Exhibit H

Biological Resources

SAN LUIS REY MITIGATION BANK

SAN DIEGO COUNTY, CALIFORNIA

BIOLOGICAL RESOURCES REPORT

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List of Acronyms

cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
DFG	California Department of Fish and Game
msl	mean sea level
Study Area	San Luis Rey Mitigation Bank Property
USFWS	United States Fish and Wildlife Service

INTRODUCTION

Wildlands is proposing to entitle a wetlands mitigation bank along the San Luis Rey River in the City of Oceanside in northwestern San Diego County, California. Wildlands is currently under contract to purchase the property.

LOCATION

The San Luis Rey Mitigation Bank encompasses a total of approximately 63 acres of land located south of North River Road, north of Highway 76/Mission Road, and west of the old Bonsall bridge (on Highway 76) in the City of Oceanside, San Diego County, California (Figure 1; all figures are located at the end of the report).

The northern portion of the property is located in Section 36 of Township 10 South, Range 4 West on the Morro Hill 7.5-minute U.S. Geological Survey quadrangle and the southern portion of the property is location in Section 1, Township 11 South, Range 4 West of the same quadrangle map (Figure 2).

ENVIRONMENTAL SETTING

Existing Conditions

Most of the project site, with the exception of the channelized San Luis Rey River, has historically been utilized for growing tomatoes or wheat. It is estimated that the project site has been in almost continuous agricultural use for over 40 years. The property is currently being operated by the Singh Property Management Company as a commercial agricultural operation producing vine-ripened tomatoes.

The project site offers an excellent opportunity to restore and reestablish the San Luis Rey River floodplain. According to the Preliminary Wetland Delineation prepared for the project site, a total of 5.374 acres of wetlands and 0.247 acres of other waters of the United States currently occur on the project site. Restoration of the site would substantially increase the amount of wetland habitats within this area of San Diego County.

Surrounding land uses include:

- South: Singh Property Management Company agricultural processing plant and State Route 76/ San Luis Rey Mission Expressway
- North: Vine-ripened tomato fields and North River Road

- East: Undeveloped land and San Luis Rey River
- West: Mission Vista High School and San Luis Rey River

Land immediately to the east and west along the San Luis Rey River has recently been restored (Figure 3).

Topography

The San Luis Rey River crosses the property from east to west and divides the property into two unequal portions with most of the property located south of the river. Topographically, the two divided areas are relatively flat with a slight slope toward the river alignment, which in turn slopes from east to west within the vicinity of the site. Elevations range from a high of approximately 160 feet mean sea level (msl) in the southern portion of the site to approximately 120 feet in the north, with a low elevation of 98 feet msl in the river channel. Surface drainage flows north and south to the river.

Soils

The Soil Survey of San Diego Area, California (Soil Conservation Service and Forest Service) was accessed via http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm to determine the soils on the Study Area. As shown in Figure 3, there are nine soil series and 12 soil mapping units found in the Study Area; however, the site soil is predominantly characterized by three soil units: Bonsall sandy loam, 2 to 9 percent slopes; Riverwash, and Tujunga sand, 0 to 5 percent slopes. Each of the soil series and soil types is described below.

Bonsall Series

The Bonsall series consists of moderately well drained, shallow to moderately deep sandy loams that have a heavy clay loam subsoil. Slopes are concave and range from 2 to 15 percent. Vegetation is mainly filaree, mustard, wild oats, and annual grasses and forbs. A few scattered oaks grow along the drainages.

In a representative profile, the surface layer is brown, slightly acid sandy loam about 10 inches thick. The subsoil is brown, yellowish-brown, and light yellowish-brown, slightly acid to moderately alkaline clay loam and sandy loam about 50 inches thick. The substratum is light-brown, mildly alkaline sandy clay loam. At a depth of about 89 inches is deeply weathered granitic rock.

Bonsall sandy loam, 2 to 9 percent slopes, eroded (B1C2). This soil is cut by shallow gullies. The rooting depth is 24 to 33 inches. The available water holding capacity is 4 to 5 inches. The erosion hazard is moderate. This soil is used for range and dryfarmed grain and for flowers.

Bonsall sandy loam, 9 to 15 percent slopes, eroded (B1D2). This soil is strongly sloping and is cut by shallow gullies. The rooting depth is 24 to 33 inches. The available water holding capacity is 4 to 5

inches. Runoff is medium, and the erosion hazard moderate. This soil is used for range and dryland farmed barley and for flowers.

Table 1. Soil Types

Soil Type	Acres	Percentage
BlC2 - Bonsall sandy loam, 2 to 9 percent slopes, eroded	11.66	18.6%
BlD2 - Bonsall sandy loam, 9 to 15 percent slopes, eroded	2.03	3.2%
BsD - Bosanko clay, 9 to 15 percent slopes	0.09	0.1%
BsE - Bosanko clay, 15 to 30 percent slopes	0.35	0.6%
ClE2 - Cieneba coarse sandy loam, 15 to 30 percent slopes, eroded	3.02	4.8%
FaD2 - Fallbrook sandy loam, 9 to 15 percent slopes, eroded	0.11	0.2%
HrD2 - Huerhuero loam, 9 to 15 percent slopes, eroded	0.36	0.6%
PeC2 - Placentia sandy loam, 5 to 9 percent slopes, eroded	0.85	1.3%
PeD2 - Placentia sandy loam, 9 to 15 percent slopes, eroded	1.14	1.8%
Rm - Riverwash	11.42	18.2%
StG - Steep gullied land	0.2	0.3%
TuB - Tujunga sand, 0 to 5 percent slopes	31.56	50.3%
Total:	62.79	100.0%

Bosanko Series

The Bosanko series consists of well-drained, moderately deep clays that formed in material derived from acid igneous rock. These soils are on uplands and are undulating to hilly. Slopes range from 2 to 30 percent. The vegetation is chiefly annual grasses and scattered shrubs.

In a representative profile the surface layer is gray, slightly acid to moderately alkaline clay 23 inches thick. The next layer is brown, moderately alkaline sandy clay loam that contains numerous soft lime concretions. At a depth of about 30 inches is pale-brown, decomposed acid igneous rock. In some areas these soils have a stony surface layer. Bosanko soils are used for range, citrus, tomatoes, grain and grain hay.

Bosanko clay, 9 to 15 percent slopes (BsD). This soil is strongly sloping and is 20 to 28 inches deep over decomposed rock. The available water holding capacity is 3.5 to 4.5 inches. Runoff is medium, and the erosion hazard moderate. This soil is used for range, small grain, pasture, citrus and tomatoes.

Bosanko clay, 15 to 30 percent slopes (BsE). This soil is moderately steep and is 16 to 28 inches deep over decomposed rock. The available water holding capacity is 2.5 to 4.5 inches. Runoff is medium to rapid, and the erosion hazard moderate to high. This soil is used for range and tomatoes.

Cieneba Series

The Cieneba series consists of excessively drained, very shallow to shallow coarse sandy loams. These soils formed in material weathered in place from granitic rock. They are on rolling to mountainous uplands and have slopes of 5 to 75 percent. The vegetation is chiefly flat-top buckwheat, chamise, California sagebrush, and annual grasses and forbs.

In a representative profile the soil is brown, medium acid coarse sandy loam about 10 inches thick. Below this is weathered granodiorite. Cieneba soils are used mainly for avocados, range, wildlife habitat, recreational areas and watershed.

Cieneba coarse sandy loam, 15 to 30 percent slopes, eroded (C1E2). This is a hilly soil on uplands. Slopes are dominantly 30 percent. Fertility is low. Permeability is rapid. The available water holding capacity is 1 to 2 inches. Runoff is medium to rapid, and the erosion hazard moderate to high. The rooting depth is 10 to 20 inches. Sheet and gully erosion are evident. This soil is used mainly for range, wildlife habitat, recreational areas, and watershed.

Fallbrook Series

The Fallbrook series consists of well-drained, moderately deep to deep sandy loams that formed in material weathered in place from granodiorite. These soils are on uplands and have slopes of 2 to 30 percent. The vegetation is chiefly annual grasses, oak or broadleaf chaparral, and intermittent areas of chamise.

In a representative profile, the surface layer is brown, slightly acid sandy loam about 6 inches thick. The subsoil is reddish-brown and light reddish-brown, slightly acid and neutral sandy clay loam and loam about 41 inches thick. Below this is decomposed granodiorite.

Fallbrook sandy loam, 9 to 15 percent slopes, eroded (FaD2). This soil is strongly sloping and is 27 to 57 inches deep over rock. Sheet and gully erosion have been moderate. The available water holding capacity is 4.5 to 7.5 inches. Runoff is medium, and the erosion hazard moderate. This soil is used mainly for avocados, citrus, tomatoes, flowers, dryfarmed grain, and range.

Huerhuero Series

The Huerhuero series consists of moderately well drained loams that have a clay subsoil. These soils developed in sandy marine sediments. They have slopes of 2 to 30 percent. The vegetation in uncultivated areas is mainly tarweed, wild oats, star-thistle, red brome, Russian-thistle, and annual grasses and forbs.

In a representative profile the surface layer is brown and pale-brown, strongly acid and medium acid loam about 12 inches thick. The upper part of the subsoil is brown, moderately alkaline clay. It extends to a depth of about 41 inches. Below this, and extending to a depth of more than 60 inches, is brown, mildly alkaline clay loam and sandy loam. Huerhuero soils are used mainly for range, truck crops, tomatoes, and flowers.

Huerhuero loam, 9 to 15 percent slopes, eroded (HrD2). This soil is strongly sloping and, because of moderate sheet erosion, has an effective rooting depth of 20 to 40 inches. The available water holding capacity is 3.5 to 5 inches. Runoff is medium, and the erosion hazard moderate. This soil is used for tomatoes, flowers, range, and housing developments.

Placentia Series

The Placentia series consists of moderately well drained sandy loams that have a sandy clay subsoil. These soils formed in granitic alluvium. They are on old alluvial fans and have slopes of 0 to 15 percent. The vegetation consists of a few scattered oaks, soft chess, wild oats, filaree, chamise and vinegarweed.

In a representative profile the surface layer is brown, medium acid and slightly acid sandy loam about 13 inches thick. The subsoil is brown, moderately alkaline sandy clay and sandy clay loam about 40 inches thick. This layer is calcareous in the lowermost part. It is underlain by yellowish-brown, moderately alkaline sandy clay loam. Placentia soils are used mainly for dryfarmed crops, range, tomatoes, and flowers.

Placentia sandy loam, 5 to 9 percent slopes, eroded (PeC2). This soil is moderately sloping and has an effective rooting depth of 9 to 17 inches. Runoff is slow to medium, and the erosion hazard slight to moderate. In other features, this soil is similar to Placentia sandy loam, 2 to 9 percent. This Placentia soil is used mainly for tomatoes, flowers, dryfarmed crops, and range.

Placentia sandy loam, 9 to 15 percent slopes, eroded (PeD2). This soil is strongly sloping and has an effective rooting depth of 9 to 15 inches. Runoff is medium, and the erosion hazard moderate. This soil is used for tomatoes, flowers, dryfarmed crops and range.

Riverwash

Riverwash (Rm) occurs in intermittent stream channels. The material is typically sandy, gravelly, or cobbly. It is excessively drained and rapidly permeable. Many areas are barren. Scattered sycamores and coast live oaks grow along the banks. Sparse shrubs and forbs occur in patches.

Steep Gullied Land

Steep gullied land (StG) consists of strongly sloping to steep areas that are actively eroding into old alluvium or decomposed rock. It occurs as large individual gullies or as a network of many gullies in areas where the vegetative cover is sparse or has been severely depleted by grazing or fires. The vegetation is a sparse cover of shrubs and annual grasses and forbs. Runoff is very rapid, and the erosion hazard very high.

Tujunga Series

The Tujunga series consists of very deep, excessively drained sands derived from granitic alluvium. These soils are on alluvial fans and flood plains and have slopes of 0 to 5 percent. The vegetation in uncultivated areas is chiefly annual grasses and forbs and a few scattered oaks.

In a representative profile the surface layer is brown, neutral sand about 14 inches thick. The next layers are pale-brown, neutral sand and coarse sand. This material extends to a depth of more than 60 inches. Tujunga soils are used mainly for range and golf courses. A few small areas are used for avocados, flowers, and truck crops.

Tujunga sand, 0 to 5 percent slopes (TuB). This soil is on alluvial fans and floodplains. Slopes are dominantly 2 percent. Fertility is low. Permeability is very rapid. The available water holding capacity is 3 to 4 inches. Runoff is very slow to slow, and the erosion hazard is slight. Roots easily penetrate to a depth of 60 inches. Short periods of flooding are probable. This soil is used mainly for range and golf courses.

Rainfall and Climate

The San Luis Rey River basin is representative of a Mediterranean climate with dry, warm to hot summers and relatively cool, moist winters. Climatic variations within the watershed are the result of coastal influence and elevation. The dry season along the coast, May through October, is usually defined by morning fog and cloudiness. On average, about 266 days out of the year are clear, with the remaining 99 days being either cloudy or partly cloudy. The average winter minimum temperature near the coast is 46^{o}F with cooler inland temperatures that range from 30^{o}F in the Palomar Mountains with an occasional snowfall. The average summer temperature along the coast is about 69^{o}F, with temperatures inland that frequently exceed 90^{o}F. A majority of the precipitation falls during the months of November through April with snow occurring in the higher elevations of the mountains. (California Department of Fish and Game 2009.)

Along the coast, Oceanside receives a mean annual precipitation of approximately 12 inches, while higher elevations inland, Lake Henshaw and Palomar Mountain, receive 26 and 33 inches, respectively. (California Department of Fish and Game 2009.)

Hydrology

The San Luis Rey River is part of the San Luis Rey Watershed, the largest watershed in San Diego County. It originates in the Cleveland National Forest near Palomar Mountain and discharges directly into the Pacific Ocean in Oceanside. It is approximately 55 miles long and supports one impoundment (i.e., dam) at Lake Henshaw. Water from Lake Henshaw is released down the main channel of the San Luis Rey River and diverted into the manmade Escondido Canal. This diversion is just east of the La Jolla Indian Reservation, approximately 7 miles downstream of the impoundment. The river is buffered by native and non-native riparian vegetation; the width and quality of this habitat varies.

The river supports intermittent stream flow and is dry during most of the year due to restricted dam releases at Lake Henshaw; however, during winter storm events it can support large flows with velocities peaking between 177,000 to 224,000 cubic feet per second (cfs). Since construction of the Lake Henshaw dam in 1922, flood flows have been reduced but the potential for flood damage has increased due to increasing urban development along the river floodplain (California Department of Fish and Game 2009).

STUDY METHODS

Prior to conducting field work and conducting special-status species surveys, Wildlands biologists consulted the following sources: California Natural Diversity Database (CNDDB) using a 5-mile radius from the project site; U.S. Fish and Wildlife Service (USFWS) list of Federal Endangered and Threatened Species that occur in or may be affected by projects within the Morro Hill 7.5-minute USFWS quadrangle; and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (California Native Plant Society 2007).

In terms of critical habitat review, the portion of the San Luis Rey River extending through the project site is located within designated critical habitat for the federal- and state-listed endangered least Bell's vireo and southwestern willow flycatcher, and the federally-listed arroyo toad. Therefore, maps and habitat evaluation models on the USFWS website were consulted in June 2011.

Resource Mapping

Jurisdictional Waters of the U.S., including Wetlands

Wildlands' biologist Bill Report conducted initial surveys to investigate and map potential jurisdictional areas on June 27 through June 30, 2011, and July 21, 2011.

Vegetation Mapping

Wildlands' biologist Bill Roper conducted reconnaissance level biological resources survey of the project site in 2010, with more focused biological surveys on June 27-30, 2011, and July 21, 2011. Vegetation community classifications used in this report generally follow Holland (1986), where applicable, and the *Vegetation Classification and Mapping Program, List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (California Department of Fish and Game 2003).

General Flora

All plant species observed were identified in the field or collected for later identification by Wildlands' biologist Bill Roper. Latin and common names of plants follow *The Jepson Manual* (Hickman 1993). A cumulative list of plant species observed within the Study Area is presented in Appendix A.

General Fauna

All wildlife species observed were identified in the field by Wildlands' biologist Bill Roper during the 2010 and 2011 general surveys. All wildlife species detected during the field surveys by sight, vocalizations, burrows, tracks, scat and other signs were recorded. Binoculars were used to aid in the identification of observed wildlife. A cumulative list of wildlife species observed within the Study Area is presented in Appendix B.

