APPENDIX A

USFWS 10A Technical Reports

Focused Surveys for Federally Listed Species

TAIC

Technology Associates International Corporation
3655 Ruffin Rd., Suite 200
San Diego, CA 92123
www.taic.net

June 15, 2005

Daniel J. Marquez
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, California 92009

RE: Summary Report of Focused Surveys for the Arroyo Toad (*Bufo californicus*) for the San Diego County Water Authority San Vicente Reservoir Dam Raising Project.

Mr. Marquez:

This report presents the findings of the focused presence/absence survey for the arroyo toad (*Bufo californicus*) that was conducted on behalf of the San Diego County Water Authority, for the San Vicente Reservoir Dam Raising Project. This report fulfills obligations under Section 10(a) of the Federal Endangered Species Act.

Survey Methods

Habitat assessments were conducted in April 2005 around the perimeter of San Vicente Reservoir to assess the suitability of arroyo toad habitat. All drainages emanating from fingers of the reservoir were assessed, including drainages near the boat dock parking lot, along Foster Canyon, Mussey Grade Road, Kimball Valley, Barona Valley and major drainages in between. The only habitat that was considered suitable for the arroyo toad was located along Kimball Valley. Therefore, USFWS protocol surveys were conducted in this drainage only.

The presence/absence survey for the arroyo toad were performed by wildlife biologists Erik LaCoste and Melissa Busby on April 27 and May 4, 2005, pursuant to the current United States Fish and Wildlife Service (USFWS) survey protocol for the species, dated May 19, 1999. One survey, which was comprised of both daytime and nighttime components, was conducted under appropriate conditions (see attached field notes). During the daytime portion of the surveys, Mr. LaCoste and Ms. Busby walked the stream margins slowly and cautiously while inspecting the stream banks for juvenile and adult arroyo toads and examining the slow-moving portions of the stream for arroyo toad eggs and larvae. The nighttime surveys were performed in a similar manner. Mr. LaCoste and Ms. Busby meandered slowly, carefully, and quietly along the stream banks, using headlamps to visually detect eye shine, and listened for arroyo toads calling. During the survey period, all arroyo toad sightings were documented on a 1:2,400 scale (1 inch equals 200 feet) aerial map.

Results

Arroyo toads have previously been recorded from approximately four locations along a three mile stretch of Kimball Valley from the reservoir (California Natural Diversity Database).

During the present survey, no arroyo toad egg strands, juveniles, or adults were detected during the daytime portion of the first survey period. Small, ponded areas in the creek were sufficient for arroyo toad breeding. A few small tadpoles were observed in 1 ponded area along the creek, but were not identifiable.

An arroyo toad was heard calling during the nighttime portion of the survey, approximately 800-feet north of a bridge located in the survey area (Figure 1); the bridge serves as a driveway for a private residence.

Habitat associated with the survey area consists of dense willow scrub with a meandering creek through the middle; the creek flows into San Vicente Reservoir. The willow scrub appears to have been burned in the recent past, probably during the Cedar Fire of October 2003. However, the vegetation is regenerating quickly, as would be expected in a riparian system. The sandy bottomed creek that cuts through the willow scrub habitat was flowing steadily due to the large amount of rainfall during the past rainy season. The relatively flat canyon bottom allows the water flow to proceed at a moderate rate towards San Vicente Reservoir, thus creating good habitat for arroyo toad breeding. The wide, flat upland area that surrounds the willow scrub habitat is composed of non-native grasslands and developed areas, mostly houses. Some oaks (*Quercus* sp.) and sycamores (*Platanus racemosa*) occur scattered in the area. Dirt roads serve as access for the few scattered private residences in the valley.

Habitat south of the survey area also consists of willow scrub, with oak woodlands intermixed. However, the canyon bottom constricts as the valley gets closer to San Vicente Reservoir, and the vegetation becomes less dense near the creek. The creek is riddled with large boulders and rocks at this point and the creek bed and surrounding uplands steeper and less sandy. The area was determined to not be good habitat for supporting arroyo toad.

California tree frog (*Hyla cadaverina*) and Pacific tree frog (*Hyla regilla*) were also heard calling during the survey. A complete list of wildlife species encountered during the survey is included as an attachment.

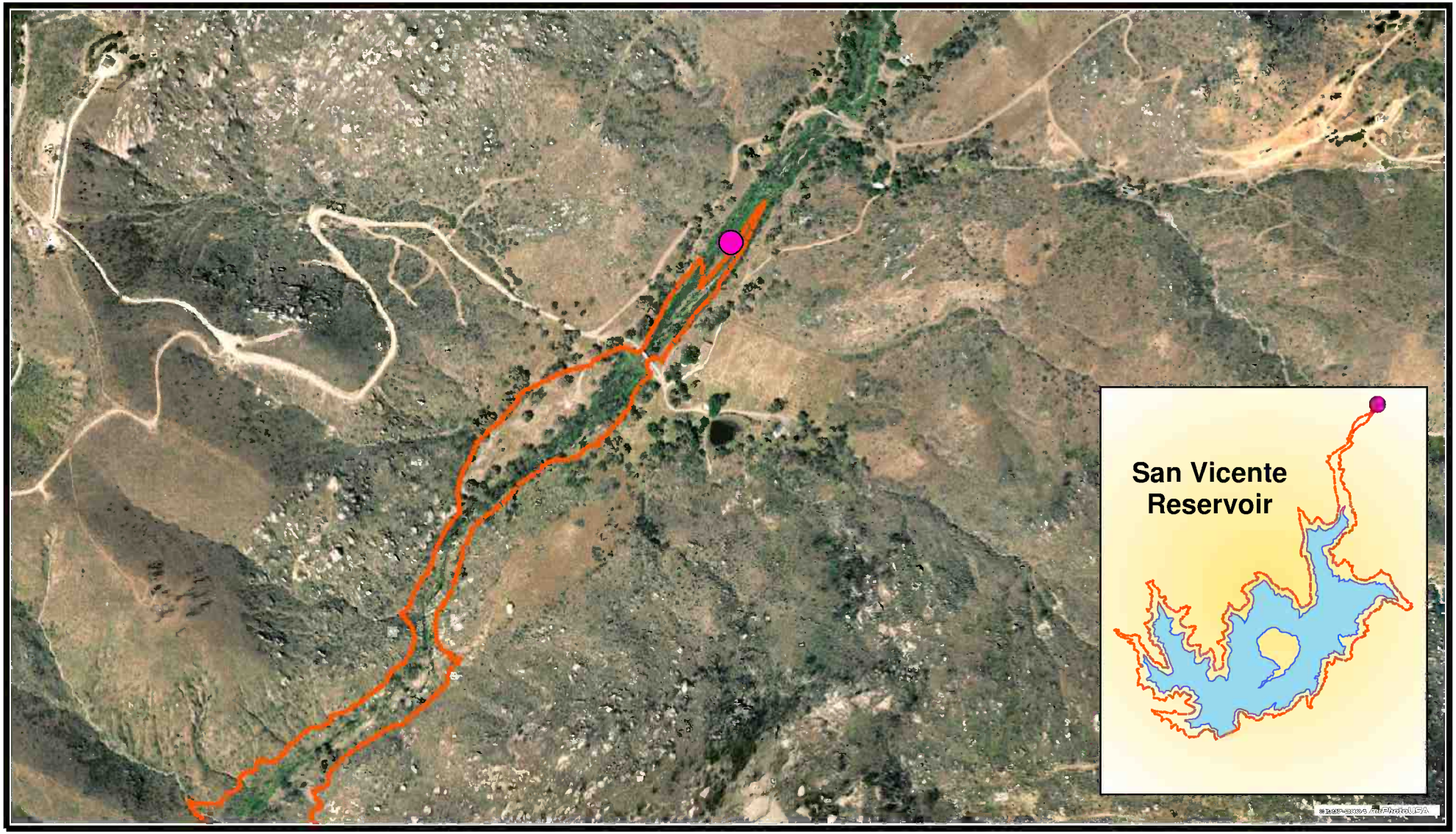
Pursuant to the USFWS Survey Protocol for this species, surveys were discontinued following the detection of arroyo toad in the survey area. Please feel free to contact Erik LaCoste or Christina Schaefer with any questions.

Sincerely,

Erik LaCoste
Wildlife Biologist
760-500-8802

Christina Schaefer
Project Manager
858-300-2346 ext. 111

Enclosures: graphics, field notes; species list.



Legend

- Arroyo Toad Calling Location
- Survey Area

0 350 700 1,400
Feet

1 inch equals 700 feet

File: gis\projects\sanvicente\plots\figures\arroyo_toad.mxd
Map Projection: Stateplane Zone 6 NAD83 Feet
Orthophoto: April 2004
Date: July 18, 2005

Location of Arroyo Toads
San Vicente Reservoir
Figure 1

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Date of Survey: **4-27-05** **Survey Number:** **1**
Data sheet for San Vicente Reservoir arroyo toad surveys for Technology Associates International Corp.

Time		**Temp (°F)**	**Wind (mph)**	**Sky (% clouds)**	**Pcp.**
Day Start	1815	70	1-2	60	0
Day End	1945	72	2-3	50	0
Night Start	2020	66	0-1	20	0
Night End	2150	61	0-1	5	0

Common Name	**Scientific name**
Birds	
Acorn woodpecker	*Melanerpes formicivorus*
American crow	*Corvus brachyrhynchos*
Black phoebe	*Sayornis nigricans*
House finch	*Carpodacus cassinii*
House wren	*Troglodytes aedon*
Long-eared owl	
Oak titmouse	*Baeolophus inornatus*
Spotted towhee	*Pipilo maculatus*
Amphibians	
California treefrog	*Hyla cadaverina*
Pacific treefrog	*Hyla regilla*
Butterflies	
Acmon blue	*Plebejus acmon*
Mammals	
Coyote	*Canis latrans*
Deer	*Odocoileus hemionus*
Grey fox	*Urocyon cinereoargenteus*
raccoon	*Procyon lotor*

Notes: No AT's noted from day or night surveys

Date of Survey: **5-4-05** **Survey Number:** **2**
Data sheet for San Vicente Reservoir arroyo toad surveys for Technology Associates International Corp.

Time		**Temp (°F)**	**Wind (mph)**	**Sky (% clouds)**	**Pcp.**
Day Start	1130	76	1-4	35	0
Day End	1330	76	2-4	80	0
Night Start	0830	65	2-4	100	0
Night End	1000	63	0-1	100	0

Common Name	**Scientific name**
Birds	
Acorn woodpecker	*Melanerpes formicivorus*
American crow	*Corvus brachyrhynchos*
Ash-throated flycatcher	*Myiarchus cinerascens*
Bewick's wren	*Thryomanes bewickii*
Brown-headed cowbird	*Molothrus ater*
Black phoebe	*Sayornis nigricans*
Bushtit	*Psaltriparus minimus*
California towhee	*Pipilo crissalis*
Common yellowthroat	*Geothlypis trichas*
Costa's hummingbird	*Calypte costa*
Great horned owl	*Bubo virginianus*
House finch	*Carpodacus cassinii*
House wren	*Troglodytes aedon*
Lesser goldfinch	*Carduelis psaltria*
Oak titmouse	*Baeolophus inornatus*
Pacific-slope flycatcher	*Empidonax difficilis*
Song sparrow	*Melospiza melodia*
Spotted towhee	*Pipilo maculatus*
Warbling vireo	*Vireo gilvus*
Western bluebird	*Sialia mexicana*
Amphibians	
Arroyo toad	*Bufo californicus*
California treefrog	*Hyla cadaverina*
Pacific treefrog	*Hyla regilla*

Notes:
Arroyo toad heard calling in the willow scrub approximately 800 feet north of the driveway bridge.

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August 16, 2005

Attn: Daniel Marquez
Recovery Permit Coordinator
Carlsbad Field Office
USFWS 6010 Hidden Valley Road
Carlsbad, California 92009

RE: Summary Report of Focused Surveys for the Least Bell's Vireo (*Vireo bellii pusillus*) for the San Diego County Water Authority San Vicente Reservoir Dam Carryover Storage Project, San Diego County, California.

Dear Mr. Marquez,

This report presents the findings of the focused presence/absence survey for the Least Bell's Vireo (*Vireo bellii pusillus*) that was conducted on behalf of the San Diego County Water Authority, for the San Vicente Reservoir Dam Carryover Storage Project. The report fulfills obligations under Section 10(a) of the Federal Endangered Species Act.

Project Area

The San Vicente Reservoir is located just north of the community of Lakeside in San Diego County, California (Figure 1). Habitat assessments were conducted in April 2005 around the perimeter of San Vicente Reservoir to assess the suitability of least bell's vireo habitat. The habitat assessment area included a one hundred foot buffer beyond the maximum expected inundation of 780 feet after the construction of the raised dam. Suitable habitat was located in 3 areas as described below.

The first area is located in Kimball Valley, along San Vicente Creek, approximately one mile north from the waters edge of the reservoir, crossing over Kimball Valley Road (referred to as Kimball survey area). This area consists of 8.22 acres of southern willow scrub. The second area is located in Barona Valley, on the eastern slopes of San Vicente Reservoir, at the waters edge (referred to as Barona Creek). This area consists of 3.44 acres of riparian woodland vegetation. The last area is located on the western edge of the reservoir, along a small drainage below a water pump outlet station (referred to as Generator). This area consists of approximately 0.3 acres of riparian woodland habitat. Although it was burned in October 2003, the riparian habitat in all 3 locations is recovering well and considered to be of good quality for this species.

Project Description

Carryover storage is needed to increase water storage reliability for the region, and to allow the Water Authority to better manage its existing supply sources consistent with the highest standards of efficient water management. The proposed project would increase the capacity of the San Vicente Reservoir by 100,000 acre feet in addition to the planned ESP dam raise. Increasing the reservoir capacity to accommodate approximately 152,100 acre feet of emergency and carryover storage would involve raising the overall dam height by up to 117 feet (up to 337

feet in height), which would raise the elevation of the spillway crest from 650 to 766 feet AMSL. Figure 2 shows the new reservoir inundation area for the increased dam height.

The enlarged dam would be formed using roller compacted concrete (RCC). As the dam enlargement is constructed, a 5-foot-thick layer of conventional concrete would be placed against the downstream face of the existing dam, and the RCC would be placed against this layer. The dam enlargement would be built from the foundation upward.

The following three options exist for the production/transport of cement or aggregate material to the site for use in dam construction, and will be evaluated as "project construction component" alternatives throughout the SEIR/EIS:

- Cement to produce conventional and RCC concrete would be brought to the site by truck. Conventional and RCC concrete batch plants would be set up near the base of the existing San Vicente Dam.
- Aggregate would be transported to the site via conveyor belt from a nearby existing commercial quarry operation. Attachment 5 illustrates the construction disturbance footprint for this alternative showing three potential conveyor belt route corridors currently under consideration.
- Aggregate would be produced at new on-site quarrying operations. Attachment 6 shows the construction disturbance footprint for this alternative.

The estimated time for construction of the enlarged San Vicente Dam is approximately 5 years. RCC placement for dam construction is a continuous operation, with placement generally occurring 20 to 24 hours per day. This phase of dam construction is estimated to last approximately 18 months.

In addition to the enlargement of the San Vicente Dam, increasing the reservoir capacity and elevation would require the construction of two saddle dams to the west of the main dam, construction of a new inlet/outlet facility, relocation of the San Vicente Marina, and relocation of the marina access road.

Survey Methods

Eight surveys were conducted by wildlife biologists Erik LaCoste and Melissa Busby at each location between May 4th and August 1st. Survey times varied, but generally occurred between 0530 hours and 1100 hours for each survey. Table 1 below details daily survey conditions. Site visits were conducted at least 10 days apart, when possible, to maximize the detection of this species throughout the season. All vireo observations were recorded on an aerial field map and subsequently plotted in GIS (Figure 2). The presence of any other sensitive wildlife species, including cowbirds (*Molothrus ater*) was also recorded.

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Table 1. Survey Times and Conditions

Survey	Date	Location	Time	Weather	Results
1	May 4	Kimball	1030-1130	Partly cloudy, 73-75ºF	Negative
	May 4	Barona Cr.	0755-0920	Partly cloudy, 65-68ºF	A single LBV observed*
	May 13	Generator	1000-1030	Clear, 73-75ºF	Negative
2	May 13	Kimball	0530-0620	Clear, 57-57ºF	Negative
	May 13	Barona Cr.	0730-1000	Clear, 65-73ºF	A single LBV observed*
	May 24	Generator	0745-0830	100%clouds, 64-65ºF	Negative
3	May 24	Kimball	0545-0650	100% clouds, 61-63ºF	Negative
	May 24	Barona Cr.	0855-1100	Partly cloudy, 65-75ºF	A single LBV observed*
	June 2	Generator	0745-0820	100% clouds, 64-66ºF	Negative
4	June 2	Kimball	0615-0655	100% clouds, 64ºF	Negative
	June 2	Barona Cr.	0840-0940	100% clouds, 66ºF	A single LBV observed*
	June 15	Generator	0830-0900	100% clouds, 65ºF	Negative
5	June 15	Kimball	0615-0715	100% clouds, 64-65ºF	Negative
	June 15	Barona Cr.	0920-1100	100% clouds, 66-68ºF	A single LBV observed*
	June 24	Generator	0715-0755	Clear, 67ºF	Negative
6	June 24	Kimball	0540-0630	Clear, 54-56ºF	A single LBV observed
	June 24	Barona Cr.	0815-0915	Clear, 67-70ºF	Two LBVs observed**
	July 8	Generator	1130-1200	Clear, 74-76ºF	Negative
7	July 8	Kimball	0545-0630	100% clouds, 63-64ºF	Negative
	July 8	Barona Cr.	0915-1100	Clear, 68-72ºF	Negative
	July 21	Generator	0715-0745	Clear, 72-73ºF	Negative
8	July 21	Kimball	0545-0630	Clear, 68-69ºF	A single LBV observed
	July 21	Barona Cr.	0815-0900	Clear, 75-76ºF	Negative
	August 1	Generator	1000-1030	Clear, 76-78ºF	Negative

* LBV observed outside of the creek on a burned chaparral/oak woodland covered slope

** One LBV observed in the burned chaparral/oak woodland covered slope, and one at the mouth of Barona Creek

Results

A single least Bell's vireo was observed towards the end of the breeding season in the Kimball Valley survey area (Figure 2). This may suggest that the area was used as a dispersal corridor or destination for juveniles during the 2005 breeding season. The lone vireo was observed on 2 occasions in the same area.

In the Barona Creek survey area, vireos were encountered both during the habitat assessments conducted in April and during focused surveys. During the habitat assessment, a single least Bell's vireo was encountered approximately 100 meters west of Barona Creek on an oak and chaparral covered hillside; the hillside was burned during the October, 2003, Cedar Fire. Vegetation in the area consists of recovering chaparral and oak woodland species, along with many opportunistic species from the surrounding slopes. The area does support riparian habitat with a dense understory, and would not normally be considered vireo habitat, even when not in a burned condition. However, the vireo stayed in that area throughout most of the breeding season.

A second least Bell's vireo was observed at the mouth of Barona Creek where it enters the lake during the 6th survey. This individual was observed with what appeared to be nest building material, but also appeared and acted like a juvenile. This vireo was only observed on a single occasion.

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Least Bell's vireo was not encountered at the Generator survey area. This survey area is small and somewhat isolated from contiguous riparian vegetated areas. Occurrence of the species in this area is unlikely.

A total of 62 bird species, including brown-headed cowbird, were observed during the surveys. A complete list of wildlife species observed during these surveys is attached to this report.

Please feel free to contact Erik LaCoste, Melissa Busby or Christina Schaefer with any questions.

Sincerely,

Erik LaCoste
Wildlife Biologist
760-500-8802

Melissa Busby
Senior Biologist, PBS&J
858-514-1015

Christina Schaefer
Project Manager
858-300-2346 ext.111

Enclosure: graphics, species list

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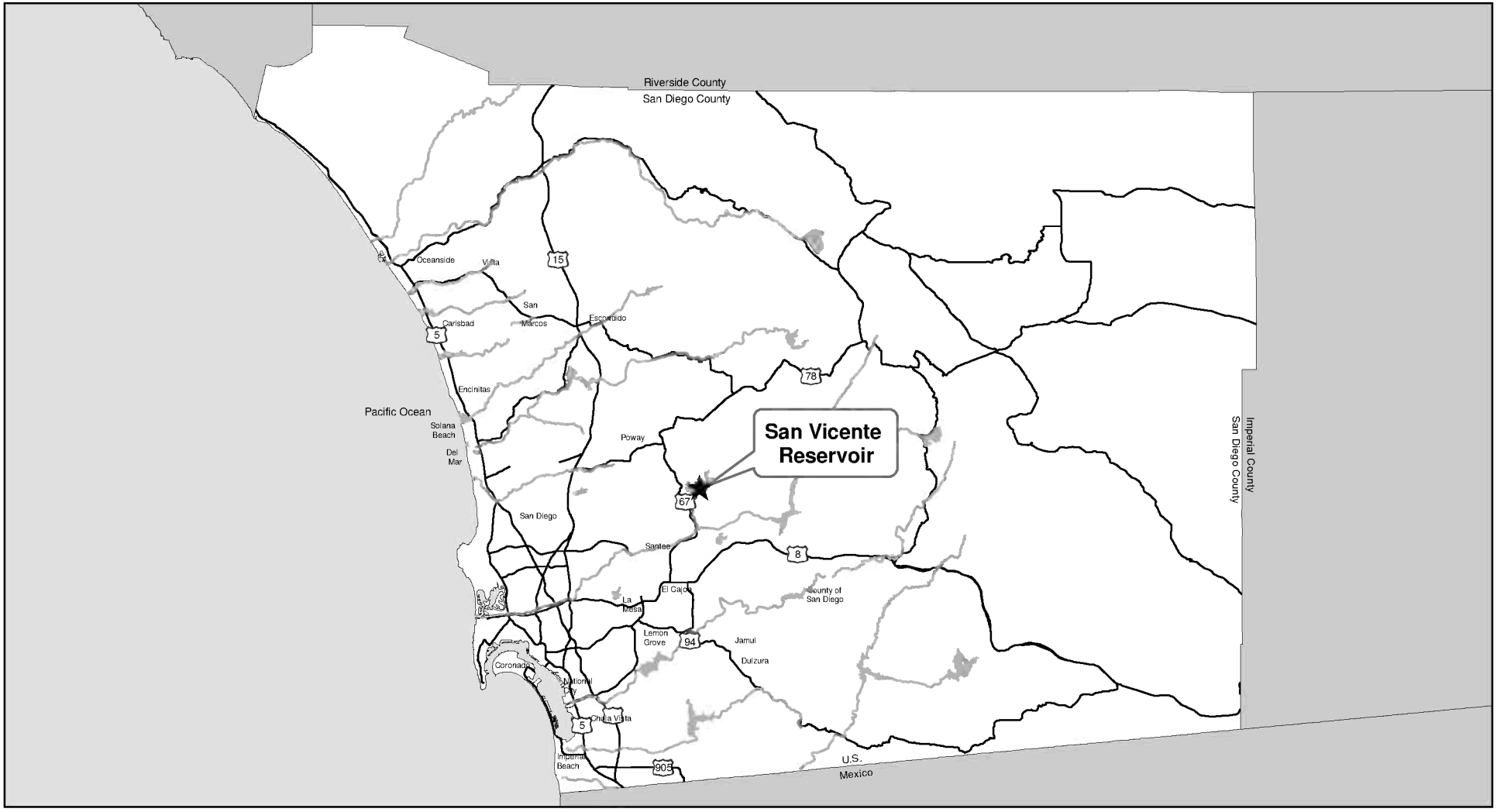

Basemap Legend

- Freeways
- Rivers
- Lake/Reservoir/Lagoon

N
W E
S

Miles

0 13

Map Notes

Date Created: August 11, 2005

File Ref: t:\projects\sanvicente\plots\figures\regional.mxd

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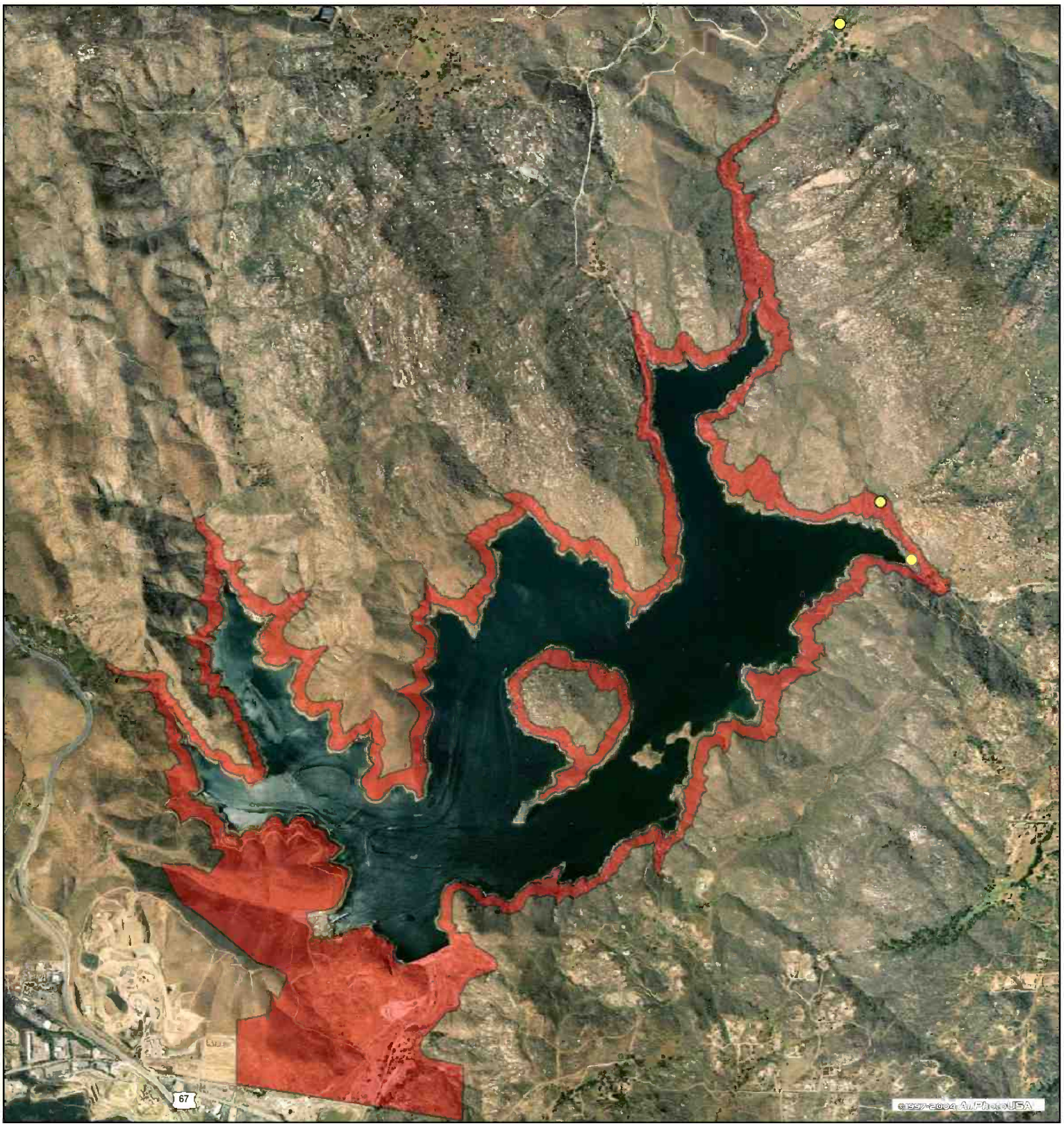
Vicinity Map

Figure 1



Legend

- Least Bell's Vireo Observation Sites
- Survey Area

N
W E
S

0 2,500
Feet

Map Notes
Date Created: August 15, 2005
File Ref: t:\projects\sanvicente\plots\figures\lbv_sites_10a.mxd

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San Vicente Reservoir - Least Bell's Vireo Sites

Figure 2

Wildlife Species List

Common Name	Scientific Name
Birds	
Pied-billed grebe	*Podilymbus podiceps*
Double-crested cormorant	*Phalacrocorax auritus*
Snow goose	*Chen caerulescens*
Mallard	*Anas platyrhynchos*
American coot	*Fulica americana*
Bonaparte's gull	*Larus philadelphia*
Caspian tern	*Sterna caspia*
Forster's tern	*Sterna forsteri*
Black skimmer	*Rhynchops niger*
Great blue heron	*Ardea herodias*
Snowy egret	*Egretta thula*
Black-crowned night heron	*Nycticorax nycticorax*
Spotted sandpiper	*Actitis macularia*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
Osprey	*Pandion haliaetus*
Turkey vulture	*Cathartes aura*
California quail	*Callipepla californica*
Mourning dove	*Zenaida macroura*
White-throated swift	*Aeronauts saxatalis*
Anna's hummingbird	*Calypte anna*
Costa's hummingbird	*Calypte costa*
Acorn woodpecker	*Melanerpes formicivorus*
Nuttall's woodpecker	*Picoides nuttallii*
Northern flicker	*Colaptes auratus*
Western wood peewee	*Contopus sordidulus*
Pacific slope flycatcher	*Empidonax difficilis*
Black phoebe	*Sayornis nigricans*
Ash throated flycatcher	*Myiarchus cinerascens*
Western kingbird	*Tyrannus verticalis*
Least Bell's vireo	*Vireo bellii pusillus*
Warbling vireo	*Vireo gilvus*
Western scrubjay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
Violet-green swallow	*Tachycineta thalassina*
Cliff swallow	*Hirundo pyrrhonota*
Oak titmouse	*Parus inornatus*
Bushtit	*Psaltriparus minimus*
White-breasted nuthatch	*Sitta carolinensis*
Canyon wren	*Catherpes mexicanus*

Bewick's wren	*Thryomanes bewickii*
House wren	*Troglodytes aedon*
Western bluebird	*Sialia mexicana*
Wrentit	*Chamaea fasciata*
Phainopepla	*Phainopepla nitens*
Common yellowthroat	*Geothlypis trichas*
Wilson's warbler	*Wilsonia pusilla*
Yellow breasted chat	*Icteria virens*
Western tanager	*Piranga ludoviciana*
Black-headed grosbeak	*Pheucticus melanocephalus*
Lazuli bunting	*Passerine amoena*
Spotted towhee	*Pipilo maculates*
California towhee	*Pipilo crissalis*
Black-chinned sparrow	*Spizella atrogularis*
Song sparrow	*Melospiza melodia*
Red-winged blackbird	*Agelaius phoeniceus*
Brown-headed cowbird	*Molothrus ater*
Hooded oriole	*Icterus cucullatus*
Bullock's oriole	*Icterus bullockii*
House finch	*Carpodacus cassinii*
Lesser goldfinch	*Carduelis psaltria*
Invertebrates	
Acmon blue	*Plebejus acmon*
Buckeye	*Junonia coenia*
Cabbage white	*Pieris rapae*
California sister	*Adelpha bredowii californica*
Dainty sulfur	*Nathalis iole*
Funereal duskywing	*Erynnis funeralis*
Gabb's checkerspot	*Chlosyne gabbii*
Marine blue	*Leptotes marina*
Mourning cloak	*Nymphalis antiopa*
Orange sulfur	*Cholias eurytheme*
Painted lady	*Vanessa cardui*
Sara orangetip	*Anthocharis sara*
Southern blue	*Glaucopsyche lygdamus australis*
Spring white	*Pontia sisymbrii*
Tailed copper	*Lycaena arota*
West coast lady	*Vanessa annabella*
Western tiger swallowtail	*Papilio rutulus*
Sphinx moth	*Hyles lineata*
Dentate stink beetle	*Eleodes dentipes*
Tarantula wasp	*Pepsis* sp.
Crayfish	
Reptiles and Amphibians	
Western toad	*Bufo boreas*

American bullfrog	*Rana catesbeiana*
Pacific treefrog	*Pseudacris regilla*
California treefrog	*Pseudacris cadaverina*
Granite spiny lizard	*Sceloporus orcutti*
Western fence lizard	*Sceloporus occidentalis*
Side-blotched lizard	*Uta stansburiana*
Western whiptail	*Cnemidophorus tigris*
Speckled rattlesnake	*Crotalus mitchelli*
Mammals	
Coyote	*Canis latrans clepticus*
Opossum	*Didelphis virginiana*
Domestic dog	*Canis familiaris*
Grey fox	*Urocyon cinereoargenteus californicus*
Raccoon	*Procyon lotor psora*
Bobcat	*Lynx rufus*
domestic horse	*Equus* sp.
Mule deer	*Odocoileus hemionus fuliginata*
California ground squirrel	*Spermophilus beecheyi nudipes*
Botta's pocket gopher	*Thomomys bottae*
Kangaroo rat sp.	*Dipodomys* sp.
Audubon's cottontail	*Sylvilagus audubonii*

TAIC
Technology Associates International Corporation

July 10, 2006

Daniel Marquez
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, CA 92011

Regarding: Results of protocol Quino checkerspot butterfly surveys for the Carryover Storage and San Vicente Dam Raise Project, San Diego County, California.

Dear Mr. Marquez,

This letter report summarizes the results of focused Quino checkerspot butterfly (*Euphydryas editha quino;* QCB) surveys conducted on behalf of the San Diego County Water Authority (Water Authority) for the Carryover Storage and San Vicente Dam Raise Project (CSP). These surveys were performed pursuant to U.S. Fish and Wildlife Service (USFWS) Quino Checkerspot Butterfly Survey Protocol (2002). Due to this year's late onset of the rainy season and associated low emergence of flying adult QCB, seven surveys were performed between March 27 and May 23, 2006, which coincided with habitat and weather conditions suitable to the QCB adult flight season.

STUDY AREA

The San Vicente Reservoir is located just north of the community of Lakeside in San Diego County, California (Figure 1). The study area includes the perimeter of the reservoir from the Ordinary High Water Mark (OHWM) up to the proposed CSP elevated spillway crest at the 766 feet Above Mean Sea Level (AMSL) contour (Figure 2), minus the footprint of the already permitted San Vicente Dam Raise component of the Water Authority's Emergency Storage Project (ESP). The OHWM was defined by the Army Corps of Engineers (Corps) as the current dam spillway crest at the 650 feet AMSL contour. In addition to the area around the reservoir, the study area includes space for staging, construction, and two potential quarry sites south of the existing dam. The survey area for the focused QCB surveys slightly differs from the study area for reasons explained in the methods section of this report (Figure 2).

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Table 1. Summary of Protocol Quino Butterfly Surveys Conducted in 2006.

Permittee	Survey[1]	Date	Time	Weather Conditions	
				Start	Finish
Michael Klein Permit No. TE-039305-3 Rosanne Humphrey Supervised Indiv.	Survey 1 (NE portion)	3/27/2006	0900 – 1600	mostly sunny, no breeze, 63°F	Partly cloudy, W breeze@ 12 mph, 65°F
		3/30/2006	1000-1700	Partly cloudy, SW wind @ 7 mph, 61°F	Mostly cloudy, W wind @ 11 mph, 62°F
		3/31/2006	0900-1630	Cloudy, no breeze, 59°F	Partly cloudy with clearing to west; west breeze @ 8 mph, 61°F
		4/03/2006	0900-1415	Sunny, NW wind @ 6 mph, 60°F	Showers, SW wind @ 3 mph, 71°F
		4/06/2006	0915-1430	Clouds, no breeze, 62°F	Clouds, west breeze @ 8 mph, 60°F
Dale Powell Jun Powell Permit No. TE-006559-3	Survey 1	4/06/06	0920-1610	50% cloud cover, wind 1 mph, 66°F	20% cloud cover, wind 5 mph, 64°F
		4/07/06	0955-1645	60% cover, wind 3 mph, 65°F	15% cover, wind 5 mph
		4/08/09	1010-1610	Clear, wind 1 mph, 66°F	Clear, wind 6 mph, 66°F
		4/09/06	1035-1240	Clear, wind 3 mph, 65°F	5% cover, wind 4 mph, 68°F
	Survey 2	4/13/06	0945-1705	Clear, wind 1 mph, 70°F	Clear, wind 6 mph, 85°F
		4/18/06	0940-1435	Clear, wind 1 mph, 64°F	Clear, no wind, 85°F
		4/19/06	0940-1530	Clear, no wind, 69°F	Clear, wind 4 mph, 84°F
	Survey 3	4/21/06	1000-1530	20% cover, no wind, 64°F	80% cover, wind 7 mph, 70°F
		4/29/06	0955-1700	80% cover, no wind, 69°F	Clear, wind 2 mph, 82°F
		4/30/06	1030-1540	Clear, wind 2 mph, 71°F	Clear, wind 4 mph, 81°F
	Survey 4	5/01/06	1000-1600	Clear, 1 mph, 69°F	Clear, wind 6 mph, 78°F
		5/02/06	1000-1555	30% cover, no wind, 68°F	Clear, wind 5 mph, 77°F
		5/06/06	1045-1540	50% cover, wind 4 mph, 69°F	Clear, wind 3 mph, 75°F
	Survey 5	5/07/06	1005-1635	30% cover, no wind, 70°F	Clear, wind 2 mph, 73°F
		5/08/06	1100-1700	70% cover, no wind, 69°F	Clear, wind 5 mph, 72°F
		5/09/06	1025-1800	30% cover , no wind, 69°F	Clear, wind 2 mph, 60°F
	Survey 6[2] (SW portion)	5/13/06	1015-1615	Clear, 3 mph, 74°F	Clear, wind 5 mph, 84°F
		5/14/06	1350-1535	Clear, wind 3 mph, 82°F	Clear, wind 5 mph, 83°F
	Survey 7	5/19/06	1020-1650	Clear, no wind, 76°F	Clear, wind 5 mph, 74°F
		5/20/06	1030-1700	Clear, wind 5 mph, 70°F	Clear, wind 7 mph, 78°F
		5/21/06	1115-1705	Clear, wind 3 mph, 81°F	100% cover, wind 5 mph, 68°F
		5/23/06	1005-1800	Clear, wind 3 mph, 72°F	Clear, wind 2 mph, 72°F

[1] The northeastern portion (Areas 12-37) was surveyed by M. Klein first, followed by weekly surveys of Areas 1-37 by Dale and Jun Powell.

[2] Initially, survey 6 was to be the last of the season; only the southwestern portion, as the northeastern portion had already been surveyed a 6th time. However, it was later determined that a 7th survey should be conducted based on the condition of the habitat.

PROJECT DESCRIPTION

Carryover storage is needed to increase water storage reliability for the region, and to allow the Water Authority to better manage its existing supply sources consistent with the highest standards of efficient water management. The proposed activity would raise the San Vicente Dam an additional 65 feet beyond the ESP dam raise, increasing the capacity of the San Vicente Reservoir by an additional 100,000 acre-feet and raising the overall dam height by up to 117 feet (or total dam height of up to 337 feet). In addition to enlarging San Vicente Dam, the proposed activity would increase the reservoir capacity and elevation, which would require the construction of two saddle dams to the west of the main dam, relocation of the San Vicente Marina, and relocation of the marina access road. The proposed activity also includes construction of a new inlet/outlet facility and installation of a bypass pipeline extending from the easterly saddle dam to the First Aqueduct Diversion Structure north of the proposed marina. In addition, two potential on-site quarries are being evaluated for the extraction and processing of aggregate that will be needed during construction.

BACKGROUND INFORMATION

The most recent sighting of QCB was made by Fred Sproul in May 2000 northwest of Foster Canyon approximately one kilometer from the study area (Figure 3). Other recent observations of QCB were made by David Faulkner within the ridgelines of Sycamore Canyon County Open Space Preserve in March 2005, and by Dudek and Associates in March 2005 within the boundary of Fanita Ranch in northern Santee. The Sycamore Canyon sighting is approximately three kilometers to the west and the Fanita Ranch sighting is approximately seven kilometers southwest of the reservoir .

METHODS

A. Habitat Assessment

In the spring of 2005 (April 13 – May 4), a site assessment for the federally endangered QCB was conducted within the larger CSP study area, which included the CSP study area as described above plus the ESP footprint. The ESP footprint constitutes previously permitted pieces and slices of the San Vicente Dam Raise component of the ESP EIR/EIS, the boundaries of which would be very difficult to identify in the landscape. In addition, focused QCB surveys were never conducted for the ESP project. Therefore, the ESP footprint was included in the QCB habitat assessment surveys for the CSP. The habitat assessment was performed by two permitted QCB biologists due to the large size of the study area (in excess of 1,200 acres): Michael Klein (Permit No. TE-039305-3), who assessed the southwestern portion of the study area, and Erik LaCoste (Permit No. TE-027736-3), who assessed the northeastern portion. The habitat assessments were conducted pursuant to the U.S. Fish and Wildlife Service protocol for this species (USFWS 2002). Mr. Klein, a Lepidoptera expert, delineated QCB habitat boundaries based on his knowledge of the species' behavior, larval and adult host plant preferences, and dispersal patterns, and focused his assessment on QCB occupation probability based on migration distances from

historical metapopulation locations. Mr. LaCoste on the other hand, precisely followed the habitat assessment guidelines published in the USFWS protocol.

Since the 2005 site assessments were performed well into the 2005 QCB adult flight season, which had the earliest start date on record, there was not adequate time to perform adult surveys in 2005. However, this was an exceptionally wet year, resulting in a successful season for host plants, and therefore, these habitat assessments were considered adequate by the USFWS for the 2006 QCB survey season (Allison Anderson, pers. comm. January 4, 2006). However, in order to standardize site assessment methods throughout the study area, and in coordination with the USFWS, Mr. LaCoste's area was re-assessed by Mr. Klein March 27 – April 6, 2006, prior to the 2006 adult QCB survey season, and using the same methods that Mr. Klein applied to his 2005 habitat assessment. The resulting survey area consists of 37 scattered patches of QCB suitable habitat (Figure 4). Appendix A contains the site assessment report, which describes the details of this effort.

B. Focused Adult QCB Surveys

Focused adult QCB surveys were initiated in the study area on March 27, 2006, in accordance with the late onset of year 2006 winter rains, which caused a delay in the blooming season for butterfly larval host plants and adult nectar plants. The late rainy season resulted in less overall average precipitation, which affected not only the timing of the adult flight season, but also reduced the overall QCB abundance. The surveys were conducted by three Quino butterfly permitted biologists who were subcontracted by Technology Associates (TAIC) and one TAIC biologist (Table 1), including Michael Klein, Rosanne Humphrey (Supervised Individual under Mr. Klein's USFWS permit), Jun Powell, and Dale Powell (both under USFWS Permit No. TE-006559-3). The average survey rate over the course of the survey period for each area is given in Table 2.

The surveys were conducted on foot generally between the hours of 9:00 AM and 4:00 PM, when the weather conditions were suitable. Surveys were terminated if one or more of the following weather conditions occurred: fog, drizzle, or rain; sustained winds greater than 15 miles per hour measured four to six feet above the ground; temperature less than 60° F at ground level in the shade on a clear, sunny day or less than 70° F on an overcast day. Surveys were conducted one week apart for a total of seven surveys per survey area. The number of surveys was determined by assessing the quality of the nectar and host plant resources, by reviewing the USFWS website which summarizes known sightings of QCB in varying life stages in San Diego County, and by discussing survey conditions with other biologists who were conducting QCB surveys in the county at that time. Site conditions and butterfly observations (all species) were noted in a field notebook and documented with photographs when feasible.

Table 2. Summary of Quino Checkerspot Butterfly Survey Effort

Survey No. [1]	Dates	Hrs of Survey Effort	Ave. Survey Rate (ac/hr)[2]
1 (Areas 12-37)	3/27/06 3/30/06 3/31/06 4/03/06 4/06/06	7'0" 7'0" 7'30" 5'15" 11'15"	1.16[3]
1 (Areas 1-11) and 2 (Areas 12-37)	4/06/06 4/07/06 4/08/06 4/09/06	8'50" 8'0" 10'10" 4'0"	3.17
2 (Areas 1-11) and 3 (Areas 12-37)	4/13/06 4/18/06 4/19/06	10'50" 6'25" 8'30"	3.88
3 (Areas 1-11) and 4 (Areas 12-37)	4/21/06 4/29/06 4/30/06	5'15" 9'40" 9'20"	3.35
4 (Areas 1-11) and 5 (Areas 12-37)	5/01/06 5/02/06 5/06/06	8'45" 9'25" 8'50"	3.92
5 (Areas 1-11) and 6 (Areas 12-37)	5/07/06 5/08/06 5/09/06	10'10" 9'10" 12'50"	3.5
6[4] (Areas 1-11)	5/13/06 5/14/06	9'40" 2'15"	4.15
7 (Areas 1-37)	5/19/06 5/20/06 5/21/06 5/23/06	5'25" 5'25" 9'20" 7'50"	3.5

[1] Areas 12-37 (44.18 ac) were surveyed first by M. Klein,and followed by weekly surveys of Areas 1-37 by D. and J. Powell. The last survey completed survey #6 for areas 1-11.

[2] Total number of acres in survey area: 98.26

[3] Hours include travel between sites. All other calculations do not include travel time.

[4] Initially, survey 6 was to be the last of the season, but it was later determined that a 7th survey should be conducted based on the condition of the habitat.

RESULTS

Habitat Conditions

The area surrounding San Vicente Reservoir is characterized by steep, boulder-strewn slopes with extensive rock outcrops, surrounding a large body of open water. Lowell Island is a prominent feature in the center of the reservoir, and a small peninsula to the south occurs as smaller islands at higher water levels. Elevations within the study area range from approximately 650 feet above mean sea level (AMSL) at water level to approximately 1,000 ft. Soils vary throughout the project site from the hydric soils that are found in drainages and other wetland areas, to soils that are derived from granitic and metavolcanic sources on slopes and peaks.

The survey area was impacted by the 2003 Cedar Fire, which burned approximately 98% of the project site. Prior to the fire, the majority of the area was covered with mature dense chaparral and coastal sage scrub and smaller areas of oak woodland, riparian forest, and riparian scrub (Figure 5). Based on the criteria for exclusion described in the USFWS QCB survey protocol, a majority of the survey area (closed canopy chaparral, riparian, and disturbed habitats) was likely to be unsuitable for QCB. However, the fire removed the majority of dense vegetation, opening up the habitat for spring blooming annuals, and exposing the soil. By the time the QCB site assessments were completed, the habitat had been in recovery for 2.5 years. During the 2006 surveys abundant flowering plants were in bloom at every survey location that could be used as nectar resources by QCB. The attached plant list consists of blooming plant species that were observed during the survey period.

QCB and Other Butterfly Species

In general, few butterflies of any type were observed during the 2006 survey season. This was probably due, in part, to the late spring rains. No Quino Butterflies were found in the survey areas within the CSP project site during the 2006 focused surveys. Because of the presence of thick vegetation prior to the Cedar Fire, it is not likely that there was an established population in the area before 2003. The vegetation is recovering relatively well, and many areas that were passable in 2005 were becoming hard to traverse in 2006 due to fire-recovery associated successional establishment of deer weed (*Lotus scoparius*), chamise (*Adenostoma fasciculatum*), scrub oak (*Quercus berberidifolia*), and laurel sumac (*Malosma laurina*).

Based on post-fire recovery succession, as it was observed from QCB associated survey efforts in 2005, and 2006, any future butterfly surveys at the San Vicente Reservoir Site (including preconstruction surveys) should be conducted on the ridge tops along the perimeter of the site, as well as on some of the areas that were surveyed in 2006 (Dale Powell, pers. comm.). In addition, the most promising sites that were surveyed in 2006 (4-7, 9, 11, 19-22, and 26) should be surveyed throughout the survey season later in the afternoon because female QCB are known to fly from ridge tops and other elevated areas later in the day to lower areas where the larval food plants occur. Other areas might also be surveyed later in the

day as well, depending upon a preliminary habitat assessment that would be conducted at the beginning of the season.

Please contact us if you have further questions. Thank You.

