Appendix C

Biological Resources Technical Report for the Carryover Storage and San Vicente Dam Raise EIR/EIS

Prepared by TAIC

Biological Resources Technical Report

Carryover Storage and San Vicente Dam Raise Project

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April 2008

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1.0 INTRODUCTION

The Carryover Storage and San Vicente Dam Raise Project (CSP) will increase regional storage capacity and water availability for San Diego County residents in times of drought. The CSP is part of a regional strategy by the San Diego County Water Authority (Water Authority) to improve water storage capacity in order to deliver a reliable supply of water to its service area. The Emergency Storage Project (ESP), also part of this strategy, has already been approved and permitted, and some portions of construction are underway or have been completed. The purpose of ESP is to provide water in times of emergency. The ESP consists of the construction of the Olivenhain Dam and Reservoir (completed), re-operation of Lake Hodges (in progress), expansion of the existing San Vicente Reservoir, and construction of associated pipelines, pump stations, and ancillary structures (in progress and proposed).

The Proposed Action for CSP consists of increasing the San Vicente Reservoir storage capacity by an additional 100,000 acre-feet (AF) beyond the permitted ESP increase. The Proposed Action includes raising the San Vicente dam (Figure 1-1) an additional 63 feet above the 54-foot ESP raise, and the construction of associated saddle dams and facilities. Two additional alternatives are being considered and analyzed as well. Alternative 2 consists of constructing a dam and reservoir at Moosa Valley to provide carryover storage capacity of 100,000 AF. Alternative 3 consists of raising the San Vicente Dam and building a new dam at Moosa Valley to provide carryover storage capacity of 50,000 AF at each location.

The purpose of this technical report is to describe the biological resources and evaluate potential impacts to these resources and alternatives pursuant to federal (National Environmental Policy Act, NEPA) and state (California Environmental Quality Act, CEQA) regulations. This report includes: (1) a description of vegetation communities, flora, wildlife, sensitive habitats, and wildlife corridors for each site; (2) an initial analysis of potential project impacts to biological resources; (3) an analysis of the significance of impacts to the resources present on each site in view of federal, state, and local laws and policies; and (4) mitigation measures that would be required for significant impacts to biological resources.

Legend

San Vicente Reservoir

Basemap Legend

Freeways

River

Lake/Reservoir/Lagoon

N

Miles

0 12

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Carryover Storage and San Vicente Dam Raise Project
Regional Location Map

Figure 1-1

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Date: Apr 26, 2007

1.1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The overall purpose of the CSP is to substantially increase the reliability and flexibility of the regional water supply by providing the Water Authority with facilities to accumulate and store approximately 100,000 AF of water. The CSP/San Vicente 100,000 AF, or SV 100K, project (Proposed Action) is needed to increase water storage reliability for the region by the year 2011. The Proposed Action would provide approximately 100,000 AF of local storage and facilitate the reliable and efficient delivery of water to residents of the Water Authority service area through the year 2030. During dry weather periods, increased regional demand for water may exceed local supplies resulting in potential water shortages. Through the use of carryover storage, water can be accumulated during wetter years/seasons, when supplies are greater, and used in drier years/seasons or during droughts, when supplies are in higher demand.

The immediate need for carryover storage was documented in the Water Authority's Regional Water Facilities Master Plan (Water Authority 2002). The purpose of the Master Plan was to evaluate the Water Authority's ability to meet its mission of providing a safe and reliable supply of water to its member agencies through the year 2030. Within the Master Plan, three water supply alternatives to meet the Water Authority's mission were presented and analyzed. The reliability of each supply alternative was modeled, with and without 100,000 AF of carryover storage. In 2005, the Water Authority further refined its water supply and demand mix in the Urban Water Management Plan (UWMP) update. The UWMP identified the need for carryover storage above and beyond the 100,000 AF identified in the Master Plan. A carryover storage volume of approximately 100,000 AF would provide a substantial increase in reliability for the regional water supply.

Objectives of the Proposed Action include:

- Providing approximately 100,000 AF of readily available, locally stored water for distribution to member agencies during supply shortages by the year 2011;
- 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;
- Minimizing environmental and social impacts; and
- Minimizing costs.

1.2 REGULATORY SETTING

This section describes the regulatory framework that is relevant to the Proposed Action and alternatives, including federal, state, and local regulations and policies. This is followed by a discussion of the current regional conservation planning efforts that are underway in the vicinity of the project area.

1.2.1 Federal

- **National Environmental Policy Act of 1969 (NEPA)**, as amended (42 United States Code [USC] §§ 4321 *et seq*). This national policy promotes efforts that prevent damage to the environment and that benefit human health and welfare.

- **Federal Endangered Species Act (FESA),** Sections 7 and 9 (16 USC §§1531 *et seq.*; 50 Code of Federal Regulations [CFR] Part 402). FESA prohibits the "take" (i.e., harm, harass, or kill individuals, or destroy associated habitat) of species federally listed as threatened or endangered. Take incidental to otherwise lawful activities can be authorized by the U.S. Fish and Wildlife Service (USFWS) under Section 7 of FESA.

- **Critical Habitat,** Section 3 (5)(A) of the FESA. Critical habitat is defined by the FESA as specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The area(s) may not be currently occupied by the species but is needed for the recovery of the species.

- **Clean Water Act (CWA)**, Sections 401 and 404 of the CWA (33 USC §§1344). Activities that have the potential to discharge fill materials into "Waters of the United States," including wetlands, are regulated under Section 404 of the CWA, as administered by the U.S. Army Corps of Engineers (Corps). The Corps takes jurisdiction over man-induced wetlands such as those found around reservoirs. Fill activities may be permitted under a Nationwide or Individual Permit. The Nationwide Permit Program involves certain activities that have been pre-authorized by the Corps. Individual Permits require the Corps to rule in favor of the least environmentally damaging practicable alternative when multiple alternatives are available for a project. Typically, the Corps requires temporary impacts to be mitigated through restoration, and permanent impacts to be mitigated through creation, restoration or enhancement of additional wetland areas at a pre-determined ratio. Alternatively, permanent impacts can be mitigated through in-lieu fees that are paid into a mitigation-banking fund.

- **Migratory Bird Treaty Act** (16 USC 703-712; 50 CFR 10). The federal Migratory Bird Treaty Act prohibits the direct or indirect take of migratory birds and their active nests unless permitted.

- **Bald and Golden Eagle Protection Act** (16 U.S.C. 668-668d, 54 Stat. 250) as amended). This law provides for the protection of the bald eagle and the golden eagle by prohibiting the taking, possession, and commerce of the birds (whole or part), nests, and eggs.

1.2.2 State

- **California Environmental Quality Act of 1970 (CEQA),** as amended (Public Resources Code [PRC] §§21000 *et seq.*). The goal of CEQA is to assist California public agencies in identifying potential significant negative environmental impacts caused by their actions, and avoiding or mitigating those impacts, when feasible.

- **California Endangered Species Act (CESA)** (California Fish and Game Code §§2050 *et seq.*). Section 2050 of the California Fish and Game Code prohibits any activities that would jeopardize or take a species designated as threatened or endangered by the state without an incidental take permit.

- **Porter-Cologne Water Quality Control Act.** The state enforces federal water quality protection programs for which they have been delegated authority. The Porter-Cologne Water Quality Control Act provides a comprehensive statewide system for water pollution control. Under the Porter-Cologne Act, the State Water Resources Control Board is responsible for adopting water quality standards as required to fulfill the state's responsibilities under the federal CWA (Sections 401 and 402), and for regulating discharges to groundwater.

- **California Department of Fish and Game Code §1600 – Streambed Alteration Agreement**. Section 1600 of the Fish and Game Code regulates the alteration of the bed, bank, or channel of a stream, river, or lake, including dry washes. Generally, the California Department of Fish and Game (CDFG) asserts jurisdiction up to the top of significant bank cuts or to the outside of any riparian vegetation associated with a watercourse.

- **California Native Plant Protection Act of 1977** (California Fish and Game Code 1900-1913). These provisions preserve, protect, and enhance endangered or rare native plants of the state.

- **California Fully Protected Wildlife Species Provisions** (California Fish and Game Code §§3511, 4700, 5050, and 5515). These provisions prohibit the taking of fully protected birds, mammals, amphibians, and fish.
- **Birds of Prey Protection Provision** (California Fish and Game Code § 3503.5). This provision prohibits the taking of birds of prey (Orders Falconiformes and Strigiformes), including their nests and eggs.
- **Natural Community Conservation Planning Act (NCCP),** as amended (California Fish and Game Code §§2800-2835). The primary objective of the NCCP program is to conserve natural communities at the ecosystem scale while accommodating compatible land use. The voluntary program seeks to anticipate and prevent the controversies and gridlock caused by species' listings by focusing on the long-term stability of wildlife and plant communities and including key interests in the process.
- **Senate Bill 1331 – Oak Woodlands Conservation Act.** This bill requires mitigation of any conversion of oak woodlands and that conservation of oak woodlands would be considered under CEQA, including voluntary conservation and mitigation provisions. The bill requires that an oak woodlands management plan be developed, and that the plan contain specified mitigation alternatives and procedures to minimize impacts to oak woodlands in specified areas.

1.2.3 Regional Resource Planning Context

NCCP Planning Efforts

Coordinated regional planning efforts in San Diego County include the following NCCP/Habitat Conservation Plan (HCP) plans: the Multiple Species Conservation Program (MSCP) covering selected jurisdictions in southern San Diego County; the Multiple Habitat Conservation Program (MHCP) covering seven jurisdictions in northern San Diego County, and the San Diego Gas and Electric (SDG&E) NCCP covering SDG&E's easements in San Diego County. In addition, the following NCCP/HCP Subregional plans are currently in preparation: the North and East County MSCPs, Water Authority NCCP/HCP, and the Joint Water Agencies (JWA) NCCP. Subarea Plans under these plans have also been developed by selected jurisdictions, including the City of San Diego's and County of San Diego's MSCP Subarea plans. Additional Subarea plans include Chula Vista, La Mesa, Poway and Carlsbad. The San Vicente Reservoir falls within the City of San Diego's MSCP subarea, which includes non-contiguous City owned lands in the southwestern portion of the county. The primary objective of the MSCP is to protect natural communities and biodiversity by preserving a network of open space lands. This preserve network, or Multiple Habitat Planning Area (MHPA) is

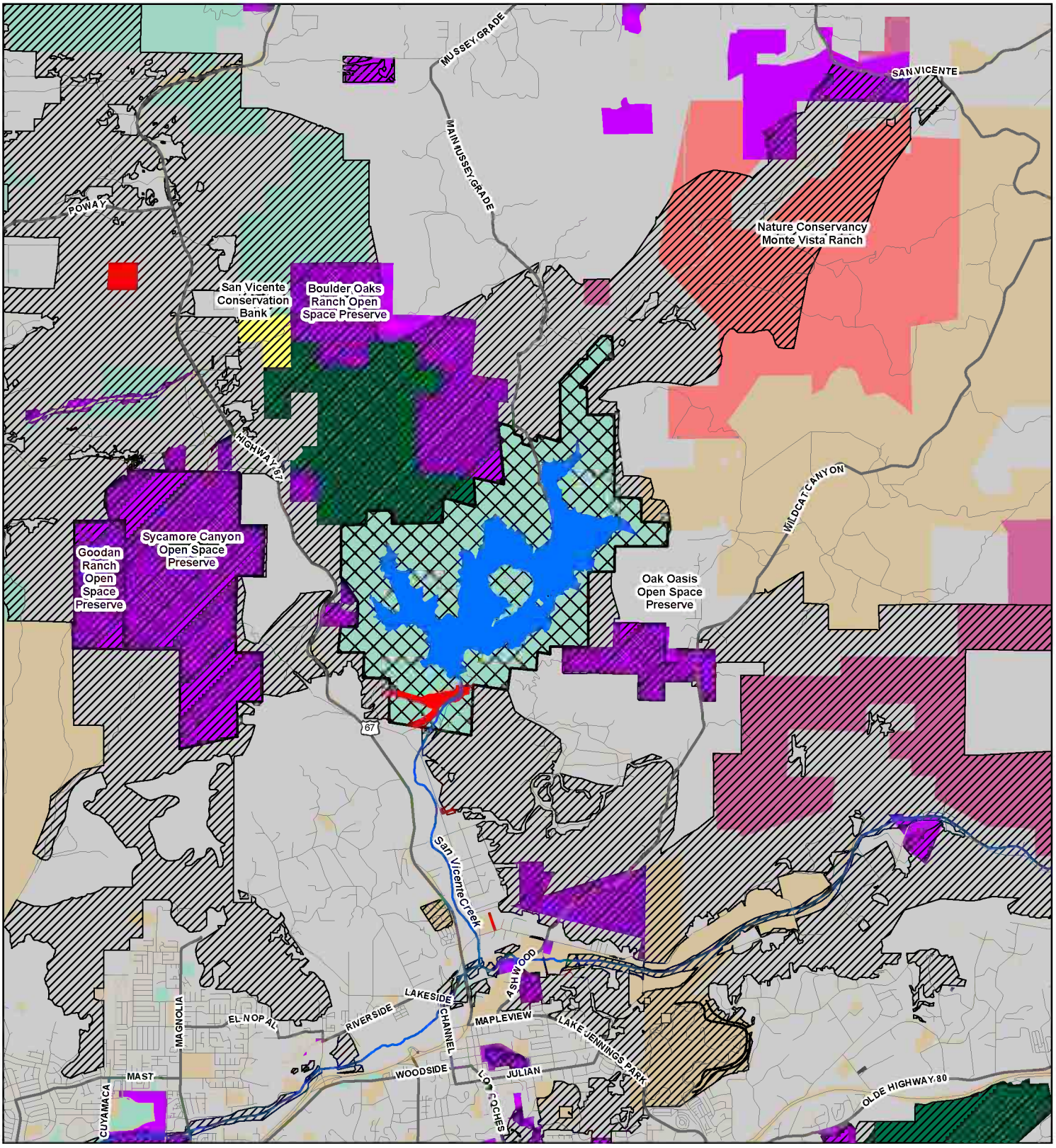
composed of core resource areas and habitat linkages. A Core Resource Area generally supports a high concentration of sensitive biological resources that could not be replaced or mitigated elsewhere if it became fragmented or developed. The City's MSCP Subarea Plan does not govern the Water Authority's land use policies, because the Water Authority is not a signatory to the MSCP Implementing Agreement. Furthermore, the Water Authority is not subject to local land use plans, policies, and ordinances, per California Government Code Section 53091(d) and (e).

The City of San Diego, through the MSCP, has designated narrow endemic species that require special attention with regard to required focused surveys. Narrow endemic species are species that are especially sensitive to the impacts of development due to their limited geographic range and population size.

The Proposed Action is located within the Central Poway/San Vicente Reservoir/North Poway Core Resource Area, which has been identified in the MSCP Subregional Plan (1998). Additionally, the lands surrounding the San Vicente Reservoir have been identified as a component of the Cornerstone Lands within the City of San Diego's MHPA (Figure 1-2). Cornerstone Lands are considered to be essential building blocks for creating a viable habitat preserve system. They consist of lands surrounding Lake Hodges, San Vicente Reservoir, and Otay Reservoir that have been maintained in a largely undisturbed condition by the City Water Department. However, the City's MSCP Subarea Plan and associated Cornerstone Conservation Bank Agreement specifically exempts the Water Authority's ESP from the preserve guidelines to provide for current and future water utility needs. According to the MSCP Subarea Plan, the exemption covers the area up to an elevation of 800 feet Above Mean Sea Level (AMSL) plus a horizontal buffer of 300 feet. A minor portion of the proposed marina and marina/quarry extend into the City's Cornerstone Land Preserve.

North County MSCP

The North County MSCP study area encompasses about 313,777 acres generally covering the unincorporated portions of north San Diego County west of Palomar Mountain and Lake Henshaw, and Ramona north to the county boundary. This Subregional and Subarea Plan (SSP) is currently being developed by the County of San Diego. It intends to cover 58 species, many of which were covered in the existing MSCP Plan. However, the SSP covers additional species -- the most notable being the Stephens' kangaroo rat (*Dipodomys stephensi*), which lives in grasslands and the San Diego fairy shrimp, which inhabits vernal pools. The species addressed in the SSP are still being reviewed by County planners.



Legend

- San Diego County Water Authority Ownership
- City of San Diego Cornerstone Land
- MSCP MHPA Conservation Areas
- San Vicente Conservation Bank
- Nature Conservancy
- City
- State
- County
- Bureau Of Land Management
- Other Public Lands
- Private

Legend

- River
- Major Road
- Road
- San Vicente Reservoir

N

Feet

0 7,000

TAIC

Carryover Storage and San Vicente Dam Raise Project
Conservation Areas and Land Ownership in the San Vicente Region

Figure 1-2

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Date: Jul 16, 2007

The Moosa Reservoir falls within the draft North County MSCP pre-approved mitigation area (PAMA) (Figure 1-3). Moosa Canyon is identified as an important wildlife linkage between coastal and inland habitats, connecting open space covered under the MHCP with planned open space under the North and East County MSCP segments and the approved flagship MSCP.

Other Regional Open Space Planning Efforts

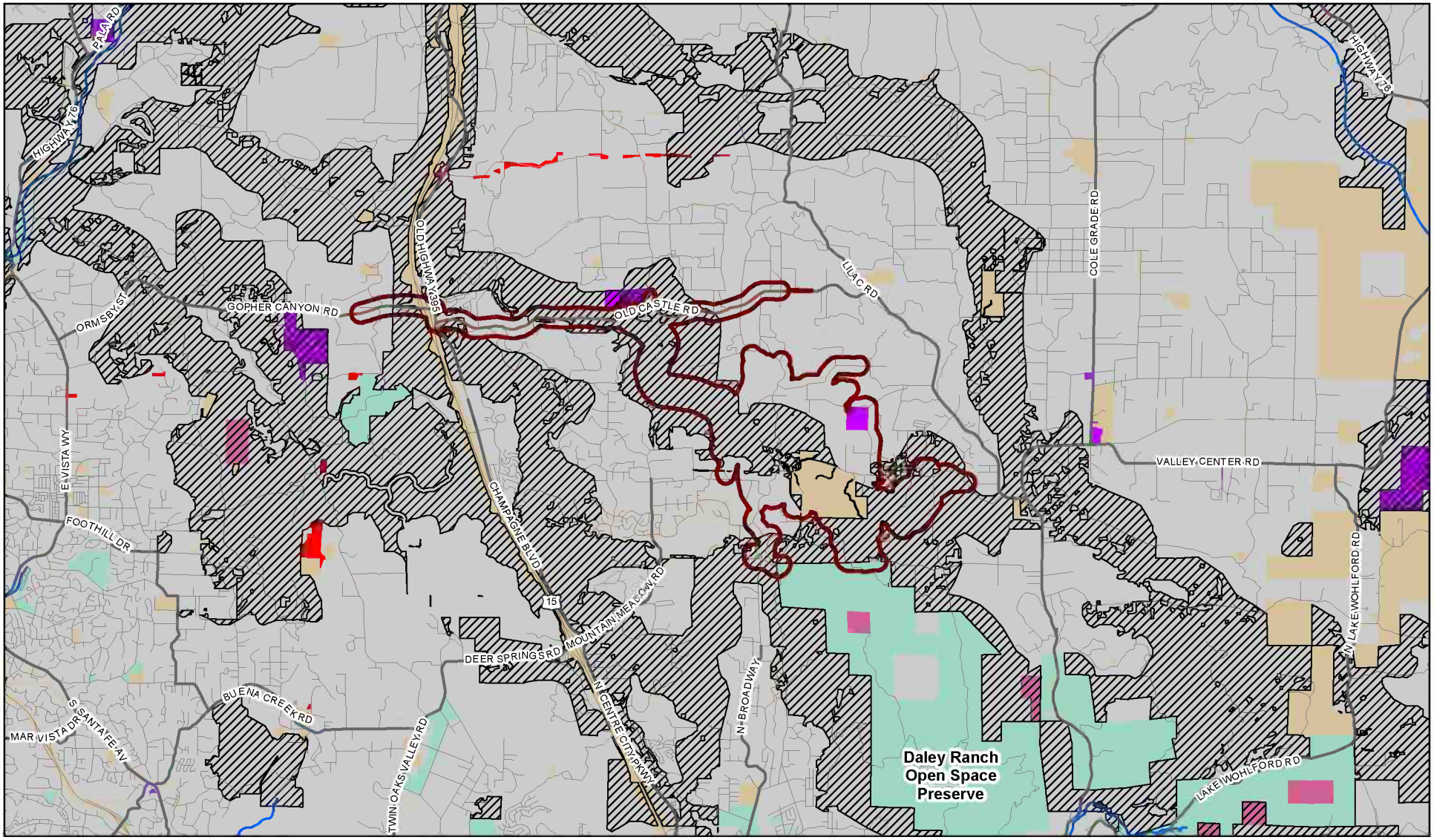
San Vicente Reservoir Region

~~One privately owned conservation bank is located north of the San Vicente Reservoir. The San Vicente Conservation Bank, located east of SR 67, is a private upland mitigation bank, which is unrelated to the MSCP planning process (Figure 1-2). It consists of 320 acres of mostly coastal sage scrub and chaparral habitat with small areas of alkali marsh and native grassland (MSCP 1997). This site provides an important habitat linkage between protected open space in the City of Poway to the north and west, and protected lands surrounding the San Vicente Reservoir to the south. The mitigation bank is owned by the Boys and Girls Club of East County Foundation and is located outside the project boundaries.~~

~~Four~~ Five public open space preserves are located very close or adjacent to San Vicente Reservoir. The San Vicente Open Space Preserve is located north of the San Vicente Reservoir, east of SR 67 (Figure 1-2). The 320-acre mitigation bank (previously owned by the Boys and Girls Club of East County Foundation) owned by the CDFG, and managed by the County of San Diego, provides coastal sage scrub and chaparral habitat with small areas of alkali marsh and native grassland (MSCP 1997). This site provides an important habitat linkage between protected open space in the City of Poway to the north and west, and protected lands surrounding the San Vicente Reservoir to the south.

