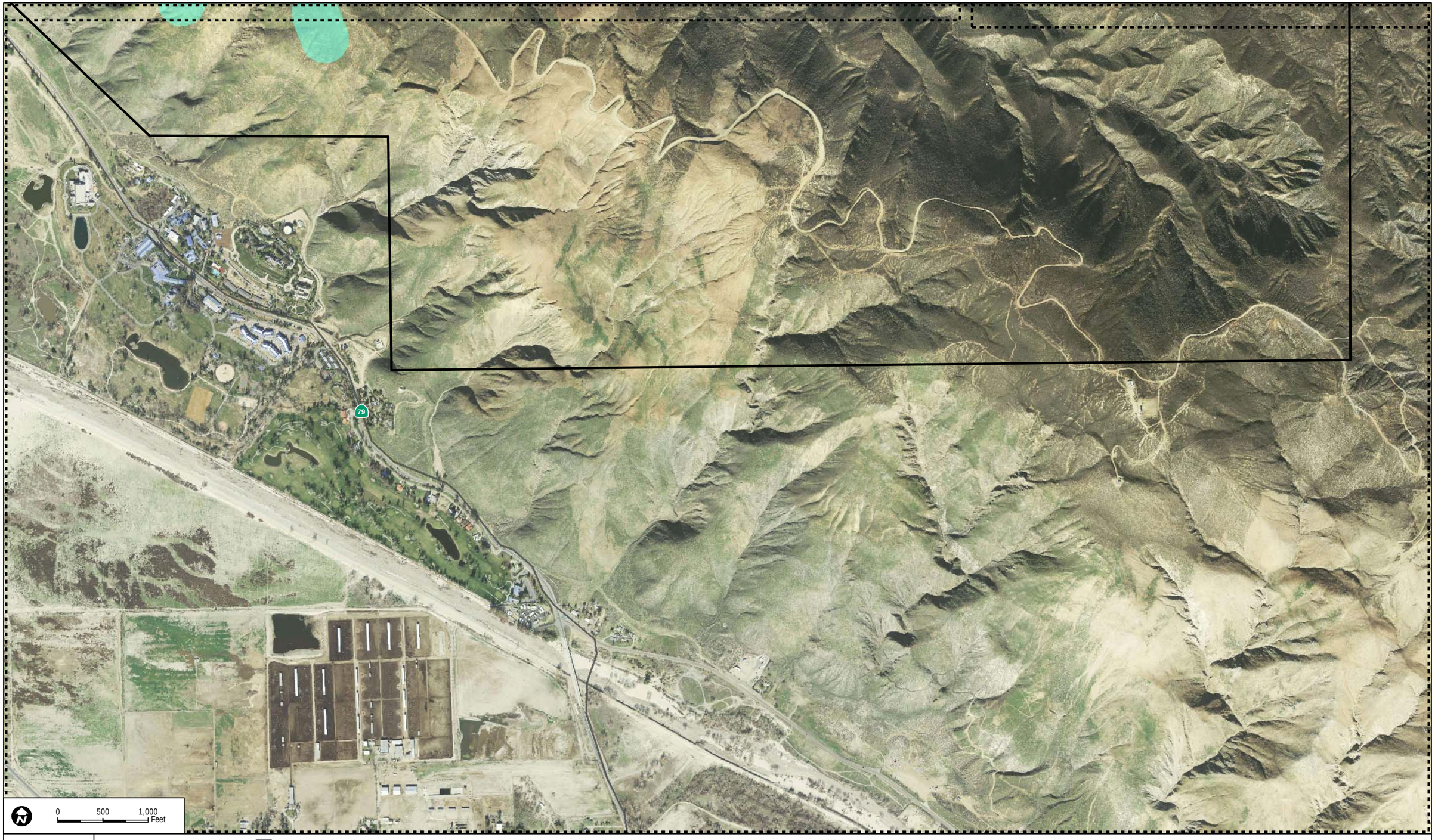
- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2k

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Plant Species Locations (Common Name)

Plant Species

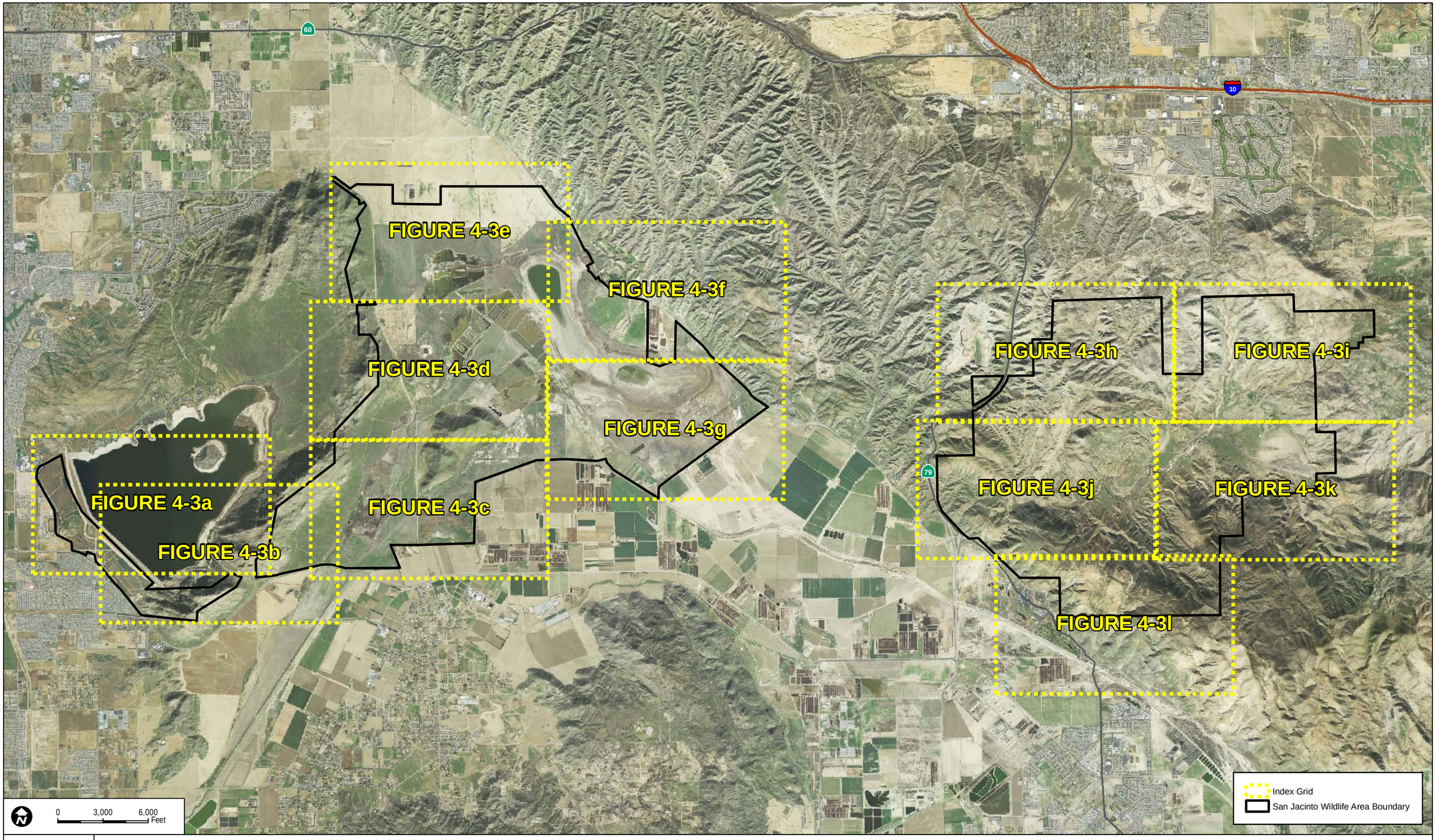
- Coulter's Goldfields and Vernal Barley
- Coulter's Goldfields
- Davidson's Saltscale
- Jaeger's Milk-vetch
- Moran's Navarretia
- Parry's Spineflower
- San Jacinto Valley Crownscale & Vernal Barley
- San Jacinto Valley Crownscale
- Smooth Tarplant
- South Coast Saltscale
- Southern Cottonwood Willow Riparian Forest
- Vernal Barley
- Wright's Trichocoronis
- Mud Nama
- Thread-leaved Brodiaea
- Wright's Trichocoronis*
- Yucaipa Onion*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-2I

Special-Status Plant Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 4-3

Wildlife Species Locations - Index Map

San Jacinto Wildlife Area - Land Management Plan

DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Wildlife Species Locations (Common Name)

Wildlife Species

- American badger
- California tiger salamander
- Los Angeles pocket mouse
- Stephens' kangaroo rat
- burrowing owl
- coast (San Diego) horned lizard
- coastal California gnatcatcher
- ferruginous hawk
- northern red-diamond rattlesnake
- orange-throated whiptail
- tricolored blackbird
- western mastiff bat
- western spadefoot
- California tiger salamander*
- Stephens' kangaroo rat*
- coast (San Diego) horned lizard*
- northwestern San Diego pocket mouse*
- western spadefoot*
- white-faced ibis*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3a

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan

White-tailed kite

California towhee
Cooper's hawk
Cooper's hawk
Spotted towhee
Song sparrow

Spotted towhee
Spotted towhee
Spotted towhee
Spotted towhee
Rufous-crowned sparrow
Song sparrow
Spotted towhee
Spotted towhee

Spotted towhee
California towhee
Rock wren
Canyon wren
Rufous-crowned sparrow
Rufous-crowned sparrow

Turkey vulture
California towhee
Rock wren
California towhee
Rufous-crowned sparrow
Rock wren

Loggerhead shrike
Deer mouse
Deer mouse
Deer mouse
Rock wren
Deer mouse
Deer mouse
Turkey vulture
California towhee

Rufous-crowned sparrow
western spadefoot
northern red-diamond rattlesnake

California towhee
California towhee
California towhee
Rock wren

Rufous-crowned sparrow

Northern harrier
Loggerhead shrike
Loggerhead shrike
Loggerhead shrike
Spotted towhee
White-crowned sparrow
Rufous-crowned sparrow
Western meadowlark
Western meadowlark
Rufous-crowned sparrow
Western meadowlark
ring-necked pheasant

Deer mouse
Deer mouse
Deer mouse
Stephens' kangaroo rat
Stephens' kangaroo rat
Stephens' kangaroo rat
Red-necked phalarope

Western meadowlark
California towhee
House wren
California towhee
Turkey vulture
Red-tailed hawk

Red-winged blackbird
Song sparrow
Western meadowlark
Red-tailed hawk

American kestrel

San Diego black-tailed jackrabbit
Red-necked phalarope

Horned lark
Horned lark
Horned lark

Burrowing owl

Northern harrier
Northern harrier
Burrowing owl

Red-tailed hawk

0 500 1,000 Feet

DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary
Wildlife Species Locations (Common Name)

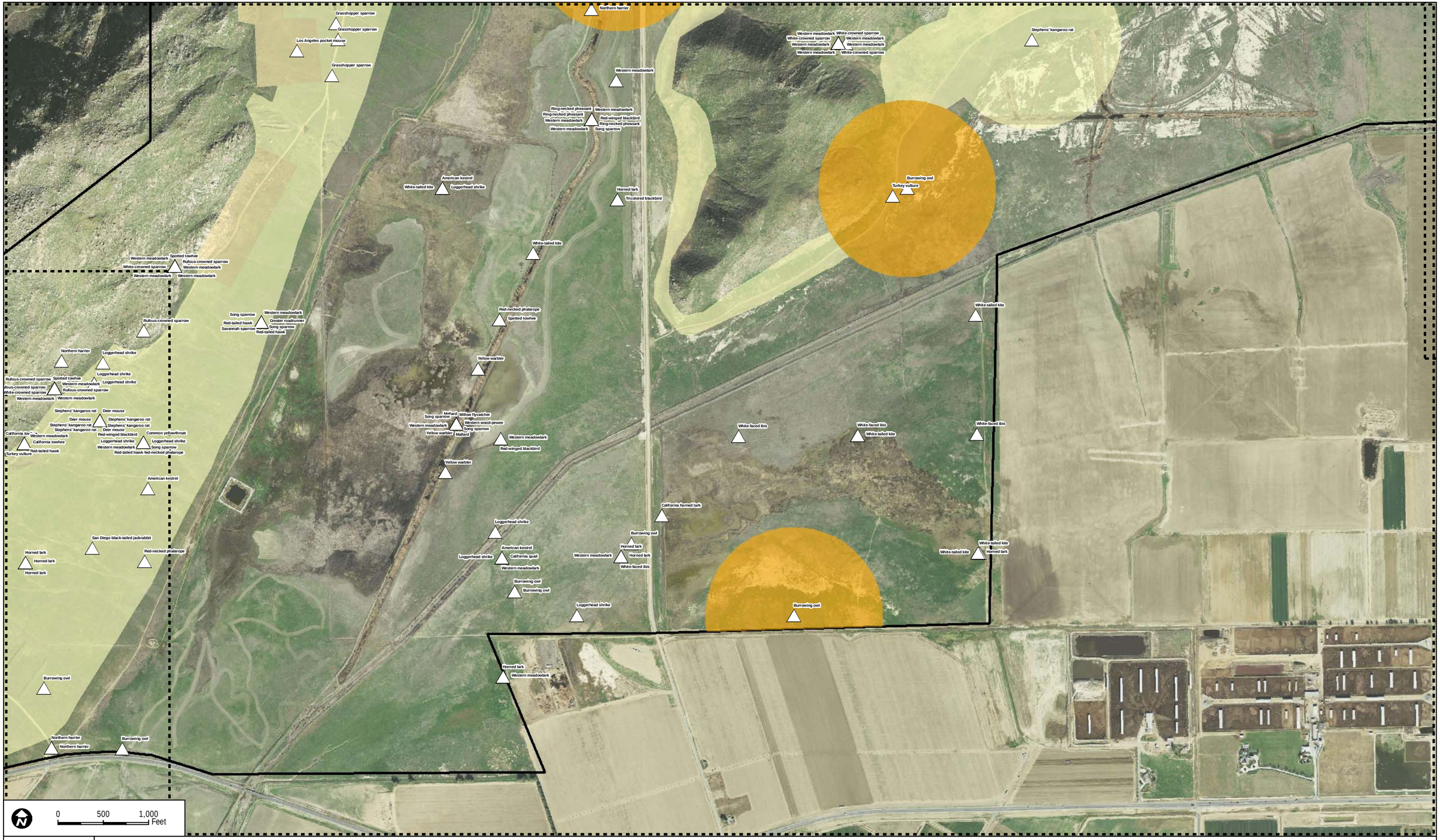
Wildlife Species
American badger
California tiger salamander
Los Angeles pocket mouse
Stephens' kangaroo rat
burrowing owl
coast (San Diego) horned lizard
coastal California gnatcatcher
ferruginous hawk
northern red-diamond rattlesnake
orange-throated whiptail
tricolored blackbird
western mastiff bat
western spadefoot
California tiger salamander*
Stephens' kangaroo rat*
coast (San Diego) horned lizard*
northwestern San Diego pocket mouse*
western spadefoot*
white-faced ibis*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3b

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Wildlife Species Locations (Common Name)