Sincerely,

Dale Powell
Wildlife Biologist
Private Consultant

Michael W. Klein Sr.
Wildlife Biologist, Lepidopterist
Klein-Edwards Professional Services

Jun Powell
Wildlife Biologist
Private Consultant

Christina M. Schaefer
Senior Conservation Biologist, TAIC

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Legend

San Vicente Reservoir

Basemap Legend

Freeways

River

Lake/Reservoir/Lagoon

N

Miles

0 12

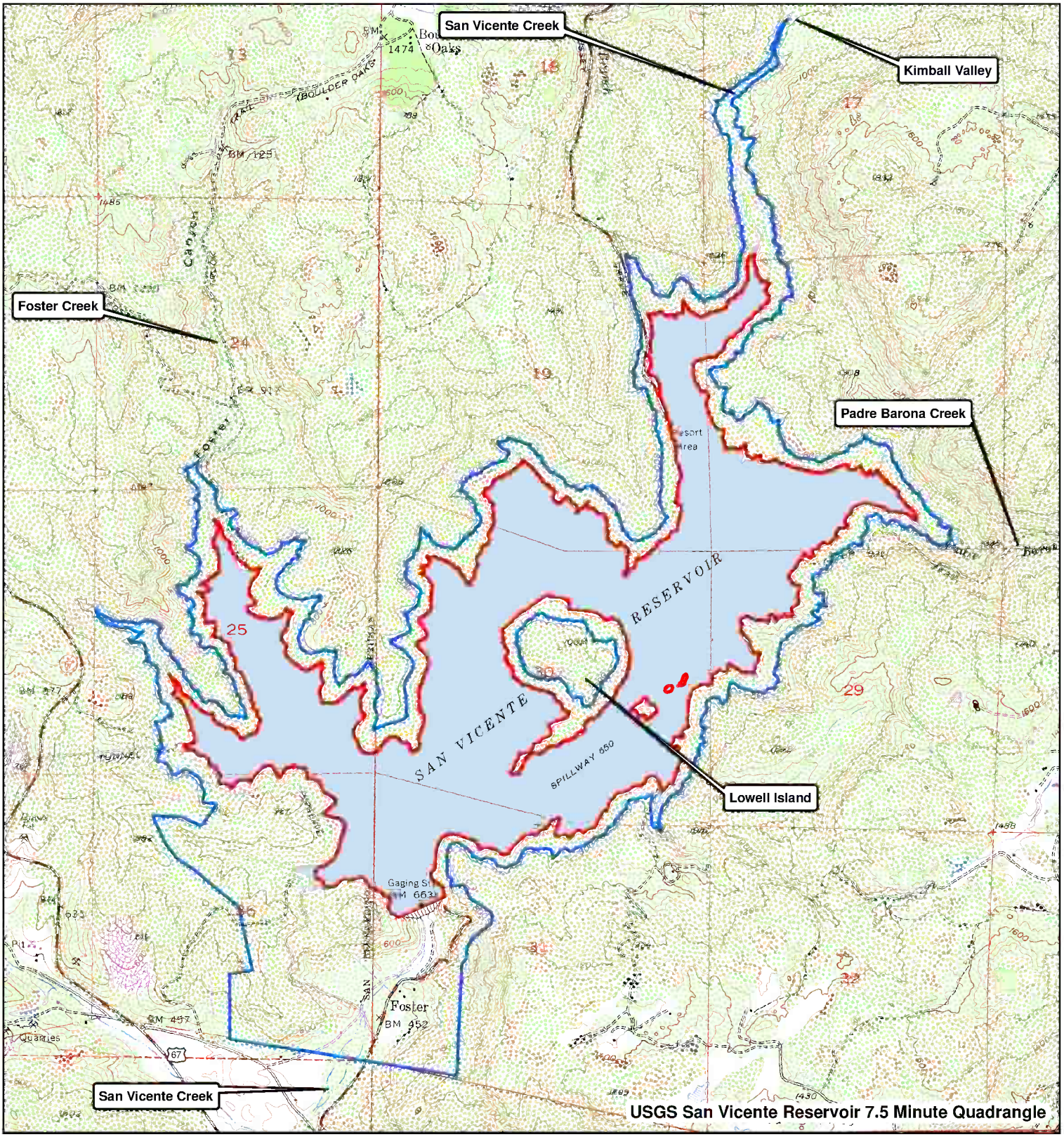
TAIC

Carryover Storage and San Vicente Dam Raise Project
Regional Location Map

Figure 1

gist\projects\sanvicente\plots\figures\regional.mxd

Date: Jun 22, 2006



Legend

650 Contour

766 Contour and Downstream Area

N

Feet

0 2,500

Note: The lake level as shown on the USGS quadrangle map is a cartographic representation and should not be considered a definitive water level, either historic or current.

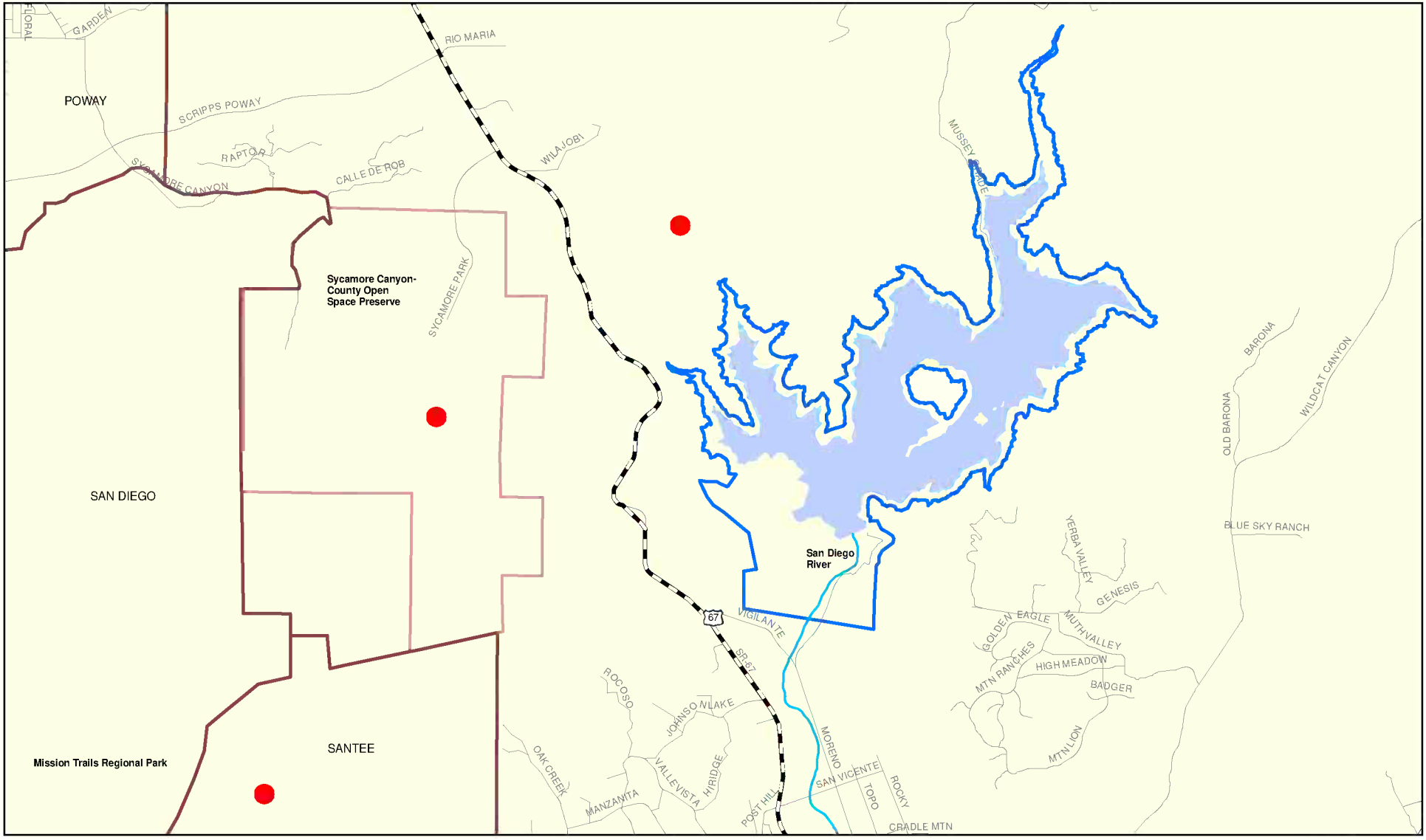
TAIC

Carryover Storage and San Vicente Dam Raise Project
Survey Area on USGS Topographic Quadrangle Map

Figure 2

gist\projects\sanvicente\plots\figures\Quino 10A\USGS.mxd

Date: Jun 23, 2006



Legend

- Historical Quino Checkerspot Butterfly Locations
- Project Boundary

Basemap Legend

- Existing San Vicente Reservoir
- Jurisdictional Boundary
- River
- Freeway
- Road

N

Feet

0 4,600

Source: USFWS 2001, 2005

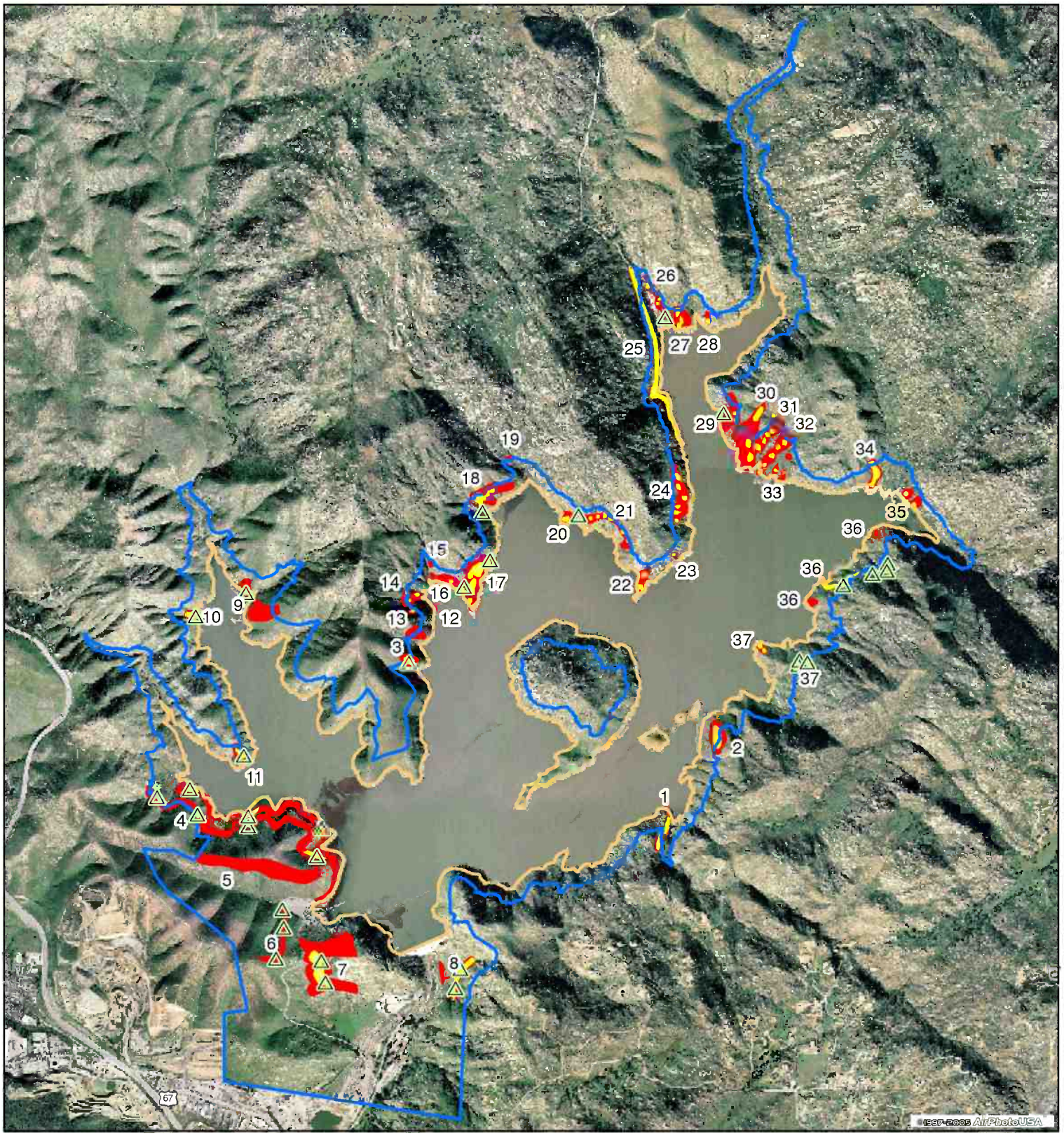
TAIC

Carryover Storage and San Vicente Dam Raise Project
Quino Checkerspot Butterfly Documented in Survey Area Vicinity

Figure 3

gist\projects\sanvicente\plots\figures\Quino 10A\Regional Quino Locations.mxd

Date: Jun 26, 2006



Legend

- Quino Suitable Habitat Areas (areas are numbered)
- Nectar Resources
- Host Plant Patches

Basemap Legend

- 650 Contour
- 766 Contour and Downstream Area

N

Feet

0 2,400

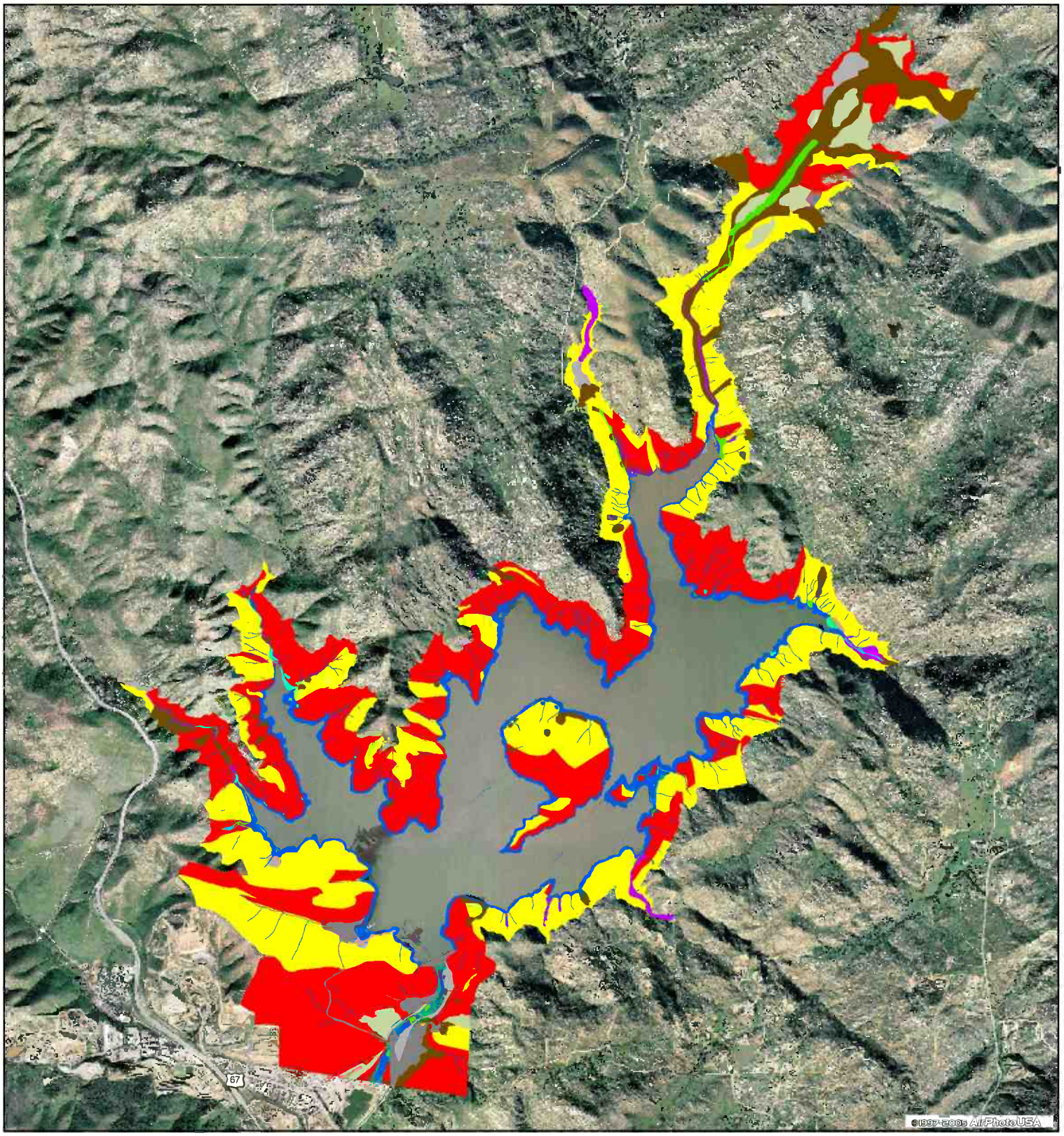
TAIC

Carryover Storage and San Vicente Dam Raise Project
Quino Checkerspot Butterfly Suitable Habitat, 2006 Surveys

Figure 4

gist\projects\sanvicente\plots\figures\Quino 10A\10A Quino Habitat 2006.mxd

Date: May 03, 2007



Legend

- Diegan Coastal Sage Scrub
- Chaparral
- Non-Native Grassland
- Coastal and Valley Freshwater Marsh
- Southern Willow Scrub
- Mule Fat Scrub
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-willow Riparian Forest
- Coast Live Oak Woodland
- Eucalyptus Woodland
- Non-Vegetated Channel/Floodway/Lakeshore Fringe
- Disturbed Habitat
- Urban/Developed

N

Feet

0 3,025

TAIC

Carryover Storage and San Vicente Dam Raise Project
Vegetation Communities

Figure 5

gist\projects\sanvicente\plots\figures\Quino 10A\10A Vegetation.mxd

Date: Jun 23, 2006

List of Blooming Plants Observed During the 2006 QCB Surveys at San Vicente Reservoir

		Survey Area (Map tile # followed by area #)											
2006		4, 25	4, 27	4, 29	6, 9	7, 16	7, 17	7, 18	7, 20	7, 23	7, 24	8, 19-22	8, 23
Anacardiaceae	*Rhus Ovata* (Sugar Bush)											x	
Asteraceae	*Anaphalis margaritacea* (Pearly Everlasting)											x	
Asteraceae	*Aster subulatus* (Annual Water-aster)		x										
Asteraceae	*Baccharis salicifolia* (Mule Fat)	x	x			x	x	x	x		x	x	
Asteraceae	*Brickellia californica* (California Brickellbush)											x	
Asteraceae	*Centaurea melitensis* (Tocalote)	x	x	x			x	x	x				
Asteraceae	*Chaenactis artemisiifolia* (White Pincushion)		x				x					x	
Asteraceae	*Chaenactis glabriuscula* (Yellow Pincushion)						x				x	x	
Asteraceae	*Chrysanthemum coconarium* (Garland Chrysanthemum)								x			x	x
Asteraceae	*Circium vulgare* (Bull Thistle)												
Asteraceae	*Dimorphotheca sinuate* (African Daisy)												
Asteraceae	*Encelia farinose* (Brittlebush)	x	x	x	x	x	x	x	x	x	x	x	x
Asteraceae	*Eriophyllum confertiflorum* (Golden Yarrow)	x	x	x	x	x	x	x	x	x	x	x	x
Asteracea	*Hemizonia fasciculate* (Fascicled Tarweed)												
Asteraceae	*Lasthenia californica* (Goldfields)	x	x	x	x	x	x	x	x	x	x	x	x
Asteraceae	*Latuca seriola* (Prickley Lettuce)											x	
Asteraceae	*Layia platyglossa* (Tidy-Tips)											x	
Asteraceae	*Lessingia filaginifolia* (California Aster)												
Asteraceae	*Picris echioides* (Bristly Ox-tongue)												
Asteraceae	*Sonchus asper* (Prickly Sow Thistle)											x	
Boraginaceae	*Amsinckia menziesii* (Rancher's Fireweed)												
Boraginaceae	*Cryptantha intermedia* (Cryptantha)	x	x	x	x	x	x	x	x	x	x	x	x
Boraginaceae	*Heliotropium curassavicum* (Salt Heliotrope)								x	x			
Brassicaceae	*Hirschfeldia incana* (Short-pod Mustard)	x		x	x	x	x	x	x	x	x	x	x
Brassicaceae	*Raphanus sativus* (Wild Radish)					x							
Brassicaceae	*Sisymbrium altissimum* (Tumble Mustard)											x	
Brassicaceae	*Sisymbrium irio* (London Rocket)												

List of Blooming Plants Observed During the 2006 QCB Surveys at San Vicente Reservoir

2006		Survey Area (Map tile # followed by area #)											
		4, 25	4, 27	4, 29	6, 9	7, 16	7, 17	7, 18	7, 20	7, 23	7, 24	8, 19-22	8, 23
Caprifoliaceae	*Sambucus mexicana* (Blue Elderberry)												
Caryophyllaceae	*Silene gallica* (Common Catchfly)		x		x				x			x	
Convolvulaceae	*Calystegia macrostegia* (Morning Glory)	x	x	x	x	x	x	x	x	x	x	x	x
Cucurbitaceae	*Marah macrocarpus* (Wild Cucumber)											x	
Euphorbiaceae	*Chamaesyce albomaginata* (Rattlesnake Weed)		x	x	x	x	x	x	x	x		x	
Fabaceae	*Lotus scoparius* (California Broom)	x	x	x	x	x	x		x	x	x	x	x
Fabaceae	*Lupinus bicolor.* (Miniature Lupine)						x		x	x			
Fabaceae	*Lupinus hirsutissimus* (Stinging Lupine)					x		x					
Fabaceae	*Lupinus truncatus* (Collar Lupine)					x		x		x			
Fabaceae	*Medicago polymorpha* (Burclover)											x	
Fabaceae	*Trifolium hirtum* (Rose Clover)		x							x		x	
Fabaceae	*Vicia ludoviciana* (Deer Pea Vetch)										x		
Geraniaceae	*Erodium cicutarium* (Red-stemmed filaree)							x	x			x	
Hydrophyllaceae	*Emmenanthe penduliflora* (Emmenanthe)												
Hydrophyllaceae	*Eriodictyon crassifolium* (Yerba Santa)												
Hydrophyllaceae	*Eucrypta chrysanthemifolia* (Eucrypta)											x	
Hydrophyllaceae	*Nemophilia menziesii* (Baby Blue-eyes)												
Hydrophyllaceae	*Phacelia cicutaria* var *hispida* (Caterpillar Phacelia)	x	x				x	x	x		x	x	
Hydrophyllaceae	Phacelia parryi *(*Parry's Phacelia*)*	x	x	x		x	x	x	x	x	x	x	
Iridaceae	*Sisyrinchium bellum* (Blue Eyed Grass)												
Lamiaceae	*Salvia columbariae* (Chia)	x				x		x	x		x	x	x
Lamiaceae	*Salvia mellifera* (Black Sage)	x						x					
Liliaceae	*Allium sp.* (Onion)											x	
Liliaceae	*Dichelostemma* sp. (Dichelostemma)		x	x	x	x	x	x	x	x	x	x	
Malvaceae	*Sphaeralcea* sp. (Globemallow)	x	x			x	x	x	x	x		x	
Nyctaginaceae	*Mirabilis laevis* var. *crassifolia* (Coastal Wishbone Plant)		x		x	x	x	x		x		x	x

List of Blooming Plants Observed During the 2006 QCB Surveys at San Vicente Reservoir

		Survey Area (Map tile # followed by area #)											
2006		4, 25	4, 27	4, 29	6, 9	7, 16	7, 17	7, 18	7, 20	7, 23	7, 24	8, 19-22	8, 23
Onagraceae	*Camissonia* sp. (Sun Cup)											x	
Onagraceae	*Clarkia* sp. (Clarkia)												
Papaveraceae	*Dicentra chrysantha* (Golden Eardrops)	x										x	
Papaveraceae	*Eschscholzia californica* (California Poppy)			x				x	x	x		x	
Polemoniaceae	*Linanthus dianthiflorus* (Ground Pink)												
Polygonaceae	*Chorizanthe fimbriata* (Fringed Spine Flower)												
Polygonaceae	*Erigonum fasiculatum* (California Buckwheat)						x					x	
Portulacaceae	*Calandrinia iliate* (Red Maids)												
Primulaceae	*Anagallis arvensis* (Scarlet Pimpernel)				x								
Ranunculaceae	*Delphinium parryi* (Parry's Larkspur)												
Rhamnaceae	*Ceanothus leucodermis* (Whitebark Wild-liliac)												
Rosaceae	*Adenostoma fasciculatum* (Chamise)					x		x					x
Rubiaceae	*Galium* (Bedstraw)												
Salicaceae	*Salix sp.* (Willow)					x				x			
Scrophulariaceae	*Collinsia heterophylla* (Chinese Houses)												
Scrophulariaceae	*Keckiella antirrhinoides* (Keckiella)						x						
Scrophulariaceae	*Mimulus auranticus* (Coast Monkeyflower)	x			x							x	x
Scrophulariaceae	*Mimulus brevipes* (Slope Semaphore)				x							x	
Scrophulariaceae	*Pedicularis* sp. (Lousewort)											x	
Scrophulariaceae	*Penstemon spectabilis* (Penstemon)											x	
Scrophulariaceae	*Solanum xanti* (Nightshade)												
Scrophulariaceae	*Scrophularia californica* (California Figwort)	x	x	x			x	x	x			x	
Solanaceae	*Datura wrightii* (Jimnson Weed)	x				x			x				x
Solanaceae	*Nicotiana glauca* (Tree Tobacco)	x						x					
Solanaceae	*Solanum douglasii* (Douglas' Nightshade)		x					x				x	x

List of Blooming Plants Observed During the 2006 QCB Surveys at San Vicente Reservoir

2006		Survey Area (Map tile # followed by area #)											
		8, 24	8, 25	9, 9	9, 10	9, 11	11, 26	12, 4	12, 5	12, 6	12, 7	13, 1	15, 8
Anacardiaceae	*Rhus Ovata* (Sugar Bush)						x	x					
Asteraceae	*Anaphalis margaritacea* (Pearly Everlasting)						x	x	x				
Asteraceae	*Aster subulatus* (Annual Water-aster)							x			x		x
Asteraceae	*Baccharis salicifolia* (Mule Fat)		x			x	x	x	x		x	x	x
Asteraceae	*Brickellia californica* (California Brickellbush)							x					
Asteraceae	*Centaurea melitensis* (Tocalote)		x			x	x	x		x			x
Asteraceae	*Chaenactis artemisiifolia* (White Pincushion)			x			x	x					
Asteraceae	*Chaenactis glabriuscula* (Yellow Pincushion)			x				x					
Asteraceae	*Chamomilla suaveolens* (Pineapple Weed)							x	x				
Asteraceae	*Chrysanthemum coconarium* (Garland Chrysanthemum)			x				x			x	x	
Asteraceae	*Circium vulgare* (Bull Thistle)		x				x	x				x	
Asteraceae	*Dimorphotheca sinuate* (African Daisy)							x					
Asteraceae	*Encelia farinose* (Brittlebush)	x	x	x	x	x	x	x	x	x	x	x	x
Asteraceae	*Eriophyllum confertiflorum* (Golden Yarrow)	x	x	x	x	x	x	x	x	x	x	x	x
Asteracea	*Hemizonia fasciculate* (Fascicled Tarweed)							x					x
Asteraceae	*Lasthenia californica* (Goldfields)	x	x	x	x	x	x	x	x	x	x	x	x
Asteraceae	*Latuca seriola* (Prickley Lettuce)							x					
Asteraceae	*Layia platyglossa* (Tidy-Tips)			x	x		x	x		x			
Asteraceae	*Lessingia filaginifolia* (California Aster)							x					
Asteraceae	*Picris echioides* (Bristly Ox-tongue)							x					
Asteraceae	*Sonchus asper* (Prickly Sow Thistle)		x			x		x					
Boraginaceae	*Amsinckia menziesii* (Rancher's Fireweed)							x	x				
Boraginaceae	*Cryptantha intermedia* (Cryptantha)	x	x	x	x	x	x	x	x	x	x	x	x
Boraginaceae	*Heliotropium curassavicum* (Salt Heliotrope)		x		x								
Brassicaceae	*Hirschfeldia incana* (Short-pod Mustard)	x	x	x	x	x	x	x	x	x	x	x	x
Brassicaceae	*Raphanus sativus* (Wild Radish)						x						
Brassicaceae	*Sisymbrium altissimum* (Tumble Mustard)												
Brassicaceae	*Sisymbrium irio* (London Rocket)				x			x					

List of Blooming Plants Observed During the 2006 QCB Surveys at San Vicente Reservoir

2006		Survey Area (Map tile # followed by area #)											
		8, 24	8, 25	9, 9	9, 10	9, 11	11, 26	12, 4	12, 5	12, 6	12, 7	13, 1	15, 8
Caprifoliaceae	*Sambucus mexicana* (Blue Elderberry)							x					
Caryophyllaceae	*Silene gallica* (Common Catchfly)			x				x	x		x		x
Convolvulaceae	*Calystegia macrostegia* (Morning Glory)	x	x	x	x	x	x	x	x	x	x	x	x
Cucurbitaceae	*Marah macrocarpus* (Wild Cucumber)					x	x	x		x			
Euphorbiaceae	*Chamaesyce albomaginata* (Rattlesnake Weed)	x				x				x	x		x
Fabaceae	*Lotus scoparius* (California Broom)	x	x		x	x	x	x	x	x	x	x	x
Fabaceae	*Lupinus bicolor.* (Miniature Lupine)			x									
Fabaceae	*Lupinus hirsutissimus* (Stinging Lupine)												
Fabaceae	*Lupinus truncatus* (Collar Lupine)							x					
Fabaceae	*Medicago polymorpha* (Burclover)							x					
Fabaceae	*Trifolium hirtum* (Rose Clover)	x		x		x	x	x			x		
Fabaceae	*Vicia ludoviciana* (Deer Pea Vetch)				x								
Geraniaceae	*Erodium cicutarium* (Red-stemmed filaree)	x	x		x	x	x	x	x	x		x	x
Hydrophyllaceae	*Emmenanthe penduliflora* (Emmenanthe)							x					
Hydrophyllaceae	*Eriodictyon crassifolium* (Yerba Santa)						x	x					
Hydrophyllaceae	*Eucrypta chrysanthemifolia* (Eucrypta)						x	x					
Hydrophyllaceae	*Nemophilia menziesii* (Baby Blue-eyes)							x					
Hydrophyllaceae	*Phacelia cicutaria* var. *hispida* (Caterpillar Phacelia)		x		x	x	x	x	x	x	x	x	x
Hydrophyllaceae	Phacelia parryi *(*Parry's Phacelia*)*	x	x		x	x		x		x			x
Iridaceae	*Sisyrinchium bellum* (Blue Eyed Grass)			x									
Lamiaceae	*Salvia columbariae* (Chia)	x	x			x	x		x		x	x	x
Lamiaceae	*Salvia mellifera* (Black Sage)							x	x	x			
Liliaceae	*Allium sp.* (Onion)							x					
Liliaceae	*Dichelostemma* sp. (Dichelostemma)	x	x	x	x	x	x	x	x	x		x	x
Malvaceae	*Sphaeralcea* sp. (Globemallow)	x	x	x	x	x	x	x	x	x	x		
Nyctaginaceae	*Mirabilis laevs* var. *crassifolia* (Coastal Wishbone Plant)	x	x		x	x	x			x	x	x	x

List of Blooming Plants Observed During the 2006 QCB Surveys at San Vicente Reservoir

2006		Survey Area (Map tile # followed by area #)											
		8, 24	8, 25	9, 9	9, 10	9, 11	11, 26	12, 4	12, 5	12, 6	12, 7	13, 1	15, 8
Onagraceae	*Camissonia* sp. (Sun Cup)							x					
Onagraceae	*Clarkia* sp. (Clarkia)							x					
Papaveraceae	*Dicentra chrysantha* (Golden Eardrops)	x	x					x	x			x	
Papaveraceae	*Eschscholzia californica* (California Poppy)	x	x			x				x	x		x
Polemoniaceae	*Linanthus dianthiflorus* (Ground Pink)					x				x			
Polygonaceae	*Chorizanthe fimbriata* (Fringed Spine Flower)							x			x		
Polygonaceae	*Erigonum fasiculatum* (California Buckwheat)							x	x				x
Portulacaceae	*Calandrinia ciliata* (Red Maids)		x	x		x		x	x	x			
Primulaceae	*Anagallis arvensis* (Scarlet Pimpernel)		x				x	x					
Ranunculaceae	*Delphinium parryi* (Parry's Larkspur)		x					x					
Rhamnaceae	*Ceanothus leucodermis* (Whitebark Wild-lilac)		x				x	x	x	x			
Rosaceae	*Adenostoma fasciculatum* (Chamise)	x	x				x	x	x	x			
Rubiaceae	*Galium* (Bedstraw)							x					
Salicaceae	*Salix sp.* (Willow)	x	x							x			
Scrophulariaceae	*Collinsia heterophylla* (Chinese Houses)							x					
Scrophulariaceae	*Keckiella antirrhinoides* (Keckiella)		x				x						
Scrophulariaceae	*Mimulus auranticus* (Coast Monkeyflower)		x	x	x		x	x			x	x	x
Scrophulariaceae	*Mimulus brevipes* (Slope Semaphore)			x			x	x	x			x	x
Scrophulariaceae	*Pedicularis* sp. (Lousewort)												
Scrophulariaceae	*Penstemon spectabilis* (Penstemon)						x	x					
Scrophulariaceae	*Solanum xanti* (Nightshade)												
Scrophulariaceae	*Scrophularia californica* (California Figwort)		x				x					x	
Solanaceae	*Datura wrightii* (Jimnson Weed)	x	x					x					
Solanaceae	*Nicotiana glauca* (Tree Tobacco)							x				x	
Solanaceae	*Solanum douglasii* (Douglas' Nightshade)	x							x	x		x	

TAIC
Technology Associates International Corporation

July 13, 2006

Daniel Marquez
Recovery Permit Coordinator
Carlsbad Field Office
U.S. Fish and Wildlife Service
6010 Hidden Valley Road
Carlsbad, CA 92011

Regarding: Results of focused California gnatcatcher surveys for the Carryover Storage and San Vicente Dam Raise Project, San Diego County, California.

Dear Mr. Marquez,

This letter report summarizes the results of focused California gnatcatcher (*Polioptila californica californica*) surveys conducted on behalf of the San Diego County Water Authority for the Carryover Storage and San Vicente Dam Raise Project (CSP). These surveys were performed pursuant to U.S. Fish and Wildlife Service (USFWS) Coastal California Gnatcatcher Presence/Absence Survey Guidelines, Revised July 28, 1997. Three surveys were performed in each of eight survey areas between May 2nd and June 21st, 2006.

Study Area

The San Vicente Reservoir is located just north of the community of Lakeside in San Diego County, California (Figure 1). The site is within the USGS 7.5' San Vicente Reservoir Quadrangle, Sections 13, 14, 25, and 36 Township 14 South, Range 1 West and 16 – 20, 23, 24, and 29 - 31 Township 14 South, Range 1 East (Figure 2).

The area is characterized by steep, boulder-strewn slopes with extensive rock outcrops, surrounding a large body of open water. The reservoir is filled with natural runoff that enters from San Vicente and West Branch Creeks in the north, Foster Creek in the northwest, and Padre Barona Creek in the east. Additionally, a substantial quantity of water enters through the aqueduct which is located in the westernmost portion of the reservoir. Lowell Island is a prominent feature in the center of the reservoir, and a small peninsula to the south occurs as smaller islands at higher water levels. Elevations within the study area range from approximately 650 feet above mean sea level (AMSL) at water level to approximately 1,000 ft.

The study area includes the perimeter of the reservoir from the Ordinary High Water Mark (OHWM) up to the proposed CSP elevated spillway crest at the 766 feet AMSL contour (Figure 2), minus the footprint of the already permitted San Vicente Dam Raise component of the Water Authority's Emergency Storage Project (ESP). The OHWM was defined by the Army Corps of Engineers (Corps) as the current dam spillway crest at the 650 feet AMSL contour. In addition to the area around the reservoir, the study area includes space for staging, construction, and two potential quarry sites south of the existing dam (Figure 3). The survey area for the focused gnatcatcher surveys slightly differs from the study area for reasons explained in the methods section of this report.

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(858) 300-2346; (858) 300-2353 fax

Project Description

Carryover storage is needed to increase water storage reliability for the region, and to allow the Water Authority to better manage its existing supply sources consistent with the highest standards of efficient water management. The proposed activity would raise the San Vicente Dam an additional 65 feet beyond the ESP dam raise, increasing the capacity of the San Vicente Reservoir by an additional 100,000 acre-feet and raising the overall dam height by up to 117 feet (or total dam height of up to 337 feet). In addition to enlarging San Vicente Dam, the proposed activity would increase the reservoir capacity and elevation, which would require the construction of two saddle dams to the west of the main dam, relocation of the San Vicente Marina, and relocation of the marina access road. The proposed activity also includes construction of a new inlet/outlet facility and installation of a bypass pipeline extending from the easterly saddle dam to the First Aqueduct Diversion Structure north of the proposed marina. In addition, two potential on-site quarries are being evaluated for the extraction and processing of aggregate that will be needed during construction.

Methods

Gnatcatcher surveys for this project were conducted within the larger CSP study area, which included the CSP study area as described above, plus the ESP footprint. The ESP footprint constitutes previously permitted pieces and slices of the San Vicente Dam Raise component of the ESP footprint, the boundaries of which would be very difficult to identify in the landscape. Therefore, the ESP footprint was included in the gnatcatcher surveys for the CSP. Potential gnatcatcher habitat was identified during previous habitat surveys conducted for this project in the spring of 2005. This habitat was compared with potential and occupied gnatcatcher habitat from the previously permitted ESP project. In addition, an aerial photograph of the study area was overlaid with a vegetation communities GIS layer to determine areas of preferred gnatcatcher habitat (coastal sage scrub) within the larger project footprint boundary. Areas containing potential gnatcatcher habitat were then buffered by 500 feet and included in the survey area in order to detect individuals that might use adjacent habitat. Because the total survey area was so large (approximately 655 acres) it was divided into eight smaller areas, each of which could be surveyed in one day (Figure 3).

The San Vicente Reservoir and surrounding lands are owned and operated by the City of San Diego, and are governed by the City's Multiple Species Conservation Program (MSCP) Subarea Plan. Although the Water Authority has not signed onto the City's MSCP, they are currently finalizing their own Natural Communities Conservation Program (NCCP). Participation in NCCPs determines the number of surveys required to assess presence/absence of the California gnatcatcher and recommends three survey visits per survey area. Therefore, a total of three surveys were conducted for each of the eight individual survey areas.

The surveys were conducted by three permitted biologists, including Robin Church (Permit No.TE-812206-3), John Konecny (Permit No. TE-837308-3), and Erik LaCoste (Permit No. TE-027736-3). Pursuant to the USFWS survey protocol, surveys were conducted during the gnatcatcher breeding season (February 15 – August 30). The three surveys for each area were spaced at least one week apart to determine presence/absence of the coastal California gnatcatcher. Surveys were conducted between May 2 and June 21, 2006 from 6:00 a.m. to 12:00 p.m. An average of 81.7 acres per day was surveyed for the California

gnatcatcher in the CSP study area. Temperature and weather conditions (wind, cloud cover, and precipitation) were recorded at the start of each survey. Periods of excessive or abnormal heat, wind, rain, fog, or other inclement weather were avoided while surveys were conducted.

Areas surrounding the reservoir were accessed by boat. Each gnatcatcher habitat area was surveyed on foot, and all incidental observations of plant and wildlife species were recorded. A tape of the gnatcatcher song was played at regular intervals throughout each survey area to increase the chances of locating gnatcatchers. Considerable time was spent by each surveyor in areas where habitat seemed most suitable for gnatcatchers.

Prior to conducting the focused surveys, sensitive species databases were searched to document gnatcatcher presence in the study area prior to the 2006 survey season, and to confirm that surveys would be conducted in areas that were previously (prior to the 2003 Cedar Fire) occupied by California gnatcatchers. Data sources included the results of ESP focused species surveys (which included the gnatcatcher), USFWS, CDFG, CNDDB, and San Diego Natural History Museum Bird Atlas Project.

Results

Each survey visit took place during calm weather conditions, with minimal wind and no precipitation. Temperatures ranged from a minimum of 56 to a maximum of 88 degrees Fahrenheit with cloud cover varying from zero percent to 100 percent cover. Weather conditions were suitable for California gnatcatcher protocol surveys. Survey date, time, permitted surveyor, and weather conditions are given in Table 1. The calculated average number of acres surveyed per day during the 2006 survey season was 81.7 acres. However, because some portions of each survey area were inaccessible due to steep slopes, the actual acreage surveyed per day was lower (less than 80 acres/day per USFWS survey protocol).

No gnatcatchers were observed in the survey area during the entire survey period. The lack of gnatcatchers in the survey area may be attributed to the highly intense 2003 Cedar Fire, which burned 98% of the San Vicente Reservoir. This wildfire impacted the coastal sage scrub plant community and all associated wildlife, including the California gnatcatcher. The survey area supported a number of populations of the gnatcatcher prior to the 2003 Cedar wild fire (Figure 5). At that time, the majority of the study area was covered with mature dense chaparral and coastal sage scrub and smaller areas of oak woodland, riparian forest, and riparian scrub. The habitat at San Vicente Reservoir has been in a state of recovery for approximately 2.5 years. Because the fire burned much of the coastal sage scrub plant community and the habitat has not yet fully recovered, there is currently a lack of suitable habitat available for the California gnatcatcher. Only one small patch of habitat that was not burned in the fire is located northwest of the marina. It is assumed that much of the habitat will eventually recover through post-fire succession and become suitable again for occupancy by the California gnatcatcher.

Please contact us if you have further questions.

Sincerely,

John Konecny
Independent Consultant

Erik LaCoste
Independent Consultant

Robin Church
Independent Consultant

Christina Schaefer
Senior Conservation Biologist, TAIC

Table 1. Summary of 2006 California Gnatcatcher Surveys Conducted at San Vicente Reservoir

Survey Area 1						
Survey Number	**Permittee (Surveyor)**	**Date**	**Time**	**Temp. (°F)**	**Wind (mph)**	**Sky (% Cover)**
1	Erik LaCoste	5/31/2006	Start 0600	59	0-1	0
			End 1200	81	2-3	0
2	Erik LaCoste	6/7/2006	Start 0600	68	1-3	100
			End 1100	73	0-1	100
3	Erik LaCoste	6/14/2006	Start 0600	58	1-3	0
			End 1030	78	2-4	0
Survey Area 2						
Survey Number	**Permittee (Surveyor)**	**Date**	**Time**	**Temp. (°F)**	**Wind (mph)**	**Sky (% Cover)**
1	John Konecny	5/2/2006	Start 0550	57	1-3	100
			End 1155	68		
2	John Konecny	5/9/2006	Start 0550	58	1-3	100
			End 1210			
3	John Konecny	5/23/2006	Start 0545	56	4-7	0
			End 1140			
Survey Area 3						
Survey Number	**Permittee (Surveyor)**	**Date**	**Time**	**Temp. (°F)**	**Wind (mph)**	**Sky (% Cover)**
1	Erik LaCoste	6/1/2006	Start 0600	58	0-1	20
			End 1115	81	2-3	0
2	Erik LaCoste	6/8/2006	Start 0545	65	0-1	100
			End 1100	72	1-3	100
3	Erik LaCoste	6/15/2006	Start 0640	67	0-1	100
			End 1130	76	3-6	0
Survey Area 4						
Survey Number	**Permittee (Surveyor)**	**Date**	**Time**	**Temp. (°F)**	**Wind (mph)**	**Sky (% Cover)**
1	Erik LaCoste	6/4/2006	Start 0550	60	0-1	0
			End 1050	84	3-6	0
2	Erik LaCoste	6/11/2006	Start 0545	66	0-1	100
			End 1040	69	2-4	0
3	Erik LaCoste	6/18/2006	Start 0550	68	0-1	100
			End 1025	73	2-5	0

Table 1. Summary of 2006 California Gnatcatcher Surveys Conducted at San Vicente Reservoir, *continued*

Survey Area 5						
Survey Number	**Permittee (Surveyor)**	**Date**	**Time**	**Temp. (°F)**	**Wind (mph)**	**Sky (% Cover)**
1	Robin Church	5/5/2006	Start 0730	62	0-2	100
			End 1140	66		
2	Robin Church	5/13/2006	Start 0700	63.8	0-3	100
			End 1030	74.4		0
3	Robin Church	5/25/2006	Start 0745	62.7	0-3	100
			End 1205	88		0
Survey Area 6						
Survey Number	**Permittee (Surveyor)**	**Date**	**Time**	**Temp. (°F)**	**Wind (mph)**	**Sky (% Cover)**
1	Robin Church	5/4/2006	Start 0815	64.5	0-3	100
			End 1200	68		90
2	Robin Church	5/12/2006	Start 0705	62.7	0-3	100
			End 1030	78.2		
3	Robin Church	5/23/2006	Start 0705	56	3-5	0
			End 1105	80		
Survey Area 7						
Survey Number	**Permittee (Surveyor)**	**Date**	**Time**	**Temp. (°F)**	**Wind (mph)**	**Sky (% Cover)**
1	Erik LaCoste	6/3/2006	Start 0545	68	2-5	0
			End 0945	82	1-3	0
2	Erik LaCoste	6/10/2006	Start 0630	62	0-1	100
			End 1030	68	2-4	0
3	Erik LaCoste	6/17/2006	Start 0600	65	1-2	100
			End 1030	76	1-2	0
Survey Area 8						
Survey Number	**Permittee (Surveyor)**	**Date**	**Time**	**Temp. (°F)**	**Wind (mph)**	**Sky (% Cover)**
1	Erik LaCoste	6/5/2006	Start 0550	66	0-1	100
			End 1045	75	1-3	80
2	Erik LaCoste	6/12/2006	Start 0600	64	1-2	100
			End 1050	70	1-3	0
3	Erik LaCoste	6/21/2006	Start 0600	63	3-5	100
			End 1030	80	2-4	0

Legend

San Vicente Reservoir

Basemap Legend

Freeways

River

Lake/Reservoir/Lagoon

N

Miles

0 12

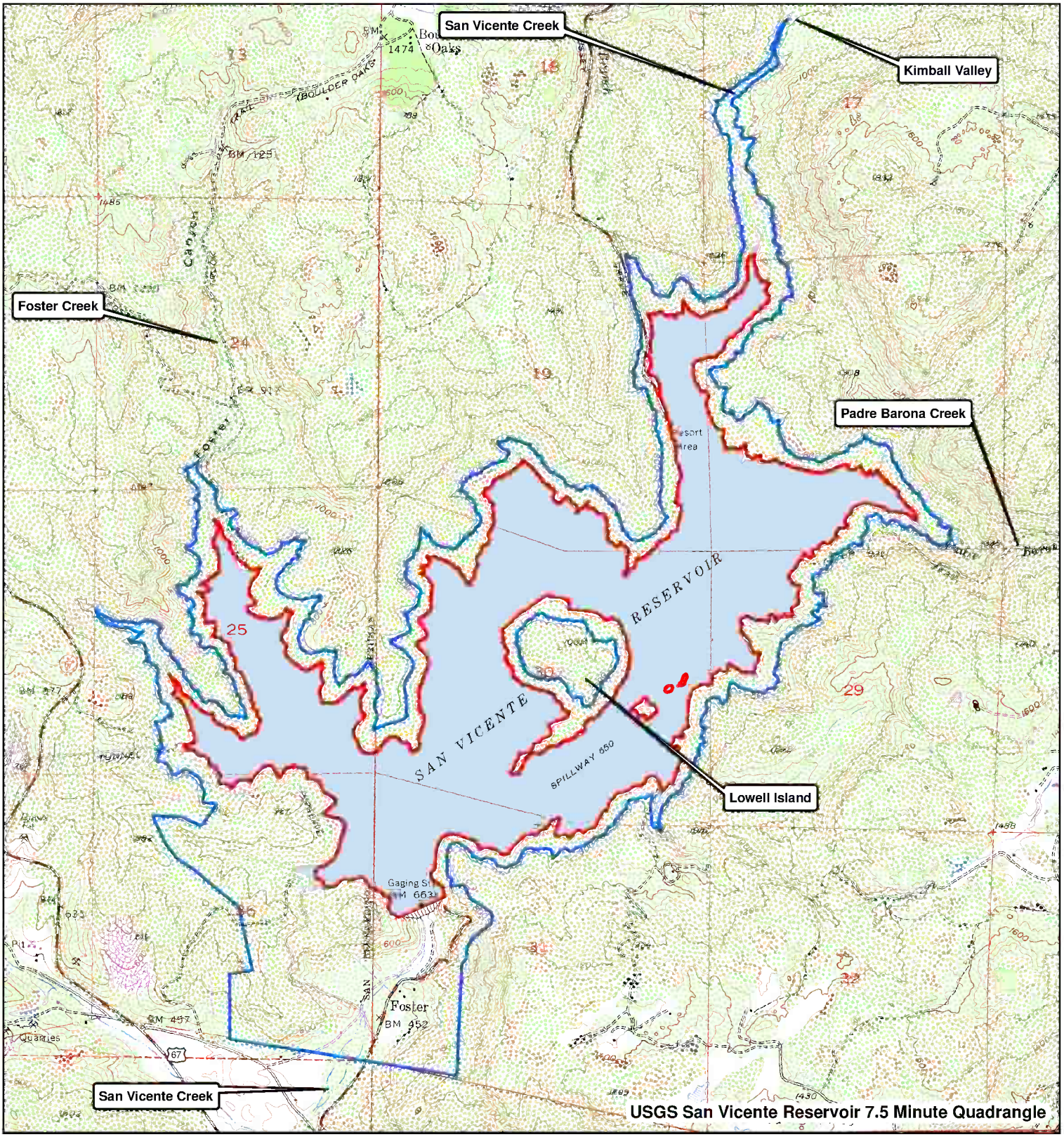
TAIC

Carryover Storage and San Vicente Dam Raise Project
Regional Location Map

Figure 1

gist\projects\sanvicente\plots\figures\regional.mxd

Date: Jun 22, 2006



Legend

650 Contour

766 Contour and Downstream Construction Area

N

Feet

0 2,500

Note: The lake level as shown on the USGS quadrangle map is a cartographic representation and should not be considered a definitive water level, either historic or current.