Sycamore Canyon and Goodan Ranch Open Space Preserves are jointly managed by the cities of Poway and Santee, the California Department of Fish and Game, and the County of San Diego Department of Parks and Recreation (Figure 1-2). Located west of SR 67 along Sycamore Canyon Road between the cities of Poway and Santee, these adjacent, protected properties comprise approximately 2,025 acres of steep slopes covered with coastal sage scrub, chaparral, oak woodland, and grassland habitat. The Oak Oasis Open Space Preserve is a 400-acre parcel of land located southeast of, and adjacent to San Vicente Reservoir. It contains mostly chaparral and oak woodland habitat. Boulder Oaks Ranch Open Space Preserve is a 1,215-acre preserve located six miles south of Ramona along Mussey Grade Road, north of San Vicente Reservoir (Figure 1-2). This open space preserve supports coastal sage scrub, chaparral, grasslands, and oak woodlands. This

preserve is owned and managed by the County of San Diego, and a management plan is currently being developed by the County of San Diego Department of Parks and Recreation. These four open space preserves, along with San Vicente Reservoir, are components of the Trans-County Trail, also known as the "Pines-to-Spines Trail," which is a 110-mile trail system being planned by the County that will extend from the desert at Borrego Springs, over the mountains, and down valleys to the coastal bluffs of Torrey Pines State Park.



TAIC

Carryover Storage and San Vicente Dam Raise Project
Conservation Areas and Land Ownership in the Moosa Region

Figure 1-3

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Date: Jun 05, 2007

Additional protected lands in the vicinity of San Vicente Reservoir include the Monte Vista Ranch, which was purchased by The Nature Conservancy in May 2005. This 4,056-acre ranch is located northeast of the reservoir (Figure 1-2). It is surrounded by public lands to the north and south, and consists of a mosaic of coastal sage scrub, chaparral, woodlands, grassland, and riparian habitats.

Moosa Valley Region

The Daley Ranch Open Space Preserve is located just south of the proposed Moosa Reservoir (Figure 1-2). This preserve is City of Escondido-owned and within the MHCP as part of the Escondido subarea. Additionally, this preserve serves as an important connection between other open space areas in the overall North County MSCP preserve configuration. The project footprint area slightly encroaches on this preserve.

1.3 METHODS

Information about biological resources within the study areas was obtained by a search of sensitive species databases, a review of pertinent literature, and through field reconnaissance, as described below.

1.3.1 Species Databases and Literature Review

Sensitive biological resources present or potentially present at the study areas were identified through a search of the following database resources: the California Natural Diversity Database (CNDDB 2006), San Diego Association of Governments (SANDAG) Regional Species, San Diego Natural History Museum (SDNHM) Bird Atlas and Mammal Atlas, USFWS (2006), CDFG (2006), and California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants (CNPS 2007).

Literature sources include the Report of a Biological Assessment of the San Diego Water Authority Optimal Storage Study Sites (PSBS 1991a); Focused Biological Investigations and Biological Assessment Update (PSBS 1991b); San Diego County Water Authority ESP Biological Resource Assessment (PSBS 1993), Biological Resources Technical Report (Ogden 1995), and Final ESP Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (Ogden 1996b); wetland delineation reports (HDR 2004; TAIC 2006); and technical reports for federally listed species (Klein et al 2006; Cass 2005; Konecny et al., 2006; LaCoste and Busby 2005, and LaCoste 2005). General information regarding wildlife species present in the region was obtained from Reiser (1994) and the CNPS for plants; Unitt (2004) for birds, Bond (1977) for mammals,

Stebbins (2003) for reptiles and amphibians, and Emmel and Emmel (1973) for butterflies.

1.3.2 Field Reconnaissance

Vegetation community boundaries, wetlands delineation data, and sensitive plant and animal species points were obtained from the databases and literature sources outlined above. The associated Geographic Information System (GIS) layers were overlaid onto a 200-scale (1" = 200') color aerial photograph, and field maps were produced. Existing and available data were then verified in the field and adjusted as necessary. Current data were collected in 2005 and 2006 through a series of field surveys. The individual surveys conducted for each project alternative and their results are discussed in the appropriate sections below.

1.4 THRESHOLDS OF SIGNIFICANCE

1.4.1 Definition of Impacts

Impacts can be direct or indirect, and may be permanent or temporary in nature.

Direct impacts cause biological resources to become altered, disturbed, destroyed, or removed during project implementation. Examples of activities that may cause direct impacts include removal or degradation of vegetation or habitat, changing surface water flows, slope alteration, and severing or narrowing habitat linkages or wildlife movement corridors. Direct impacts to species may include direct take (leading to injury or mortality) of plants or animals, or removal of suitable foraging or breeding habitat that supports them.

Indirect impacts result from actions that may not themselves cause direct effects to biological resources. For example, construction activities may not directly affect habitat or species, but associated noise, light, and dust may cause harmful effects. For example, it has been documented that certain types of noise emissions at 60 dBA Leq or higher may affect breeding behavior and nest success in certain passerine bird species (Bioacoustics Research Team 1997, Awbrey and Hunsacker 1997, Awbrey et al. 1995, Mock 1994). Other examples of indirect impacts include erosion and sedimentation, alteration of hydrology, invasion by non-native competitor species, and other edge effects.

Both direct and indirect impacts can be classified as temporary or permanent.

Temporary impacts are reversible within a reasonable amount of time. For example, if an action results in the alteration of slope and/or vegetation, the action is considered temporary if the area will be recontoured and revegetated with appropriate native vegetation. Temporary indirect impacts include construction-related affects, such as noise or light, that end when construction ends.

Permanent impacts result in non-reversible (in the immediate future) affects to sensitive habitats, jurisdictional resources, or sensitive species. Examples include permanent stream alteration, grading and removal of vegetation for the purpose of constructing a building, or a permanent source of nighttime lighting.

1.4.2 Definition of Significance

Thresholds used to evaluate impacts to biological resources are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387). A significant impact to biological resources would occur if the proposed action would:

1. Have a substantial adverse effect on any riparian habitat, submerged aquatic vegetation, or other sensitive natural communities identified in policies or regulations by the CDFG or USFWS.
2. Have a substantial adverse effect on *Corps-jurisdictional waters of the U.S., including wetlands, as defined by Section 404 of the CWA through direct or indirect removal, filling, inundation, hydrological interruption, or other means.*
3. Have a substantial adverse effect, either directly (e.g., habitat loss) or indirectly (e.g., noise effects on wildlife) through habitat modifications, on any species identified or published as an endangered, threatened, candidate, sensitive, or special-status species by the CDFG or USFWS.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
5. Substantially conflicts with the policies and provisions of an adopted local or regional Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP) for the area where the project is located or with any of these plans' efforts to conserve "covered species."

Sensitive plant and wildlife species are legally protected under the federal and state regulations, or species that are considered by the scientific community to be sufficiently rare to qualify for such listing. The USFWS no longer keeps a list of federal species of

concern, and therefore this designation has not been included in this report. Non-listed sensitive and protected species include those covered by the following:

- **Federal acts and treaties:** Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act,
- **California state species of special concern**: as determined by CDFG,
- **Fully protected:** full protection by the state or federal government and
- **California Native Plant Society (CNPS) rare species lists:** species contained in lists 1A, 1B, and 2.

Impacts are considered significant if they are expected to affect: (1) a species listed as threatened or endangered by the state of California or federal government at the time the Notice of Intent and Notice of Preparation (NOI/NOP) for this project were published; (2) a major population or subpopulation of a species that would result in the regional decline of this species; (3) a relative large number of individuals within a population that is considered rare or declining; (4) the species' metapopulation (e.g., if one of only a few known populations occurs in the impact zone, or if the species has extremely narrow habitat requirements); or (5) a habitat type or vegetation community in regional decline or that is regionally endemic.

Impacts are considered less than significant if they are not expected to affect species or populations because: (1) a relatively small number of non-listed individuals would be impacted; (2) populations with a larger number of individuals are abundant in the region; (3) recovery and conservation efforts are documented to adequately conserve the species or habitat and impacts would not affect the recovery or conservation of this species or habitat; or (4) the species or habitat is locally common and fairly abundant in the region.

2.0 ALTERNATIVE 1: SAN VICENTE 100,000 ACRE-FEET (PROPOSED ACTION)

2.1 ENVIRONMENTAL SETTING

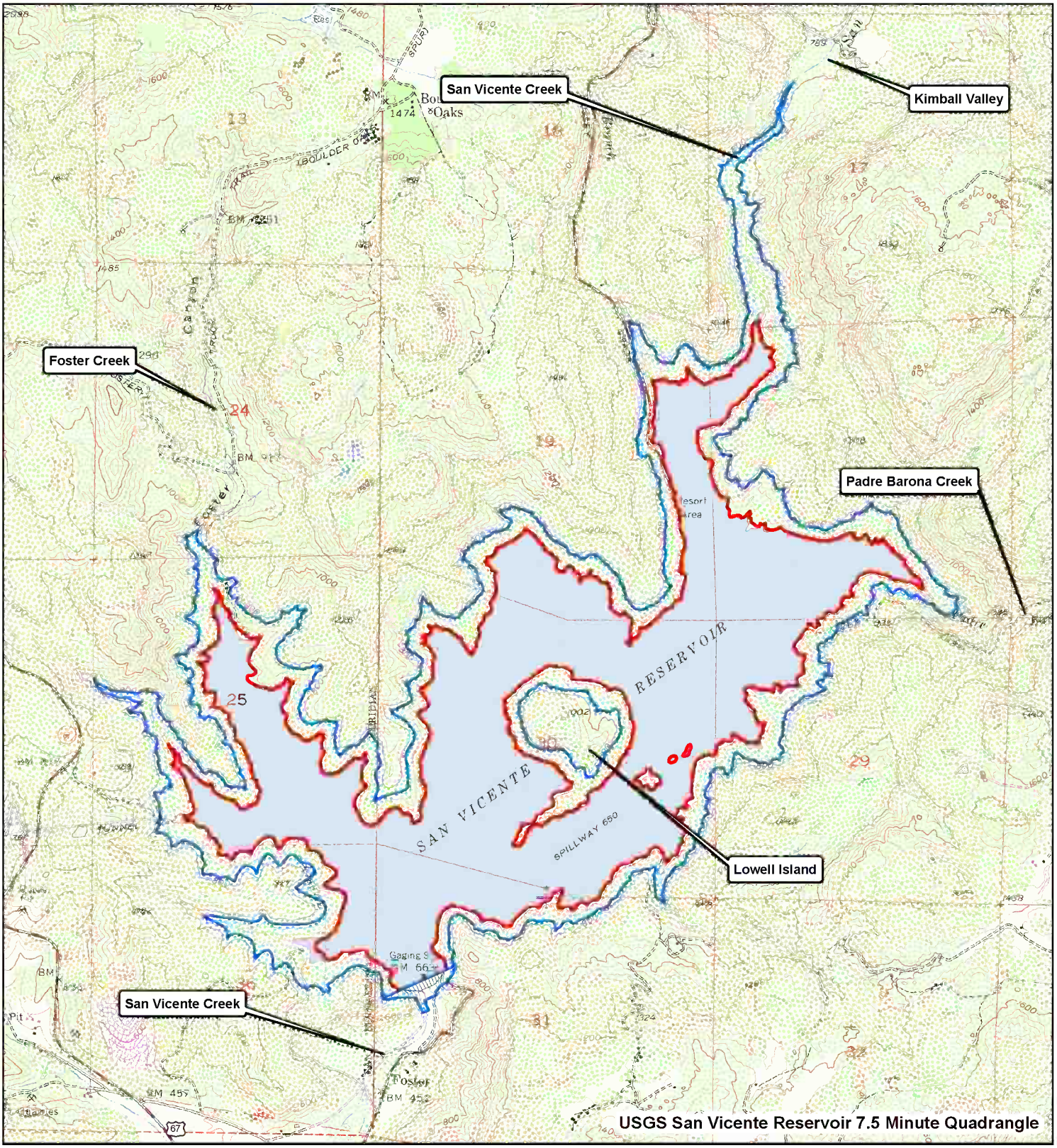
2.1.1 San Vicente Study Area

Owned and operated by the City of San Diego, the San Vicente Dam and Reservoir are located in south central San Diego County (Figure 1-1). The reservoir is bordered on the south by the community of Lakeside, on the east by the Barona Band of Mission Indians Tribal lands, and on the north and west by mostly undeveloped land that is within the jurisdiction of the County of San Diego. Scattered residences occur north of the reservoir, and extensive mining operations occur to the southwest. The site is within the USGS 7.5' San Vicente Reservoir Quadrangle**,** Township 14 South, Range 1 West, Sections 13, 14, 25, and 36; and Township 14 South, Range 1 East, Sections 16 – 20, 23, 24, and 29 - 31 (Figure 2-1).

The following definitions will clarify the extent of each portion of the San Vicente study area that is referred to in this chapter:

Study area: The San Vicente study area includes areas from the water's edge to the outer boundary of the San Vicente footprint (766 feet AMSL) plus a buffer up to 880 feet AMSL. The study area was mapped and surveyed for plants, wildlife, and sensitive habitat by Technology Associates International Corporation (TAIC) during the 2005 and 2006 field seasons (See Section 2.3.1). The buffer was added to fully capture the existing biological conditions in the vicinity of the San Vicente impact footprint and to account for any potential indirect environmental effects.

CSP/ESP combined San Vicente footprint: The combined footprint (area between 650 and 766 feet ASML elevation contours) includes all areas below the 766 feet AMSL contour line (the outer boundary of the project footprint for the Proposed Action), including the ESP impact footprint and the portion of the San Vicente Pipeline (SVP) footprint that occurs below 766 feet AMSL (Figure 2-1).



Legend

650 Contour

Elevated Spillway Crest (766 AMSL)

N

Feet

0 2,500

Project component details are displayed on Figure 2-3.

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

San Vicente 100K Elevated Spillway Crest on USGS Topographic Quadrangle Map

Figure 2-1

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Date: Apr 26, 2007

San Vicente 100K footprint: The San Vicente 100K (SV 100K) footprint is the impact footprint for the Proposed Action, not including the impact footprints for ESP projects, as these projects have already been analyzed for impacts and permitted. The San Vicente 100K footprint consists of three options for an on-site quarry, as described in Section 2.2.1. Each quarry option is analyzed separately for impacts to biological resources.

Survey areas: Survey areas are portions of the study area that were determined appropriate for focused species surveys, vegetation mapping, and wetlands delineation. The survey areas include areas of suitable habitat plus a 500-foot buffer. All survey areas occur within the overall study area up to the 880 feet AMSL contour line.

Reservoir Inundation Area

The San Vicente footprint encompasses the area surrounding the reservoir between the Ordinary High Water Mark (OHWM), as defined by the Corps as the current dam spillway crest at the 650 feet AMSL contour, up to the proposed SV 100K elevated spillway crest at the 766 feet AMSL contour (as detailed below). However, the area between the 664 and 710 feet AMSL contours has already been analyzed in the certified EIR/EIS for the ESP and in the regulatory agency permits that have been issued for the ESP. Therefore, this area is not included in the SV 100K footprint. In addition, habitats within the reservoir that are below the OHWM are not included in the SV 100K footprint because these areas are considered within the range of normal water operations.

The existing reservoir's water level fluctuates based on operational schedules and water needs, and weather conditions. On the report graphics, the 650 feet AMSL contour is depicted as equal to the water level (due to the scale of the graphic and the thickness of the lines); however, the contour may be located above the current water level.

Construction Area South and West of the Dam

The San Vicente footprint also includes construction-related areas south and west of the existing dam for staging, three optional on-site quarries, access roads, and temporary structures (Figures 2-2 and 2-3). Again, the construction footprint for the ESP, as well as the footprint for the SVP within the area south of the dam, have already been addressed in the environmental approvals and permits for those projects, and, therefore, are not included in the SV 100K footprint.

Figure 2-4 depicts the ESP and SVP footprints within the reservoir inundation limits and the construction area south and west of the dam that is excluded from the SV 100K

footprint. The impact footprints of all three projects (SV 100K, ESP, and SVP) fit together like puzzle pieces south of the dam (Figure 2-5), and in the area of inundation (Figure 2-6), although a few small temporary impact areas from ESP and SVP (cross-hatched) overlap with permanent impact areas of CSP (blue). CSP permanent impact areas are being analyzed in this document, because they override already permitted temporary impacts associated with the ESP and SVP.

2.1.2 Background

Major facilities that currently exist at the project site include San Vicente Dam and Reservoir, a marina, water conveyance facilities, access roads, and City of San Diego facilities, including a maintenance yard, trailers, and a reservoir keeper's house.

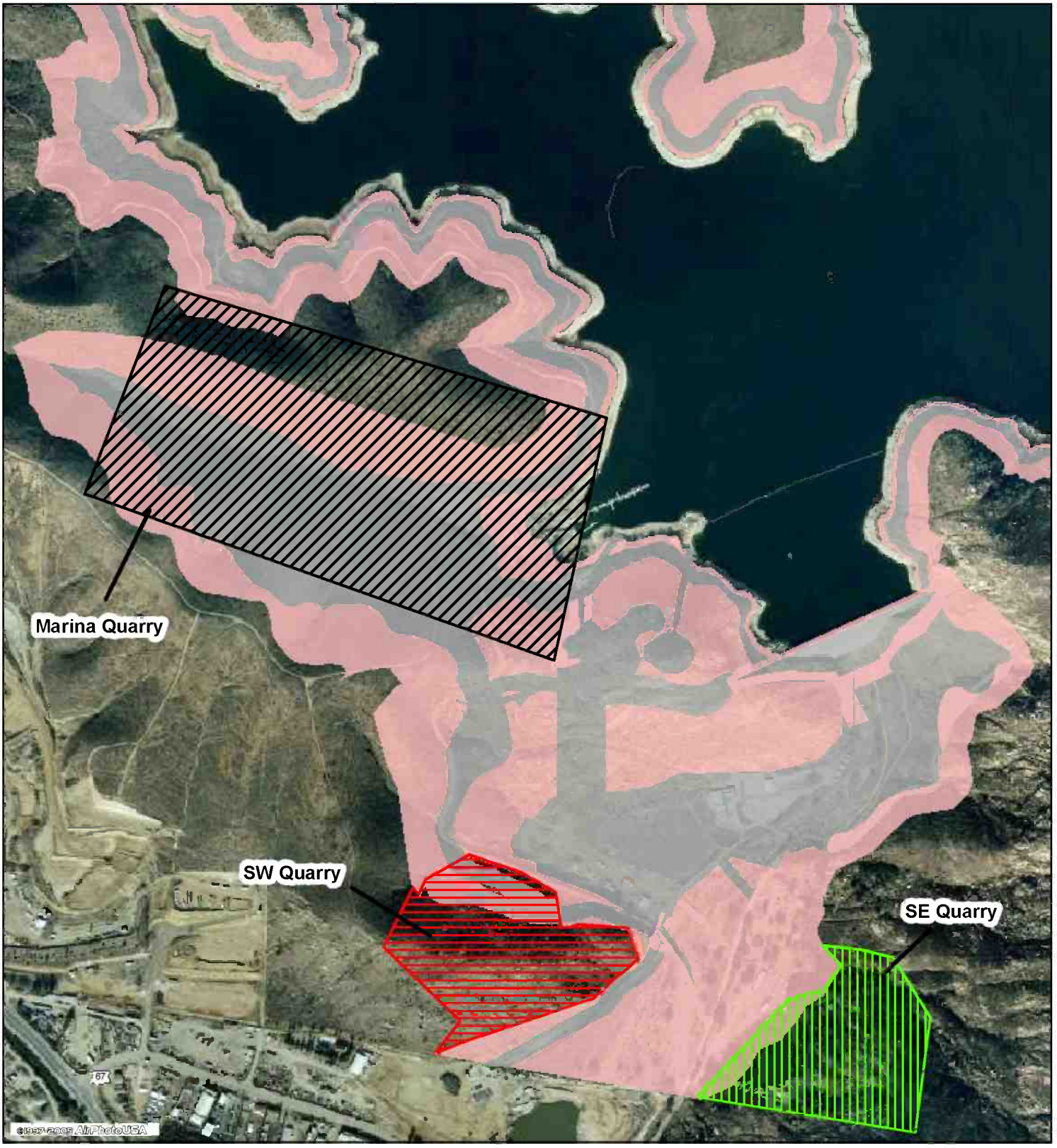
San Vicente Dam and Reservoir

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 and a crest length of 963 feet. The spillway consists of a 275-foot-long uncontrolled ogee section near the center of the dam. The spillway crest is at elevation 650 feet AMSL.