Special-Status and/or Regulated Resources

Special-status species are those species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or threatened population sizes. This includes those species listed by the state and federal government as threatened or endangered, those species proposed for state and/or federal listing or candidates, those plant species found on Lists 1A, 1B, or 2 of the CNPS Inventory of Rare and Endangered Plants of California, or CNPS online inventory (http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi).

Prior to conducting the biological resources surveys, the CNDDB was reviewed to identify any potentially occurring locally, state-, and/or federally protected plant and wildlife species within the Study Area. During the biological resources surveys, the entire Study Area was surveyed to effectively inventory all biological resources present. Habitat assessments for special-status wildlife species were conducted separate from the general biological resource surveys.

Focused Botanical Surveys

Due to the disturbed nature of the project site, suitable habitat is absent for the vast majority of special status plant species with potential to occur in the project vicinity. However, focused botanical surveys were conducted in June 2011 and all plant species observed were identified to a taxonomic level sufficient to determine special status.

Focused Wildlife Surveys

Due to timing and the overall lack of suitable on site habitat, no focused surveys for special-status wildlife were conducted; however, habitat assessments for arroyo toad and least Bell's vireo and southwestern willow flycatcher were conducted for the project as described below.

Arroyo Toad

Cadre Environmental research biologist Ruben S. Ramirez, Jr., conducted a breeding and upland habitat assessment for the federally endangered arroyo toad (*Anaxyrus californicus*) within the Study Area on June 27, 2011, to qualitatively assess potential breeding and upland habitat for the arroyo toad. The survey included an assessment of all habitats (potential movement routes) present within and adjacent to the Study Area.

Least Bell's Vireo and Southwestern Willow Flycatcher

ESA biologist Mark Tucker conducted a breeding and upland habitat assessment for the federally and state listed endangered least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*) on July 21, 2011, to qualitatively assess potential nesting habitat for these species. The survey included an assessment of all on site habitat and habitat within 500 feet of the Study Area.

RESULTS

Jurisdictional Areas

U.S. Army Corps of Engineers

Within the Study Area, Corps jurisdictional areas occur within the San Luis Rey River and agricultural fields as shown in Figure 4. A total of 5.374 acres of Corps jurisdictional wetlands occur within the Study Area, comprised entirely of freshwater marsh within the San Luis Rey River. Corps jurisdictional riparian forest occurs immediately beyond the eastern and southeastern boundaries of the project site. Additionally, 0.274 acre of Corps jurisdictional non-wetland Waters of the U.S., comprised of agricultural drainage ditches, occur within and along the edges of agricultural fields (Figure 4).

California Department of Fish and Game

DFG jurisdictional areas within the project site are primarily comprised of those areas also under Corps jusridiction. In addition to Corps jurisdictional areas, DFG also may have jurisdiction on those portions of the levee habitat dominated by invasive giant reed (*Arundo donax*). This areas are on the inside levee slopes along the north and south edges of the San Luis Rey River.

Vegetation Communities

The Oceanside Subarea Plan divides vegetation communities into six Habitat Groups (A through F) in order of decreasing sensitivity (AMEC and CBI 2005):

Table 2. Oceanside Habitat Types

Oceanside Habitat Group	Habitat Type and Description
A	Wetland/riparian: Coastal salt marsh, alkali marsh, freshwater marsh, estuarine, salt pan/mudflats, riparian forest, riparian woodland, riparian scrub, vernal pool, disturbed wetland, open water, non-vegetated channel (these areas are vegetation communities and may differ from jurisdictional areas)
B	Rare upland: Beach, southern coastal bluff scrub, maritime succulent scrub, southern maritime chaparral, Engelmann oak woodland, coast live oak woodland, native grassland
C	Coastal sage scrub: Diegan coastal sage scrub, coastal sage-chaparral scrub
D	Chaparral: Chaparral, excluding southern maritime chaparral
E	Annual grassland: Non-native grassland
F	Other: Disturbed land (including ruderal), agricultural land, eucalyptus

The site supports five vegetation communities; however, majority of the site is comprised of agricultural fields (Figure 5, Aerial Photograph, and Figure 6, Habitat Types).

Table 3. Habitat Types

Habitat Type	Habitat Group	Acres	Percentage
Freshwater marsh	A	5.32	8.5
Coastal sage scrub	C	0.74	1.2
Agricultural field	F	46.39	73.9
Developed/disturbed	F	8.93	14.2
Levee	F	1.41	2.2
Total		**62.79**	**100.0**

Agricultural Fields

Agricultural fields within the project site have been in continuous agricultural production for at least the last 40 years. These fields are primarily used for tomato production. Occasional rotational/cover crops such as wheat are grown or fields are rested to maintain long term productivity. These fields were observed in tomato production during the 2010 season and being rested during the 2011 season. These fields were mostly unvegetated during June/July 2011 habitat mapping. The only vegetation observed within the fields were scattered volunteer wheat (*Triticum aestivum*) and tomato (*Lycopersicon esculentum*).

Agricultural ditches are found within and along the edges of agricultural fields throughout the project area. These ditches convey irrigation, and precipitation runoff to the San Luis Rey River from areas within and outside the project area. These ditches are regularly maintained in conjunction with ongoing agricultural production and are mostly unvegetated.

Freshwater Marsh

Freshwater marsh within the project site is found entirely within the channelized reach of the San Luis Rey River. The freshwater marsh habitat is dominated by three-square bulrush (*Scirpus americanus*) and broadleaf cattail (*Typha latifolia*) with isolated regions of surface water expression. Other common plant species observed within the fresh water marsh where California bulrush (*Scirpus californicus*), river bulrush (*Scirpus fluviatilis*) and watercress (*Rorippa nasturtium-aquaticum*). The edges of the emergent marsh (abutting the levees) where lined with giant reed. Giant reed extends up the levees along the north and south banks of the river.

Levee

Levees are found along the north and south banks of the San Luis Rey River and extend the length of the project site. These levees are assumed to have been constructed as part of the historic agricultural management activities to limit any natural movement of the river channel and flooding of the adjacent agricultural fields. These levees are relatively steep and are armored with large granite rock. This rock ranges in size from 1 foot to 6 feet in diameter. Levees within the project site are primarily dominated by giant reed along the inside slopes. The upper slopes and levee tops are dominated by common ragweed (*Ambrosia artemisiifolia*), and red brome (*Bromus madritensis ssp. rubens*). Other species on the levees include white sweetclover (*Melilotus alba*), spurge (*Chamaesyce sp*), Bermuda grass (*Cynodon dactylon*), and tomato.

Developed/Disturbed

Developed/disturbed areas are primarily comprised of areas maintained for farm equipment storage, staging of agricultural materials/rock, and roads that are maintained for year round use and not part of annual field maintenance activities. These areas have surfaces that are well compacted and mostly unvegetated due to ongoing use and maintenance.

Coastal Sage Scrub

A small coastal sage scrub area is located in the southwest corner of the project site. This thin strip of coastal sage scrub is located between an equipment storage area within the project site and Mission Vista High School. It is positioned on the face of a steep, nearly sheer granite cutbank. The coastal sage scrub area is primarily vegetated with California sage (*Artemisia californica*) and California buckwheat (*Eriogonum fasciculatum*).

Vegetation Community Adjacent to the Project Site (Riparian Forest)

Riparian forest is located outside the proposed bank boundary (some canopy overhang) but has been included in the vegetation community results due to the extremely close proximity to the eastern and southeastern proposed bank boundary. The edge of this community was also included in the Study Area boundary of the Corps preliminary wetland delineation for the project. This feature is similar in species composition to other riparian wetlands such as riparian scrub and riparian woodland. It is being considered riparian forest because the majority of canopy cover is comprised of trees (dbh > 3") and absolute canopy cover is greater than 50%. Riparian forest is dominated by arroyo willow (*Salix lasiolepis*) and Fremont cottonwood (*Populus fremontii*). Other plant species within the riparian forest include black willow (*Salix gooddingii*), sandbar willow (*Salix exigua*) and mulefat (*Baccharis salicifolia*). There is very little midstory and understory vegetation within the riparian forest.

Special Status Species

Special Status Plants

No state- and/or federally listed plant species were observed in the project site during botanical surveys. Based on a review of the CNDDB search, few special status plant species are expected to occur based on habitats and substrate present. All special status plant species with potential to occur based on site location and general soils mapping are shown in Table 4. For each species listed, a determination was made regarding the potential for the species to occur on site based on information gathered during the field survey including: the location of the site, habitats or land covers present, current site conditions, degree of disturbance on site, and past and present land use.

Special Status Wildlife

Based on a review of the CNDDB search, several State and/or federally listed wildlife species have potential to occur within or adjacent to the project site (see Table 5). For each species listed, a determination is made regarding the potential use of the site based on information gathered during the general biological surveys including known habitat preferences and knowledge of their relative distributions in the area.

Wildlife surveys followed methods recommended by the USFWS and DFG. A search covering the entire site was conducted to sample all habitats present and to detect as many wildlife species as possible. Visual surveys were made for flying and soaring birds. Special attention was also given to waterways and other wetland habitats, and to nesting habitats for avian species. All wildlife species that were detected were noted. Signs of wildlife presence such as tracks, scat, burrows, feather piles, and dead animals also were noted.

CONCLUSIONS

The Study Area possesses the natural resources and habitat values that the resource agencies and Wildlands want to restore and preserve. The successful restoration projects upstream and downstream indicate that the proposed restoration of the site is biologically feasible and would improve habitat for numerous species including state and federally listed species.

REFERENCES

AMEC Earth & Environmental (AMEC) and Conservation Biological Institute (CBI). 2005. Review Draft Final Oceanside Subarea Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP). December.

California Department of Fish and Game. 2000. Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities.

California Department of Fish and Game. 2003. Vegetation Classification and Mapping Program, List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database.

California Department of Fish and Game. 2009. Coastal Watershed Planning and Assessment Program. San Luis Rey River Assessment Report – Draft. May.

California Department of Fish and Game. California Natural Diversity Database (CNDDB). Computer database. Accessed June 2011.

California Native Plant Society. 2007. Inventory of Rare and Endangered Plants of California.

Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Nongame-Heritage Program, California Department of Fish and Game. 156 pp.

Hickman, J.C., ed. 1993. The Jepson Manual: higher plants of California. University of California Press. Berkeley, CA. 1,400 pp.

Soil Conservation Service and Forest Service. 1973. Soil Survey of the San Diego Area, California. U.S. Department of Agriculture.

Tables

Table 4. Special Status Plant Species Potentially Occurring or Known to Occur at the San Luis Rey Mitigation Bank Site

Common Name *Scientific Name*	Legal Status				Primary Habitat Associations/ Life Form/Blooming Period	Status on Site or Potential to Occur
	Federal	State	HCP	CNPS		
San Diego thornmint *Acanthomintha ilicifolia*	FT	SE	NE *1	1B.1	Chaparral, coastal scrub, valley and foothill grassland, vernal pools; clay/ annual herb/ April–June/30–3,150 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
California adolphia *Adolphia californica*	None	None	None	2.1	Chaparral, coastal scrub, valley and foothill grassland; clay/deciduous shrub/December–May/150–2,430 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
San Diego ambrosia *Ambrosia pumila*	FE	None	NE *1	1B.1	Chaparral, coastal scrub, valley and foothill grassland, vernal pools; often disturbed, sometimes alkaline/ rhizomatous herb/May–October/60–1,360 feet	Margianal habitat (levee tops) within project site. However this species was not observed during botanical surveys in June 2011.
Del Mar manzanita *Arctostaphylos glandulosa spp. crassifolia*	FE	None	NE 1	1B.1	Maritime chaparral; sandy/evergreen shrub/ December–June/ <1,200 feet	Not expected to occur. There is no suitable habitat for this species in the Study Area.
Coastal dunes milk-vetch *Astragalus tener* var. *titi*	FE	SE	None	1B.1	Coastal bluff scrub, coastal dunes, coastal prairie; mesic, often vernally mesic/annual herb/ March–May/ <170 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Coulter's saltbush *Atriplex coulteri*	None	None		1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, and valley and foothill grassland (alkaline or clay)/Perennial herb/March–October	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
South Coast saltscale *Atriplex pacifica*	None	None	None	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, playas/ annual herb/ March–October/<500 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Davidson's saltscale *Atriplex serenana* var. *davidsonii*	None	None		1B.2	Coastal bluff scrub, coastal scrub (alkaline)/Annual herb/April–October	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Encinitas baccharis *Baccharis vanessae*	FT	SE	NE *1	1B.1	Chaparral, cismontane woodland; sandstone/deciduous shrub/ August–November/200–2,400 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
San Diego goldenstar *Bloomeria clevelandii*	None	None	None	1B.1	Chaparral, coastal scrub, valley and foothill grassland, vernal pools; clay/ bulbiferous herb/ April–May/ 160–1,550 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.

Table 4. Special Status Plant Species Potentially Occurring or Known to Occur at the San Luis Rey Mitigation Bank Site

Common Name *Scientific Name*	Legal Status				Primary Habitat Associations/ Life Form/Blooming Period	Status on Site or Potential to Occur
	Federal	State	HCP	CNPS		
Thread-leaved brodiaea *Brodiaea filifolia*	FT	SE	NE *1, 2	1B.1	Chaparral (openings) cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools; often clay/ bulbiferous herb/ March–June/ 400- 2,800 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Orcutt's brodiaea *Brodiaea orcuttii*	None	None	None	1.B.1	Closed-cone conifer forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, vernal pools; mesic, clay, sometimes serpentine/ bulbiferous herb/ May–July/100–5,550 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Lewis's evening primrose *Camissonia lewisii*	None	None	None	3	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland; sandy or clay/ annual herb/ March–May (June)/ <1,000 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Wart-stemmed ceanothus *Ceanothus verrucosus*	None	None	Covered *1	2.2	Chaparral/evergreen shrub/ December–May/<1,250 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Southern tarplant *Centromadia parryi* ssp. *australis*	None	None		1B.1	Marshes and swamps, valley and foothill grassland (vernally mesic), vernal pools, often in disturbed sites with alkaline soils near the coast/ annual herb/May–November	Not expected to occur. Along the California coast this species is typically seen in seasonally mesic areas or along disturbed roads, trails, and habitat edges with alkaline soils.
Smooth tarplant *Centromadia pungens* spp. *Laevis*	None	None	None	1B.1	Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland; alkaline/ annual herb/April–September/ <1,580 feet	Not expected to occur. There is no chenopod scrub or alkali soil in the Study Area.
Orcutt's pincushion *Chaenactis labriuscula* var. *orcuttiana*	None	None	None	1B.1	Coastal bluff scrub, coastal dunes/ annual herb/ JanuaryAugust/10-330 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Orcutt's spineflower *Chorizanthe orcuttiana*	FE	SE	NE *1	1B.1	Maritime chaparral, closed-cone conifer forest, coastal scrub/ annual herb/ March– May/ <400 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.

Table 4. Special Status Plant Species Potentially Occurring or Known to Occur at the San Luis Rey Mitigation Bank Site						
Common Name *Scientific Name*	**Legal Status**				**Primary Habitat Associations/ Life Form/Blooming Period**	**Status on Site or Potential to Occur**
	Federal	**State**	**HCP**	**CNPS**		
Long-spined spineflower *Chorizanthe polygonoides* var. *longispina*	None	None	None	1B.2	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland; often clay/ annual herb/ April–July/ 100–5,000 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Delicate clarkia *Clarkia delicata*	None	None	None	1B.2	Chaparral, cismontane woodland/ annual herb/ April–June/ 770–3,300 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Summer-holly *Comorostaphylis diversifolia* spp. *Diversifolia*	None	None	Covered *1	1B.2	Chaparral, cismontane woodland/ evergreen shrub/ April–June/100–1,800 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Sea dahlia *Coreopsis maritima*	None	None	None	2.2	Coastal bluff scrub, coastal scrub/ perennial herb/ March—May/ 15-500 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
San Diego sand aster *Corethrogyne filaginifolia* var. *incana*	None	None	None	1B.1	Chaparral, coastal bluff scrub, coastal scrub/ perennial herb/ June–September/10–380 feet	Not expected to occur. There is no suitable habitat for this species in the Study Area.
Del Mar Mesa sand aster *Corethrogyne filaginifolia* var. *linifolia*	None	None	NE *1	1B.1	Coastal bluff scrub, maritime chaparral (openings), coastal scrub; sandy/ perennial herb/ May–September/ 10–380 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Blochman's dudleya *Dudleya blochmaniae* ssp. *blochmaniae*	None	None	Covered *2	1B.1	Chaparral, coastal bluff scrub, coastal scrub, valley and foothill grassland, rocky; often clay or serpentinite/ perennial herb/April–June/ 15–1,500 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Many-stemmed dudleya *Dudleya multicaulis*	None	None	None	1B.2	Chaparral, coastal scrub, valley and foothill grassland; often clay/ perennial herb/ April–July/ 50–2,600 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Variegated dudleya *Dudleya variegata*	None	None	None	1B.2	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, vernal pools; clay/ perennial herb/ April– June/ <1,900 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.