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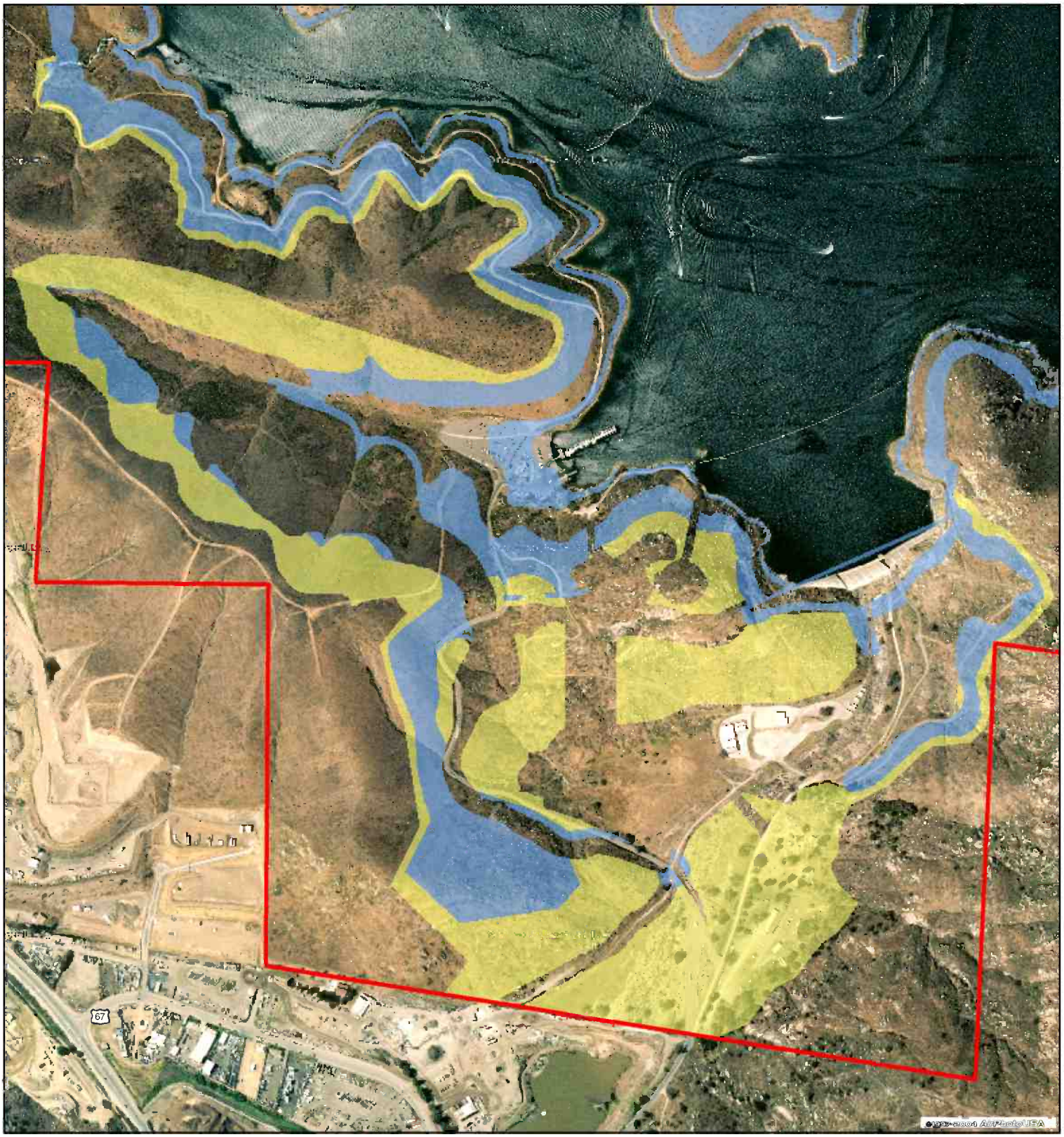
Carryover Storage and San Vicente Dam Raise Project
Study Area on USGS Topographic Quadrangle Map

Figure 2

gist\projects\sanvicente\plots\figures\BTR\USGS.mxd

Date: Jun 29, 2006



Legend

- Permanent
- Temporary
- City Property Boundary

N

Feet

0 800

The previously permitted ESP and San Vicente Pipeline footprints are not shown on this map to avoid confusion, however, the acreages have been subtracted in the wetland impact tables. The wetland impact tables for the CSP project do not include previously permitted impacts.

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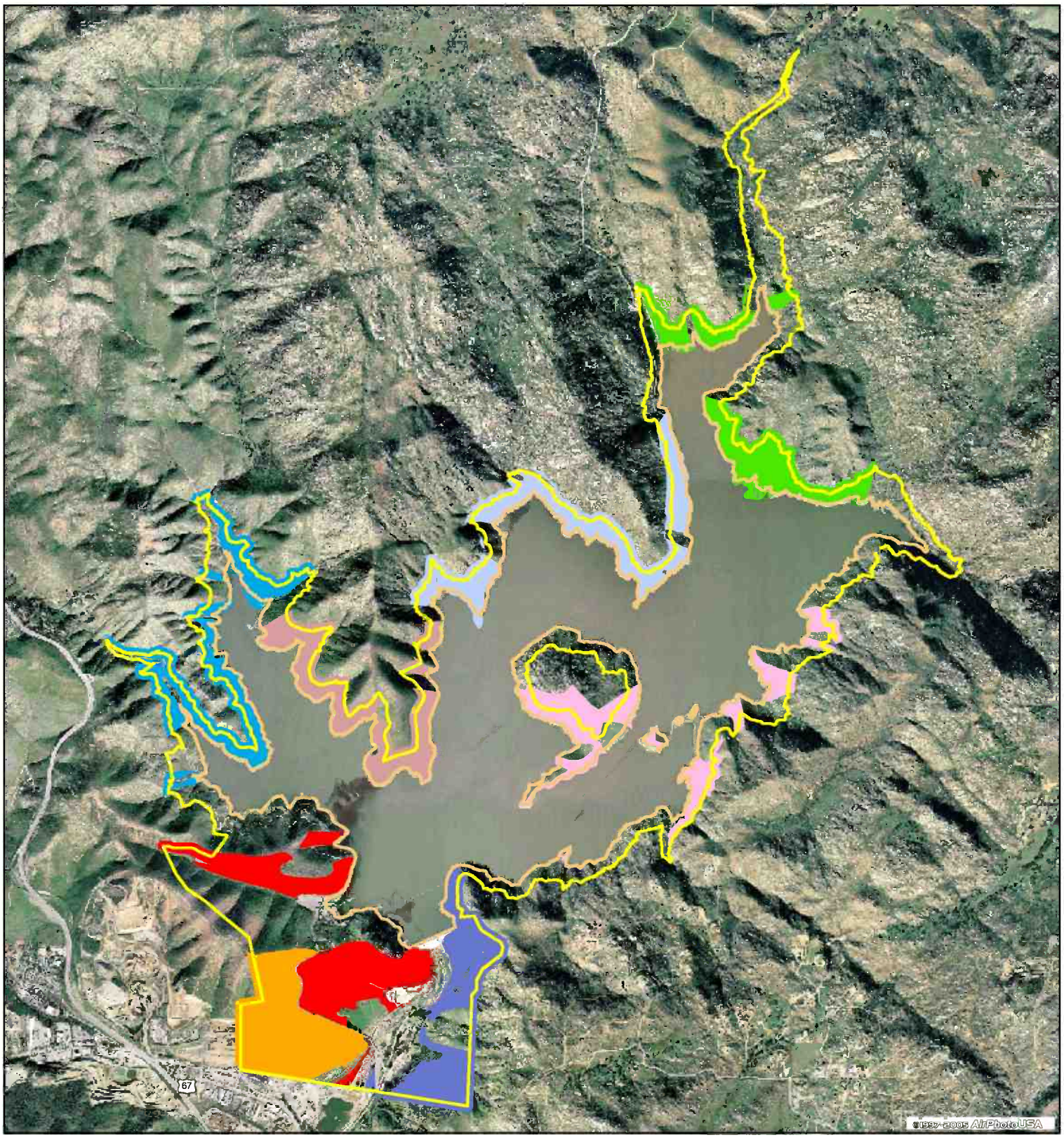
Carryover Storage and San Vicente Dam Raise Project
Survey Area South of the Dam

Figure 3

gist\projects\sanvicente\plots\figures\quarry_alt1.mxd

Date: Feb 13, 2006



Legend

- Survey Area 1
- Survey Area 2
- Survey Area 3
- Survey Area 4
- Survey Area 5
- Survey Area 6
- Survey Area 7
- Survey Area 8

Basemap Legend

- 766 Contour and Downstream Area
- 650 Contour

N

Feet

0 2,500

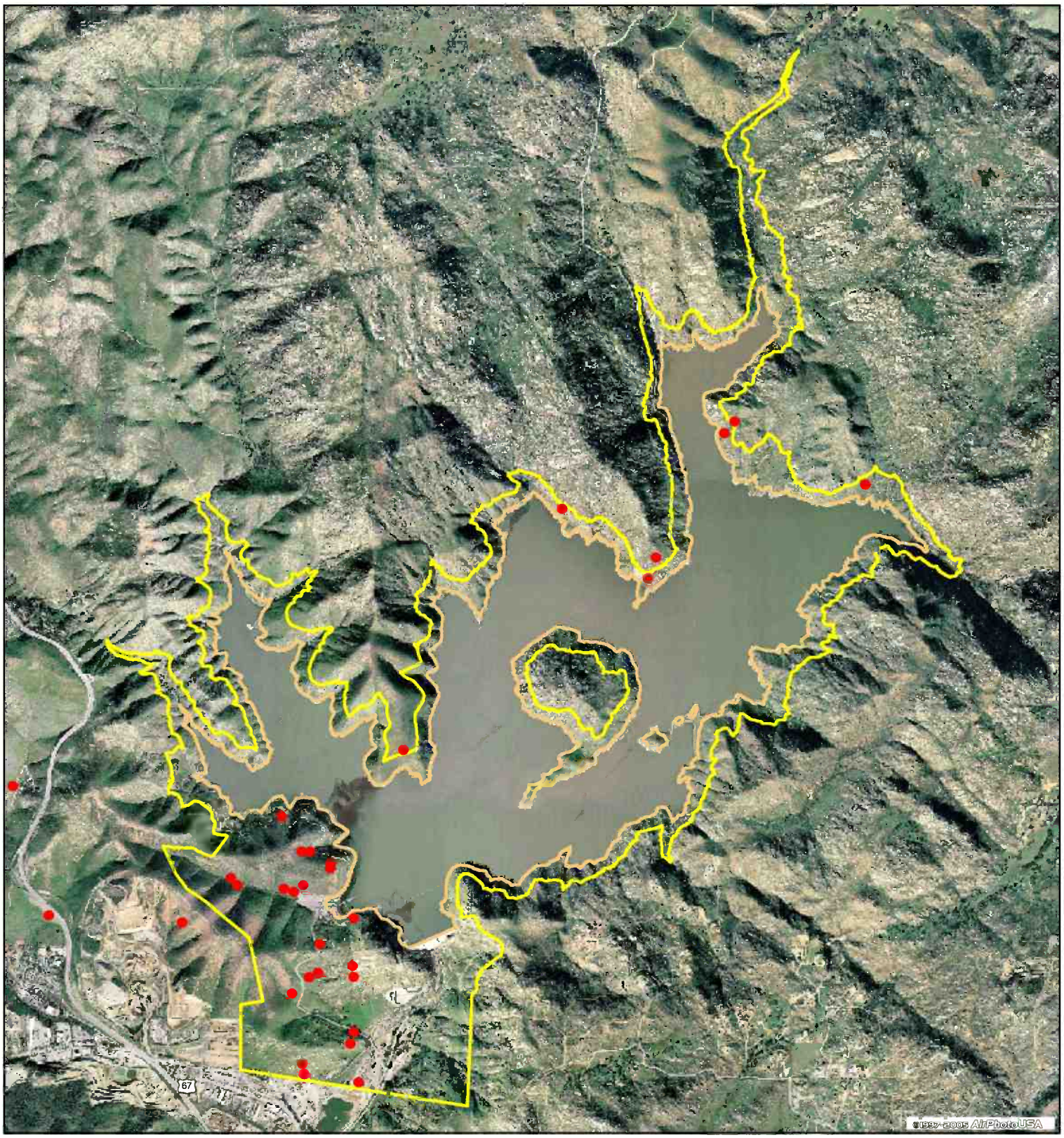
TAIC

Carryover Storage and San Vicente Dam Raise Project
California Gnatcatcher Survey Areas

Figure 4

gist\projects\sanvicente\plots\figures\Gnatcatcher\Survey Areas.mxd

Date: Jul 11, 2006



Legend

- California gnatcatcher

Basemap Legend

- 766 Contour and Downstream Area
- 650 Contour

N

Feet

0 2,500

TAIC

Carryover Storage and San Vicente Dam Raise Project
California Gnatcatcher Previously Documented from the Study Area

Figure 5

gist\projects\sanvicente\plots\figures\Gnatcatcher\Historic Locations.mxd

Date: Jul 11, 2006

APPENDIX B

Plant and Wildlife Inventories

Inventory of Plants Known or Expected to Occur in the Carryover Storage and San Vicente Dam Raise Project

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
PLANT-LIKE ALGAE					
CHARACEAE					
Chara sp.	Muskwort	--/--	No	X	
Nitella sp.	Brittlewort	--/--	No	X	
FERNS AND FERN ALLIES					
DRYOPTERIDACEAE – Wood Fern Family					
Dryopteris arguta[3]	Coastal Woodfern	--/--	No	X	
EQUISETAQCEAE – Horsetail Family					
Equisetum telmateia ssp. *braunii*	Giant Horsetail	--/--	No	X	
POLYPODIACEAE – Polypody Family					
Polypodium californicum	California polypody	--/--	No	X	
PTERIDACEAE - Brake Family					
Adiantum jordanii	California Maidenhair	--/--	No	X	
Aspidotis californica[3]	California Lace Fern	--/--	No	X	
Cheilanthes newberryi	California Cotton Fern	--/--	No	X	
Pellaea andromedifolia	Coffee Fern	--/--	No	X	
Pellaea mucronata var. *mucronata*	Bird's-foot Fern	--/--	No	X	
Pentagramma triangularis	Silverback Fern	--/--	No	X	
SELAGINELLACEAE - Spike-Moss Family					
Selaginella bigelovii	Bigelow's Spike-moss	--/--	No	X	
Selaginella cinerascens	Ashy Spike-moss	--/--	No	X	
DICOTS					
AMARANTHACEAE – Amaranth Family					
**Amaranthus albus*	White Tumbleweed	--/--	No	X	
ANACARDIACEAE - Sumac Family					
Malosma laurina	Laurel Sumac	--/--	No	X	
Rhus ovata	Sugarbush	--/--	No	X	
Rhus trilobata[3]	Basketbush	--/--	No	X	
**Schinus molle*	Peruvian Peppertree	--/--	No	X	
Toxicodendron diversilobum	Poison Oak	--/--	No	X	X
APIACEAE - Carrot Family					
Apiastrum angustifolium[3]	Mock Parsley	--/--	No	X	
Apium graveolens[3]	Common Celery	--/--	No	X	
Conium maculatum	Common Poison Hemlock	--/--	No		X
Daucus carota	Queen Anne's Lace	--/--	No	X	
Daucus pusillus	Rattlesnake Weed	--/--	No	X	
**Foeniculum vulgare*	Fennel	--/--	No		X
Lomatium dasycarpum[3]	Woolly-fruit Lomatium	--/--	No	X	
Lomatium lucidum	Shiny Lomatium	--/--	No	X	
Sanicula arguta[3]	Sharp-toothed Sanicle	--/--	No	X	
Sanicula crassicaulis[3]	Western Sanicle	--/--	No	X	
Tauschia arguta [3]	Southern Tauschia	--/--	No	X	
ASCLEPIADACEAE - Milkweed Family					

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
Asclepias californica	California Milkweed	--/--	No	X	
Asclepias fascicularis[3]	Narrow-leaf Milkweed	--/--	No	X	
Sarcostemma cynanchoides ssp. *harwegii*[3]	Climbing Milkweed	--/--	No	X	X
ASTERACEAE - Sunflower Family					
Acourtia microcephala[3]	Sacapellote, Purpleheads	--/--	No	X	
Ambrosia psilostachya	Western Ragweed	--/--	No	X	
Anaphalis margaritacea	Pearly Everlasting	--/--	No	X	
Artemisia californica	California Sagebrush	--/--	No	X	
Artemisia douglasiana	Douglas Mugwort	--/--	No	X	
Artemisia dracunculus[3]	Dragon Sagewort	--/--	No	X	
Artemisia palmeri	**San Diego Sagewort**	**--/List 4**	**No**	**X**	
Aster subulatus var. *ligulatus*[3]	Slim Aster	--/--	No	X	
Baccharis pilularis	Coyote Bush	--/--	No	X	
Baccharis salicifolia	Mule Fat	--/--	No	X	
Baccharis sarothroides	Broom Baccharis	--/--	No	X	
Brickellia californica	California Brickelbush	--/--	No	X	
**Centaurea melitensis*	Tocalote	--/--	No	X	X
Chaenactis artemisiaefolia	White Pincushio	--/--	No	X	
Chaenactis glabriuscula	Yellow Pincushion	--/--	No	X	
*Chamomilla suaveolens	Pineapple Weed	--/--	No	X	
**Chrysanthemum coronarium*	Garland Chrysanthemum	--/--	No	X	
Cirsium occidentale var. *californicum*	California Thistle	--/--	No	X	
**Cirsium vulgare*	Bull Thistle	--/--	No	X	
**Conyza canadensis*	Horseweed	--/--	No	X	
Conyza floribunda	Asthma weed	--/--	No		X
**Cotula coronopifolia*	Brass Buttons	--/--	No	X	X
Deinandra (Hemizonia) fasciculata	Fascicled Tarweed	--/--	No	X	
Dimorphotheca sinuate[3]	Cape Marigold	--/--	No	X	
**Eclipta prostrate*[3]	False Daisy	--/--	No	X	
Encelia californica	California Encelia	--/--	No	X	
Erigeron foliosus var *foliosus*[3]	Leafy Daisy	--/--	No	X	
Eriophyllum confertiflorum var. *confertiflorum*	Golden-yarrow	--/--	No	X	
Euthamia occidentalis[3]	Western Goldenrod	--/--	No	X	
Filago californica	California Filago	--/--	No	X	
**Gazania splendens*	Gazania	--/--	No	X	
Gnaphalium bicolor	Bicolor Cudweed	--/--	No	X	
Gnaphalium californicum	California Everlasting	--/--	No	X	X
Gnaphalium canenscens ssp. *beneolans*[3]	Fragrant Everlasting	--/--	No	X	
Gnaphalium canenscens ssp. *microcephalum*[3]	White Everlasting	--/--	No	X	
**Gnaphalium luteo-album*[3]	Everlasting	--/--	No	X	
Gnaphalium palustre[3]	Lowland Cudweed	--/--	No	X	
Gnaphalium straminium[3]	Cotton-batting Plant	--/--	No	X	
Gutierrezia sarothrae	Matchweed	--/--	No	X	
Hazardia squarrosa	Saw-toothed Goldenbush	--/--	No	X	
**Hedypnois cretica*	Crete Hedypnois	--/--	No	X	X
Helianthus gracilentus [3]	Slender Sunflower	--/--	No	X	
Heterotheca grandiflora	Telegraph Weed	--/--	No	X	X
**Hypochaeris glabra*[3]	Smooth Cat's Ear	--/--	No	X	
Isocoma menziesii	Coast Goldenbush	--/--	No	X	X
**Lactuca serriola*	Prickly Lettuce	--/--	No	X	X

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
Lasthenia californica	Common Goldfields	--/--	No	X	
Layia platyglossa	Tidy Tips	--/--	No	X	
Lessingia filaginifolia var. *filaginifolia*	California-Aster	--/--	No	X	
Machaeranthera juncea	**Rush-like Bristleweed**	**--/List 4**	**No**	**X**	
Osmadenia tenella[3]	Osmadenia	--/--	No	X	
Pentachaeta aurea [3]	Golden Daisy	--/--	No	X	
**Picris echioides*	Prickly Ox Tongue	--/--	No	X	X
Pluchea odorata	Marsh Fleabane	--/--	No	X	
Pluchea sericea	Arrow Weed	--/--	No	X	
Porophyllum gracile	Odora	--/--	No	X	
Rafinesquia californica[3]	California Chicory	--/--	No	X	
**Silybum marianum*	Milk Thistle	--/--	No	X	
**Sonchus asper*	Prickly Sow-Thistle	--/--	No	X	X
Sonchus oleraceus	Common Sow-Thistle	--/--	No		X
Stephanomeria diegensis	San Diego Wreathplant	--/--	No	X	X
Stephanomeria exigua deanei	Deane's Small Wreathplant	--/--	No		X
Stephanomeria exigua[3]	Small Wreathplant	--/--	No	X	
Stylocine gnaphalioides	Everlasting Nest Straw	--/--	No	X	
Uropappus lindleyi	Silver Puffs	--/--	No	X	
Viguiera laciniata	**San Diego Sunflower**	**--/List 4**	**No**	**X**	
Xanthium strumarium	Cocklebur	--/--	No	X	
BORAGINACEAE - Borage Family					
Amsinckia menziesii var. *intermedia*	Common Fiddleneck	--/--	No	X	
Cryptantha intermedia	Nievetas	--/--	No	X	
Cryptantha micromeres[3]	Minute-flower Cryptantha	--/--	No	X	
Cryptantha microstachys[3]	Tejon Cryptantha	--/--	No	X	
Heliotropium curvassavicum	Salt Heliotrope	--/--	No	X	X
Plagiobothrys collinus var. *californicus*[3]	Rough Popcorn Flower	--/--	No	X	
BRASSICACEAE - Mustard Family					
**Brassica nigra*	Black Mustard	--/--	No	X	
Caulanthus heterophyllus					
var. heterophyllus	**San Diego Jewelflower**	**--/CR**	**Yes**	**X**	
**Coronopus didymus*	Lesser Wart-cress	--/--	No		X
Guillenia lasiophylla[3]	California Mustard	--/--	No	X	
**Hirschfeldia incana*	Short-pod Mustard	--/--	No	X	
Lepidium lasiocarpum var. *lasiocarpum*[3]	Sand Peppergrass	--/--	No	X	
Lepidium nitidum	Peppergrass	--/--	No	X	
**Lepidium virginicum* var. *robinsonii*	Robinson's Peppergrass	--/--	No	X	
*Raphanus sativus	Wild Radish	--/--	No	X	
Rorippa nasturtium-aquaticum[3]	Watercress	--/--	No	X	X
**Sisymbrium irio* [3]	London Rocket	--/--	No	X	
CACTACEAE - Cactus Family					
Opuntia ficus-indica	Indian Fig	--/--	No	X	
Opuntia littoralis	Coastal Prickly-pear	--/--	No	X	
CAPRIFOLIACEAE – Honeysuckle Family					
Lonicera subspicata	Southern Honeysuckle	--/--	No	X	
Sambucus mexicana	Mexidan Elderberry	--/--	No	X	
CARYOPHYLLACEAE - Pink Family					

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**Polycarpon tetraphyllum*	Four-Leaf Allseed	--/--	No		X
**Silene gallica*	Common Catchfly	--/--	No		
Silene lacineata ssp. *major*	Fringed Indian Pink	--/--	No	X	X
Stellaria media[3]	Chickweed	--/--	No	X	
CERATOPHYLLACEAE – Hornwort Family					
Ceratophyllum demersum[3]	Hornwort	--/--	No	X	
CHENOPODIACEAE - Goosefoot Family					
**Atriplex semibaccata*[3]	Australian Saltbush	--/--	No	X	
**Chenopodium album*	Lamb's Quarters	--/--	No	X	
**Salsola tragus*	Russian Thistle	--/--	No	X	
CISTACEAE - Rock-Rose Family					
Helianthemum scoparium	Peak Rush-rose	--/--	No	X	
CONVOLVULACEAE - Morning-Glory Family					
Calystegia macrostegia ssp. *tenuifolia*	Narrow-leaf Morning-glory	--/--	No	X	
Cuscuta californica var. *californica*	Witch's Hair	--/--	No	X	
Cuscuta subinclusa	Canyon Dodder	--/--	No	X	
CRASSULACEAE - Stonecrop Family					
Crassula connata[3]	Dwarf Stonecrop	--/--	No	X	
Dudleya edulis	Ladies Fingers	--/--	No	X	
Dudleya lanceolata	Lance-Leaved Dudleya	--/--	No	X	
Dudleya pulverulenta[3]	Chalk-lettuce	--/--	No	X	
CUCURBITACEAE - Gourd Family					
Cucurbita foetidissima[3]	Calabazilla	--/--	No	X	
Marah macrocarpus	Wild Cucumber	--/--	No	X	
DATISCACEAE - Datisca Family					
Datisca glomerata[3]	Durango Root	--/--	No	X	
ERICACEAE - Heath Family					
Xylococcus bicolor	Mission Manzanita	--/--	No	X	
EUPHORBIACEAE - Spurge Family					
Acalypha californica	California Copperleaf	--/--	No	X	
Chamaesyce polycarpa	Prostrate Spurge	--/--	No	X	
Croton californicus[3]	California Croton	--/--	No	X	
Eremocarpus setigerus	Doveweed	--/--	No	X	
**Euphorbia peplus*	Petty Spurge	--/--	No		X
**Ricinus communis*	Castor-bean	--/--	No	X	
FABACEAE - Pea Family					
Astragalus trichopodus[3]	Ocean Locoweed	--/--	No	X	
Lathyrus vestitus ssp. *alefeldii*	San Diego Sweat Pea	--/--	No	X	
Lotus hamatus[3]	Grab Lotus	--/--	No	X	X
Lotus purshianus	Spanish Clover	--/--	No	X	X
Lotis salsuginosus ssp. salsuginosus[3]	Alkali Lotus	--/--	No	X	
Lotus scoparius	Deerweed	--/--	No	X	
Lotus strigosus	California Deerweed	--/--	No	X	
Lotus wrantelianus [3]	California Lotus	--/--	No	X	
Lupinus bicolor	Minature Lupine	--/--	No	X	

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Lupinus hirsutissimus	Stinging Lupine	--/--	No	X	
Lupinus truncates	Collar Lunpine	--/--	No	X	
**Medicago polymorpha*	California Bur-clover	--/--	No	X	
**Melilotus alba*	White Sweet Clover	--/--	No	X	
**Melilotus indicus*	Indian Sweet Clover	--/--	No		X
**Melilotus officinalis*	Yellow Sweet Clover	--/--	No	X	
Pickeringia montana	Chaparral Pea	--/--	No	X	
**Trifolium hirtum*	Rose Clover	--/--	No	X	X
Trifolium willdenovii	Tomcat Clover	--/--	No	X	
Vicia americana[3]	American Vetch	--/--	No	X	
Vicia ludoviciana	Deer Pea Vetch	--/--	No	X	
FAGACEAE - Oak Family					
Quercus agrifolia var. *agrifolia*	Coast Live Oak	--/--	No	X	
Quercus berberidifolia	California Scrub Oak	--/--	No	X	
Quercus engelmannii	**Engelmann Oak**	**--/List 4**	**No**	**X**	**X**
FRANKENIACEAE – Frankenia Family					
Frankenia salina	Alkali Heath	--/--	No	X	
GERANIACEAE - Geranium Family					
**Erodium botrys*	Long-beak Filaree	--/--	No	X	
**Erodium brachycarpum*[3]	Short-beak Filaree	--/--	No	X	
**Erodium cicutarium*	Red-stem Filaree	--/--	No	X	X
**Erodium moscatum*	White-stem Filaree	--/--	No	X	
Geranium californicum	California Geranium	--/--	No	X	
GROSSULARIACEAE – Gooseberry Family					
Ribes indecorum[3]	White-flowered Currant	--/--	No	X	
HALORAGACEAE –Water-Milfoil Family					
Myriophyllum sibiricum[3]	American Milfoil	--/--	No	X	
Myiophyllum spicatum	Water Milfoil	--/--	No	X	
HYDROCHARITACEAE – Waterweed Family					
Najas guadalupensis	Common Water Nymph	--/--	No	X	
HYDROPHYLLACEAE - Waterleaf Family					
Emmenanthe penduliflora	Whispering Bells	--/--	No	X	
Eriodictyon crassifolium	Thick-leaved Yerba Santa	--/--	No	X	
Eucrypta chrysanthemifolia	Common Eucrypta	--/--	No	X	
Phacelia cicutaria var. *hispida*	Caterpillar Phacelia	--/--	No	X	
Phacelia grandiflora	Large Flowered Phacelia	--/--	No	X	
Phacelia parryi	Parry's Phacelia	--/--	No	X	
Phacelia ramosissima var. *latifolia*	Caterpillar Phacelia	--/--	No	X	
LAMIACEAE - Mint Family					
**Marrubium vulgare*	Horehound	--/--	No	X	
Salvia apiana	White Sage	--/--	No	X	X
Salvia columbariae	Chia	--/--	No	X	
Salvia mellifera	Black Sage	--/--	No	X	
Scutellaria tuberosa	Common Skullcap	--/--	No	X	
Stachys bullata	Hedge Nettle	--/--	No	X	
MALVACEAE - Mallow Family					

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
Malocothamnus fasciculatus[3]	Mesa Bush Mallow	--/--	No	X	
Sidalcea malvaeflora ssp. *sparsifolia*	Checker-bloom	--/--	No	X	
MYRTACEAE – Myrtle Family					
**Callistemon citrinus*[3]	Bottlebrush Tree	--/--	No	X	
**Eucalyptus* sp.	Gum Tree	--/--	No	X	
**Grevillea robusta*[3]	Silk Oak	--/--	No	X	
NYCTAGINACEAE - Four-O'Clock Family					
Mirabilis laevis var *crassifolia*	Coastal Wishbone Plant	--/--	No	X	
ONAGRACEAE - Evening Primrose Family					
Camissonia bisorta	California Sun Cup	--/--	No	X	
Camissonia californica	False-Mustard	--/--	No	X	
Camissonia micrantha	Small Primrose	--/--	No	X	
Camissonia strigulosa	Strigose Sun Cup	--/--	No	X	
Camissonia sp.	Evening Primrose	--/--	No		X
Clarkia delicata	**Delicate Clarkia**	**--/List 1B**	**No**	**X**	
Clarkia epilobioides	Willow-Herb Clarkia	--/--	No	X	
Clarkia purpurea	Winecup Clarkia	--/--	No	X	
Clarkia rhomboidea	Diamond Clarkia	--/--	No	X	
Clarkia similis[3]	Canyon Clarkia	--/--	No	X	
Epilobium canum	California Fuchsia	--/--	No	X	
Oenothera elata[3]	Great Marsh Evening Primrose	--/--	No	X	
OXALIDACEAE - Oxalis Family					
**Oxalis pers-caprae*	Bermuda Buttercup	--/--	No	X	
PAEONIACEAE – Peony Family					
Paeonia californica	California Peony	--/--	No	X	
PAPAVERACEAE - Poppy Family					
Dendromecon rigida	Bush Poppy	--/--	No	X	
Dicentra chrysantha	Golden Eardrops	--/--	No	X	
Eschscholzia californica	California Poppy	--/--	No	X	X
Papaver californicum	Fire Poppy	--/--	No	X	
PLANTAGINACEAE - Plantain Family					
Plantago erecta	Dot-seed Plantain	--/--	No	X	X
**Plantago major*[3]	Common Plantain	--/--	No	X	
**Veronica anagallis-aquatica*	Water Speedwell	--/--	No		X
PLATANACEAE - Sycamore Family					
Platanus racemosa	Western Sycamore	--/--	No	X	X
POLEMONIACEAE - Phlox Family					
Eriastrum sphirinum	Mojave Woolly-star	--/--	No	X	
Gilia angelensis[3]	Grassland Gilia	--/--	No	X	
Linanthus dianthiflorus	Ground Pink	--/--	No	X	
Navarretia hamata	Hooked Skunkweed	--/--	No	X	
Navarretia atractyloides[3]	Holly-Leaved Navarretia	--/--	No	X	
POLYGALACEAE - Milkwort Family					
Polygala cornuta var. fishiae	Fish's Milkwort	--/--	No		X

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
POLYGONACEAE - Buckwheat Family					
Chorizanthe fimbriata	Fringed Spine-flower	--/--	No	X	
Chorizanthe procumbens albiflora	Prostrate Spine-flower	--/--	No		X
Chorizanthe staticoides[3]	Turkish Rugging	--/--	No	X	
Eriogonum fasciculatum var. *fasciculatum*	California Buckwheat	--/--	No	X	
Eriogonum fasciculatum var. *foliolosum*[3]	California Buckwheat	--/--	No	X	
Eriogonum fasciculatum var. polifolium	Mountain Buckwheat	--/--	No		X
**Polygonum arenastrum*[3]	Common Knotweed	--/--	No	X	
Polygonum lapathifolium[3]	Willow Weed	--/--	No	X	
Polygonum punctatum[3]	Perennial Smartweed	--/--	No	X	
Pterostegia drymarioides[3]	Threadstem	--/--	No	X	
**Rumex crispus*	Curly Dock	--/--	No	X	X
**Rumex conglomeratus*	Whorled Dock	--/--	No	X	X
PORTULACACEAE – Purslane Family					
Calndrinia ciliate	Red Maids	--/--	No	X	
Claytonia perfoliata	Miner's Lettuce	--/--	No	X	
PRIMULACEAE - Primrose Family					
**Anagallis arvensis*	Scarlet Pimpernel	--/--	No	X	
RANUNCULACEAE - Crowfoot Family					
Clematis pauciflora	Virgin's Bower	--/--	No	X	
Delphinium parryi	Parry's Larkspur	--/--	No	X	
Thalictrum fendleri var. *polycarpum*	Fendler's Meadow-rue	--/--	No	X	
RESEDACEAE – Mignonette Family					
**Reseda luteola*[3]	Dyer's Rocket	--/--	No	X	
RHAMNACEAE - Buckthorn Family					
Adolphia californica[3]	**California Adolphia**	**--/List 2**	**No**	**X**	
Ceanothus crassifolius	Thick-leaf Ceanothus	--/--	No	X	
Ceanothus leucodermis	Whitebark Wild-lilac	--/--	No	X	
Ceanothus tomentosus	Ramona Lilac	--/--	No	X	
Rhamnus crocea	Spiny Redberry	--/--	No	X	
Rhamnus pilosa	Hoary Redberry	--/--	No	X	
ROSACEAE - Rose Family					
Adenostoma fasciculatum	Chamise	--/--	No	X	
Cercocarpus minutiflorus[3]	Coastal Mountain-mahogany	--/--	No	X	
Heteromeles arbutifolia	Toyon	--/--	No	X	
Prunus ilicifolia	Holly-Leaved Cherry	--/--	No	X	
Rosa californica	California Rose	--/--	No	X	
Rubus ursinus	California Blackberry	--/--	No	X	
RUBIACEAE - Madder Family					
Galium angustifolium	Narrow-leaf Bedstraw	--/--	No	X	
**Galium aparine*	Common Bedstraw	--/--	No	X	X
RUTACEAE – Citrus Family					
Cneoridium dumosum	Spice Bush	--/--	No	X	
SALICACEAE - Willow Family					
Populus fremontii	Fremont Cottonwood	--/--	No	X	

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
Salix exigua	Narrow-leaved Willow	--/--	No	X	
Salix goddingii	Goodding's Black Willow	--/--	No	X	
Salix lasiolepis	Arroyo Willow	--/--	No	X	
Salix lucida ssp. *lasiandra*	Shining Willow	--/--	No	X	
Salix sp.	Willow	--/--	No		X
SAURURACEAE - Lizard's Tail Family					
Anemopsis californica[3]	Yerba Mansa	--/--	No	X	
SAXIFRAGACEAE - Saxifrage Family					
Jepsonia parryi[3]	Coast Jepsonia	--/--	No	X	
SCROPHULARIACEAE - Figwort Family					
Antirrhinum coulterianum[3]	White Snapdragon	--/--	No	X	
Antirrhinum kelloggii	Twining Snapdragon	--/--	No	X	
Antirrhinum nuttallianum	Nuttall's Snapdragon	--/--	No	X	X
Castilleja affinis ssp. *affinis*	Coast Paintbrush	--/--	No	X	
Castilleja exserta ssp. exserta	Purple Owl's-clover	--/--	No	X	
Castilleja minor ssp. *spiralis*[3]	California Thread-torch	--/--	No	X	
Collinsia concolor	Southern Chinese Houses	--/--	No	X	
Collinsia heterophylla	Chinese Houses	--/--	No	X	
Cordylanthus rigidus ssp. *setigerus*[3]	Dark-tip Bird's-beak	--/--	No	X	
Keckiella antirrhinoides	Yellow Bush Penstemon	--/--	No	X	
Keckiella cordifolia	Climbing Bush Penstemon	--/--	No	X	X
Keckiella ternata	Bush Penstemon	--/--	No	X	
Linaria canadensis	Large Blue Toadflax	--/--	No	X	
Mimulus aurantiacus	Coast Monkeyflower	--/--	No	X	
Mimulus brevipes	Slope Semaphore	--/--	No	X	
Mimulus cardinalus	Scarlet Monkeyflower	--/--	No	X	
Mimulus guttatus	Common Monkeyflower	--/--	No	X	
Mimulus pilosus[3]	Downy Monkeyflower	--/--	No	X	
Penstemon spectabilis	Showy Penstemon	--/--	No	X	
Scrophularia californica ssp. *floribunda*	California Bee Plant	--/--	No	X	
**Verbascum virgatum*	Wand Mullein	--/--	No	X	X
SOLANACEAE - Nightshade Family					
**Datura stramonium*	Jimson Weed	--/--	No	X	
Datura wrightii	Western Jimson Weed	--/--	No	X	X
**Nicotiana glauca*	Tree Tobacco	--/--	No	X	X
Physalis crassifolia	Ground-cherry	--/--	No	X	
Solanum americanum	White Nightshade	--/--	No		X
Solanum douglasii	Douglas' Nightshade	--/--	No	X	
Solanum tenuilobatum[3]	Narrow-leaf Nightshade	--/--	No	X	
Solanum xantii[3]	Chaparral Nightshade	--/--	No	X	
Solanum sp.	Nightshade	--/--	No		X
TAMARICACEAE - Tamarisk Family					
**Tamarix parviflora*	Tamarisk	--/--	No	X	
URTICACEAE - Nettle Family					
Parietaria hespera var. *californica*[3]	Western Pellitory	--/--	No	X	
Urtica dioica[3]	Giant Creek Nettle	--/--	No	X	
Urtica urens[3]	Dwarf Nettle	--/--	No	X	
VERBENACEAE – Vervain Family					

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
Phyla nodiflora var. *nodiflora*[3]	Lippia	--/--	No	X	
Verbena lasiostachys	Western Vervain	--/--	No	X	
VITACEAE – Grape Family					
Vitis girdiana	Desert Wild Grape	--/--	No		X
MONOCOTS					
ALISMATACEAE – Water-Plantain Family					
Alisma plantago-aquatica[3]	Water-plantain	--/--	No	X	
Echinodorus berteroi	Upright Burhead	--/--	No	X	
ALLIACEAE – Onion Family					
Allium peninsulare	Peninsular Onion	--/--	No	X	
Allium praecox	Early Onion	--/--	No	X	
AGAVACEAE - Agave Family					
**Agave Americana*	Century Plant	--/--	No	X	
Hesperoyucca whipplei	Our Lord's Candle	--/--	No	X	
Yucca schidigera	Mohave Yucca	--/--	No	X	
CYPERACEAE - Sedge Family					
Carex spissa	San Diego Sedge	--/--	No	X	
Carex triquetra	Chaparral Sedge	--/--	No	X	
Cyperus eragrostis	Tall Flatsedge	--/--	No	X	
Cyperus odoratus	Coarse Cyperus	--/--	No	X	
Eleocharis macrostachya[3]	Pale Spike-rush	--/--	No	X	
Eleocharis montevidensis[3]	Dombey's Spike-sedge	--/--	No	X	
Scirpus americanus[3]	Olney's Bulrush	--/--	No	X	
Scirpus californicus	California Bulrush	--/--	No	X	
HYACINTHACEAE – Hyacinth Family					
Chlorogalum parviflorum	Small-flower Soap-plant	--/--	No	X	
Chlorogalum pomeridianum	Soap Plant	--/--	No	X	
JUNCACEAE - Rush Family					
Juncus bufonius[3]	Toad Rush	--/--	No	X	
Juncus dubius	Mariposa Rush	--/--	No	X	
Juncus mexicanus	Mexican Rush	--/--	No	X	
LEMNACEAE – Duckweed Family					
Lemna gibba	Duckweed	--/--	No	X	
Lemna miniscula	Duckweed	--/--	No	X	
Lemna minor	Duckweed	--/--	No	X	
LILIACEAE - Lily Family					
Calochortus splendens	Splendid Mariposa	--/--	No	X	
Calochortus weedii[3]	Weed's Mariposa Lily	--/--	No	X	
Lilium humboldtii* ssp. *ocellatum[3]	**Ocellated Humboldt Lily**	**--/List 4**	**No**	**X**	
MELANTHIACEAE – Camas Family					
Zigadenus fremontii[3]	Star Lily	--/--	No	X	
ORCHIDACEAE – Orchid Family					

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
Piperia unalascensis[3]	Slenderspire Piperia	--/--	No	X	
POACEAE - Grass Family					
Achnatherum coronatum[3]	Giant Needlegrass	--/--	No	X	
**Arundo donax*	Giant Reed	--/--	No	X	
**Avena barbata*	Slender Oat	--/--	No	X	
**Avena fatua*	Wild Oat	--/--	No	X	
**Bromus diandrus*	Ripgut Grass	--/--	No	X	
**Bromus hordeaceus*	Soft Chess	--/--	No	X	
**Bromus madritensis* ssp. *rubens*	Foxtail Chess	--/--	No	X	
**Cortaderia jubata*	Pampas Grass	--/--	No	X	
**Crypsis schoenoides*	Swamp Prickle Grass	--/--	No	X	
**Crypsis vaginiflora*[3]	Sharp-leaf Crypsis	--/--	No	X	
**Cynodon dactylon*	Bermuda Grass	--/--	No	X	
Distichlis spicata	Saltgrass	--/--	No	X	
Elymus glaucus	Blue Wildrye	--/--	No	X	
**Gastridium ventricosum*	Nit Grass	--/--	No	X	
**Holcus lanatus*	Velvet Grass	--/--	No	X	
**Hordeum murinum* ssp. *leporinum*	Hare Barley	--/--	No	X	
**Lamarckia aurea*	Goldentop	--/--	No	X	
Leymus triticoides[3]	Beardless Wild Rye	--/--	No	X	
**Lolium multiflorum*	Italian Ryegrass	--/--	No	X	
Melica imperfecta	Coast Range Melic	--/--	No	X	
Melinis repens[3]	Natal Grass	--/--	No	X	
Muhlenbergia microsperma[3]	Little-seed Muhly	--/--	No	X	
Muhlenbergia rigens	Deergrass	--/--	No	X	
Nassella lepida[3]	Foothill Needlegrass	--/--	No	X	
Nassella pulchra	Purple Needlegrass	--/--	No	X	
**Paspalum dilatatum*[3]	Dallis Grass	--/--	No	X	
Paspalum paspalodes[3]	Common Knotgrass	--/--	No	X	
**Pennisetum setaceum*	African Fountain Grass	--/--	No	X	
**Phalaris sp.* [3]	Canary Grass	--/--	No	X	
*Piptatherum miliaceum[3]	Smilo Grass	--/--	No	X	
**Poa* annua[3]	Annual Bluegrass	--/--	No	X	
**Polypogon monspeliensis*	Annual Beard Grass	--/--	No	X	X
**Schismus barbatus*[3]	Mediterranean Schismus	--/--	No	X	
**Vulpia myuros* var. *hirsuta*	Foxtail Fescue	--/--	No	X	
PONTEDERIACEAE - Pickerel Weed Family					
Eichhornia crassipes	water hyacinth	--/--	No	X	
POTAMOGETONACEAE – Pondweed Family					
Potamogeton pectinatus	Fennel-leaf Pondweed	--/--	No	X	
Potamogeton pusillus var. *tenuissimus*	Small Pondweed	--/--	No	X	
THEMIDACEAE - Brodiaea Family					
Bloomeria crocea	Common Goldenstar	--/--	No	X	
Dichelostemma capitatum ssp. *capitatum*	Wild Hyacinth	--/--	No	X	
Muilla clevelandii	**San Diego Goldenstar**	**--/List 1B**	**Yes**	**X**	
TYPHACEAE					
Typha latifolia	Cattail	--/--	No	X	
ZANNICHELLIACEAE – Horned Pondweed Family					
Zannichellia palustris	Horned Pondweed	--/--	No	X	

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[2] **Status**: *Federal*: FE – endangered, FT – threatened, FFP – fully protected, BEPA – Bald Eagle Protection Act, FD – federally delisted. *State*: SE – endangered, ST – threatened, SSC – special concern, SFP – fully protected. *California Native Plant Society (CNPS)*: List 1B – Plants rare, threatened, or endangered in California and elsewhere, List 2: Plants rare, threatened, or endangered in California, but more common elsewhere, List 3 – Plants about which we need more information, List 4 – Plants of limited distribution (a watch list).