Wildlife Species

American badger

California tiger salamander

Los Angeles pocket mouse

Stephens' kangaroo rat

burrowing owl

coast (San Diego) horned lizard

coastal California gnatcatcher

ferruginous hawk

northern red-diamond rattlesnake

orange-throated whiptail

tricolored blackbird

western mastiff bat

western spadefoot

California tiger salamander*

Stephens' kangaroo rat*

coast (San Diego) horned lizard*

northwestern San Diego pocket mouse*

western spadefoot*

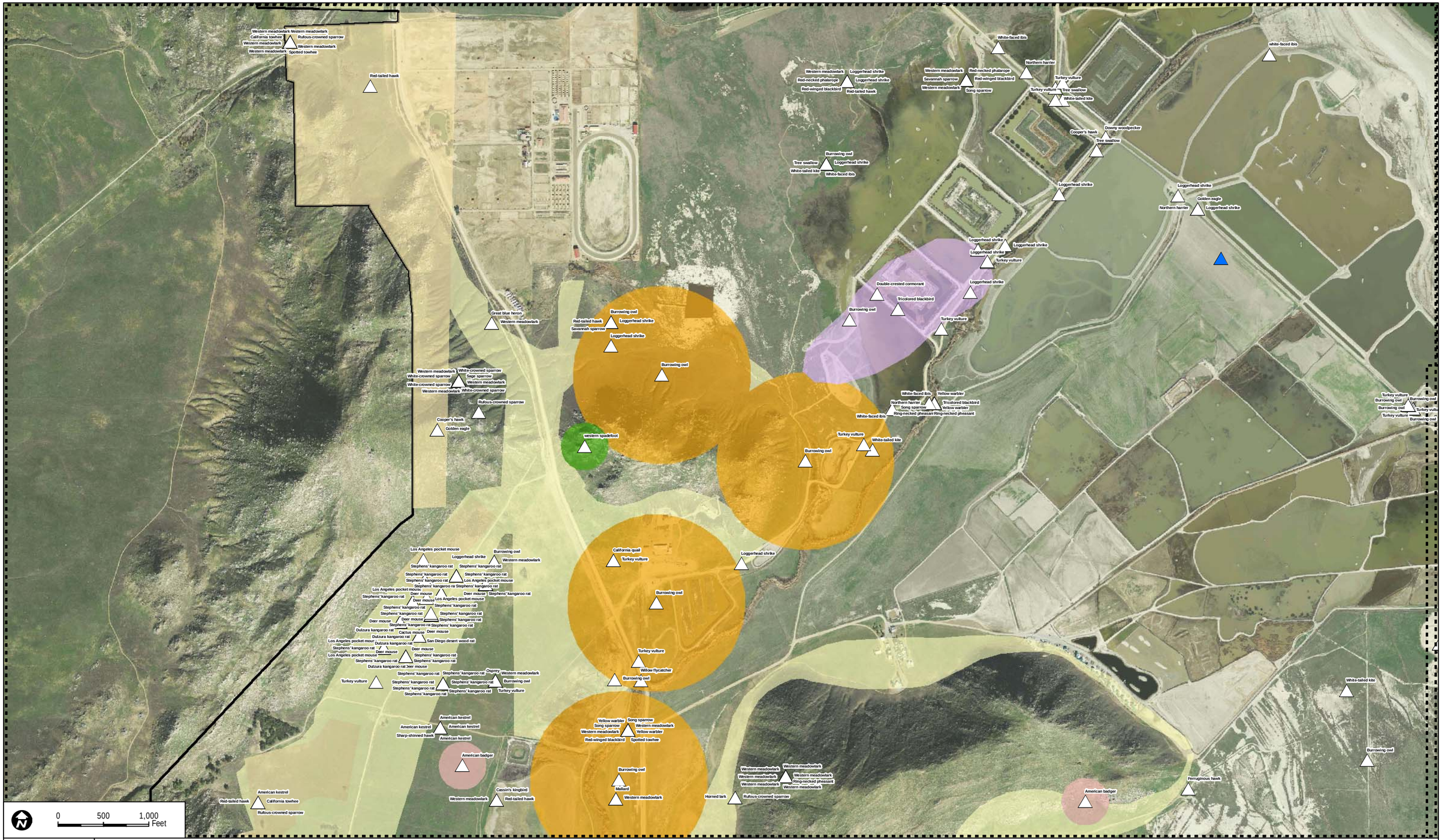
white-faced ibis*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3c

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Wildlife Species Locations (Common Name)

Wildlife Species

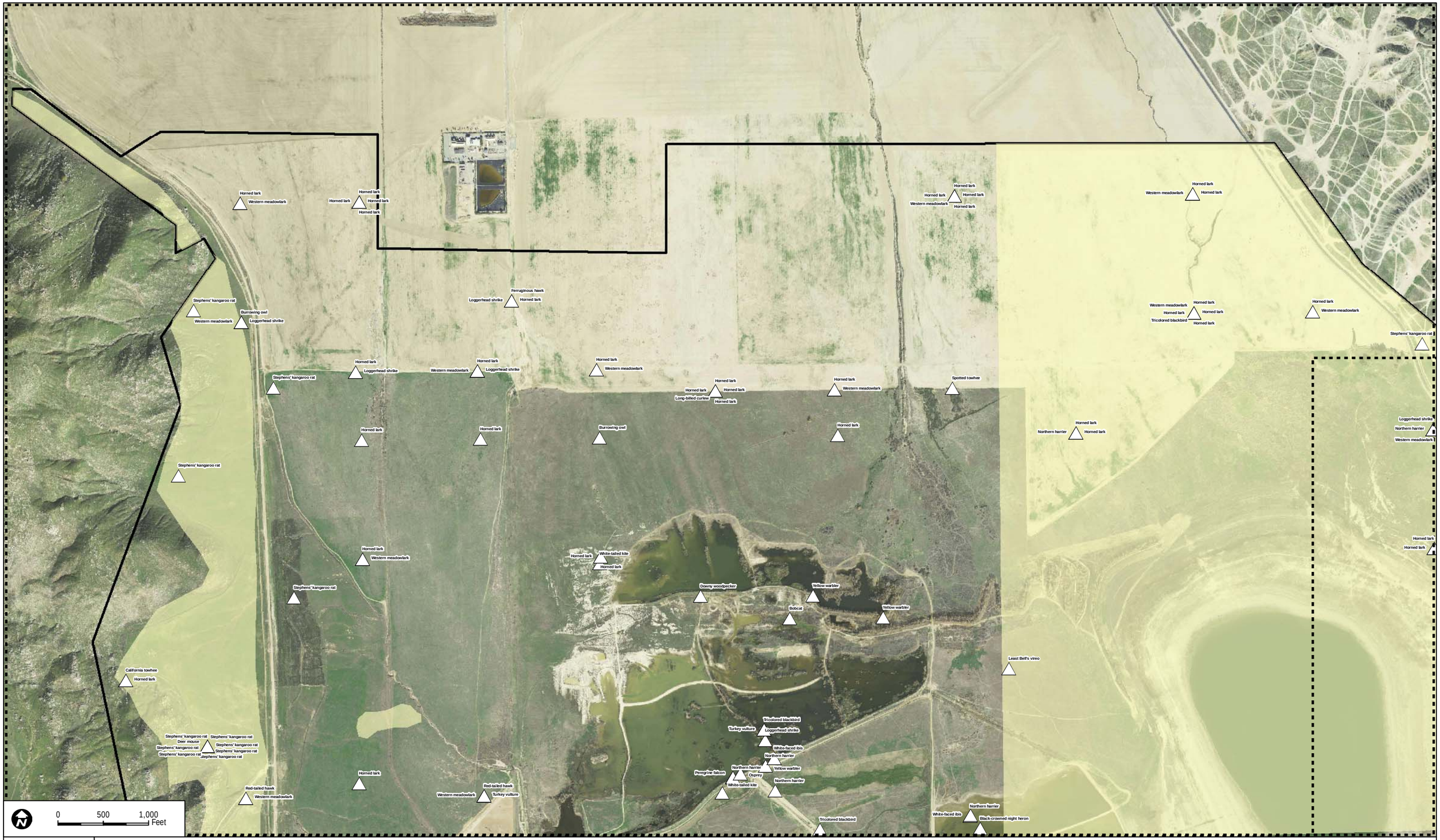
- American badger
- California tiger salamander
- Los Angeles pocket mouse
- Stephens' kangaroo rat
- burrowing owl
- coast (San Diego) horned lizard
- coastal California gnatcatcher
- ferruginous hawk
- northern red-diamond rattlesnake
- orange-throated whiptail
- tricolored blackbird
- western mastiff bat
- western spadefoot
- California tiger salamander*
- Stephens' kangaroo rat*
- coast (San Diego) horned lizard*
- northwestern San Diego pocket mouse*
- western spadefoot*
- white-faced ibis*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3d

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Wildlife Species Locations (Common Name)

Wildlife Species

- American badger
- California tiger salamander
- Los Angeles pocket mouse
- Stephens' kangaroo rat
- burrowing owl
- coast (San Diego) horned lizard
- coastal California gnatcatcher
- ferruginous hawk
- northern red-diamond rattlesnake
- orange-throated whiptail
- tricolored blackbird
- western mastiff bat
- western spadefoot
- California tiger salamander*
- Stephens' kangaroo rat*
- coast (San Diego) horned lizard*
- northwestern San Diego pocket mouse*
- western spadefoot*
- white-faced ibis*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3e

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan

DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Wildlife Species Locations (Common Name)

Wildlife Species

- American badger
- California tiger salamander
- Los Angeles pocket mouse
- Stephens' kangaroo rat
- burrowing owl
- coast (San Diego) horned lizard
- coastal California gnatcatcher
- ferruginous hawk
- northern red-diamond rattlesnake
- orange-throated whiptail
- tricolored blackbird
- western mastiff bat
- western spadefoot
- California tiger salamander*
- Stephens' kangaroo rat*
- coast (San Diego) horned lizard*
- northwestern San Diego pocket mouse*
- western spadefoot*
- white-faced ibis*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3f

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan

Peregrine falcon
Peregrine falcon
Peregrine falcon
Burrowing owl
Burrowing owl
Burrowing owl
Burrowing owl
Burrowing owl
California horned lark
Turkey vulture
Burrowing owl
Burrowing owl
Burrowing owl
Burrowing owl
Burrowing owl
Burrowing owl
Northern harrier
Loggerhead shrike
Turkey vulture
Loggerhead shrike
Swainson's hawk
Northern harrier
Song sparrow

0 500 1,000 Feet

DUDEK

6096-01
JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary
Wildlife Species Locations (Common Name)

Wildlife Species
American badger
California tiger salamander
Los Angeles pocket mouse
Stephens' kangaroo rat
burrowing owl
coast (San Diego) horned lizard
coastal California gnatcatcher
ferruginous hawk
northern red-diamond rattlesnake
orange-throated whiptail
tricolored blackbird
western mastiff bat
western spadefoot
California tiger salamander*
Stephens' kangaroo rat*
coast (San Diego) horned lizard*
northwestern San Diego pocket mouse*
western spadefoot*
white-faced ibis*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3g
Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan

DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Wildlife Species Locations (Common Name)

Wildlife Species

American badger

California tiger salamander

Los Angeles pocket mouse

Stephens' kangaroo rat

burrowing owl

coast (San Diego) horned lizard

coastal California gnatcatcher

ferruginous hawk

northern red-diamond rattlesnake

orange-throated whiptail

tricolored blackbird

western mastiff bat

western spadefoot

California tiger salamander*

Stephens' kangaroo rat*

coast (San Diego) horned lizard*

northwestern San Diego pocket mouse*

western spadefoot*

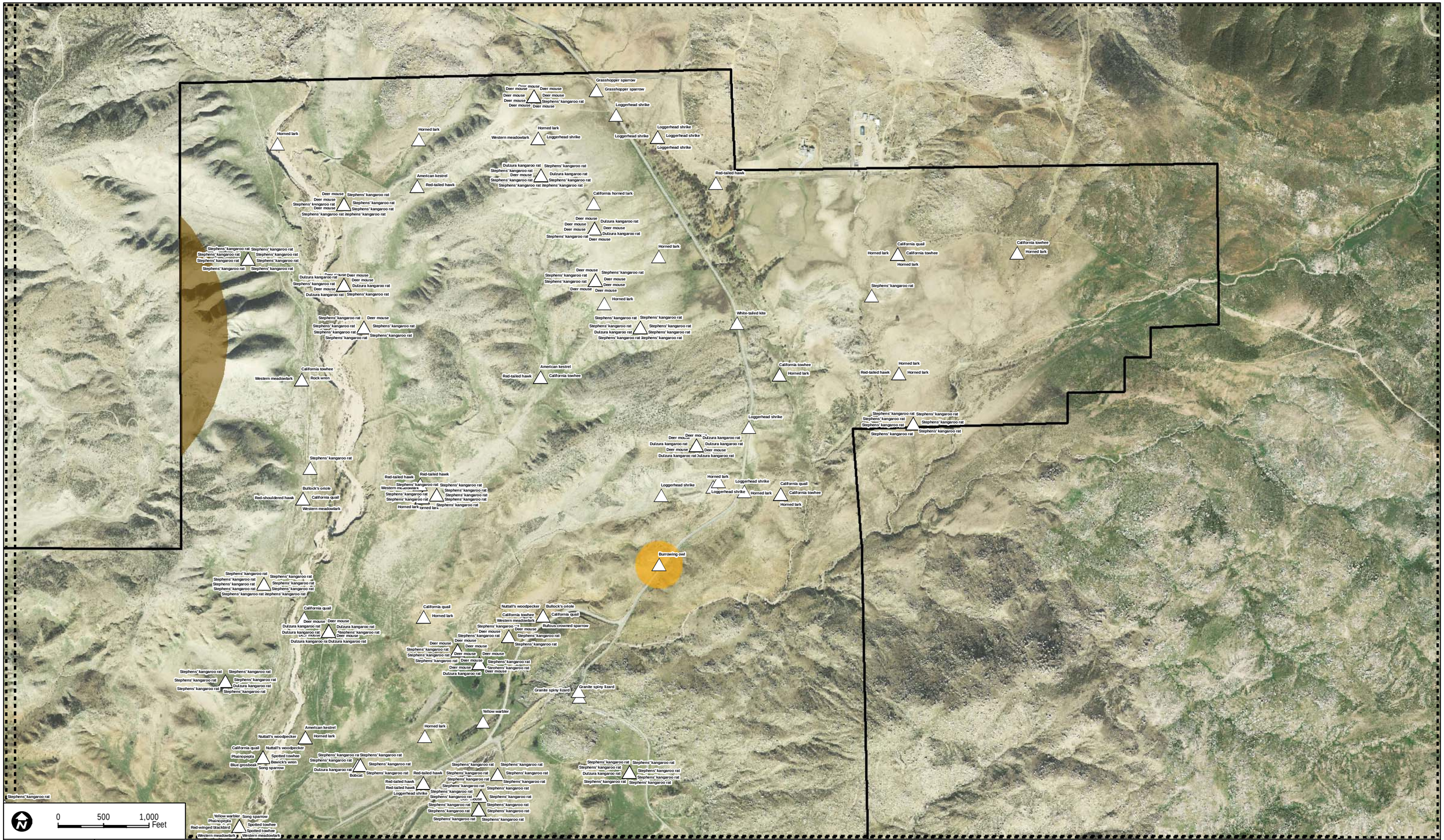
white-faced ibis*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3h

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Wildlife Species Locations (Common Name)

Wildlife Species

- American badger
- California tiger salamander
- Los Angeles pocket mouse
- Stephens' kangaroo rat
- burrowing owl
- coast (San Diego) horned lizard
- coastal California gnatcatcher
- ferruginous hawk
- northern red-diamond rattlesnake
- orange-throated whiptail
- tricolored blackbird
- western mastiff bat
- western spadefoot