Table 4. Special Status Plant Species Potentially Occurring or Known to Occur at the San Luis Rey Mitigation Bank Site

Common Name *Scientific Name*	Legal Status				Primary Habitat Associations/ Life Form/Blooming Period	Status on Site or Potential to Occur
	Federal	State	HCP	CNPS		
Sticky dudleya *Dudleya viscida*	None	None	Covered *2	1B.2	Coastal bluff scrub, chaparral, coastal scrub; rocky/ perennial herb/ May–June/ 30– 1,800 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
San Diego button-celery *Eryngium aristulatum* var. *parishii*	FE	SE	OW NE *1, 2	1B.1	Coastal scrub, valley and foothill grassland, vernal pools, mesic/ annual-perennial herb/ April–June/ 60– 2,000 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Pendleton buttoncelery *Eryngium pendletonensis*	None	None		1B.1	Coastal bluff scrub, valley and foothill grassland, vernal pools; clay, vernally mesic/perennial herb/ April–June/ 50–360 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Sand-loving wallflower *Erysimum ammophilum*	None	None		1B.2	Maritime chaparral, coastal dunes, coastal scrub; sandy, openings/ perennial herb. February–June/ <200 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Cliff spurge *Euphorbia misera*	None	None	Covered	2.2	Coastal bluff scrub, coastal scrub, Mojavean desert scrub; rocky/ shrub/ December–August/30–1,650 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
San Diego barrel cactus *Ferocactus viridescens*	None	None	Covered *	2.1	Chaparral, coastal scrub, valley and foothill grassland, vernal pools/ perennial stem succulent/ May–June/ <1,500 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Orcutt's hazardia *Hazardia orcuttii*	FC	ST	NE *1	1B.1	Maritime chaparral, coastal scrub; often clay/evergreen shrub/August–October/ 250–280 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Beach goldenaster *Heterotheca sessiliflora* ssp. *sessiliflora*	None	None	None	1B.1	Coastal dunes, coastal scrub, coastal chaparral/annual herb/July–November/ <35 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Ramona horkelia *Horkelia truncata*	None	None	None	1B.3	Chaparral, cismontane woodland, clay, gabbroic/ perennial herb/ May-June/ 1300-4,300 ft.	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Decumbent goldenbush *Isocoma menziesii* var. *decumbens*	None	None	None	1B.2	Chaparral, coastal scrub (sandy, often disturbed areas)/ shrub/April–November/ 30–450 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.

Table 4. Special Status Plant Species Potentially Occurring or Known to Occur at the San Luis Rey Mitigation Bank Site

Common Name *Scientific Name*	Legal Status				Primary Habitat Associations/ Life Form/Blooming Period	Status on Site or Potential to Occur
	Federal	State	HCP	CNPS		
San Diego marsh-elder *Iva hayesiana*	None	None	Covered *1	2.2	Marshes and swamps, playas/ perennial herb/April–November/ 30–1,650 feet	Marginal habitat (Freshwater marsh) is within the study area, However , this species was not observed during botanical surveys conducted in June 2011.
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	None	None		1B.1	Marshes and swamps (coastal salt), playas, and vernal pools/Annual herb/February–June	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Robinson's pepper-grass *Lepidium virginicum* var. *robinsonii*	None	None	None	1B.2	Chaparral, coastal scrub/ annual herb/ January–July/ <2,900 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Nuttall's lotus *Lotus nuttallianus*	None	None	NE *	1B.1	Coastal dunes, coastal scrub; sandy/ annual herb/ March–June/ <35 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Felt-leaved monardella *Monardella hypoleuca* ssp. *lanata*	None	None	None	1B.2	Chaparral, cismontane woodland/ rhizomatous herb/ June–August/1,000–3,600 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Little mousetail *Myosurus minimus* ssp. *apus*	None	None	OW NE *1	3.1	Vernal pools, valley and foothill grassland; alkaline/ annual herb/ March–June/ 60–2,100 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Mud nama *Nama stenocarpum*	None	None	None	2.2	Marshes and swamps, lake margins, riverbanks/ annual perennial herb/ January–July/ 15–1,650 feet	Marginal habitat (Freshwater marsh) is within the study area, However , this species was not observed during botanical surveys conducted in June 2011.
Spreading navarretia *Navarretia fossalis*	FT	None	OW NE *1	1B.1	Chenopod scrub, shallow freshwater marshes and swamps, playas, vernal pools/annual herb/ April–June/ 100–4,300 feet	Marginal habitat (Freshwater marsh) is within the study area, However , this species was not observed during botanical surveys conducted in June 2011.

Table 4. Special Status Plant Species Potentially Occurring or Known to Occur at the San Luis Rey Mitigation Bank Site

Common Name *Scientific Name*	Legal Status				Primary Habitat Associations/ Life Form/Blooming Period	Status on Site or Potential to Occur
	Federal	State	HCP	CNPS		
Coast woollyheads *Nemacaulis denudata* var. *denudate*	None	None	None	1B.2	Coastal dunes/ annual herb/ April–September/<330 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Slender woollyheads *Nemacaulis denudata* var. *gracilis*	None	None	None	2.2	Coastal dunes, desert dunes, Sonoran desert scrub/annual herb/ (March) April–May/160-1,300 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Chaparral nolina *Nolina cismontane*	None	None	None	1B.2	Chaparral, coastal scrub; sandstone or gabbro/evergreen shrub/May–July/ 460–4,200 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
California Orcutt grass *Orcuttia californica*	FE	SE	OW NE *1	1B.1	Vernal pools/ annual herb/ April–August/ 50–2,200 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.
Brand's phacelia *Phacelia stellaris*	FC	None	None	1B.1	Coastal dunes, coastal scrub/ annual herb/March–June/ <1,300 feet	Not expected to occur. There is no suitable habitat or soil for this species in the Study Area.

Federal Designations:

FE = Federally listed Endangered
FT = Federally listed Threatened
FC = Federally listed Candidate

State Designations:

SE = State-listed Endangered
ST = State-listed Threatened

Draft Oceanside Habitat Conservation Plan (HCP)/ NCCP:

Covered = Proposed Covered species under draft Subarea Plan (take permitted)
OW = Covered, Obligate Wetland species under MHCP (take regulated)
NE = Covered, Narrow Endemic species under MHCP (take regulated)
* Covered, MHCP coverage requires species-specific conservation measures (take regulated)
1 = Coverage contingent upon approval of other local Subarea Plan(s)
2 = Proposed for coverage under draft Subarea Plan, but MHCP requires Subarea Plans to include additional conservation measures
3 = Proposed for coverage under draft Subarea Plan, but species not covered under MHCP

Table 5. Special Status Wildlife Species and Critical Habitat Potentially Occurring or Known to Occur at the San Luis Rey Mitigation Bank Site

Common Name *Scientific Name*	**Legal Status**			**Primary Habitat Associations**	**Comments**
	Federal	**State**	**Other**		
Fish					
Tidewater goby *Eucyclogobius newberryi*	FE	CSC	None	Low-salinity waters in coastal wetlands	Considered but rejected. The site lacks suitable habitat.
Southern steelhead *Oncorhynchus mykiss*	FE	CSC	None	Juveniles occur in cool, freshwater streams with riffle-pool complexes; moderate-sized gravel with shallow waters. Adults migrate to the ocean after 1–5 years in freshwater.	Low potential to pass through the Study Area when appropriate flows are present. No suitable spawning gravel within the project site. Pool shelter and pool depth unsuitable in the Study Area. There are both documented and anecdotal observations of this species in the San Luis Rey River from 2007 and 1997.
Amphibians					
Arroyo toad *Anaxyrus [=Bufo] californicus*	FE	CSC	None	Stream channels for breeding (typically 3rd order); adjacent stream terraces and uplands for foraging and wintering	The Study Area is identified as Critical Habitat for this species; however, a breeding and upland habitat assessment conducted in June 2011 determined that the Study Area does not represent suitable arroyo toad breeding or aestivation habitat.
Western spadefoot *Spea [=Scaphiopus] hammondi*	BLM	CSC	None	Most common in grasslands, coastal sage scrub near rain pools or vernal pools; riparian habitats	Considered but rejected. The site lacks suitable habitat.
Reptiles					
Orangethroated whiptail *Aspidoscelis hyperythra*	None	CSC	None	Coastal sage scrub, chaparral, grassland, juniper and oak woodland	Not expected to occur. The coastal sage scrub onsite is small, isolated and very steep
Coastal western whiptail *Aspidoscelis tigris stejnegeri*	None	None DFG Special Animals List	None	Coastal sage scrub, chaparral; sandy areas, gravelly arroyos, or washes	Not expected to occur. The coastal sage scrub onsite is small, isolated and very steep.

Table 5. Special Status Wildlife Species and Critical Habitat Potentially Occurring or Known to Occur at the San Luis Rey Mitigation Bank Site

Common Name / ***Scientific Name***	**Legal Status**			**Primary Habitat Associations**	**Comments**
	Federal	**State**	**Other**		
Rosy boa *Charina =Lichanura] trivirgata*	None	None	USFS BLM	Rocky chaparral, coastal sage scrub, oak woodlands, desert and semi-desert scrub	Not expected to occur. The coastal sage scrub onsite is small, isolated and very steep.
Birds					
Cooper's hawk *Accipiter cooperii* (nesting)	None	Watch List	None	Riparian and oak woodlands, montane canyons	Very low potential to occur onsite. Suitable habitat is present in the riparian corridors immediately east and west of the project.
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	None	Watch List	None	Grass-covered hillsides, coastal sage scrub, chaparral with boulders and outcrops	Not expected to occur. The coastal sage scrub onsite is small, isolated and very steep.
Golden eagle *Aquila chrysaetos*	BCC	Watch List SP	BLM CDF	Open country, especially hilly and mountainous regions; grassland, coastal sage scrub, chaparral, oak savannas, open coniferous forest	There is no suitable nesting habitat within the project area. Agricutural fields provide low quality foraging habitat.
Coastal cactus wren *Campylorhynchus brunneicapillus sandiegensis*	BCC	CSC	USFS	Southern cactus scrub, maritime succulent scrub, cactus thickets in coastal sage scrub	Not expected to occur. There are no cactus thickets within the project area. The coastal sage scrub onsite is small, isolated and very steep.
Northern harrier *Circus cyaneus* (nesting)	None	CSC	None	Open wetlands (nesting), pasture, old fields, dry uplands, grasslands, rangelands, coastal sage scrub	No suitable nesting habitat is present in the Study Area due to intensive agricultural maintenance. Site may provide very low quality foraging habitat.
Yellow warbler *Dendroica petechia brewsteri* (nesting)	None	CSC	None	Nests in lowland and foothill riparian woodlands dominated by cottonwoods, alders and willows; winters in a variety of habitats	Not likely to occur onsite due to lack of habitat. Suitable habitat is present in the riparian corridors immediately east and west of the project.

Table 5. Special Status Wildlife Species and Critical Habitat Potentially Occurring or Known to Occur at the San Luis Rey Mitigation Bank Site

Common Name *Scientific Name*	**Legal Status**			**Primary Habitat Associations**	**Comments**
	Federal	**State**	**Other**		
White-tailed kite *Elanus leucurus* (nesting)	None	SP	None	Open grasslands, savanna-like habitats, agriculture, wetlands, oak woodlands, riparian	Not likely to nest onsite due to lack of habitat. Low quality foraging habitat onsite. Suitable habitat is present in the riparian corridors immediately east and west of the project.
Southwestern willow flycatcher *Empidonax traillii extimus* (nesting)	FE	SE	None	Riparian woodlands along streams and rivers with mature, dense stands of willows or alders; may nest in thickets dominated by tamarisk	Not likely to occur onsite due to lack of habitat. Suitable habitat is present in the riparian corridors immediately east and west of the project.
Yellowbreasted chat *Icteria virens* (nesting)	None	CSC	None	Dense, relatively wide riparian woodlands and thickets of willows, vine tangles and dense brush.	Not likely to occur onsite due to lack of habitat. Suitable habitat is present in the riparian corridors immediately east and west of the project.
White-faced ibis *Plegadis chihi* (rookery site)	SMC	Watch List	None	Nests in marsh; winter foraging in shallow lacustrine waters, muddy ground of wet meadows, marshes, ponds, lakes, rivers, flooded fields and estuaries	Marginal habitat within the project site (freshwater marsh). However, potential for nesting is low due to the narrow, isolated nature of the habitat , and the abundance of tall statured arundo surrounding the marsh habitat.
Coastal California gnatcatcher *Polioptila californica californica*	FT	CSC	None	Coastal sage scrub, coastal sage scrub chaparral mix, coastal sage scrub-grassland ecotone, riparian in late summer	Not expected to occur. The coastal sage scrub onsite is small, isolated and very steep.
Light-footed clapper rail *Rallus longirostris levipes*	FE	SE SP	None	Grassy (cordgrass pickleweed), saltwater, and brackish marshes	Not expected to occur. The Study Area does not support suitable habitat for this species.
California least tern *Sternula [Sturna] antillarum browni* (nesting colony)	FE	SE SP	None	Coastal waters, estuaries, large bays and harbors, mudflats; nests on sandy beaches	Not expected to occur. The Study Area does not support suitable habitat for this species.

Table 5. Special Status Wildlife Species and Critical Habitat Potentially Occurring or Known to Occur at the San Luis Rey Mitigation Bank Site

Common Name / ***Scientific Name***	**Legal Status**			**Primary Habitat Associations**	**Comments**
	Federal	**State**	**Other**		
Least Bell's vireo *Vireo bellii pusillus* (nesting)	FE BCC	SE		Nests in southern willow scrub with dense cover within 1–2 meters of the ground; habitat includes willows, cottonwoods, mulefat, wild blackberry or mesquite on desert areas	Low potential to nest in Study Area due to lack of suitable habitat. The Study Area is designated critical habitat for this species. There is a high potential for this species to nest in suitable habitat located immediately east and west of the Study Area.