[3] Documented prior to 2005

* **Introduced Species**

Inventory of Invertebrates Known or Expected to Occur in the Carryover Storage and San Vicente Dam Raise Project

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
ATHROPODA					
CRUSTACEA					
**Procambarus clarkii*	Swamp Crayfish	--/--	No	X	
INSECTA					
ODONATA (Dragonflies and Damselfies)					
Argia vivida	Vivid Dancer	--/--	No	X	
Anax junius	Common Green Darner	**--/--**	No	X	
Enallagma carunculatum	Tule Bluet	--/--	No	X	
Enallagma cyathigerum	Northern Bluet	--/--	No	X	
Sympetrum corruptum	Variegated Meadowhawk	**--/--**	No	X	
Sympetrum illotum	Cardinal Meadowhawk	**--/--**	No	X	
ORTHOPTERA (Grasshoppers, Crickets, Katydids)					
Gryllus sp.	Field Cricket	--/--	No	X	
Platylyra californica	Chaparral Katydid	--/--	No	X	
Schistcera nitens	Gray Bird Locust	--/--	No	X	
Trimerotropis pallidipennis	Pallid-Winged Grasshopper	--/--	No	X	
HEMIPTERA (True Bugs)					
Family Miridae	Plant Bug	--/--	No	X	
HOMOPTERA (Cicadas, Leafhoppers, Aphids)					
Family Cercopidae	Spittle Bug	--/--	No	X	
Family Cicadellidae	Leafhopper	--/--	No	X	
NEUROPTERA (Lacewings, Antlions)					
Family Chrysopidae	Green Lacewing	--/--	No	X	
COLEOPTERA (Beetles)					
Calosoma semilaeve	Common Calosoma	--/--	No	X	
Coccinella californica	California Ladybird Beetle	--/--	No	X	
Eleodes dentipes	Dentate Stink Beetle	--/--	No	X	
Hippodamia convergens	Convergent Ladybird Beetle	--/--	No	X	
Lytta sp.	Green Blister Beetle	--/--	No	X	
Family Phalacridae	Shining Flower Beetle	--/--	No	X	
Meloidae zonitis	Blister Beetle	--/--	No	X	
Nemognatha sp.	Blister Beetle	--/--	No	X	
Paracotalpa ursine	Bear Beetle	--/--	No	X	
Pristonychus complanatus	Large Ground Beetle	--/--	No	X	
Zonitis sp.	Black Blister Beetle	--/--	No	X	
DIPTERA (Gnats, Midges, Flies)					
Family Anthomyiidae	Beach Flies	--/--	No	X	
Family Asilidae	Robber Flies	--/--	No	X	
Family Bibionidae	March Flies	--/--	No	X	
Dilophus orbatus	Little Black March Fly	--/--	No	X	
Family Bombyliidae	Bee Flies	--/--	No	X	
Exoprosopa sp.	Bee Fly	--/--	No	X	
Lepiddanthrax sp.	Bee Fly	--/--	No	X	
Family Chironomidae	Water Midges	--/--	No	X	

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
Family Muscidae	Muscid Flies	--/--	No	X	
Family Sarcophagidae	Flesh Flies	--/--	No	X	
Parasarcophaga sp.	Flesh Fly	--/--	No	X	
Family Syrphidae	Hover Flies	--/--	No	X	
Metasyrphus americanus	Syrphid Fly	--/--	No	X	
Sphecomyia vittatum	Syrphid Fly	--/--	No	X	
Family Tachinidae	Tachinid Flies	--/--	No	X	
Family Tipulidae	Crane Flies	--/--	No	X	
Holorusia hespera	Common Crane Fly	--/--	No	X	
HYMENOPTERA (Ants, Bees, Wasps)					
Chlorion aerarium	Blue Mud Dauber	--/--	No	X	
Iridomyrmex humilis	Argentine Ant	--/--	No	X	
Pogonomyrmex sp.	Harvester Ant	--/--	No	X	
Ammophila sp.	Thread-Waist Wasp	--/--	No	X	
Chalybion californicum	Blue Mud Wasp	--/--	No	X	
Family Apidae	Honey Bees	--/--	No	X	
Agapostemon texanus	Sweat Bee	--/--	No	X	
Anthidium sp.	Leaf-cutting Bee	--/--	No	X	
Apis mellifera	Honey Bee	--/--	No	X	
Bombus crotchii	Crotch's Bumble Bee	--/--	No	X	
Colletes sp.	Plasterer Bee	--/--	No	X	
Osmia sp.	Mason Bee	--/--	No	X	
Tribe *Eucerini*	Long-Antenna Honey Bee	--/--	No	X	
Pepsis sp.	Tarantula Wasp	--/--	No	X	
Polistes fuscatus aurifer	Golden Polistes Wasp	--/--	No	X	
Urocerus sp.	Horntail Wasp	--/--	No	X	
CHILOPODA (Centipedes)					
Scolopendra polymorpha	Multicolored Centipede	--/--	No	X	
LEPIDOPTERA (Butterflies and Moths)					
Family Geometridae	Geometrid Moths	--/--	No	X	
Family Hesperidae (Skippers)					
Erynnis funeralis	Funereal Duskywing	--/--	No	X	
Erynnis pacuvius[3]	Pacuvius Duskywing	--/--	No	X	
Erynnis tristis[3]	Mournful Duskywing	--/--	No	X	
Heliopetes ericetorum	Northern White-Skipper	--/--	No	X	
Euphyes vestries harbisoni	**Harbison's dun skipper**	**--/--**	**No**		**X**
Family Lycaenidae (Blues, Hairstreaks, Coppers)					
Callophrys augustinus iriodes	Brown elphin	--/--	No	X	
Callophrys perplexa perplexa	Perplexing Hairstreak	--/--	No	X	
Glaucopsyche lygdamus	Southern Blue	--/--	No	X	
Hemiargus ceraunus gyas	Edward's Blue	--/--	No	X	
Icaricia acmon	Acmon Blue	--/--	No	X	
Leptotes marina	Marine Blue				
Lycaena arota	Tailed Copper	--/--	No	X	
Lycaena hermes[3]	**Hermes Copper**	**--/--**	**No**	**X**	
Lycaena xanthoides[3]	Great Copper	--/--	No	X	

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Strymon melinus pudica	Gray Hairsteak	--/--	No	X	
Family Noctuidae (Owlett Moths)					
Autographa californica	Alfalfa Looper	--/--	No	X	
Synedoida ochracea	Underwing Moth	--/--	No	X	
Family Nymphalidae (Brushfoots)					
Adelpha bredowii californica	California Sister	--/--	No	X	
Ceononympha tullia[3]	California Ringlet	--/--	No	X	
Cercyonis sthenele silvestris [3]	Sylvan Wood-Nymph	--/--	No	X	
Chlosyne gabbii	Gabb's Checkerspot	--/--	No	X	
Coenonympha californica californica	Common California Ringlet	--/--	No	X	
Danaus gilippus thersippus[3]	Queen	--/--	No	X	
Euphydryas chalcedona chalcedona[3]	Chalcedon Checkerspot	--/--	No	X	
Junonia coenia	Common Buckeye	--/--	No	X	
Nymphalis antiopa	Mourning Cloak	--/--	No	X	
Vanessa anabella	West Coast Lady	--/--	No	X	
Vanessa atalanta rubria	Red Admiral	--/--	No	X	
Vanessa cardui	Painted Lady	--/--	No	X	
Family Papilionidae					
Papilio rutulus[3]	Western Tiger Swallowtail	--/--	No	X	
Papilio zelicaon	Anise Swallowtail	--/--	No	X	
Pterourus eurymedon	Pale Swallowtail	--/--	No	X	
Family Pieridae (Whites and Sulphurs)					
Anthocharis sara sara	Pacific Sara Orangetip	--/--	No	X	
Colias eurytheme	Orange Sulphur	--/--	No	X	
Nathalis iole	Dainty Sulphur	--/--	No	X	
Phoebis sennae marcellina[3]	Cloudless Sulfur	--/--	No	X	
Pieris rapae	Cabbage White	--/--	No	X	
Pontia protodice	Checkered White	--/--	No	X	
Pontia sysymbrii	Spring White	--/--	No	X	
Family Riodinidae (Metalmarks)					
Apodemia mormo virgulti	Behr's Metalmark	--/--	No	X	
Family Sphingindae (Hawk Moths)					
Hyles lineata	White-Lined Sphinx Moth	--/--	No	X	

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CLASS: OSTEICHTHYES (Bony Fish)					
ATHERINOPSIDAE (Silversides)					
*Mississippi Silversides	*Menidia audens*	--/--	No	X	
CENTRARCHIDAE (Sunfishes)					
*Black Crappie[3]	*Pomoxis nigromaculatus*	--/--	No	X	
*Bluegill Sunfish[3]	*Lepomis macrochirus*	--/--	No	X	
*Green Sunfish[3]	*Lepomis cyanellus*	--/--	No	X	
*Largemouth Bass[3]	*Micropterus salmoides*	--/--	No	X	
Red Ear Sunfish	*Lepomis microlophus*	--/--	No	X	
CLUPEIDAE (Herrings)					
*Threadfin Shad[3]	*Dorosoma petense*	--/--	No	X	
COTTIDAE (Sculpins)					
Prickly Sculpin[3]	*Cotus asper*	--/--	No	X	
CYPRINIDAE (Carps and Minnows)					
*Common Carp[3]	*Cyprinius carpie*	--/--	No	X	
*Golden Shiner[3]	*Notemigonus crysoleucas*	--/--	No	X	
ICTALURIDAE (Bullhead and Catfishes)					
*Blue Catfish[3]	*Ictalurus furcatus*	--/--	No	X	
*Channel Catfish[3]	*Ictalurus punctatus*	--/--	No	X	
*White Catfish[3]	*Ictalurus catus*	--/--	No	X	
*Yellow Catfish[3]	*Ictalurus natalis*	--/--	No	X	
SALMONIFORMES (Salmons and Trout)					
Rainbow Trout[3]	*Onchorynchus mykiss*	--/--	No	X	
CLASS: AMPHIBIA (Amphibians)					
CAUDATA (Salamanders)					
PLETHODONTIDAE (Lungless Salamanders)					
Garden Slender Salamander[3]	*Batrachoseps major*	--/--	No	X	
ANURA (Frogs and Toads)					
PELOBATIDAE (Spadefoot Toads)					
Western Spadefoot[3]	***Spea (Scaphiopus) hammondii***	**--/SSC**	**No**	**X**	

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BUFONIDAE (True Toads)					
Arroyo Toad	***Bufo californicus***	**FE/SSC**	**Yes**	**X**	
Western Toad	*Bufo boreas*	--/--	No	X	
HYLIDAE (Treefrogs and relatives)					
California Tree Frog	*Pseudacris cadaverina*	--/--	No	X	X
Pacific Tree Frog	*Pseudacris regilla*	--/--	No	X	
RANIDAE (True Frogs)					
*Bullfrog	*Rana catesbeiana*	--/--	No	X	
CLASS: REPTILIA (Reptiles)					
TESTUDINES (Turtles)					
EMYDIDAE (Box and Water Turtles)					
*Red-eared Slider[3]	*Trachemys scripta*	--/--	No	X	
Southwestern Pond Turtle[3]	***Clemmys marmorata pallida***	**--/SSC**	**Yes**	**X**	**X**
SQUAMATA (Lizards and Snakes)					
PHRYNOSOMATIDAE					
Granite Spiny Lizard	*Sceloporus orcutti*	--/--	No	X	
San Diego Horned Lizard[3]	***Phrynosoma coronatum blainvillei***	**--/SSC**	**Yes**	**X**	**X**
Side-blotched Lizard	*Uta stansburiana*	--/--	No	X	X
Western Fence Lizard	*Sceloporus occidentalis*	--/--	No	X	
EUBLEPHARIDAE (Eyelid Geckos)					
San Diego Banded Gecko[3]	***Coleonyx variegatus abbotti***	**--/SSC**	**No**	**X**	
XANTUSIIDAE (Night Lizards)					
Granite Night Lizard[3]	*Xantusia henshawi*	--/--	No	X	
SCINCIDAE (Skinks)					
Gilbert's Skink	*Eumeces gilberti*	**--/--**	No	**X**	
TEIIDAE (Whiptails and relatives)					
Orange-throated Whiptail	***Cnemidophorus hyperythrus beldingi***	**--/SSC**	**Yes**	**X**	**X**
Western Whiptail	*Cnemidophorus tigris multiscutatus*	--/--	No	X	X
ANGUIDAE (Alligator Lizards and relatives)					

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Southern Alligator Lizard[3]	*Elgaria multicarinata*	--/--	No	X	
BOIDAE (Boas)					
Coastal Rosy Boa	***Lichanura trivirgata roseofusca***	**--/--**	**No**	**X**	
COLUBRIDAE (Colubrids)					
Common Kingsnake	*Lampropeltis getula californiae*	--/--	No	X	
Gopher Snake[3]	*Pituophis melanoleucus*	--/--	No	X	
Striped Racer (California Whipsnake)	*Masticophis lateralis*	--/--	No	X	
Two-striped Garter Snake	***Thamnophis hammondii***	**--/SSC**	**No**	**X**	
Western Lyresnake	*Trimorphodon biscutatus lyrophanes*	--/--	No	X	
VIPERIDAE (Vipers)					
No. Red Diamond Rattlesnake[3]	***Crotalus ruber ruber***	**--/SSC**	**No**	**X**	
Speckled Rattlesnake	*Crotalus mitchellii*	--/--	No	X	
Western Rattlesnake	*Crotalus viridis*	--/--	No	X	
CLASS: AVES (Birds)					
PODICIPEDIFORMES (Grebes)					
PODICIPEDIDAE (Grebes)					
Clark's Grebe[3]	*Aechmophorus clarki*	--/--	No	X	
Eared Grebe[3]	*Podiceps nigricollis*	--/--	No	X	
Pied-Billed Grebe	*Podilymbus podiceps*	--/--	No	X	
Western Grebe[3]	*Aechmophorus occidentalis*	--/--	No	X	X
GAVIIFORMES (Loons)					
GAVIIDAE (Loons)					
Common Loon[3]	*Gavia immer*	--/--	No	X	
PELECANIFORMES (Pelicans and Allies)					
PHALACROCORACIDAE (Cormorants)					
Double-Crested Cormorant	*Phalacrocorax auritus*	--/--	No	X	
CICONIIFORMES (Herons, Storks, Ibises, and relatives)					
ARDEIDAE (Herons and Bitterns)					
Black-crowned Night-Heron	*Nycticorax nycticorax*	--/--	No	X	
Great Blue Heron	*Ardea herodius*	--/--	No	X	
Great Egret	*Ardea albus*	--/--	No	X	X
Green Heron	*Butorides virescens*	--/--	No	X	X
Snowy Egret	*Egretta thula*	--/--	No	X	X

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
CATHARTIDAE (New World Vultures)					
Turkey Vulture	*Cathartes aura*	--/--	No	X	X
ANSERIFORMES (Screamers, Ducks, and relatives)					
ANATIDAE (Swans, Geese, and Ducks)					
American Wigeon[3]	*Anas americana*	--/--	No	X	
Bufflehead[3]	*Bucephala albeola*	--/--	No	X	
Canada Goose[3]	*Branta canadensis*	--/--	No	X	
Canvasback[3]	*Aythya valisineria*	--/--	No	X	
Common Merganser[3]	*Mergus merganser*	--/--	No	X	
Gadwall[3]	*Anas strepera*	--/--	No	X	
Green-winged Teal[3]	*Anas crecca*	--/--	No	X	
Lesser Scaup[3]	*Aythya affinis*	--/--	No	X	X
Mallard	*Anas platyrhynchos*	--/--	No	X	
Northern Shoveler[3]	*Anas clypeata*	--/--	No	X	
Red-breasted Merganser[3]	*Mergus serrator*	--/--	No	X	
Ring-necked Duck[3]	*Aythya collaris*	--/--	No	X	X
Ruddy Duck[3]	*Oxyura jamaicensis*	--/--	No	X	
Snow Goose	*Chen caerulescens*	--/--	No	X	
Surf Scoter	*Melanitta perspicillata*	--/--	No	X	
FALCONIFORMES (Vultures, Hawks, and Falcons)					
ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)					
Bald Eagle[3]	***Haliaeetus leucocephalus***	**FT, BEPA/SE,SFP**	**Yes**	**X**	
Cooper's Hawk	***Accipiter cooperii***	**--/SSC**	**Yes**	**X**	**X**
Golden Eagle	***Aquila chrysaetos***	**BEPA/SFP**	**Yes**	**X**	**X**
Northern Harrier[3]	***Circus cyaneus***	**--/SSC**	**Yes**	**X**	**X**
Osprey	***Pandion haliaetus***	**--/SSC**	**No**	**X**	
Red-shouldered Hawk	*Buteo lineatus*	--/--	No	X	X
Red-tailed Hawk	*Buteo jamaicensis*	--/--	No	X	X
Sharp shinned Hawk[3]	***Accipiter striatus***	**--/SSC**	**No**	**X**	
White-tailed Kite	***Elanus leucurus***	**--/SFP**	**No**	**X**	**X**
FALCONIDAE (Caracaras and Falcons)					
American Kestrel	*Falco sparverius*	--/--	No	X	
Peregrine Falcon[3]	***Falco peregrinus***	**FD/SE, SFP**	**Yes**	**X**	
GRUIFORMES (Cranes, rails, and relatives)					
RALLIDAE (Rails, coots)					
American Coot	*Fulica americana*	--/--	No	X	X
Common Moorhen	*Gallinula chloropus*	--/--	No	X	
ODONTOPHORIDAE (New World Quail)					
California Quail	*Callipepla californica*	--/--	No	X	X
CHARADRIIFORMES (Shorebirds, Gulls, and relatives)					
CHARADRIIDAE (Plovers and relatives)					

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Killdeer[3]	*Charadrius vociferus*	--/--	No	X	
SCOLOPACIDAE (Sandpipers and relatives)					
Common Snipe[3]	*Gallinago gallinago*	--/--	No	X	
Greater Yellowlegs[3]	*Tringa melanoleuca*	--/--	No	X	
Spotted Sandpiper	*Actitis macularia*	--/--	No	X	
LARIDAE (Gulls and Terns)					
Bonaparte's Gull	*Larus philidelphia*	--/--	No	X	
Caspian Tern	*Sterna caspia*	--/--	No	X	
Forster's Tern	*Sterna forsteri*	--/--	No	X	
Herring Gull[3]	*Larus argentatus*	--/--	No	X	
Ring-billed Gull	*Larus delawarensis*	--/--	No	X	
COLUMBIFORMES (Pigeons and Doves)					
COLUMBIDAE (Pigeons and Doves)					
Mourning Dove	*Zenaida macroura*	--/--	No	X	X
*Rock Pigion	*Columba livia*	--/--	No	X	
CUCULIFORMES (Cuckoos and relatives)					
CUCULIDAE (Typical Cuckoos)					
Greater Roadrunner[3]	*Geococcyx californianus*	--/--	No	X	
STRIGIDAE (Typical Owls)					
Great Horned Owl[3]	*Bubo virginianus*	--/--	No	X	
APODIFORMES (Swifts and Hummingbirds)					
APODIDAE (Swifts)					
White-throated Swift	*Aeronautes saxatalis*	--/--	No	X	
TROCHILIDAE (Hummingbirds)					
Allen's Hummingbird[3]	*Selasphorus sasin*	--/--	No	X	
Anna's Hummingbird	*Calypte anna*	--/--	No	X	X
Black-chinned Hummingbird[3]	*Archilochus alexandri*	--/--	No	X	
Costa's Hummingbird	*Calypte costae*	--/--	No	X	
Rufous Hummingbird[3]	*Selasphorus rufus*	--/--	No	X	
CORACIIFORMES (Kingfishers and relatives)					
ALCEDINIDAE (Kingfishers)					
Belted Kingfisher	*Ceryle alcyon*	--/--	No	X	X
PICIFORMES (Woodpeckers and relatives)					
PICIDAE (Woodpeckers and Wrynecks)					
Acorn Woodpecker	*Melanerpes formicivorus*	--/--	No	X	X

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
Downy Woodpecker	*Picoides pubescens*	--/--	No		X
Northern Flicker	*Colaptes auratus*	--/--	No	X	X
Nuttall's Woodpecker	*Picoides nuttallii*	--/--	No	X	X
Red-breasted Sapsucker[3]	*Sphyrapicus ruber*	--/--	No	X	
PASSERIFORMES (Perching Birds)					
TYRANNIDAE (Tyrant Flycatchers)					
Ash-throated Flycatcher	*Myiarchus cinerascens*	--/--	No	X	
Black Phoebe	*Sayornis nigricans*	--/--	No	X	X
Cassin's Kingbird	*Tyrannus vociferans*	--/--	No	X	
Pacific-Slope Flycatcher	*Empidonax difficilis*	--/--	No	X	
Say's Phoebe	*Sayornis saya*	--/--	No	X	
Western Kingbird	*Tyrannus verticalis*	--/--	No	X	
Western Wood Pewee	*Contopus sordidulus*	--/--	No	X	
LANIIDAE (Shrikes)					
Loggerhead Shrike[3]	***Lanius ludovicianus***	**--/SSC**	**No**	**X**	
VIREONIDAE (Typical Vireos)					
Least Bell's Vireo	***Vireo bellii pusillus***	**FE/SE**	**Yes**	**X**	
Warbling Vireo	*Vireo gilvus*	--/--	No	X	
CORVIDAE (Jays, Magpies, and Crows)					
American Crow	*Corvus brachyrhynchos*	--/--	No	X	X
Common Raven	*Corvus corax*	--/--	No	X	X
Western Scrub-Jay	*Aphelocoma californica*	--/--	No	X	X
BOMBYCILLIDAE (Waxwings and Silky Flycatchers)					
Phainopepla	*Phainopepla nitens*	--/--	No	X	
TURDIDAE					
Hermit Thrush[3]	*Catharus guttatus*	--/--	No	X	X
Western Bluebird	***Sialia mexicana***	**--/--**	**Yes**	**X**	
STURNIDAE (Starlings & Allies)					
*European Starling	*Sturnus vulgaris*	--/--	No	X	
MIMIDAE (Mockingbirds and Thrashers)					
California Thrasher	*Toxostoma redivivum*	--/--	No	X	X
Northern Mockingbird	*Mimus polyglottos*	--/--	No	X	
SITTIDAE (Nuthatches)					
White-breasted Nuthatch	*Sitta carolinensis*	--/--	No	X	
TROGLODYTIDAE (Wrens)					
Bewick's Wren	*Thryomanes bewickii*	--/--	No	X	X
Canyon Wren	*Catherpes mexicanus*	--/--	No	X	
House Wren	*Troglodytes aedon*	--/--	No	X	
Rock Wren	*Salpinctes obsoletus*	--/--	No	X	

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
POLIOPTILIDAE (Verdin and Gnatcatcher)					
Blue Gray Gnatcatcher	*Polioptila caerulea*	--/--	No	X	X
California Gnatcatcher[3]	***Polioptila californica californica***	**FT/SSC**	**Yes**	**X**	**X**
PARIDAE (Titmice and relatives)				X	
Oak Titmouse	*Baeolophus inornatus*	--/--	No	X	X
AEGITHALIDAE (Bushtit)					
Bushtit	*Psaltriparus minimus*	--/--	No	X	X
HIRUNDINIDAE (Swallows)					
Cliff Swallow	*Petrochelidon pyrrhonota*	--/--	No	X	
Northern Rough-winged Swallow[3]	*Stelgidopteryx serripennis*	--/--	No	X	
Violet-green Swallow	*Tachycineta thalassina*	--/--	No	X	
REGULIDAE (Kinglets)					
Ruby-crowned Kinglet[3]	*Regulus calendula*	--/--	No	X	X
TIMALIIDAE (Babblers)					
Wrentit	*Chamaea fasciata*	--/--	No	X	X
ALAUDIDAE (Larks)					
Horned Lark	***Eremophila alpestris***	**--/SSC**	**No**	**X**	
PASSERIDAE					
House Sparrow	**Passer domesticus*[3]	--/--	No	X	
MOTACILLIDAE (Pipits and Wagtails)					
American Pipit[3]	*Anthus rubescens*	--/--	No	X	
FRINGILLIDAE (Finches)					
American Goldfinch[3]	*Carduelis tristis*	--/--	No	X	
House Finch	*Carpodacus mexicanus*	--/--	No	X	
Lesser Goldfinch	*Carduelis psaltria*	--/--	No	X	X
EMBERIZIDAE (Emberizines)					
Bell's Sage Sparrow	***Amphispiza belli bellii***	**--/SSC**	**No**	**X**	
Black-chinned Sparrow	*Spizella atrogularis*	--/--	No	X	
California Towhee	*Pipilo crissalis*	--/--	No	X	X
Chipping Sparrow[3]	*Spizella passerina*	--/--	No	X	
Grasshopper Sparrow	***Ammodramus savannarum***	**--/--**	**No**	**X**	
Lark Sparrow	*Chondestes grammacus*	--/--	No	X	
Lincoln's Sparrow[3]	*Passerella (Melospiza) lincolnii*	--/--	No	X	
Savannah Sparrow[3]	*Passerculus sandwichensis*	--/--	No	X	

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
Song Sparrow	*Melospiza melodia*	--/--	No	X	X
CA Rufous-crowned Sparrow	***Aimophila ruficeps canescens***	**--/SSC**	**Yes**	**X**	**X**
Spotted Towhee	*Pipilo maculatus*	--/--	No	X	
White-crowned Sparrow	*Zonotrichia leucophrys*	--/--	No	X	X
PARULIDAE (Wood Warblers and relatives)					
Black-throated Gray Warbler[3]	*Dendroica nigrescens*	--/--	No	X	
Common Yellowthroat	*Geothlypis trichas*	--/--	No	X	
McGillivray's Warbler	*Oporornis tolmiei*	--/--	No	X	
Nashville Warbler[3]	*Vermivora ruficapilla*	--/--	No	X	
Orange-crowned Warbler	*Vermivora celata*	--/--	No	X	X
Townsend's Warbler	*Dendroica townsendii*	--/--	No	X	
Wilson's Warbler	*Wilsonia pusilla*	--/--	No	X	
Yellow-breasted Chat	***Icteria virens***	**--/SSC**	**No**	**X**	
Yellow-rumped Warbler	*Dendroica coronata*	--/--	No	X	X
CARDINALIDAE (Cardinals, Grosbeaks & Allies)					
Blue Grosbeak	*Guiraca caerulea*	--/--	No	X	
Lazuli Bunting	*Passerina amoena*	--/--	No	X	
Black-headed Grosbeak	*Pheucticus melanocephalus*	--/--	No	X	
ICTERIDAE (Blackbirds, Orioles & Allies)					
Brewer's Blackbird	*Euphagus cyanocephalus*				X
*Brown-headed Cowbird	*Molothrus ater*	--/--	No		
Bullocks Oriole	*Icterus bullockii*	--/--	No	X	
Hooded Oriole	*Icterus cucullatus*	--/--	No	X	
Red-winged Blackbird	*Agelaius phoeniceus*	--/--	No	X	
CLASS: MAMMALIA (Mammals)					
DIDELPHIMORPHIA (Marsupials)				X	
DIDELPHIDAE (Opossums)				X	
*Virginia Opossum	*Didelphis virginiana*	--/--	No	X	
CHIROPTERA (Bats)					
VESPERTILIONIDAE (Evening Bats)					
Big Brown Bat[3]	*Eptesicus fuscus*	--/--	No	X	
California Myotis	*Myotis californicus*	--/--	No	X	
MOLOSSIDAE (Free-tailed Bats)					
Western Mastiff Bat[3]	***Eumops perotis californicus***	**--/SSC**	**No**	**X**	**X**
Brazilian Free-tailed Bat[3]	*Tadarida brasiliensis*	--/--	No	X	
LAGOMORPHA (Rabbits, Hares, and Pikas)					

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
LEPORIDAE (Rabbits and Hares)					
Audubon's (Desert) Cottontail	*Sylvilagus audubonii*	--/--	No	X	
Brush Rabbit[3]	*Sylvilagus bachmani*	--/--	No	X	
RODENTIA (Squirrels, Rats, Mice, and relatives)					
SCIURIDAE (Squirrels, Chipmunks, and Marmots)					
California Ground Squirrel	*Spermophilus beecheyi*	--/--	No	X	
GEOMYIDAE (Pocket Gophers)					
Botta's Pocket Gopher	*Thomomys bottae* (mounds)	--/--	No	X	
HETEROMYIDAE (Pocket Mice and Kangaroo Rats)					
Agile Kangaroo Rat[3]	*Dipodomys agilis* (burrows)	--/--	No	X	
California (Dulzura) Pocket Mouse[3]	***Chaetodipus californicus femoralis***	**--/SSC**	**No**	**X**	
Dulzura Kangaroo Rat	*Dipodomys simulans*	--/--	No	X	
MURIDAE					
Brush Mouse[3]	*Peromyscus boylii*	--/--	No	X	
Cactus Mouse[3]	*Peromyscus eremicus*	--/--	No	X	
California Mouse[3]	*Peromyscus californicus*	--/--	No	X	
Deer Mouse[3]	*Peromyscus maniculatus clementis*	--/--	No	X	
San Diego Desert Woodrat[3]	***Neotoma lepida intermedia*** (nests)	**--/SSC**	**No**	**X**	
Dusky-footed Woodrat[3]	*Neotoma fuscipes* (nests)	--/--	No	X	
Western Harvest Mouse	*Reithrodontomys megalotis limicola*	--/--	No	X	
CARNIVORA (Carnivores)					
CANIDAE (Foxes, Wolves, and relatives)					
Coyote	*Canis latrans*	--/--	No	X	X
*Domestic Dog	*Canis familiaris*	--/--	No	X	
Gray Fox	*Urocyon cinereoargenteus*	--/--	No	X	
PROCYONIDAE (Raccoons and relatives)					
Raccoon	*Procyon lotor* (tracks)	--/--	**No**	X	
MUSTELIDAE (Skunks, and weasles)					
Striped Skunk[3]	*Mephitis mephitis*	--/--		X	
FELIDAE (Cats)					
Bobcat	*Lynx rufus* (tracks, scat)	--/--		X	X

Scientific Name[1]	Common Name	Status[2]	Covered by MSCP	San Vicente	Moosa
ARTIODACTYLA (Even-toed Ungulates)					
CERVIDAE (Deer, Elk, and relatives)					
Southern Mule Deer	***Odocoileus hemionus fuliginata***	**--/--**	**Yes**	**X**	

[1] **Data Sources**: General biological resources surveys and focused species surveys conducted by TAIC, 2005 and 2006; PSBS 1991a , 1991b, 1993; ESP Biological Technical Report (1995); and the following species databases: Bird and Mammal Atlases (San Diego Natural History Museum), California Natural Diversity Database, MSCP, and U.S. Forest Service.

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

[3] Documented prior to 2005

* **Introduced Species**

† **Presumed extirpated.**

APPENDIX C

U.S. Army Corps of Engineers
Wetlands Delineation Report

U.S. Army Corps of Engineers
Jurisdictional Wetlands and Waters

for the

Carryover Storage and
San Vicente Dam Raise Project

Amendment

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March 28, 2008

Introduction

The following amendment contains the determination of wetlands and waters under the jurisdiction of the U.S. Army Corps of Engineers (USACE) for the San Diego County Water Authority's (Water Authority) Carryover Storage and San Vicente Dam Raise project (CSP). This amendment amends some previously collected wetlands data contained in Appendix A with recently collected data contained in Appendix B. The information summarized herein is based on data from jurisdictional wetlands determinations and delineations prepared by

- PBS&J and Technology Associates on February 17, 2006 (Appendix A), based upon routine jurisdictional delineation field work (spot checks) undertaken in the fall of 2005 to confirm information previously collected by Pacific Southwest Biological Service (PSBS) and Ogden Environmental in 1992 and 1993 for the Water Authority's Emergency Storage Project (ESP); and
- Jones & Stokes in March 2008 (Appendix B), based upon routine jurisdictional delineation field work along San Vicente (Kimball Valley) and Padre Barona creeks performed on February 7 and 11, 2008.

<u>Alternative 3: Marina Quarry Option</u>

A third quarry option was added following the date of the 2006 wetlands delineation report and will be evaluated in this amendment. Aggregate processing will occur within the footprint of the planned marina, as follows:

> The marina quarry option (Figure 1, replacing Figures 3a and 3b of Appendix A) consists of an on-site quarry that encompasses the marina and includes additional area surrounding the marina, which will be constructed after all necessary material has been quarried from the site. The footprint for this option includes the Primary Impact Area, plus an additional area that extends beyond the Primary Impact Area and slightly encroaches on the City's Cornerstone Lands Preserve. The quarry portion of the marina quarry footprint will be reseeded after aggregate extraction and production.

Methods

All jurisdictional delineations conducted for this project followed the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (USACE 1987). Specific methods are detailed in Appendix A and B.

In the fall of 2005, Technology Associates confirmed wetlands delineation data collected for the ESP, and spot-checked USACE jurisdictional boundaries where changes between the previously collected data and 2005 were apparent (Appendix A). Routine wetlands delineations were performed for the entire study area, including the area surrounding the reservoir (lakeshore fringe/bathtub ring), and tributaries and creeks flowing into the reservoir (including San Vicente Creek, Padre Barona Creek, and Foster Creek). Delineations in 2005 followed an unseasonally wet year and were conducted at a time that the operational reservoir water level was high.

In February 2008, Jones & Stokes conducted a routine wetlands delineation focused on San Vicente Creek (Kimball Valley) and Padre Barona Creek (Appendix B) within the CSP footprint. The results of this delineation replace the data previously collected for San Vicente Creek and Padre Barona Creek. The changes to existing vegetation communities are depicted in Figure 2 (replacing Figure 4 of Appendix A).

In addition, all mapping of coast live oak riparian forest and southern cottonwood willow riparian forest along tributaries previously identified as USACE jurisdictional wetlands was converted to California Department of Fish and Game (CDFG) streambed based on the delineation results from San Vicente and Padre Barona creeks performed by Jones & Stokes (Appendix B), which determined that coast live oak riparian forest and southern cottonwood willow riparian forest did not occur within the boundaries of USACE jurisdiction. USACE jurisdiction was maintained over unvegetated waters in these above-mentioned tributaries.

Impacts

The following section replaces the impact section in the PBS&J/Technology Associates Wetlands Delineation Report (2006), attached as Appendix A. The analysis of impacts to USACE jurisdiction within the marina quarry footprint and results from the Jones & Stokes delineation along San Vicente and Padre Barona creeks have been added.

Implementation of the CSP (SV 100K alternative) with the Southwest Quarry Option will permanently impact approximately 9.08 acres and temporarily impact approximately 3.54 acres of USACE jurisdictional wetlands and waters, as summarized in Table 1 (replacing Table 3 of Appendix A). Using the Southeast Quarry Option, the CSP will result in approximately equal amounts of impacts: approximately 9.08 acres of permanent USACE jurisdictional impacts, and approximately 3.55 acres of temporary impacts (Table 2, replacing Table 4 of Appendix A). The Marina Quarry Option of the CSP will result in

Table 1. Impacts[1] to Corps-Regulated Wetlands/Vegetated Waters and Unvegetated Waters of the U.S. in the Study Area: Option 1 – Southwest Quarry

Wetlands/Vegetated Waters and Unvegetated Waters of the U.S.	South and West of Dam (Acres)		650-664 AMSL (Acres)		710-766 AMSL (Acres)		Total Acres	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
WETLANDS/VEGETATED WATERS								
Coastal/Valley Freshwater Marsh	0	0	0.01	0	0.69	0	0.70	0
Riparian Scrub								
Southern Willow Scrub	0	0.25	0.22	0	1.12	0	1.34	0.25
Mulefat Scrub	0	0	0.02	0	0.09	0	0.11	0
TOTAL WETLANDS	**0**	**0.25**	**0.25**	**0**	**1.90**	**0**	**2.15**	**0.25**
UNVEGETATED WATERS OF THE U.S.								
Lakeshore Fringe	0.05	0	0.79	0	0.10	0	0.94	0
Seasonal Streambed	0.29	3.29	1.09	0	4.61	0	5.99	3.29
TOTAL UNVEGETATED WATERS	**0.34**	**3.29**	**1.88**	**0**	**4.71**	**0**	**6.93**	**3.29**
TOTAL WETLANDS/VEGETATED WATERS AND UNVEGETATED WATERS OF THE U.S.	**0.34**	**3.54**	**2.13**	**0**	**6.61**	**0**	**9.08**	**3.54**

[1] The CSP wetland impacts reported in this table exclude the previously permitted temporary and permanent impacts from the ESP and San Vicente Pipeline Projects. Where previously-permitted temporary impacts are replaced by permanent CSP impacts, the permanent CSP impacts took precedence and are reported in this table. The excluded ESP project and San Vicente Pipeline project impact footprints are not shown on the wetland impact graphics, however, all mapped wetlands within the study area are displayed on Figures 3, 4 and 5 to reduce graphic complexity.

Table 2. Impacts[2] to Corps-Regulated Wetlands/Vegetated Waters and Unvegetated Waters of the U.S. in the Study Area: Option 2 – Southeast Quarry

Wetlands/Vegetated Waters and Unvegetated Waters of the U.S.	South and West of Dam (Acres)		650-664 AMSL (Acres)		710-766 AMSL (Acres)		Total Acres	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
WETLANDS/VEGETATED WATERS								
Coastal/Valley Freshwater Marsh	0	0	0.01	0	0.69	0	0.70	0
Riparian Scrub								
Southern Willow Scrub	0	0.25	0.22	0	1.12	0	1.34	0.25
Mulefat Scrub	0	0	0.02	0	0.09	0	0.11	0
TOTAL WETLANDS	**0**	**0.25**	**0.25**	**0**	**1.90**	**0**	**2.15**	**0.25**
UNVEGETATED WATERS OF THE U.S.								
Lakeshore Fringe	0.05	0	0.79	0	0.10	0	0.94	0
Seasonal Streambed	0.29	3.30	1.09	0	4.61	0	5.99	3.30
TOTAL UNVEGETATED WATERS	**0.34**	**3.30**	**1.88**	**0**	**4.71**	**0**	**6.93**	**3.30**
TOTAL WETLANDS/VEGETATED WATERS AND UNVEGETATED WATERS OF THE U.S.	**0.34**	**3.55**	**2.13**	**0**	**6.61**	**0**	**9.08**	**3.55**

[2] The CSP wetland impacts reported in this table exclude the previously permitted temporary and permanent impacts from the ESP and San Vicente Pipeline Projects. Where previously-permitted temporary impacts are replaced by permanent CSP impacts, the permanent CSP impacts took precedence and are reported in this table. The excluded ESP project and San Vicente Pipeline project impact footprints are not shown on the wetland impact graphics, however, all mapped wetlands within the study area are displayed on Figures 3, 4 and 5 to reduce graphic complexity.

Table 3. Impacts[3] to Corps-Regulated Wetlands/Vegetated Waters and Unvegetated Waters of the U.S. in the Study Area: Option 3 – Marina Quarry

Wetlands/Vegetated Waters and Unvegetated Waters of the U.S.	South and West of Dam (Acres)		650-664 AMSL (Acres)		710-766 AMSL (Acres)		Total Acres	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
WETLANDS/VEGETATED WATERS								
Coastal/Valley Freshwater Marsh	0	0.11	0.01	0	0.69	0	0.70	0.11
Riparian Scrub								
Southern Willow Scrub	0	0.25	0.22	0	1.12	0	1.34	0.25
Mulefat Scrub	0	0	0.02	0	0.09	0	0.11	0
TOTAL WETLANDS	**0**	**0.36**	**0.25**	**0**	**1.90**	**0**	**2.15**	**0.36**
UNVEGETATED WATERS OF THE U.S.								
Lakeshore Fringe	0.05	2.06	0.79	0	0.10	0	0.94	2.06
Seasonal Streambed	0.29	3.29	1.09	0	4.61	0	5.99	3.29
TOTAL UNVEGETATED WATERS	**0.34**	**5.35**	**1.88**	**0**	**4.71**	**0**	**6.93**	**5.35**
TOTAL WETLANDS /VEGETATED WATERS AND UNVEGETATED WATERS OF THE U.S.	**0.34**	**5.71**	**2.13**	**0**	**6.61**	**0**	**9.08**	**5.71**

[3] The CSP wetland impacts reported in this table exclude the previously permitted temporary and permanent impacts from the ESP and San Vicente Pipeline Projects. Where previously-permitted temporary impacts are replaced by permanent CSP impacts, the permanent CSP impacts took precedence and are reported in this table. The excluded ESP project and San Vicente Pipeline project impact footprints are not shown on the wetland impact graphics, however, all mapped wetlands within the study area are displayed on Figures 3, 4 and 5 to reduce graphic complexity.

approximately 9.08 acres of permanent impacts and 5.71 acres of temporary impacts to USACE jurisdictional waters (Table 3).

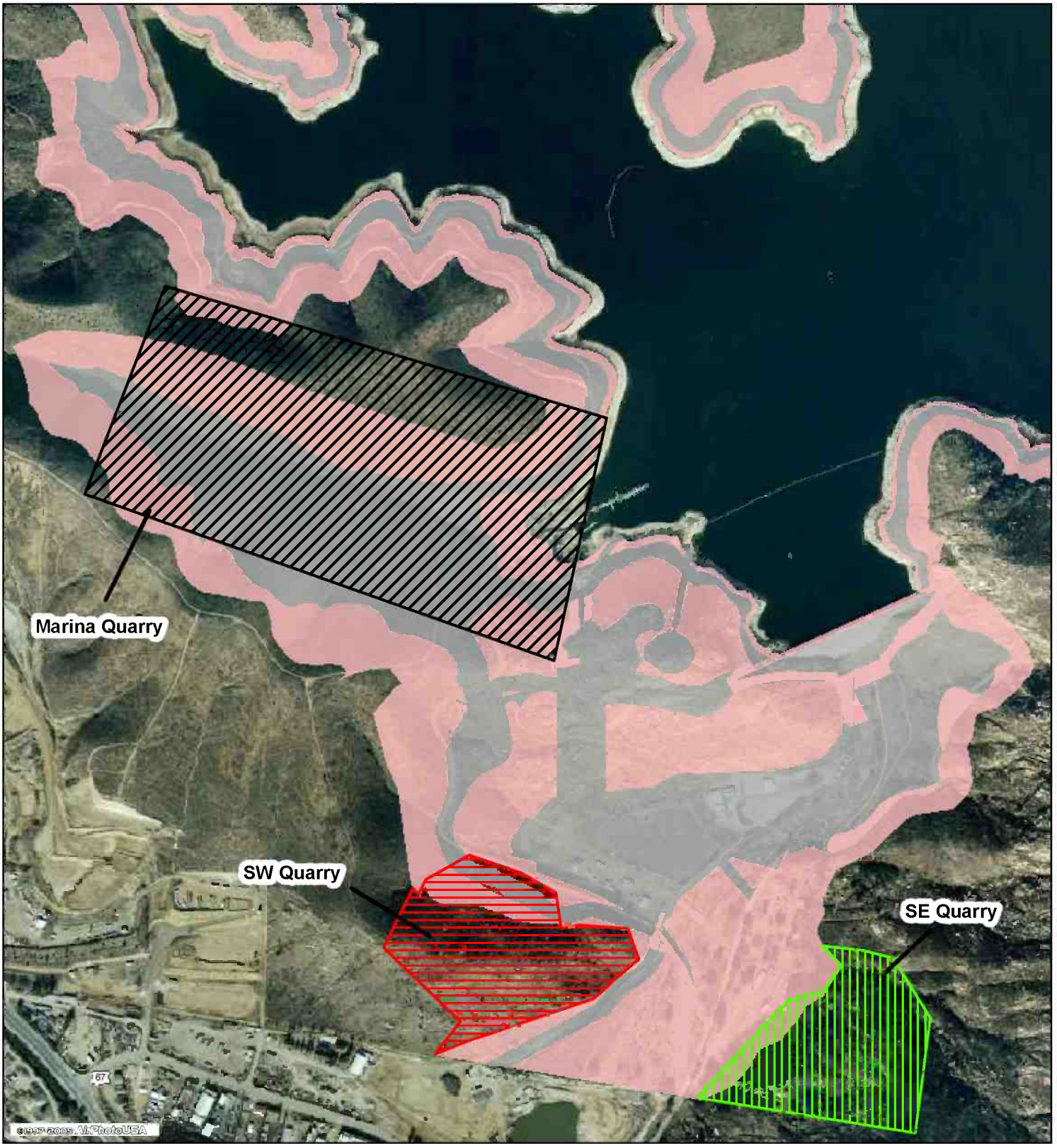
The impact zone includes the area of inundation around the reservoir from the OHWM (El 650 AMSL) up to the spillway of the new dam (El 766 AMSL), exclusive of the ESP study area (El 664-710 AMSL). The construction area south of the dam will be impacted as well; however, only impacts associated with the CSP (exclusive of ESP and San Vicente Pipeline project footprints) are analyzed in this report.

The area around the reservoir will be inundated permanently and impacts to wetlands are assumed to be direct and permanent. Permanent impacts constitute the permanent flooding of the study area surrounding the reservoir between El 650 AMSL and El 766 AMSL (following a construction-related draw-down period), and the footprints of the marina, three on-site quarry options for aggregate processing, access roads, saddle dams, the enlarged area of the raised San Vicente Dam, and Bypass Pipeline (including portions underlying a paved maintenance road and portions within permanently graded areas inside the reservoir). Temporary impacts are associated with construction grading, access and staging, and those impacts whose footprints will be abandoned, re-contoured, and in some cases revegetated.

There is essentially no difference (0.01 acre, temporary) in the impacts to jurisdictional wetlands and waters between the Southeast and Southwest Quarry option footprints. The Marina Quarry Option would result in similar permanent impacts as the Southeast and Southwest Quarry options. However, temporary impacts for the Marina Quarry Option would be greater (a difference of approximately 2.17 acres) than temporary impacts associated with the Southeast and Southwest Quarry options. Discussion of impacts to wetlands resources will apply to all three quarry options, unless otherwise noted.

Seasonal streambed is expected to receive the greatest permanent and temporary impacts with 9.29 acres (5.99 acres permanent and 3.30 acres temporary) of this unvegetated water located south of the dam and along drainages leading into the reservoir (Figures 3, 4 and 5, replacing Figures 6, 7a, and 7b of Appendix A). Soils, including both hydric and nonhydric, are depicted in Figure 6 (replacing Figure 5 in the original report). Impacts to seasonal streambed account for approximately 74 percent of the impacts to USACE jurisdictional wetlands resources overall for the Southeast and Southwest Quarry options and 63 percent of the impacts to USACE jurisdictional wetlands resources overall for the Marina Quarry Option. Smaller areas of lakeshore fringe (0.94 acre of permanent impacts for the Southeast and Southwest Quarry options and 3.00 acres of permanent and

temporary impacts for the Marina Quarry Option) and southern willow scrub (1.34 acres of permanent and 0.25 acre of temporary impacts) will be affected as well. Impacts of less than 1 acre are expected to occur in freshwater marsh (0.70 acre for Southeast and Southwest Quarry options and 0.81 acre for Marina Quarry Option) and mulefat scrub (0.11 acre).



Legend

- Marina Quarry Option*
- Southeast Quarry Option
- Southwest Quarry Option
- CSP Primary Impact Area
- Previously Permitted under Emergency Storage Program and San Vicente Pipeline Projects

The southeast and southwest quarry options are permanents impacts. The marina quarry option is a temporary impact.
Note: This is a location graphic that shows the maximum quarry footprints but does not detail project impacts.
* Represents general study boundaries for the Marina Quarry Option for purposes of analysis. If selected, the actual boundaries of the Marina Quarry Option would be determined based on the results of materials testing. The Marina Quarry Option would be mined prior to marina construction, which will occur on portions of the Marina Quarry Option footprint.