Stephens' kangaroo rat*

California tiger salamander*

northwestern San Diego pocket mouse*

coast (San Diego) horned lizard*

white-faced ibis*

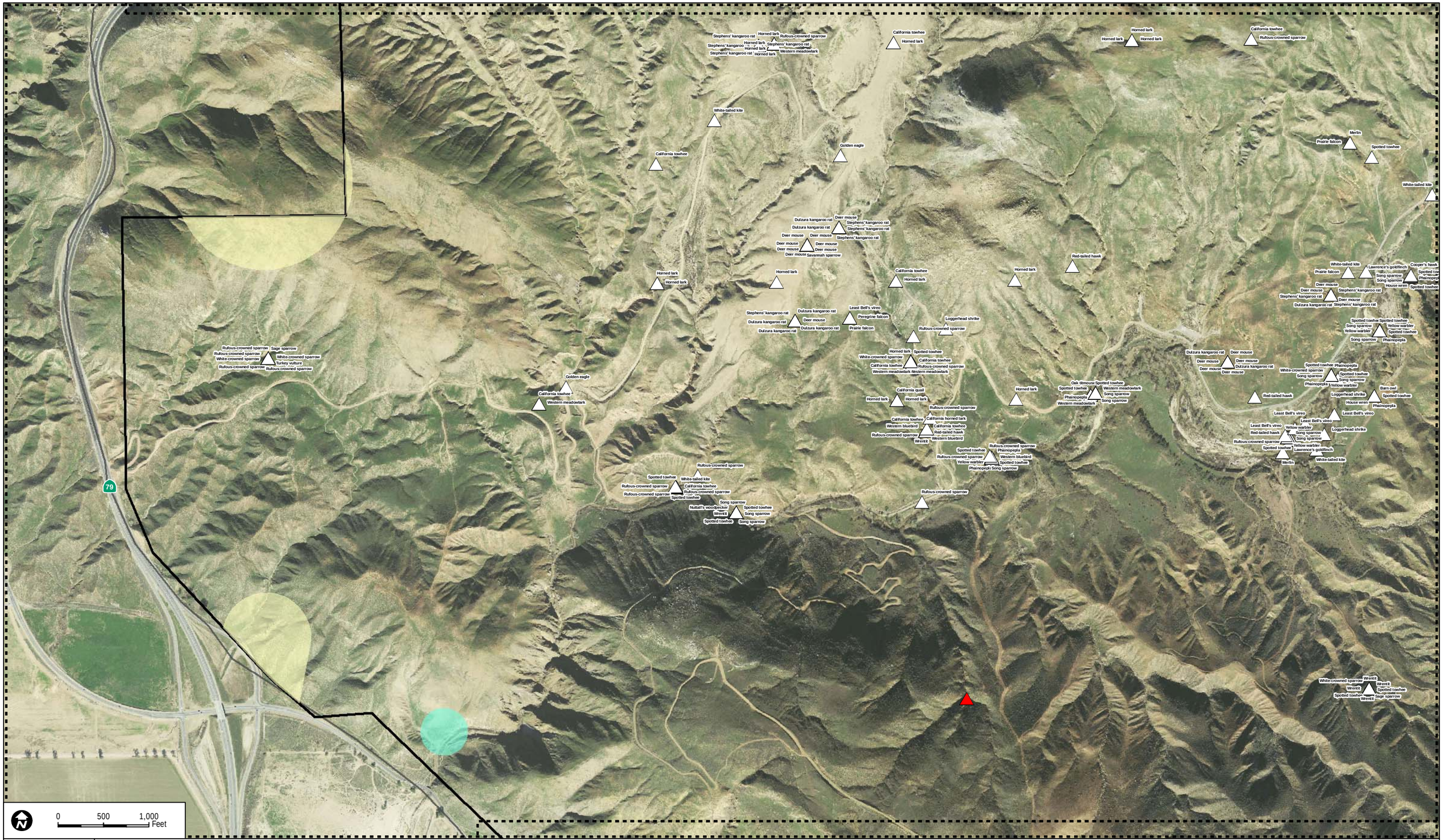
western spadefoot*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3i

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Wildlife Species Locations (Common Name)

Wildlife Species

American badger

California tiger salamander

Los Angeles pocket mouse

Stephens' kangaroo rat

burrowing owl

coast (San Diego) horned lizard

coastal California gnatcatcher

ferruginous hawk

northern red-diamond rattlesnake

orange-throated whiptail

tricolored blackbird

western mastiff bat

western spadefoot

California tiger salamander*

Stephens' kangaroo rat*

coast (San Diego) horned lizard*

northwestern San Diego pocket mouse*

western spadefoot*

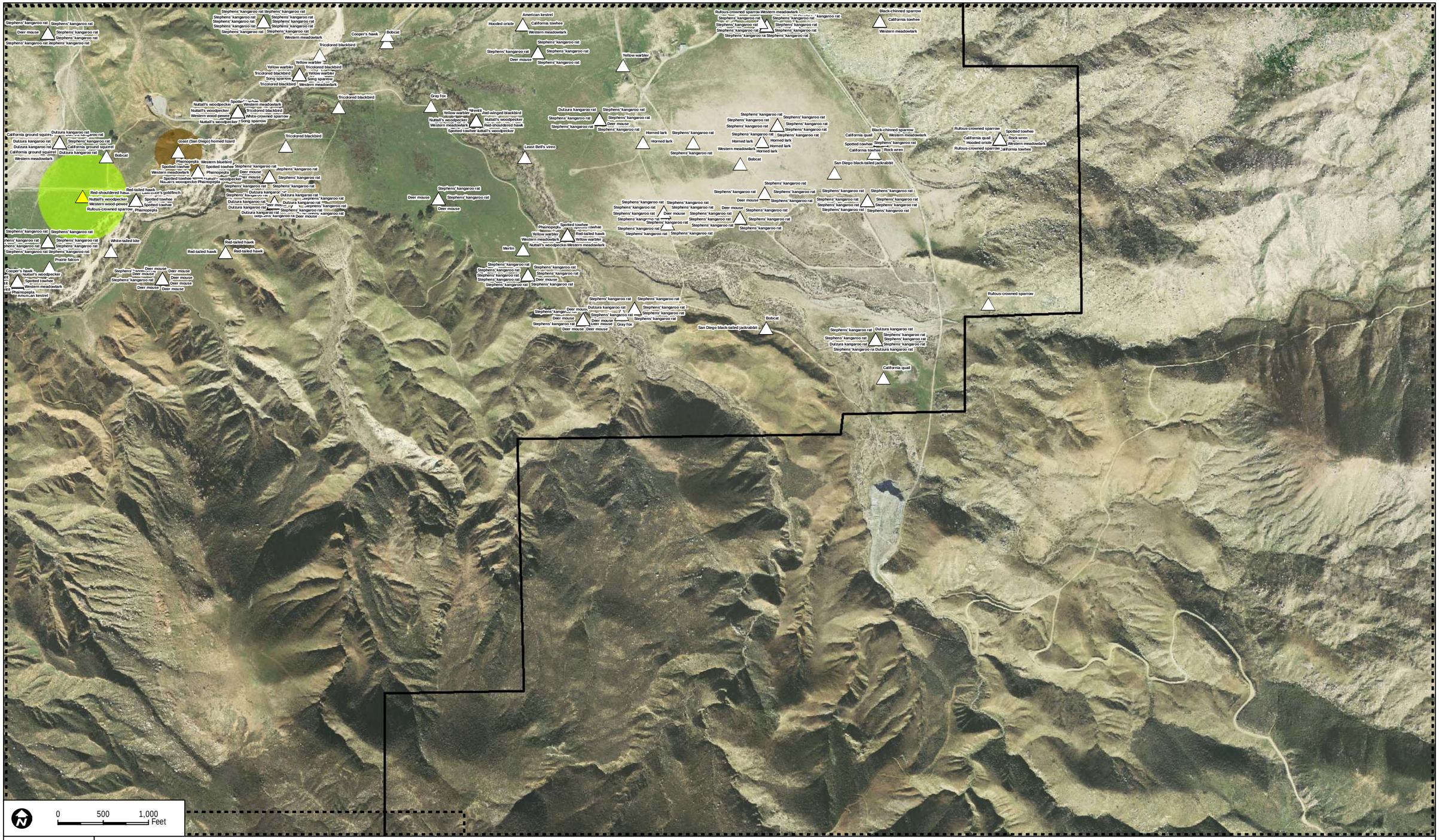
white-faced ibis*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3j

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Wildlife Species Locations (Common Name)

Wildlife Species

American badger

California tiger salamander

Los Angeles pocket mouse

Stephens' kangaroo rat

burrowing owl

coast (San Diego) horned lizard

coastal California gnatcatcher

ferruginous hawk

northern red-diamond rattlesnake

orange-throated whiptail

tricolored blackbird

western mastiff bat

western spadefoot

Stephens' kangaroo rat*

California tiger salamander*

coast (San Diego) horned lizard*

northwestern San Diego pocket mouse*

western spadefoot*

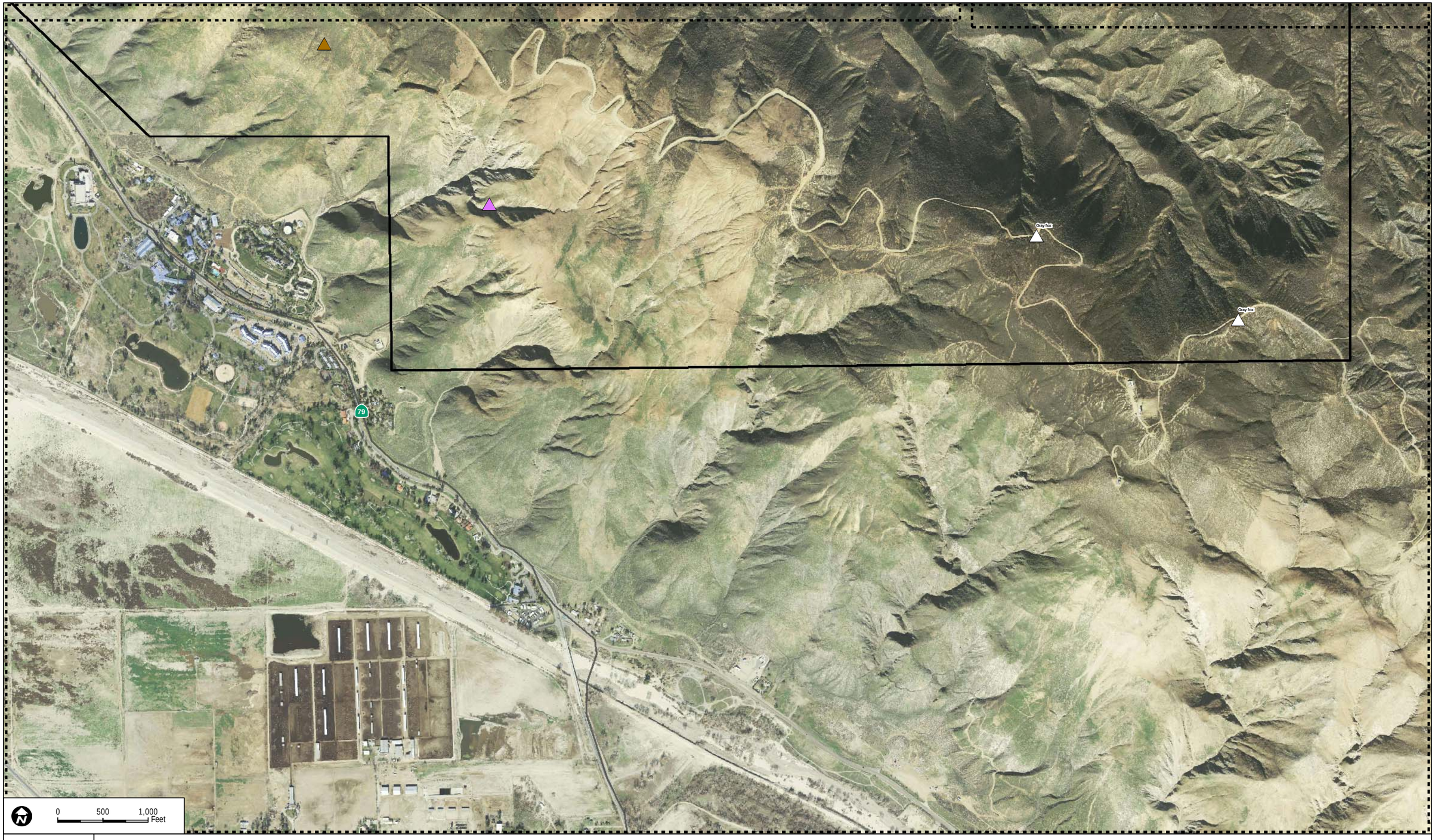
white-faced ibis*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3k

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

San Jacinto Wildlife Area Boundary

Wildlife Species Locations (Common Name)

Wildlife Species

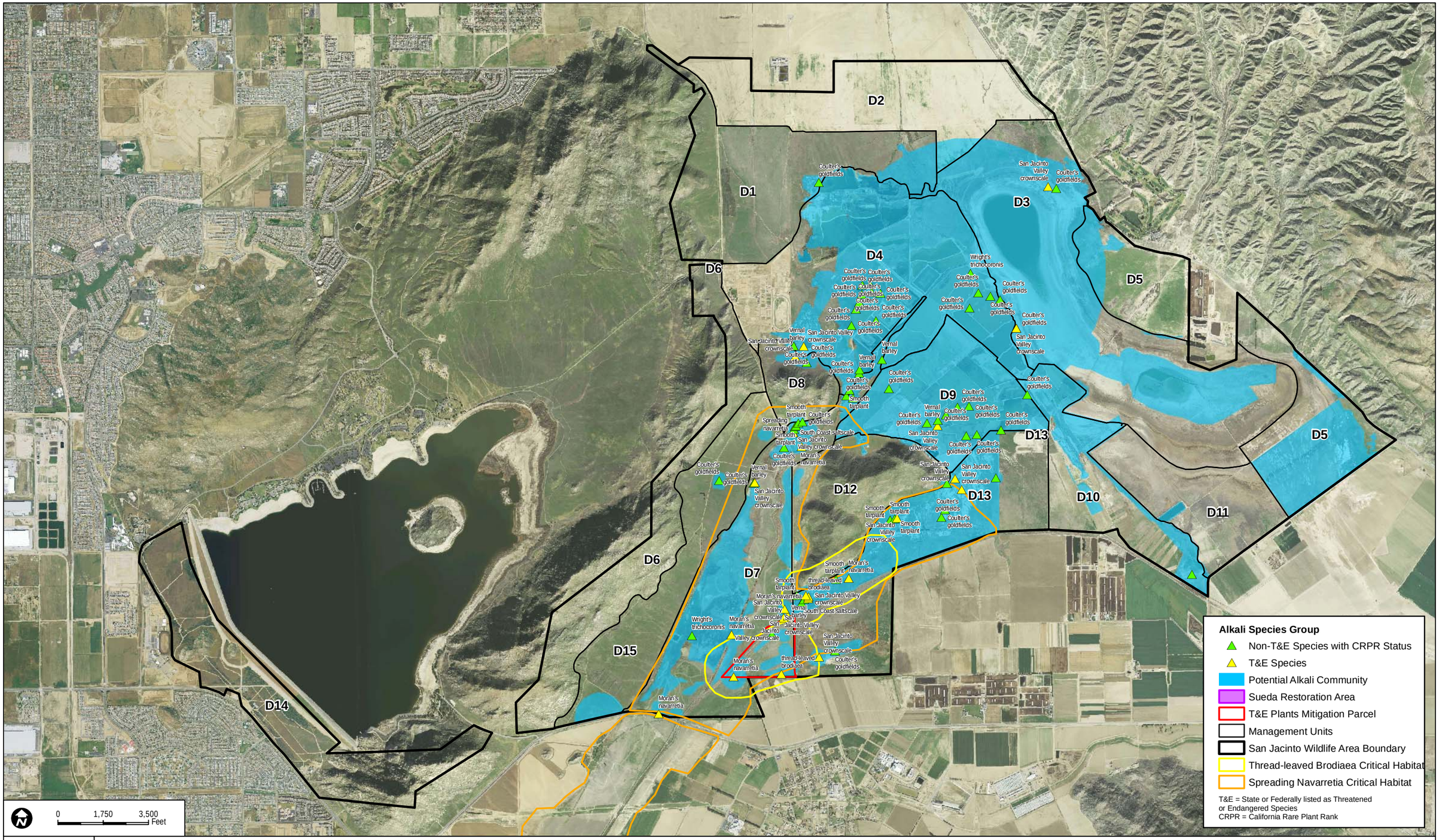
- American badger
- California tiger salamander
- Los Angeles pocket mouse
- Stephens' kangaroo rat
- burrowing owl
- coast (San Diego) horned lizard
- coastal California gnatcatcher
- ferruginous hawk
- northern red-diamond rattlesnake
- orange-throated whiptail
- tricolored blackbird
- western mastiff bat
- western spadefoot
- Stephens' kangaroo rat*
- California tiger salamander*
- northwestern San Diego pocket mouse*
- coast (San Diego) horned lizard*
- white-faced ibis*
- western spadefoot*

* Point represents a CNDDB occurence with a low level of geographic accuracy.