San Vicente Reservoir is the southern terminus for the Water Authority's First Aqueduct, a pipeline corridor that contains San Diego Pipelines 1 and 2. The current storage capacity of the reservoir is approximately 90,000 AF. At this water elevation, the reservoir surface area is approximately 1,100 acres. The water stored in San Vicente Reservoir is conveyed to 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 Helix Water District's R.M. Levy Water Treatment Plant via the Water Authority's Morena Lakeside Pipeline. Treated reservoir water provides a potable water supply to city and other member agencies' residents. The existing reservoir also provides public recreational facilities, including boating, fishing, and water skiing.

Emergency Storage and San Vicente Pipeline Projects

In August 1996, the Water Authority's Board of Directors approved the ESP 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.



Legend

- Marina Quarry Option*
- Southeast Quarry Option
- Southwest Quarry Option
- SV 100K Primary Impact Area
- Previously Permitted under ESP and SVP

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 EIR/EIS 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 2-2

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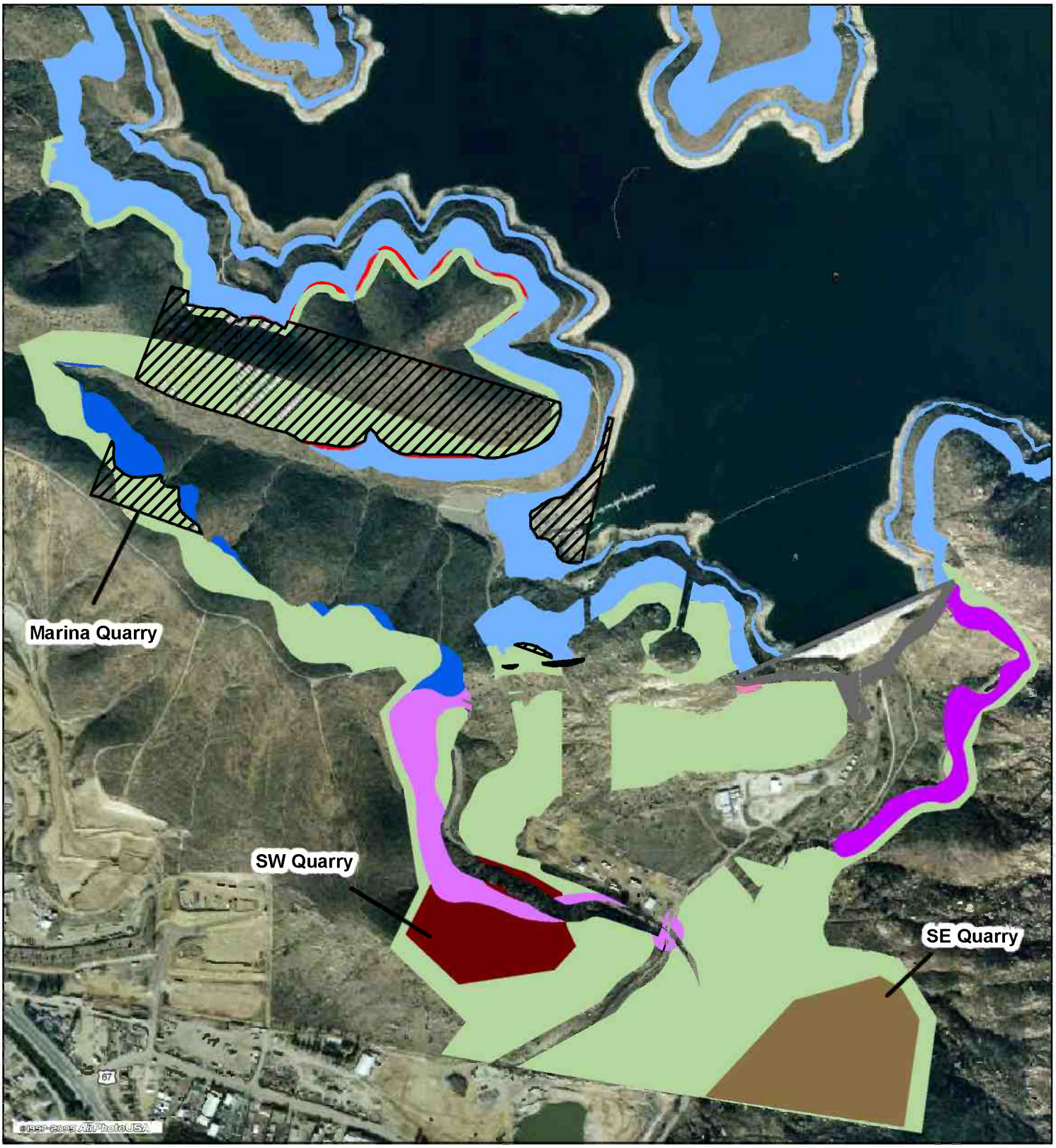
Date: Apr 26, 2007



Legend

- Marina Quarry Option* (temporary impact)
- Southeast Quarry Option (permanent impact)
- Southwest Quarry Option (permanent impact)
- Inundation Area (650' to 664' and 710' to 766 contours)
- Dam
- Saddle Dam
- Marina
- Marina Road
- Left Abutment Road
- Right Abutment Road
- Bypass Pipeline
- Temporary Limits of Disturbance

Note: The previously permitted ESP and San Vicente Pipeline footprints are not shown on this map.
* Diagonal hatching represents general study boundaries for the Marina Quarry Option for purposes of EIR/EIS 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 100K Project Components - Downstream Construction Area

Figure 2-3

gist\projects\sanvicente\plots\figures\BTR\CSP Project Detail.mxd

Date: Apr 26, 2007

Legend

- ESP Permanent Impacts
- ESP Temporary Impacts
- SVP Permanent Impacts
- SVP Temporary Impacts

N

Feet

0 825

TAIC

Carryover Storage and San Vicente Dam Raise Project
ESP and SVP Impact Areas - Downstream Construction Area

Figure 2-4

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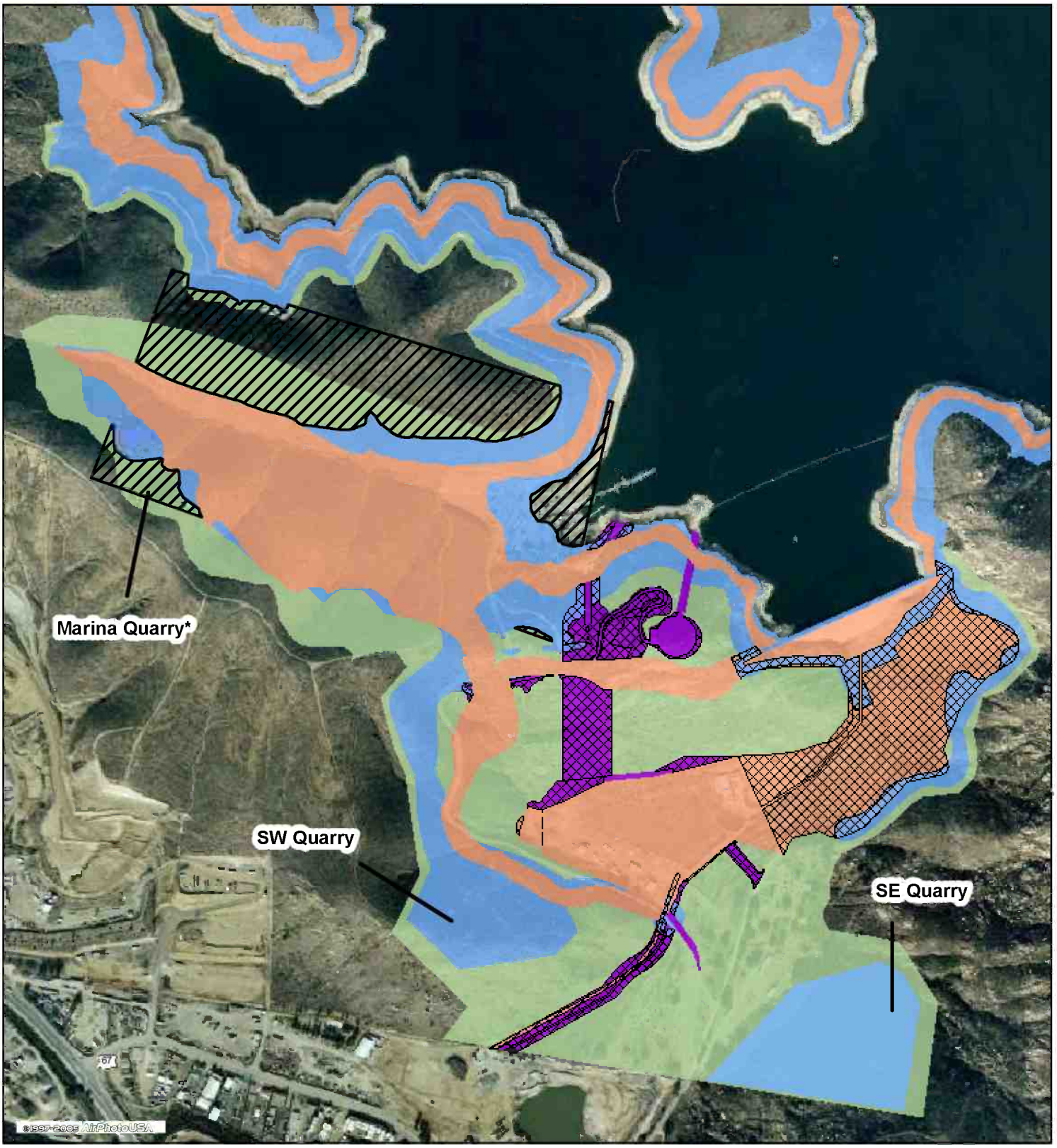
Date: Apr 26, 2007



Legend

- ESP and SVP Temporary Impact Overlay
- San Vicente 100K Permanent Impacts (south and west of dam, inundation areas 650' to 664' and 710' to 766' contours)
- San Vicente 100K Temporary Impacts
- ESP Permanent Impacts
- SVP Permanent Impacts
- Marina Quarry Option* (temporary impact)

* Diagonal hatching represents general study boundaries for the Marina Quarry Option for purposes of EIR/EIS 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. The Marina Quarry Option would be considered a permanent impact.

N

Feet

0 825

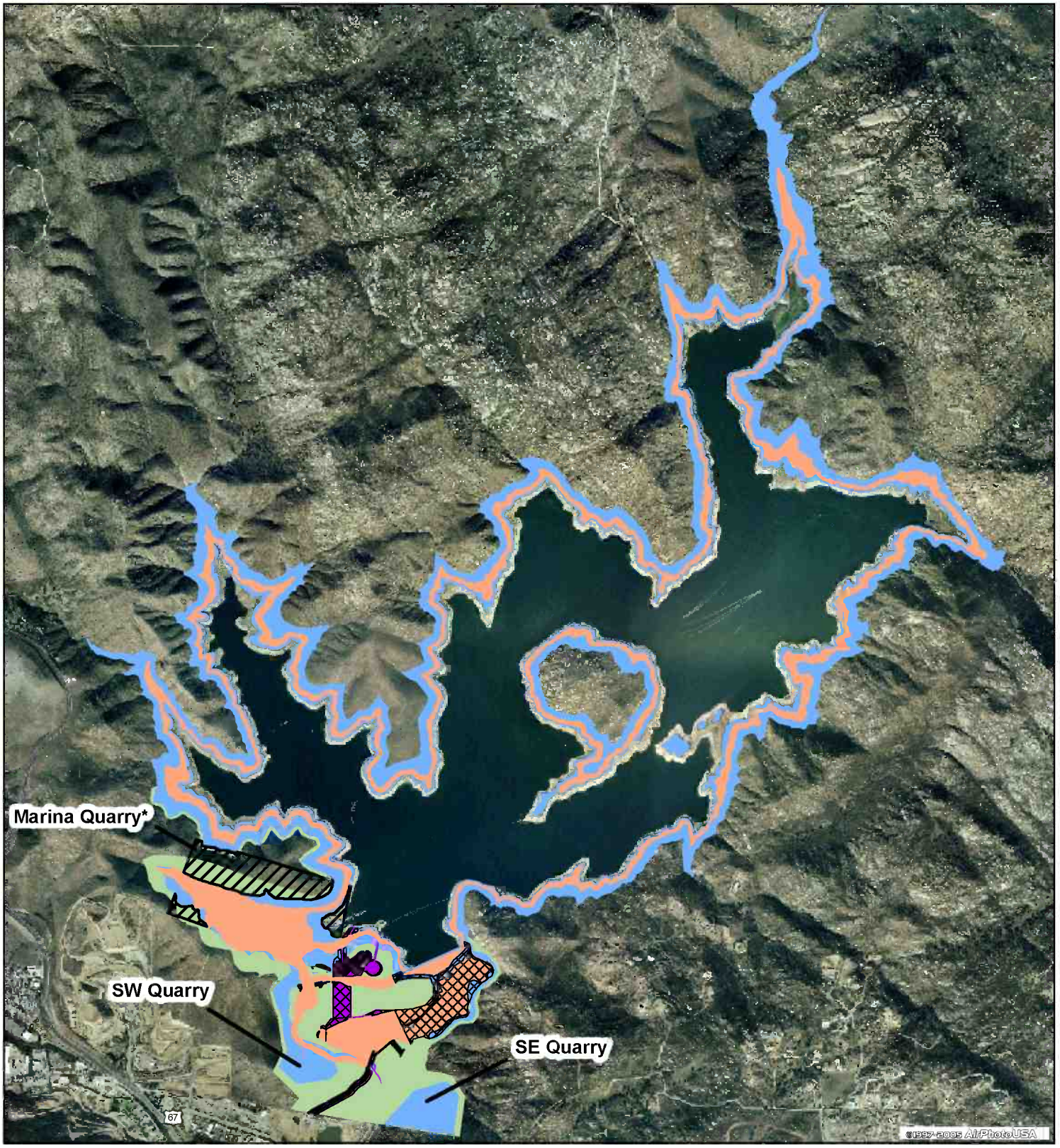
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K, ESP and SVP Impact Areas - Downstream Construction Area

Figure 2-5

gist\projects\sanvicente\plots\figures\BTR\CSP and Other Impact.mxd

Date: Apr 26, 2007



Legend

- Marina Quarry Option* (temporary impact)
- ESP and SVP Temporary Impact Overlay
- San Vicente 100K Permanent Impacts (south and west of dam, inundation areas 650' to 664' and 710' to 766' contours)
- San Vicente 100K Temporary Impacts
- ESP Permanent Impacts (inundation area 664' to 710' contour)
- SVP Permanent Impacts

* Diagonal hatching represents general study boundaries for the Marina Quarry Option for purposes of EIR/EIS 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. The Marina Quarry Option would be considered a permanent impact.

N

Feet

0 2,350

TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K, ESP and SVP Impact Areas - Overview

Figure 2-6

gist\projects\sanvicente\plots\figures\BTR\CSP and Other Impact Overview.mxd

Date: Apr 26, 2007

The Water Authority's ESP was designed to improve the reliability of the region's existing water supply system by the addition of approximately 90,000 AF of reservoir storage in San Diego County. The approved ESP includes the following major components: a new dam, pipeline, and pump station at Olivenhain (complete); the Lake Hodges Pump Station and pipeline (under construction); the San Vicente Pipeline (under construction); and the San Vicente Pump Station/Surge Control Facility (under construction). The ESP also includes expansion of the existing San Vicente Reservoir by raising the existing San Vicente Dam by 54 feet, providing approximately 52,100 AF of emergency storage capacity. The Water Authority has not yet implemented this component of the ESP, and is now proposing to combine the approved ESP dam raise with a higher dam raise to accommodate CSP. The ESP impact footprint is illustrated in Figure 2-4.

The ESP was evaluated in an EIR/EIS for which the Water Authority was Lead Agency under CEQA and the Corps was Lead Agency under NEPA. The Water Authority's Board of Directors certified the Final EIR/EIS on August 15, 1996. The Corps issued a Record of Decision (ROD) for the EIR/EIS on August 4, 1997, and an Individual Permit under Section 404 of the Clean Water Act (Permit No. 95-2009200-DZ) on August 18, 1997. In addition, for the Master Plan mentioned above (Section 1.1), the Water Authority was Lead Agency under CEQA for the preparation of a Program EIR, which was certified by the Board of Directors on November 20, 2003.

San Vicente Pipeline and Surge Facility Project

The San Vicente Pipeline Project (SVP) was evaluated in the Final ESP EIR/EIS. The SVP consists of a pipeline connecting the San Vicente Reservoir to the Water Authority's Second Aqueduct, and a new pump station, electrical substation, and transmission line. Subsequent design changes for SVP, including the addition of a Surge Control Facility, were addressed in Subsequent and Supplemental EIRs, which were certified by the Water Authority's Board of Directors in December of 2003 and January of 2004, respectively, and a separate regulatory review for this component. The portions of the SVP below 766 feet AMSL are illustrated in Figure 2-4.

2.2 DESCRIPTION OF PROPOSED ACTION

The Proposed Action 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 AF. The combined ESP/CSP would increase the existing reservoir capacity by approximately 152,100 AF, and increase the overall dam height by up to 117

feet. With implementation of both the ESP and CSP, the total dam height would be 337 feet with a spillway crest of 766 feet AMSL.

No additional conveyance facilities beyond those being constructed for the ESP would be needed for the additional carryover expansion of the San Vicente Reservoir. The dam raise would be accomplished using roller compacted concrete (RCC). The RCC would be placed against the downstream side of the existing dam. It is not technically advisable, nor economically feasible, to raise the dam for ESP purposes, and then raise it again at a later time for carryover storage purposes.

The Proposed Action would require the construction of two saddle dams to the west of the main dam, and relocation of the San Vicente Marina and marina access road (Figure 2-3). New marina facilities would replace the existing marina that would be inundated by the dam raise and subsequent reservoir inundation. The marina facilities would be shifted west of the existing location as part of the Proposed Action. The Proposed Action would also include 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. During construction, temporary staging areas would be established to accommodate construction equipment, supplies, and materials. The staging areas would be located on City-owned property south or southwest of the existing dam and/or within the marina expansion area.

Four options are being evaluated for the source of aggregate material for RCC production. There are three on-site quarry options and one offsite option. Figure 2-2 shows three alternative locations being considered for on-site quarry production, and have been included in this analysis. Only one of the on-site quarry alternatives will be selected for aggregate production. The offsite quarry option involves the hauling of aggregate from an existing offsite commercial quarry. The location of the offsite quarry is still to be determined, and is not included in this analysis.

Construction of the San Vicente Dam raise would require lowering water levels in the reservoir prior to construction. The construction drawdown is expected to take up to one year, depending on local watershed inflows. The construction timeframe for the dam raise is approximately three years. Once construction is complete, refilling of the reservoir is expected to take three to five years, depending on the availability of imported water and local watershed inflows. The total time required to lower the reservoir, complete construction of the dam raise, and refill the reservoir to the new water level would be approximately eight years.

For the Proposed Action, the Corps has determined that the jurisdictional ordinary high water mark (OHWM) for the reservoir is the existing San Vicente Dam spillway at 650 feet AMSL. This is also the baseline for the evaluation of existing environmental resources, and impacts to those resources minus the ESP-permitted area from the 664 to 710-foot contour AMSL.

2.2.1 Project Design Features

Water Authority General Conditions and Standard Specifications and project-specific design features will be included in the project construction documents to reduce biological resources impacts associated with construction of the Proposed Action. These features could include, but not be limited to, the design and construction measures summarized in this section.

- A qualified/certified biologist will conduct pre-construction sensitive species surveys as required by permit conditions. In compliance with the federal Endangered Species Act, surveys will be conducted for State Species of Special Concern (SSC) that are federally listed and have been determined to potentially occur at the project site. For the Quino checkerspot butterfly, within one year of water levels exceeding the pre-project elevation (OHWM of 650 feet AMSL), a habitat assessment will be conducted within the inundation area during refilling of the reservoir (after completion of the dam raise construction) to determine whether potentially suitable habitat occurs within the project footprint. If suitable habitat is found within the inundation area, then protocol-level surveys will be conducted for this species and appropriate mitigation will be developed in coordination with the USFWS.
- Prior to construction, a qualified biologist will oversee installation of appropriate fencing and/or flagging to delineate the approved construction limits for protection of identified sensitive resources outside the approved construction zone.
- A qualified biologist will hold preconstruction meetings to provide information about sensitive resources, the locations of the approved construction limits, and other required biological mitigation measures.
- The width of construction corridors extending through sensitive habitats (e.g., oak woodlands, coastal sage scrub, and wetlands) will be minimized to the extent practicable. Where construction corridors cross drainage features, appropriate drainage facilities will be installed to avoid interruption of downstream flows.
- Wherever practicable, access/construction roads and staging areas will be located a minimum of 100 feet from areas supporting sensitive habitats or species to minimize the potential for unauthorized impacts.
- During construction, a qualified biologist will monitor areas supporting sensitive habitats or species adjacent to the approved construction limits at least weekly. The biological monitor will: (1) document all activities pertaining to biological resources; (2) provide regular updates to the Water Authority; (3) notify the Water Authority

immediately if unauthorized impacts to biological resources occur; and (4) advise the contractor(s), as needed, to ensure effective and appropriate implementation of biological mitigation measures for specific site conditions.