Federal Designations:

FE = Federally listed Endangered
FT = Federally listed Threatened
BCC = USFWS Birds of Conservation Concern
SMC = Fish and Wildlife Service Region 1 Species of Management Concern

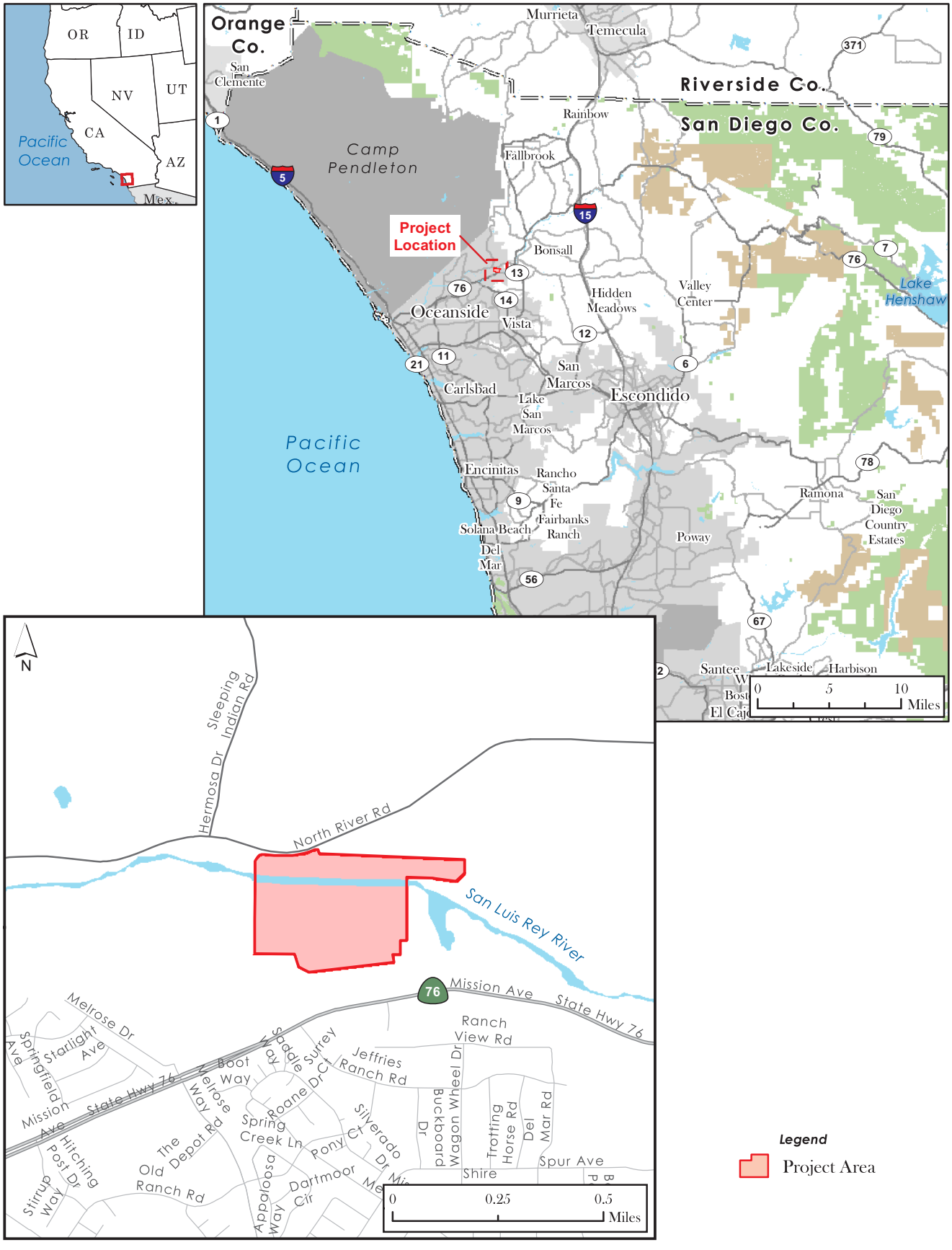
State Designations:

CSC = California Special Concern Species
SP = California Department of Fish and Game Protected and Fully Protected Species
SE = State-listed Endangered
ST = State-listed Threatened

Other:

BLM = Bureau of Land Management sensitive
USFS = U.S. Forest Service sensitive
CDF = California Department of Forestry and Fire sensitive

Figures


OR
ID
NV
UT
CA
AZ
Pacific Ocean
Mex.
Orange Co.
San Clemente
Murrieta
Temecula
Riverside Co.
San Diego Co.
Rainbow
Fallbrook
Camp Pendleton
Project Location
Bonsall
Oceanside
Vista
Hidden Meadows
Valley Center
Lake Henshaw
Carlsbad
San Marcos
Lake San Marcos
Escondido
Pacific Ocean
Encinitas
Rancho Santa Fe
Fairbanks Ranch
Solana Beach
Del Mar
Ramona
San Diego Country Estates
Poway
Santee
Lakeside
Harbison
0 5 10 Miles
N
Sleeping Indian Rd
Hermosa Dr
North River Rd
San Luis Rey River
Mission Ave
State Hwy 76
Melrose Dr
Springfield Ave
Starlight Ave
Boot Hill Way
Saddle Surrey Way
Jeffries Ranch Rd
Ranch View Rd
Roane Dr Ct
Wagon Wheel Dr
Buckboard Dr
Trotting Horse Rd
Del Mar Rd
Spur Ave
Shire
Silverado Dr
Pony Ct
Spring Creek Ln
The Old Depot Rd
Old Ranch Rd
Hitching Post Dr
Stirrup Way
Appaloosa Way
Dartmoor Cir
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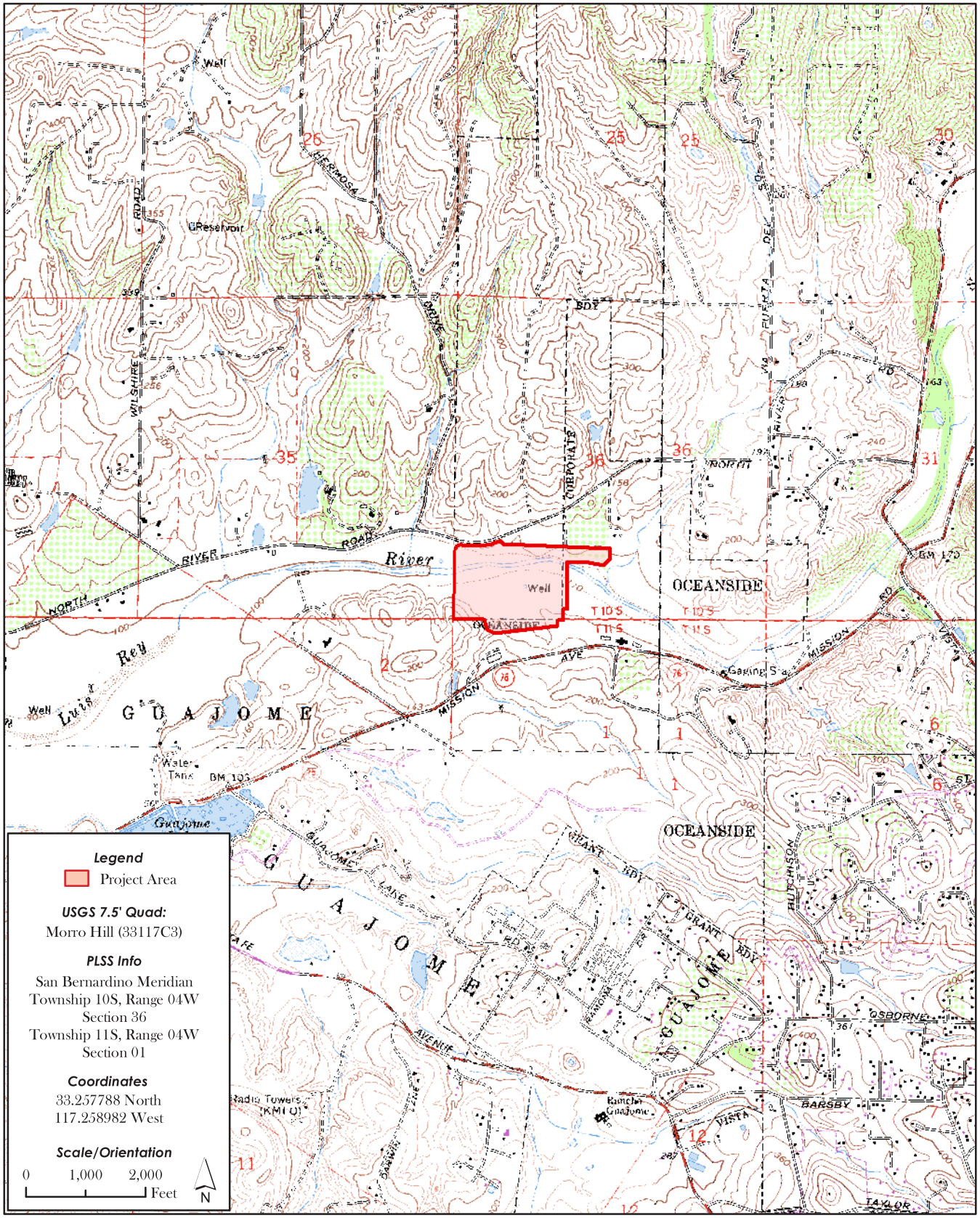
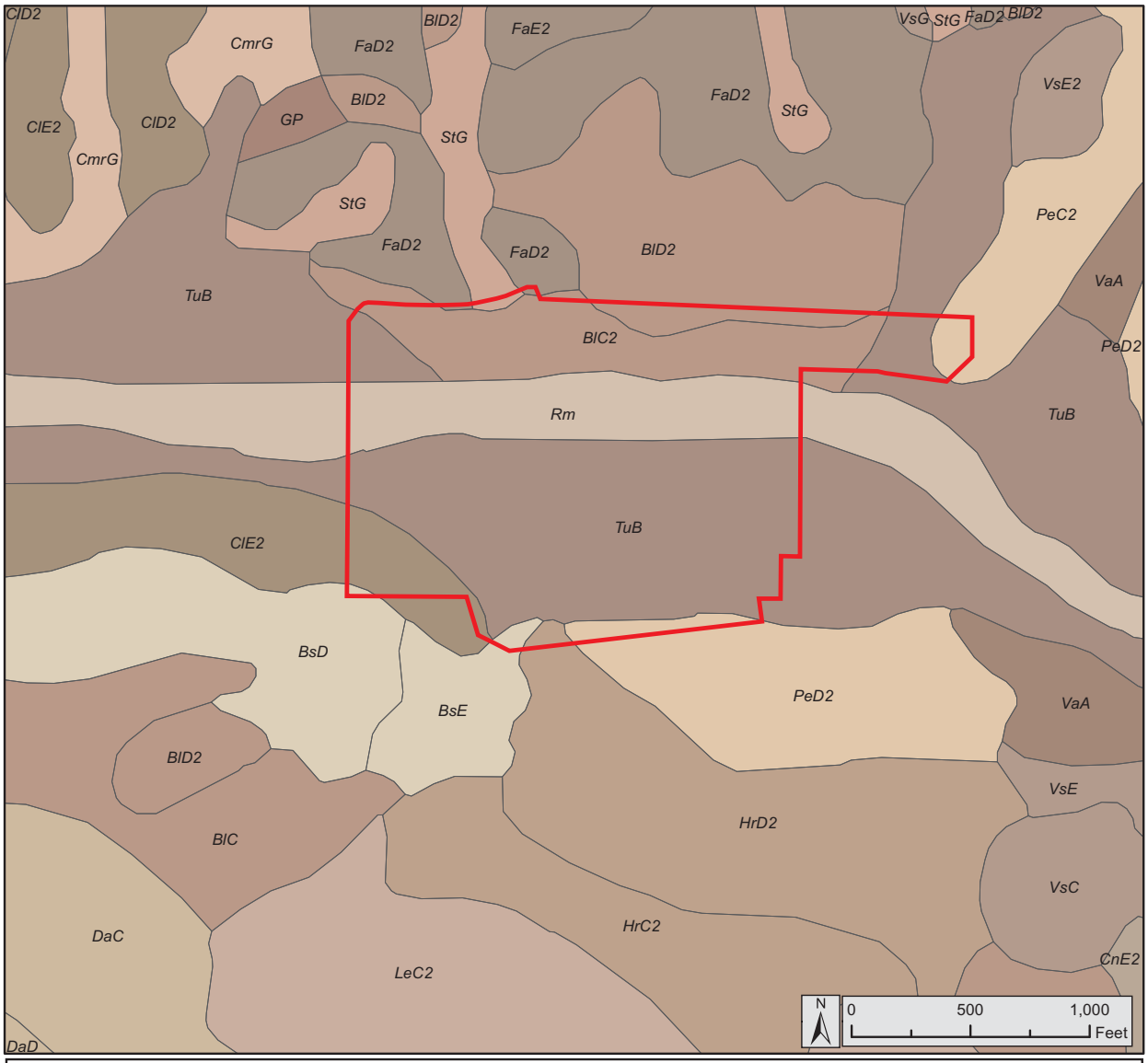
Legend
Project Area


Legend
Project Area
USGS 7.5' Quad:
Morro Hill (33117C3)
PLSS Info
San Bernardino Meridian
Township 10S, Range 04W
Section 36
Township 11S, Range 04W
Section 01
Coordinates
33.257788 North
117.258982 West
Scale/Orientation
0 1,000 2,000 Feet
N
OCEANSIDE
GUAJOME
River
Well
Reservoir
Water Tank
BM 105
Radio Towers (KMIQ)
Ranch Guajome
BM 170
Gaging Sta
T10S
T11S
ROAD
AVENUE
LANE
DRIVE
BDY
NORTH
MISSION
GRANT
OSBORNE
BARSBY
VISTA
TAYLOR
BUCHANAN
WILSHIRE
HERMOSA
CORPORATE
PUENTA
DEL
RIVER
SAN LUIS REY


Legend
Project Area
Granite Construction Preserve
Singh Property Restoration Area
VUSD Preserve
Scale/Orientation
0 200 400 800 Feet
N
N River Rd
Granite Construction Preserve
VUSD Preserve
Project Boundary
Singh Restoration Area
San Luis Rey River
Mission Ave
76
Saddle Ridge Rd
Ranch View Rd
Jeffries Ranch Rd
Pacesetter St
Boot Way



Legend

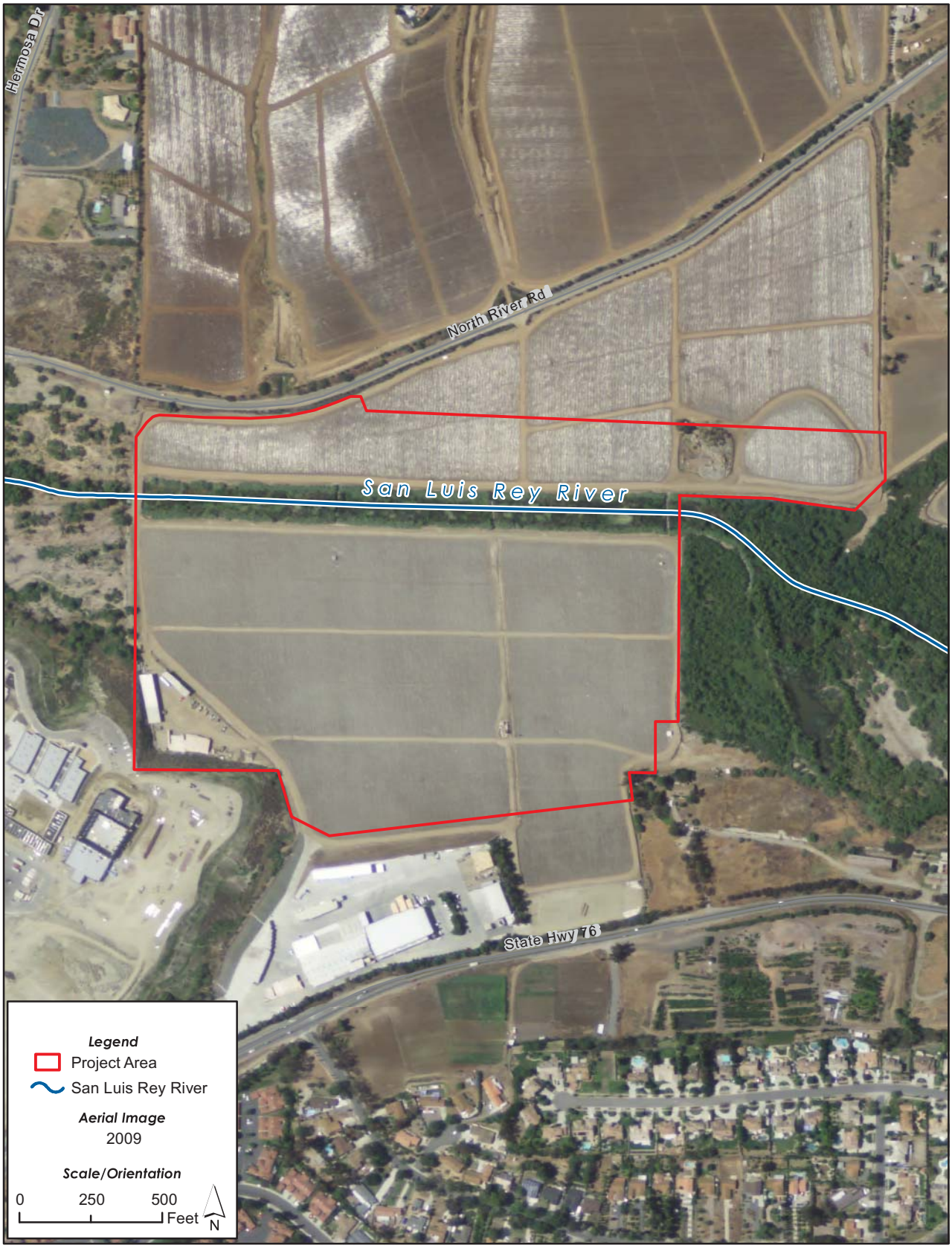
Project Area

Soils within Property

- BlC2 - Bonsall sandy loam, 2 to 9 percent slopes, eroded
  BlD2 - Bonsall sandy loam, 9 to 15 percent slopes, eroded
- BsD - Bosanko clay, 9 to 15 percent slopes
  BsE - Bosanko clay, 15 to 30 percent slopes
- ClE2 - Cieneba coarse sandy loam, 15 to 30 percent slopes, eroded
- FaD2 - Fallbrook sandy loam, 9 to 15 percent slopes, eroded
- HrD2 - Huerhuero loam, 9 to 15 percent slopes, eroded
- PeC2 - Placentia sandy loam, 5 to 9 percent slopes, eroded
  PeD2 - Placentia sandy loam, 9 to 15 percent slopes, eroded
- Rm - Riverwash
- StG - Steep gullied land
- TuB - Tujunga sand, 0 to 5 percent slopes