FIGURE 4-3I

Wildlife Species Locations

San Jacinto Wildlife Area - Land Management Plan



DUDEK

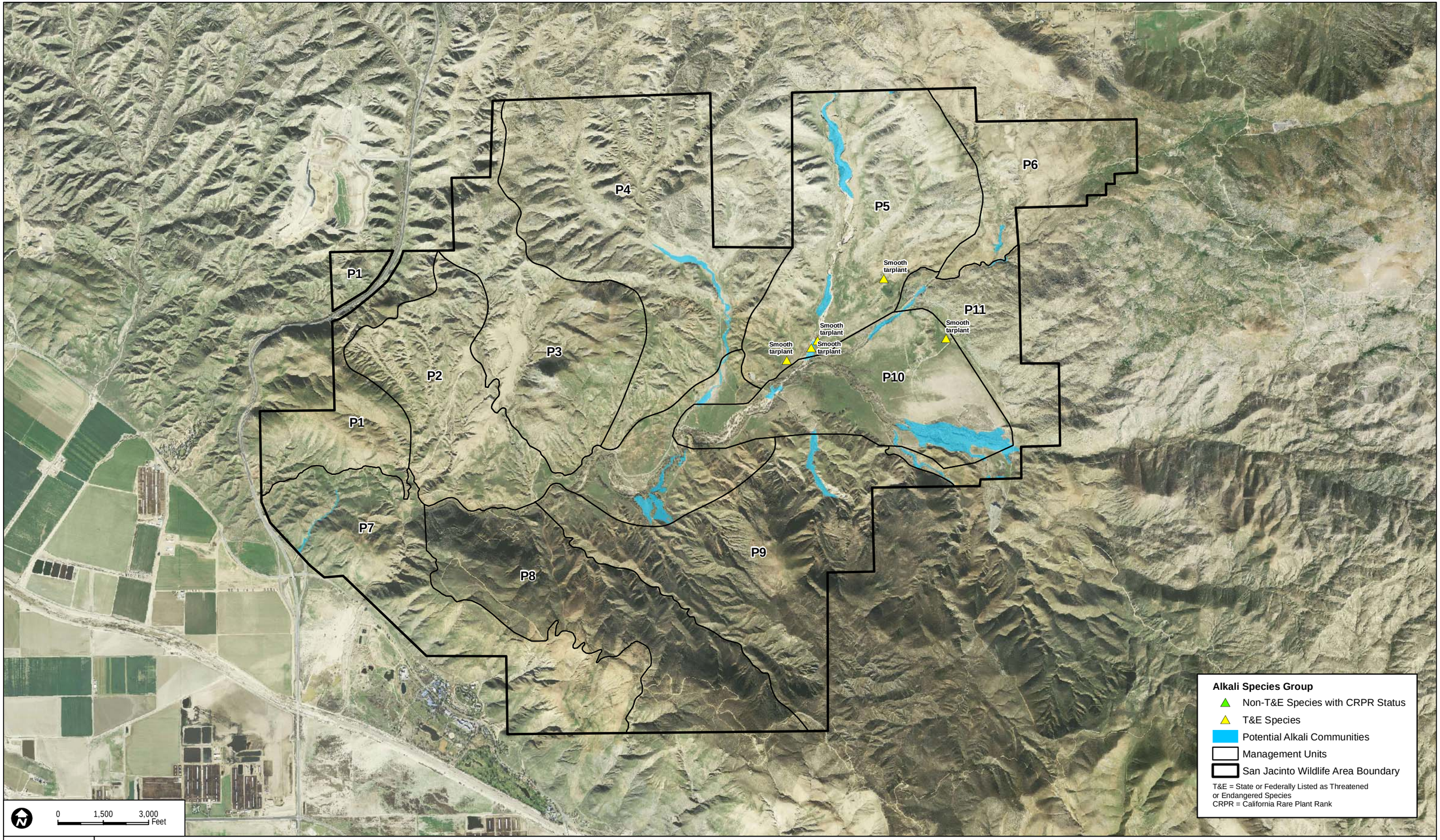
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
USFWS 2011

FIGURE 4-4a

Alkali Resources Map - Davis Unit



DUDEK

6096-01

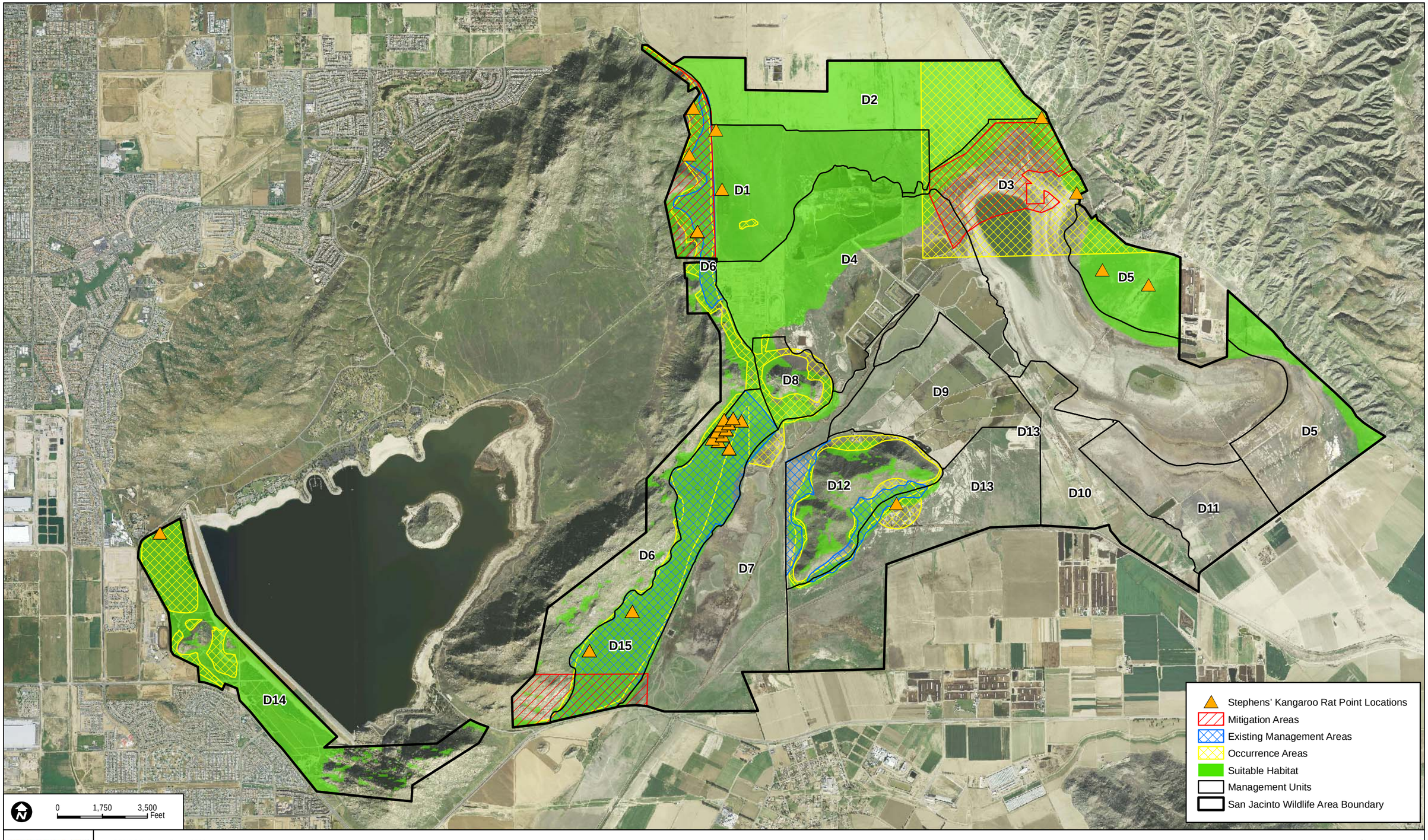
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 4-4b

Alkali Resources Map - Potrero Unit

San Jacinto Wildlife Area - Land Management Plan



DUDEK

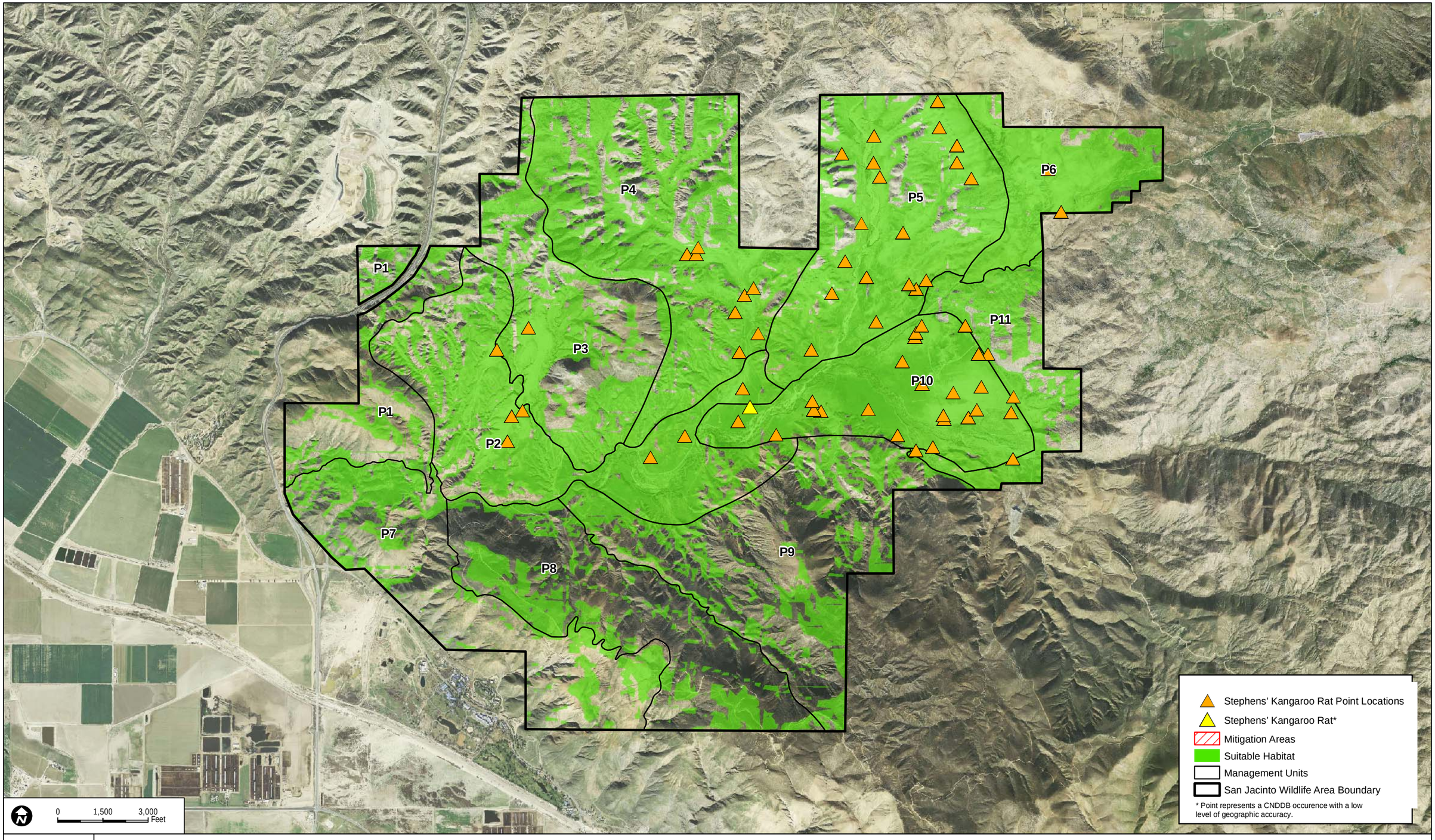
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 4-5a

Stephens' Kangaroo Rat Resources Map - Davis Unit



DUDEK

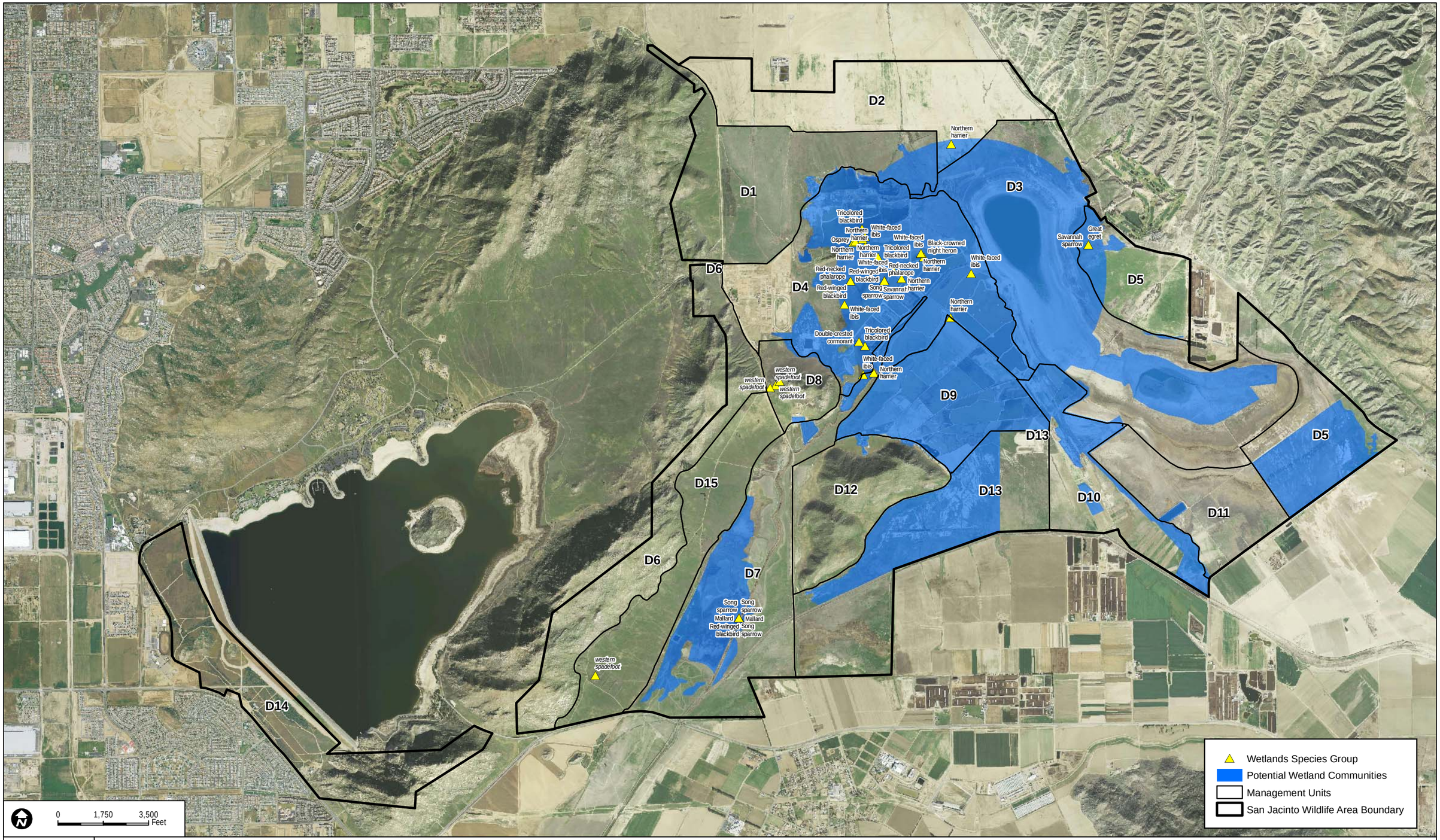
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 4-5b