- If the removal of native vegetation and/or mature trees within the approved construction limits is proposed during the breeding season for sensitive nesting migratory birds (February 15 through August 30) or during the raptor breeding season (generally between January 1 and July 30), a survey for active nests will be conducted prior to vegetation/tree removal; active nests will be avoided; and a temporary construction fence will be installed to maintain the following buffer distances around the nests, until the young birds have fledged: up to 500 feet for raptors, 300 feet for California gnatcatcher, and 100 feet for all other sensitive breeding bird species.
- Vegetation outside the approved construction limits will not be cut or sprayed with herbicide.
- Construction night lighting will be directed away from adjacent native habitats and will consist of low-sodium or similar lighting equipped with shields to focus light downward.
- Fueling of equipment will occur in designated fueling zones within the approved construction limits and located at least 100 feet from drainages and wetlands. All equipment used within the approved construction limits will be free of fluid and grease leaks. Emergency provisions to contain and clean up unintentional fuel or oil spills will be in place prior to construction.
- Construction personnel will park private vehicles in designated areas within the approved construction limits.
- During clearing, grading, excavation, construction, or hauling of excavated materials, water trucks or sprinkler systems will be used as necessary to reduce airborne dust.
- During construction, the contractor(s) will implement a Storm Water Pollution Prevention Plan (SWPPP) to minimize erosion of, and siltation into, sensitive habitats and natural drainages outside the approved construction limits. The SWPPP will identify erosion- and sediment-control Best Management Practices (BMPs) tailored to specific site conditions including, but not limited to, silt fences, gravel bags, sandbag dikes, diversion ditches, stream bank stabilization, detention basins, and any other appropriate and effective measures. These measures will be in place prior to initiation of clearing/grubbing, vegetation removal and construction activities within the approved construction limits.
- During construction, the contractor(s) will implement invasive exotic plant control programs at the boundaries of approved construction limits adjacent to sensitive habitats. Invasive plant removal methods will be developed in

- consultation between the Water Authority, City of San Diego, and regulatory agencies.
- Where practicable, disturbed areas will be recontoured to be compatible with the surrounding topography, and these areas will be restored and revegetated at the completion of construction. A landscape architect or restoration ecologist, experienced in southern California landscapes, will be consulted to recommend appropriate seed mixes and/or plant materials in the areas to be revegetated. Only native wetland plant species indigenous to the area will be used for revegetation of wetlands. To the extent feasible, ~~Plant~~ plant materials used for revegetation will be propagated from material collected in the vicinity of where they are to be planted. Insect pest control measures will be implemented for any planting stock brought into the revegetated areas on-site. The use of fertilizers and pesticides for revegetation efforts in and adjacent to wetlands will be limited to the maximum extent practicable. The use of non-native, invasive plant species in revegetation efforts will be prohibited. All temporary irrigation in revegetated areas will be for the shortest duration possible, and no permanent irrigation will be used for on- or off-site habitat creation/restoration/enhancement.
- The exotic plant control programs initiated during construction will be continued in revegetated areas until it can be demonstrated that native vegetation can sustain itself without active weed eradication.
- Specific areas at San Vicente Reservoir are excluded from the Cornerstone Lands MHPA Preserve for the ESP and future reservoir expansion. These exclusions were based on negotiations between the City of San Diego and the regulatory agencies identifying the San Vicente Dam and Reservoir expansion (under both ESP and CSP) as a "hard-line" project in the MSCP Subarea Plan. In recognition of these negotiations, the Water Authority will debit upland credits from its Crestridge Habitat Management Area and San Miguel Conservation Bank at a ratio of 0.5:1 to offset permanent impacts to chaparral and non-native grassland vegetation communities resulting from the Proposed Action.

2.2.2 Primary Impact Area

The impact area includes the area around the reservoir between the 650 and 766 feet AMSL (excluding 664 – 710 feet AMSL, which is the area previously permitted under ESP), and the impact area south of the dam (excluding ESP and San Vicente Pipeline Project footprints that have already been permitted) (Figure 2-2). These areas will be permanently impacted from inundation around the reservoir, the new marina, access roads, bypass pipeline, dam, and foundation expansion, and temporarily impacted from staging and storage areas and grading of manufactured slopes.

2.2.3 On-site Quarry Options

Off-site quarry options are being considered for aggregate production; however, a location for off-site quarrying has not yet been identified and is, therefore, not addressed in this document. If an off-site quarry option is not feasible, only one of the three on-site quarry options discussed below

will be constructed as part of the proposed action. The three quarry options include a southwest, southeast, and marina quarry.

Southwest Quarry Option

The footprint for this option includes the Primary Impact Area plus an area southwest of the dam, which will be used for the on-site quarry (Figure 2-2). Permanent impacts are expected within the red-hatched areas. Temporary impacts are expected from staging the aggregate production around the quarry.

Southeast Quarry Option

The footprint for this option includes the Primary Impact Area plus an area southeast of the dam, which will be used for the on-site quarry (Figure 2-2). Permanent impacts are expected from quarry excavation within the green-hatched areas. Temporary impacts are expected from staging the aggregate production around the quarry.

Marina Quarry Option

The marina quarry option 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 entire footprint of the Marina Quarry Option is depicted by black hatching in Figure 2-2; the area of impact not permitted by the ESP is depicted by black hatching in Figure 2-3). The quarry portion of the marina quarry footprint will be reseeded after aggregate extraction and production.

2.3 FIELD SURVEY METHODS

An overview of methods, including literature searches, species database queries, and field surveys that were used to determine the type and extent of biological resources within the study area is given in Section 1.3 above. This section describes, in greater detail, the methods for surveys conducted in 2005 and 2006 for the Proposed Action, and survey limitations. Additional detail regarding methods used for focused species surveys is included in the USFWS 10A technical reports (Appendix A).

2.3.1 Field Reconnaissance

Field surveys for the Proposed Action were conducted within the study area. The ESP and SVP footprints constitute previously permitted areas of land south of the dam, and the area between the 664 and 710 feet AMSL contours. The boundaries of these areas would be difficult to distinguish in the field, and, therefore, with the exception of focused species surveys, all field reconnaissance efforts were conducted within the larger study area.

TAIC conducted field investigations during the spring and summer of 2005 and 2006 (Table 2-1). Areas along the perimeter of the reservoir were accessed by motorboat. The biologists stopped the boat at various access points around the reservoir and completed the surveys on foot. Pedestrian surveys were conducted in all riparian and upland areas near the marina and dam. Details of these field reconnaissance activities are given below.

Table 2- 1. Summary of Field Surveys Conducted by TAIC in 2005 and 2006.

Survey Type	Dates	Personnel[1]
Vegetation communities delineation and mapping	April 13 - May 4, 2005	RH, SL, EL, MK
Rare plants surveys	April 17 – May 23, 2006	RH, SL
General biological resources survey	April 13 - May 4, 2005	RH, SL, EL, MK
Habitat assessments		
Quino checkerspot butterfly	April 13 - May 4, 2005	MK, EL
Arroyo toad	April 13 - May 4, 2005	MK, EL
California gnatcatcher	April 13 - May 4, 2005	RH, SL
Least Bell's vireo	April 13 - May 4, 2005	MK, EL
Southwestern willow flycatcher	April 13 - May 4, 2005	MK, EL
Focused species surveys		
Quino checkerspot butterfly	March 27 – May 23, 2006	MK, RH, JP, DP
Arroyo toad	April 27 and May 4, 2005	MB, EL
California gnatcatcher	May 2 – June 21, 2006	RC, JK, EL
Least Bell's vireo	May 4 – August 1, 2005	MB, EL
Jurisdictional wetlands delineation	Aug 17 – Oct 19, 2005	CS, RH, SL
Aquatic vegetation surveys	Sept 15, Oct 12, 2006	CS, RH, SL

[1] Personnel: MB = Melissa Busby (PBS&J), RC = Robin Church (independent consultant), RH = Rosanne Humphrey (TAIC), JK = John Konecny (independent consultant), MK = Michael Klein (Klein-Edwards Professional Services), EL = Erik LaCoste (independent consultant), SL = Suzann Leininger (TAIC), DP = Dale Powell (independent consultant), JP = Jun Powell (independent consultant), CS = Christina Schaefer (TAIC).

Vegetation mapping. Vegetation community mapping conducted for the ESP was verified in the field by overlaying the GIS vegetation layer onto a 200-scale color aerial photograph, and comparing vegetation boundaries with vegetation communities on the ground. Because the vegetation was still recovering from the 2003 Cedar Fire (the largest of three wildfires burning in San Diego County in October 2003), the habitat was also field-assessed for potential type conversion and boundary changes. It was assumed that plant communities that were highly disturbed by the fire through invasion of exotic

plant species would eventually revert to a pre-fire condition. This assumption was based on a variety of active post-fire studies that are showing evidence of recovery (San Diego Natural History Museum, unpubl. data). The presence or absence of plant species that are indicative of a particular vegetation community helped to determine the vegetation type. Field mapping was performed in the study area up to the 880 feet AMSL boundary. During vegetation mapping, incidental observations of sensitive plants and animals were recorded and mapped. The natural vegetation community classification used in this report follows Holland (1986) and Oberbauer (2005).

Rare plant surveys. Rare plant surveys were conducted by two TAIC biologists between April 17 and May 23, 2006. Observed species are listed in the species compendium in Appendix B. Surveys were conducted in suitable habitat on foot along horizontal transects (parallel to the shore). The distance between transects varied depending on topography, but was short enough so that the area in between could be observed with the naked eye, or with binoculars when necessary. Slopes too steep or too thick with vegetation for safe hiking were observed with binoculars only. A single pass was made throughout the study area, and special attention (i.e. a slower pace and closer transects) was given to chaparral and riparian habitats, which were expected to contain a higher diversity of potentially occurring sensitive plant species. The list of potentially occurring species was obtained from the San Diego Natural History Museum (Rebman and Simpson, 2006), based on known species points in the vicinity, and from a query of other species databases as described in Section 1.3 above. Because the 2005 and 2006 winter rains were scant and arrived late in the season, the conditions were not optimal for observing plant species due to a shortened blooming period for flowering plants.

General biological resources surveys. General biological resource surveys were conducted between April 13 and May 4, 2005 in the study area up to the 880 feet AMSL boundary. Species of plants, invertebrates, amphibians, reptiles, birds, and mammals that were observed during the survey period were recorded. A complete species inventory is included in this report for reference (Appendix B). This list includes observed species from the 2005 and 2006 general and focused surveys as well as data acquired from database queries and a literature review.

Habitat assessments. Habitat assessments were conducted within the San Vicente study area in April and May 2005, to evaluate the habitat for potentially occurring federally listed species (see survey reports in Appendix A). Suitable habitat was mapped onto a 200-scale color aerial photograph, and transferred into a GIS database and separate vegetation layer. The patches of suitable habitat for each species were used as survey areas for the focused species surveys (see below).

The following habitat indicators were used:

1. Quino checkerspot butterfly (*Euphydryas editha quino*): presence of specific larval host plants and/or adult nectar sources; gentle slopes and/or hilltops; open habitat; cryptogamic soils; potential for dispersal to and from the site.

2. Arroyo toad (*Bufo californicus*): Sandy washes along streams; areas of pooling along the edges of streams and slow-moving water; upland dispersal habitat (non-breeding habitat) adjacent to streams.

3. Coastal California Gnatcatcher (*Polioptila californica californica*). Coastal sage scrub habitat and ecotonal habitat between sage scrub and chaparral; presence of indicator species, such as buckwheat (*Eriogonum fasciculatum*), California sage brush (*Artemisia californica*), black sage (*Salvia mellifera*), and white sage (*Salvia apiana*); canopy height for nesting; density of invasive non-native vegetation; level of post-fire recovery.

4. Southwestern willow flycatcher (*Empidonax traillii extimus*): Riparian scrub and riparian forest habitat containing willows, cottonwoods, sycamores, and mulefat (*Baccharis salicifolia*); canopy cover; density of riparian undergrowth; structural heterogeneity; habitat patch size.

5. Least Bell's vireo (*Vireo bellii pusillus*): Riparian scrub and riparian forest habitat containing willows and mulefat; canopy cover; density of riparian undergrowth; understory at about 1 meter height for nesting.

Focused species surveys. Focused species surveys were conducted by TAIC biologists and their consultants pursuant to USFWS protocols. A unique survey area was determined for each state or federally listed species by: (a) determining and selecting suitable habitat (see above), and (b) buffering suitable habitat areas by 500 feet to include areas potentially affected by indirect impacts. Details of survey methods are included in the technical reports that were submitted to the USFWS, pursuant to Section 10(a) of the FESA (Appendix A). Daytime and nighttime surveys were conducted for the Arroyo toad between April 27 and May 4, 2005; surveys for the Least Bell's vireo were conducted between May 4 and August 1, 2005; Quino checkerspot butterfly surveys were conducted between March 27 and May 23, 2006; and California gnatcatcher surveys were conducted between May 2 and June 21, 2006. Riparian habitat within the study area was not found

to have adequate canopy cover and age structure for the southwestern willow flycatcher; therefore, no focused surveys were conducted for this species.

Jurisdictional wetlands delineation. TAIC wetlands expert Christina Schaefer and two TAIC biologists conducted jurisdictional wetlands confirmation, determinations, and delineations between August 17 and October 19, 2005, to assess the potential impacts of the Proposed Action on Corps jurisdictional wetlands and Waters of the U.S. within the study area (TAIC 2006; Appendix C). Results of this study were used to confirm data obtained from previous wetlands delineations performed by Pacific Southwest Biological Service in 1992 for the ESP (PSBS 2003), and by HDR in 2004 for the amended ESP documents covering the SVP (HDR 2004). TAIC also determined wetlands conditions in the San Vicente study area that were not previously delineated or permitted by the ESP and SVP projects.

Corps delineations were performed in accordance with Section D "Routine Determinations for Areas Greater than Five Acres in Size" of the *1987 Corps Wetland Delineation Manual* (Environmental Laboratory 1987). Interpretation of delineation results were made following guidelines in this manual for Section F: Atypical 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.

Delineation stations (soil pits) were excavated in the field by TAIC trained 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 areas that exhibited soils too hard to excavate, but where hydrophytic vegetation and wetlands hydrology were present, TAIC confirmed the previously mapped wetlands based on vegetation and hydrology parameters only.

Wetlands under CDFG jurisdiction were confirmed from previous studies (PSBS 1993, HDR 2004) by comparing 2005 survey data, including wetlands boundaries that fulfill CDFG's vegetation characteristics criteria of "hydrophytic" (Cowardin et al. 1979) and the delineation of unvegetated channels that fall under CDFG's definition of "streams."

General aquatic vegetation surveys. In addition to excavating soil pits, TAIC biologists surveyed aquatic plant species along the shoreline on September 15, 2005. Sampling was performed from a boat at 5 locations distributed randomly along the reservoir fringe. TAIC biologists pulled aquatic vegetation in clumps, stored the samples in wetted zip-lock bags (one bag per sample location), and took the vegetation to the San

Diego Natural History Museum's botany collection for identification. Each bag contained multiple species.

Additionally, on October 12, 2006, TAIC biologists surveyed the entire reservoir fringe by boat and visually mapped the band of submerged aquatic vegetation. The water was clear at the time of the survey, and the aquatic vegetation and associated wildlife was visible from the boat. GPS data were recorded at the beginning and end of each vegetation band and an average width was recorded. The water level at the time of the survey was estimated to be approximately 620 feet AMSL (no detailed water level elevations were established at the time of this survey).

2.3.2 Survey Limitations

Limitations of the 2005 and 2006 biological resources surveys include a seasonal bias for plants. Herbaceous annual or perennial plant species that flower in early summer or fall would be difficult to observe during springtime surveys, a poor rainy season, and post-fire conditions. In addition, many plants flower for a short period of time, and therefore, a single survey visit might miss these species.

Limitations also include a diurnal wildlife bias. Wildlife species that are secretive in their habitats, nocturnally active, or may require trapping efforts to determine presence/absence would not have been observed or detected during the general wildlife surveys. Birds represent the largest component of the vertebrate fauna, and because most birds are active in the daytime, diurnal surveys maximize the number of observations of this portion of the fauna. However, daytime surveys usually result in few observations of mammals, many of which may only be active at night and many species of reptiles and amphibians that are secretive in their habits and are difficult to observe in the daytime.

Lastly, incidental sightings were not always mapped. More often, the species were noted in field notes only. However, all observations recorded on maps and field notes were included in the species inventory (Appendix B).

2.4 AFFECTED ENVIRONMENT

2.4.1 Physical Conditions

San Diego County has a Mediterranean climate, which is characterized by wet winters and dry summers. This is largely due to a semi-permanent high pressure zone that sits over the Pacific Ocean during much of the year. One of the most influential weather

phenomena in the region is the Santa Ana winds. Usually beginning in fall and peaking in December, hot, dry winds originating in the Great Basin blow towards the coast. This scenario tends to create an environment highly conducive to rapidly spreading wildfires, which was illustrated by the 2003 fire season in which the majority of the study area was burned.

The reservoir is part of the San Diego River Watershed, which is the second largest watershed in San Diego County. In addition to San Vicente Reservoir, the watershed includes four other water storage reservoirs: El Capitan Reservoir, Lake Jennings, Lake Murray, and Cuyamaca Reservoir.

The area is characterized by steep, boulder-strewn slopes with extensive rock outcrops, surrounding a large body of open water. The existing reservoir is filled with untreated water delivered through the First Aqueduct and 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. The majority of water entering the reservoir is 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 AMSL at water level to approximately 1,000 feet AMSL. 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.

2.4.2 Flora

This section includes an overview of the flora and vegetation communities that occur in the study area. Sensitive vegetation communities and sensitive species are discussed separately in Section 2.4.4 below.

2.4.2.1 Plant Species

San Diego County is known to support a rich biodiversity, and the San Vicente Reservoir is no exception. A total of 364 plant species have been documented in the study area. Seventy-two of these are non-native species, many of which are grasses. The remaining species (80 percent) consist of a diverse array of native aquatic, riparian, and upland plants that occur in natural assemblages as described below. A full inventory of plant species observed during the 2005 and 2006 surveys, reported in the literature, and documented in species databases is included in this report (Appendix B).

2.4.2.2 Vegetation Communities

The vegetation communities in southern California have been shaped, in part, by seasonal wildfires that have occurred throughout history. However, October 2003 proved to be the worst fire season in California's history. Years of drought and fire suppression coupled with the hot, dry Santa Ana winds resulted in three large wildfires that spread rapidly through San Diego County. The largest of these, the Cedar Fire, began in the Ramona area and quickly spread to Miramar Marine Corps Air Station in the west, to the Cuyamaca Mountains in the east, and as far south as Crest. The San Vicente Reservoir was completely surrounded by this fire, and 98 percent of the vegetation within the study area, including Lowell Island, was completely burned.