Other Soils

- BlC - Bonsall sandy loam, 2 to 9 percent slopes
- ClD2 - Cieneba coarse sandy loam, 5 to 15 percent slopes, eroded
- CmrG - Cieneba very rocky coarse sandy loam, 30 to 75 percent slopes
- CnE2 - Cieneba-Fallbrook rocky sandy loams, 9 to 30 percent slopes, eroded
- DaC - Diablo clay, 2 to 9 percent slopes
  DaD - Diablo clay, 9 to 15 percent slopes
- FaE2 - Fallbrook sandy loam, 15 to 30 percent slopes, eroded
- GP - Gravel pits
- HrC2 - Huerhuero loam, 5 to 9 percent slopes, eroded
- LeC2 - Las Flores loamy fine sand, 5 to 9 percent slopes, eroded
- VaA - Visalia sandy loam, 0 to 2 percent slopes
- VsC - Vista coarse sandy loam, 5 to 9 percent slopes
  VsE - Vista coarse sandy loam, 15 to 30 percent slopes
  VsG - Vista coarse sandy loam, 30 to 65 percent slopes
  VsE2 - Vista coarse sandy loam, 15 to 30 percent slopes, eroded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San Luis Rey River
Aerial Image
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Scale/Orientation
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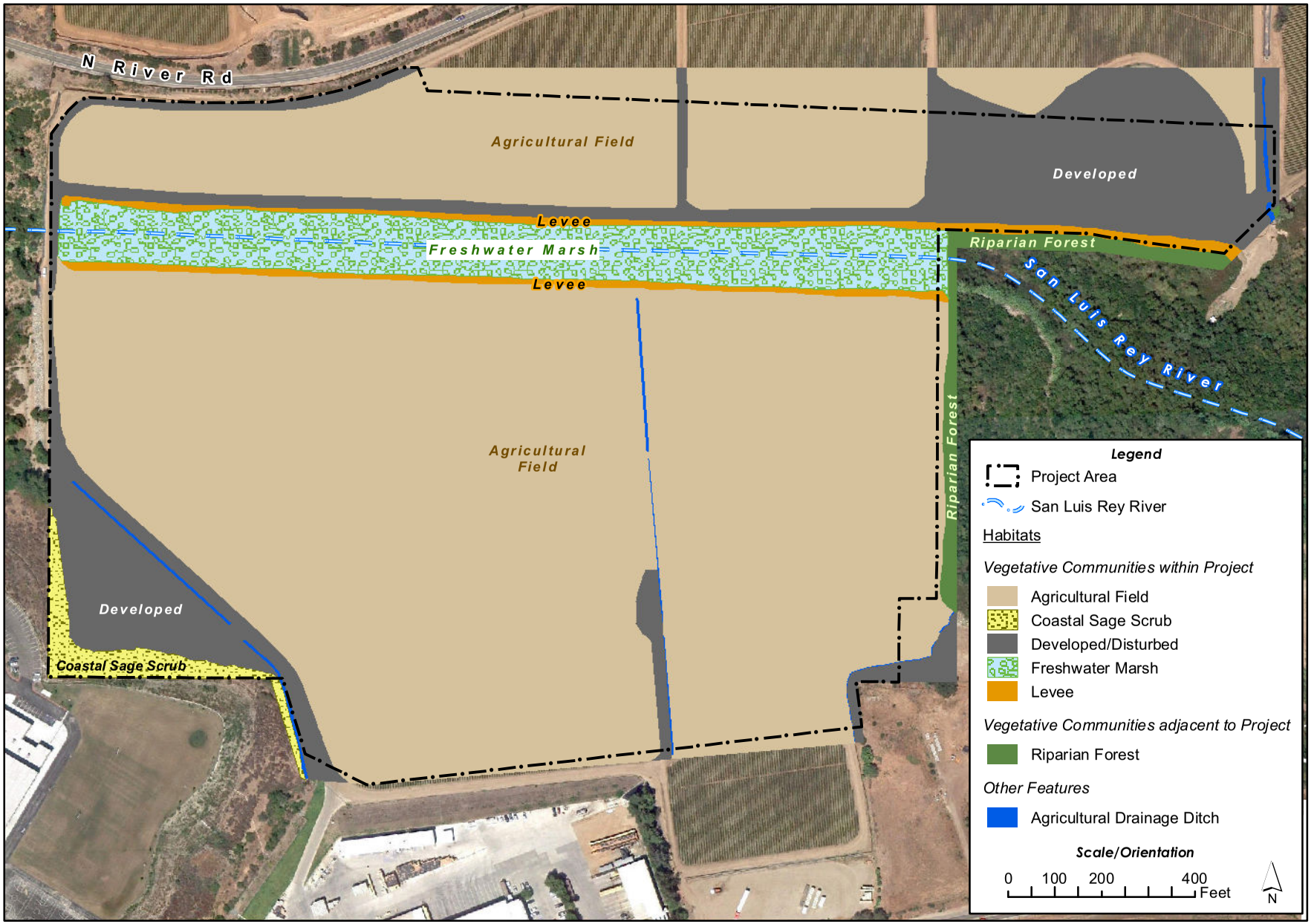
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Developed
Levee
Freshwater Marsh
Levee
Riparian Forest
San Luis Rey River
Agricultural Field
Riparian Forest
Developed
Coastal Sage Scrub
Legend
Project Area
San Luis Rey River
Habitats
Vegetative Communities within Project
Agricultural Field
Coastal Sage Scrub
Developed/Disturbed
Freshwater Marsh
Levee
Vegetative Communities adjacent to Project
Riparian Forest
Other Features
Agricultural Drainage Ditch
Scale/Orientation
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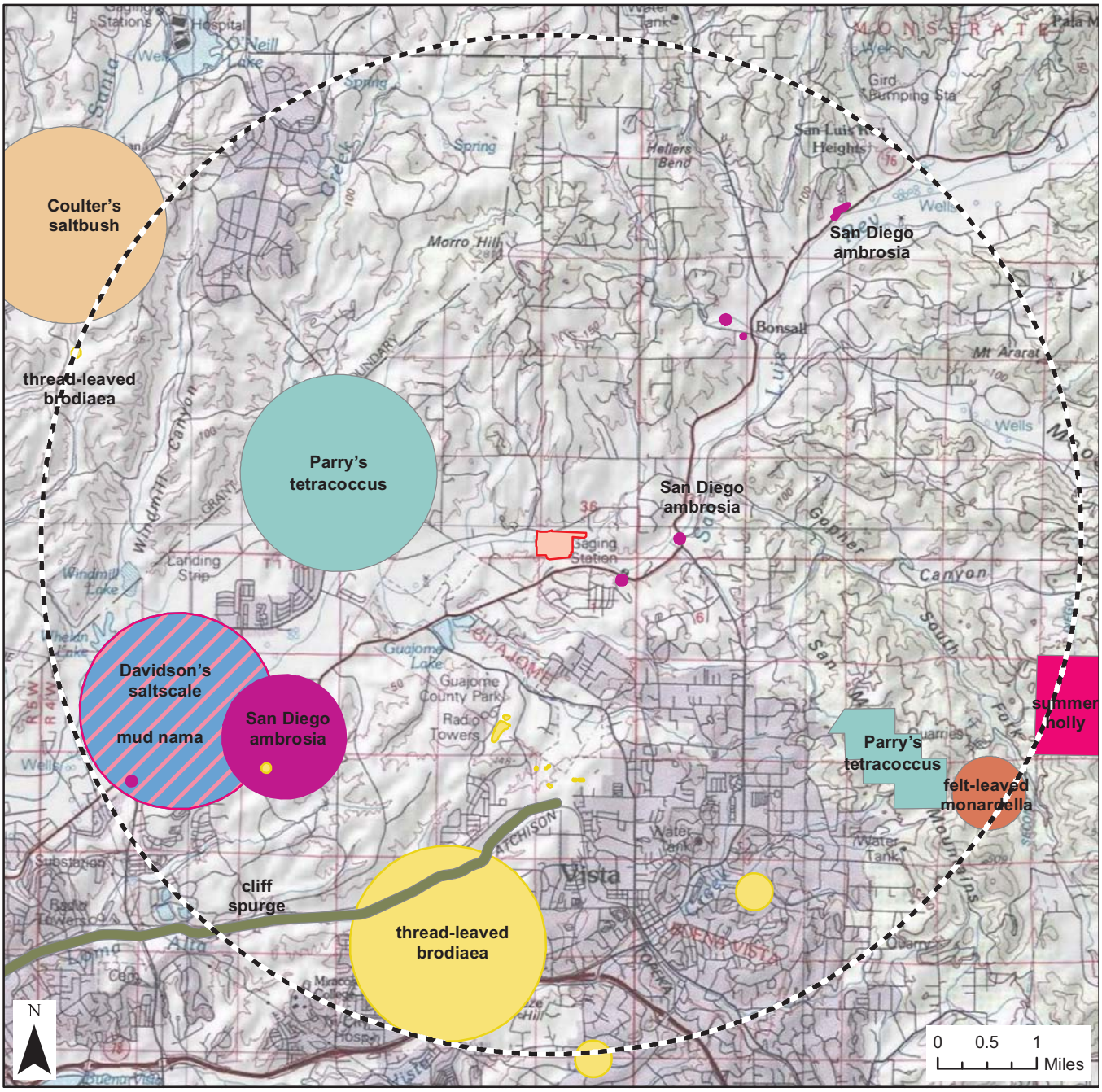
Coulter's saltbush
thread-leaved brodiaea
Parry's tetracoccus
San Diego ambrosia
Bonsall
San Diego ambrosia
Davidson's saltscale
mud nama
San Diego ambrosia
Parry's tetracoccus
summer holly
felt-leaved monardella
cliff spurge
thread-leaved brodiaea
Vista
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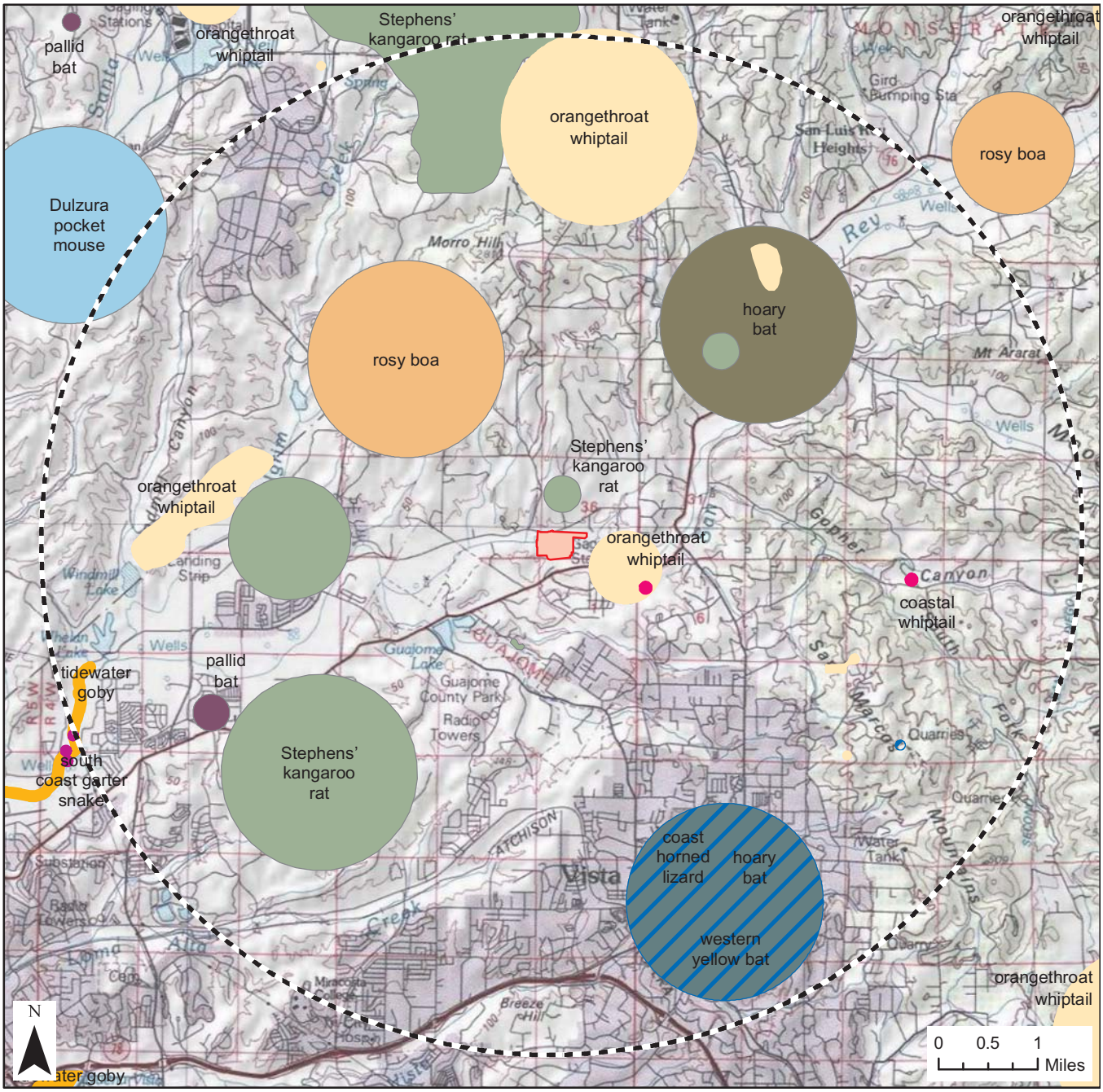
0 0.5 1
Miles
Legend
Project Area
5 Mile Radius
CNDDB - PLANTS*
Coulter's saltbush
Davidson's saltscale
Parry's tetracoccus
San Diego ambrosia
cliff spurge
felt-leaved monardella
mud nama
summer holly
thread-leaved brodiaea
*Data Downloaded: June 2011


pallid bat
orangethroat whiptail
Stephens' kangaroo rat
orangethroat whiptail
orangethroat whiptail
rosy boa
Dulzura pocket mouse
Morro Hill
hoary bat
rosy boa
Mt Ararat
Stephens' kangaroo rat
orangethroat whiptail
orangethroat whiptail
coastal whiptail
tidewater goby
pallid bat
Stephens' kangaroo rat
south coast garter snake
coast horned lizard
hoary bat
western yellow bat
orangethroat whiptail
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Project Area
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CNDDB-ANIMALS*
Dulzura pocket mouse
Stephens' kangaroo rat
coast horned lizard
coastal whiptail
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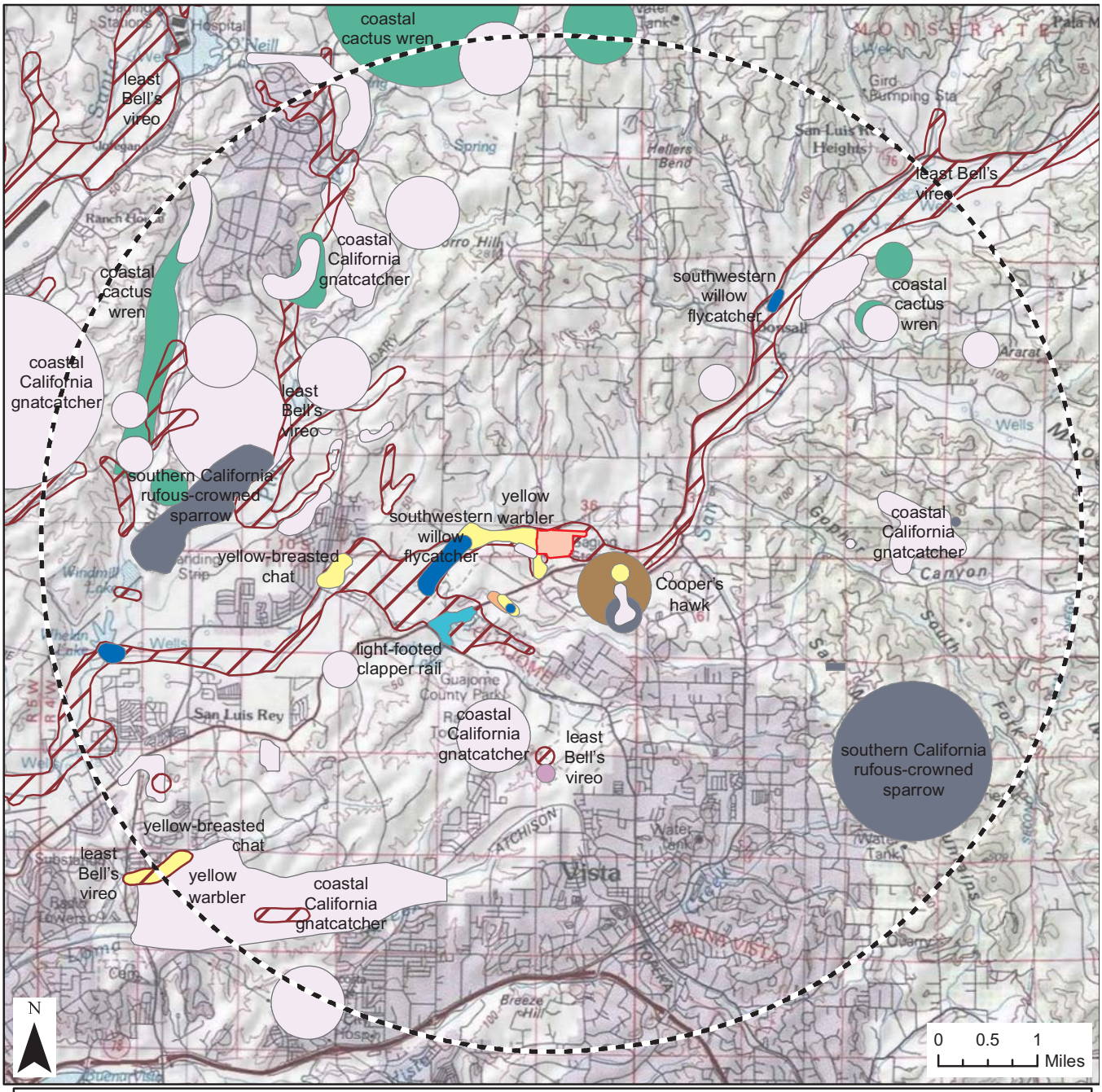