N

Feet

0 825

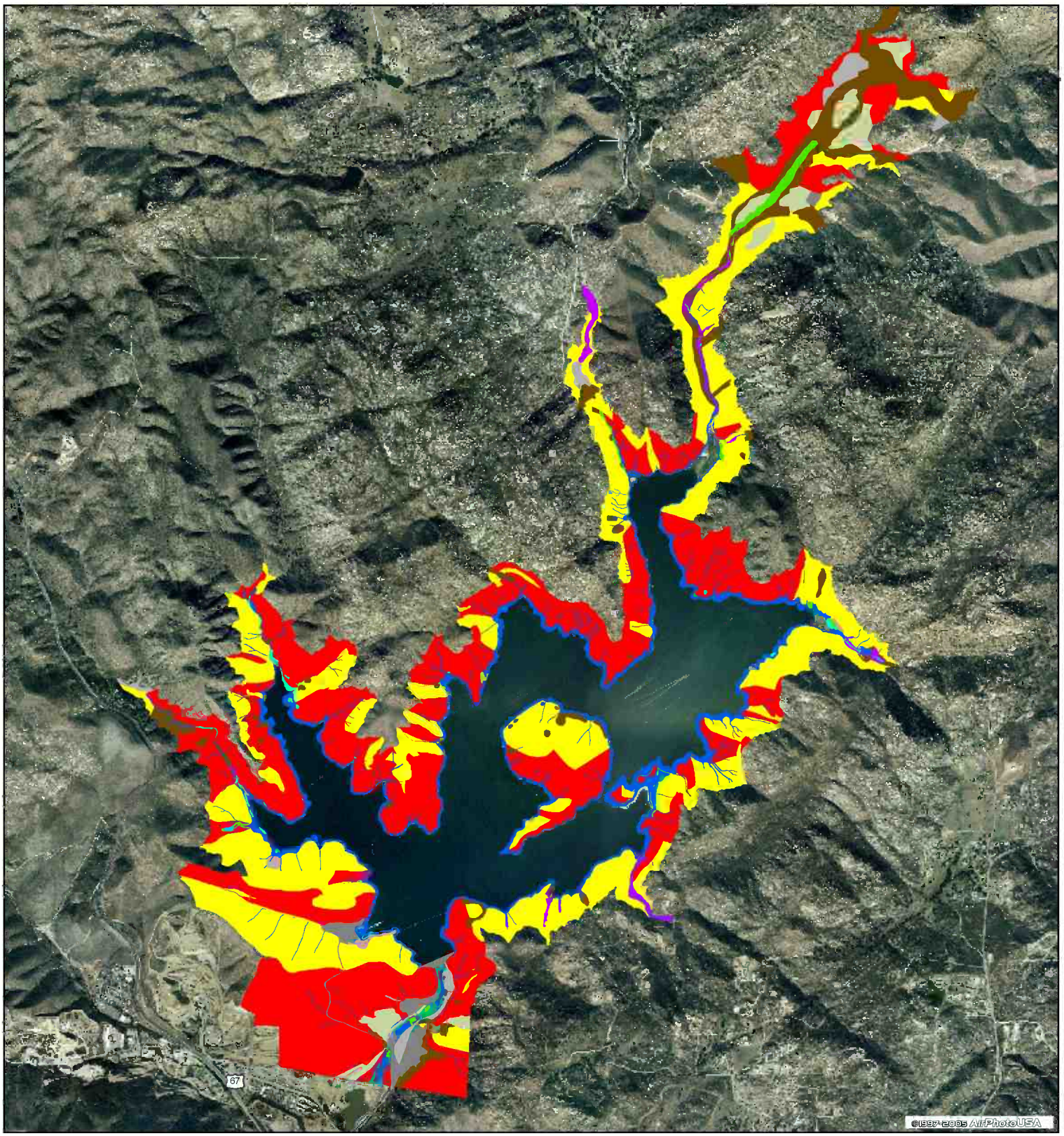
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente Quarry Options

Figure 1

File: T:\projects\sanvicente\plots\figures\Wetland_Delineation\Quarry Preview.mxd

Date: Mar 18, 2008



Legend

- Diegan Coastal Sage Scrub
- Chaparral
- Non-Native Grassland
- Coastal and Valley Freshwater Marsh
- Southern Willow Scrub
- Mule Fat Scrub
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-willow Riparian Forest
- Coast Live Oak Woodland
- Eucalyptus Woodland
- Non-Vegetated Channel/Floodway/Lakeshore Fringe
- Disturbed Habitat
- Urban/Developed

N

Feet

0 3,025

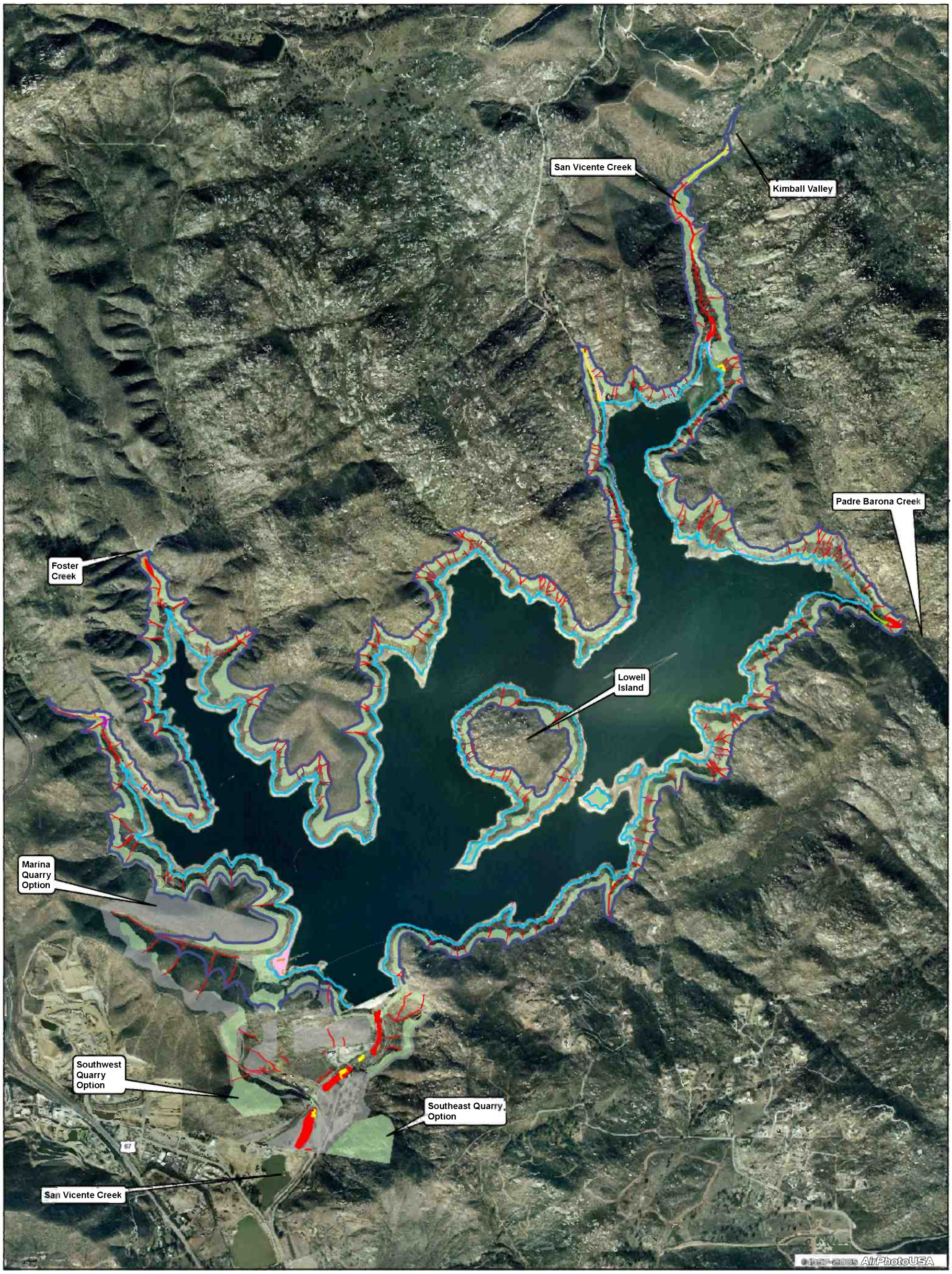
TAIC

Carryover Storage and San Vicente Dam Raise Project
Vegetation Communities

Figure 2

File: T:\projects\sanvicente\plots\figures\Wetland_Delineation\vegetation.mxd

Date: Mar 18, 2008



Legend

- Coastal Valley/Freshwater Marsh
- So. Cottonwood-Willow Riparian Forest
- Mulefat Scrub
- Southern Willow Scrub
- Lakeshore Fringe
- Seasonal Streambed

CSP Project Features

- 650' Contour
- 766' Contour
- CSP Permanent Impacts
- CSP Temporary Impacts

N

0 1,700

Feet

The previously permitted ESP and San Vicente Pipeline impact footprints are not displayed on this map and the acreages have been subtracted in the CSP wetland impact tables. However, all mapped wetlands within the study area are displayed on this map to reduce graphic complexity. The wetland impact tables for the CSP project do not include previously permitted impacts.

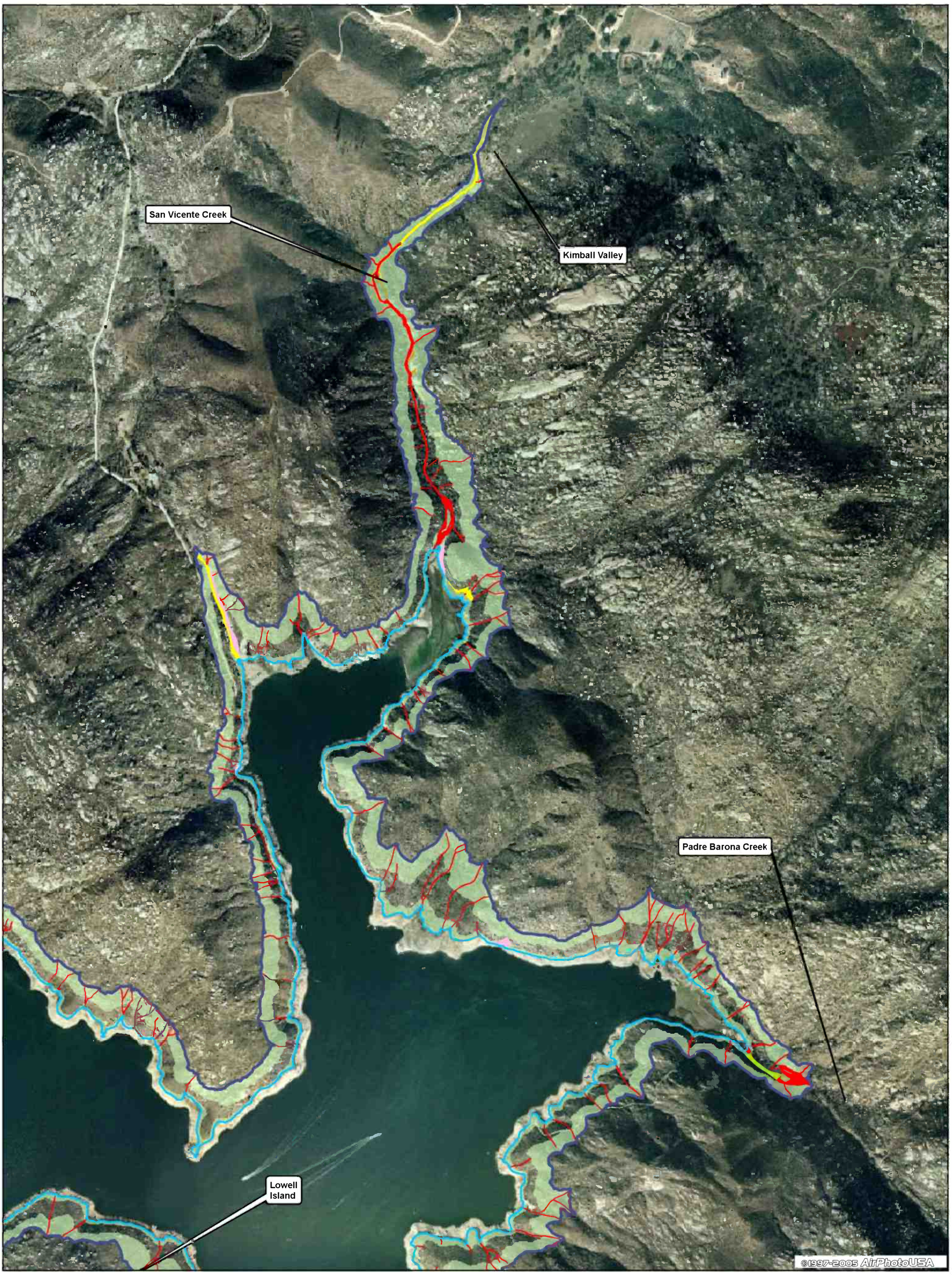
TAIC

Carryover Storage and San Vicente Dam Raise Project
U. S. Army Corps of Engineers Jurisdictional Waters and Wetlands within the Study Area

Figure 3

Document: wetlands_11x17.mxd

Date: Mar 18, 2008



Legend

- Coastal Valley/Freshwater Marsh
- So. Cottonwood-Willow Riparian Forest
- Mulefat Scrub
- Southern Willow Scrub
- Lakeshore Fringe
- Seasonal Streambed

CSP Project Features

- 650' Contour
- 766' Contour
- CSP Permanent Impacts
- CSP Temporary Impacts

N

0 900

Feet

The previously permitted ESP and San Vicente Pipeline impact footprints are not displayed on this map and the acreages have been subtracted in the CSP wetland impact tables. However, all mapped wetlands within the study area are displayed on this map to reduce graphic complexity. The wetland impact tables for the CSP project do not include previously permitted impacts.

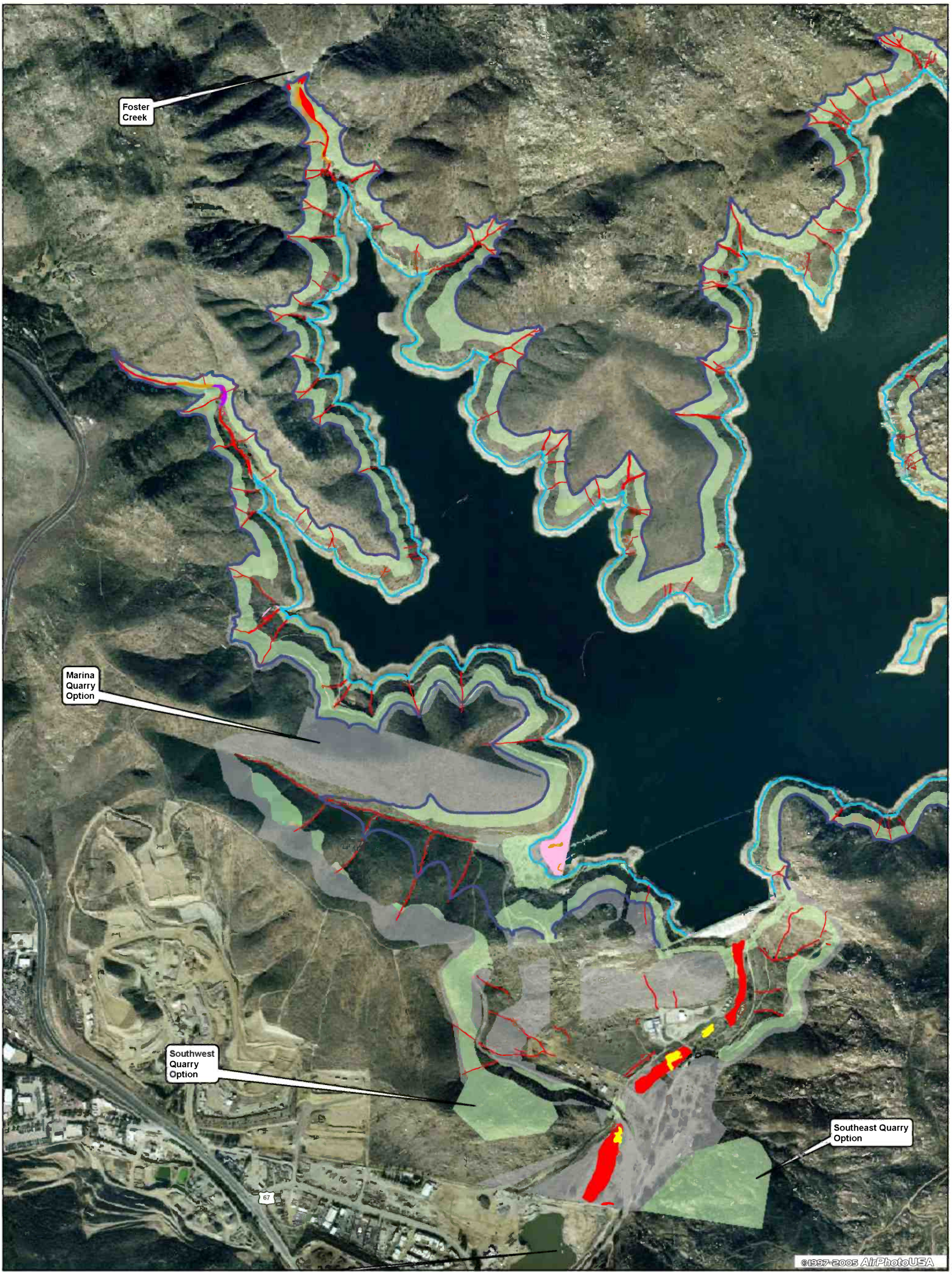
TAIC

Carryover Storage and San Vicente Dam Raise Project
U. S. Army Corps of Engineers Jurisdictional Waters and Wetlands in the Northern Study Area

Figure 4

Document: wetlands_11x17.mxd

Date: Mar 18, 2008



Legend

- Coastal Valley/Freshwater Marsh
- So. Cottonwood-Willow Riparian Forest
- Mulefat Scrub
- Southern Willow Scrub
- Lakeshore Fringe
- Seasonal Streambed

CSP Project Features

- 650' Contour
- 766' Contour
- CSP Permanent Impacts
- CSP Temporary Impacts

N

0 900

Feet

The previously permitted ESP and San Vicente Pipeline impact footprints are not displayed on this map and the acreages have been subtracted in the CSP wetland impact tables. However, all mapped wetlands within the study area are displayed on this map to reduce graphic complexity. The wetland impact tables for the CSP project do not include previously permitted impacts.

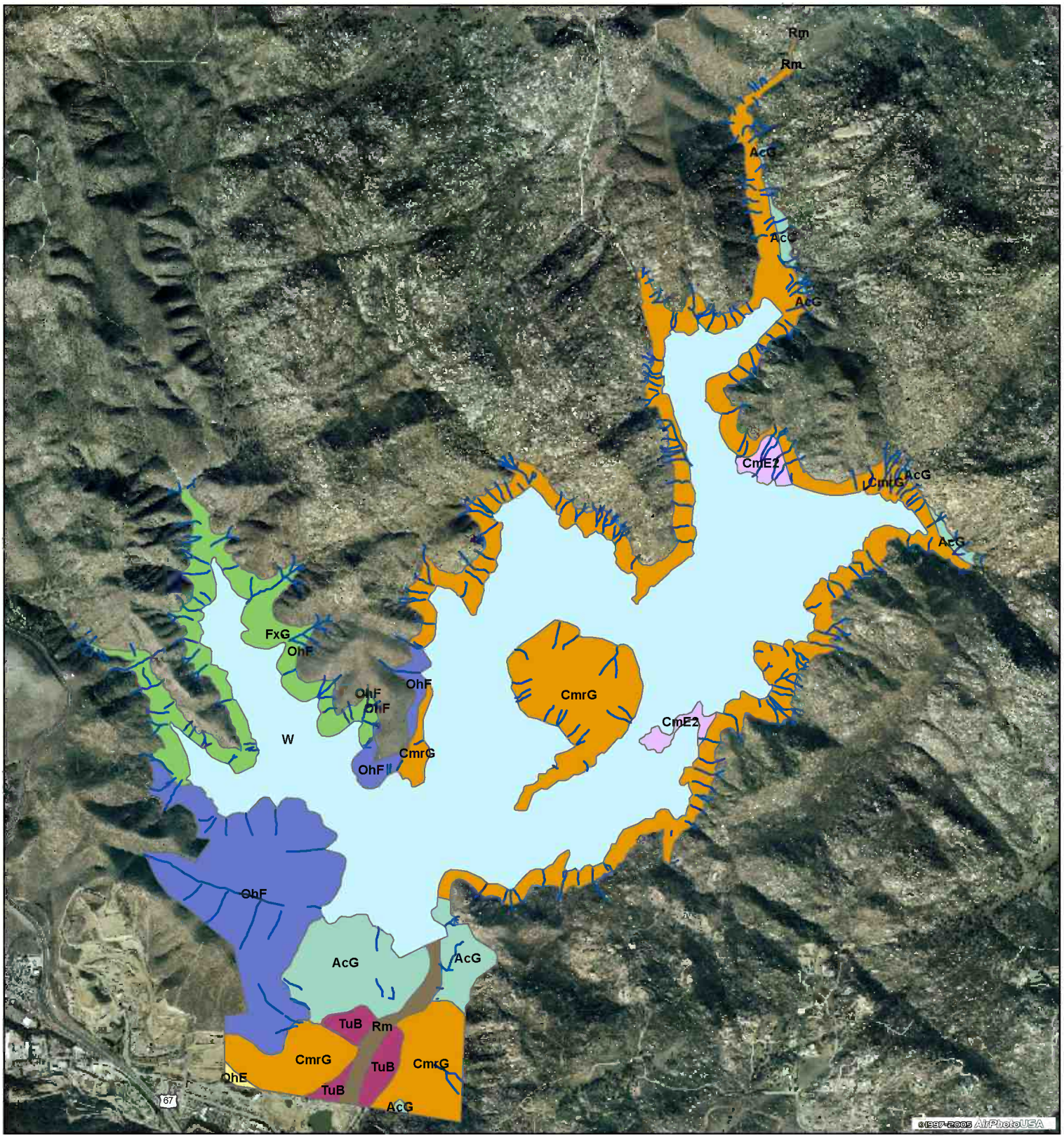
TAIC

Carryover Storage and San Vicente Dam Raise Project
U. S. Army Corps of Engineers Jurisdictional Waters and Wetlands in the Southern Study Area

Figure 5

Document: wetlands_11x17.mxd

Date: Mar 18, 2008



Legend

- AcG, Acid igneous rock land
- CmE2, Cieneba rocky coarse sandy loam, 9 to 30 percent slopes , eroded
- CmrG, Cieneba very rocky coarse sandy loam, 30 to 75 percent slopes
- FxG, Friant rocky fine sandy loam, 30 to 70 percent slopes
- OhE, Olivenhain cobbly loam, 9 to 30 percent slopes
- OhF, Olivenhain cobbly loam, 30 to 50 percent slopes
- RaD2, Ramona sandy loam, 9 to 15 percent slopes, eroded
- Rm, Riverwash-hydric
- TuB, Tujunga sand, 0 to 5 percent slopes-hydric
- W, Water

Source: San Diego County Soil Survey, Natural Resources Conservation Service, 1973

Basemap Legend

Seasonal Stream Beds

N

Feet

0 2,400

TAIC

Carryover Storage and San Vicente Dam Raise Project
Soils

Figure 6

gist\projects\sanvicente\plots\figures\soils.mxd

Date: Mar 28, 2008

APPENDIX A

Amendment to:

U.S. Army Corps of Engineers Wetland Delineation Report

PBS&J and Technology Associates
Draft Submitted: February 17, 2006
Revised Final: March 19, 2008

U.S. Army Corps of Engineers
Wetlands Delineation Report

Carryover Storage and
San Vicente Dam Raise Project

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Draft Submitted: February 17, 2006
Revised Final: March 19, 2008

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Introduction

Technology Associates (TAIC) conducted wetlands determinations and confirmations, including a formal wetlands delineation, in the year 2005 in support of the San Diego County Water Authority's (Water Authority) Carryover Storage and San Vicente Dam Raise Project (CSP), the Proposed Activity. The purpose of this Wetland Delineation Report is to determine the potential impacts to wetlands and waters under the U.S. Army Corps of Engineers' (Corps) jurisdiction within the project site due to the Proposed Activity. This report summarizes existing site conditions, describes the methods used to conduct the delineation, presents delineation results, and assesses potential impacts of the Proposed Activity to Corps jurisdictional wetlands and waters.

Project Location and Study Area

The San Vicente Reservoir is located just north of the community of Lakeside in San Diego County, California (Figure 1). Lowell Island is a prominent feature in the center of the reservoir, and a small peninsula to the south occurs as smaller islands at higher water levels. The site is within the USGS 7.5' San Vicente Reservoir Quadrangle, Sections 13, 14, 25, and 36 Township 14 South, Range 1 West and 16 – 20, 23, 24, and 29 - 31 Township 14 South, Range 1 East.

Reservoir Inundation Area. The study area encompasses the area surrounding the reservoir between the Ordinary High Water Mark (OHWM), which was defined by the Corps as the current dam spillway crest at the 650 feet above mean sea level (AMSL) contour, up to the proposed CSP elevated spillway crest at the 766 feet AMSL contour (see description below) (Figure 2). The approved Emergency Storage Project (ESP) and the San Vicente Pipeline Project and their associated construction footprints, which are expected to impact the CSP area between the 664 and 710 AMSL contours, have already been covered under an individual permit issued by the Corps in 1997 and, therefore, are not included in the CSP project footprint.

The existing San Vicente Dam and Reservoir is owned and operated by the City of San Diego as surface storage for the city's drinking water supply. As such, the reservoir's water level elevation fluctuates significantly based on operational schedules and water needs, and weather conditions. The report graphics reflect the 650 foot AMSL contour as

Legend

San Vicente Reservoir

Basemap Legend

Freeways

River

Lake/Reservoir/Lagoon

N

Miles

0 13

TAIC

San Vicente Reservoir Carry-Over Storage Project
Regional Location Map

Figure 1

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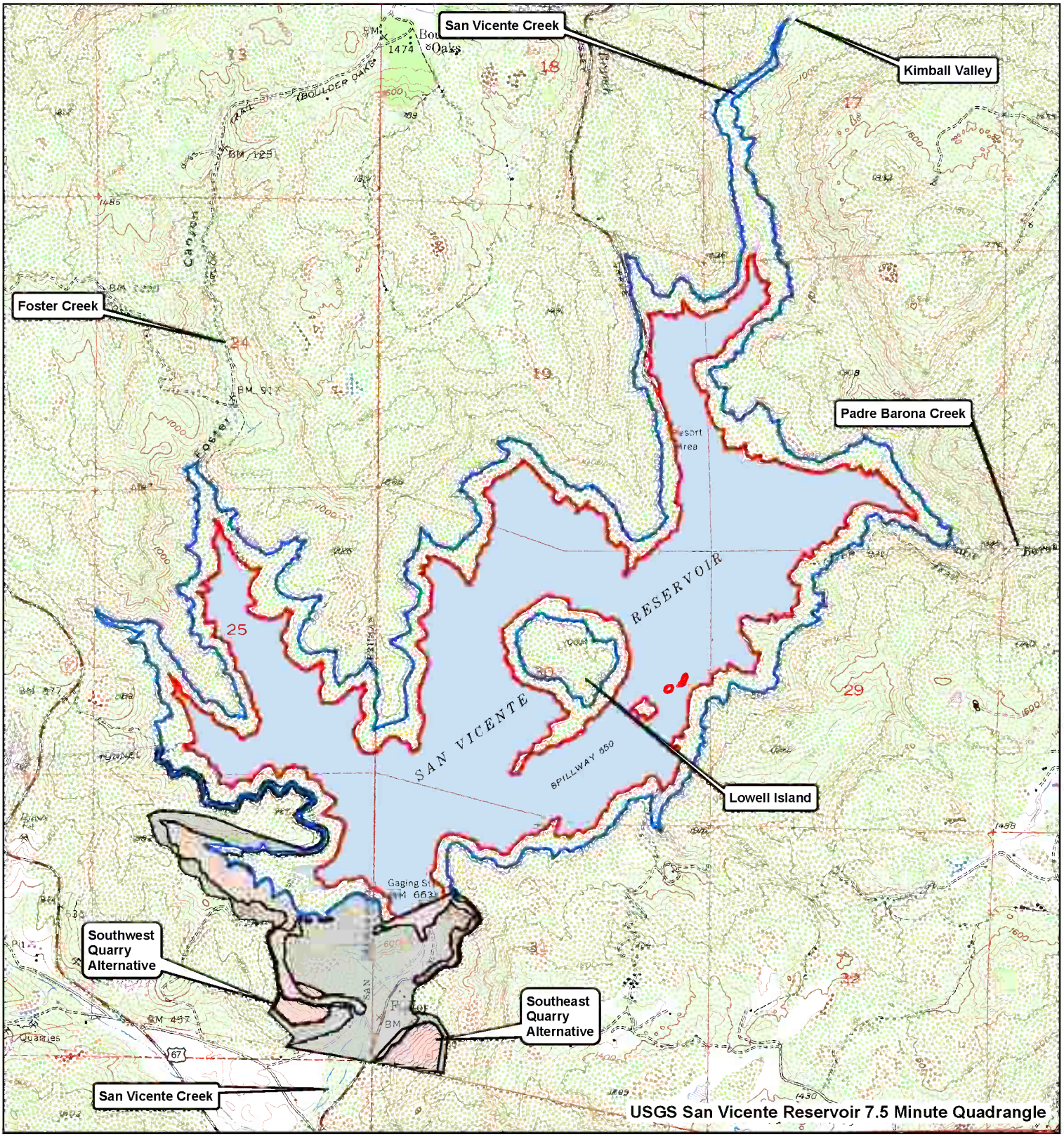
Date: Jan 12, 2006



Legend

- 650' Contour
- 766' Contour
- CSP Permanent Construction Limits of Disturbance
- CSP Temporary Construction Limits of Disturbance

The previously permitted ESP and San Vicente Pipeline footprints are not shown on this map to avoid confusion, however, the acreages have been subtracted in the wetland impact tables. The wetland impact tables for the CSP project do not include previously permitted impacts.

Note: The lake level as shown on the USGS quadrangle map is a cartographic representation and should not be considered a definitive water level, either historic or current.

N

Feet

0 2,500

TAIC

Carryover Storage and San Vicente Dam Raise Project
Study Area with Inundation and Construction Footprints

Figure 2

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Date: Feb 16, 2006

this is the current dam spillway crest, and is considered the OHWM. However, at the time of this delineation, the water level was approximately 20 feet below the OHWM, due to the operation of the reservoir and weather conditions at the time of the survey.

Area South of the Dam. The CSP study area south of the dam includes the construction area for the dam raise, several staging areas, and two alternative aggregate quarry sites, the Southwest and Southeast On-Site Quarry Alternatives (Figures 3a and 3b). Permanent and temporary impact areas are shown on these figures. It should be noted that the portions of the downstream construction area that consist of the approved ESP and San Vicente Pipeline Project footprints are not included in the CSP study area as they have been accounted for in a previous Corps permit (1997).

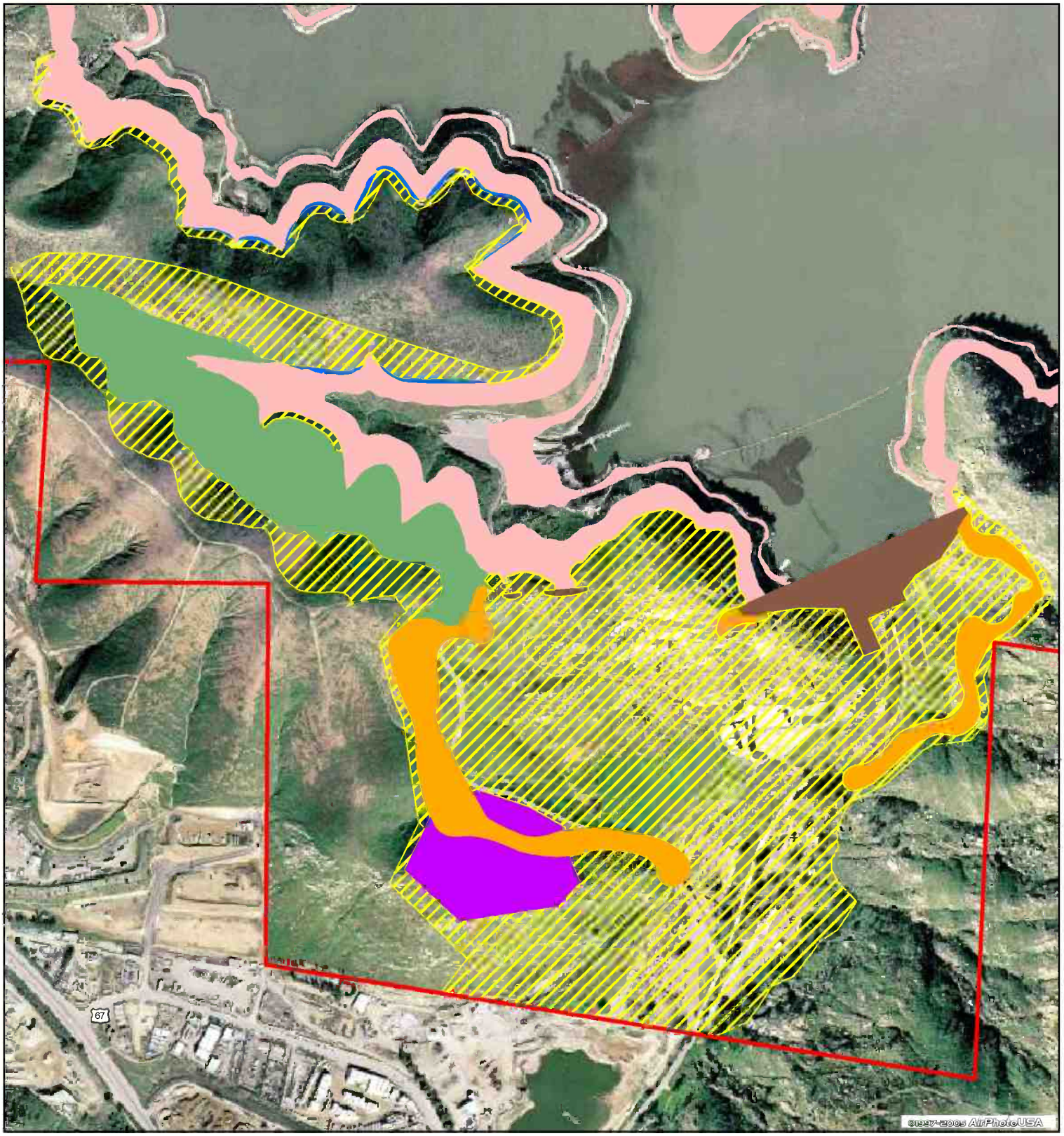
Project Description

Background

Major facilities that currently exist at the project site include San Vicente Dam and Reservoir, a marina, water conveyance facilities, and access roads. The City of San Diego owns and operates the dam and reservoir.

San Vicente Dam was constructed in 1943. The existing dam is a concrete gravity structure founded on bedrock with a structural height of 220 feet AMSL and a crest length of 963 feet. The spillway consists of a 275-ft-long, uncontrolled ogee section near the center of the dam. The crest of the spillway is at elevation (El) 650 AMSL.

San Vicente Reservoir is the southern terminus for the Water Authority's First Aqueduct. The current storage capacity of the reservoir is approximately 90,000 acre-feet, below the 650 feet AMSL spillway crest elevation. At this water elevation, the reservoir surface area is approximately 1,083 acres. The water stored in San Vicente Reservoir is conveyed through the City of San Diego's El Monte Pipeline, which delivers water to the City's Alvarado Water Treatment Plant, and can also supply water to El Capitan Reservoir via the City's El Capitan Pipeline. Reservoir water provides a potable water supply to City of San Diego residents. The existing reservoir also provides public recreational facilities, including boating, fishing, and water skiing.



Legend

- CSP Inundation Areas (650-664/710-766)
- Dam/Saddle Dam
- Marina
- Roads
- Southwest Quarry Alternative
- Bypass Pipeline
- Temporary Limits of Disturbance
- City Property Boundary

The previously permitted ESP and San Vicente Pipeline footprints are not shown on this map to avoid confusion, however, the acreages have been subtracted in the wetland impact tables. The wetland impact tables for the CSP project do not include previously permitted impacts.

N

Feet

0 800

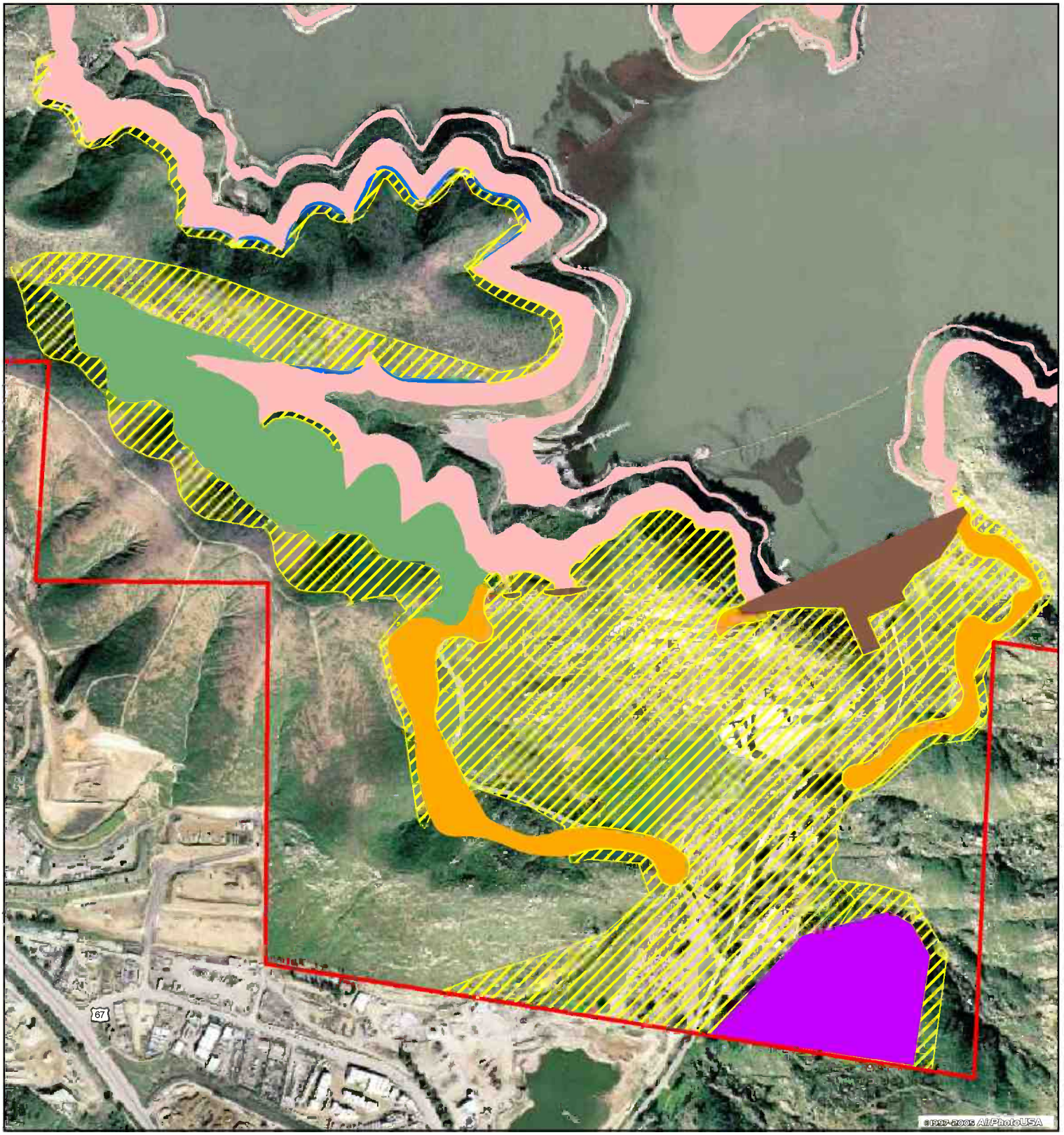
TAIC

Carryover Storage and San Vicente Dam Raise Project
Detailed Construction Footprint with Southwest Quarry Alternative

Figure 3a

gist\projects\sanvicente\plots\figures\quarry_alt1.mxd

Date: Feb 16, 2006



Legend

- CSP Inundation Areas (650-664/710-766)
- Dam/Saddle Dam
- Marina
- Roads
- Southeast Quarry Alternative
- Bypass Pipeline
- Temporary Limits of Disturbance
- City Property Boundary

The previously permitted ESP and San Vicente Pipeline footprints are not shown on this map to avoid confusion, however, the acreages have been subtracted in the wetland impact tables. The wetland impact tables for the CSP project do not include previously permitted impacts.

N

Feet

0 800

TAIC

Carryover Storage and San Vicente Dam Raise Project
Detailed Construction Footprint with Southeast Quarry Alternative

Figure 3b

gist\projects\sanvicente\plots\figures\quarry_alt2.mxd

Date: Feb 16, 2006

In August 1996, the Water Authority's Board of Directors approved the Emergency Storage Project to provide local water storage to meet emergency needs within the Water Authority's service area, an initiative central to the agency's overall mission to deliver a reliable supply of water to the region. The regional water supply system is vulnerable to natural hazards, such as strong seismic activities in southern California, severe floods, or prolonged droughts. The Water Authority's ESP is designed to improve the reliability of the region's existing water supply system by the addition of approximately 90,000 acre-feet of reservoir storage in San Diego County. The ESP includes the construction of the Olivenhain Dam and Reservoir (completed in 2003), re-operation of Lake Hodges, expansion of the existing San Vicente Reservoir through raising the dam by 54 feet, and construction of associated pipelines, pump stations, and ancillary structures. The ESP San Vicente Dam raise would provide approximately 52,100 acre-feet of emergency storage capacity within San Vicente Reservoir. The Water Authority has not yet implemented this component of the ESP, and is now proposing to combine the approved permitted ESP dam raise with an additional dam raise to accommodate CSP.

Proposed Activity

Carryover storage is needed to increase water storage reliability for the region, and to allow the Water Authority to better manage its existing supply sources consistent with the highest standards of efficient water management. The proposed activity would raise the San Vicente Dam an additional 63 feet beyond the approved ESP dam raise, increasing the capacity of the San Vicente Reservoir by an additional 100,000 acre-feet and raising the overall dam height by up to 117 feet (or a total dam height of up to 337 feet). The ESP/CSP would increase the existing reservoir capacity by 152,100 acre-feet. The elevation of the spillway crest would be raised from 650 to 766 feet AMSL. Total storage capacity and surface area (at Maximum Normal Pool, MNP) of the expanded reservoir would be approximately 247,110 acre-feet and 1,700 acres, respectively.

Because it would not be feasible or practicable to construct two separate raises of the dam - due to issues such as cost, construction logistics, and structural integrity of the dam - the two increases would be combined and constructed at the same time. The enlarged dam would be formed using roller compacted concrete (RCC). As the dam enlargement is constructed, a five-foot-thick layer of conventional concrete would be placed against the downstream face of the existing dam, and the RCC would be placed against this layer. The dam enlargement would be built from the foundation upward.

The estimated time for construction of the enlarged San Vicente Dam is approximately five years. RCC placement for dam construction is a continuous operation, with placement generally occurring 20 to 24 hours per day. This phase of dam construction is estimated to last approximately 18 months.

In addition to enlarging San Vicente Dam, the proposed activity would increase the reservoir capacity and elevation, which would require the construction of two saddle dams to the west of the main dam, construction of a new inlet/outlet facility, relocation of the San Vicente Marina, and relocation of the marina access road. The proposed activity also includes installation of a bypass pipeline extending from the easterly saddle dam to the First Aqueduct Diversion Structure north of the proposed marina.

Several options are being evaluated for the provision of aggregate material necessary for RCC production. One of these options involves the extraction and processing of aggregate at an on-site quarry, within City of San Diego property south of San Vicente Dam. Figures 3a and 3b shows two alternative locations being considered for on-site quarry production. The total project footprint will include the core impact area and one of two alternative quarry sites, as described below. Impacts to jurisdictional Waters of the U.S. for each alternative are quantified separately in this report. Only one of the on-site quarry alternatives will be selected for aggregate production.

Core Impact Area

The core impact area includes the area around the reservoir between El 650 and 766 AMSL (excluding the area between El 664 – 710 AMSL, which is the area previously permitted by the Corps under ESP), and the impact area south of the dam (excluding ESP and San Vicente Pipeline Project footprints that have already been accounted for in previous Corps permits) (see Figure 2). The core impact area also includes the new marina, access roads, bypass pipeline relocation, dam foundation expansion, two saddle dams, staging and storage areas, and grading limits for the permanent facilities.

Alternative 1: Southwest On-Site Quarry

The project footprint for this alternative includes the core impact area plus an area southwest of the dam, which will be used for the on-site quarry (Figure 3a). Permanent impacts are expected within the purple colored areas. Temporary impacts are depicted with yellow hashed lines.

Alternative 2: Southeast On-Site Quarry

The project footprint for this alternative includes the core impact area plus an area southeast of the dam, which will be used for the on-site quarry (Figure 3b). Permanent impacts are expected within the purple colored areas. Temporary impacts are depicted with yellow hashed lines.

Project Purpose

The purpose of the proposed activity is to substantially increase the reliability and flexibility of the regional water supply by providing the Water Authority with facilities to accumulate and store water. During dry weather periods, increased demand for water may exceed local supplies resulting in potential water shortages. As part of the Water Authority's Regional Water Facilities Master Plan (2002), the Water Authority developed scenarios to meet the daily water demands of its member agencies and reduce extended dry-weather shortages to the maximum extent feasible. Carryover storage is one of the management options developed to meet the immediate and long-term water demands of the region. Through the use of carryover storage, water can be accumulated during wetter years/seasons, when supplies are available, and used in drier years/seasons or during droughts, when supplies are in greater demand. A carryover storage volume of approximately 100,000 acre-feet provides a substantial increase in regional water storage reliability for the Water Authority.

Objectives of the proposed activity include:

- Providing approximately 100,000 acre feet of local water storage that would be readily available for distribution to member agencies during supply shortages;
- Increasing system reliability and operation flexibility;
- Locating new facilities in a manner that reduces needs for additional improvements to the Water Authority's infrastructure network; and
- Minimizing costs and environmental impacts.

Regulatory Overview

This section provides an overview of the regulations, determination criteria and regulatory context that are pertinent to Corps jurisdictional wetlands and waters, followed

by a description of the role of the Regional Water Quality Control Board (RWQCB) during the Corps permitting process.

U.S. Army Corps of Engineers

The Corps regulates discharges of dredged or fill material affecting *-waters of the United States.* These *waters* include *wetlands* and non-wetland bodies of water that meet specific criteria. Corps regulatory jurisdiction pursuant to Section 404 of the federal Clean Water Act is founded on a connection, or *nexus,* between the water body in question and interstate commerce. This connection may be direct, through a tributary system linking a stream channel with traditional navigable waters used in interstate or foreign commerce, or may be indirect, through a nexus identified in Corps regulations. The following definition of waters of the United States is taken from the discussion provided in 33 CFR 328.3:

> "The term waters of the United States means:
>
> *(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce...;*
>
> *(2) All interstate waters including interstate wetlands;*
>
> *(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams) ...the use, degradation or destruction of which could affect interstate or foreign commerce...;*
>
> *(4) All impoundments of waters otherwise defined as waters of the United States under the definition; and*
>
> *(5) Tributaries of waters defined in paragraphs (a) (1)-(4) of this section;"*

The Corps typically regulates as *waters of the United States* any body of water displaying an *ordinary high water mark* (OHWM). The landward limits of Corps jurisdiction in tidal waters of the United States extend to the high tide line, and Corps jurisdiction over non-tidal waters of the United States extends laterally to the OHWM or beyond the OHWM to the limit of any adjacent wetlands, if present (33 CFR 328.4). The OHWM is defined as *"that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area"* (33 CFR 328.3). As previously stated, for this project, the OHWM was defined by

the Corps as the top of the existing reservoir spillway. Jurisdiction typically extends upstream to the point where the OHWM is no longer perceptible.