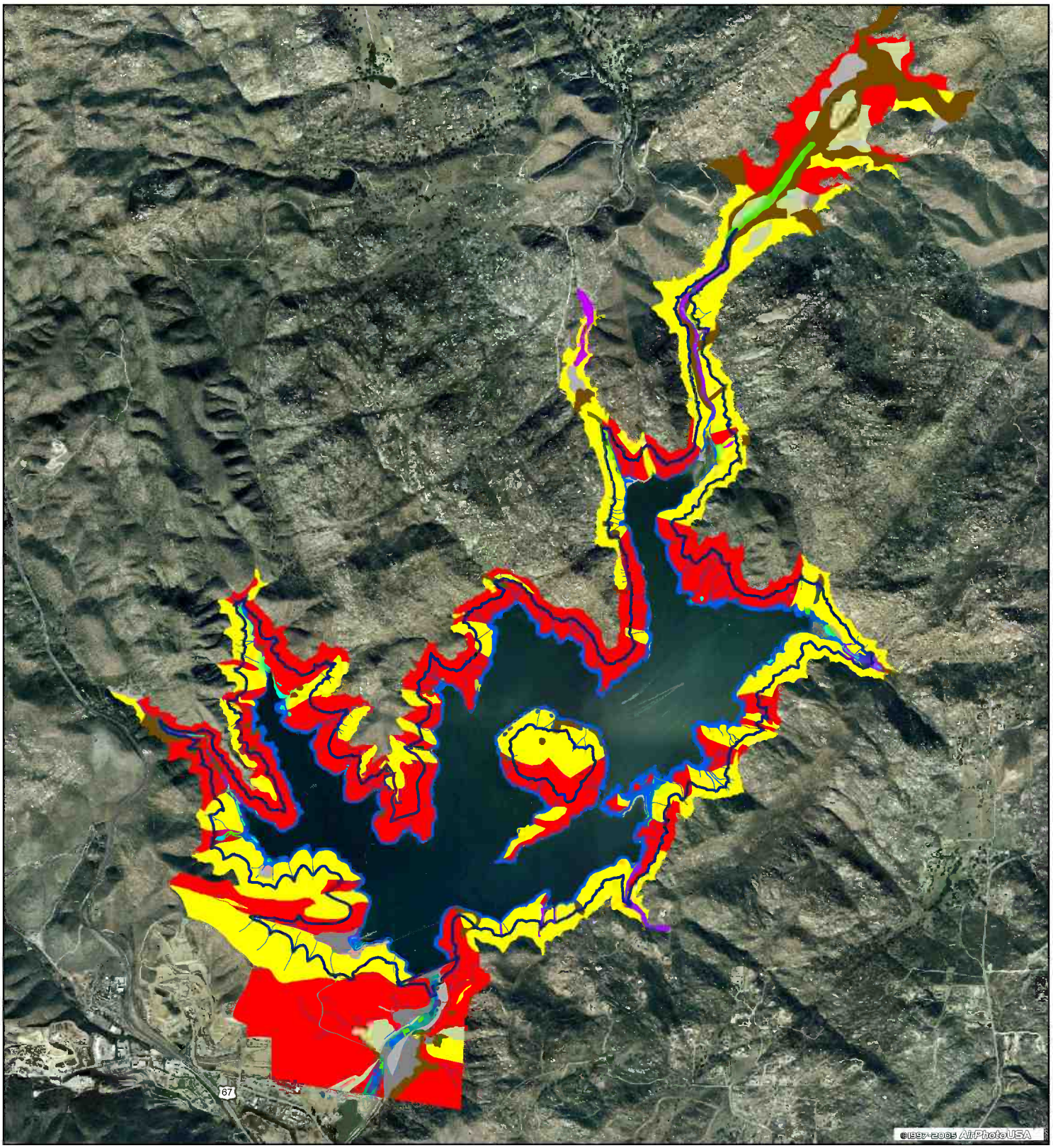
Although many habitat types, most notably coastal sage scrub and chaparral, have adapted to and are associated with periodic wildfires, the timing, intensity and geographic scale of the Cedar Fire has had a detrimental impact on the natural communities and associated plants and animals. Particularly large or frequent fires often lead to a greater vulnerability to invasion by non-native plant species and a potential for type conversion of scrub vegetation to weedy grass and forb habitat (Oberbauer 2003). In addition, burned riparian areas along stream courses may provide an avenue for the introduction and spread of non-native giant reed (*Arundo donax*) and salt cedar (*Tamarix* sp.), which could potentially displace native willows and cottonwood trees.

Fourteen vegetation communities have been mapped in the study area (Table 2-2; Figure 2-7). The location of the vegetation communities reflects the types of soils and microhabitat that support them. For example, riparian vegetation is restricted to drainages, where soils tend to be moist and soft, and riparian vegetation along the fringe of the reservoir is not well developed due to the constantly fluctuating water level. Upland habitat is dominated by coastal sage scrub, which generally occurs on south-facing slopes, and chaparral, which occurs on north-facing slopes. However, small patches of oak woodland and non-native grassland occur as well.

Table 2- 2. Vegetation Communities in the San Vicente Study Area

Vegetation Community[1]	Acres[2]
RIPARIAN/WETLAND COMMUNITIES	
Open Water (reservoir)/Freshwater (13140)[3~~2~~,4~~3~~]	~~876.87~~876.72
Unvegetated Channel/Lakeshore Fringe (13200)[3~~2~~]	~~150.58~~152.84
Freshwater Marsh (52410)[3~~2~~]	~~5.26~~5.35
Southern Coast Live Oak Riparian Forest (61310)[3~~2~~]	~~20.59~~20.52
Southern Cottonwood-Willow Riparian Forest (61330)[3~~2~~]	~~1.27~~0.94
Mulefat Scrub (63310)[3~~2~~]	~~7.42~~7.69
Southern Willow Scrub (63320)[3~~2~~]	~~16.48~~15.42
Total Riparian/Wetland Communities	***~~1,078.47~~1,079.48***
UPLAND COMMUNITIES	
Coastal Sage Scrub (32500)[3~~2~~]	854.25
Chaparral (37000)	~~709.46~~709.73
Non-Native Grassland (42200)	52.85
Coast Live Oak Woodland (71160)[3~~2~~]	~~161.53~~160.26
Eucalyptus Woodland (11100)	3.13
Disturbed Habitat (11300)	25.90
Urban/Developed (12000)	31.52
Total Upland Communities	***~~1,838.64~~1,837.64***
TOTAL VEGETATION COMMUNITIES	**~~2,917.11~~2,917.12**

[1] Holland codes are given in parentheses.
[2] Acreages rounded to nearest hundredth decimal.
[3] Vegetation communities regulated or considered sensitive by federal, or state agencies.
Note: The vegetation communities in the study area include the limits between 650 and 766 feet AMSL (excluding 664 – 710 feet AMSL, which is the area previously permitted under ESP).
[3~~4~~] Acreage calculated based on survey when reservoir was at 620 AMSL.



Legend

- Elevated Spillway Crest (766 AMSL)
- Unvegetated Channel/Lakeshore Fringe
- Coastal and Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Mulefat Scrub
- Southern Willow Scrub
- Diegan Coastal Sage Scrub
- Chaparral
- Non-Native Grassland
- Coast Live Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

N

Feet

0 3,025

TAIC

Carryover Storage and San Vicente Dam Raise Project
Vegetation Communities in San Vicente Study Area

Figure 2-7

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Date: Mar 11, 2008

The vegetation communities described below were classified according to the Thomas Oberbauer modification of Holland Community Types (Holland 1986, Oberbauer 2005), which uses an arbitrary code to identify vegetation types. Riparian and wetland communities are discussed first in order of Holland code, followed by a discussion of upland communities, also in order of Holland code. Each description includes the acreage and locations of each plant community within the study area. Although it exists on the study site, submerged aquatic vegetation is not a terrestrial vegetation community. It is not included in the Holland system for the classification of terrestrial vegetation communities in California (Holland 1986, Oberbauer 2005), and is therefore not included in Table 2-2.

RIPARIAN/WETLAND COMMUNITIES

Open Water (reservoir)/Freshwater (13140)

Freshwater refers to open water areas, including reservoirs, lakes, ponds, and relatively large sloughs, channels, and rivers or streambeds that contain water throughout the year. The study area is dominated by open water/freshwater of the reservoir (approximately ~~876.87~~ 876.72 acres, as mapped during ESP surveys). Since the water level fluctuates continuously due to operational requirements, an exact acreage cannot be given, and the interface between open water and lakeshore fringe varies seasonally. Acreage calculations provided in this report are based on the boundaries for open water/freshwater derived from the ESP database. The reservoir consists of several main finger tributaries that emanate from the reservoir into Barona Valley in the east, Kimball Valley in the northeast, and Foster Canyon in the northwest. Lowell Island is a fairly large land mass located in the center of the reservoir. Within the San Vicente footprint, freshwater occurs in a small sliver in Kimball Valley (PSBS 1993).

Submerged aquatic vegetation. A subset of open water/freshwater, aquatic vegetation occurs in most natural lakes and some reservoirs, if suitable conditions are present. Suitable conditions include appropriate light infiltration, the presence of fine textured substrate of low to moderate organic content, and oxygen availability. The vegetation type includes native and non-native aquatic species, such as fennel-leaved pondweed (*Potamogeton pectinatus*), common water nymph (*Najas guadalupensis*), and upright burhead (*Echinodorus berteroi*). Aquatic and emergent vegetation within the freshwater zone provide habitat for wildlife and fisheries, and supports recreational fishing in San Vicente Reservoir.

Submerged aquatic vegetation occurs at San Vicente Reservoir in an intermittent band surrounding almost the entire reservoir below the OHWM. The width of the existing aquatic belt appears to vary between 7 feet and 25 feet, averaging 15 feet, or a total of approximately 20 acres. The elevation at which this band of aquatic vegetation occurs is variable depending on rainfall and operation of the reservoir, and this vegetation follows the surface water level. Upon the implementation of the preferred project, the San Vicente Reservoir is anticipated to support about 31 acres of submerged aquatic vegetation, hypothetically assuming (for the purpose of impact quantification) that the water level were maintained at the OHWM of 650 feet AMSL (i.e. the dam spillway elevation). This water level would equate to approximately 17 miles of shoreline. This extrapolation was conducted by:(1) creating a GIS database that includes topographic contour data for the SV 100K study area; (2) applying a 15-foot band width to the 650 feet AMSL contour; (3) in GIS, calculating the length of the shoreline perimeter at this elevation to be 17 miles; and (4) assuming the average slope of the newly submerged area approximates current conditions, the estimated acreage of the theoretical band of submerged aquatic vegetation at the OHWM was calculated to be approximately 31 acres (i.e., 15 feet x 17 miles).

According to two memorandums prepared for the Water Authority by Jones & Stokes (dated October 26, 2006 and December 18, 2006), the aquatic vegetation band present in San Vicente Reservoir does not meet the definition of "vegetated shallows" under the definition of *special aquatic sites* identified in the EPA Section 404 b.(I) guidelines, which would otherwise be regulated by the Corps and the USFWS. Based on the Corps' review of the referenced Jones & Stokes memoranda, the Corps has determined that the submerged aquatic vegetation is not considered vegetated shallows. Specifically, the mean water elevation of the reservoir from 1980 to 2005, the period of record, is 633 feet AMSL. Based on this elevation, the vegetated shallows would be found between 633 and 626 feet AMSL. In October 2005, the Corps observed the submerged aquatic vegetation well below this range, at 616 feet AMSL. According to water level data maintained by the City of San Diego, the fluctuations in the reservoir level are 30 feet in any given year and the submerged aquatic vegetation seemingly had survived these fluctuations. The submerged aquatic vegetation at San Vicente Reservoir appears to be functioning as freshwater deepwater habitat that adjusts to the water level fluctuations.

Unvegetated Channel/Lakeshore Fringe (13200)

Unvegetated channel/lakeshore fringe consists of unvegetated or sparsely vegetated drainages outside the area of tidal influence, and the shoreline along lakes and reservoirs.

An estimated ~~150.58~~ 152.84 acres of unvegetated channel/lakeshore fringe habitat occur in a "bathtub ring" around the circumference of the San Vicente Reservoir and along tributaries and unvegetated streambeds leading to the reservoir and south of the dam. The lakeshore area of San Vicente Reservoir is characterized by rocky or coarse sandy substrate with occasional willow (*Salix lasiolepis*) trees and mulefat. The lack of significant vegetative cover around the reservoir can be attributed to the constantly fluctuating water level, which makes it difficult for wetlands or riparian vegetation to become well established. Giant reed, an invasive exotic plant, was not observed during the 2005 and 2006 surveys. However, large isolated salt cedar trees (*Tamarix* spp.) were observed along the lakeshore, and numerous seedlings of this invasive plant were becoming established along the north shore near Kimball Valley.

The SV 100K footprint includes a portion of lakeshore fringe along the tip of the Kimball Valley finger and along a major drainage just west of Kimball Valley; numerous drainages classified as unvegetated channel lead into the reservoir and a wide unvegetated streambed occurs south of the dam.

Freshwater Marsh (52410)

Freshwater marsh is dominated by perennial, emergent monocots to 1.3 to 2 meters (4.3 to 6.6 feet) tall. Uniform stands of bulrushes (*Scirpus* spp.) or cattails (*Typha* spp.) often characterize this habitat. Freshwater marsh occurs in wetlands that are permanently flooded by standing fresh water (Holland 1986). Within the study area, there are several small isolated areas of freshwater marsh dominated by California bulrush (*Scirpus californicus*) and sedges (*Cyperus* spp.) at various points along the shoreline and drainages. The most prominent of these are located near Barona Valley, along the peninsula east of Lowell Island, and on the western side of the reservoir, especially along the Foster Canyon shoreline. The estimated acreage of freshwater marsh habitat is ~~5.26~~ 5.35 acres.

In addition, freshwater marsh vegetation occurs between the freshwater and lakeshore fringe interface, specifically at the confluence of the many tributaries with the reservoir. Emergent hydrophytes include cattails (*Typha latifolia*), bulrushes, and sedges. Depending on the operational water level, this freshwater marsh community may be temporally submerged, or above the water level.

Southern Coast Live Oak Riparian Forest (61310)

Southern coast live oak riparian forest is characterized by an open to locally dense evergreen sclerophyllous community dominated by coast live oak (*Quercus agrifolia*). This community type appears to be richer in herbs and poorer in understory shrubs than other riparian communities. Southern coast live oak riparian forest is associated with bottomlands and outer floodplains along larger streams, and occurs on fine-grained, rich alluvium (Holland 1986). Structurally, this habitat generally consists of western sycamores (*Platanus racemosa*), cottonwoods (*Populus* spp.), and willows (*Salix* spp.) at the channel margins, bordered by coast live oak at slightly higher elevations. Young willows and cottonwoods, mulefat (*Baccharis glutinosa*), San Diego sagewort (*Artemisia palmeri*), and western ragweed (*Ambrosia psilostachya)* dominate the understory. This vegetation community occurs along all of the major drainages in the study area, including Foster Canyon, west of Foster Canyon, southeast of Lowell Island, Barona Valley, Kimball Valley and the drainage along Mussey Grade Road. The estimated -acreage for this habitat type within the study area is ~~20.59~~ 20.52 acres.

Southern Cottonwood-Willow Riparian Forest (61330)

Southern cottonwood-willow riparian forest is an open or closed canopy forest that is generally greater than 6 meters (20 feet) high and occupies relatively broad drainages and floodplains supporting perennially wet streams. This community is dominated by mature individuals of winter deciduous trees, including Fremont's cottonwood (*Populus fremontii*) and several species of willows, and may have a dense understory of shrubby willows, mulefat, and mugwort (*Artemisia douglasiana*). The dominant species require moist, bare mineral soil for germination and establishment (Holland 1986). An estimated ~~1.27~~0.94 acres of this habitat type occur in the study area near Barona Valley and on the western end of the reservoir along a small drainage.

Mulefat Scrub (63310)

Mulefat dominates this tall herbaceous riparian scrub community. Other species often found in this association include broom baccharis (*Baccharis sarothroides*) and coyote bush (*Baccharis pilularis*). Mulefat scrub occurs along intermittent streams and around ponds and lakes with a fairly coarse substrate and moderately deep water table. Understory vegetation is usually composed of non-native, weedy species or is lacking altogether. This community is usually maintained by frequent flooding, which keeps it from transitioning into sycamore or cottonwood dominated riparian woodland or forest.

Within the study area, an estimated ~~7.42~~ 7.69 acres of mulefat scrub occur along an unvegetated channel south of the dam, and in isolated patches along the shoreline.

Southern Willow Scrub (63320)

Southern willow scrub is a dense, broad-leafed, winter-deciduous association dominated by several species of willow (*Salix gooddingii*, *S. exigua*, *S. laevigata*, *S. lasiolepis, S. lucida* ssp. *lasiandra*), with scattered emergent Fremont's cottonwood and western sycamore. This vegetation community is found on loose, sandy, or fine gravelly alluvium deposited near stream channels during floods. Most stands are too dense to allow much understory to develop. An estimated ~~16.48~~15.42 acres of southern willow scrub occur along an unvegetated channel south of the dam, along Kimball Valley, and in scattered areas along the shore.

UPLAND COMMUNITIES

Diegan Coastal Sage Scrub (32500)

Diegan coastal sage scrub (coastal sage scrub) is comprised of low, soft-woody subshrubs to about 1 meter (3 feet) high, many of which are drought-deciduous. Dominant plant species include California sagebrush (*Artemisia californica*), flat-top buckwheat (*Eriogonum fasciculatum* ssp. *fasciculatum*), laurel sumac (*Malosma laurina*), white sage (*Salvia apiana*), and black sage (*Salvia mellifera*). Other, less frequent, constituents of this community include spiny redberry (*Rhamnus crocea*), deerweed (*Lotus scoparius*), and broom baccharis.

The shrub layer in this community ranges from a continuous canopy and little understory to a more open canopy with widely-spaced shrubs and a well-developed understory. Native understory species present in this association include foothill needlegrass (*Nassella lepida*), giant stipa (*Achnatherum coronatum*), ashy spike-moss (*Selaginella cinerascens*), fascicled tarweed (*Deinandra fasciculata*), chalk live-forever (*Dudleya pulverulenta*), coastal wishbone plant (*Mirabilis laevis* var. *crassifolia*), and coast barrel cactus (*Ferocactus viridescens*).

Coastal sage scrub is an imperiled and sharply declining vegetation community harboring more than 200 sensitive species (Allen *et al*., in press). Coastal sage scrub is protected through policies and guidelines that have been established by the NCCP in California. It is the preferred habitat of the federally threatened California gnatcatcher and non-listed sensitive species, such as the rufous-crowned sparrow (*Aimophila ruficeps canescens*).

Additionally, under the appropriate conditions, coastal sage scrub can provide habitat for the federally endangered Quino checkerspot butterfly. Twenty-five years ago, it was the third most extensive vegetation community in the county (CDFG 1965); however, Oberbauer (1979) suggested that up to 70 percent of the county's original sage scrub habitat was destroyed or modified, and this loss has continued throughout the last decade, primarily due to urban expansion.

Coastal sage scrub is the most abundant vegetation community within the study site. An estimated 854.25 acres occur mostly along south-facing slopes in the study area. Except for a small area southwest of the reservoir, this plant community was impacted by the Cedar Fire of 2003, and it is still in recovery. At the time of the 2005 sensitive habitat surveys, this habitat was dominated by invasive, non-native species such as wild oat (*Avena* spp.), mustards (*Brassica* spp.), and thistles (*Salsola* spp.), as well as the native morning-glory (*Calystegia macrostegia*), which smothered much of the annual herbaceous plants in early spring. Based on the most recent observations (2006), it appears that the habitat is slowly recovering, as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and laurel sumac (*Malosma laurina*) are now present throughout.

Additionally, small isolated patches of native grasses were observed embedded (less than 20 percent cover) within coastal sage scrub throughout the SV 100K study area. These grasses did not occur in dominant associations or sub-associations to the extent necessary to be classified as native grassland vegetation communities.

Chaparral (37000)

Southern mixed chaparral tends to occur on dry slopes and ridges at low and medium elevations where it occupies thin, rocky, or heavy soils. This vegetation community type is characterized by relatively high species diversity. Typical species include chamise (*Adenostoma fasciculatum*), manzanita (*Arctostaphylos spp.*), scrub oak (*Quercus berberidifolia*), wild lilacs (*Ceanothus* spp.), San Diego mountain mahogany (*Cercocarpus minutifora*), toyon (*Heteromeles arbutifolia*), holly-leaf cherry (*Prunus ilicifolia*), and winter currant (*Ribes indecorum*).

Chaparral is the second-most common (approximately ~~709.46~~709.73 acres) vegetation community in the study area. Chaparral generally occurs along north-facing slopes throughout the study area. Like coastal sage scrub, this vegetation community was burned in the 2003 Cedar fire; however, a small patch along the southwestern end of the reservoir is still intact. The plants of this community have developed the ability to survive

recurrent fires by producing seeds that require a fire-related cue to stimulate germination and/or by stump sprouting after being burned. This regeneration process was evident during the habitat assessment surveys that were conducted in the spring of 2005. Rigorous stump sprouting was observed in various species, including the scrub oak, wild lilacs, mission manzanita (*Xylococcus bicolor*), and chamise. In addition, various annual herbs that are commonly associated with post fire recovery were observed as well, including golden eardrops (*Dicentra chrysantha*), fire poppy (*Papaver californicum*), and large-flowered phacelia (*Phacelia grandiflora*).

Non-Native Grassland (42200)

Nonnative grassland generally occurs on fine-textured loam or clay soils which are moist or even waterlogged during the winter rainy season and very dry during the summer and fall. It is characterized by a dense to sparse cover of annual grasses, often with native and non-native annual forbs (Holland 1986). This habitat is a disturbance-related community most often found in old fields or openings in native scrub habitats. This association may have replaced native grassland and coastal sage scrub at many localities in the county.

Typical grasses within the study area include wild oats (*Avena fatua* and *A. barbata*), barleys (*Hordeum* spp.) soft chess (*Bromus hordeaceus*), foxtail chess (*Bromus madritensis* ssp. *rubens*), ripgut grass (*Bromus diandrus*), and Italian ryegrass (*Lolium multiflorum*). Characteristic forbs include filarees (*Erodium* spp.), mustards (*Brassica* spp.), California poppies (*Eschscholzia californica*), tarweed (*Deinandra* spp.), California goldfields (*Lasthenia californica*), and lupins (*Lupinus* spp.). Grassland-adapted bird species such as the grasshopper sparrow (*Ammodramus savannarum perpallidus*), horned lark (*Eremophila alpestris*), and loggerhead shrike (*Lanius ludovicianus*) prefer native grasslands for foraging and breeding; however, they will use the lower quality non-native grasslands when native grasses are unavailable.