Legend

Project Area

5 Mile Radius

CNDDB - BIRDS*

- California least tern
- Cooper's hawk
- coastal California gnatcatcher
- coastal cactus wren
- least Bell's vireo
- light-footed clapper rail
- southern California rufous-crowned sparrow
- southwestern willow flycatcher
- white-tailed kite
- yellow warbler
- yellow-breasted chat

*Data Downloaded: June 2011

Appendices

Appendix A

Plant Species Observed on the Project Site (2011)

Scientific Name	Common Name	Growth Habit	Family
Ambrosia artemisiifolia	Common ragweed	AH	Asteraceae
Anagallis arvensis	Scarlet pimpernel	AH	Primulaceae
Anthemis cotula	Mayweed	AH	Asteraceae
Artemisia californica	California sagebrush	S	Asteraceae
Arundo donax	Giant reed	PG	Poaceae
Baccharis salicifolia	Mule fat, seep-willow	S	Asteraceae
Brassica sp.	Mustard	AH	Brassicaceae
Bromus diandrus	Ripgut grass	AG	Poaceae
Bromus hordeaceus	Soft chess	AG	Poaceae
Bromus madritensis ssp. Rubens	Red brome	AG	Poaceae
Cerastium glomeratum	Mouse-ear chickweed	AH	Caryophyllaceae
Chamaesyce sp.	Spurge	AH	Euphorbiaceae
Chenopodium album	Lambsquarter	AH	Chenopodiaceae
Chenopodium ambrosioides	Mexican tea	PH	Chenopodiaceae
Convolvulus arvensis	Bind weed	PV	Convolvulaceae
Conyza sp.	Horseweed	AH	Asteraceae
Cotula coronopifolia	Brass-buttons	AH	Asteraceae
Cynodon dactylon	Bermuda grass	PG	Poaceae
Cyperus sp	Flat sedge / nutgrass	PH	Cyperaceae
Datura stramonium	Jimson weed	AH	Solanaceae
Digitaria sanguinalis	Hairy crabgrass	PG	Poaceae
Eleocharis sp.	Spike-rush	PH	Cyperaceae
Epilobium pygmaeum	Smooth spike-primrose	AH	Onagraceae
Epilobium sp.	Willow-herb		Onagraceae
Eragrostis pilosa	Lovegrass	AG	Poaceae
Eriogonum fasciculatum	California buckwheat	S	Polygonaceae
Erodium cicutarium	Redstem filaree	AH	Geraniaceae
Eucalyptus sp.	Eucalyptus	T	Myrtaceae
Foeniculum vulgare	Sweet fennel	PH	Apiaceae
Gnaphalium luteo-album	Cudweed everlasting	AH	Asteraceae
Heliotropium curassavicum	Alkali heliotrope	PH	Hydrophyllaceae
Hirschfeldia incana	Summer mustard	PH	Brassicaceae
Hordeum murinum ssp. Leporinum	Hare barley	AG	Poaceae
Lactuca serriola	Prickly wild lettuce	AH	Asteraceae
Lepidium latifolium	Broadleaf peppergrass	PH	Brassicaceae
Lepidium sp.	Peppergrass	AH	Brassicaceae
Lolium multiflorum	Italian ryegrass	AG	Poaceae
Lupinus sp.	lupine	PH	Fabaceae
Lycopersicon esculentum	Tomato	AH	Solanaceae
Lythrum hyssopifolia	Hyssop loosestrife, wallow poly	AH/PH	Lythraceae
Malosma laurina	Laurelleaf sumac	S	Anacardiaceae
Malva parviflora	Cheeseweed	AH	Malvaceae
Medicago polymorpha	Bur-clover	AH	Fabaceae
Melilotus alba	White sweetclover	AH	Fabaceae

Scientific Name	Common Name	Growth Habit	Family
Melilotus indica	Sourclover	AH	Fabaceae
Melilotus officinalis	Yellow sweetclover	AH	Fabaceae
Oenothera elata	Great marsh evening primrose	BH	Onagraceae
Opuntia sp.	Prickly pear	S	Cactaceae
Paspalum distichum	Joint Dallis grass	PG	Poaceae
Picris echioides	Bristly ox-tongue	AH	Asteraceae
Plantago lanceolata	Narrowleaf plantain	PH	Plantaginaceae
Plantago major	Broadleaf plantain	PH	Plantaginaceae
Platanus racemosa	Western sycamore	T	Platanaceae
Poa annua	Annual bluegrass	AG	Poaceae
Polygonum aviculare	Prostrate knotweed	AH	Polygonaceae
Polypogon monspeliensis	Rabbitsfoot grass	AG	Poaceae
Populus fremontii	Fremont cottonwood	T	Salicaceae
Portulaca oleracea	Common purslane	AH	Portulaceae
Quercus agrifolia	Coast live oak	T	Fagaceae
Ricinus communis	Castor bean	S	Euphorbiaceae
Rorippa nasturtium-aquaticum	Water-cress	PH	Brassicaceae
Rosa californica	California wild rose	S	Rosaceae
Rumex crispus	Curly dock	PH	Polygonaceae
Salix exigua	Sandbar willow	S	Salicaceae
Salix gooddingii	Black willow	T	Salicaceae
Salix lasiolepis	Arroyo willow	T	Salicaceae
Salsola tragus	Russian thistle		Chenopodiaceae
Sambucus mexicana	Blue elderberry	S	Caprifoliaceae
Schinus molle	Peruvian pepper tree	T	Anacardiaceae
Scirpus americanus	Three-square bulrush, Olney's bulrush	PH	Cyperaceae
Scirpus californicus	California bulrush	PH	Cyperaceae
Scirpus fluviatilis	River bulrush	PH	Cyperaceae
Sonchus oleraceus	Common sow-thistle	AH	Asteraceae
Spergularia marina	Saltmarsh sandspurry	AH	Caryophyllaceae
Tamarix sp.	Salt-cedar, (tamarisk)		Tamaricaceae
Tribulus terrestris	Puncture weed, land caltrop	AH	Zygophyllaceae
Triticum aestivum	Cultivated wheat	AG	Poaceae
Typha latifolia	Broad-leaved cattail, soft flag	PH	Typhaceae
Urtica dioica	Giant creek or hoary nettle	PH	Urticaceae
Veronica anagallis-aquatica	Common speedwell	PH	Scrophulariaceae
Vulpia bromoides	Slender fescue	AG	Poaceae
Vulpia sp.	Fescue	AG	Poaceae
Washingtonia sp	fan palm	T	Arecaceae
Xanthium strumarium	Cocklebur	AH	Asteraceae

Growth habit definitions:

AF = annual fern or fern ally.
AG = annual grass.
AH = annual herb.
AV = annual vine.
BH = biennial herb.
PF = perennial fern or fern ally.
PG = perennial grass.
PH = perennial herb.
PV = perennial vine.
S = shrub.
T = tree.

Appendix B

Wildlife Species Observed or Detected on the Project Site (2011)

Common Name	*Scientific Name*
Fish	
Mosquito fish	*Gambusia affinis*
Reptiles	
Western skink	*Eumeces skiltonianus*
Amphibians	
Bullfrog	*Rana catesbeiana*
Birds	
Great blue heron	*Ardea herodias*
Red-tailed hawk	*Buteo jamaicensis*
Anna's Hummingbird	*Calypte anna*
House finch	*Carpodacus mexicanus*
Rock dove	*Columba livia*
American crow	*Corvus brachyrhynchos*
Common moorhen	*Gallinula chloropus*
Roadrunner	*Geococcyx californianus*
Barn swallow	*Hirundo rustica*
Great-tailed grackle	*Quiscalus mexicanus*
Black phoebe	*Sayornis nigricans*
European starling	*Sturnus vulgaris*
Mourning dove	*Zenaida macroura*
Mammals	
Coyote	*Canis latrans*
California ground squirrel	*Spermophilus beecheyi*
Cottontail	*Sylvilagus auduboni*
Raccoon	*Procyon lotor*
Norway rat	*Rattus norvegicus*

Appendix C

Arroyo Toad Habitat Assessment

July 11th, 2011

Mr. Bill Roper
Wildlands, Inc.
3855 Atherton Road
Rocklin, CA 95765

Re: Results of Arroyo Toad Habitat Assessment for the Proposed San Luis Rey Mitigation Bank, San Diego County, California

Dear Mr. Roper:

This letter presents the results of a breeding and upland habitat assessment for the federally endangered arroyo toad (*Anaxyrus californicus*) within the proposed San Luis Rey Mitigation Bank Project study area (Study Area), San Diego County, California.

STUDY AREA LOCATION/DESCRIPTION

The approximately 64-acre proposed San Luis Rey Mitigation Bank is located south of North River Road and north of State Route 76 within the San Luis Rey River floodprone area as shown in Attachment A, *Study Area Map*.

The Study Area is primarily characterized as active cultivated agricultural lands located both north and south of an approximately 1,800ft reach of the San Luis Rey River. The entire reach of the San Luis Rey River bisecting the Study Area has been channelized and is characterized as freshwater marsh habitat as illustrated in Attachment B, *Current Study Area Photographs*. The banks of the incised channel are inundated with the invasive *Arundo donax*. The freshwater marsh habitat is dominated by bulrush (*Scirpus* sp.) and cattail (*Typha* sp.) with isolated regions of surface water expression.

BACKGROUND

The arroyo toad was listed as an endangered species by the U.S. Fish and Wildlife Service (USFWS) on December 16, 1994 (59 FR 241: 64859-64866) (USFWS 1994), and is considered a species of special concern by the California Department of Fish and Game. This rather uniformly warty, stocky toad has a light-colored stripe across the head that includes the eyelids. The parotoid glands are oval-shaped, widely separated, and pale toward the front. The underside of the arroyo toad is usually buff-colored and unspotted, and the cranial crests are absent or weak. Early descriptions of the habitat requirements for the arroyo toad are based on detailed life history studies conducted over a period of years by Sweet (1992, 1993). Much of that work was conducted in the Los Padres National Forest in Santa Barbara County. Subsequent to this work, additional studies of populations in other portions of the range have resulted in a somewhat broader habitat description (e.g., Griffin et al. 1999, Ramirez et al. 1999, 2000, 2001, 2002). It can generally be said that the arroyo toad frequents third order or larger washes, streams, and arroyos in semiarid parts of the southwest. Stream substrates range from sands to small cobble, with sandy banks supporting mule fat (*Baccharis salicifolia*), willows (*Salix* spp.), cottonwoods (*Populus* spp.), or sycamores (*Platanus racemosa*). The arroyo toad

breeds both within streams and in small backwater pools that form along the stream margins, usually in relatively shallow water (four inches).

METHODS

Ruben S. Ramirez, Jr., research biologist, conducted a review of literature pertaining to the life history, habitat requirements, and distribution of the arroyo toad within and adjacent to the Study Area. Prior to initiating the site survey, the Study Area boundary was mapped onto a recent digitally orthorectified aerial photograph for the purpose of accurately surveying all areas within and adjacent to the potential direct/indirect impact area. A reconnaissance survey of the Study Area was conducted by Mr. Ramirez on June 27th, 2011 to qualitatively assess potential breeding and upland habitat for the arroyo toad. The survey included an assessment of all habitats (potential movement routes) present within and adjacent to the Study Area.

RESULTS

Arroyo Toad Distribution within Vicinity of Study Area

The arroyo toad has been documented within the San Luis Rey River flood prone area southeast of the Study Area in 1997 (USFWS GIS Database 2011). Suitable breeding and high quality upland habitat occurs immediately up and downstream of the Study Area. The majority of the Study Area occurs within the USFWS designated critical habitat for the arroyo toad (USFWS 2011) as shown in Attachment C, *USFWS Arroyo Toad Critical Habitat Boundary*.

Characteristics of Suitable Arroyo Toad Breeding and Upland Habitat

Arroyo toads have very specific habitat requirements (Jennings and Hayes 1994). Suitable habitat includes rivers and streams with the following primary constituent elements (i.e., physical and biological features that are essential to the conservation of the species) based on studies completed by Sweet (1992, 1993), Griffin (1999), and Ramirez (1999, 2000, 2001 and 2002) and summarized by the USFWS (2000):

1. A hydrologic regime that supplies sufficient flowing water of suitable quality for breeding followed by complete metamorphosis (i.e., hatching from eggs into tadpoles and completed development from tadpoles into juvenile toads) must be present. In the northern portion of the range, surface water, either as stream flow or persisting pools, must last into at least July.

2. Low gradient stream segments with shallow breeding pools for mating and egg laying, sandy or fine gravel beds where egg masses are deposited and tadpoles develop, and sparsely vegetated sand and gravel bars that are sufficiently wet, at least temporarily, for juvenile toads to forage and burrow must be present.

3. A natural flooding regime, which reworks sand and gravel bars, scours dense streamside vegetation, and deposits streamside sand bars and upland sand terraces such that breeding pools, terraces, and vegetation requirements are maintained for all life stages of the toad must be present.

4. Upland sandy terrace habitats of sufficient width and quality with areas of loose sandy soil where adult toads can burrow outside the breeding season must be present. Non-breeding

aestivation sites generally possess an associated canopy cover (mule fat, willow spp.) and layer of detritus.

5. Few or no non-native wildlife species (e.g., crustaceans, gamefish, and bullfrogs) which may compete with or prey on adult or juvenile toads and/or tadpoles and plants (e.g., giant reed which chokes out native vegetation and may alter flood patterns) should be present.

6. Streams and upland areas absent of artificial barriers which interfere with natural flooding regimes and toad movement (e.g., migration to and from breeding pools, dispersal between populations, or recolonization of previously occupied areas) should be present.

7. Habitats undisturbed by grading, agriculture, or other human-associated land use conversions should be present.

This suite of conditions is vital to the persistence of viable arroyo toad populations, yet occur in dynamic stream systems that are inherently unstable and can change within the lifetime of an individual, for example by a flood event. Arroyo toad habitat is generally produced and maintained by narrow drainages of intermediate size (Sweet 1992), typically third to sixth order streams or larger, generally where the stream is still bordered by ridges of moderate relief and the stream gradient is low. In headwater areas above these stream segments, the higher stream gradient, lack of sediment build up, and smaller amount of available water result in sections that dry too soon. Downstream of these areas, the broader canyons and increased streambed width result in early loss of surface flows or increased stream gradients drain available water too quickly.

Characteristics of Suitable Arroyo Toad Breeding and Upland Habitat within and Adjacent to the Study Area

To evaluate the presence of potentially suitable breeding and upland habitat within and adjacent to the Study Area, habitat conditions observed during the site survey were compared with the primary constituent elements identified above.

Breeding Habitat

No suitable arroyo toad breeding habitat is present within the Study Area. The existing freshwater marsh habitat located within the Study Area does not represent suitable breeding conditions for the species. The extensive emergent vegetation, deep pools (>1ft) and unsuitable substrates are not characteristic of where arroyo toads breed. Suitable arroyo toad breeding habitat was documented immediately up and downstream of the Study Area where the San Luis Rey River is not channelized.