The Corps and EPA define wetlands as follows:

> *"Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions."*

In order to be considered a jurisdictional wetland under Section 404, an area must possess three wetland characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. Each characteristic has a specific set of mandatory wetland criteria that must be satisfied in order for that particular wetland characteristic to be met. Several parameters may be analyzed to determine whether the criteria are satisfied.

Hydrophytic Vegetation

Hydrophytic vegetation is plant life that grows, and is typically adapted for life, in permanently or periodically saturated soils. The hydrophytic vegetation criterion is met if more than 50 percent of the dominant plant species from all strata (tree, shrub and herb layers) are considered hydrophytic. Hydrophytic species are those included on the *National List of Plant Species That Occur in Wetlands: California (Region 0)* (Reed, 1988), published by the U.S. Fish and Wildlife Service (USFWS). Each species on the list is rated according to a wetland indicator category, as shown in Table 1.

Table 1. Hydrophytic Vegetation

Category	Code	Probability
Obligate Wetland	OBL	Almost always occurs in wetlands (estimated probability >99%)
Facultative Wetland	FACW	Usually occurs in wetlands (estimated probability 67%-99%)
Facultative	FAC	Equally likely to occur in wetlands and non-wetlands (estimated probability 34%-66%)
Facultative Upland	FACU	Usually occurs in non-wetlands (estimated probability 67%-99%)
Obligate Upland	UPL	Almost always occurs in non-wetlands (estimated probability >99%)

To be considered hydrophytic, the species must have *-wetland indicator status,* i.e., be rated as OBL, FACW, or FAC (excluding FAC-).

The delineation of hydrophytic vegetation is typically based on the three (five, if only one or two strata are present) most dominant species from each vegetative stratum (strata are considered separately); when more than 50 percent of these dominant species are hydrophytic (i.e., FAC [excluding FAC-], FACW or OBL), the vegetation is considered hydrophytic. Recent Corps guidance (Corps of Engineers, 1992) provides that alternative ecologically based methods for determining dominant species are also acceptable, and suggests using methods described in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989 Manual) (Federal Interagency Committee for Wetland Delineation, 1989) as appropriate alternatives to the vegetation methods included in the *Corps a/Engineers Wetlands Delineation Manual* (1987 Manual) (Environmental Laboratory, 1987). In particular, the Corps recommends use of the "50/20" rule from the 1989 Manual for determining dominant species (Wetland Research and Technology Center, 1993). Under this method, dominant species are the most abundant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50 percent of the total dominance measure for the stratum, plus any additional species comprising 20 percent or more of the total dominance measure for the stratum.

Hydric Soils

Hydric soils are saturated or inundated long enough during the growing season to develop anaerobic conditions that favor growth and regeneration of hydrophytic vegetation. Soils are considered hydric when the National Technical Committee for Hydric Soils (NTCHS) criteria are met. Current criteria (as of October, 1992) are as follows:

1. All Histosols except Folists; or
2. Soils in Aquic suborders, Aquic subgroups, Albolls suborder, Salothids great group. Pell great groups of vertisols, Pachic subgroups, or Cumulic subgroups that are:
   A) Somewhat poorly drained and have a frequently[1] occurring water table at less than 0.5 foot from the surface for a significant period (usually more than two weeks) during the growing season; or
   B) Poorly drained or very poorly drained and have either:

[1] The term "frequent" is defined by the NTCHS as more than 50 years out of 100 or more than 50 percent probability in any one year.

(i) A frequently occurring water table at less than 0.5 foot from the surface for a significant period (usually more than two weeks) during the growing season if textures are coarse sand, or fine sand in all layers within 20 inches; or

(ii) A frequently occurring water table at less than 1.0 foot from the surface for a significant period (usually more than two weeks) during the growing season if permeability is greater than 6.0 inches/hour in all layers within 20 inches; or

(iii) A frequently occurring water table at less than 1.5 feet from the surface for a significant period (usually more than two weeks) during the growing season if permeability is less than 6.0 inches/hour in all layers within 20 inches; or

3. Soils that are frequently ponded for long duration[2] or very long duration[2] during the growing season; or
4. Soils that are frequently flooded for long duration or very long duration during the growing season.

There are a number of indirect indicators that may signify the presence of hydric soils, including hydrogen sulfide generation, the presence of iron and manganese concretions, certain soil colors, gleying, and the presence of mottling. Generally, hydric soils are dark in color or may be gleyed (bluish, greenish, or grayish), resulting from soil development under anoxic (without oxygen) conditions. Bright mottles within an otherwise dark soil matrix indicate periodic saturation with intervening periods of soil aeration.

Hydric indicators are particularly difficult to observe in sandy soils, which are often recently deposited soils of floodplains (entisols) and usually lack sufficient fines (clay and silt) and organic material to allow use of soil color as a reliable indicator of hydric conditions. Hydric soil indicators in sandy soils include accumulations of organic matter in the surface horizon, vertical streaking of subsurface horizons by organic matter, and organic pans. In some situations, it may be impossible to find any hydric soil indicators due to recent deposits of sandy soils or due to the creation of permanent man-made water bodies, including reservoirs. These are described as "Atypical Situations" in the 1987 Manual, which prescribes use of the other two parameters (vegetation and hydrology) for wetland delineations when no hydric soils indicators can be found. Corps jurisdictional

[2] "Long duration" is defined by the NTCHS as a single event ranging from 7 to 30 days; "very long duration" is defined as a single event that lasts longer than 30 days.

wetlands and water at the San Vicente Reservoir are analyzed following guidelines for man-made water bodies and "Atypical Situations".

Wetland Hydrology

Under natural conditions, development of hydrophytic vegetation and hydric soils is dependent on a third characteristic: wetland hydrology. Areas with wetland hydrology are those where the presence of water has an overriding influence on vegetation and soil characteristics due to anaerobic and reducing conditions, respectively (Environmental Laboratory, 1987). The wetland hydrology parameter is satisfied if the area is seasonally inundated or saturated to the surface for a consecutive number of days equal to 12.5 percent or more of the growing season' (Corps of Engineers, 1992). Areas saturated to the surface for less than five percent of the growing season do not meet the hydrology criterion. Areas saturated to the surface between 5.0 and 12.5 percent of the growing season may or may not meet the hydrology criterion; in these situations, other hydrology indicators must be considered, and the vegetation test should be critically reviewed (Corps of Engineers, 1991).

In Southern California, hydrology is often the most difficult criterion to measure in the field, due to seasonal and annual variations in water availability and soil permeability. Some of the indicators that are commonly used to identify wetland hydrology include visual observation of inundation or saturation, watermarks, recent sediment deposits, surface scour and oxidized root channels (rhizospheres) resulting from prolonged anaerobic conditions.

Wetland Determination

Wetland delineations for Section 404 purposes must be done according to the 1987 Manual (Environmental Laboratory, 1987). This manual provides two different approaches to delineating wetlands (i.e., routine and comprehensive), depending on the complexity of the site and whether there is a need for quantitative evaluation and extensive documentation. For the majority of wetland delineations, the routine on-site evaluation method is appropriate. When all three wetland criteria are present, the area being evaluated is determined to be a wetland. The Corps typically verifies the wetland delineation and makes the final determination as to what is or is not subject to its jurisdiction.

Regional Water Quality Control Board

Section 401 of the Clean Water Act (33 U.S.C. 1341) requires any applicant for a Federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain certification from the State in which the discharge originates. As a result, proposed fill in waters and wetlands requires coordination with the appropriate RWQCB that administers Section 401 and provides certification. The RWQCB also plays a role in review of water quality and wetland issues, including avoidance and minimization of impacts. Section 401 certification is required prior to issuance of a Section 404 permit.

Methods

Prior to field delineations, the following existing information was reviewed to establish a baseline for the field investigations:

- PSBS delineation (PSBS 1993; SDCWA 1997) and associated mapping;
- HDR delineation of 250 x 500 ft area southwest of the Dam (HDR, 2004)
- Section 404 Permit for the Emergency Storage Project (ESP);
- Recent (2004) aerial ortho-topographical imagery.

TAIC wetlands experts and biologists Christina Schaefer, Rosanne Humphrey, and Suzann Leininger performed field surveys, including jurisdictional wetlands confirmation, determinations, and delineations on August 17, September 15, September 29, October 12, and October 19, 2005. Delineations were performed in accordance with Section D "Routine Determinations for Areas Greater than Five Acres in Size" of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987). Interpretation of delineation results were made following guidelines in this manual for Section F: Atypcial Situations; Subsection 4: Man-Induced Wetlands because San Vicente Reservoir is an artificial, man-made water body that is subjected to operational changes in water levels on a year-round basis.

Wetlands delineations and field determinations were performed to confirm data obtained from the previous wetlands delineations performed by PSBS in 1992 and by HDR in 2004 for the ESP project (PSBS 1993; HDR 2004) and to determine wetlands conditions of areas that occur between the jurisdictional boundaries for the CSP but outside of the areas already permitted for the ESP project (between the 650 and 664 foot contours and the 710 and 766 foot contours, and CSP footprints south of the dam). Studies conducted

for the ESP project mapped the area between the existing Probable Maximum Flood (PMF) elevation (El 664 AMSL), and the future ESP PMF (El 710 AMSL).

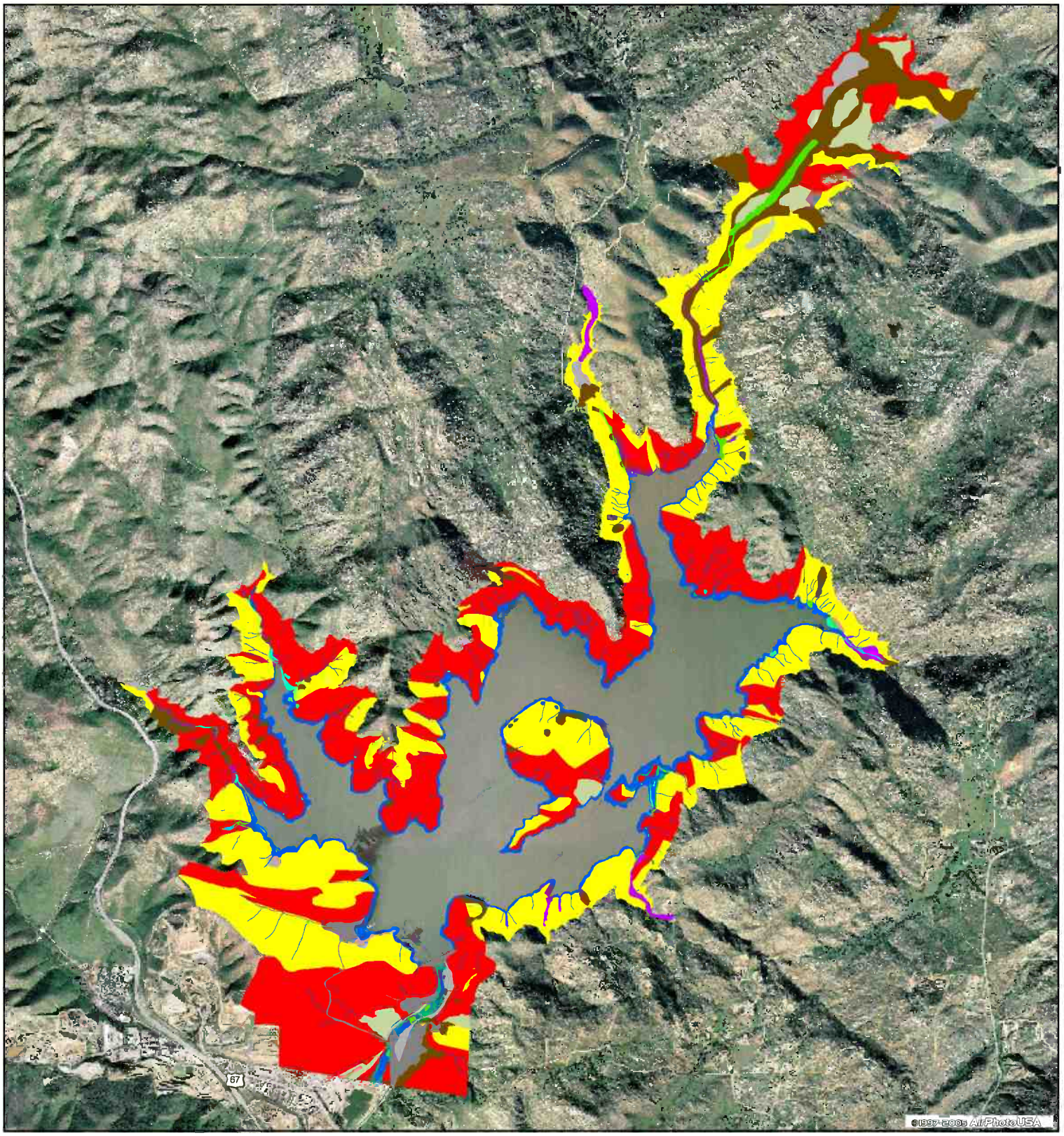
Delineation stations (soil pits) were excavated in the field by TAIC-certified wetlands delineation personnel where feasible (in some instances, the soils were too hard to excavate), and where necessary to confirm previous wetlands determinations (for example, in previously confirmed wetlands areas that exhibited soils too hard to excavate, but where hydrophytic vegetation and wetlands hydrology were present, confirmation was made on the previously mapped wetlands based on vegetation and hydrology). The PSBS delineation covered an area between the open water of the reservoir, the water level at the time of the 1992 delineations, and the inundation level for the ESP project, which was determined as the PMF elevation contour of 710 feet AMSL (El 710). The HDR delineation covered a small area (approximately 250 x 500 ft) near access roads southwest of the dam.

Results

This section summarizes the results of the most recent comprehensive jurisdictional wetlands delineation conducted at the San Vicente Reservoir for the CSP, and confirms the ESP delineations conducted by PSBS (1993) and HDR (2004). Current wetlands conditions have not changed appreciably from those observed during the previous ESP delineations for the study area. Differences from previously mapped conditions that were observed by TAIC in 2005 are reflected in the sections below. Existing vegetation communities are depicted on Figure 4.

Vegetation

Two upland vegetation communities dominate the area surrounding the San Vicente Reservoir, Diegan coastal sage scrub and Southern mixed chaparral (Figure 4). Diegan coastal sage scrub occurs mostly in the northern and southwestern portion of the project area on south-facing slopes, while Southern mixed chaparral generally occurs on north-facing slopes in the eastern and southeastern portion of the project area. The third most common vegetation community is coast live oak riparian forest, which occurs along some of the deeper drainages. However, this and other riparian communities account for only 2.5 percent of the total acreage in the project area and occur mostly at the bottom of steep valleys that drain into the reservoir (including Kimball Valley, Barona Valley and Foster Valley).



Legend

- Diegan Coastal Sage Scrub
- Chaparral
- Non-Native Grassland
- Coastal and Valley Freshwater Marsh
- Southern Willow Scrub
- Mule Fat Scrub
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-willow Riparian Forest
- Coast Live Oak Woodland
- Eucalyptus Woodland
- Non-Vegetated Channel/Floodway/Lakeshore Fringe
- Disturbed Habitat
- Urban/Developed

N

Feet

0 3,025

TAIC

Carryover Storage and San Vicente Dam Raise Project
Vegetation Communities

Figure 4

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Date: Feb 16, 2006

Because of the constantly fluctuating water elevation and shoreline, riparian vegetation maintains itself in small pockets at the delta of tributaries with the reservoir, as mostly herbaceous vegetation at some of the beaches, and as a sparsely vegetated belt of mulefat scrub. Patches of freshwater marsh include sedges and floating vegetation that exist along the major tributaries leading into the reservoir and at the deltas of most major drainages (some these areas are not visible on Figure 4 within the larger polygons of southern willow scrub and oak riparian forest because of the large mapping unit.)

In 2003, the Cedar fire swept through the area, burning 98 percent of the native vegetation within the project boundary. This greatly changed the character of the vegetation communities. Weedy annuals such as non-native grasses, mustards, and thistles have invaded these recently burned areas; closed canopy chaparral is now open, much of the woody vegetation having been burned away; some of the large oaks and willows have burned up and are slow to regenerate through crown sprouting; and the soil in some areas are more vulnerable to erosion due to the loss of vegetation which once held it in place.

Vegetation Communities Associated with Jurisdictional Wetlands and Waters

Coastal and Valley Freshwater Marsh

Freshwater marsh is a type of emergent wetland that is permanently flooded by standing water. It typically consists of a variety of obligate hydrophytic plant species, such as cattail (*Typha latifolia*), bulrushes (*Scirpus* spp.), yerba mansa (*Anemopsis californicus*), seep monkeyflower (*Mimulus guttatus*), and watercress (*Rorippa palustris*), as well as facultative species, such as horseweed (*Conyza canadensis*), toad rush (*Juncus bufonius* var. *bufonius*), Mexican rush (*Juncus mexicanus*), and tall flatsedge (*Cyperus eragrostis*).

Within the CSP study area (650 – 664 feet AMSL and 710-766 feet AMSL), soils in this wetland type vary from coarse, sandy loam, to dark organic mud. Hydrologic indicators consist of extended periods of inundation, saturated soils, and water marks on woody vegetation. There are several small, isolated areas of freshwater marsh dominated by cattail, California bulrush (*Scirpus californicus*) and sedges at the bottom of several drainages. The most prominent of these are located near Barona Valley, along the peninsula east of Lowell Island; along Foster Canyon; and in Kimball Valley (San Vicente Creek). The Kimball Valley occurrence of this habitat type is occupied by the federally endangered arroyo toad (*Bufo californicus*).

Southern Willow Scrub

Southern willow scrub is a jurisdictional scrub-shrub wetland. Hydrophytic indicator species include a variety of willows (*Salix gooddingii*, *S. exigua*, *S. laevigata*, *S. lasiolepis, S. lucida* ssp. *lasiandra*), which dominate this wetland, as well as mulefat, cocklebur (*Xanthium strumarium*), salt grass (*Distichlis spicata*), and rabbitfoot grass (*Polypogon monspeliensis*).

Within the CSP study area (650-664 feet AMSL and 710-766 feet AMSL, and south of the dam), the well-drained soils of this wetland type consists of coarse and cobbly sand, and clay subsoils. Hydrologic evidence consists of heavy scouring and organic debris piles along stream banks. Southern willow scrub occurs in isolated patches along a seasonal stream channel south of the dam, along the northeastern bank of the Kimball Valley arm, along the northern-most end of San Vicente Creek, and on the upper banks of the aqueduct outflow. The Kimball Valley location supports the largest stand of this vegetation community.

Mulefat Scrub

Mulefat scrub is a shrub-scrub wetland type. It generally occurs along intermittent streams and around ponds and lakes. This wetland typically has a moderately deep water table, and is maintained by frequent flooding. Characteristic hydrophytic vegetation is dominated by mulefat (*Baccharis salicifolia*), and includes arroyo willow (*Salix lasiolepis*), and a variety of rushes (*Juncus* spp.) as well.

Within the CSP study area (650-664 feet AMSL and 710-766 feet AMSL) mule fat scrub occurs along a drainage southwest of Foster Canyon. In addition to the dominant plants mentioned above, tamarisk (*Tamarix parviflora.*), arroweed (*Pluchea sericea*), and coastal salt grass (*Distichlis spicata*) are occasionally present. Soils are composed of shallow coarse sandy loam overlaying decomposed granite. Hydrology is indicated by inundation during the rainy season, bank scour, and water-borne plant debris.

Southern Cottonwood-Willow Riparian Forest

This vegetation community is a type of forested wetland. It is characterized by an open or closed canopy forest that is generally greater than 6 m (20 ft) high and occupies relatively broad drainages and floodplains supporting perennially wet streams. This community is

typically dominated by mature individuals of hydrophytic winter deciduous trees, including Fremont's cottonwood (*Populus fremontii* var. *fremontii*), western sycamores (*Platanus racemosa*) and several species of willows. Other indicator species include mulefat, cattails, spike-sedge (*Eleocharis* spp.), common plantain (*Plantago major*), and Durango root (*Datisca glomerata*).

Southern cottonwood-willow riparian forest is uncommon in the CSP study area (650-664 feet AMSL and 710-766 feet AMSL), occurring only in a narrow band along the drainage leading from Barona Valley on the eastern side of the reservoir. It is flanked on both sides by coast live oak riparian forest. All of the typical dominant species occur here, as well as several other indicator species, such as common plantain, Durango root, and spike sedge. Soils in this area have a high organic content and show regular mottling. Inundation during the growing season, and debris deposits above the shore indicate hydrologic condition. A single federally endangered least Bell's vireo (*Vireo bellii pusillus*) singing male was found in an area west of Barona Valley in atypical habitat for this species. The bird continued to occupy this area during the entire breeding season.

Southern Coast Live Oak Riparian Forest

This forested wetland type is characterized by an open to locally dense evergreen community dominated by coast live oak, and is typically richer in herbs and poorer in understory shrubs than other riparian communities. Wetland indicator species include arroyo willow, Mexican elderberry, mulefat, tree tobacco (*Nicotiana glauca*), Mexican rush, San Diego sedge (*Carex spissa*), and Douglas' nightshade (*Solanum douglasii*). Southern coast live oak riparian forest is associated with bottomlands and outer floodplains along larger streams, and occurs on fine-grained, rich alluvium.

Within the CSP study area (650 – 664 feet AMSL and 710-766 feet AMSL), southern coast live oak riparian forest occurs along all major drainages leading to the reservoir, and along some of the smaller drainages in the southeast. In drier areas upslope it is typically surrounded by scrub habitat; in wetter areas near the bottom of drainages or creekbeds it supports a thicker understory dominated by poison oak (*Toxicodendron diversilobum*), climbing bush penstemon (*Keckiella cordifolia*), Mexican elderberry (*Sambucus mexicana*) and Douglas' nightshade (*Solanum douglasii*). The silty soils have a high organic content and show regular mottling. Hydrologic condition is indicated by observed inundation, bank scouring, and water-borne debris deposits.

Jurisdictional Waters

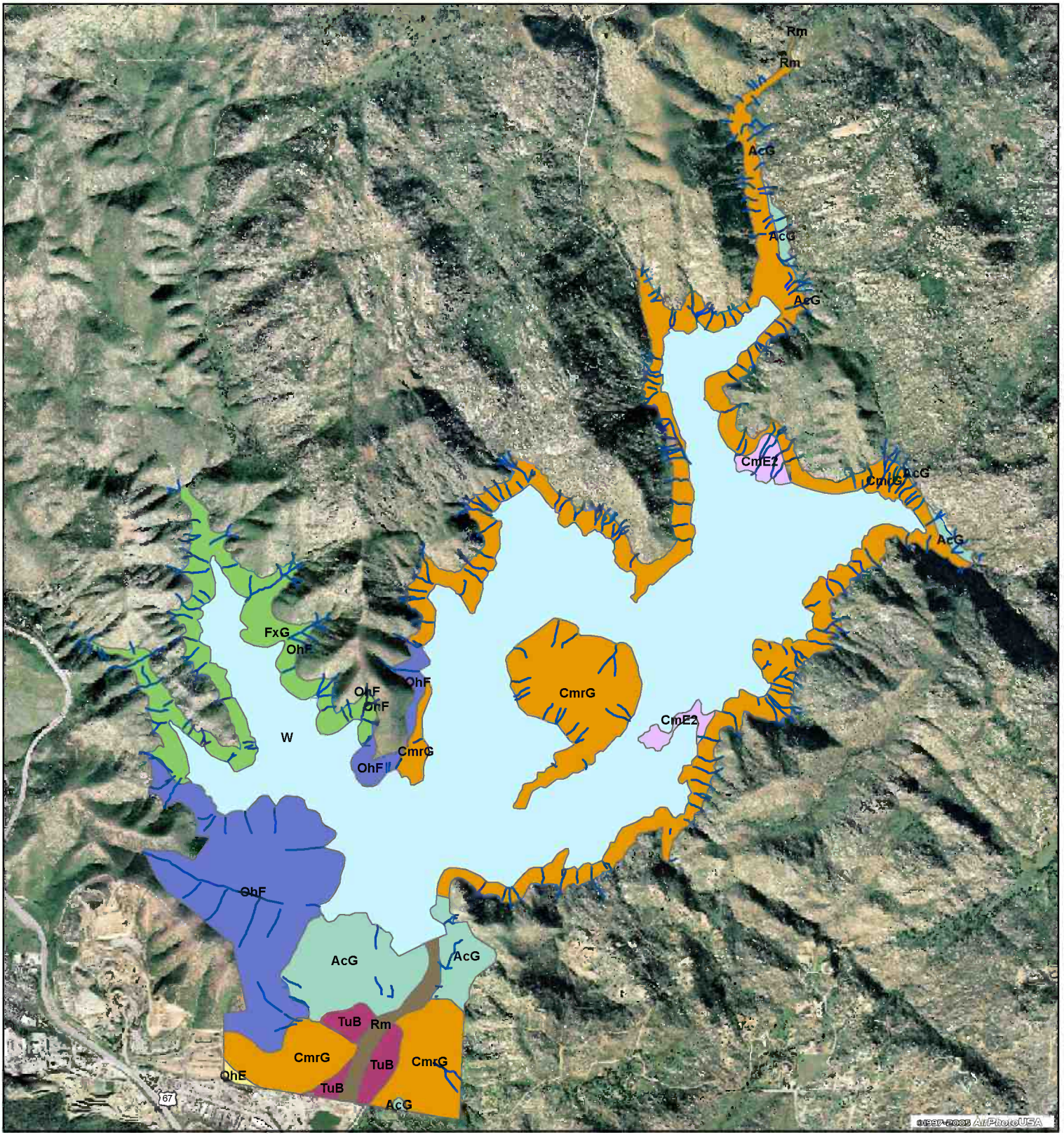
Jurisdictional waters consist of lakeshore fringe, seasonal streambed, and open water. Within the CSP study area (650-664 feet AMSL and 710-766 feet AMSL, and south of the dam) lakeshore fringe occurs along the tip of the Kimball Valley finger, and along a major drainage just west of Kimball Valley. Seasonal streambed occurs along major and minor drainages leading into the reservoir and along a wide channel south of the dam. Open water areas occur in a small sliver in Kimball Valley where the originally mapped reservoir water level (PSBS 1993) lies above the 650 foot ASML.

Hydrology

The project site is located in the San Diego Basin within the San Diego River Watershed. The San Vicente Reservoir is filled with natural runoff that enters from San Vicente and West Branch Creeks in the north, Foster Creek in the northwest, and Padre Barona Creek in the east. Additionally, a substantial quantity of water enters through the aqueduct which is located in the westernmost portion of the reservoir. These blue-line streams and the water body of the reservoir are naturally filled by smaller ephemeral creeks and tributaries surrounding the reservoir. The water level in the reservoir varies greatly between the wet and dry season and from year to year. High water levels rarely reach the crest of the dam spillway, and the reservoir has only spilled five times in the dam's history.

Soils

The reservoir is a man-made water body and, with the exception of natural creeks, does not exhibit wetlands soils (USDA 1973). The most common soils in the project area are within the Cieneba series (557 acres), which occurs around the fringes of the eastern two thirds of the reservoir, on Lowell Island, and south of the boat dock and dam (Figure 5). This series consists of rocky coarse sandy loam on slopes of 9 to 75 percent. It is subdivided into rocky (9-30 percent slope) and very rocky (30-75 percent slope) types as illustrated in Table 2. The latter exhibits very little water holding capacity, very rapid runoff, and high erosion risk. The second most common soil series is the Olivenhain series (217 acres), which occurs on the slopes west of the boat dock. It consists of a cobbly loam with slopes mostly between 30 and 50 percent and rapid runoff characteristics. Approximately 118 acres of acid igneous rock occurs south of the dam, excluding the stream channel, which consists of Riverwash soil (high soil permeability). Surrounding the stream channel on the southern end is Tujunga sand with slow runoff



Legend

- AcG, Acid igneous rock land
- CmE2, Cieneba rocky coarse sandy loam, 9 to 30 percent slopes , eroded
- CmrG, Cieneba very rocky coarse sandy loam, 30 to 75 percent slopes
- FxG, Friant rocky fine sandy loam, 30 to 70 percent slopes
- OhE, Olivenhain cobbly loam, 9 to 30 percent slopes
- OhF, Olivenhain cobbly loam, 30 to 50 percent slopes
- RaD2, Ramona sandy loam, 9 to 15 percent slopes, eroded
- Rm, Riverwash
- TuB, Tujunga sand, 0 to 5 percent slopes
- W, Water

Source: San Diego County Soil Survey, Natural Resources Conservation Service, 1973

Basemap Legend

Seasonal Stream Beds

N

Feet

0 2,400

TAIC

Carryover Storage and San Vicente Dam Raise Project
Soils

Figure 5

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Date: Feb 16, 2006

Table 2. Soil Series and Description

Soil Type	Slope	Acres
Acid igneous rock land (AcG)		118.22
Cieneba rocky coarse sandy loam (CmE2)	9 to 30 % slopes	20.03
Cieneba very rocky coarse sandy loam (CmrG)	30 to 75 % slopes	537.34
Friant rocky fine sandy loam (FxG)	30 to 70 % slopes	130.33
Olivenhain cobbly loam (OhF)	30 to 50 % slopes	214.20
Olivenhain cobbly loam (OhE)	9 to 30 % slopes	2.51
Ramona sandy loam (RaD2)	9 to 15 % slopes	0.25
Riverwash (Rm)		21.18
Tujunga sand (TuB)	0 to 5 % slopes	27.22
Water (W)		997.16
TOTAL		**2,068.44**

and high water permeability. The Foster Canyon area of the reservoir (western finger) consists of Friant rocky fine sandy loam on 30 – 70 percent slopes with very rapid runoff characteristics.

Impacts

Implementation of the CSP with the Southwest Quarry Alternative will permanently impact approximately 15.29 acres and temporarily impact approximately 3.54 acres of Corps jurisdictional wetlands and waters, as summarized in Table 3. Using the Southeast Quarry Alternative, the CSP will result in approximately equal amounts of impacts: approximately 15.29 acres of permanent Corps jurisdictional impacts, and approximately 3.55 acres of temporary impacts (Table 4). The impact zone includes the area of inundation around the reservoir from the OHWM (El 650 AMSL) up to the spillway of the new dam (El 766 AMSL), exclusive of the ESP study area (El 664-710 AMSL). The construction area south of the dam will be impacted as well; however, only impacts associated with the CSP (exclusive of ESP and San Vicente Pipeline project footprints) are analyzed in this report.

The area around the reservoir will be inundated permanently and impacts to wetlands are assumed to be direct and permanent. Permanent impacts constitute the permanent flooding of the study area surrounding the reservoir between El 650 AMSL and El 766 AMSL (following a construction-related draw-down period), and the footprints of the

Table 3. Impacts[3] to Corps Jurisdictional Wetlands and Waters in the Study Area: Alternative 1 – Southwest Quarry

Wetlands and Waters of the U.S.	South of Dam (Acres)		650-664 AMSL (Acres)		710-766 AMSL (Acres)		Total Acres	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
WETLANDS								
Coastal/Valley Freshwater Marsh	0	0	0.01	0	0.61	0	0.62	0
Riparian Scrub								
Southern Willow Scrub	0	0.25	0.66	0	1.68	0	2.34	0.25
Mulefat Scrub	0	0	0.02	0	0.09	0	0.11	0
Riparian Forest								
Southern Cottonwood Willow Riparian Forest	0	0	0.06	0	0.28	0	0.34	0
Southern Coast Live Oak Riparian Forest	0	0	0.51	0	5.08	0	5.59	0
TOTAL WETLANDS	**0**	**0.25**	**1.26**	**0**	**7.74**	**0**	**9.00**	**0.25**
UNVEGETATED WATERS OF THE U.S.								
Lakeshore Fringe	0.05	0	1.27	0	0.10	0	1.42	0
Open Water (reservoir)	0.38	0	0.03	0		0	0.41	0
Seasonal Streambed	0.29	3.29	1.07	0	3.10	0	4.46	3.29
TOTAL UNVEGETATED WATERS	**0.72**	**3.29**	**2.37**	**0**	**3.20**	**0**	**6.29**	**3.29**
TOTAL WETLANDS AND WATERS	**0.72**	**3.54**	**3.63**	**0**	**10.94**	**0**	**15.29**	**3.54**

[3] CSP impacts exclude the previously permitted temporary and permanent impacts from the ESP and San Vicente Pipeline Projects. If temporary impacts of these previously permitted project are replaced by permanent CSP impacts, these impacts are shown. Due to graphical constraints, the subtracted ESP and San Vicente Pipeline Footprints are not shown on Figures 6 and 7a.

Table 4. Impacts[4] to Corps Jurisdictional Wetlands and Waters in the Study Area: Alternative 2 – Southeast Quarry

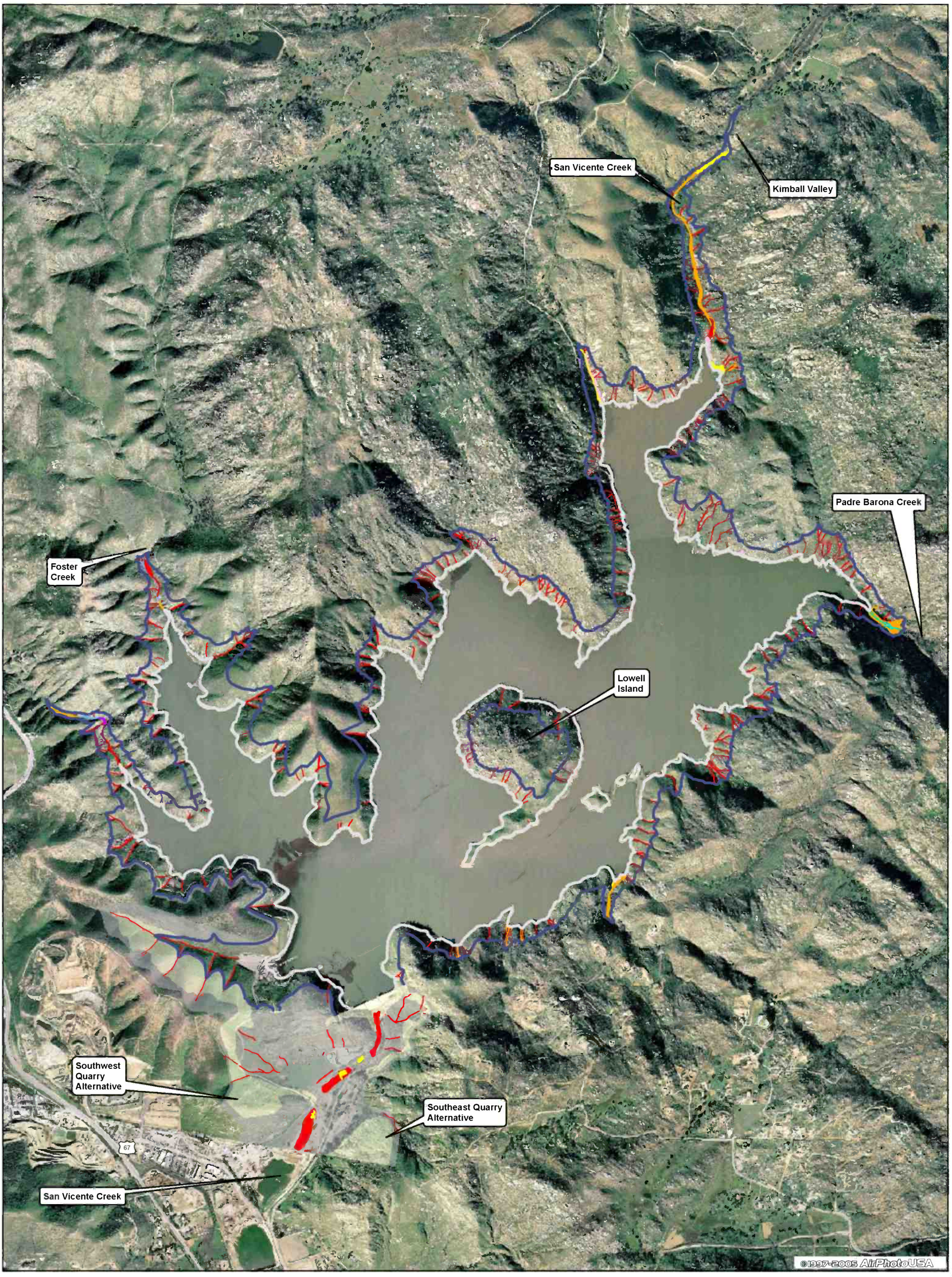
Wetlands and Waters of the U.S.	South of Dam (Acres)		650-664 AMSL (Acres)		710-766 AMSL (Acres)		Total Acres	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
WETLANDS								
Coastal/Valley Freshwater Marsh	0	0	0.01	0	0.61	0	0.62	0
Riparian Scrub								
Southern Willow Scrub	0	0.25	0.66	0	1.68	0	2.34	0.25
Mulefat Scrub	0	0	0.02	0	0.09	0	0.11	0
Riparian Forest								
Southern Cottonwood Willow Riparian Forest	0	0	0.06	0	0.28	0	0.34	0
Southern Coast Live Oak Riparian Forest	0	0	0.51	0	5.08	0	5.59	0
TOTAL WETLANDS	**0**	**0.25**	**1.26**	**0**	**7.74**	**0**	**9.00**	**0.25**
UNVEGETATED WATERS OF THE U.S.								
Lakeshore Fringe	0.05	0	1.27	0	0.10	0	1.42	0
Open Water (reservoir)	0.38	0	0.03	0	0	0	0.41	0
Seasonal Streambed	0.29	3.30	1.07	0	3.10	0	4.46	3.30
TOTAL UNVEGETATED WATERS	**0.72**	**3.30**	**2.37**	**0**	**3.20**	**0**	**6.29**	**3.30**
TOTAL WETLANDS AND WATERS	**0.72**	**3.55**	**3.63**	**0**	**10.94**	**0**	**15.29**	**3.55**

[4] CSP impacts exclude the previously permitted temporary and permanent impacts from the ESP and San Vicente Pipeline Projects. If temporary impacts of these previously permitted project are replaced by permanent CSP impacts, these impacts are shown. Due to graphical constraints, the subtracted ESP and San Vicente Pipeline Footprints are not shown on Figures 6 and 7b.

marina, on-site quarry alternatives for aggregate processing, access roads, saddle dams, the enlarged area of the raised San Vicente Dam, and Bypass Pipeline (including portions underlying a paved maintenance road and portions within permanently graded areas inside the reservoir). Temporary impacts are associated with construction grading, access and staging, and those impacts whose footprints will be abandoned, re-contoured, and in some cases revegetated.

There is essentially no difference (0.01 acre) in the impacts to jurisdictional wetlands and waters between the two alternative footprints. As such, the discussion of impacts to wetlands resources will apply to both project alternatives. Two types of wetlands are expected to receive the greatest permanent and temporary impacts: 7.76 acres (4.46 acres permanent and 3.30 acres temporary) of seasonal streambed located south of the dam and along drainages leading into the reservoir (Figure 6), and 5.59 acres (all permanent impacts) of coast live oak riparian forest located along major and minor drainages around the reservoir (Figures 7a and 7b). These two types combined account for approximately 86 percent of the impacts to Corps jurisdictional wetlands resources overall. Smaller areas of lakeshore fringe (1.42 acres of permanent impacts) and southern willow scrub (2.34 acres of permanent and 0.25 acre of temporary impacts) will be affected as well. Impacts of less than 1 acre are expected to occur in freshwater marsh, mulefat scrub, and open water.

The minor impact to open water is based on the San Vicente Reservoir water level at the time of the CSP surveys and the inundation level as it was originally mapped (PSBS 1993). The water level fluctuates significantly throughout the year due to operations of the reservoir, and the water level as depicted on the report graphics and impact calculation tables is therefore not stationary. The 650 foot ASML contour overlaps with the mapped water level in five areas to total 0.41 acre, which are shown as open water.



Legend

- Coast Live Oak Riparian Forest
- Coastal Valley/Freshwater Marsh
- Lakeshore Fringe
- Mulefat Scrub
- Seasonal Streambed
- So. Cottonwood-Willow Riparian Forest
- Southern Willow Scrub

CSP Project Features

- 650' Contour
- 766' Contour
- CSP Permanent Construction Area
- CSP Temporary Construction Area

The previously permitted ESP and San Vicente Pipeline footprints are not shown on this map to avoid confusion, however, the acreages have been subtracted in the wetland impact tables. The wetland impact tables for the CSP project do not include previously permitted impacts.

N

0 1,700
Feet

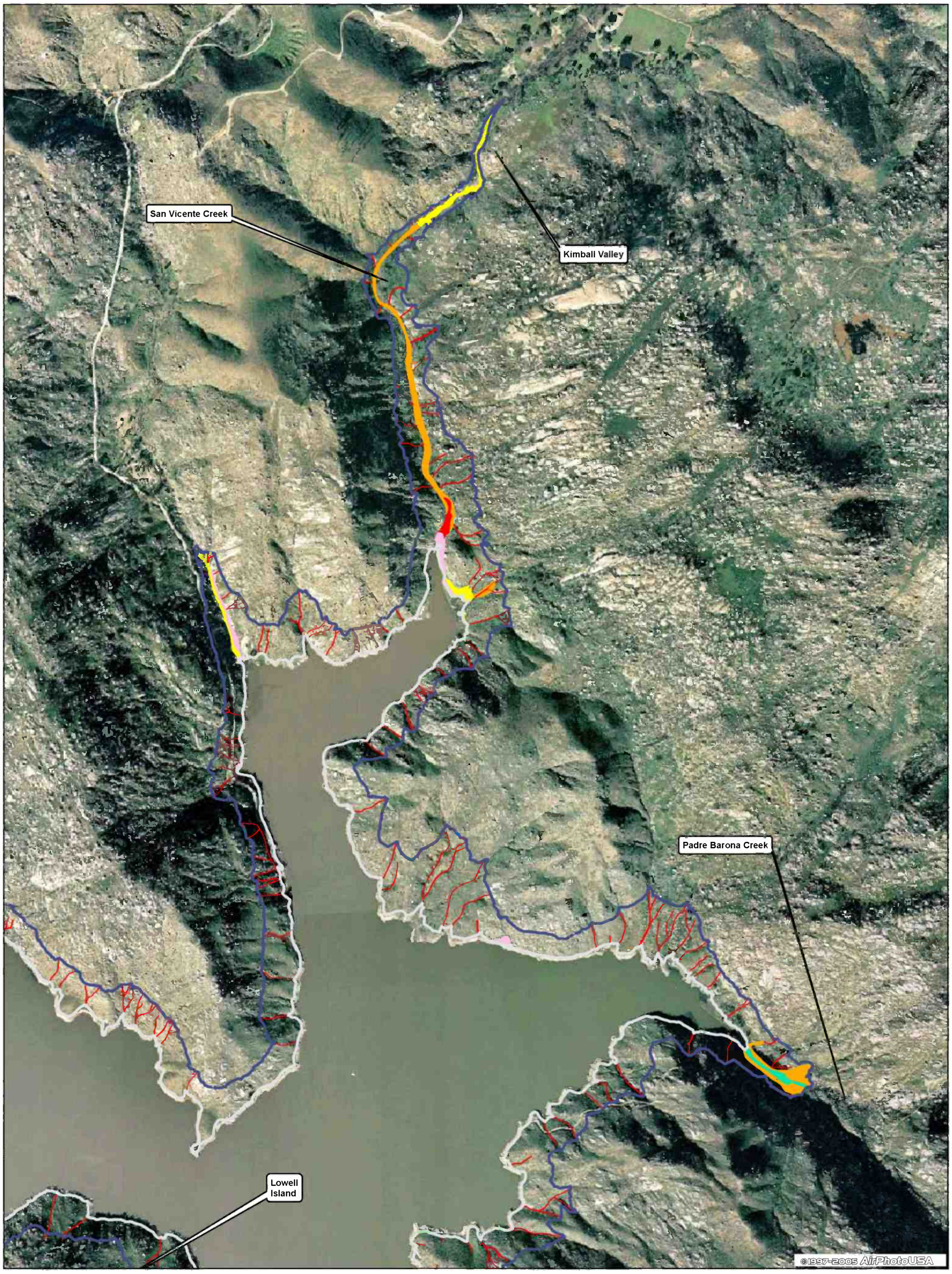
TAIC

Carryover Storage and San Vicente Dam Raise Project
U. S. Army Corps of Engineers Jurisdictional Waters and Wetlands within the Study Area

Figure 6

Document: wetlands_11x17.mxd

Date: Feb 16, 2006



Legend

- Coast Live Oak Riparian Forest
- Coastal Valley/Freshwater Marsh
- Lakeshore Fringe
- Mulefat Scrub
- Seasonal Streambed
- So. Cottonwood-Willow Riparian Forest
- Southern Willow Scrub

CSP Project Features

- 650' Contour
- 766' Contour

N

0 900

Feet

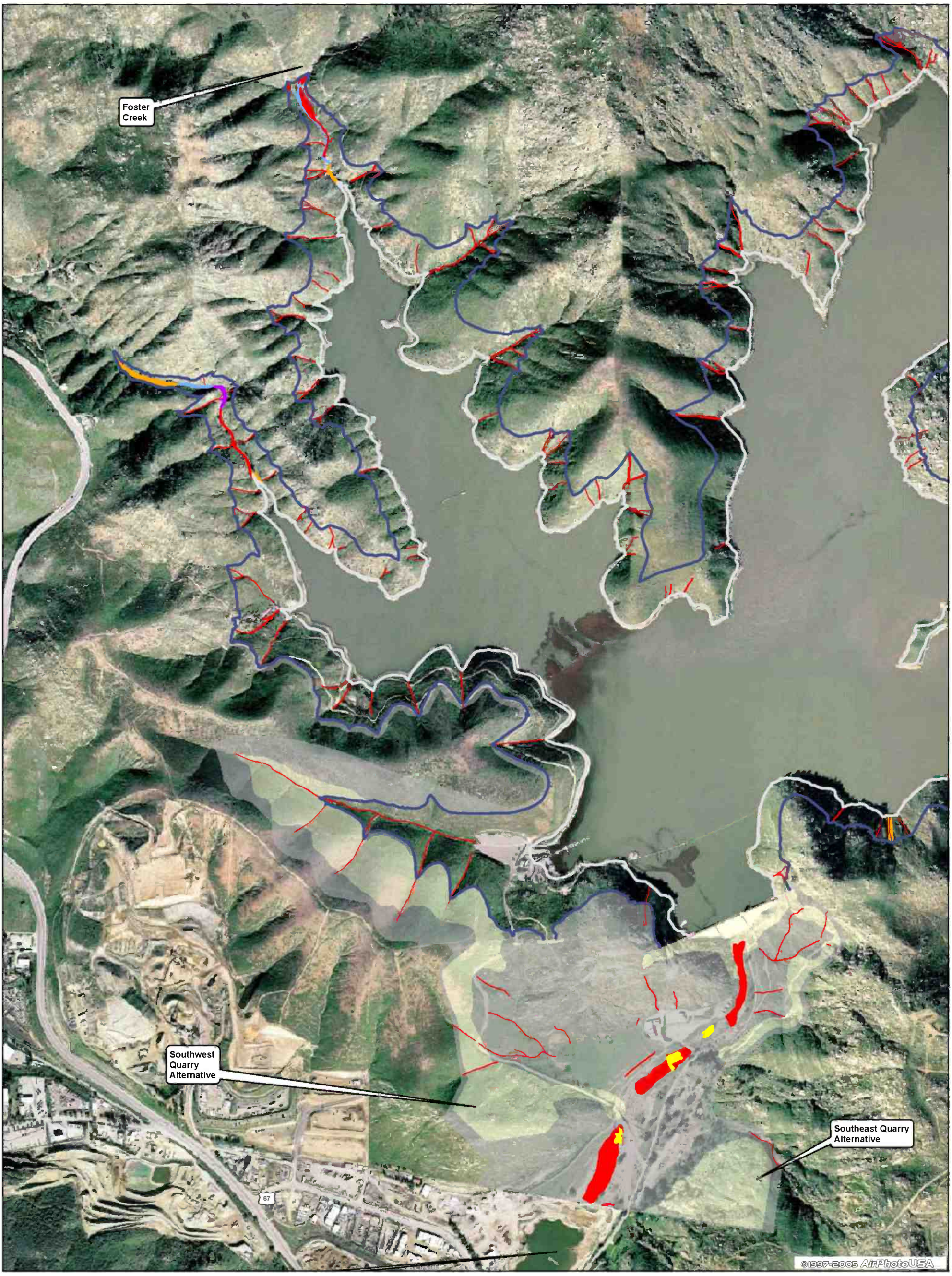
TAIC

Carryover Storage and San Vicente Dam Raise Project
U. S. Army Corps of Engineers Jurisdictional Waters and Wetlands in the Northern Study Area

Figure 7a

Document: wetlands_11x17.mxd

Date: Feb 16, 2006



Legend

- Coast Live Oak Riparian Forest
- Coastal Valley/Freshwater Marsh
- Lakeshore Fringe
- Mulefat Scrub
- Seasonal Streambed
- So. Cottonwood-Willow Riparian Forest
- Southern Willow Scrub

CSP Project Features

- 650' Contour
- 766' Contour
- CSP Permanent Construction Area
- CSP Temporary Construction Area

The previously permitted ESP and San Vicente Pipeline footprints are not shown on this map to avoid confusion, however, the acreages have been subtracted in the wetland impact tables. The wetland impact tables for the CSP project do not include previously permitted impacts.