An estimated 52.85 acres of non-native grassland occurs in isolated patches south of the dam, and along Kimball Valley. It is possible that these patches were a contributing source for weedy annuals that invaded much of the areas burned in the 2003 Cedar Fire.

Coast Live Oak Woodland (71160)

Coast live oak woodland is dominated by coast live oak or a combination of both Engelmann oak (*Quercus engelmannii*) and coast live oak. In mesic areas such as canyons and north facing slopes, these communities form a dense canopy cover with little

or no understory vegetation. In drier, more exposed areas, coast live oaks are more scattered, forming an open woodland with a grassland understory, and may intergrade with coastal sage scrub or chaparral (Holland 1986). The shrub layer is typically poorly-developed but may include toyon, currant, laurel sumac, and Mexican elderberry (*Sambucus mexicanus*). The herbaceous component is continuous and sometimes dominated by non-native, weedy species.

Oak woodlands, including individual oaks, are protected through policies and guidelines that have been established by the Senate Bill 1334, or Oak Woodlands Conservation Act. Despite the level of disturbance in some areas, oak woodland provides habitat for many wildlife species which would not otherwise be found in the vicinity, such as Western bluebird (*Sialia mexicana*), woodpeckers (*Picoides* spp.), and a variety of hawks and owls.

Coast live oak woodland is the third-most common habitat type (approximately ~~161.53~~ 160.26 acres) in the study area. The majority of this vegetation community occurs in Kimball Valley and south of the dam. Smaller patches occur along drainages around the perimeter of the reservoir and on the north side of the island.

Eucalyptus Woodland (11100)

Eucalyptus woodland is typically characterized by dense stands of gum trees (*Eucalyptus* spp.). Plants in this genus, imported primarily from Australia, were originally planted in groves throughout many regions of coastal California as a potential source of lumber and building materials, for their use as windbreaks, and for their horticultural novelty. They have increased their cover through natural regeneration, particularly in moist areas sheltered from strong coastal winds. Gum trees naturalize readily in the state and, where they form dense stands, tend to completely supplant native vegetation, greatly altering community structure and dynamics.

Within the study area, an estimated 3.13 acres of eucalyptus woodland occurs in three locations. Small groups of trees are located near the marina on the south side of the reservoir, near the shore a short distance to the northwest of the marina, and at the shoreline near Barona Valley.

Disturbed Habitat (11300)

Disturbed habitat is any land on which the native vegetation has been significantly altered by agriculture, construction, or other land-clearing activities, and the species composition

and site conditions are not characteristic of the disturbed phase of one of the plant associations within the study area. Such habitat is typically found in vacant lots, roadsides, construction staging areas or abandoned fields, and is dominated by non-native annual species and perennial broadleaf species. Typical plant species include Russian-thistle (*Salsola tragus*), sweet fennel (*Foeniculum vulgare*), horseweed (*Conyza* spp.), mustards, lamb's quarters (*Chenopodium album*), fountain grass (*Pennisetum setaceum*), and castor bean (*Ricinus communis*), among others. Nonnative trees, such as eucalyptus, pepper-trees (*Schinus molle*, and *S. terebinthifolius*), Russian olive (*Olea europea*), and other ornamentals can also occur in this association.

An estimated 25.90 acres of disturbed habitat occurs within the study area. The majority of this habitat occurs next to a developed area that contains the maintenance yard for reservoir staff. Other disturbed areas occur next to a small grove of eucalyptus trees northwest of the boat dock, in Kimball Valley, and near the southern end of Mussey Grade Road.

Urban/Developed (12000)

Developed areas support no native vegetation and may be additionally characterized by the presence of man-made structures such as buildings or roads. The level of soil disturbance is such that only the most ruderal plant species would be expected. The study area includes an estimated 31.52 acres of developed land. Developed areas include the dam, marina, maintenance yard, trailers, and reservoir keeper house.

2.4.3 Wildlife

Biological resources surveys and literature searches have identified a wide diversity of invertebrate and vertebrate species that occupy various habitats in the study area. A total of 317 animal species have been documented, including 103 invertebrates (43 of them butterflies), 15 fish, 8 amphibians, 23 reptiles, 138 birds, and 30 mammals. An inventory of species that have been documented within the study area is included in this report (Appendix B).

Invertebrates

Invertebrates that have been documented within the study area include the non-native swamp crayfish (*Procambarus clarkia*), 17 species of flies, 8 species of bees or wasps, 8 species of beetles, 6 species of dragonflies/damselflies, and a handful of other insect species. The area also supports a high diversity of butterflies and moths, including blues,

coppers, owlet moths, brushfoots, swallowtails, whites, sulfurs, Behr's metalmark (*Apodemia mormo virgulti*), and the white-lined sphinx moth (*Hyles lineata*).

Fish

San Vicente Reservoir is a recreational lake that supports fishing. As such, it has been stocked with various introduced species of fishes, including sunfish (*Lepomis* spp.), largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), threadfin shad (*Dorosoma petense*), prickly sculpin (*Cotus asper*), catfishes (*Ictalurus* spp., *Ameiurus* spp., and *Pylodictis* ssp.), and rainbow trout (*Onchorynchus mykiss*).

Amphibians

One species of salamander, the garden slender salamander (*Batrachoseps major*), is known from the study area. This species prefers moist areas within a variety of habitats, including oak woodland, chaparral, and grassland. Several species of frogs are present in the freshwater marsh and riparian corridors, including the California tree frog (*Pseudacris cadaverina*), Pacific tree frog (*Pseudacris regilla*), western toad (*Bufo boreas*), and federally endangered arroyo toad (*Bufo californicus*). The non-native bullfrog (*Rana catesbeiana*) is also present throughout these habitats and may present a threat to the native populations of frogs due to their highly predatory nature. Two other sensitive species of frogs have been recorded from this area on or before 1993 (PSBS 1993). In addition, the federally threatened California red-legged frog (*Rana aurora draytonii*) was documented in the study area in 1950 (USFWS 2006), but is now considered to be extirpated from San Diego County. The western spadefoot toad (*Spea hammondii*) was recorded from 1994 (ESP species database), and prefers riparian habitats with cottonwood, sycamore, and willow trees. The stream setting usually includes sandy streambeds and adjacent shallow pools where the toad may sit in the water while partially exposed above.

Reptiles

The study area supports numerous reptiles by providing good vegetative cover, large boulders, and a permanent water source. Two species of turtles have been recorded in the reservoir from earlier surveys (PSBS 1993), including the introduced red-eared slider (*Trachemys scripta*) and the sensitive southwestern pond turtle (*Clemmys marmorata pallida*), although neither was observed during the 2005 and 2006 surveys.

Lizards are plentiful on site, especially the western whiptail (*Cnemidophorus tigris*), western fence lizard (*Sceloporus occidentalis*), granite spiny lizard (*Sceloporus orcutti*),

and the side-blotched lizard (*Uta stansburiana*). Less common species or species that are less easily seen include the southern alligator lizard (*Elgaria multicarinata*), granite night lizard (*Xantusia henshawi*), San Diego banded lizard (*Coleonyx variegates abbotti*), California legless lizard (*Anniella pulchra pulchra*), western skink (*Eumeces skiltonianus interparietalis*), and orange-throated whiptail (*Cnemidophorus hyerythrus*). The latter four species are sensitive, but the orange-throated whiptail is the only one of these that was observed during the most recent surveys.

Snakes are also relatively common within the study area. Three species of rattlesnake (*Crotalus* spp.), eight species of colubrids, and the coastal rosy boa (*Lichanura trivirgata*) have been documented. The coastal rosy boa, two-striped garter snake (*Thamnophis hammondii*), and the Baja California lyresnake (*Trimorphodon biscutatus lyrophanes*) were observed during the 2005 and 2006 field seasons. Appendix B contains a complete list of species documented in the study area.

Birds

The study area provides numerous foraging and nesting opportunities for a variety of migrating and breeding birds, including open water, marsh habitat, scrub communities, grassland, rocky outcrops, and large trees. Birds associated with open water include grebes, cormorants, herons, egrets, fifteen species of ducks and geese, coots, plovers, sandpipers, gulls, and terns. Other birds that are commonly associated with open water or other riparian habitats include the bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), belted kingfisher (*Ceryle alcyon*), pacific-slope flycatcher (*Empidonax difficilis*), least Bell's vireo (*Vireo bellii pusillus*), yellow-breasted chat (*Icteria virens*), common yellowthroat (*Geothlypis trichas*), and red-winged blackbird (*Agelaius phoeniceus*). In addition, healthy populations of rodents, rabbits, snakes, and lizards provide forage for a large number of raptors; and upland scrub, woodland, and grassland communities provide habitat for numerous hummingbirds, perching birds, and woodpeckers.

Mammals

Common mammals in the study area include the Audubon's cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), and southern mule deer (*Odocoileus hemionus*). Other species documented onsite are typical of coastal sage scrub and chaparral dominated communities, including evening bats (Family Vespertilionidae), free-tailed bats (Family Molossidae), pocket mice (*Chaetodipus* spp.), kangaroo rats (*Dipodomys* spp.), woodrats (*Neotoma* spp.), deer mice (*Peromyscus* spp.),

gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*), and mountain lion (*Puma concolor*). This faunal assemblage includes five State Species of Concern: the pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis*), California pocket mouse (*Chaetodipus californicus femoralis*), San Diego Pocket Mouse (*Chaetodipus fallax fallax*), and San Diego desert woodrat (*Neotoma lepida intermedia*).

2.4.4 Sensitive Biological Resources

2.4.4.1 Sensitive Vegetation Communities

Sensitive vegetation communities (1) support sensitive plant or animal species, (2) are regulated by resource agencies, or (3) are in substantial decline throughout all or a significant portion of its range due to human activities, or (4) are otherwise rare due to limited natural distribution. Two upland vegetation communities (coastal sage scrub and coast live oak woodland) and all riparian communities within the study area are considered sensitive by the regulatory agencies.

CDFG-~~Regulated~~ Defined Wetlands and Waters of the State

The CDFG has jurisdictional authority over rivers, streams, and lakes and associated aquatic resources under California Fish and Game Code Sections 1600 to 1607. "Stream" is defined by CDFG as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. This includes watercourses having a surface or subsurface flow that support or has supported riparian vegetation, including intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams, and watercourses with subsurface flows.

CDFG-defined wetlands are "lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water," (Cowardin 1979) and they exist where at least one of the following conditions are present: hydrophytic vegetation, hydric soil types, and/or wetland hydrology. Because only one of these criteria must be met, CDFG wetlands are more broadly defined than Corps wetlands and may extend beyond Corps jurisdiction.

CDFG-defined wetlands in the SV 100K study area include: freshwater marsh, southern coast live oak riparian forest, southern cottonwood-willow riparian forest, mulefat scrub, and southern willow scrub and the band of submerged aquatic vegetation described above

(Table 2-3; Figures 2-8 and 2-9). Among the CDFG-defined wetlands is the band of submerged aquatic vegetation described above, but this habitat is not included in Table 2-3 because it is not a surveyed terrestrial vegetation community. At the time of the survey (October 12, 2005), the reservoir elevation was at 620 feet AMSL; the width of the aquatic vegetation varied between 7 feet and 25 feet, averaged approximately 15 feet (Schaefer, 2006), and consisted of approximately 20.01 acres. The width and depth of aquatic vegetation is variable based on the operational water level. At moderate to high water levels, the entire band of aquatic vegetation, consisting of perennial and annual vascular plants and algae, is submerged. The aquatic vegetation is rooted in the reservoir's submersed substrate. The vegetation surrounds the entire reservoir where substrate is present (e.g., not in rocky areas), and occurs below the lower limit (650 feet AMSL) of the San Vicente footprint.

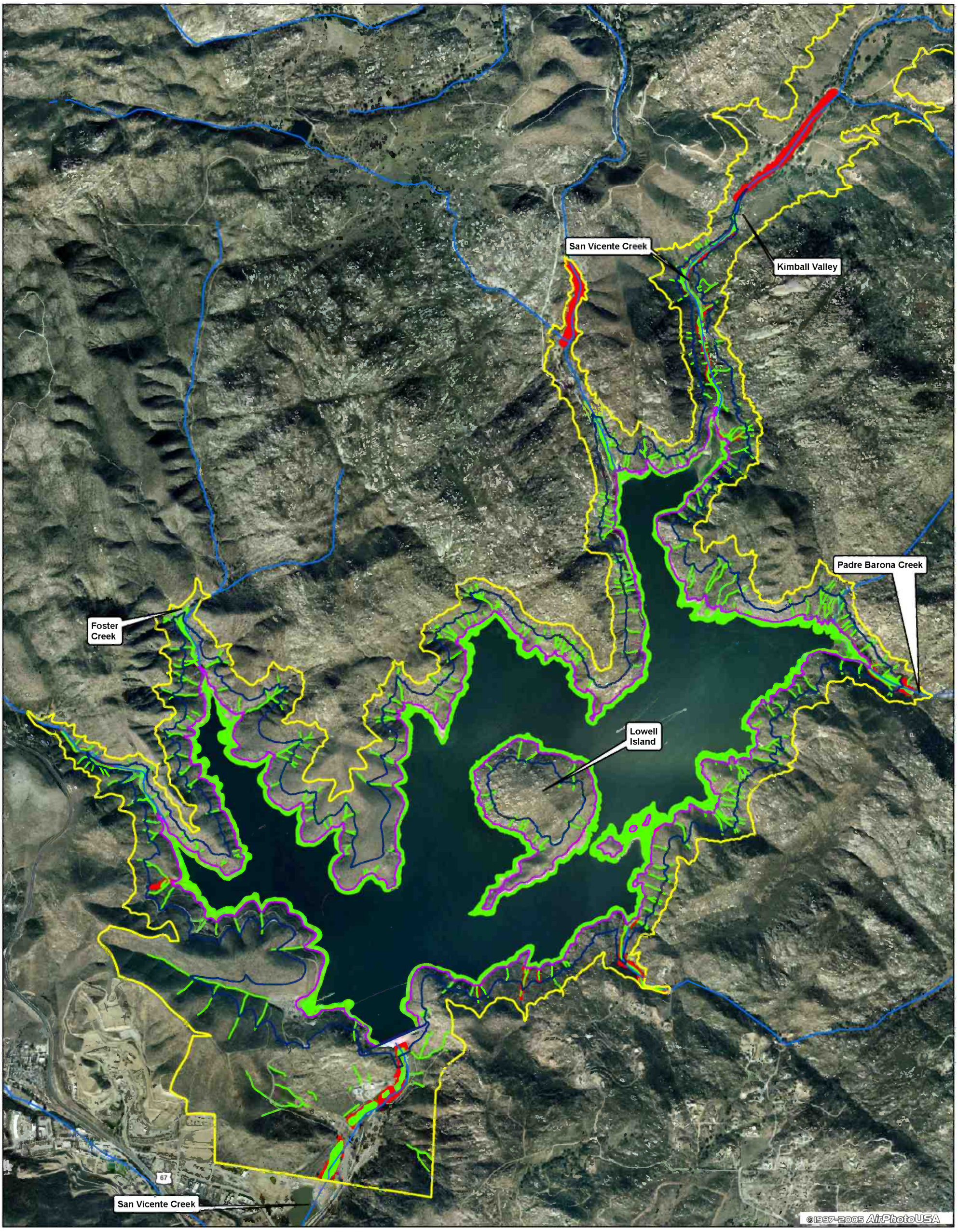
Table 2- 3. CDFG-~~Regulated~~ Defined Wetlands and Unvegetated Waters of the State within the SV 100K Footprint[1]

CDFG-Regulated Wetlands/Waters of the State	Acres[1]
WETLANDS	
Freshwater Marsh	~~5.26~~5.35
Southern Coast Live Oak Riparian Forest	~~20.59~~21.88
Southern Cottonwood-Willow Riparian Forest	~~1.27~~0.94
Mulefat Scrub	~~7.42~~7.69
Southern Willow Scrub	~~16.48~~15.42
Total Wetlands	***~~51.02~~51.28***
UNVEGETATED WATERS OF THE STATE	
Open Water (reservoir)/Freshwater	~~876.87~~876.72
Lakeshore Fringe[2~~1~~]	~~120.18~~119.83
Unvegetated Channel[2~~1~~]	~~30.40~~31.65
Total Unvegetated Waters	***~~1,027.45~~1,028.20***
TOTAL WETLANDS AND UNVEGETATED WATERS	**~~1,078.47~~1,079.48**

[1] Acreages rounded to nearest hundredth decimal.

[2] The CDFG uses "lakeshore fringe" and "unvegetated channel" as categories to describe jurisdictional resources. However, Oberbauer (2005) combines these into a single vegetation community called "unvegetated channel/lakeshore fringe" (Holland code 13200). See Table 2-2.

Note: The vegetation communities in the study area include the limits between 650 and 766 feet AMSL (excluding 664 – 710 feet AMSL, which is the area previously permitted under ESP).



Legend

- Elevated Spillway Crest (766 AMSL)
- Ordinary High Water Mark (650 AMSL)
- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands and Waters

Basemap Legend

- Study Area
- Streams

Note: Open water (existing reservoir) mapping not displayed.

N

Feet

0 1,800

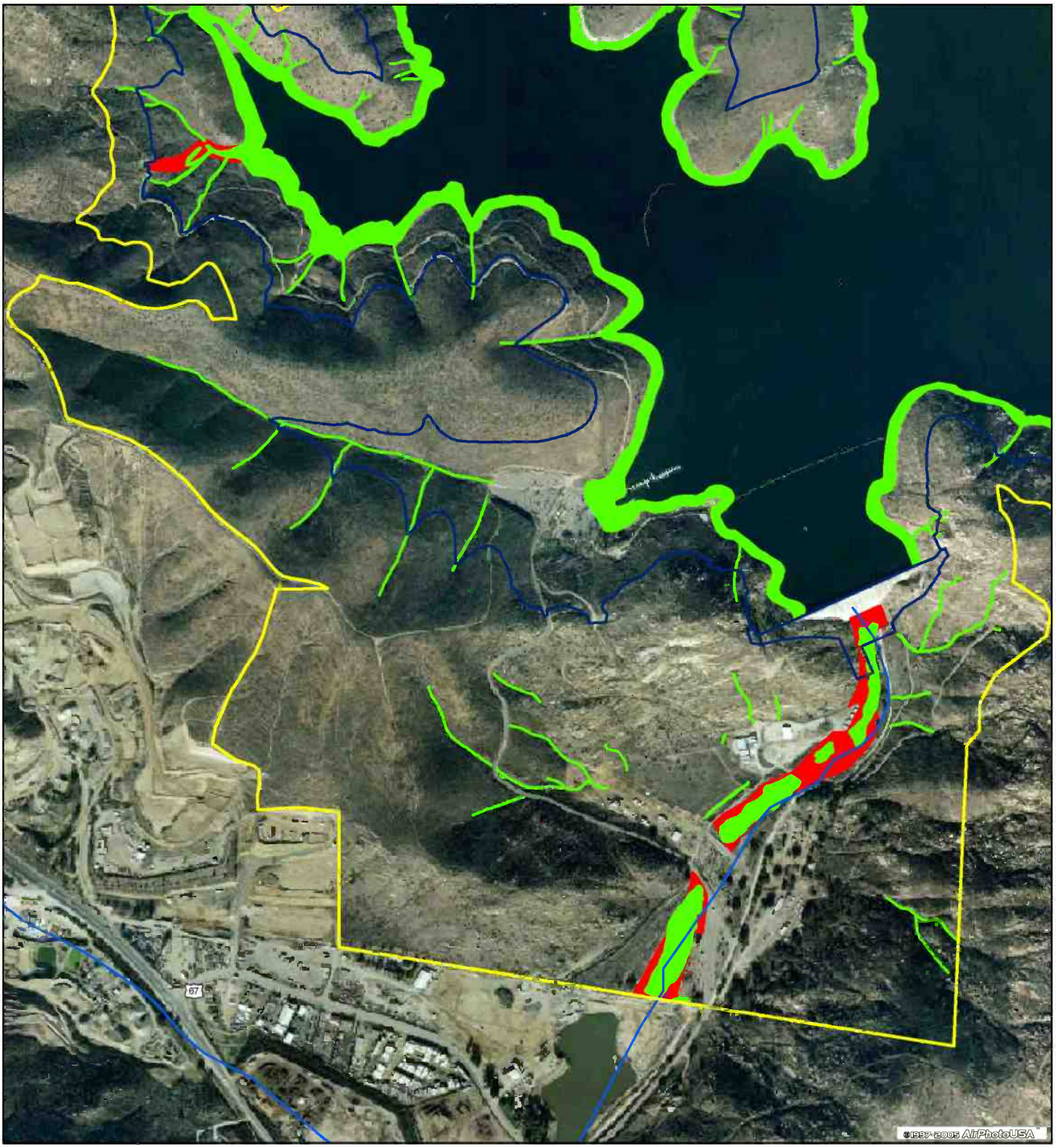
TAIC

Carryover Storage and San Vicente Dam Raise Project
Jurisdictional Wetlands and Waters within the San Vicente Study Area

Figure 2-8

/gist/projects/sanvicente/plots/figures/BTR/Wetlands_11x17.mxd

Date: Mar 11, 2008



Legend

- Elevated Spillway Crest (766 AMSL)
- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands and Waters

Basemap Legend

- Study Area
- Streams

N

Feet

0 930

Note: Open water (existing reservoir) mapping not displayed.