Upland Habitat

The following upland habitat assessment is based on the presence and/or absence of suitable aestivation habitat located onsite and within the vicinity of potential movement routes between the San Luis Rey River flood prone area and Study Area.

The Study Area does not represent suitable arroyo toad aestivation habitat. Although suitable soils are present within the upland habitats (sand/loam) the complete lack of vegetation and detritus often associated with aestivating arroyo toad sites (willow and mulefat scrub) is not present within the Study Area. However, high quality arroyo toad upland habitat was documented immediately up and downstream of the Study Area within the San Luis Rey floodprone area. Although the species is generally not expected to occur within these lower

reaches of the San Luis Rey River, isolated populations may persist and occasional movements through the Study Area within the existing matrix of dirt roads including burrowing (during breeding season – non aestivation behavior) could occur.

The Study Area represents an ideal location for the restoration of the San Luis Rey floodprone area. The restoration of the natural geomorphology within the Study Area could directly benefit the arroyo toad if the species has not been extirpated from the lower reach of the San Luis Rey River. The final restoration site would also provide an ideal translocation site for arroyo toads captured during future project activities conducted within the upper reaches of the San Luis Rey floodprone area.

If you have any comments or questions, please contact me at 949.300.0212 or e-mail me at r.ramirez@cadreenvironmental.com.

Sincerely,
Cadre Environmental

Ruben S. Ramirez, Jr.
Research Biologist

ATTACHMENT A – Study Area Map
ATTACHMENT B – Current Study Area Photographs
ATTACHMENT C – USFWS Arroyo Toad Critical Habitat Boundary

REFERENCES

Campbell, L., Graham, T., Thibault, L. and P. Stine. 1996. The arroyo toad (*Bufo microscaphus californicus*), ecology, threats, recovery actions, and research needs. Technical Report NBS/CSC-96-01 for the U.S. Fish and Wildlife Service, Ventura Field Office. 46 pp.

Griffin, P.C., T. Case, and R. Fisher. 1999. Radio telemetry study of *Bufo californicus*, arroyo toad movement patterns and habitat preferences. Contract Report to the California Department of Transportation Southern Biology Pool. 66 pp.

Holland, D.C, N.R. Sisk, and R.H. Goodman. 2001. Linear Transect Censusing of the Arroyo Toad (Bufo californicus) from 1996-2000 on MCB Camp Pendleton, San Diego County, California. Unpublished report 56 pp.

Holland, D.C, and N.R. Sisk. 2001. Habitat Use and Population Demographics of the Arroyo Toad (Bufo californicus) on MCB Camp Pendleton, San Diego County, California 1998-2000. Unpublished report 43 pp.

Jennings, M. and M. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. California Department of Fish and Game, Inland Fisheries Division, Contract No. 8023. 255 pp.

Pacific Southwest Biological Services. 2004. The Groves of San Luis Rey Downs – A Residential Subdivision on 281-acres in the Bonsall Area, San Diego County California – Delineation of Jurisdictional Drainages and Wetlands. Unpublished report 14 pp.

Ramirez, Jr. R.S. 2002. Arroyo toad (*Bufo californicus*) radio telemetry study, Little Rock Creek, Los Angeles County, California. Final Report for the USDA Forest Service, Angeles National Forest, Arcadia, California. Unpublished report. 62 pp.

Ramirez, Jr. R.S. 2002. Arroyo toad (*Bufo californicus*) radio telemetry, San Juan Creek, Orange/Riverside Counties, California. Interim Report for the USDA Forest Service, Cleveland National Forest, Rancho Bernardo, California. Unpublished report 53 pp.

Ramirez, Jr. R.S. 2002. Arroyo toad (*Bufo californicus*) radio telemetry & pitfall trapping studies, Little Horsethief Canyon, Summit Valley Ranch, San Bernardino County, California. Final Report for Caltrans, District 8, San Bernardino County, California. Unpublished report 92 pp.

State of California Resources Agency. 2008. Department of Fish and Game. Natural Diversity Database (CNDDB). Database Record Search for Information on Threatened, Endangered, Rare, or Otherwise Sensitive Species and Communities, Pala Quadrangle.

Stebbins, R. 1985. A Field Guide to Western Reptiles and Amphibians. Houghton Mifflin Company, Boston, MA. 336 pp.

Sweet, S.S. 1992. Initial report on the ecology and status of the arroyo toad (*Bufo microscaphus californicus*) on the Los Padres National Forest of Southern California with management recommendations. Contract report to USDA, Forest Service, Los Padres National Forest, Goleta, California. 198 pp.

Sweet, S.S. 1993. Second report on the ecology and status of the arroyo toad (*Bufo microscaphus californicus*) on the Los Padres National Forest of Southern California. Contract report to USDA, Forest Service, Los Padres National Forest, Goleta, California. 73 pp.

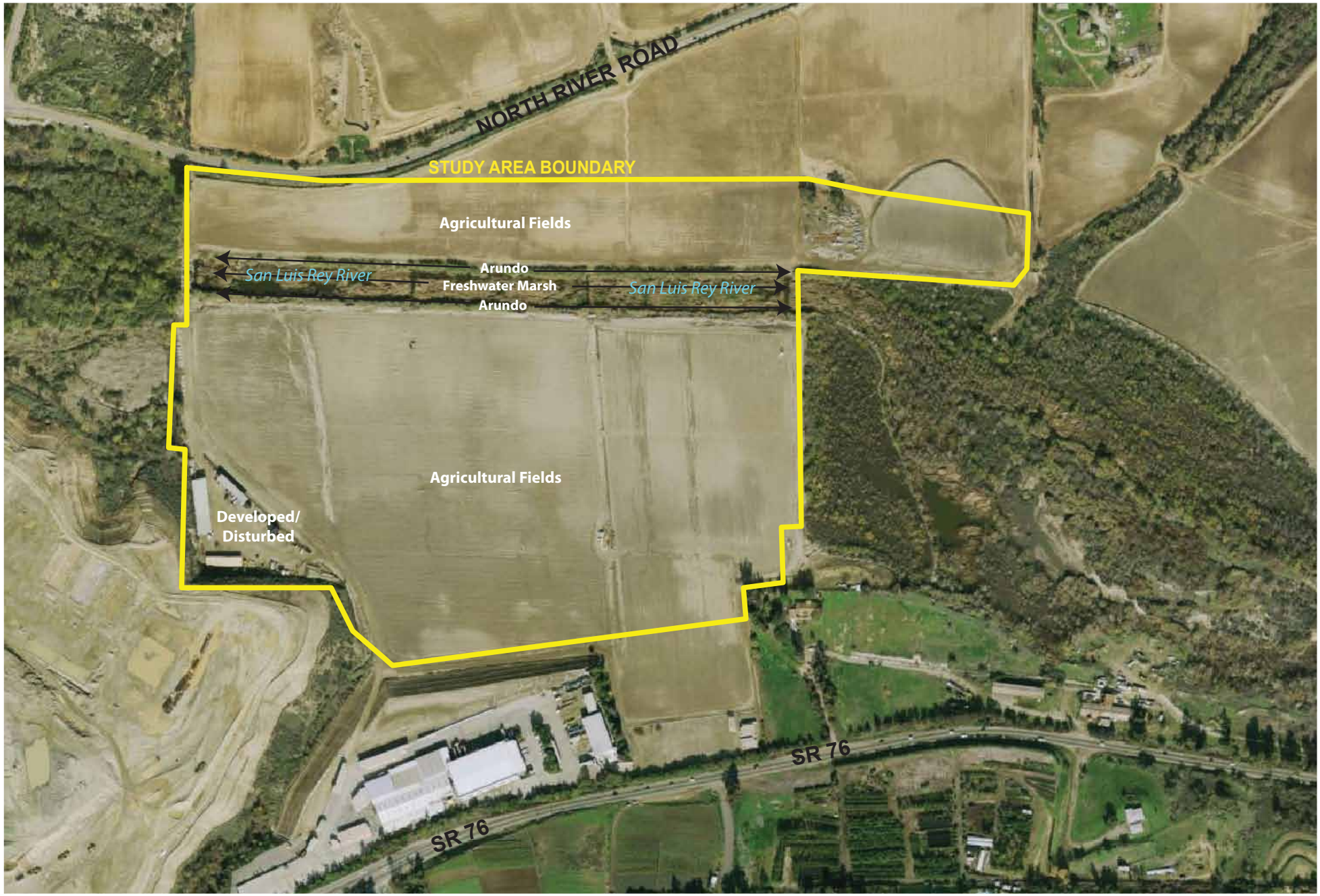
U.S. Fish and Wildlife Service (USFWS). 1994. Endangered and threatened wildlife and plants; determination of endangered status for the arroyo southwestern toad. Federal Register 59:64859-64866.

U. S. Fish and Wildlife Service (USFWS). 1999. Arroyo southwestern toad (*Bufo microscaphus californicus*) recovery plan. U. S. Fish and Wildlife Service, Portland, Oregon. vi. + 119 pp.

U.S. Fish and Wildlife Service (USFWS). 2007. Biological Opinion Concerning the Proposed Rosemary's Mountain Quarry and Associated State Route 76 Expansion, San Diego County, California.

U. S. Fish and Wildlife Service (USFWS). 2011. Revised Critical Habitat for the Arroyo Toad: Final Rule. U. S. Fish and Wildlife Service, Portland, Oregon. 76 FR 7245 7467.

U.S. Fish and Wildlife Service (USFWS). 2011. GIS Species Database.



Attachment A - Study Area Map

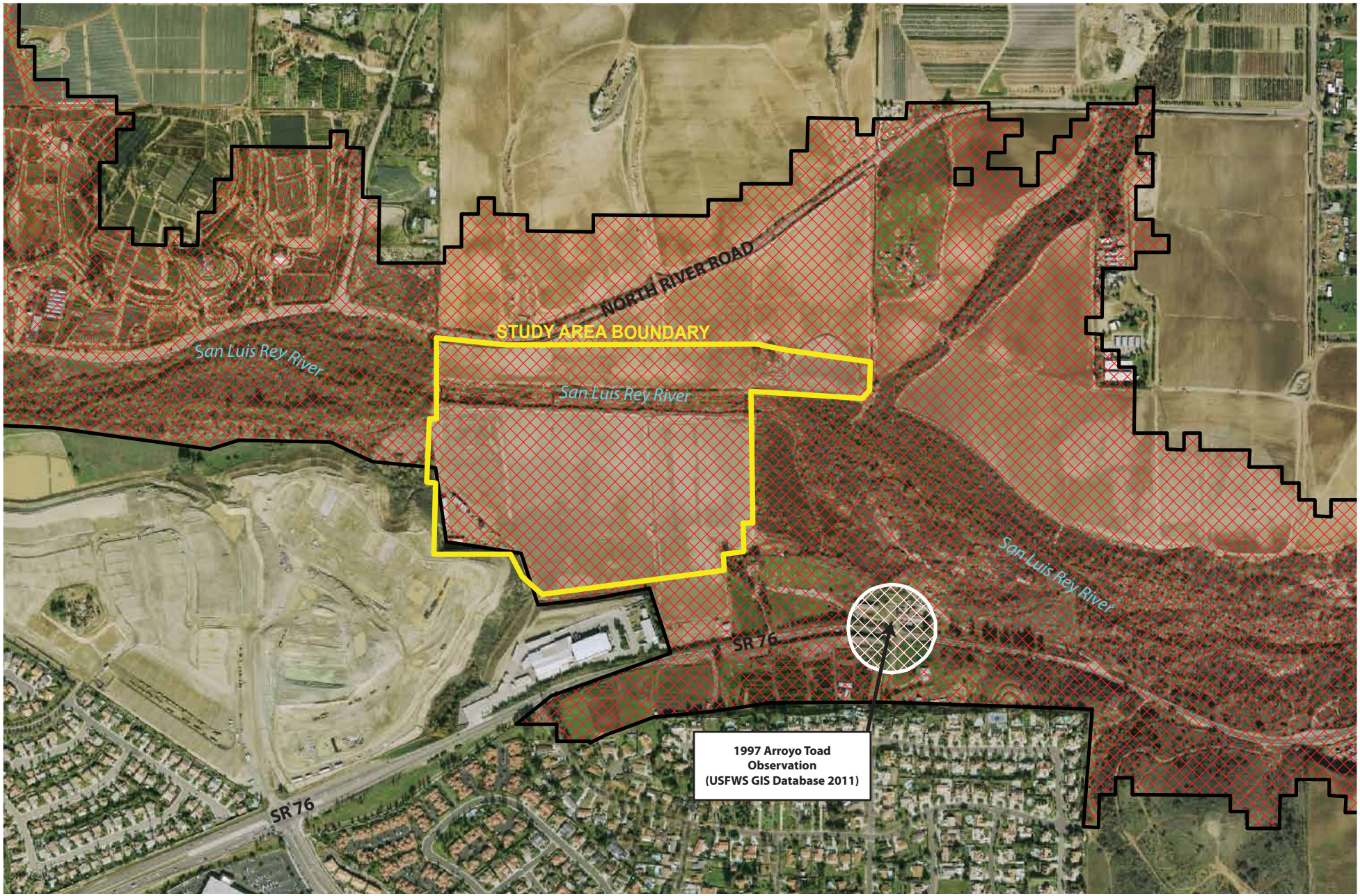
Arroyo Toad Habitat Assessment
San Luis Rey Mitigation Bank

CADRE Environmental

1 inch = 400 feet

Top: Eastward view of Study Area from western boundary. The entire reach of the San Luis Rey River bisecting the Study Area is channelized and characterized as freshwater marsh bordered by *Arundo donax*.

Bottom: Eastward view of Study Area with *Arundo donax* bordering the channelized reach of the San Luis Rey River. The balance of the Study Area is cultivated agricultural fields.



United States Fish and Wildlife Service Designated Critical Habitat (2011)

Attachment C - USFWS Arroyo Toad Critical Habitat Boundary

Arroyo Toad Habitat Assessment

San Luis Rey Mitigation Bank

CADRE Environmental

1 inch = 800 feet

Appendix D

Least Bell's Vireo and Southwestern Willow Flycatcher Habitat Assessment

ESA

9191 Towne Centre Drive
Suite 340
San Diego, CA 92122
858.638.0900phone
858.638.0910 fax

www.esassoc.com

July 25, 2011

Mr. Bill Roper
Wildlands
3855 Atherton Road
Rocklin, CA 95765

Re: Results of LBVI and SWWF Habitat Assessment for the Proposed San Luis Rey Mitigation Bank, San Diego County, California

Dear Mr. Roper:

This letter presents the results of a breeding and upland habitat assessment for the federal and state-listed endangered least Bell's vireo (*Vireo bellii pusillus*) and federal-listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*) within the proposed San Luis Rey Mitigation Bank Project study area (Study Area), San Diego County, California.

STUDY AREA LOCATION/DESCRIPTION

The approximately 64-acre proposed San Luis Rey Mitigation Bank is located south of North River Road and north of State Route 76 within and adjacent to the San Luis Rey River (Figure 1). The site lies within designated critical habitat for least bell's vireo and southwestern willow flycatcher (Figure 2).

The Study Area is primarily characterized as active cultivated agricultural lands located both north and south of an approximately 1,800 ft reach of the San Luis Rey River. The entire reach of the San Luis Rey River bisecting the Study Area has been channelized (Figure 3a). The river bottom is freshwater marsh habitat, which is dominated by bulrush (*Scirpus* sp.) and cattail (*Typha* sp.). Surface water is present in places. The banks of the incised channel are dominated by the invasive *Arundo donax* (Figure 3b).

BACKGROUND

Least Bell's Vireo - The least Bell's vireo (LBVI) was state listed as endangered in 1980 and listed as endangered by the U.S. Fish and Wildlife Service (USFWS) on May 2, 1986 (51 FR 16474 16482) (USFWS, 1986). This listing was followed by designation of critical habitat on February 2, 1994. It is a small bird – only 11.5-12.5 centimeters long (about 4.5 to 5.0 inches) – with short rounded wings and a short, straight bill. There is a faint white eye ring. Feathers are mostly gray above and pale below. The least Bell's vireo was formerly abundant in the riparian woodlands of California's Central Valley and low elevation riparian streams in southern California and northern Baja, Mexico (USFWS, 1998). It was one of California's most abundant birds in the late 19th and early 20th centuries, but was reduced to just 300 pairs by 1986.