N

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Feet

TAIC

Carryover Storage and San Vicente Dam Raise Project
U. S. Army Corps of Engineers Jurisdictional Waters and Wetlands in the Southern Study Area

Figure 7b

Document: wetlands_11x17.mxd

Date: Feb 16, 2006

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APPENDIX B

Amendment to:

U.S. Army Corps of Engineers Wetland Delineation Report

Jones & Stokes
March 2008

Amendment to the Delineation of Jurisdictional Waters and Wetlands for the Carryover Storage and San Vicente Dam Raise Project

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March 2008

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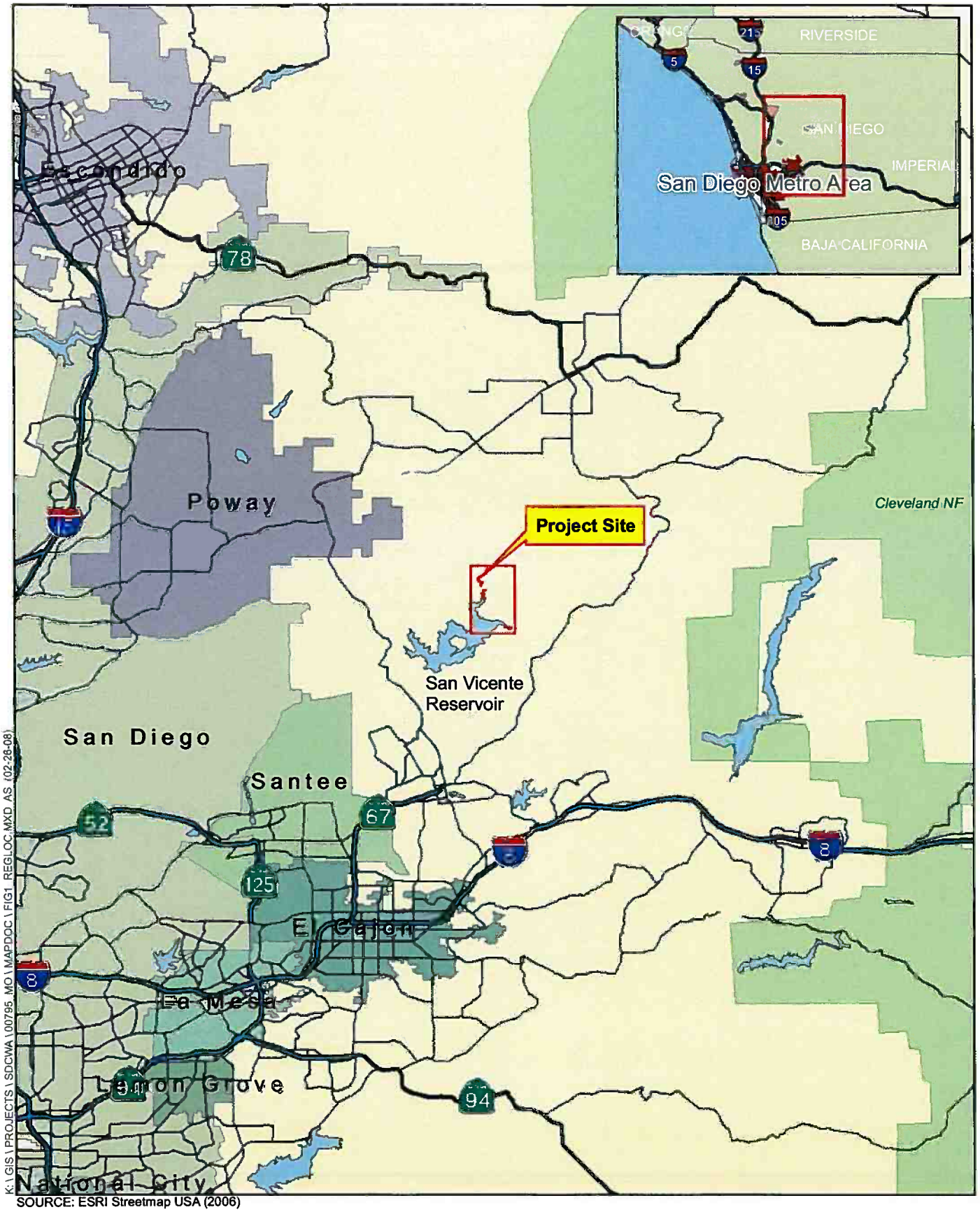
1.0. Introduction

This report provides methods, results, and interpretation for a delineation of potential state and federal jurisdictional waters and wetlands for the San Diego County Water Authority's (Water Authority) Carryover Storage and San Vicente Dam Raise Project (CSP) in west-central San Diego County, California (Figure 1). This report is an amendment to the previous wetlands delineation completed for CSP in 2006 by PBS&J. The previous report prepared by PBS&J covered a larger CSP study area, which included all tributaries within the overall study area. The study area in this report provides updated and detailed information on selected portions of the previously delineated CSP study area. This work is intended to assist the Water Authority in determining jurisdictional resources that will be impacted as a result of the CSP project.

The study area includes two elevation ranges, elevations 650–664 feet and 710–766 feet above mean sea level, where San Vicente Creek and Padre Barona Creek intersect these ranges. San Vicente Creek flows into the reservoir from the north, and Padre Barona Creek from the northeast. The study area is located within the San Vicente Reservoir, California, U.S. Geological Survey (USGS) 7.5-minute quadrangle map (Figure 2).



SOURCE: ESRI Streetmap USA (2006)

Jones & Stokes

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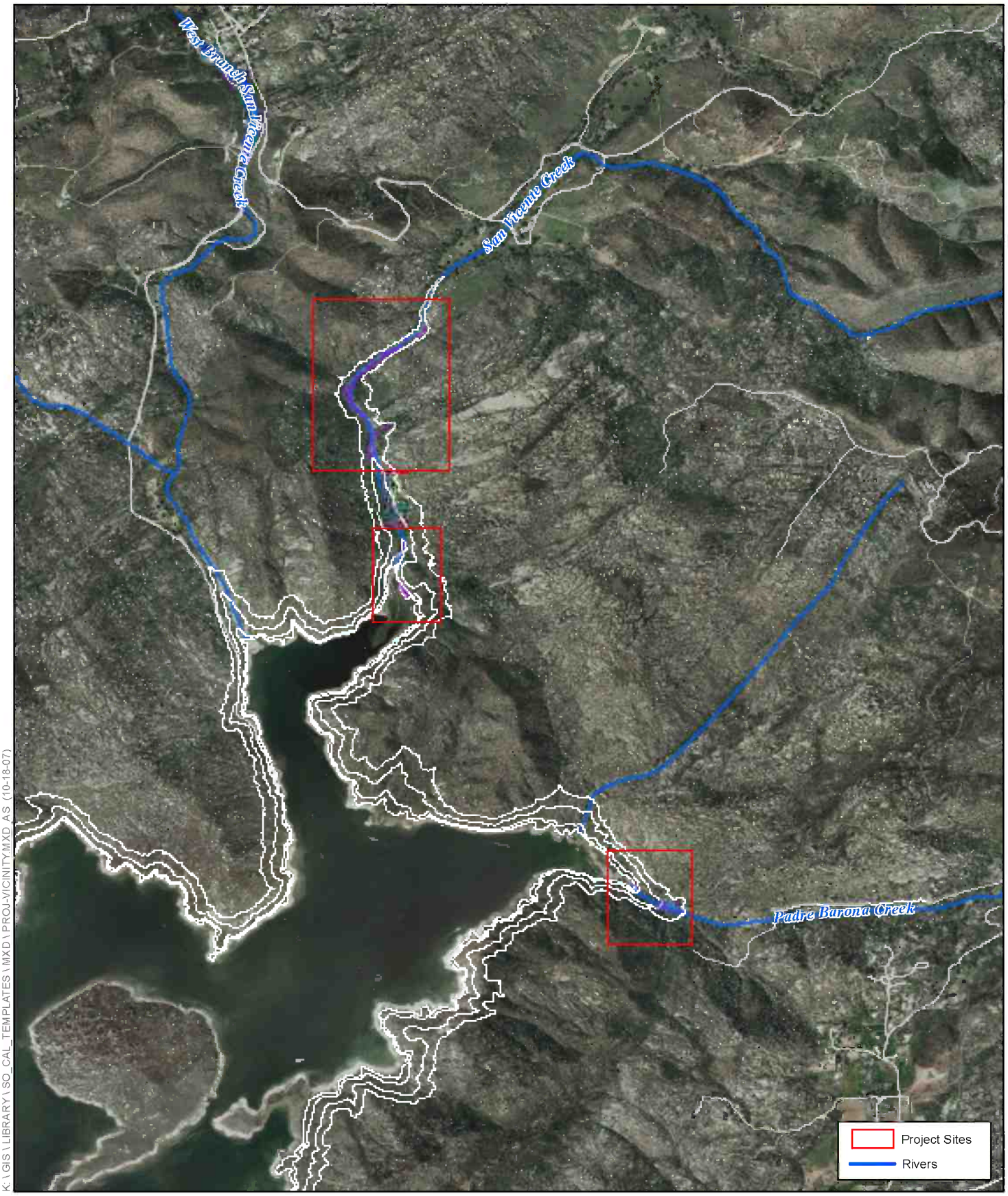
Figure 1
Regional Location



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SOURCE: ESRI Imagery

Jones & Stokes

Figure 2
Project Vicinity

2.0 Methods

Information presented in this report is based upon field work performed by A. Borcher and D. Teel on February 7 and 11, 2008.

Judgments regarding conditions and resources are based on a carefully evaluated array of information including: (1) personal and professional experience, knowledge, and training; and (2) careful observations and inferences made during the field work.

Field work included completion of the Corps delineation data sheet for the sample points (Attachment A) and jurisdictional measurements. In addition, for the purpose of evaluating functions and values of any jurisdictional area, information was compiled on observed resource conditions, wildlife species detected, relevant plant species detected, hydrology, soil conditions, human disturbance, and relevant engineering features. Representative photographs were also taken (Attachment B). Section 3 provides a brief summary of conditions and natural resources.

For the current work, the study area was carefully examined in the field for indicators of jurisdiction by walking the area, as well as gathering focused wetland delineation data at sampling points. Based on the existing conditions, a single representative point was chosen as a basis to adequately evaluate those areas potentially within jurisdictional wetlands. In addition, several data points were taken at the edges of jurisdictional areas to assist in mapping. Sample point locations are displayed on Figure 3 at the end of this report.

Because this delineation was performed at a standard or "routine determination" level rather than a "comprehensive determination" level (following terminology in USACE 1987), no rigorous vegetation sampling or plant voucher collecting was performed; no soil or water chemistry tests were performed; and no soil, water, or other samples were retained for laboratory testing. Routine determinations are the standard level of detail for the majority of jurisdictional delineations.

Delineation of waters of the United States was based on indicators for the Ordinary High Water Mark (OHWM), inclusive of any wetlands (33 CFR 328.4), following established criteria (33 CFR 328.3[e]). Specifically, we measured (1) average OHWM width accurate to at least the half foot at points wherever clear changes in width occurred, and (2) length using drainage mapping that was carefully confirmed in the field. The OHWM is defined in federal regulations as

"that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR 328.3[e]).

The wetland delineation followed the current three-factor (= "three parameter") method and indicators as stipulated by the USACE (USACE 1987 and supplementary materials): vegetation, hydrology, and soils.

Vegetation was evaluated at the sample points through determination of whether hydrophytic (wetland-adapted) plant species were dominant. Dominance of plants was assessed using percent relative areal cover, for subjective (but practiced) application of the "50/20 rule." Plant dominance was assessed within a 5-foot radius for herbs and saplings/shrubs, and a 30-foot radius for trees and woody vines (when present). Plants considered hydrophytic have been determined to be associated with wetland conditions at least 50% of the time, meaning that they are categorized as "Facultative" or wetter by Reed (1988).

Hydrology indicators employed follow the discussion provided above. Specifically, we evaluated the presence or absence of an OHWM, especially with regard to drainage patterns ("hydrogeomorphic context"), and as further indicators of the extent of hydrology we also evaluated indicators such as inundation, soil saturation, slope and channel contour, evidence of materials transport (scour and erosion, deposition, and visible loads), water marks and staining, drift lines, oxidized rhizospheres, concretions, plant adaptations, and others.

At each sample point a soil pit was dug using a Sharpshooter shovel with a 16 by 5 inch blade, generally to a depth of at least 16 inches. Hydric soil indicators considered include gleying and odor, color (e.g., high chroma/low value), and hydrogeomorphic context (e.g., evidence of soil flooding, ponding, or saturation for sufficient periods to establish wetland conditions).

Evaluation of state jurisdiction followed guidance in the California Fish and Game Code, related Fish and Game materials, and standard practices by Fish and Game personnel (see Section 4.4 below). Briefly, state jurisdiction was delineated by measuring outer width and length boundaries of state jurisdiction ("lakes or streambeds"), consisting of the greater of either the "top of bank" measurement (= "bankfull" width) or the extent of associated riparian or wetland vegetation.

This report is an amendment to a previous wetland delineation completed in 2006 by PBS&J. Therefore, the data was collected and analyzed using the standard techniques before Arid West Supplement and the latest Rapanos Decision Guidance.

For further detail on technical criteria and indicators used for the delineation, see Section 4.2, as well as USACE (1987). For details on observed indicators see Sections 5.1 through 5.3.

3.0 Existing Conditions

The following discussions provide a brief summary of conditions and biological resources found within the Study Area. This provides context for interpretations and findings, and supports assessment of functions and values for potentially jurisdictional areas. See Attachment B for photographs.

3.1 Setting and Physical Conditions

San Vicente Creek flows into San Vicente Reservoir from the north. Within elevation range 710–766 feet, San Vicente Creek is a relatively wide (18 to 40 feet), meandering rocky channel. The middle of the channel was inundated during the field surveys and presumed to be mostly unvegetated where vegetation was not observed above the water. Areas that were inundated and supported vegetation consisted of dense to moderately dense stands of southern willow scrub or freshwater marsh. Apart from inundated areas only the margins of the creek supported these hydrophytic vegetation communities. Otherwise the creek banks supported mule fat scrub (MFS) and southern coast live oak riparian forest (SCLORF). Near the creek's convergence with San Vicente Reservoir, within elevation range 650–664 feet, the drainage becomes an incised, fast flowing channel comprised of large boulders. The banks and hillsides along this stretch are steep and rocky, and support coast live oak riparian forest or upland vegetation.

Padre Barona Creek flows into San Vicente Reservoir from the east. Padre Barona Creek consists of a mostly unvegetated channel with large boulders and steep banks under the canopy of coast live oak riparian forest. Padre Barona Creek changes in elevation rapidly from 650–664 feet to 710–766 feet within 700 linear feet.

3.2 Vegetation Communities

The vegetation communities within the study area consist of mule fat scrub, southern coast live oak riparian forest, southern willow scrub, and freshwater marsh. San Vicente Creek has the most diversity of vegetation communities, containing all of those listed above. Padre Barona Creek is dominated by SCLORF.

3.2.1 Mule Fat Scrub

Mule fat scrub is a depauperate, tall, herbaceous riparian scrub dominated by mule fat (*Baccharis salicifolia*). It is usually found within intermittent stream channels with fairly coarse substrate and moderate depth to the water table. This early seral community is maintained by frequent flooding (Holland 1986).

Mule fat scrub within the study area is found along the outer edges of San Vicente Creek in areas that are periodically flooded. Dominant vegetation consists of mule fat, western ragweed (*Ambrosia psilostachya*), mugwort (*Artemisia douglasiana*), and black mustard (*Brassica nigra*).

3.2.2 Southern Coast Live Oak Riparian Forest

Southern coast live oak riparian forest is open to locally dense evergreen, sclerophyllous, riparian woodland dominated by coast live oak (*Quercus agrifolia*). It is usually found in bottomlands and outer floodplains along larger streams, on fine-grained rich alluvium (Holland 1986).

Southern coast live oak riparian forest is the dominant vegetation community found along both San Vicente and Padre Barona Creeks within the study area. Dominant vegetation consists of coast live oak, western sycamore (*Platanus racemosa*), western cottonwood (*Populus fremontii*), poison oak (*Toxicodendron radicans*), and soft chess (*Bromus hordaceous*).

3.2.3 Southern Willow Scrub

Southern willow scrub (SWS) is a dense, broadleaved, winter-deciduous, riparian thicket dominated by willows with scattered emergent western cottonwood and western sycamore. It is usually found within loose sandy or fine gravelly alluvium deposited near stream channels during flood flows (Holland 1986).

Southern willow scrub within the study area is found within the 710–766 feet portion of San Vicente Creek in the creek channel along the banks and sand bars. Dominant species consist of arroyo willow (*Salix lasiolepis*), western sycamore, western cottonwood, and mule fat.

3.2.4 Coastal and Valley Fresh Water Marsh

Coastal and valley fresh water marsh (FWM) is dominated by perennial, emergent monocots, often forming completely closed canopies. It is usually found within sites lacking significant current and permanent or sustained saturation by freshwater (Holland 1986).

Freshwater marsh within the study area is found along San Vicente Creek. It is located on the edges of, and in ponded areas outside of, the main stream channel. Freshwater marsh is also found within a braided channel of San Vicente Creek.

Dominant vegetation of FWM within the study area consists of spike-sedge (*Eleocharis* sp.), broad-leaved cattail *(Typha latifolia),* and California bulrush *(Scirpus californicus).*

4.0 Potentially Jurisdictional Waters and Wetlands

This section provides background regulatory information, methods, results, and conclusions for a routine delineation of jurisdiction for waters and wetlands.

4.1 Regulatory Background

Three separate regulatory processes are commonly applicable to projects potentially affecting jurisdictional water functions and values. At the federal level, final determinations on jurisdictional waters and permitting are generally made by U.S. Army Corps of Engineer (USACE) regulatory personnel, under Section 404 of the federal Clean Water Act ("the Act"). The applicable Regional Water Quality Control Board (RWQCB), a state agency, reviews many projects for water quality certification or waiver under Section 401 of the Act. Finally, the California Department of Fish and Game (DFG) is responsible for execution of a Lake or Streambed Alteration Agreement under Section 1600 of the California Fish and Game Code.

All three commonly required processes allow considerable discretion on the part of regulatory personnel. The specific agreement and permit(s) applicable in any situation depend on project design, the extent of jurisdictional areas within the project impact area, and the presence of special features within impacted jurisdictional areas. Associated permitting, including terms and conditions and any mitigation requirements, is ultimately based on agency assessment of the potential project effects on existing functions and values associated with their jurisdiction.

4.2 USACE Section 404 Regulations

The discharge (temporary or permanent) of dredged or fill material into Waters of the United States, including wetlands, typically requires prior authorization from the USACE, pursuant to Section 404 of the Clean Water Act (CWA).

4.2.1 Waters of the United States

Waters of the United States, as defined in the Code of Federal Regulations (CFR) 328.3, include all waters or tributaries to waters such as lakes, rivers, intermittent

and perennial streams, mudflats, sandflats, natural ponds, wetlands, wet meadows, and other aquatic habitats. Frequently, a Water of the United States (with at least intermittently flowing water or tidal influences) is demarcated by the ordinary high water mark (OHWM), defined in CFR 328.3[e] as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." Typically, in this region, the OHWM is indicated by the presence of an incised streambed with defined bank shelving. If adjacent wetlands are present, the jurisdiction extends to the limit of wetlands (defined by the presence of hydrophytic vegetation, hydric soils, and hydrology). Finally, note that where an OHWM is present, ephemeral waters are also explicitly defined in USACE regulations as Waters of the United States.

4.2.2 Wetlands

According to the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (USACE 1987), three criteria must be satisfied to classify an area as a jurisdictional wetland. These are: (1) a predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation); (2) soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils); and (3) permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology). Wetland vegetation is characterized by vegetation in which more than 50% of the cover of dominant plant species are obligate wetland, facultative wetland, or facultative species that occur in wetlands.

4.2.3 Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers

In 1986, in an attempt to "clarify" the reach of its jurisdiction, the USACE stated that §Section 404(a) extends to intrastate waters: "(a) Which are or would be used as habitat by birds protected by Migratory Bird Treaties; or (b) Which are or would be used as habitat by other migratory birds which cross state lines; or (c) Which are or would be used as habitat for endangered species; or (d) Used to irrigate crops sold in interstate commerce" (51 Federal Register [FR] 41217).

In 2001, the U.S. Supreme Court (USSC), in its judgment on the *SWANCC* case, held that 33 CFR §328.3(a)(3) (1999), as clarified and applied to the SWANCC site pursuant to the "Migratory Bird Rule" 51 FR 41217 (1986), exceeded the authority granted to the USACE under Section §404(a) of the CWA. Therefore, the USACE may not rely on the "Migratory Bird Rule" to establish a "*significant nexus*" to interstate or foreign commerce. In additional language, the USSC majority opinion reasoned that these types of waters required some nexus to navigable waters. Although no formal guidance was issued by the USACE

interpreting the extent to which the *SWANCC* decision would limit jurisdictional determinations, in practice, the USACE considers intrastate waters as Waters of the United States where there is an appropriate connection to a navigable water or other clear interstate commerce connection.

4.2.4 USACE-Regulated Activities

USACE-regulated activities under Section 404 involve a discharge of dredged or fill material including, but not limited to, grading, placing of riprap for erosion control, pouring concrete, laying sod, and stockpiling excavated material into Waters of the United States. Activities that generally do not involve a regulated discharge (if performed specifically in a manner to avoid discharges) include driving pilings, some drainage channel maintenance activities, constructing temporary mining and farm/forest roads, and excavating without stockpiling.

4.3 RWQCB Section 401 and Porter-Cologne Act Regulations

The RWQCB regulates activities within state and federal waters under Section 401 of the federal CWA and the state Porter-Cologne Act.

4.3.1 Section 401 of the Clean Water Act

Section 401 of the CWA requires that "any applicant for a Federal permit for activities that involve a discharge to waters of the United States, shall provide the Federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act." Therefore, in California, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 water quality certification or waiver from the RWQCB.

4.3.2 Porter-Cologne Act

The RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, with any region that could affect the water of the state" (Water Code 13260(a)), pursuant to provisions of the state Porter-Cologne Act. *Waters of the State* are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code 13050(e)).

4.3.3 RWQCB-Regulated Activities

Under Section 401 of the CWA, the RWQCB regulates at the state level all activities that are regulated at the federal level by the USACE. Under the Porter-Cologne Act, the RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by

the USACE due to a lack of connectivity with a navigable water body or lack of an OHWM.

4.4 DFG Section 1602 Regulations

The Fish and Game Code of California mandates that "it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds, without first notifying the department of such activity." DFG jurisdiction includes ephemeral, intermittent, and perennial watercourses (including dry washes) and lakes characterized by the presence of (1) definable bed and banks and (2) existing fish or wildlife resources. Furthermore, DFG jurisdiction is often extended to habitats adjacent to watercourses, such as oak woodlands in canyon bottoms or willow woodlands that function hydrologically as part of the riparian system. Historic court cases have further extended DFG jurisdiction to include watercourses that seemingly disappear, but re-emerge elsewhere. Under the DFG definition, a watercourse need not exhibit evidence of an OHWM to be claimed as jurisdiction.

Water features such as vernal pools and other seasonal swales, where the defined bed and bank are absent and the feature is not contiguous or closely adjacent to other jurisdictional features, are generally not asserted to fall within state jurisdiction. The state generally does not assert jurisdiction over human-made water bodies, unless they are located where such natural features were previously located or (importantly) where they are contiguous with existing or prior natural jurisdictional areas.

4.4.1 DFG-Regulated Activities

Under recently revised Fish and Game Code Sections 1600–1616, the DFG has authority to regulate work that will substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake. The DFG also has authority to regulate work that will deposit or dispose of debris, waster, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. This regulation takes the form of a requirement for a Lake or Streambed Alteration Agreement and is applicable to all nonfederal projects.

5.0 Results

The following subsections address the various aspects of the water features investigated through the delineation. The delineation was performed at the standard, "routine determination" level (USACE 1987). Quantitative results are provided in Section 6.

5.1 Hydrology

San Vicente Creek and Padre Barona Creek are within the San Diego River Watershed and flow into the San Vicente Reservoir. The reservoir drains into the southern portion of San Vicente Creek that flows into the San Diego River, which eventually drains into the Pacific Ocean.

During the two site visits in February 2008, clear, nonsudsy, nonoily surface water flowed through the entire portions of San Vicente and Padre Barona Creeks within the study area. The velocity of the flowing water was fast throughout the entire study area. Surface flow was observed within braided channels within the Creeks' immediate floodplain and ephemeral tributaries of both Creeks. This is accredited to recent rainfall received by the area prior to the site visits.

San Vicente and Padre Barona Creeks appear to be intact natural features that flow roughly from north to south and east to west, respectively. Source hydrology for San Vicente Creek is likely a mix of natural surface- and groundwater flows supplemented by urban runoff, especially from landscape maintenance to San Diego Country Estates and the San Vicente Golf Course that occur approximately 4 miles to the northeast. Source hydrology for Padre Barona Creek is also likely a mixture of natural surface- and groundwater flows supplemented by urban runoff from landscape maintenance of the Barona Resort and Casino and Barona Creek Golf Course approximately 1 mile to the northeast.

Both Creeks and their unnamed tributaries have well-defined, slightly meandering beds and banks and clear evidence of a federal OHWM. Indicators of wetland hydrology included saturation, water marks, and drift lines.

5.2 Vegetation

The following information summarizes results of the vegetation analysis, with emphasis on results at the delineation sample points. The plant species judged dominant at the sample points and other areas within the study area concluded to

be within or supported by the Creeks, including adjacent wetlands, or identified at sample points 01 through 05, are listed in Table 1.

Table 1. Dominant Plants within the Study Area

English Name	Scientific Name	Stratum	Region 0 (CA) Indicator[1]
Western ragweed	*Ambrosia psilostachya*	herb	Facultative
Mugwort	*Artemisia douglasiana*	herb	Facultative Wetland
Mule-fat	*Baccharis salicifolia*	shrub	Facultative Wetland
Black mustard	*Brassica nigra*[2]	herb	Not an Indicator
Soft chess	*Bromus hordaceous*[2]	herb	Not an Indicator
Poison hemlock	*Conium maculatum*[2]	herb	Facultative Wetland
Tall flatsedge	*Cyperus eragrostis*	herb	Facultative Wetland
Spike rush	*Eleocharis macrostachya*	herb	Obligate Wetland
Yerba Santa	*Eriodictyon crassifolium*	shrub	Not an Indicator
Smilo grass	*Piptatherum miliaceum*[2]	herb	Not an Indicator
Western sycamore	*Platanus racemosa*	tree	Facultative Wetland
Western cottonwood	*Populus fremontii ssp. fremontii*	tree	Facultative Wetland
Coast live oak	*Quercus agrifolia*	tree	Not an Indicator
Arroyo willow	*Salix lasiolepis*	tree	Obligate Wetland
California bulrush	*Scirpus californicus*	shrub	Obligate Wetland
Western poison-oak	*Toxicodendron diversilobum*	herb	Not an Indicator
Broad-leaf cattail	*Typha latifolia*	herb	Obligate Wetland

Notes:
[1]Terminology is from Reed (1988).
[2]Nonnative species

5.3 Soils

Soil mapping (USDA 1973; sheet 45) indicates the presence of three soil phases within the study area: Cieneba rocky coarse sandy loam (30 to 75% slopes, eroded), acid igneous rock land, and riverwash.

Cieneba rocky coarse sandy loam is found on rolling to hilly ground, often having rock outcrops on about 10 to 20% of the surface and very large granitic

boulders on about 20 to 30% of the surface. Runoff is rapid as this soil type typically has very little water-holding capacity (1 to 1.5 inches) (USDA 1973).

Acid igneous rock land is rough broken terrain. The topography ranges from low hills to very steep mountains. Large boulders and rock outcrops of granite, granodiorite, tonalite, quarzt diorite, gabbro, basalt, or gabbro diorite cover 50 to 90% of the total area. The soil material is loam to loamy coarse sand in texture and is very shallow over decomposed granite or basic igneous rock (USDA 1973). Acid igneous rock land is found on the slopes east of San Vicente Creek and the northeast slopes of Padre Barona Creek.

Riverwash occurs in intermittent stream channels. The material is typically sandy, gravelly, or cobbly. It is excessively drained and rapidly permeable (USDA 1973). Riverwash is found in the northern extent of the study area within San Vicente Creek. Soils within this area were found to be either coarse sand (riverwash), sandy with rocks, or sandy loams. The majority of the soils that were not considered riverwash within the study area consisted of a relatively dark depleted layer (4/3 to 2/1) of six inches or more. Two out of the five soil samples within the immediate flood plain of the study area were saturated.

Soils throughout the study area appeared dominated by riverwash, sand, and silts. Current soils may reflect substantial past or recent movement or mixing by natural or artificial processes (or a combination). These processes include the Cedar Fire of 2003 that burned the entire uplands surrounding the study area. The fire's removal of vegetation promoted erosion and siltation into all nearby drainages, resulting in thick layers of silt and sand. These layers are particularly evident in the upland drainages, which have had less surface flow than the main creek channels since the fire.

The current soil characteristics indicating wetlands, specifically low chroma and the presence of riverwash, are typically reflective of sustained anaerobic conditions over a period of years. These conditions are expected within the less steep areas of San Vicente and Padre Barona Creeks because they appear to contain surface water for a majority of the year.

5.4 Consideration of Atypical Situations and Problem Areas

Atypical situations are those where wetland indicators have been directly or indirectly altered by human activity and/or by unusual (often catastrophic) natural events. Problem areas are special cases of ongoing natural situations where wetland indicators may be difficult to evaluate, cryptic, or absent for special reasons even though the hydrology may be sufficient to create a wetland. Sites that naturally concentrate soil toxins, vernal pools, and sites with excessively drained soils, such as gravels, are often considered problem areas.

In both atypical situations and problem areas, an important consideration is whether relevant changes have brought about a "new normal" condition, such

that the current conditions should be considered well established and more-or-less self-sustaining (USACE 1987 and supplementary materials). In some cases, such as long-standing cattle grazing or stream alteration, human changes are of sufficiently long-standing condition that they are now considered to be the normal circumstances. In these situations, the current conditions are interpreted as the applicable jurisdictional evidence without regard to origin.

Although the study area was burned in 2003 the conditions are typical. Therefore, all indicators for the OHWM and wetland conditions are accepted as valid and reflective of the applicable normal circumstances in the study area.

5.5 State Jurisdiction

Sections 1600 et seq. of the Fish and Game Code are relevant at the current study area based on the presence of a jurisdictional streambed and adjacent riparian vegetation. State jurisdiction at the study area is somewhat broader in width than the areas found to be Waters of the United States, including adjacent wetlands. The greater width occurs where riparian vegetation such as coast live oaks, willows, sycamores, and cottonwoods associated with the drainage extend beyond the OHWM, or where "top of bank" extends beyond the OHWM.

5.6 Functions and Values

No quantitative functional analysis was performed for the study area, as this was a routine-level delineation. However, a basic consideration of functions of the wetland and non-wetland waters found within the study area is expressed below.

The Committee on Characterization of Wetlands (CCW1995) has defined wetland functions as the physical, chemical, and biological processes that characterize wetland ecosystems, such as flooding, denitrification, provision of habitat for organisms, and support of aquatic life. They note that objective measurement of wetland functions falls within the realm of the natural sciences. They further define the value of a wetland as the measure of its importance to society, and observe that assessment of values involves the social sciences, especially economics. Taken in this sense, consideration and analysis of social values are beyond the scope of this work.

The study area consists of two linear features with several small, side reaches. The study area has well-defined beds and banks with little vegetation within the stream channel. Potions of San Vicente Creek support small pools with well-defined beds and banks that receive, hold, and transport precipitation and flows from the upper watershed, supporting riparian vegetation, including freshwater marsh throughout the year. Padre Barona Creek, however, is a relatively steep waterway with high-velocity water flow that does not allow for enough pooling to support habitats such as coast and valley freshwater marsh.

Based on current conditions, the primary hydrological function of the study area appears to be water flow transport with minor attenuation of flooding and purification of urban runoff water before it reaches the San Vicente Reservoir.

The study area is believed to have moderate wetland functions and values. The upper portion of San Vicente Creek supports riparian vegetation with a well-developed multi-layered canopy with the potential to support high faunal diversity. However, the high velocity flows in the lower portion of San Vicente Creek and the entire stretch of Padre Barona Creek do not allow for sediment retention and groundwater recharge or the ability to support higher valued riparian vegetation communities such as southern willow scrub or coast and valley fresh water marsh.

In conclusion, the study area in its present condition and location is judged to provide moderate wetland functions.

6.0 Findings

San Vicente Creek and Barona Creek are both judged to be jurisdictional under Section 404 of the federal Clean Water Act, as administered by the USACE. The ephemeral drainages that help feed the creeks during seasonal rains and assist with the chemical, physical, and biological integrity of the watershed are also jurisdictional under USACE.

These drainages are also judged to be jurisdictional under Section 1600 of the California Fish and Game Code as implemented by the CDFG.

The USACE non-wetland waters within the elevation range of 650–664 feet within both creeks total 0.28 acres. The CDFG streambed within the same elevation range in both creeks totals 0.74 acres. No USACE wetland waters were observed within this elevation range.

The USACE non-wetland waters within the elevation range of 710–766 feet within both creeks total 1.51 acres. The USACE wetland waters, observed only in San Vicente Creek, total 0.99 acre. The CDFG streambed within the same elevation range in both creeks totals 6.62 acres.

Complete details of these results including separation of impacts by creek and vegetation type are included in Table 2 below. A summary of the total quantitative results is included in Table 3 below.

For graphical results see Figures 3a through 3e below.

Table 2. Jurisdictional Resources within Elevations 650–664 and 710–766 at San Vicente Creek and Padre Barona Creek

Vegetation Type		Linear Feet	Square Feet	Acres
SAN VICENTE CREEK				
Elevations 650–664				
USACE Non-Wetland Waters	Unvegetated Channel	372	10,359	0.24
		Total USACE Waters:	**10,359**	**0.24**
CDFG Streambed	Unvegetated Channel	372	10,359	0.24
	SCLORF	NA	5,932	0.14
	MFS	NA	11,519	0.26
		Total CDFG Streambed:	**27,810**	**0.64**
Elevations 710–766				
USACE Non-Wetland Waters	Unvegetated Channel	4754	35,117	0.81
		Total USACE Waters	**35,117**	**0.81**
USACE Wetland Waters	SWS	NA	39,479	0.91
	FWM	NA	3,711	0.09
		Total USACE Wetland Waters:	**43,190**	**0.99**
CDFG Streambed	Unvegetated Channel	4,754	35,117	0.81
	SWS	NA	39,479	0.91
	FWM	NA	3,711	0.09
	SCLORF	NA	166,706	3.83
		Total CDFG Streambed:	**245,013**	**5.62**
PADRE BARONA CREEK				
Elevations 650–664				
USACE Non-Wetland Waters	Unvegetated Channel	101	2,025	0.05
		Total USACE Waters:	**2,025**	**0.05**
CDFG Streambed	Unvegetated Channel	101	2,025	0.05
	SCLORF	NA	2,368	0.05
		Total CDFG Streambed:	**4,393**	**0.10**

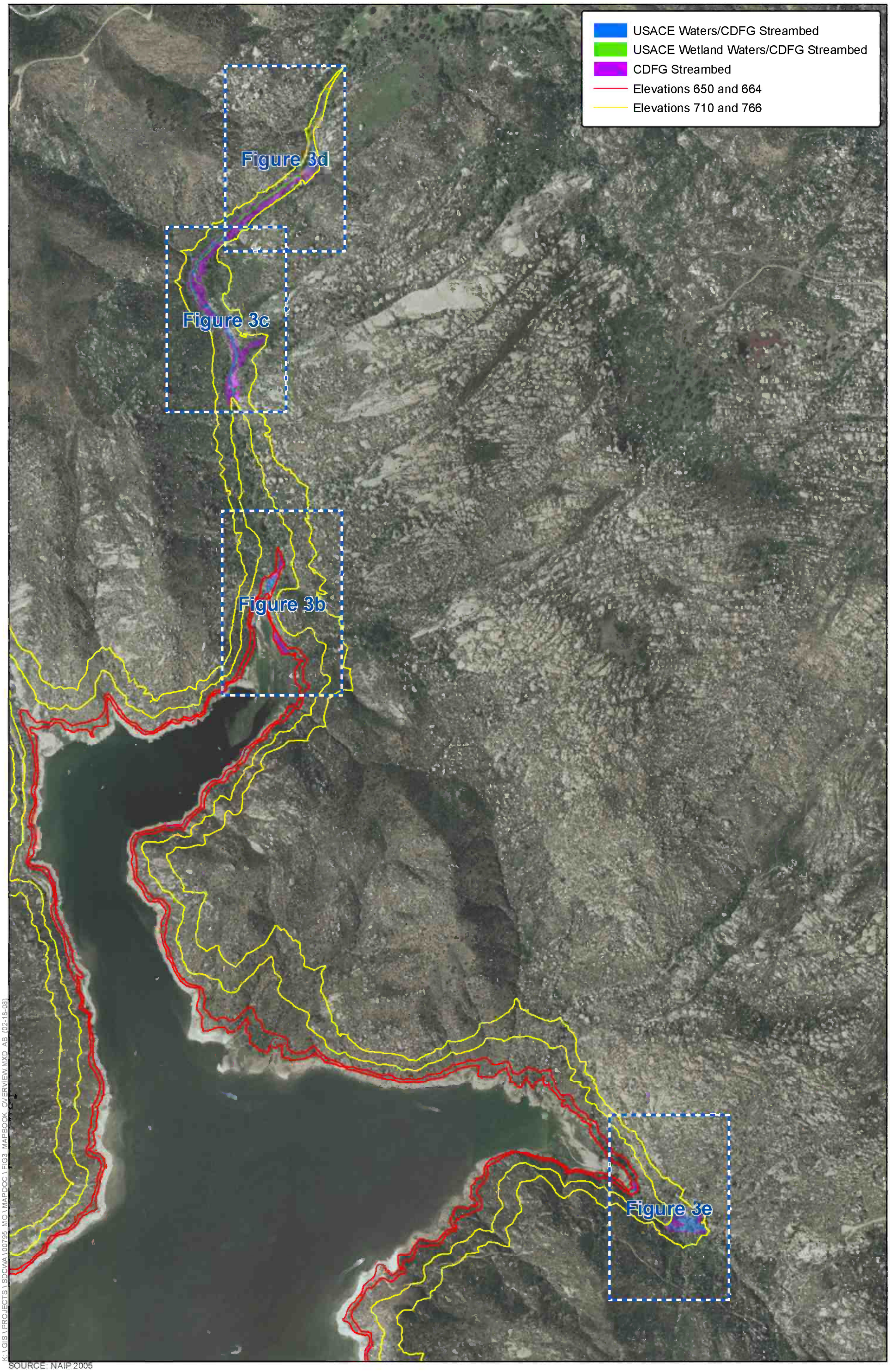
	Vegetation Type	Linear Feet	Square Feet	Acres
Elevations 710–766				
USACE Non-Wetland Waters	Unvegetated Channel	690	30,693	0.70
		Total USACE Waters:	**30,693**	**0.70**
CDFG Streambed	Unvegetated Channel	690	30,693	0.70
	SCLORF	NA	16,494	0.38
		Total CDFG Streambed:	**47,187**	**1.08**

Vegetation types = Southern Coast Live Oak Riparian Forest (SCLORF), Mule fat Scrub (MFS), Southern Willow Scrub (SWS), and Freshwater Marsh (FWM)

Table 3. Total Jurisdictional Resources within Elevations 650–664 and 710–766

	Vegetation Type	Linear Feet	Square Feet	Acres
TOTAL Impacts Elevations 650– 664				
USACE Non-Wetland Waters	Unvegetated Channel	473	12,384	0.28
		Total USACE:	**12,384**	**0.28**
CDFG Streambed	Unvegetated Channel	5126	12,384	0.28
	SCLORF	NA	8,300	0.19
	MFS	NA	11,519	0.26
		Total CDFG:	**32,203**	**0.74**
TOTAL Impacts Elevations 710–766				
USACE Non-Wetland Waters	Unvegetated Channel	5444	65,810	1.51
		Total USACE Waters:	**65,810**	**1.51**
USACE Wetland Waters	SWS	NA	39,479	0.91
	FWM	NA	3,711	0.09
		Total USACE Wetland Waters:	**43,190**	**0.99**
CDFG Streambed	Unvegetated Channel	5444	65,810	1.51
	SCLORF	NA	183,200	4.21
	SWS	NA	39,479	0.91
	FWM	NA	3,711	0.09
		Total CDFG:	**288,489**	**6.62**

Vegetation types = Southern Coast Live Oak Riparian Forest (SCLORF), Mule fat Scrub (MFS), Southern Willow Scrub (SWS), and Freshwater Marsh (FWM)



K:\GIS\PROJECTS\SDCWA\00795_MO\MAPDOC\FIG3_MAPBOOK_OVERVIEW.MXD AB (02-18-08)

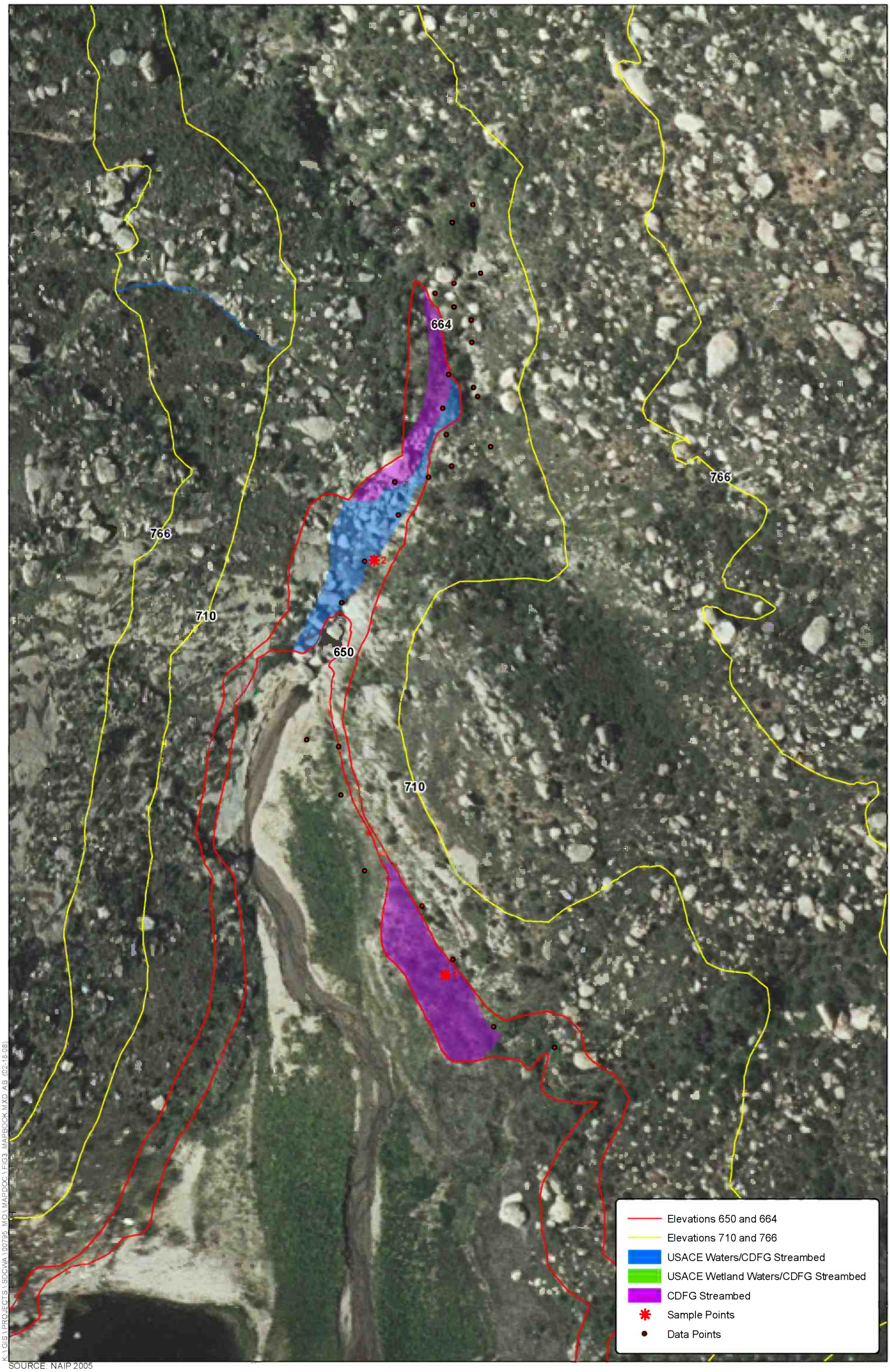
SOURCE: NAIP 2005

Jones & Stokes

N

0 500 1,000 2,000 Feet

Figure 3a
Jurisdictional Resources Index Map



K:\GIS\PROJECTS\SDCWA\00795_MO\MAPDOC\FIG3_MAPBOOK.MXD AB (02-18-08)