TAIC

Carryover Storage and San Vicente Dam Raise Project
Jurisdictional Wetlands and Waters within the
San Vicente Downstream Construction Area

Figure 2-9

gist\projects\sanvicente\plots\figures\BTR\Downstream Wetlands.mxd

Date: Apr 26, 2007

Categories of unvegetated waters regulated by CDFG in the study area include open water (freshwater vegetation community), lakeshore fringe, and unvegetated channel (unvegetated waters of the state) (Table 2-3; Figures 2-8 and 2-9). These are described in Section 2.4.2 above (the latter two regulated waters correspond to a single, combined vegetation community, unvegetated channel/lakeshore fringe, according to Oberbauer (2005). Table 2-3 summarizes the CDFG wetlands and waters within the study area.

Corps-Regulated Wetlands and Waters of the U.S.

Wetlands and unvegetated waters are considered a sensitive and declining resource by several regulatory agencies, including the Corps, USFWS, and CDFG. Section 404 of the Clean Water Act (CWA) of 1972 regulates activities that result in the discharge of dredged or fill material into jurisdictional wetlands and unvegetated "Waters of the United States (U.S.)". The Corps also regulates certain man-made waters, as defined in the Corps' *1987 Wetlands Delineation Manual*, including reservoirs. Waters of the U.S., as defined by the Corps, include navigable waters, interstate waters, and all other waters where the use, degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Tributary waters, such as incised seasonal or perennial drainages devoid of wetland vegetation, extend to the OHWM on opposing channel banks. The OHWM is typically indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in character of soil, destruction of vegetation, exposed roots on the bank, deposition of leaf litter and other debris materials, or a lower limit of moss growth on channel banks.

Wetlands are defined by the Corps as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Corps jurisdictional wetlands must meet all three wetland delineation criteria: hydrophytic vegetation, hydric soil types, and wetland hydrology.

The Corps, as the federal lead agency, has the decision-making authority related to NEPA and Section 404 compliance. To assess inundation impacts from the Proposed Action on existing habitats and jurisdictional resources surrounding the reservoir, the Corps has determined the baseline condition as the area above the OHWM (650 feet AMSL), exclusive of the previously permitted ESP area between 664 and 710 feet AMSL. As previously stated, the Corps has determined the OHWM as the existing dam spillway (650 feet AMSL). Although the submerged aquatic vegetation below the OHWM is not regulated by the Corps as a Waters of the U.S., it was necessary to determine the existing conditions baseline for this habitat for purposes of NEPA analysis. This was done by extrapolating the band of aquatic vegetation that existed at the reservoir level at the time of the October 12, 2005 survey (i.e., 620 feet AMSL) upward to the OHWM, and then estimating the amount of aquatic vegetation that could occur below 650 feet AMSL based on a projected average bandwidth of 15 feet. As such, this area of submerged aquatic vegetation will be included in the existing conditions description below.

Within the study area, five wetland habitat types occur: freshwater marsh, southern coast live oak riparian forest, southern cottonwood-willow riparian forest, mulefat scrub, and southern willow scrub. The Corps

regulated~~s~~ Waters of the U.S. ~~that fall within these vegetation communities~~within the SV 100K footprint are~~.~~ ~~The acreage for oak riparian forest~~ reported in Table 2-4. ~~was derived from jurisdictional delineations conducted in 1992 for the ESP project; spot verifications were conducted in 2005. The amount of oak riparian forest will need to be verified through project level jurisdictional delineations at the time of the CSP Section 404 permit application with the Corps; it is anticipated that the amount of jurisdictional oak riparian forest is likely smaller than reported in Table 2-4. Detailed descriptions, acreage, and locations of these wetlands are given in Section 2.4.2 above.~~

Table 2-4. Corps-Regulated Wetlands/Vegetated Waters and Unvegetated Waters of the U.S. within the SV 100K Footprint
~~**Corps-Regulated Wetlands and Waters of the U.S. within the SV 100K Footprint**[1]~~

Corps-Regulated Wetlands/Waters of the U.S.	Acres[1]
WETLANDS	
~~Freshwater Marsh~~	~~5.22~~
Freshwater Marsh	5.31
~~Southern Coast Live Oak Riparian Forest~~	~~14.42~~
~~So. Cottonwood-Willow Riparian Forest~~	~~0.91~~
So. Cottonwood-Willow Riparian Forest	0.57
Mulefat Scrub	1.45
~~Southern Willow Scrub~~	~~5.69~~
Southern Willow Scrub	4.70
~~***Total Wetlands***~~	~~***27.69***~~
Total Wetlands	***12.03***
UNVEGETATED WATERS OF THE U.S.	
~~Open Water (reservoir)/Freshwater[2]~~	~~876.87~~
Open Water (reservoir)/Freshwater[2]	876.72
~~Lakeshore Fringe~~	~~120.18~~
Lakeshore Fringe	119.83
~~Seasonal Streambed[3]~~	~~30.40~~
Seasonal Streambed[3]	33.02
~~***Total Unvegetated Waters***~~	~~***1,027.45***~~
Total Unvegetated Waters	***1,029.57***
~~**TOTAL WETLANDS AND UNVEGETATED WATERS**~~	~~**1,055.14**~~
TOTAL WETLANDS AND UNVEGETATED WATERS	**1,041.60**

1 Acreages rounded to nearest hundredth decimal.

~~[1]This term is equivalent to "Unvegetated Channel" as defined by CDFG.~~

2 Open water acreage was mapped by ESP to the 620-foot contour AMSL

3 This term is equivalent to "Unvegetated Channel" as defined by CDFG.

Note: The vegetation communities in the study area include the limits between 650 and 766 feet AMSL (excluding 664 – 710 feet AMSL, which is the area previously permitted under ESP

Categories of Corps regulated waters (Waters of the U.S.) in the study area include open water (freshwater vegetation community), lakeshore fringe, and seasonal streambed (Table 2-4; Figures 2-8 and 2-9). These are described in Section 2.4.2 above (the latter two regulated waters correspond to a single, combined vegetation community: unvegetated channel/lakeshore fringe according to Oberbauer (2005).

As described in Section 2.4.2.2, the Corps does not regulate the band of submerged aquatic vegetation within the reservoir as "vegetated shallows;" however, this habitat is addressed herein to satisfy NEPA requirements. Vegetated shallows are "*areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.*" The Corps describes areas that are equal to or less than 6.6 feet mean annual depth that only support submergent aquatic plants as vegetated shallows. However, submerged vegetation at the San Vicente Reservoir is not considered "vegetated shallows" under the Section 404 (b)(1) guidelines, since operation of the reservoir is the "normal circumstances" and there is no true "permanently inundated" area due to the operational changes of the reservoir's water level. Therefore, the submerged aquatic vegetation in the San Vicente Reservoir is often found in excess of 6.6 feet below the spillway, and thus would not be considered vegetated shallows pursuant to the Corps' and U.S. Environmental Protection Agency's (EPA) definition.

2.4.4.2 Sensitive Species

This section discusses the sensitive species that have been documented from or have the potential to occur in the study area. Sensitive species are defined as endangered, rare or threatened in Section 15380 of the CEQA Guidelines. Sensitive species are plants and animals that have been listed as endangered, threatened, or rare, or identified as candidates for listing pursuant to the federal or state endangered species acts (FESA, CESA). A species not listed by the endangered species acts shall nevertheless be considered sensitive, if the species can be shown to meet the following criteria:

- When its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including the loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors; or
- Although not presently threatened with extinction, the species is existing in such small numbers through all or a significant portion of its range that it may become endangered if its environment worsens; or

- The species is likely to become threatened or endangered within the foreseeable future throughout all or a significant portion of its range and may be considered threatened as the term is used in the FESA.

The status "State Species of Special Concern" and "Fully Protected Species" apply to animals not necessarily listed under the FESA or CESA, but which nonetheless are; (1) declining at a rate that could result in listing, or (2) historically occurred in low numbers and known threats to their persistence currently exist. The CNPS Inventory of Rare and Endangered Vascular Plants of California is sanctioned by CDFG, and serves as a Species of Special Concern list for plants. Plant and wildlife Species of Special Concern and plants with a CNPS designation of 1a, 1b, and 2 observed or that could potentially occur in the study area are analyzed as sensitive for the purposes of CEQA. Table 2-5 lists the sensitive species that have been documented from the SV 100K study area.

Table 2- 5. Documented Sensitive Species from the San Vicente Survey Area[1]

Common Name[2]	Species Name	Status[3]	Covered by MSCP
Plants			
California Adolphia[4]	*Adolphia californica*	--/SSC, List 2	No
Delicate Clarkia	*Clarkia delicata*	--/SSC, List 1B	No
Engelmann Oak	*Quercus engelmannii*	--/SSC, List 4	No
~~Lakeside Ceanothus~~	~~*Ceanothus cyaneus*~~	~~--/SSC, List 1B~~	~~Yes, NE[5]~~
Ocellated Humbolt Lily[4]	*Lilium humboldtii* ssp *ocellatum*	--/SSC, List 4	No
San Diego Goldenstar	*Muilla clevelandii*	--/SSC, List 1B	Yes
San Diego Sagewort	*Artemisia palmeri*	--/SSC, List 4	No
~~San Diego Sunflower~~	~~*Viguiera laciniata*~~	~~--/SSC, List 4~~	~~No~~
San Diego County Viguiera	*Viguiera laciniata*	--/SSC, List 4	No
Invertebrates			
Hermes Copper Butterfly[4,5,6,7]	*Lycaena hermes*	--/--	No
Amphibians			
Arroyo Toad	*Bufo californicus*	FE/SSC	Yes
Western Spadefoot[4]	*Spea hammondii*	--/SSC	No
Reptiles			
Orange-throated Whiptail	*Cnemidophorus hyperythrus*	--/SSC	Yes
Red Diamond Rattlesnake	*Crotalus ruber ruber*	--/SSC	No
Coast Horned Lizard[4]	*Phrynosoma coronatum blainvillei*	--/SSC	Yes
Southwestern Pond Turtle[4,7]	*Clemmys marmorata pallida*	--/SSC	Yes
Two-striped Garter Snake	*Thamnophis hammondii*	--/SSC	No

Table 2-5 *(continued)*. Documented Sensitive Species from the San Vicente Survey Area[1]

Common Name[2]	Species Name	Status[3]	Covered by MSCP
Birds			
Bald Eagle	*Haliaeetus leucocephalus*	~~DL~~FD/ ~~SFP[8]~~SFP[8]	Yes
Bell's Sage Sparrow	*Amphispiza belli bellii*	--/SSC	No
Coastal California Gnatcatcher[4]	*Polioptila californica californica*	FT/SSC	Yes
Cooper's Hawk	*Accipiter cooperi*	--/SSC	Yes
Horned Lark	*Eremophila alpestris*	--/SSC	No
Least Bell's Vireo	*Vireo bellii pusillus*	FE/SE	Yes
Loggerhead Shrike	*Lanius ludovicianus*	--/SSC	No
Northern Harrier[4]	*Circus cyaneus*	--/SSC	Yes
Osprey	*Pandion haliaetus*	--/SSC	No
Peregrine Falcon[4]	*Falco peregrinus*	FD, SFP	Yes
Sharp-shinned Hawk[4]	*Accipiter striatus*	--/SSC	No
Southern CA Rufous-crowned Sparrow	*Aimophila ruficeps canescens*	--/SSC	Yes
Western Bluebird	*Sialia mexicana*	--/--	Yes
White-tailed Kite	*Elanus leucurus*	--/SFP	No
Yellow-breasted Chat	*Icteria virens*	--/SSC	No
Mammals			
Dulzura Pocket Mouse[4]	*Chaetodipus californicus femoralis*	--/SSC	No
San Diego Desert Woodrat[4]	*Neotoma lepida intermedia (nests)*	--/SSC	No
Southern Mule Deer	*Odocoileus hemionus fuliginata*	--/--	Yes
Western Mastiff Bat[4]	*Eumops perotis californicus*	--/SSC	No

[1] Some of the observed species were not mapped and are, therefore, not shown in the figures.

[2] **Data Source**: PSBS 1991a, 1991b, 1993; ESP species database, SDNHM 2005 and 2006; CNDDB 2006, USFS 2006; SANDAG 2006; General biological resources surveys and focused species surveys conducted by TAIC, 2005 and 2006

[3] **Status**: The format for the species status is [federal status] / [state and/or CNPS status]. A double dash "--" means that there is no official status. Federal: FE – endangered, FT – threatened, BEPA – Bald Eagle Protection Act, FD – federally delisted. State: SE – endangered, ST – threatened, SR – rare, 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).

[4] Documented prior to, but not during TAIC's 2005 and 2006 surveys.

~~[5] **NE** = Narrow Endemic. Species that are confined to a specific geographic region, soil type, and/or habitat.~~

[5~~6~~] CNDDB status of G1G2S1S2 (Global Ranking G1 = Extremely endangered globally; G2 = Endangered globally. State Ranking S1 = Extremely endangered in California; S2 = Endangered within California).

[~~6~~7] Included on list at request of CDFG & USFWS; pre-CEQA consultation January 4, 2007.

[~~7~~8] Southwestern pond turtle observed during 1993 ESP field surveys. However, this species was not detected during extensive surveys conducted by USGS in 2002. Therefore, it is assumed that the species is no longer occupying the San Vicente Reservoir.

[8] The delisting of the bald eagle was published in the Federal Register on July 9, 2007 (72 FR, 37346-37372).

Subsection A summarizes the state or federally listed species documented on site and includes species accounts for each listed species. Subsection B summarizes the sensitive species (as defined above) documented on site, which are not listed (e.g., not regulated by CESA or FESA). Subsection B also includes species that may be considered sensitive by the scientific community, but are not on a formal sensitive species list sanctioned by the CDFG or USFWS. Species accounts in this subsection are prepared for only those non- listed species observed by TAIC biologist during 2005 and 2006 field seasons. Subsection C summarizes the MSCP species documented on site. Finally, Subsection ~~C~~D summarizes species that have the potential to occur onsite, but that have not been documented within the study area boundaries. This subsection includes species accounts only for potentially occurring listed species.

A. *Rare, Threatened, and Endangered Species (Listed Species)*

Species that are federally and state listed as rare, threatened, or endangered are afforded a degree of protection requiring a permit or consultation and specific mitigation measures before impacts are allowed. Listed species are "in danger of extinction throughout all or a significant portion of its range" or "likely to become endangered in the foreseeable future." Five currently listed species, the federally endangered arroyo toad, the state fully protected bald eagle (*Haliaeetus leucocaphalus*) (delisting of the bald eagle was published in the Federal Register on July 9, 2007 (72 FR, 37346-37372), the federally threatened California gnatcatcher, the federally and state endangered least Bell's vireo, and the state endangered peregrine falcon (*Falco peregrinus*), have been documented from the San Vicente study area (Table 2-5). See Section 1.3.1 above for source information. The following are species accounts containing life history and distribution information for each rare, threatened, and endangered species documented from the study area.

Arroyo Toad - *Bufo californicus*
Federal Status: Endangered
State Status: California Special Concern Species

This species is distributed in semiarid parts of the southwest from near Santa Margarita in San Luis Obispo County to northwestern Baja California. Breeding activity typically occurs from February to June. Breeding habitat consists of gravelly or sandy washes, stream and riverbanks, and arroyos. Adult toads spend most of the year in burrows in upland habitat, such as sage scrub and mixed chaparral near washes and streams. The primary reasons for the decline of the species include dams and water projects, urban development, agriculture and grazing, and human recreational activities in breeding areas. Prior to the 2005 survey conducted by TAIC, arroyo toads have been recorded at four general locations along a three-mile stretch of Kimball Valley (USFWS, USFS, and ESP species databases) (Figure 2-10).

The entire reach of San Vicente Creek within the study area is occupied by this species, with breeding population locations varying by degree and intensity of winter rains and associated stream flows. During the 2005 field season, no arroyo toad egg strands juveniles, or adults were detected during the daytime portion of the first survey.

However, one arroyo toad was heard calling during the nighttime portion approximately 800-feet north of a bridge located in the community of Fernbrook (Figure 2-10). The northern reach of Kimball Valley, where the toad was observed, contains good quality habitat for this species. However, farther south near the reservoir, the habitat becomes less vegetated, steeper, more constricted with large boulders, and less sandy. However, during years of normal rainfall, the downstream reaches of Kimball Valley have provided occupied toad habitat in the recent past (see USFWS 2003 species points, Figure 2-10).

Bald Eagle – *Haliaetus leucocephalus*
Federal Status: Bald and Golden Eagle Protection Act; Delisted
State Status: Endangered; Fully Protected

The bald eagle breeds throughout much of the United States and southern Canada, but is an uncommon winter visitor to San Diego County (Unitt 2004). Only one nesting record has been reported for this species in the County, at Little Tecate Peak in 1936. Bald eagles frequently winter at Lake Henshaw, Whalen Lake, and Lake Cuyamaca (Unitt 2004). Because their diet consists mostly of fish, wintering bald eagles require large bodies of open water for foraging. Additionally, preferred habitat contains large trees for roosting. This species has declined because of shooting, human disturbance at nest sites, loss of nesting trees, loss of open water habitat due to human activities, power line electrocution, and reproductive failure caused by DDT (Buehler 2000). This species was not observed in the study area during the 2005 and 2006 survey season; it was documented (not nesting) in the ESP database as occurring near Lowell Island; however, the ESP Biological Technical Report (Ogden 1995) indicates that it was not observed during ESP surveys (Figure 2-11).

California Gnatcatcher – *Polioptila californica californica*
Federal Status: Threatened
State Status: Species of Special Concern

The California gnatcatcher is a non-migratory bird endemic to the coastal slope of southern California and northwestern Baja California Norte, Mexico, from Ventura County southward to approximately El Rosario, Mexico. It is associated with coastal sage scrub plant communities, including Venturan coastal sage scrub, coastal sage scrub, maritime succulent scrub, Riversidean sage scrub, Riversidean alluvial fan scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub. The breeding season extends from late February through July, with the peak of nest initiations occurring from mid-March through mid-May. The California gnatcatcher is threatened by urban

development and nest parasitism by the brown-headed cowbird (*Molothrus ater*). In addition, a significant number were lost during the October 2003 wildfires. No gnatcatchers were detected during the 2006 survey season. However, between 1990 and 2002, a total of 27 gnatcatcher territories were documented from the study area (ESP, CNDDB, SDNHM, and SANDAG species databases) (Figure 2-12). Because territories and populations may change over time, Figure 2-12 does not necessarily indicate the status of gnatcatchers in the study area at any given time.

Least Bell's Vireo - *Vireo bellii pusillus*
Federal Status: Endangered
State Status: Endangered

Currently, least Bell's vireos breed only in riparian woodlands in southern California, with the majority of breeding pairs in San Diego, Santa Barbara, and Riverside Counties. Substantial vireo populations are currently found on five rivers in San Diego County: Tijuana, Sweetwater, San Diego, San Luis Rey, and Santa Margarita, with smaller populations in other drainages. The least Bell's vireo arrives in San Diego County in late March and early April and leaves for its wintering ground in September. This species is most frequent in areas that combine an understory of dense young willows or mulefat with a semi-open canopy of tall willows. The vireo's decline is a result of loss, degradation, and fragmentation of riparian habitat combined with nest parasitism by the brown-headed cowbird.

During the 2005 survey season, a total of three individual vireos were detected from two of the three areas that were identified as having potentially suitable habitat (Figure 2-13). A single vireo was observed on two occasions near the end of the season in Kimball Valley, located along San Vicente Creek approximately 1 mile north of the reservoir; another individual was observed throughout the breeding season in poor quality habitat on the eastern slopes of Padre Barona Creek, and another individual was observed once at the mouth of Padre Barona Creek. No vireos were observed in the southern willow scrub near the outlet facility on the western side of the reservoir. The habitat in this location is a small, isolated patch and not considered good quality.

Peregrine Falcon - *Falco peregrinus*
Federal Status: Delisted
State Status: Endangered, Fully Protected

The American peregrine falcon is in the process of recovering much of its former breeding range in North America. Within San Diego County, peregrine falcons occur

along coastal areas and at reservoirs in the county during winter. Foraging habitat for this species includes coastal wetland areas, extensive riparian areas, and lakes that support large flocks of waterbirds (ducks, shorebirds) or pigeons. Peregrines traditionally nest on cliff faces but have adapted to also nest on tall building ledges, towers, and similar tall structures. Nest sites need minimal human disturbance. Although this species was not observed during the 2005 or 2006 field seasons, it was observed near the dam during surveys conducted for the ESP (Ogden 1995) (Figure 2-11).