Least Bell's vireo primarily occupy riparian habitats along open water or dry parts of intermittent streams, generally below 460 m (1,500 ft) in elevation (USFWS, 1986). It typically occurs in drainages with low to medium shrub cover of arroyo willow (*Salix lasiolepis* var. *lasiolepis*) and mulefat (*Baccharis glutinosa*), with a moderately dense overstory and are generally associated with the following vegetation types in cismontane

southern California: southern willow scrub; cottonwood forest; mule fat scrub; sycamore alluvial woodland; coast live oak riparian forest; arroyo willow riparian forest; and wild blackberry (Kus, 2002). LBVIs also occur to a lesser degree in drainages with low to medium shrub cover with little or no overstory. USFWS (1998) states that LBVI habitat typically includes the following: dense vegetative cover within 1-2 meters (3-6 feet) of the ground; dense, stratified upper canopy for foraging; usually willow-dominated. Predominately an insectivore, it prefers willows for nesting and foraging, although it will also use the California wild rose and coastal live oak for these purposes. Least Bell's vireos have been observed to maintain territories that include upland habitats adjacent to riparian areas, such as coastal sage scrub (USFWS, 1998). Upland habitats have also been documented for foraging and for nesting when early spring floods inundate riparian areas (Kus and Miner, 1989, USFWS, 1998). It has also been hypothesized that berry-producing upland vegetation, such as laurel sumac (*Malosma laurina*) and elderberry (*Sambucus mexicana*), may supplement the vireo diet in marginal habitats (Kus and Miner, 1989).

In 1994 on the Upper San Luis Rey River in San Diego County, nests averaged 2.8 m (9 ft) high (Griffith Wildlife Biology, 1995). The males are protective of their territories and will often return to the same nest year after year (Greaves, 1989); therefore they are sensitive to changes in riparian vegetation within their territories from year-to-year. The breeding distribution of the least Bell's vireo is currently restricted to eight counties in California (Kern, San Diego, San Bernardino, Riverside, Ventura, Los Angeles, Santa Barbara, Imperial counties) (USFWS, 1998).

The Service has determined that the physical and biological habitat features (referred to as the primary constituent elements) that support feeding, nesting, roosting and sheltering essential to the conservation of the least Bell's vireo can be described as riparian woodland vegetation that generally contains both canopy and shrub layers, and includes some associated upland habitats. Vireos meet their survival and reproductive needs (food, cover, nest sites, nestling and fledgling protection) within the riparian zone in most areas. In some areas they also forage in adjacent upland habitats (USFWS, 1994).

Southwestern Willow Flycatcher - The southwestern willow flycatcher (SWWF) is a small passerine bird placed on the federal Endangered Species list by the USFWS on February 27, 1995 (60 FR 10695 10715) (USFWS, 1995). It measures about 5.75 inches (15 cm) in length, and weighs only about 0.4 ounces (12 g). The flycatcher's appearance is overall greenish or brownish gray above, with a white throat that contrasts with a pale olive breast. The belly is pale yellow. Two white wing bars are visible, but the eye ring is faint or absent. The upper mandible is dark, and the lower mandible light. The southwestern willow flycatcher breeds in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands including lakes and reservoirs. In most instances, dense vegetation occurs within the first 10 to 13 feet above ground. In some areas, the flycatcher will nest in habitats dominated by tamarisk and Russian olive (*Eleagnus angustifolia*) (USFWS, 2004). One of the most important characteristics of the habitat appears to be the presence of dense vegetation, usually throughout all vegetation layers present. An open-cup nest is usually placed in a vertical fork of a willow or other riparian deciduous shrub at about 3.7 to 8.3 ft. above the ground and built around supporting twigs (Flett and Sanders, 1987, Valentine et al., Harris, 1991).The nest site plant community is typically even-aged, structurally homeogeneous, and dense (Brown, 1988, Whitfield, 1990, Sedgewick and Knopf, 1992). Nesting sites are usually near or over standing water (Sogge et al., 1992). Water is not necessarily present at the latter stages of the breeding cycle, but it is always available during early stages of breeding and pair formation. At some nest sites surface water may be present early in the breeding season, but only damp soil may be present by late June or

early July. Habitat not suitable for nesting may be used for migration and foraging. The breeding range of the southwestern willow flycatcher includes southern California, Arizona, New Mexico, extreme southern portions of Nevada and Utah, far western Texas, perhaps southwestern Colorado, and extreme northwestern Mexico.

Based on current knowledge of the life history, biology, and ecology of the species and the requirements of the habitat to sustain the essential life history functions of the species, the Service has determined that the southwestern willow flycatcher's primary constituent elements are:

(1) Riparian habitat in a dynamic successional riverine environment (for nesting, foraging, migration, dispersal, and shelter) that comprises:

(a) Trees and shrubs that include Gooddings willow (*Salix gooddingii*), coyote willow (*Salix exigua*), Geyers willow (*Salix geyerana*), arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), yewleaf willow (*Salix taxifolia*), pacific willow (*Salix lasiandra*), boxelder (*Acer negundo*), tamarisk (*Tamarix ramosissima*), Russian olive (*Eleagnus angustifolia*), buttonbush (*Cephalanthus occidentalis*), cottonwood (*Populus fremontii*), stinging nettle (*Urtica dioica*), alder (*Alnus rhombifolia*, *Alnus oblongifolia*, *Alnus tenuifolia*), velvet ash (*Fraxinus velutina*), poison hemlock (*Conium maculatum*), blackberry (*Rubus ursinus*), seep willow (*Baccharis salicifolia*, *Baccharis glutinosa*), oak (*Quercus agrifolia*, *Quercus chrysolepis*), rose (*Rosa californica*, *Rosa arizonica*, *Rosa multiflora*), sycamore (*Platinus wrightii*), false indigo (*Amorpha californica*), Pacific poison ivy (*Toxicodendron diversilobum*), grape (*Vitus arizonica*), Virginia creeper (*Parthenocissus quinquefolia*), Siberian elm (*Ulmus pumila*), and walnut (*Juglans hindsii*);

(b) Dense riparian vegetation with thickets of trees and shrubs ranging in height from 2 m to 30 m (6 to 98 ft). Lower-stature thickets (2 to 4 m or 6 to 13 ft tall) are found at higher elevation riparian forests and tall-stature thickets are found at middle- and lower elevation riparian forests;

(c) Areas of dense riparian foliage at least from the ground level up to approximately 4 m (13 ft) above ground or dense foliage only at the shrub level, or as a low, dense tree canopy;

(d) Sites for nesting that contain a dense tree and/or shrub canopy (the amount of cover provided by tree and shrub branches measured from the ground) (i.e., a tree or shrub canopy with densities ranging from 50 percent to 100 percent); and

(e) Dense patches of riparian forests that are interspersed with small openings of open water or marsh, or shorter/sparser vegetation that creates a mosaic that is not uniformly dense. Patch size may be as small as 0.1 ha (0.25 ac) or as large as 70 ha (175 ac); and

(2) A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments, including: flying ants, wasps, and bees (Hymenoptera); dragonflies (Odonata); flies (Diptera); true bugs (Hemiptera); beetles (Coleoptera); butterflies/moths and caterpillars (Lepidoptera); and spittlebugs (Homoptera).

METHODS

Mark Tucker conducted a review of literature pertaining to the life history, habitat requirements, and distribution of the least Bell's vireo and southwestern willow flycatcher within and adjacent to the Study Area. Prior to initiating the site survey, the Study Area boundary was mapped onto a recent digitally orthorectified aerial photograph for the purpose of accurately surveying all areas within and adjacent to the potential direct/indirect impact area (Figure 1). A reconnaissance survey of the Study Area was conducted by Mr. Tucker on July 21, 2011, to qualitatively assess potential breeding and upland habitat for LBVI and SWWF. The survey included an assessment of all habitats (potential movement routes) present within and adjacent to the Study Area.

RESULTS

Based on the conditions observed onsite, the Study Area does not contain suitable breeding habitat for LBVI or SWWF. The lack of tree and shrub elements would preclude the use of the use of the site for nesting by either species. The existing freshwater marsh habitat located within the Study Area does not represent suitable breeding conditions for either species especially in the absence of key structural elements like trees and shrubs adjacent to the river. Potentially suitable breeding habitat was observed immediately up and downstream of the Study Area where the San Luis Rey River where riparian vegetation with the necessary structural and compositional elements occurs. The current site conditions are documented in Figure 3. The proposed mitigation site is an ideal location for the creation of riparian habitat that could support LBVI and/or SWWF and connect native riparian upstream and downstream of the site.

If you have any questions please feel free to contact me at (619) 929-6855.

Sincerely,

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REFERENCES

Brown, B. T. 1988. Breeding ecology of a Willow Flycatcher population in Grand Canyon, Arizona. Western Birds 19: 25-33.

Flett, M. A. and S. D. Sanders. 1987. Montane Riparian Habitat and Willow Flycatchers: Threats to a Sensitive Environment and Species.

Greaves, J. M. 1989. Maintaining site integrity for breeding least Bell's vireos. In Proceedings, California Riparian Systems Conference; Sept. 22-24, 1988; Davis, CA. Gen. Tech. Rep. PSW 110. Berkeley, CA: Pacific SW Forest and Range Experiment Station, US Forest Service, USDA; pp.293-298.

Griffith Wildlife Biology. 1995. The status of the Southwestern Willow Flycatcher at the Upper San Luis Rey River, San Diego County, California, in 1994. Report for USDA Forest Service, Palomar Ranger District, Ramona, Calif. 19pp.

Harris, J.H. 1991. Effects of brood parasitism by Brown-headed Cowbirds on Willow Flycatcher nesting success along the Kern River, California. Western Birds 22:13-26.

Kus, Barbara E. and Karen L. Miner. 1989. Use of Non-Riparian Habitats by Least Bell's Vireos.

Kus, B. 2002. Least Bell's Vireo (*Vireo bellii pusillus*). *In* The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. http://www.prbo.org/calpif/htmldocs/riparian_v-2.html

Sedgewick, J. A., and F. L. Knopf. 1992. Describing willow flycatcher habitats: scale perspectives and gender differences. Condor 94: 720-733.

Sogge, M. K. and T. J. Tibbitts. 1992. Southwestern willow flycatcher *(Empidonax traillii extimus)* surveys along the Colorado River in Grand Canyon National Park and Glen Canyon National Recreation Area - 1992 summary report. National Park Service Cooperative Park Studies Unit/Northern Arizona University and U.S. Fish and Wildlife Service report. 46 pp.

U.S. Fish and Wildlife Service (USFWS). 1986. Determination of Endangered Status for Least Bell's Vireo. 51 FR 16474 16482.

USFWS. 1994. ETWP; Designation of Critical Habitat for the Least Bell's Vireo. 59 FR 4845 4867.

USFWS. 1995. ETWP; Final Rule Determining Endangered Status for the Southwestern Willow Flycatcher. 60 FR 10695 10715.

USFWS, 1998. Draft Recovery Plan for the Least Bell's Vireo.

USFWS. 2004. Proposed Designation of Critical Habitat for Southwestern Willow Flycatcher (*Empidonax traillii extimus*). 69 FR 60706 60786

USFWS. 2005. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Southwestern Willow Flycatcher (*Empidonax traillii extimus*). 70 FR 60886 61009.

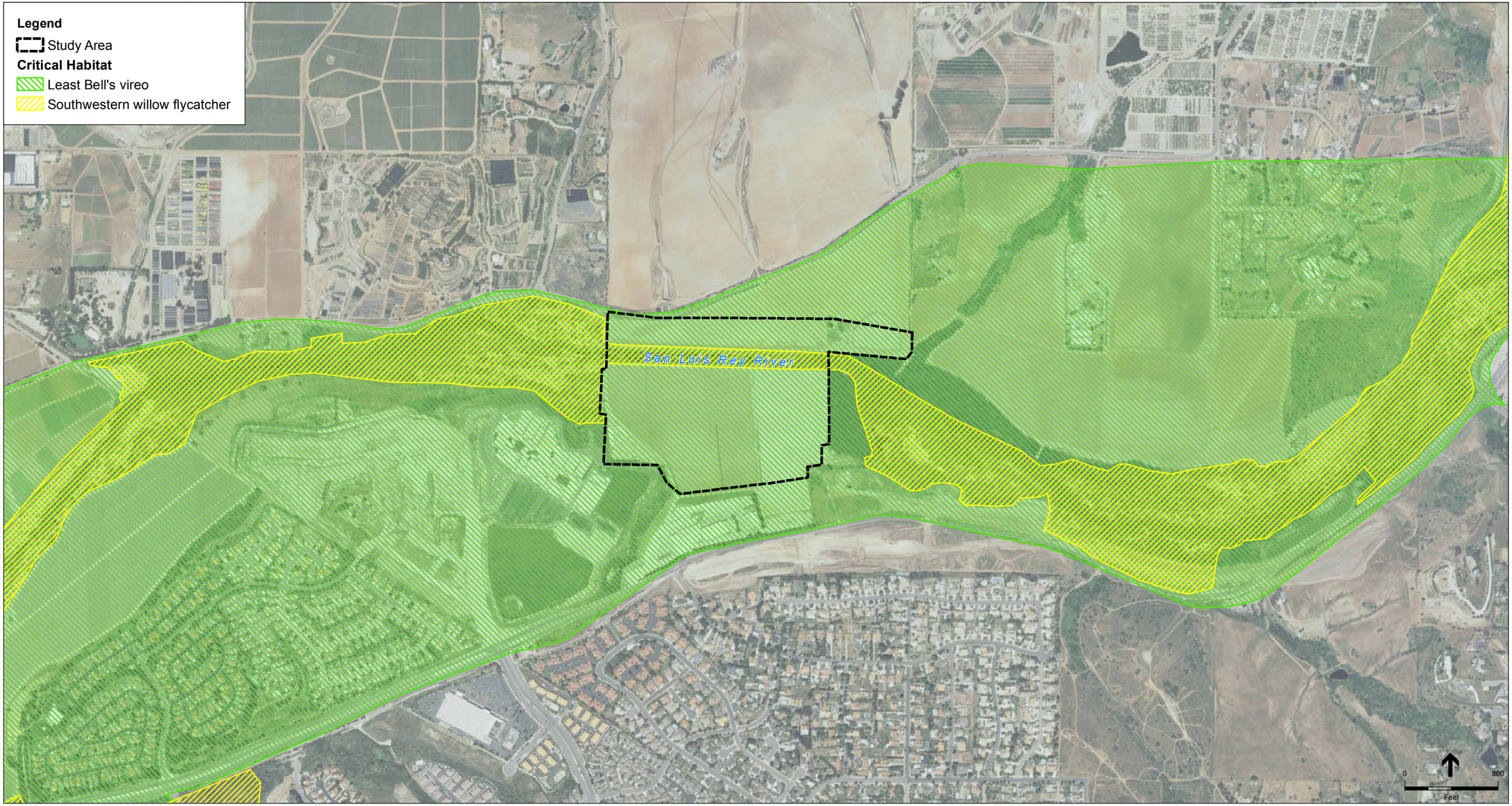
Valentine, B. E., T. A. Roberts, S. D. Boland, and A. P. Woodman. 1988. Livestock management and productivity of Willow Flycatchers in the central Sierra Nevada. Transactions of the Western Section of the Wildlife Society 24:105-114.

Whitfield, M. J. 1990. Willow flycatcher reproductive response to Brown-headed Cowbird parasitism. Masters theses, Calif. State Univ., Chico. 25 pp.

SOURCE: ESA, 2011.

San Luis Rey Mitigation Bank .

Figure 1
Study Area



SOURCE:United States Fish and Wildlife Service, 2007, Critical Habitat; California Department of Fish and Game, 2011, California Natural Diversity Database; ESA, 2011.

San Luis Rey Mitigation Bank .

Figure 2

Critical Habitat

Photo 1: Looking south across the site. Note *Arundo*-lined channel and adjacent agricultural fields.

Photo 2: Suitable LBVI and SWWF habitat is present upstream of the site and to the south of the northeastern portion of the study area. No suitable LBVI or SWWF habitat exists on site due to lack of suitable structure and composition.

SOURCE: ESA, 2011.

San Luis Rey Mitigation Bank

Figure 3a
Representative Photos

Photo 3: Suitable LBVI and SWWF habitat is present downstream of the site, but no suitable habitat exists on site due to lack of suitable structure and composition.

Photo 4: Habitat within the channel consists solely of dense stands of *Arundo* along the banks and *Scirpus*-dominated freshwater marsh in the channel. Stream flow was present at the time of the assessment.

SOURCE: ESA, 2011.

San Luis Rey Mitigation Bank

Figure 3b
Representative Photos