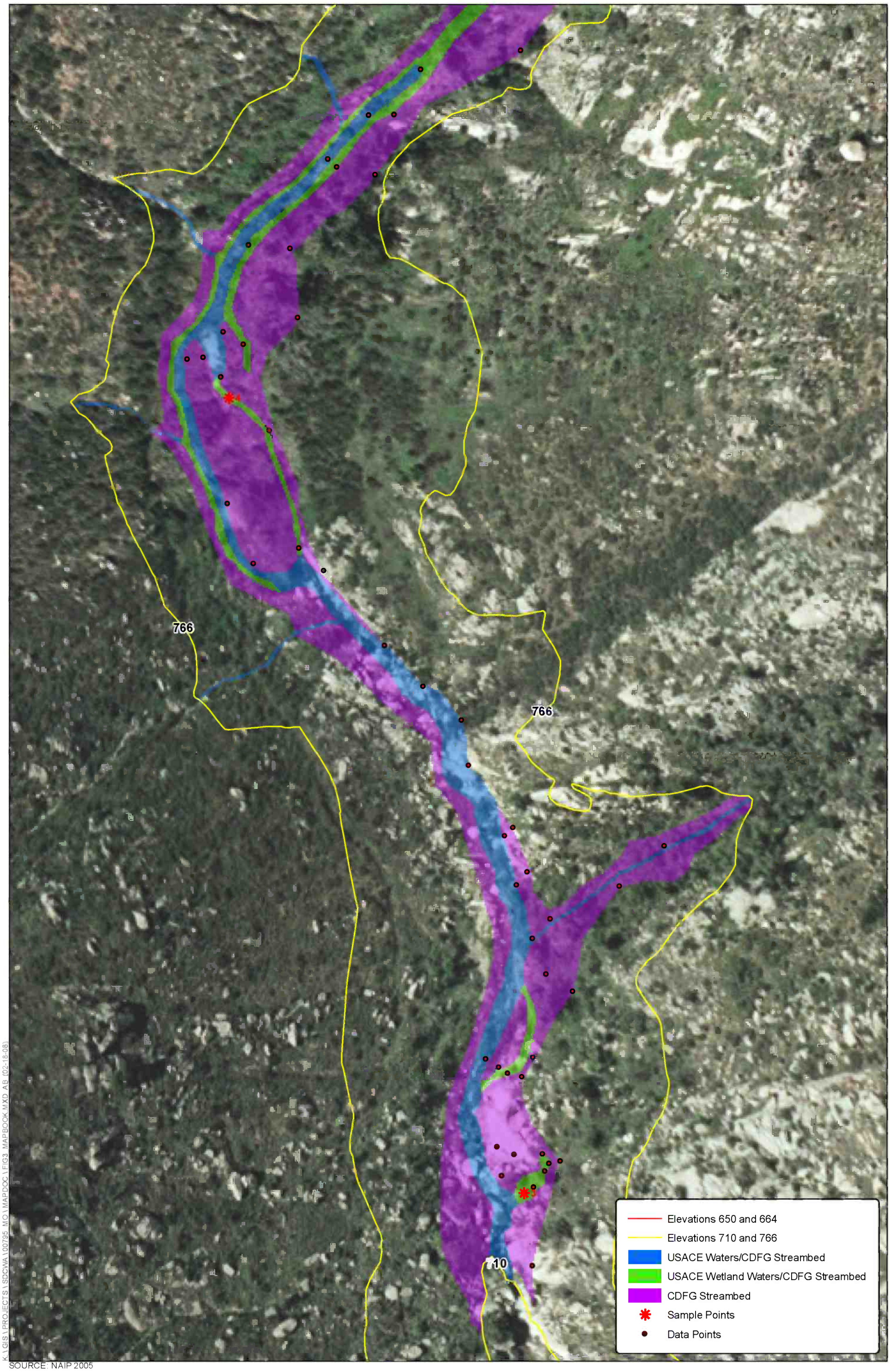
SOURCE: NAIP 2005

Jones & Stokes

N

0 125 250 Feet

Figure 3b
Jurisdictional Resources
San Vicente Creek
Elevations 650 to 664 & 710 to 766



K:\GIS\PROJECTS\SDCWA\00795_MO\MAPDOC\FIG3_MAPBOOK.MXD AB (02-18-08)

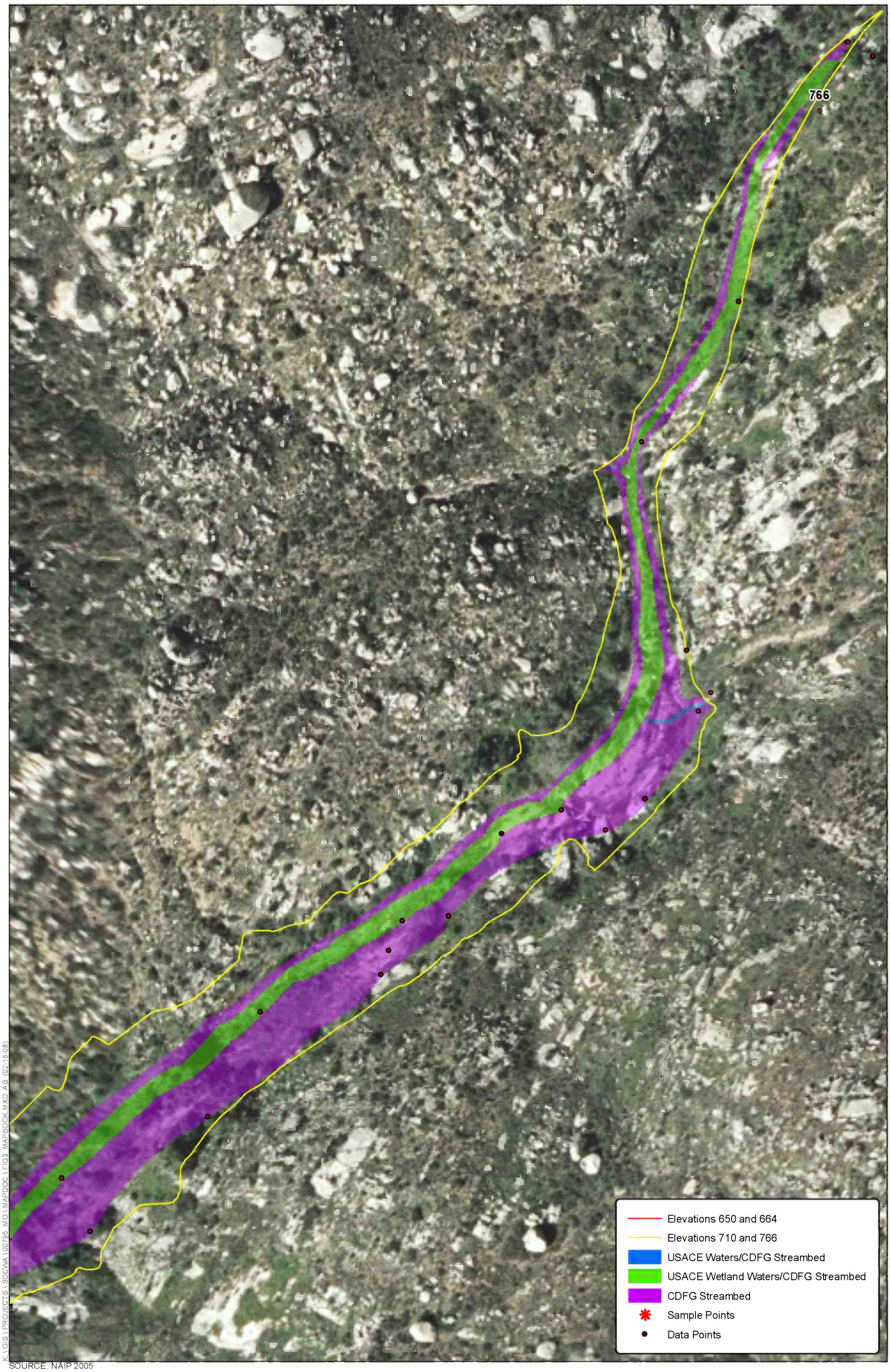
SOURCE: NAIP 2005

Jones & Stokes

N

0 125 250 Feet

Figure 3c
Jurisdictional Resources
San Vicente Creek
Elevations 710 to 766



K:\GIS\PROJECTS\SDCWA\00795_MO\MAPDOC\FIG3_MAPBOOK.MXD AB (02-18-08)

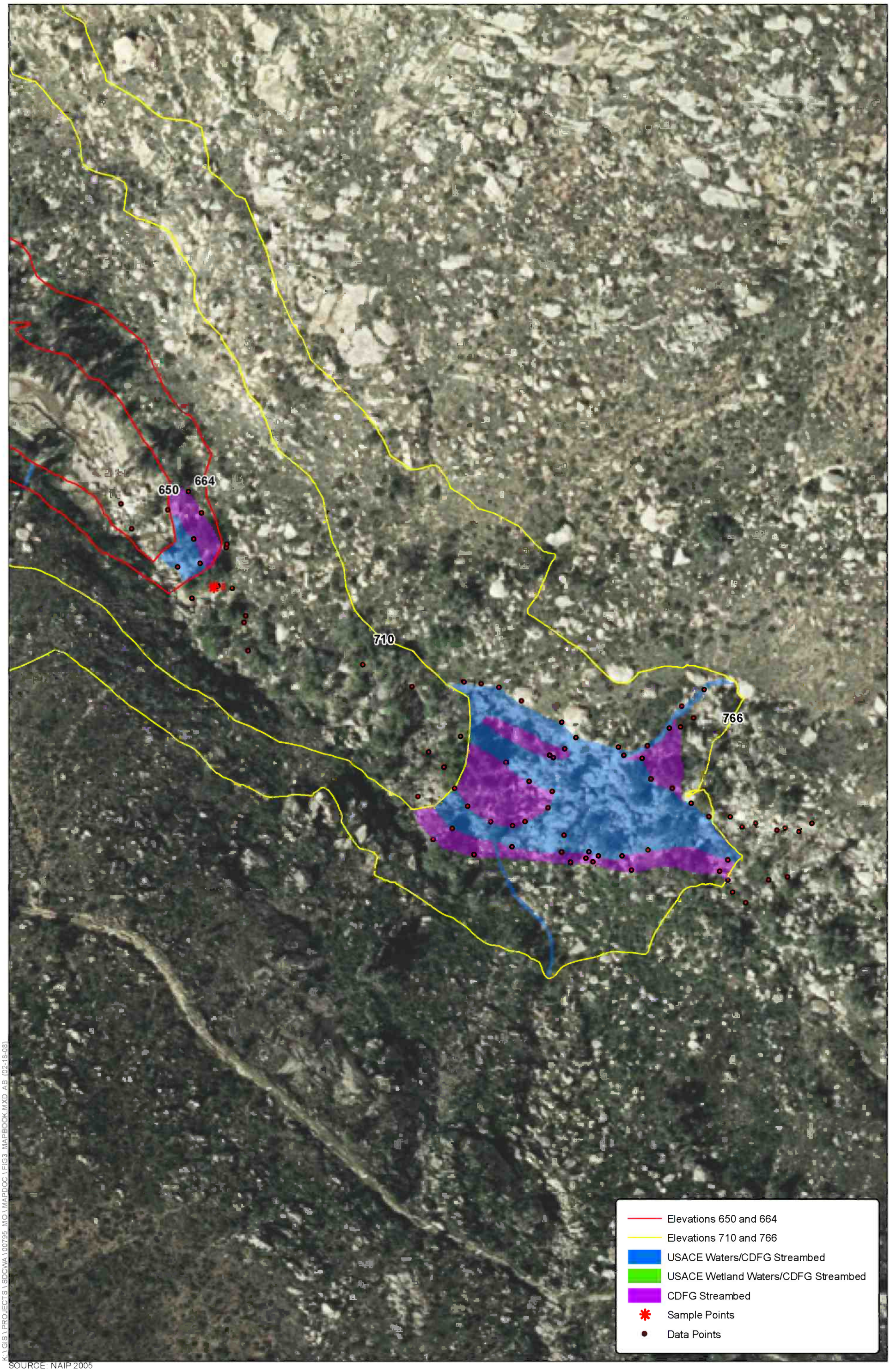
SOURCE: NAIP 2005

Jones & Stokes

N

0 125 250 Feet

Figure 3d
Jurisdictional Resources
San Vicente Creek
Elevations 710 to 766



K:\GIS\PROJECTS\SDCWA\00795_MO\MAPDOC\FIG3_MAPBOOK.MXD AB (02-18-08)

SOURCE: NAIP 2005

Jones & Stokes

N

0 125 250 Feet

Figure 3e
Jurisdictional Resources
Padre Barona Creek
Elevations 650 to 664 & 710 to 766

7.0 References

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Attachment A

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps Methodology Wetlands Delineation Manual)

Project/Site:	SAN VICENTE/KIMBALL ARM	Date:	2-7-08
Applicant/Owner:	CWA	County:	SD
Investigator(s) :	ANDREW BORLIHER/DAYLON TEEL	State:	CA

Do Normal Circumstances exist on the site? ___ Yes ___ No
Is the site significantly disturbed (Atypical Situation)? ___ Yes ___ No
Is the area a potential Problem Area? ___ Yes ___ No
(If needed, explain answer on reverse or attach separate sheet.)

Community ID: MFS
Transect ID:
Plot ID: UP 1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Bar sal	S	FACW	9.		
2. Brassica Nigra	H	X	10.		
3. Mar mac	H	X	11.		
4. Western hemlock	H	X	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Observations & Remarks:
1. Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 25 %
2. Assume presence of wetland vegetation? ___ Yes X No; or,
3. Visually observed rooted emergent vegetation present? ___ Yes X No
4. Taxonomic References:

HYDROLOGY

X Recorded Data (Attached):
- X Stream, Lake, or Tide Gauge
- X Aerial Photographs: Dates: 2005
- X Other TOPO - 5 FOOT

__ No Recorded Data Found

Current Field Observations:
- Depth of Surface Water: / (in.)
- Depth to Free Water in Pit: / (in.)
- Depth to Saturated Soil: / (in.)

__ Tidal Influence
__ Non-Tidal Influence

Wetland Hydrology Indicators: NO
Primary Indicators:
- ___ Inundated: ___ Flooded ___ Ponded
- / Saturated in: ___ Upper 12" of Soil Profile
- / Water Marks
- / Drift Lines
- / Sediment Deposits
- / Drainage Patterns in Wetlands (Hydrogeomorphic context)

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in: ___ Upper 12" of Soil Profile
- / Water-Stained Leaves
- / Local Soil Survey Data
- / FAC-Neutral Test
- / Other (Explain in Remarks)

Observations and Remarks:
1. *Filamentous or sheet forming algae present?* ___ *Yes* X *No*
2. *Surface Sediment with Bedding Planes* ___ *Yes* X *No*
3. *Slope:* X *0-2%; or* ___ *> 2%*
4. *Oxidized rhizospheres:* ___ *new roots only;* ___ *old roots only;* ___ *new and old roots, or* ___ *none*
5. *Flooding:* ___ *none, flooding not probable;* X *rare, unlikely but possible under unusual weather conditions;* ___ *occasional, occurs on an average of once or less in 2 years, or* ___ *frequent, occurs on an average of more than once in 2 years.*
6. *Continuous flooding duration:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, if <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS; or* ___ *very long, if >12.5% GS*
7. *Ponding?* ___ *Yes* ___ *No*
8. *Continuous ponding duration:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS or;* ___ *very long, if >12.5% GS*
9. *Saturation?* ___ *Yes* ___ *No*
10. *Continuous duration of Saturation:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS; or* ___ *very long, if >12.5% GS*

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ID:

SOILS

Map Unit Name (Series and Phase): _____

Taxonomy (Subgroup): _____

Drainage Class[1]: _____

Permeability[2]: _____

Run off[3]: _____

Field Observations Confirm NRCS Mapping? ___ Yes ___ No

Profile Description (Surface to 12"):

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance[4]/ Contrast[5]	Texture[6], Concretions, Structures[7], etc.
0-12	A	10YR 4/4	NO	NO	Sand

Hydric Soil Indicators:

Historic:
___ Histosol
___ Histic Epipedon
___ Organic Streaking in Sandy Soils
___ Listed on National Hydric Soils List
___ Listed on Local Hydric Soils List
___ Concretions
___ High Organic Content in Surface Layer in Sandy Soils
___ Gleyed or Low-Chroma Colors
___ Other (Explain in Remarks): _____

Current:
___ Sulfidic Odor
___ Reducing Conditions
___ Aquic Moisture Regime
___ Other (Explain in Remarks): _____

Observations and Remarks:

1. *Smell:* ___ *Neutral;* ___ *Slightly Fresh;* ___ *Freshly Plowed Field Smell; or* ___ *Sulfidic Odor*
2. *Site has been:* ___ *Irrigated;* ___ *Land Leveled;* ___ *Ditch Drained;* ___ *Pumped;* ___ *Graded to drain via slope*
3. *Soils Currently are:* ___ *Flooded;* ___ *Ponded;* ___ *Saturated*[8]
4. *Soils:* ___ *do* ___ *do not, become continuously flooded or ponded or saturated for long (≥15 to 30 days) to very long durations ; (>30 days) during the growing season;* ___ *Unknown*
5. *Soils:* ___ *do* ___ *do not, become continuously saturated for 14 days or greater*

WETLAND DETERMINATION

Hydrophytic Vegetation Conditions Present? ___ Yes X No
Wetland Hydrology Conditions Present? ___ Yes X No
Hydric Soils Conditions Currently Present? ___ Yes X No

Is this Sampling Point Within a Wetland? ___ Yes X No

Signature: ALBL

Remarks:

1. *Possible water of the U.S.?* ___ *Yes* X *No*
2. *Possibly exempt from Corps/EPA regulation?* ___ *Yes* ___ *No (If yes, check item(s) below).*
   - *(a)* ___ *Non-tidal drainage and irrigation ditches excavated on dry land*
   - *(b)* ___ *Artificially irrigated areas which would revert to upland if the irrigation ceased.*
   - *(c)* ___ *Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.*
   - *(d)* ___ *Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.*
   - *(e)* ___ *Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (see 33 CFR 328.3(a)).*

Approved by HQUSACE 3/9

NOTES:

[1] *Drainage class: Excessively drained (ED), Somewhat excessively drained (SED), Well drained (WD), Moderately well drained (MWD), Somewhat poor drained (SPD), Poorly drained (PD), Very poorly drained (VPD), or Variable (V).*
[2] *Permeability: Very slow (VS-less than 0.06 inch), slow (S-0.06 to 0.20 inch), moderately slow (MS-0.2 to 0.6 inch), moderate (M-0.6 to 2.0 inches moderately rapid (MR-2.0 to 6.0 inches), rapid (R-6.0 to 20 inches), very rapid (VR-more than 20 inches), or Variable (V).*
[3] *Runoff: Very slow (VS) Slow (S), Moderate (M), Rapid (R), or Variable (V).*
[4] *Mottle abundance: Few (F), Common (C), or Many (M).*
[5] *Mottle contrast: Faint (F), Distinct (D), or Prominent (P).*
[6] *Texture: Sand, loamy sand, sandy loam, loam , silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.*
[7] *Structure: Platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), or granular.*
[8] *Reliance on visual observation of flooding, or ponding is required, or the use of indicators other than factors such as soil color, the presence of motti or hydric soil classification.*

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*All additions in italics are by Huffman & Associates Inc.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps Methodology Wetlands Delineation Manual)

Project/Site: SAN VICENTE / KIMBLE ARM Applicant/Owner: CWA Investigator(s): AB/DT	Date: 2-7-08 County: SD State: CA
Do Normal Circumstances exist on the site? ___ Yes ___ No Is the site significantly disturbed (Atypical Situation)? ___ Yes ___ No Is the area a potential Problem Area? ___ Yes ___ No (If needed, explain answer on reverse or attach separate sheet.)	Community ID: SCLORF Transect ID: ___ Plot ID: 2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Piptathrum miliaceum	H	NI	9.		
2. Populus trichocarpa	T	FACW	10.		
3. Ambrosia psilostachya	H	FACW	11.		
4. Eriodictyon californicum	H	NI	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Observations & Remarks:
1. Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 50 %
2. Assume presence of wetland vegetation? ___ Yes ___ No; or,
3. Visually observed rooted emergent vegetation present? ___ Yes ___ No
4. Taxonomic References:

HYDROLOGY

X Recorded Data (Attached):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs: Dates: 2005
- X Other 1000 5 FOOT

___ No Recorded Data Found

Current Field Observations:
- Depth of Surface Water: ___ (in.)
- Depth to Free Water in Pit: ___ (in.)
- Depth to Saturated Soil: ___ (in.)
- ___ Tidal Influence
- ___ Non-Tidal Influence

Wetland Hydrology Indicators:
Primary Indicators:
- ___ Inundated: ___ Flooded ___ Ponded
- ___ Saturated in: ___ Upper 12" of Soil Profile
- ___ Water Marks
- X Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands (Hydrogeomorphic context)

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in: ___ Upper 12" of Soil Profile
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Observations and Remarks:
1. *Filamentous or sheet forming algae present?* ___ *Yes* X *No*
2. *Surface Sediment with Bedding Planes* ___ *Yes* X *No*
3. *Slope:* X *0-2%; or* ___ *> 2%*
4. *Oxidized rhizospheres:* ___ *new roots only;* X *old roots only;* ___ *new and old roots, or* ___ *none*
5. *Flooding:* ___ *none, flooding not probable;* X *rare, unlikely but possible under unusual weather conditions;* ___ *occasional, occurs on an average of once or less in 2 years, or* ___ *frequent, occurs on an average of more than once in 2 years.*
6. *Continuous flooding duration:* ___ *None;* X *very brief, if < 2 days;* ___ *brief, if <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS; or* ___ *very long, if > 12.5% GS*
7. *Ponding?* ___ *Yes* ___ *No*
8. *Continuous ponding duration:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS or;* ___ *very long, if > 12.5% GS*
9. *Saturation?* ___ *Yes* ___ *No*
10. *Continuous duration of Saturation:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS; or* ___ *very long, if > 12.5% GS*

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ID:

SOILS

Map Unit Name (Series and Phase): _____

Taxonomy (Subgroup): _____

Drainage Class[1]: _____

Permeability[2]: _____

Run off[3]: _____

Field Observations Confirm NRCS Mapping? __ Yes __ No

Profile Description (Surface to 12"):

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance[4]/ Contrast[5]	Texture[6], Concretions, Structures[7], etc.
0-12	A	10YR 4/4			Sand/Loday

Hydric Soil Indicators:

Historic:
- __ Histosol
- __ Histic Epipedon
- __ Organic Streaking in Sandy Soils
- __ Listed on National Hydric Soils List
- __ Listed on Local Hydric Soils List
- __ Concretions
- __ High Organic Content in Surface Layer in Sandy Soils
- __ Gleyed or Low-Chroma Colors
- __ Other (Explain in Remarks): _____

Current:
- __ Sulfidic Odor
- __ Reducing Conditions
- __ Aquic Moisture Regime
- __ Other (Explain in Remarks): _____

Observations and Remarks:

1. *Smell:* __ *Neutral;* __ *Slightly Fresh;* __ *Freshly Plowed Field Smell; or* __ *Sulfidic Odor*
2. *Site has been:* __ *Irrigated;* __ *Land Leveled;* __ *Ditch Drained;* __ *Pumped;* __ *Graded to drain via slope*
3. *Soils Currently are:* __ *Flooded;* __ *Ponded;* __ *Saturated*[8]
4. *Soils:* __ *do* X *do not, become continuously flooded or ponded or saturated for long (≥15 to 30 days) to very long durations (>30 days) during the growing season;* __ *Unknown*
5. *Soils:* __ *do* __ *do not, become continuously saturated for 14 days or greater*

WETLAND DETERMINATION

Hydrophytic Vegetation Conditions Present? __ Yes X No

Wetland Hydrology Conditions Present? X Yes __ No

Hydric Soils Conditions Currently Present? __ Yes X No

Is this Sampling Point Within a Wetland? __ Yes X No

Signature: ALBL

Remarks:

1. *Possible water of the U.S.?* __ *Yes* __ *No*
2. *Possibly exempt from Corps/EPA regulation?* __ *Yes* __ *No* *(If yes, check item(s) below).*
   - *(a)* __ *Non-tidal drainage and irrigation ditches excavated on dry land*
   - *(b)* __ *Artificially irrigated areas which would revert to upland if the irrigation ceased.*
   - *(c)* __ *Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.*
   - *(d)* __ *Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.*
   - *(e)* __ *Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (see 33 CFR 328.3(a)).*

Approved by HQUSACE 3/9

NOTES:

[1] *Drainage class: Excessively drained (ED), Somewhat excessively drained (SED), Well drained (WD), Moderately well drained (MWD), Somewhat poor drained (SPD), Poorly drained (PD), Very poorly drained (VPD), or Variable (V).*

[2] *Permeability: Very slow (VS-less than 0.06 inch), slow (S-0.06 to 0.20 inch), moderately slow (MS-0.2 to 0.6 inch), moderate (M-0.6 to 2.0 inches moderately rapid (MR-2.0 to 6.0 inches), rapid (R-6.0 to 20 inches), very rapid (VR-more than 20 inches), or Variable (V).*

[3] *Runoff: Very slow (VS) Slow (S), Moderate (M), Rapid (R), or Variable (V).*

[4] *Mottle abundance: Few (F), Common (C), or Many (M).*

[5] *Mottle contrast: Faint (F), Distinct (D), or Prominent (P).*

[6] *Texture: Sand, loamy sand, sandy loam, loam , silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.*

[7] *Structure: Platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), or granular.*

[8] *Reliance on visual observation of flooding, or ponding is required, or the use of indicators other than factors such as soil color, the presence of mottl or hydric soil classification.*

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DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps Methodology Wetlands Delineation Manual)

Project/Site: San Vicente/Kimball Arm Applicant/Owner: CNA Investigator(s): AB/DT	Date: 2-8-08 County: SD State: CA
Do Normal Circumstances exist on the site? X Yes ___ No Is the site significantly disturbed (Atypical Situation)? ___ Yes X No Is the area a potential Problem Area? ___ Yes X No (If needed, explain answer on reverse or attach separate sheet.)	Community ID: FWM Transect ID: ~~3~~ Plot ID: 3

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Sal lem	T	OBL	9.		
2. Pla rac	T	FACW	10.		
3. Fra sp	H	OBL	11.		
4. Iox rad	H	NI	12.		
5. Ant dou	H	FACW	13.		
6. Bac sal	S	FACW	14.		
7.			15.		
8.			16.		

Observations & Remarks:
1. Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 83 %
2. Assume presence of wetland vegetation? ___ Yes ___ No; or,
3. Visually observed rooted emergent vegetation present? X Yes ___ No
4. Taxonomic References:

HYDROLOGY

X Recorded Data (Attached):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs: Dates: 2005
- X Other TOPO 6FOOT

___ No Recorded Data Found

Current Field Observations:
- Depth of Surface Water: ___ (in.)
- Depth to Free Water in Pit: ~~4~~ (in.) < 4 in
- Depth to Saturated Soil: ___ (in.)

___ Tidal Influence
___ Non-Tidal Influence

Wetland Hydrology Indicators:
Primary Indicators:
- ___ Inundated: ___ Flooded ___ Ponded
- X Saturated in: X Upper 12" of Soil Profile
- X Water Marks
- X Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands (Hydrogeomorphic context)

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in: ___ Upper 12" of Soil Profile
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Observations and Remarks:
1. *Filamentous or sheet forming algae present?* ___ *Yes* X *No*
2. *Surface Sediment with Bedding Planes* ___ *Yes* X *No*
3. *Slope:* X *0-2%; or* ___ *> 2%*
4. *Oxidized rhizospheres:* ___ *new roots only;* ___ *old roots only;* ___ *new and old roots, or* ___ *none*
5. *Flooding:* ___ *none, flooding not probable;* ___ *rare, unlikely but possible under unusual weather conditions;* X *occasional, occurs on an average of once or less in 2 years, or* ___ *frequent, occurs on an average of more than once in 2 years.*
6. *Continuous flooding duration:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, if <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS; or* ___ *very long, if >12.5% GS*
7. *Ponding?* ___ *Yes* ___ *No*
8. *Continuous ponding duration:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS or;* ___ *very long, if >12.5% GS*
9. *Saturation?* ___ *Yes* ___ *No*
10. *Continuous duration of Saturation:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS; or* ___ *very long, if >12.5% GS*

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ID:

SOILS

Map Unit Name (Series and Phase): _____

Taxonomy (Subgroup): _____

Drainage Class[1]: _____

Permeability[2]: _____

Run off[3]: _____

Field Observations Confirm NRCS Mapping? ___ Yes ___ No

Profile Description (Surface to 12"):

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance[4]/ Contrast[5]	Texture[6], Concretions, Structures[7], etc.
0-8		10YR 2/1			Silt Loam

Hydric Soil Indicators:

Historic:
- ___ Histosol
- ___ Histic Epipedon
- ___ Organic Streaking in Sandy Soils
- ___ Listed on National Hydric Soils List
- ___ Listed on Local Hydric Soils List
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- X Gleyed or Low-Chroma Colors
- ___ Other (Explain in Remarks): _____

Current:
- ___ Sulfidic Odor
- ___ Reducing Conditions
- ___ Aquic Moisture Regime
- ___ Other (Explain in Remarks): _____

Observations and Remarks:

1. *Smell:* ___ *Neutral;* ___ *Slightly Fresh;* ___ *Freshly Plowed Field Smell; or* ___ *Sulfidic Odor*
2. *Site has been:* ___ *Irrigated;* ___ *Land Leveled;* ___ *Ditch Drained;* ___ *Pumped;* ___ *Graded to drain via slope*
3. *Soils Currently are:* ___ *Flooded;* ___ *Ponded;* X *Saturated*[8]
4. *Soils:* ___ *do* ___ *do not, become continuously flooded or ponded or saturated for long (≥15 to 30 days) to very long durations ; (>30 days) during the growing season;* ___ *Unknown*
5. *Soils:* ___ *do* ___ *do not, become continuously saturated for 14 days or greater*

WETLAND DETERMINATION

Hydrophytic Vegetation Conditions Present? X Yes ___ No

Wetland Hydrology Conditions Present? X Yes ___ No

Hydric Soils Conditions Currently Present? X Yes ___ No

Is this Sampling Point Within a Wetland? X Yes ___ No

Signature: _____

Remarks:

1. *Possible water of the U.S.?* ___ *Yes* ___ *No*
2. *Possibly exempt from Corps/EPA regulation?* ___ *Yes* ___ *No (If yes, check item(s) below).*
   - *(a)* ___ *Non-tidal drainage and irrigation ditches excavated on dry land*
   - *(b)* ___ *Artificially irrigated areas which would revert to upland if the irrigation ceased.*
   - *(c)* ___ *Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.*
   - *(d)* ___ *Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.*
   - *(e)* ___ *Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (see 33 CFR 328.3(a)).*

Approved by HQUSACE 3/9

NOTES:

[1] *Drainage class: Excessively drained (ED), Somewhat excessively drained (SED), Well drained (WD), Moderately well drained (MWD), Somewhat poor drained (SPD), Poorly drained (PD), Very poorly drained (VPD), or Variable (V).*

[2] *Permeability: Very slow (VS-less than 0.06 inch), slow (S-0.06 to 0.20 inch), moderately slow (MS-0.2 to 0.6 inch), moderate (M-0.6 to 2.0 inches moderately rapid (MR-2.0 to 6.0 inches), rapid (R-6.0 to 20 inches), very rapid (VR-more than 20 inches), or Variable (V).*

[3] *Runoff: Very slow (VS) Slow (S), Moderate (M), Rapid (R), or Variable (V).*

[4] *Mottle abundance: Few (F), Common (C), or Many (M).*

[5] *Mottle contrast: Faint (F), Distinct (D), or Prominent (P).*

[6] *Texture: Sand, loamy sand, sandy loam, loam , silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.*

[7] *Structure: Platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), or granular.*

[8] *Reliance on visual observation of flooding, or ponding is required, or the use of indicators other than factors such as soil color, the presence of motti or hydric soil classification.*

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DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps Methodology Wetlands Delineation Manual)

Project/Site: San Vicente / Kimball Arm Applicant/Owner: CWA Investigator(s): AB, DT	Date: 2-7-08 County: SD State: CA
Do Normal Circumstances exist on the site? ___ Yes ___ No Is the site significantly disturbed (Atypical Situation)? ___ Yes ___ No Is the area a potential Problem Area? ___ Yes ___ No (If needed, explain answer on reverse or attach separate sheet.)	Community ID: FWM Transect ID: Plot ID: DP 4

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Bac Sal	S	FACW	9.		
2. Amb psi	H	FACW	10.		
3. Sal lea	T	OBL	11.		
4. Ort dou	H	FACW	12.		
5. Eleocharis	H	OBL	13.		
6.			14.		
7.			15.		
8.			16.		

Observations & Remarks:
1. Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100 %
2. Assume presence of wetland vegetation? ___ Yes ___ No; or,
3. Visually observed rooted emergent vegetation present? ___ Yes ___ No
4. Taxonomic References:

HYDROLOGY

✓ Recorded Data (Attached):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs: Dates: 2005
- X Other ~~15 Foot Topo~~

___ No Recorded Data Found

Current Field Observations:
- Depth of Surface Water: _____ (in.)
- Depth to Free Water in Pit: _____ (in.)
- Depth to Saturated Soil: _____ (in.)
- ___ Tidal Influence
- ___ Non-Tidal Influence

Wetland Hydrology Indicators:
Primary Indicators:
- ___ Inundated: ___ Flooded ___ Ponded
- X Saturated in: 3 Upper 12" of Soil Profile
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands (Hydrogeomorphic context)

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in: ___ Upper 12" of Soil Profile
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Observations and Remarks:
1. *Filamentous or sheet forming algae present?* ___ *Yes* ___ *No*
2. *Surface Sediment with Bedding Planes* ___ *Yes* ___ *No*
3. *Slope:* X *0-2%; or* ___ *> 2%*
4. *Oxidized rhizospheres:* ___ *new roots only;* ___ *old roots only;* ___ *new and old roots, or* ___ *none*
5. *Flooding:* ___ *none, flooding not probable;* ___ *rare, unlikely but possible under unusual weather conditions;* ___ *occasional, occurs on an average of once or less in 2 years, or* ___ *frequent, occurs on an average of more than once in 2 years.*
6. *Continuous flooding duration:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, if <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS; or* ___ *very long, if >12.5% GS*
7. *Ponding?* ___ *Yes* ___ *No*
8. *Continuous ponding duration:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS or;* ___ *very long, if >12.5% GS*
9. *Saturation?* ___ *Yes* ___ *No*
10. *Continuous duration of Saturation:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS; or* ___ *very long, if >12.5% GS*

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ID:

SOILS

Map Unit Name (Series and Phase): _____

Taxonomy (Subgroup): _____

Drainage Class[1]: _____

Permeability[2]: _____

Run off[3]: _____

Field Observations Confirm NRCS Mapping? ___ Yes ___ No

Profile Description (Surface to 12"):

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance[4]/ Contrast[5]	Texture[6], Concretions, Structures[7], etc.
6-10		10YR 2/1			Sand / Gable

Hydric Soil Indicators:

Historic:
___ Histosol
___ Histic Epipedon
___ Organic Streaking in Sandy Soils
___ Listed on National Hydric Soils List
___ Listed on Local Hydric Soils List
___ Concretions
___ High Organic Content in Surface Layer in Sandy Soils
___ Gleyed or Low-Chroma Colors
___ Other (Explain in Remarks): _____

Current:
___ Sulfidic Odor
___ Reducing Conditions
___ Aquic Moisture Regime
___ Other (Explain in Remarks): _____

Observations and Remarks:

1. *Smell:* ___ *Neutral;* ___ *Slightly Fresh;* ___ *Freshly Plowed Field Smell; or* ___ *Sulfidic Odor*
2. *Site has been:* ___ *Irrigated;* ___ *Land Leveled;* ___ *Ditch Drained;* ___ *Pumped;* ___ *Graded to drain via slope*
3. *Soils Currently are:* ___ *Flooded;* ___ *Ponded;* ___ *Saturated*
4. *Soils:* ___ *do* ___ *do not, become continuously flooded or ponded or saturated for long (≥15 to 30 days) to very long durations ; (>30 days) during the growing season;* ___ *Unknown*
5. *Soils:* ___ *do* ___ *do not, become continuously saturated for 14 days or greater*

WETLAND DETERMINATION

Hydrophytic Vegetation Conditions Present? X Yes ___ No
Wetland Hydrology Conditions Present? X Yes ___ No
Hydric Soils Conditions Currently Present? X Yes ___ No

Is this Sampling Point Within a Wetland? X Yes ___ No

Signature: ALBL

Remarks:

1. *Possible water of the U.S.?* ___ *Yes* ___ *No*
2. *Possibly exempt from Corps/EPA regulation?* ___ *Yes* ___ *No* *(If yes, check item(s) below).*
   - *(a)* ___ *Non-tidal drainage and irrigation ditches excavated on dry land*
   - *(b)* ___ *Artificially irrigated areas which would revert to upland if the irrigation ceased.*
   - *(c)* ___ *Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.*
   - *(d)* ___ *Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.*
   - *(e)* ___ *Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (see 33 CFR 328.3(a)).*

Approved by HQUSACE 3/

NOTES:

[1] *Drainage class: Excessively drained (ED), Somewhat excessively drained (SED), Well drained (WD), Moderately well drained (MWD), Somewhat poo drained (SPD), Poorly drained (PD), Very poorly drained (VPD), or Variable (V).*

[2] *Permeability: Very slow (VS-less than 0.06 inch), slow (S-0.06 to 0.20 inch), moderately slow (MS-0.2 to 0.6 inch), moderate (M-0.6 to 2.0 inche moderately rapid (MR-2.0 to 6.0 inches), rapid (R-6.0 to 20 inches), very rapid (VR-more than 20 inches), or Variable (V).*

[3] *Runoff: Very slow (VS) Slow (S), Moderate (M), Rapid (R), or Variable (V).*

[4] *Mottle abundance: Few (F), Common (C), or Many (M).*

[5] *Mottle contrast: Faint (F), Distinct (D), or Prominent (P).*

[6] *Texture: Sand, loamy sand, sandy loam, loam , silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.*

[7] *Structure: Platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), or granular.*

[8] *Reliance on visual observation of flooding, or ponding is required, or the use of indicators other than factors such as soil color, the presence of moti or hydric soil classification.*

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*All additions in italics are by Huffman & Associates Inc

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps Methodology Wetlands Delineation Manual)

Project/Site: PADRE BARONA
Applicant/Owner: CWA
Investigator(s): ANDREW BORCHER / DAYLON TEEL

Date: 2-11-08
County: SD
State: CA

Do Normal Circumstances exist on the site? X Yes ___ No
Is the site significantly disturbed (Atypical Situation)? ___ Yes X No
Is the area a potential Problem Area? ___ Yes X No
(If needed, explain answer on reverse or attach separate sheet.)

Community ID: SCLORF
Transect ID:
Plot ID: DP 5

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Pla Rac	T	FACW	9.		
2. Bromus hordeaceus	H	NO	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Observations & Remarks:
1. Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 50 % Overhanging Tree
2. Assume presence of wetland vegetation? ___ Yes X No; or,
3. Visually observed rooted emergent vegetation present? ___ Yes X No
4. Taxonomic References:

HYDROLOGY

___ Recorded Data (Attached):
___ Stream, Lake, or Tide Gauge
X Aerial Photographs: Dates: 2005
X Other TOPO Sheet
___ No Recorded Data Found

Current Field Observations:
Depth of Surface Water: ___ (in.)
Depth to Free Water in Pit: ___ (in.)
Depth to Saturated Soil: ___ (in.)
___ Tidal Influence
___ Non-Tidal Influence

Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated: ___ Flooded ___ Ponded
___ Saturated in: ___ Upper 12" of Soil Profile
___ Water Marks
X Drift Lines
___ Sediment Deposits
___ Drainage Patterns in Wetlands (Hydrogeomorphic context)
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in: ___ Upper 12" of Soil Profile
___ Water-Stained Leaves
___ Local Soil Survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Observations and Remarks:
1. *Filamentous or sheet forming algae present?* ___ *Yes* ___ *No*
2. *Surface Sediment with Bedding Planes* ___ *Yes* ___ *No*
3. *Slope:* X *0-2%; or* ___ *> 2%*
4. *Oxidized rhizospheres:* ___ *new roots only;* ___ *old roots only;* ___ *new and old roots, or* ___ *none*
5. *Flooding:* ___ *none, flooding not probable;* ___ *rare, unlikely but possible under unusual weather conditions;* ___ *occasional, occurs on an average of once or less in 2 years, or* ___ *frequent, occurs on an average of more than once in 2 years.*
6. *Continuous flooding duration:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, if <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS; or* ___ *very long, if >12.5% GS*
7. *Ponding?* ___ *Yes* ___ *No*
8. *Continuous ponding duration:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS or;* ___ *very long, if >12.5% GS*
9. *Saturation?* ___ *Yes* ___ *No*
10. *Continuous duration of Saturation:* ___ *None;* ___ *very brief, if < 2 days;* ___ *brief, <5% growing season (GS);* ___ *long, if ≥5% to 12.5% GS; or* ___ *very long, if >12.5% GS*

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ID:

SOILS

Map Unit Name (Series and Phase): _____

Taxonomy (Subgroup): _____

Drainage Class[1]: _____

Permeability[2]: _____

Run off[3]: _____

Field Observations Confirm NRCS Mapping? ___ Yes ___ No

Profile Description (Surface to 12"):

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance[4]/ Contrast[5]	Texture[6], Concretions, Structures[7], etc.
0-3		10YR 4/3	—	—	LOAMY SAND
3-6 in		7.5YR 2.5/1	—	—	LOAMY SAND
6-12		10YR 4/3			

Hydric Soil Indicators:

Historic:
- ___ Histosol
- ___ Histic Epipedon
- ___ Organic Streaking in Sandy Soils
- ___ Listed on National Hydric Soils List
- ___ Listed on Local Hydric Soils List
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Gleyed or Low-Chroma Colors
- ___ Other (Explain in Remarks): _____

Current:
- ___ Sulfidic Odor
- ___ Reducing Conditions
- ___ Aquic Moisture Regime
- ___ Other (Explain in Remarks): _____

Observations and Remarks:

1. *Smell:* ___ *Neutral;* ___ *Slightly Fresh;* ___ *Freshly Plowed Field Smell; or* ___ *Sulfidic Odor*
2. *Site has been:* ___ *Irrigated;* ___ *Land Leveled;* ___ *Ditch Drained;* ___ *Pumped;* ___ *Graded to drain via slope*
3. *Soils Currently are:* ___ *Flooded;* ___ *Ponded;* ___ *Saturated*[8]
4. *Soils:* ___ *do* ___ *do not, become continuously flooded or ponded or saturated for long (≥15 to 30 days) to very long durations ;*
   (>30 days) during the growing season; ___ *Unknown*
5. *Soils:* ___ *do* ___ *do not, become continuously saturated for 14 days or greater*

WETLAND DETERMINATION

Hydrophytic Vegetation Conditions Present? ___ Yes X No

Wetland Hydrology Conditions Present? X Yes ___ No

Hydric Soils Conditions Currently Present? X Yes ___ No

Is this Sampling Point Within a Wetland? ___ Yes X No

Signature: [signature]

Remarks:

1. *Possible water of the U.S.?* ___ *Yes* ___ *No*
2. *Possibly exempt from Corps/EPA regulation?* ___ *Yes* ___ *No* *(If yes, check item(s) below).*
   - *(a)* ___ *Non-tidal drainage and irrigation ditches excavated on dry land*
   - *(b)* ___ *Artificially irrigated areas which would revert to upland if the irrigation ceased.*
   - *(c)* ___ *Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.*
   - *(d)* ___ *Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.*
   - *(e)* ___ *Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (see 33 CFR 328.3(a)).*

Approved by HQUSACE 3/9

NOTES:

[1] *Drainage class: Excessively drained (ED), Somewhat excessively drained (SED), Well drained (WD), Moderately well drained (MWD), Somewhat poor drained (SPD), Poorly drained (PD), Very poorly drained (VPD), or Variable (V).*

[2] *Permeability: Very slow (VS-less than 0.06 inch), slow (S-0.06 to 0.20 inch), moderately slow (MS-0.2 to 0.6 inch), moderate (M-0.6 to 2.0 inches moderately rapid (MR-2.0 to 6.0 inches), rapid (R-6.0 to 20 inches), very rapid (VR-more than 20 inches), or Variable (V).*

[3] *Runoff: Very slow (VS) Slow (S), Moderate (M), Rapid (R), or Variable (V).*

[4] *Mottle abundance: Few (F), Common (C), or Many (M).*

[5] *Mottle contrast: Faint (F), Distinct (D), or Prominent (P).*

[6] *Texture: Sand, loamy sand, sandy loam, loam , silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.*

[7] *Structure: Platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), or granular.*

[8] *Reliance on visual observation of flooding, or ponding is required, or the use of indicators other than factors such as soil color, the presence of mottl or hydric soil classification.*

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Attachment B

Attachment B - Photographs

Photo 1 (San Vicente Creek). Creek bordered by steep boulders

Photo 2 (San Vicente Creek). Wide creek with boulders

Photo 3 (San Vicente Creek). Sample point #2

Photo 4 (San Vicente Creek). Sandy bench supporting wetland vegetation

Photo 5. (San Vicente Creek). Small pools in braided channel

Photo 6 (San Vicente Creek). Sample point #4 within braided wet area

Photo 7 (San Vicente Creek). Dense SWS near eastern end of survey area

Photo 8 (Padre Barona Creek). Main channel

Photo 9 (Padre Barona Creek). Large boulders in channel

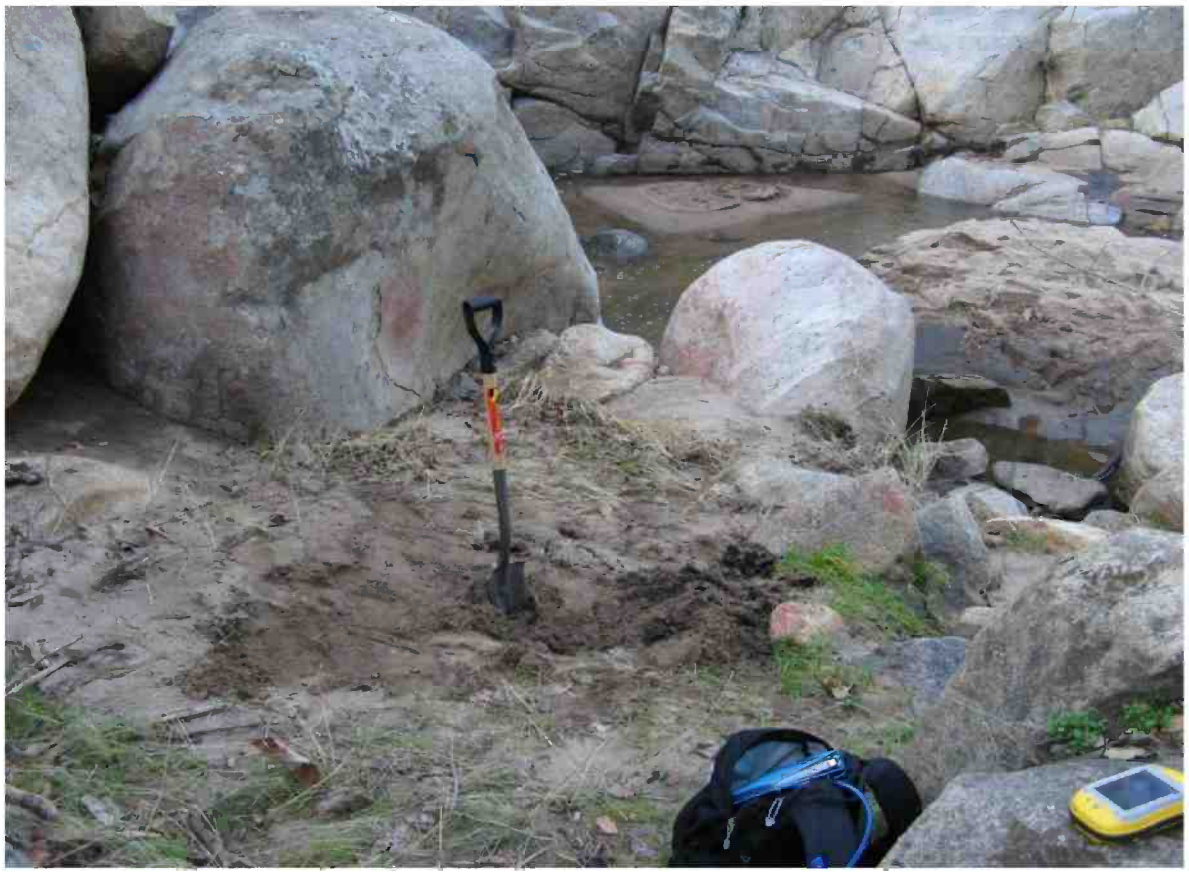

Photo 10 (Padre Barona Creek). Sample point #5

Photo 11 (Padre Barona Creek). Channel with some SCLORF on margins

Photo 12 (Padre Barona Creek). Large boulder pile across creek

Photo 13 (Padre Barona Creek). Braided channels under and between boulders

Photo 14 (Padre Barona Creek). Main channel supporting SCLORF