Stephens' Kangaroo Rat Resources Map - Potrero Unit



DUDEK

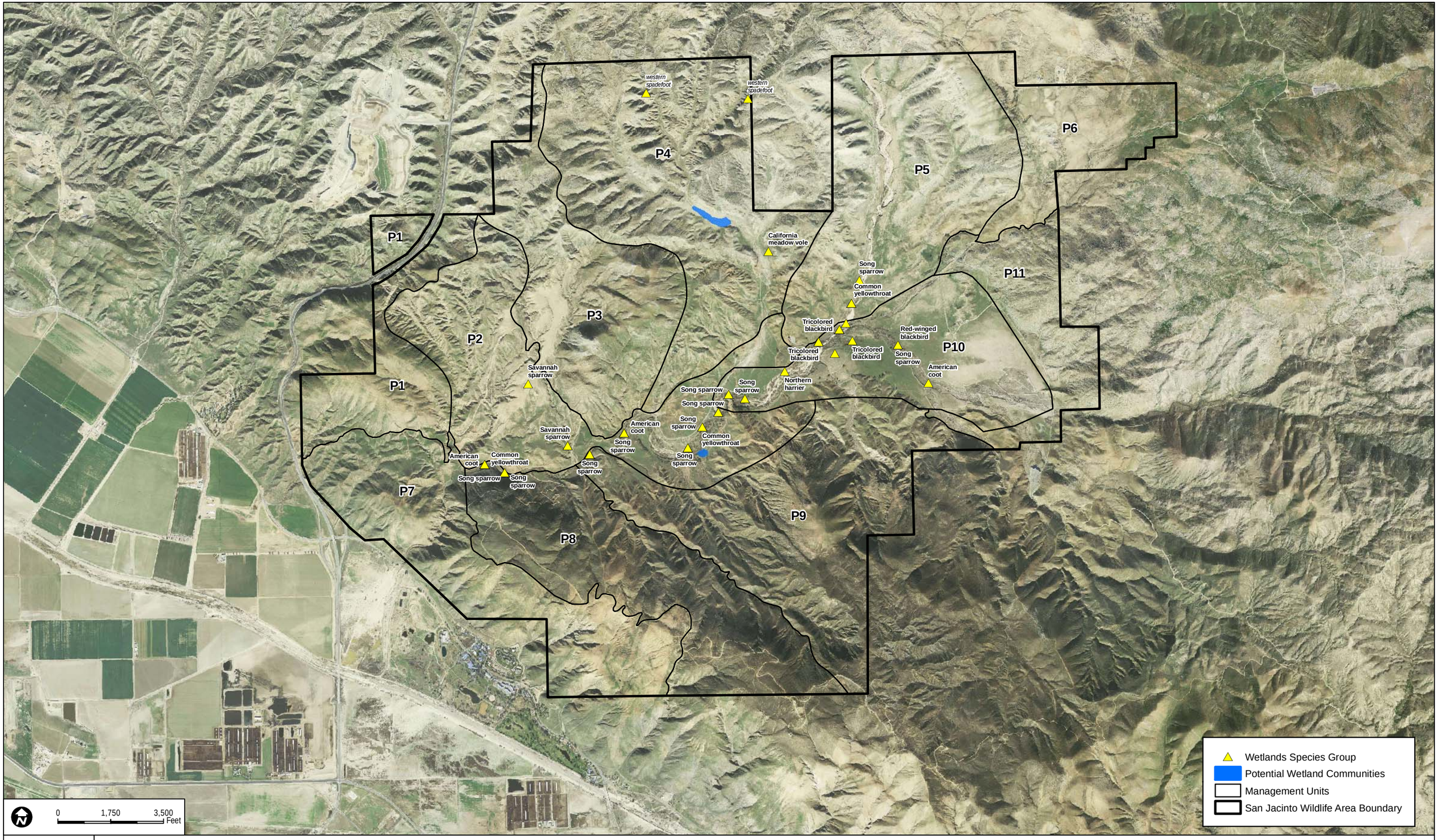
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 4-6a

Wetland Resources Map - Davis Unit



DUDEK

6096-01

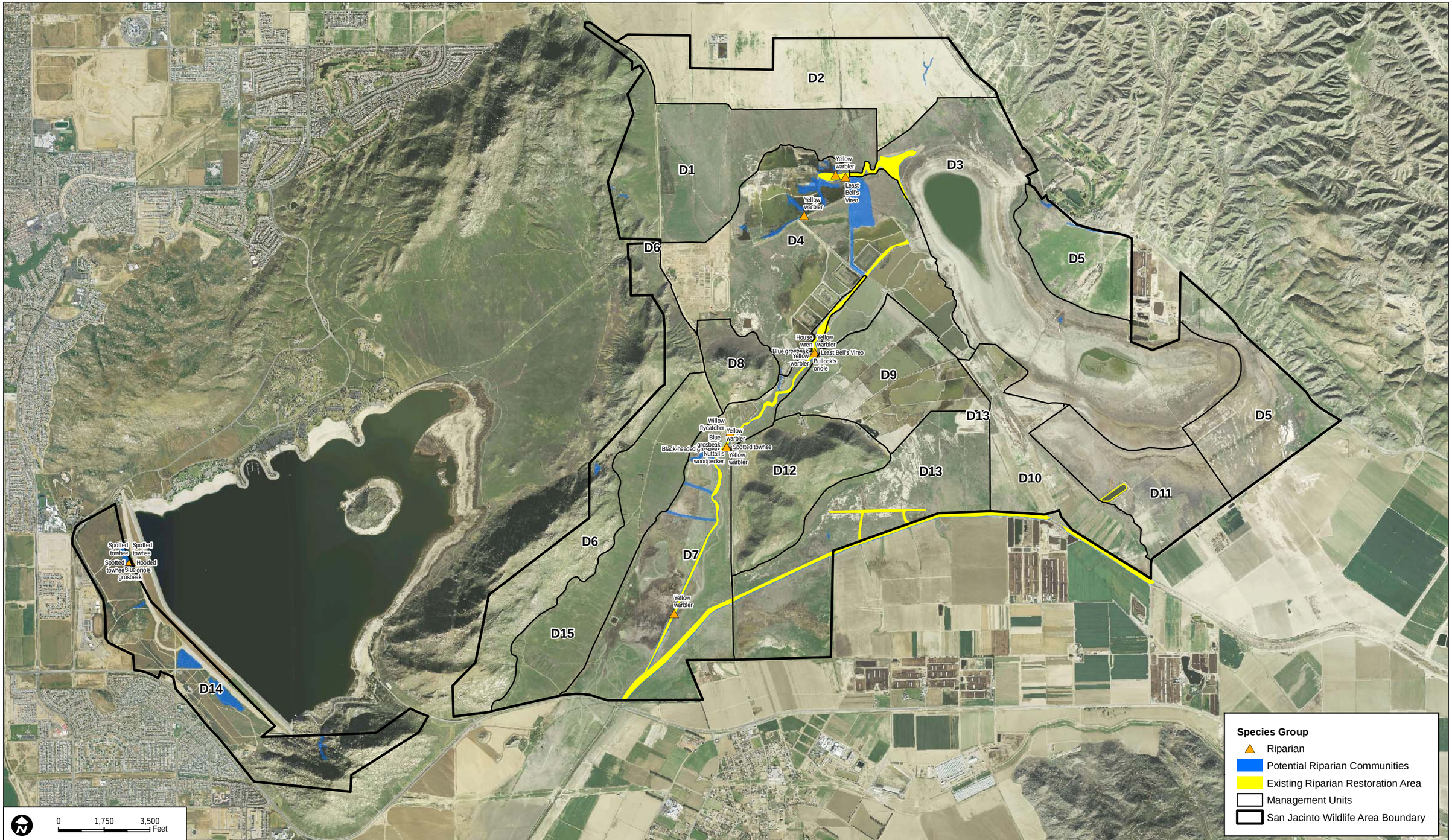
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 4-6b

Wetland Resources Map - Potrero Unit

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

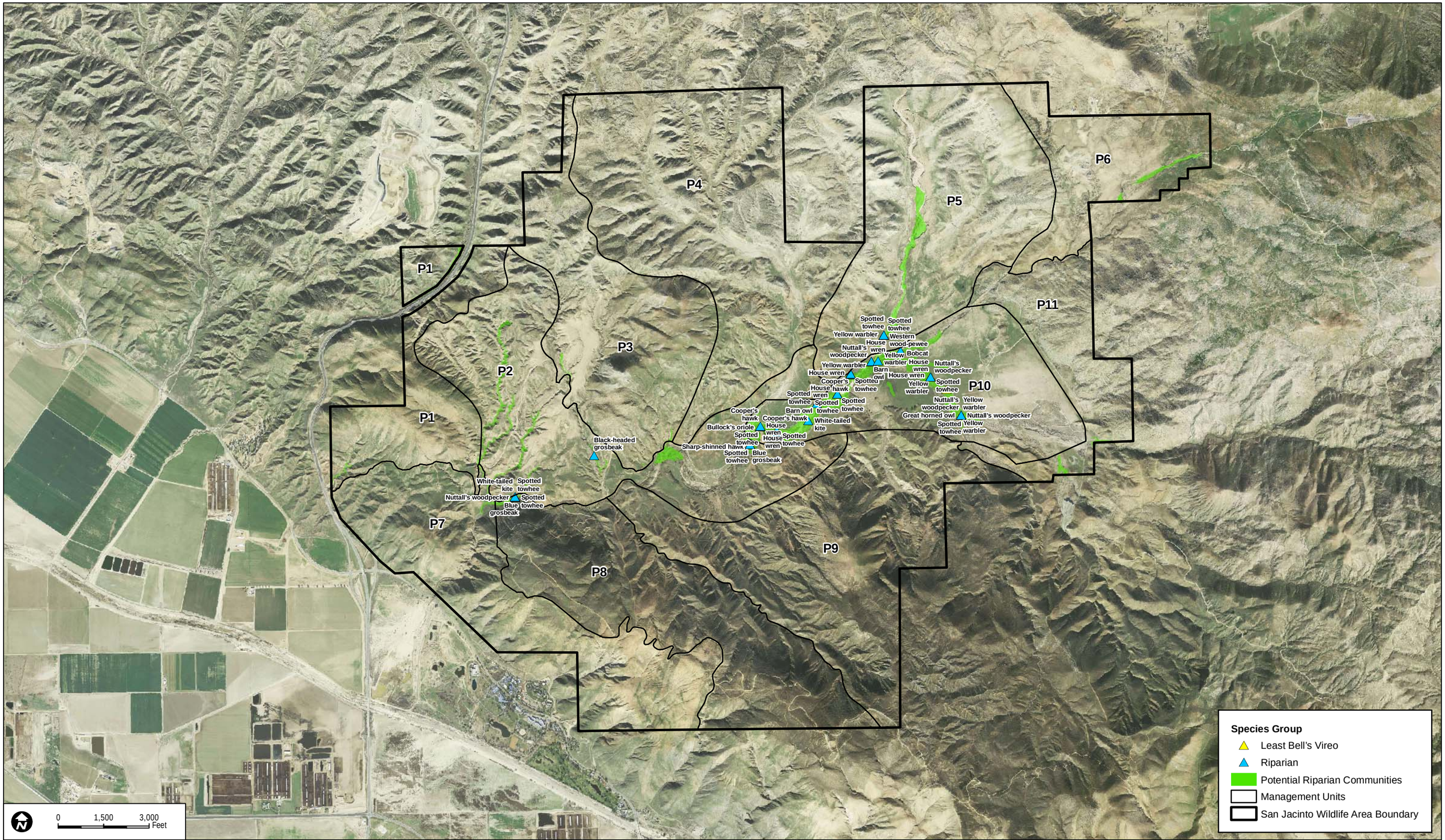
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 4-7a

Riparian Resources Map - Davis Unit

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

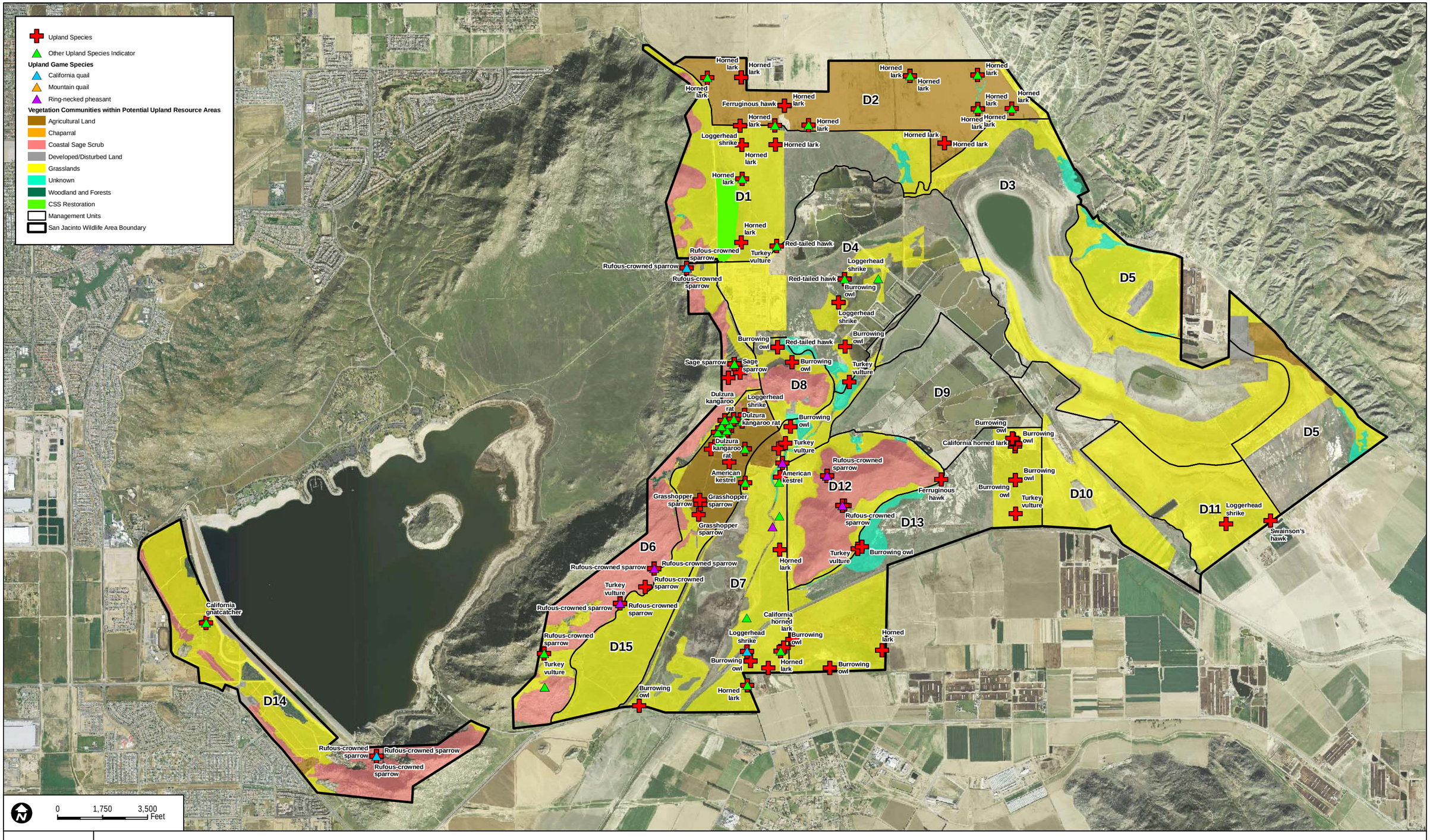
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 4-7b

Riparian Resources Map - Potrero Unit

San Jacinto Wildlife Area - Land Management Plan



SOURCE: Digital Globe 2008

DUDEK

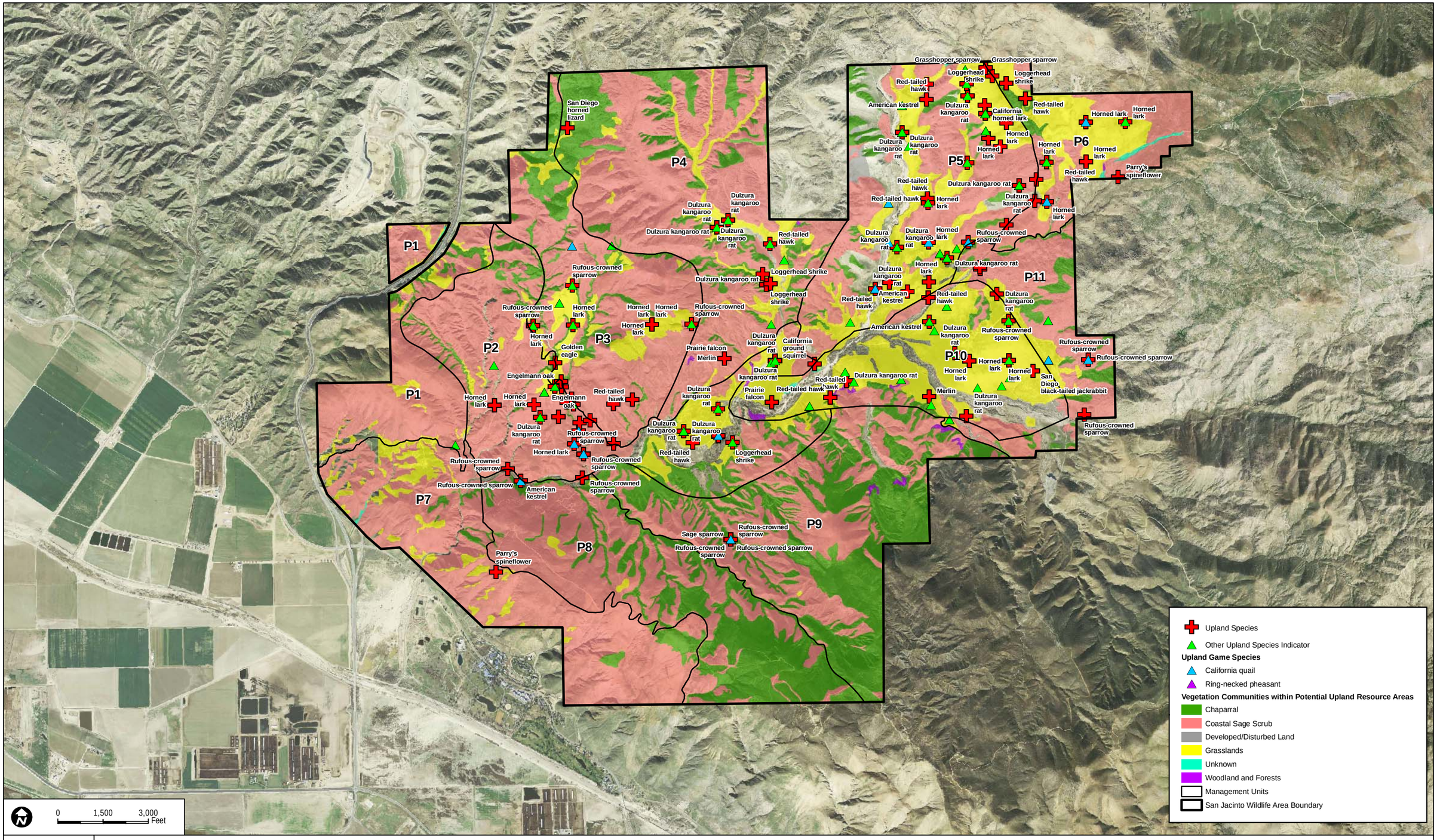
6096-01

JANUARY 2012

FIGURE 4-8a

Upland Resources Map - Davis Unit

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

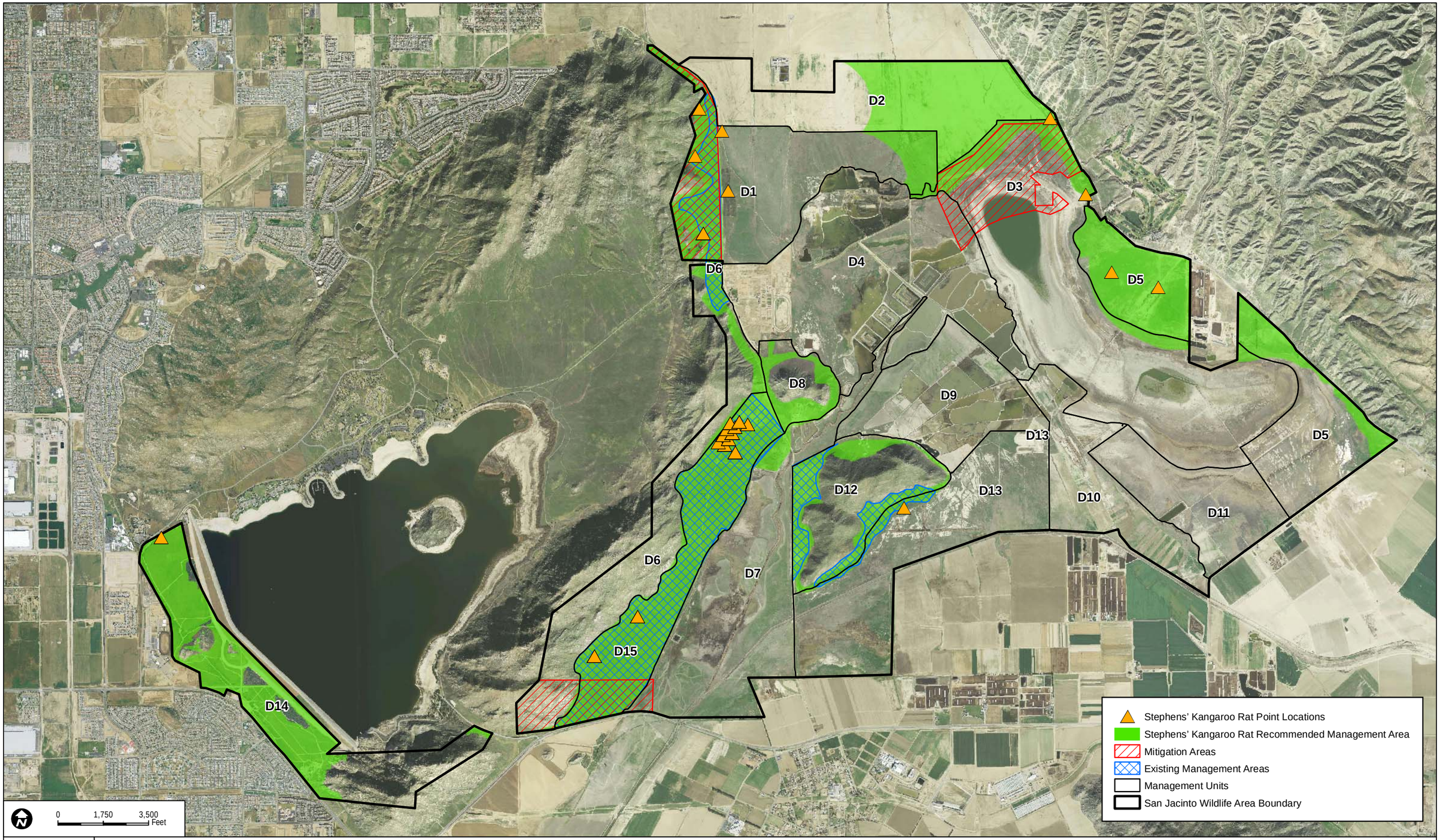
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 4-8b

Upland Resources Map - Potrero Unit

San Jacinto Wildlife Area - Land Management Plan



DUDEK

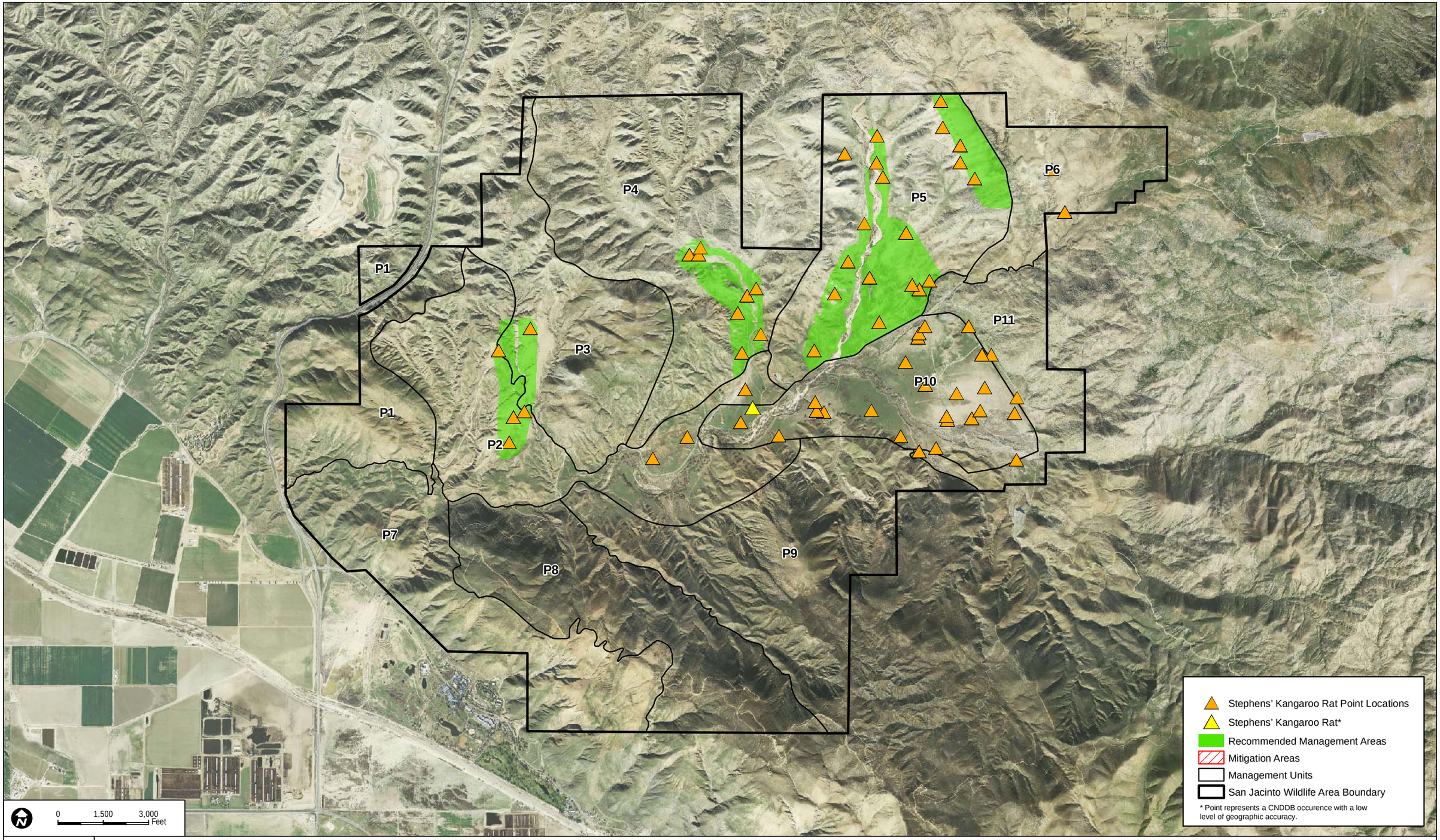
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 5-1a

Stephens' Kangaroo Rat Recommended Management Area Map - Davis Unit



DUDEK

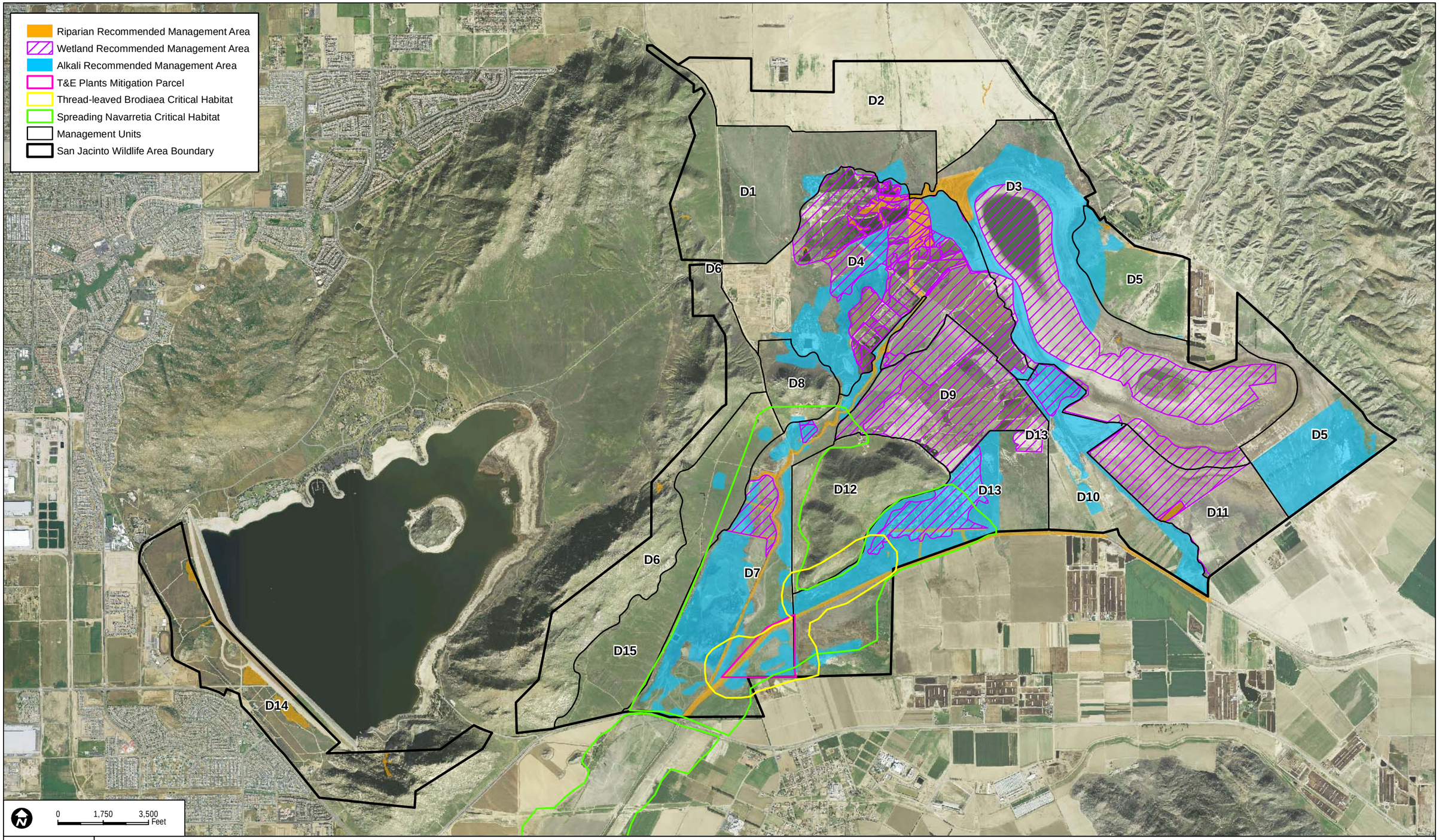
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 5-1b

Stephens' Kangaroo Rat Recommended Management Area Map - Potrero Unit



DUDEK

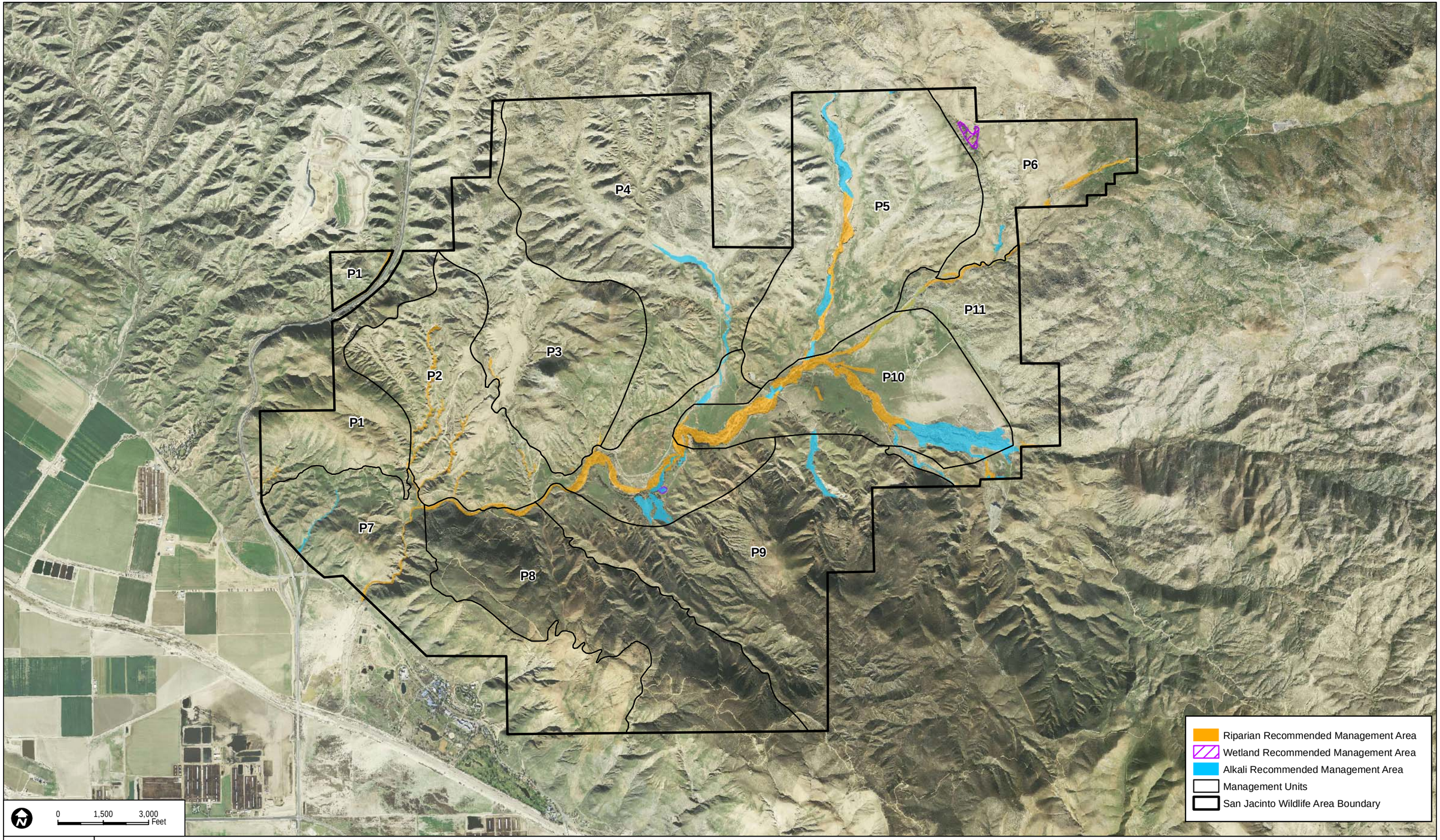
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008
USFWS 2011

FIGURE 5-2a

Alkali, Riparian, and Wetland Recommended Management Area Map - Davis Unit



DUDEK

6096-01

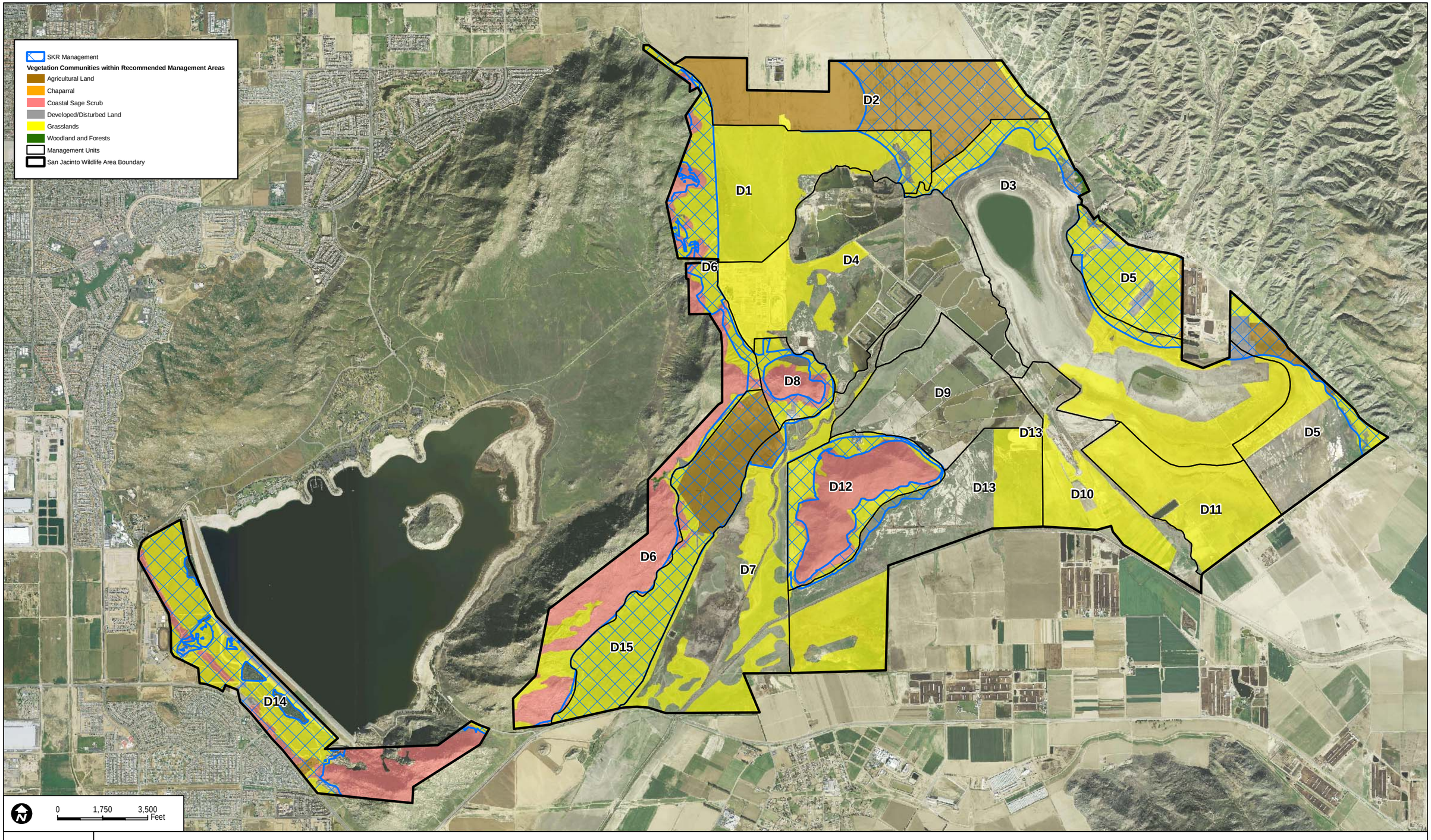
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 5-2b

Alkali, Riparian, and Wetland Recommended Management Area Map - Potrero Unit

San Jacinto Wildlife Area - Land Management Plan



DUDEK

6096-01

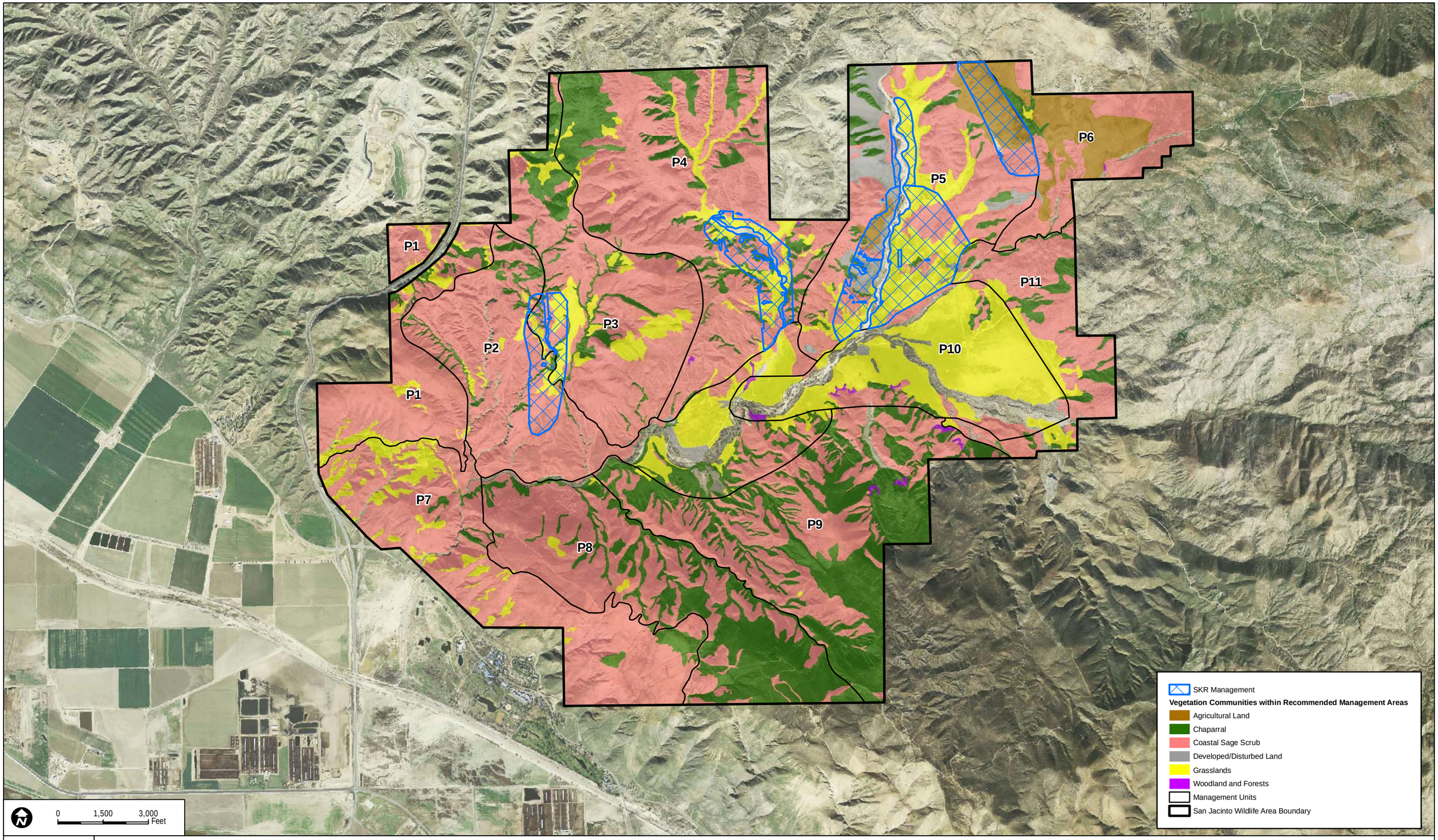
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 5-3a

Upland Resources Recommended Management Area Map - Davis Unit

San Jacinto Wildlife Area - Land Management Plan



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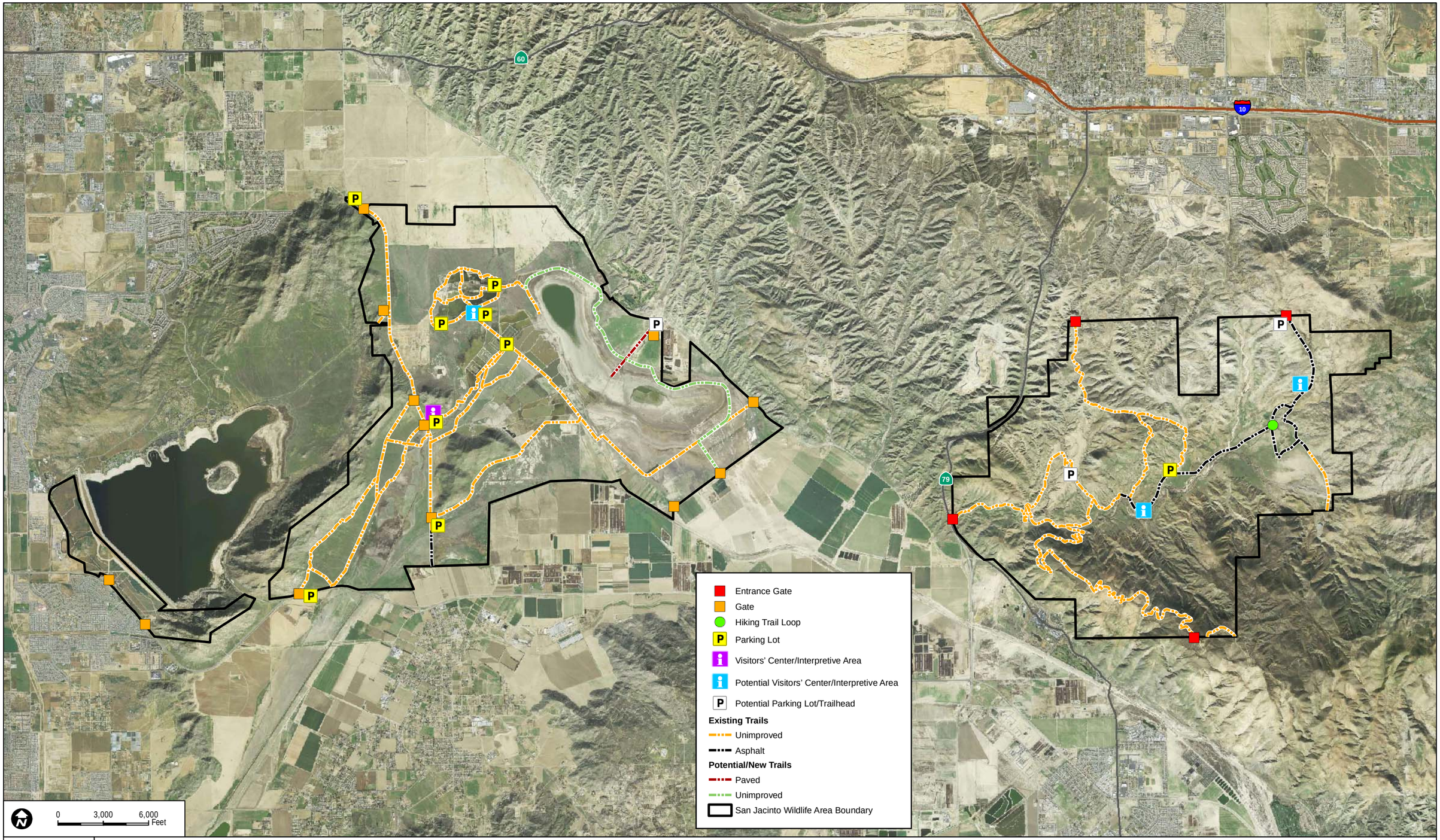
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 5-3b

Upland Resources Recommended Management Area Map - Davis Unit



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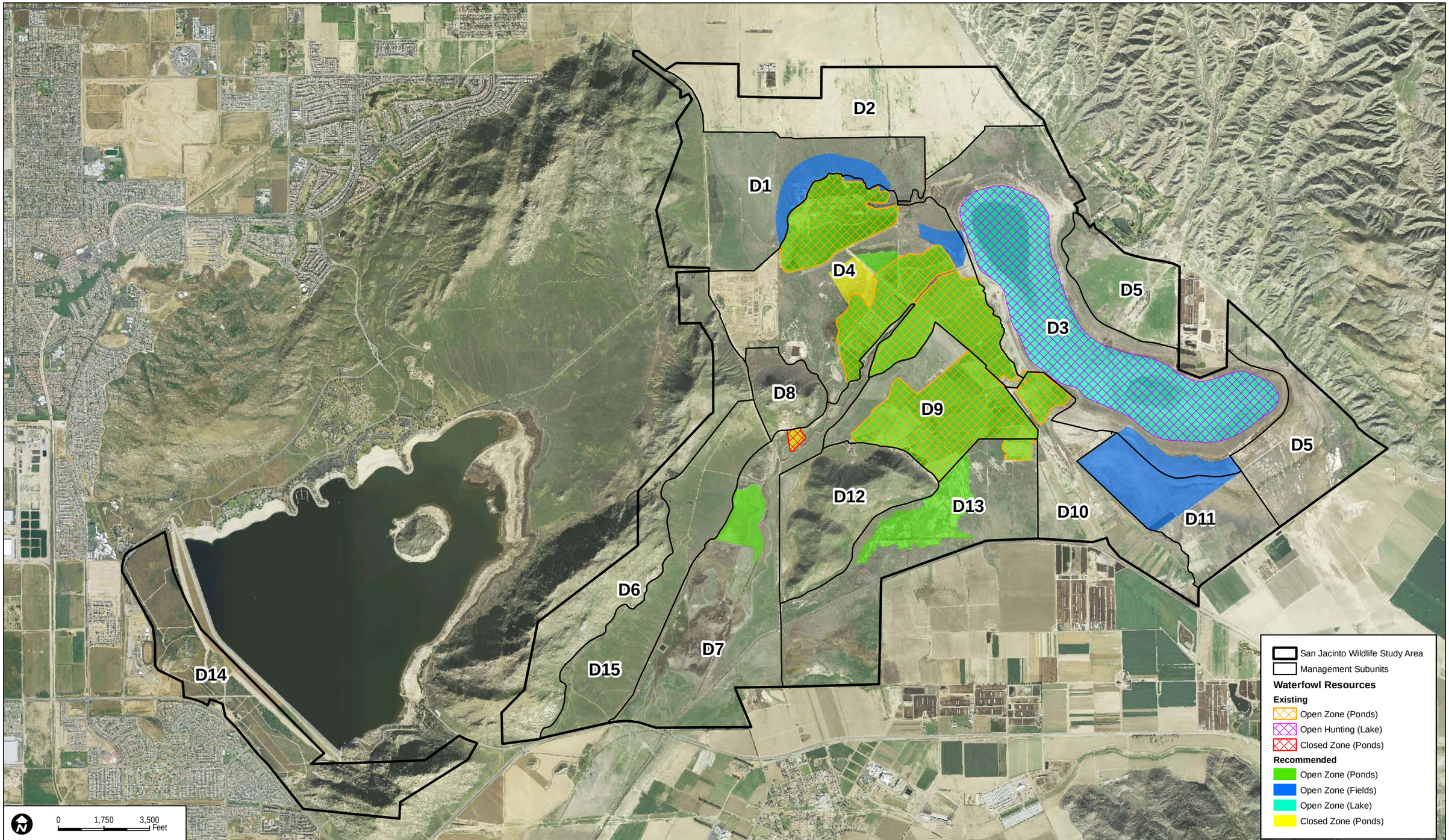
SOURCE: Digital Globe 2008

FIGURE 5-4

Passive Recreation Recommended Infrastructure Map

San Jacinto Wildlife Area - Land Management Plan



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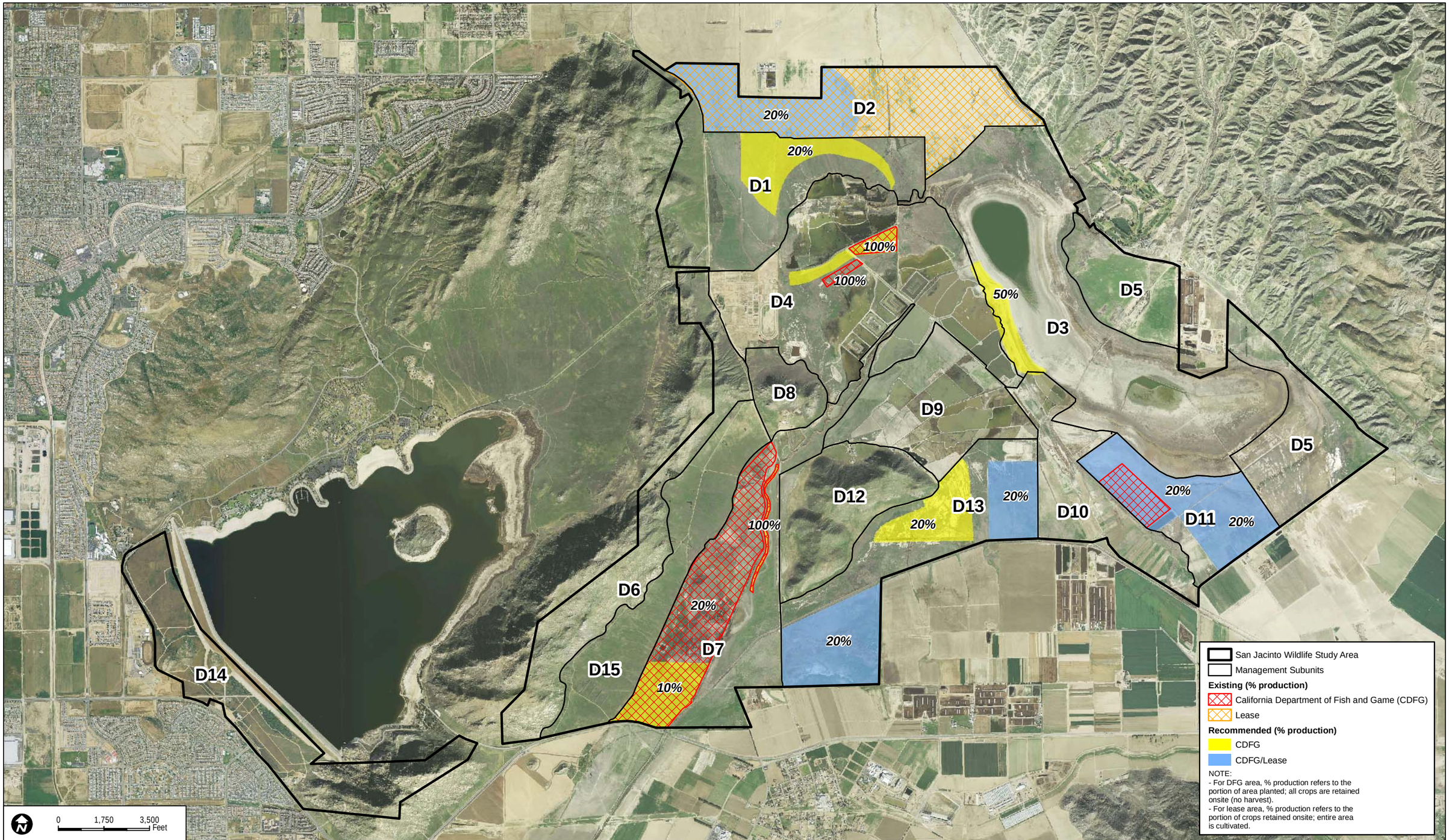
SOURCE: Digital Globe 2008

FIGURE 5-5

Existing and Recommended Waterfowl Management Area Map



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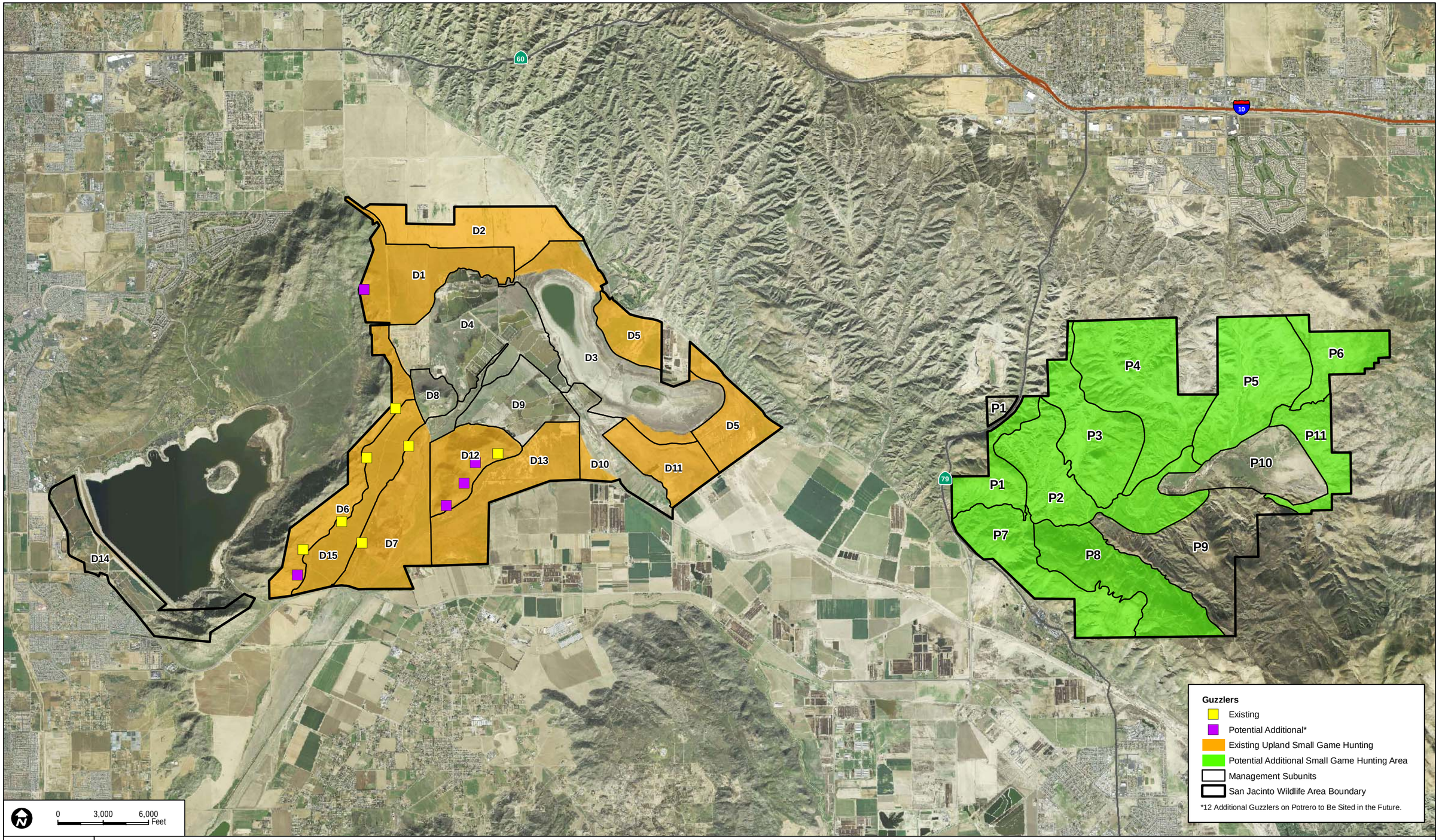
JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 5-6

Existing and Recommended Agriculture Management Area Map



DUDEK

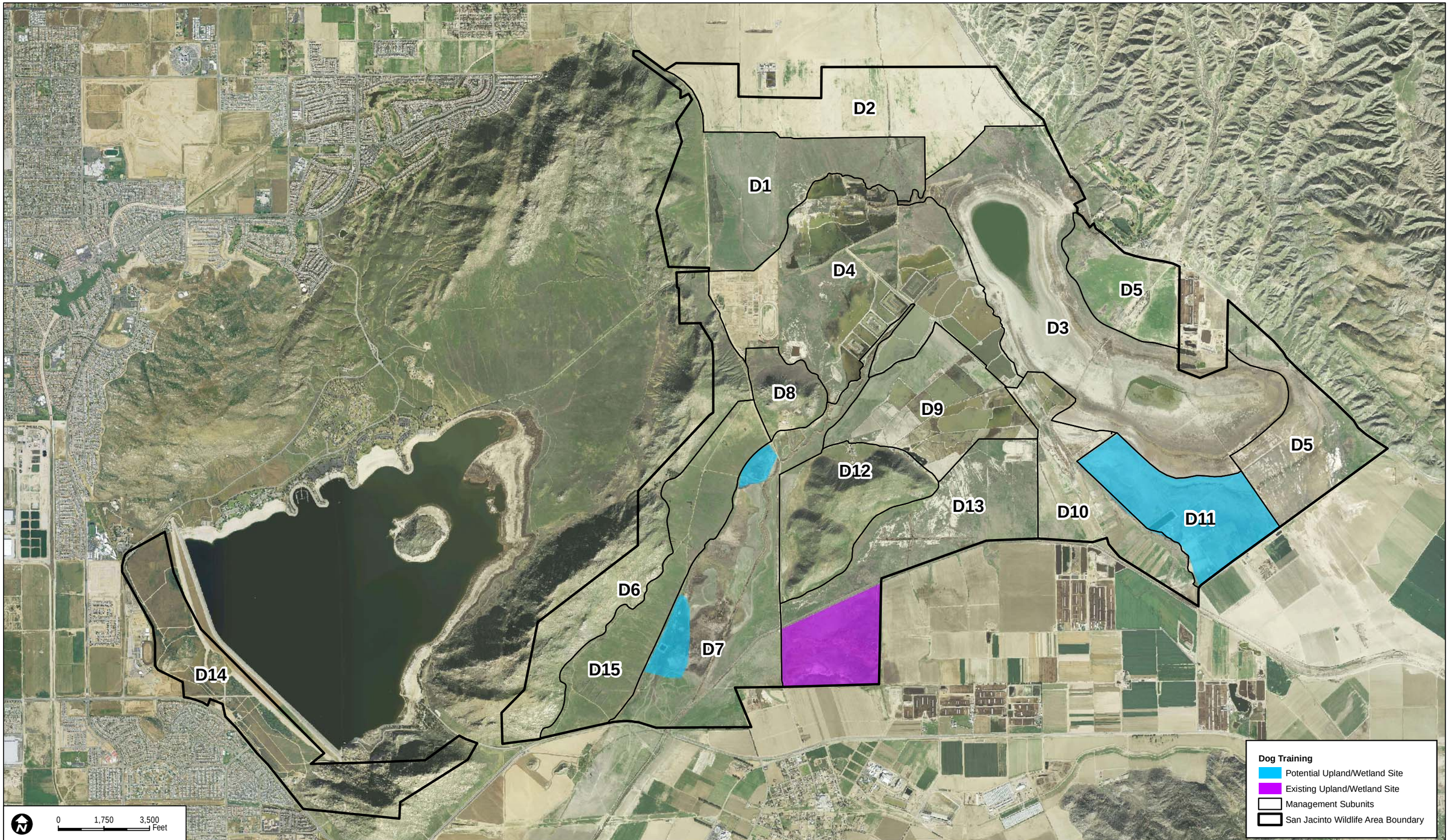
6096-01

JANUARY 2012

SOURCE: Digital Globe 2008

FIGURE 5-7

Recommended Upland Small Game Management Area Map



SOURCE: Digital Globe 2008

FIGURE 5-8

Hunting Dog Training Recommended Management Area Map