B. Other (Non-Listed) Sensitive Species

~~Fifteen~~ Seventeen out of ~~30~~ 29 other (non-listed) sensitive species were observed by TAIC biologists within the study area during the 2005 and 2006 survey seasons (Table 2-5). The accounts below provide species-specific information about distribution, habitat preferences, and locations of the species observed by TAIC in 2005 and 2006. However, some of the field observations were noted only in field notes, and there is no indication of where they were observed. Therefore, location data for some of the species may be limited.

Delicate Clarkia - *Clarkia delicata*
Federal Status: None
State Status: Species of Special Concern
CNPS List: 1B

Delicate clarkia is an annual herb that blooms from April through June. It generally occurs along the fringes of cismontane oak woodlands and scrub habitat. Although populations of this species were stable in the early 1990's (when detailed information was last available), the overall distribution is limited. It is known only from San Diego County and northern Baja California. Approximately 31 small populations (25 – 300 plants each) are distributed throughout the County (San Diego Natural History Museum 2005). During the 2005 and 2006 field seasons, delicate clarkia was observed in small, fairly dense patches south of the dam and on the western slopes above the reservoir in scrub habitat, disturbed habitat, and adjacent to oak woodland (Figure 2-14). The San Vicente population contains more than 1,000 plants.

Engelmann Oak - *Quercus engelmannii*
Federal Status: None
State Status: Species of Special Concern
CNPS List: 4

The Engelmann oak occurs in Orange County, Riverside County, San Diego County, Santa Catalina Island, and Baja California, Mexico. It is generally found in chaparral, cismontaine woodland, riparian woodland, and grassland habitats below 1,300 meters. Populations of this species are currently stable; however, the distribution of Engelmann oaks is limited. Overgrazing by cattle has resulted in poor reproduction rates. Other factors affecting this species include browsing by deer, the use of acorns as a food source for small mammals, birds, and insects, and urban development. Hybridization with scrub oaks is relatively common in the chaparral, resulting in more shrubby trees with a greater leaf variation. Within the survey area, Engelmann oaks occur as isolated individuals on Lowell Island, southeast and north of Lowell Island, and on the west-facing slope along the finger that leads to Kimball Valley (Figure 2-14).

~~**Lakeside Ceanothus** - *Ceanothus cyaneus*~~
~~Federal Status: None~~
~~State Status: Species of Special Concern~~
~~CNPS List: List 1B~~

~~Lakeside ceanothus occurs in San Diego County and Baja California, Mexico at elevations between 235 and 755 meters. This large shrub occurs in dense chaparral with a mix of chamise and other shrubs such as manzanita. This type of taller growing chaparral occurs on mesic soils. This species is threatened by a number of residential development projects. Lakeside ceanothus has been documented prior to 2005 just outside the study area on the west side of Kimball Valley. This species was observed within the study area during 2005 and 2006 surveys.~~

San Diego Goldenstar - *Muilla clevelandii*
Federal Status: None
State Status: Species of Special Concern
CNPS List: 1B

This perennial bulb is distributed in western San Diego County and Baja California, Mexico. The San Diego goldenstar prefers clay soils in grasslands or vernal pools; however, it can also be found in open coastal sage scrub or chaparral habitat. The greatest threat to this species includes habitat loss from road construction, urban development, off road vehicles, and illegal dumping. Prior to 2005 this species was found southwest of the dam and on the west side of the reservoir, on the north side of the finger leading to Foster Canyon. During 2005 and 2006 field surveys, this species was found on the western and southwestern ends of the reservoir (Figure 2-14).

San Diego Sagewort – *Artemisia palmeri*
Federal Status: None
State Status: Species of Special Concern
CNPS List: List 4

San Diego sagewort is distributed from coastal San Diego to Baja California, Mexico. It is primarily found along creeks and drainages near the coast at elevations of 15 to 915 meters. Inland, this species may occur in mesic chaparral conditions. This species is threatened by development and flood control projects. Within the survey area, San Diego sagewort is found in riparian drainages around the entire length of the reservoir with the highest densities at the southern and southwestern ends of the reservoir. It was found in similar locations during surveys prior to and after 2005, with more sighting after 2005. Two occurrences, on Lowell Island and in Kimball Valley, were found only during surveys prior to 2005 (Figure 2-14).

San Diego ~~Sunflower~~ County Viguiera – *Viguiera lacineata*
Federal Status: None
State Status: Species of Special Concern
CNPS List: List 4

The San Diego ~~sunflower~~ County viguiera is known from Orange County, Riverside County, San Diego County, and Baja California, Mexico. It is generally found in arid Diegan sage scrub habitats and is often a co-dominant element of the shrub community where it occurs, along with *Artemisia californica*. This species is locally common but threatened by development. Within the survey area, this species is locally abundant on the southwestern and western ends of the reservoir. Observations made by TAIC in 2005 and 2006 were consistent with previous records, however, three occurrences on Lowell Island were found only during surveys prior to 2005 (Figure 2-14).

Orange-throated Whiptail - *Cnemidophorus hyperythrus*
Federal Status: None
State Status: Species of Concern

The orange-throated whiptail prefers open sage scrub habitat, but will also occupy areas of higher shrub density, open floodplains, sparse grasslands, open chaparral, riparian scrub, and oak woodlands (V. Horchar pers. comm.). This species is restricted to the extreme southwest of California and northwest of Baja California Norte, Mexico (Stebbins 2003). In California, it is found on the west side of the Peninsular Ranges between sea level and 3,000 feet, in Los Angeles, San Bernardino, Orange, Riverside and

San Diego counties (Zeiner et al 1988). It is still locally common in many areas where it remains. The principal threat to the orange-throated whiptail is degradation and loss of habitat, however it is also impacted by off-road vehicle activity, over-grazing by livestock, and predation by introduced predators (e.g., cats and dogs) (San Diego Herpetological Society 1980). A limiting factor to the species' range is the availability of its primary food item, the termite *Reticulitermes hesperus.* During surveys conducted prior to 2005, whiptails were found all along the western side of the reservoir. In addition, it was found on Lowell Island, on both sides of the finger that leads to Kimball Valley, and south of the dam (Figure 2-15). This species was observed twice during 2005 and 2006 field surveys; however the specific locations were not recorded.

Red Diamond Rattlesnake – *Crotalus ruber ruber*
Federal Status: None
State Status: Species of Concern

The northern red diamond rattlesnake is found in southwestern California from the Morongo Valley west to the coast and south along the peninsular ranges to mid Baja California, Mexico. This heavy bodied species inhabits coastal chaparral, oak and pine woodlands, grasslands, arid scrub, and cultivated areas. Dense vegetation with rocky areas and an abundance of burrowing small mammals are important habitat factors for this species. In addition to small mammals, this species preys on lizards and birds. This species is inactive during cooler winter months. The primary threats to this species are loss of habitat and humans' negative attitude toward snake species. This species was observed during 2005 and 2006 surveys, but not mapped. Prior to 2005, this species was documented from the north, south, and west sides of the reservoir (Figure 2-15).

Two-striped Garter Snake - *Thamnophis hammondii*
Federal Status: None
State Status: Species of Concern

The two-striped garter snake is distributed from central California to Baja California. In southern California it occurs from the coast to the mountains and is usually found in riparian habitat in or near sources of freshwater, including streams, ponds, and lakes. Its preferred diet consists of small fish, tadpoles, frogs, toads, and insect larvae. The breeding season for this live-bearing species begins in April or May, and continues through the summer. The greatest threat to this species is predation by raptors and introduced bullfrogs. In 2005, this species was observed on the western end of the reservoir. In surveys conducted prior to 2005, this species was found in a similar location as well as at the northern end of the finger leading to Kimball Valley (Figure 2-15).

Bell's Sage Sparrow - *Amphispiza belli bellii*
Federal Status: None
State Status: Species of Concern

The sage sparrow is distributed in arid areas of the western United States and Mexico. Bell's sage sparrow, a dark colored subspecies, occurs year round in the western two thirds of San Diego County. This subspecies tends to forage on the ground, and as such, prefers open coastal sage scrub or chaparral habitat. It is often found in areas that are recovering from fire. Breeding activity generally occurs from late March through June. Nest building occurs low down in the brush, and sometimes on the ground. The greatest threat to the Bell's sage sparrow is habitat fragmentation resulting from urban development. This subspecies may be the most sensitive shrubland bird to habitat fragmentation (Bolger et al. 1997; Lovio 1996). This species was found on the western, southwestern, and northeastern sides of the reservoir during field studies prior to 2005 (Figure 2-16). This species was incidentally observed during surveys conducted in 2005 and 2006.

Cooper's Hawk - *Accipiter cooperi*
Federal Status: None
State Status: Species of Concern

The Cooper's hawk is distributed throughout much of the United States from southern Canada to northern Mexico. It is a regular nesting species in San Diego County. This species has previously been closely associated with oak woodland, and the densely foliaged crowns of the coast live oak remain a favored site for Cooper's hawks to place their nests. Recently, however, Cooper's hawks have adapted to the urban environment and often nest in eucalyptus trees. Additionally, they can be observed foraging in many types of upland and riparian habitats. Habitat loss, pesticide contamination, and human disturbance at the nest site limit this species population sizes (Remsen 1978). Prior to 2005, this species was observed west of the reservoir, in Foster Canyon, near the study area boundary. It was also observed west of highway 67, outside the study area. A single observation was made in 2005 (Figure 2-16).

Horned Lark - *Eremophila alpestris*
Federal Status: None
State Status: Species of Concern

This species are distributed throughout North America and into Mexico. Although northern populations migrate farther south for the winter, most populations within the United States south of Canada occur year round. Within San Diego County, horned larks occur in the coastal strand, grasslands, and desert areas. Because they frequently forage for seeds on the ground, they prefer to have openings within the habitat. Horned larks appear to be attracted to disturbed areas, such as plowed fields, and graded areas. Threats to this species include habitat loss and fragmentation due to development, and predation. Within the study area, an individual was observed in 2005 (Figure 2-16).

Loggerhead Shrike – *Lanius ludovicianus*
Federal Status: None
State Status: Species of Concern
Not covered

The loggerhead shrike is a fairly common breeding species in San Diego County. It is found in all areas of San Diego except for the mountains. It can be found in a variety of dry, open habitats with sparse vegetation, including grasslands, pastures, agricultural fields, and orchards. They commonly use posts, fences, and utility lines as perches. Threats to the loggerhead shrike populations include habitat loss and degradation from urban development and changes in land use practices, pesticides, and competition with species that are more tolerant of human-induced changes. Prior to 2005, this species was documented from a couple of locations on the east side of the reservoir (Figure 2-16). This species was incidentally observed during 2005 and 2006 field surveys.

Osprey - *Pandion haliaetus*
Federal Status: None
State Status: Species of Concern

Ospreys are a widely distributed species in North America. They are fairly widespread, but in low density in winter and are relatively rare during the breeding season in San Diego County. Foraging habitat includes coastal estuaries and large lakes and reservoirs that support large fish populations. Ospreys may nest near these habitats in large dead-topped trees, snags, cliffs, or man-made structures that can support their large nests. In the mid 20th century, populations of this species were drastically affected by eating fish that were contaminated with the pesticide DDT, which resulted in their disappearance as a breeding species from southern California. Since the ban on the use of DDT within the United States, the osprey's numbers have rebounded. In 1997 ospreys nested in San Diego County for the first time since 1912. Each year since then there have been more nesting observations, some successful and some not (Unitt 2004). This species

is even more widespread in the County during the winter months, and is likely to be observed in most coastal wetlands and inland lakes and reservoirs. Ospreys were observed throughout the site (always near the water) on many occasions during the 2005 and 2006 biological surveys (Figure 2-16).

Rufous-crowned Sparrow - *Aimophila ruficeps canescens*
Federal Status: None
State Status: Species of Concern

The rufous-crowned sparrow is a common resident of scrub habitats of the coastal plain and foothills of southern California and Baja California, Mexico. It is locally common in open coastal sage scrub in San Diego County, and often occurs on slopes that are steep, sparsely vegetated, and rocky or recently burned. Urban development is greatest threat to this species due to the loss, degradation, and fragmentation of coastal sage scrub habitat and associated edge effects. During surveys conducted prior to 2005, this species was observed frequently around the entire perimeter of the reservoir. Observations of this species were in similar locations but far less frequent in 2005 and 2006 surveys. It was only observed on Lowell Island prior to 2005 (Figure 2-16).

Western Bluebird - *Sialia mexicana*
Federal Status: None
State Status: None

The western bluebird is a common cavity-nesting songbird of oak woodland and pine forests throughout the western United States. It breeds in open woodlands of oaks, riparian deciduous trees, or conifers with herbaceous understory, and winters in a wide variety of open habitats at elevations below 4,000 feet. Bluebirds breed from the eastern reaches of lowland coastal valleys such as Lake Hodges, along the San Diego River east of Santee, and drainages east of Otay Reservoir, up through the foothills and montane areas where suitable habitat occurs. This species is vulnerable to competition with more aggressive introduced species (e.g., European starling, *Sturnus vulgaris,* and house sparrow, *Passer domesticus*) for scarce nesting cavities (McLaren 1963; Zeleny 1969; Patterson 1979). However, in San Diego County, this species appears to be extending its range, successfully colonizing urban areas and adapting to novel nest sites such as nest boxes and certain species of palms (Unitt 2004). During the 2005 field surveys conducted by TAIC, one individual was observed in open woodland within the study area. The exact location of this incidental observation was not mapped.

White-tailed Kite – *Elanus leucurus*
Federal Status: None
State Status: Fully Protected

The white-tailed kite once ranged from Georgia to Florida, across the southern United States and northern Mexico, to California and Oregon. The population was decimated by hunting during the 1800s and early 1900s. By the 1920s, only a remnant population of approximately 70 pairs remained in an isolated area of central California. Protection by the Migratory Bird Treaty Act, education, and changes in farming practices, were all likely contributing factors to the recovery of this species. The white-tailed kite is a permanent resident in western San Diego County. It prefers riparian woodland adjacent to grasslands, where it hunts for voles and meadow mice. It roosts communally, and nests in large trees, such as coast live oaks, or occasionally in shrubs such, as toyon or scrub oak. Within the survey area, this species was observed at the southeastern end of the finger leading to Kimball Valley (Figure 2-16). Observations of this species were not made prior to 2005.

Yellow-breasted Chat - *Icteria virens*
Federal Status: None
State Status: Species of Concern

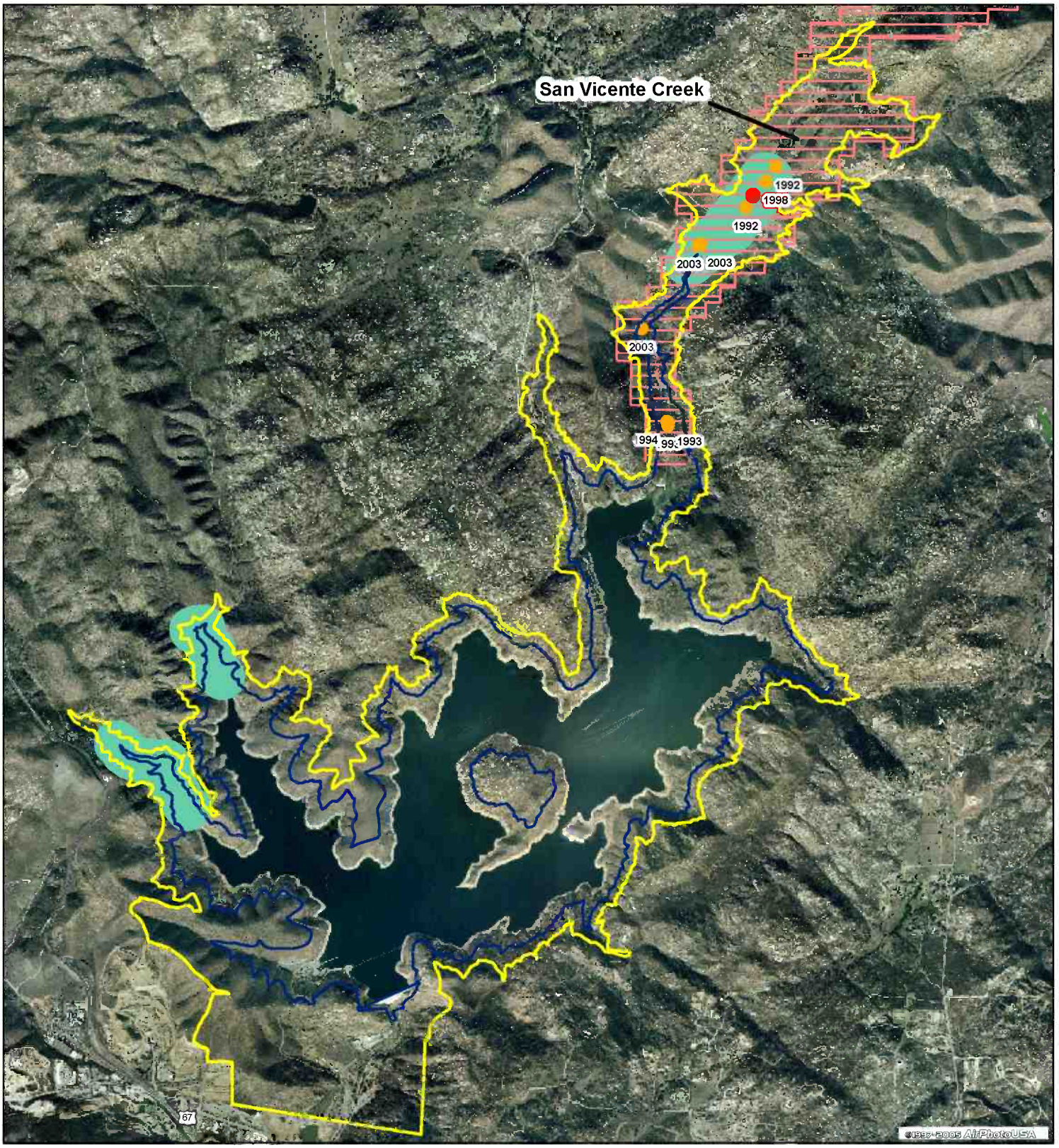
The yellow-breasted chat is a migratory species, arriving in San Diego County around April and departing by late September for wintering grounds in Mexico and Guatemala. This species requires dense riparian thickets of willows, vine tangles, and dense brush associated with streams, swampy ground and the borders of small ponds (Small 1994). Some taller trees (e.g., cottonwoods) are required for song perches (Dunn and Garrett 1997). It is most often found in areas in early stages of succession, as opposed to young and mature forests (Melhop and Lynch 1986). Loss and degradation of riparian habitat have caused a marked decline in the breeding population in recent decades in California. Another threat to this species includes potential nest predators such as western scrub jays (*Aphelocoma californica*), dusky-footed woodrats, raccoons, and several species of snakes. Additionally, chats are a frequent host of the brown-headed cowbird (Burhans and Thompson 1999). The yellow-breasted chat was observed in riparian areas within the Proposed Action study area.

Southern Mule Deer - *Odocoileus hemionus fuliginata*
Federal Status: None
State Status: None

Mule deer are presently widespread throughout undeveloped portions of western San Diego County, although their numbers may be declining in the county. Deer require relatively large, undisturbed tracts of chaparral, coastal sage scrub, and mixed grassland/shrub habitats (Padley 1992). The southern mule deer is not threatened with extinction within its range, but the present checkerboard of private property distribution in western San Diego County and associated urbanization could result in local extirpation without appropriate conservation measures. Roads are a significant source of direct mortality and habitat fragmentation. Additionally, mule deer are an important prey for mountain lions. Mule deer were observed at many locations throughout the study area, including three individuals on Lowell Island (Figure 2-17); however, most of these incidental observations were not mapped. Additionally, numerous deer trails traverse the area. Because the Cedar Fire opened up the chaparral and coastal sage scrub habitat, it is possible that mule deer are more abundant now than before the fire.

C. MSCP Covered Species

The following section described species that are covered by the City of San Diego's MSCP that are not included in the above discussion under listed or non-listed species. ~~Sixteen~~ Fourteen of the plant and animal species that have been documented within the study area are covered by the MSCP (Table 2-5). ~~Ten~~ Nine of these were observed by TAIC biologists during the 2005 and 2006 survey season. Out of these MSCP-covered species, only southern mule deer and western bluebird are neither listed as threatened or endangered or as otherwise sensitive. Lakeside ceanothus, observed outside the study area, has been identified by the MSCP as a narrow endemic species, which is a species that is confined to a specific geographic region, soil type, and/or habitat. This species is considered a potentially occurring species (see Table 2-6).



Legend

- Elevated Spillway Crest (766 AMSL)
- Arroyo Toad (TAIC 2005 survey)
- Arroyo Toad (USFS, USFWS, ESP surveys prior to 2005)
- USFWS Arroyo Toad Critical Habitat - Excluded Essential Habitat
- Survey Area (mapped suitable habitat plus a 500-foot buffer)

Basemap Legend

- Study Area

N

Feet

0 3,025

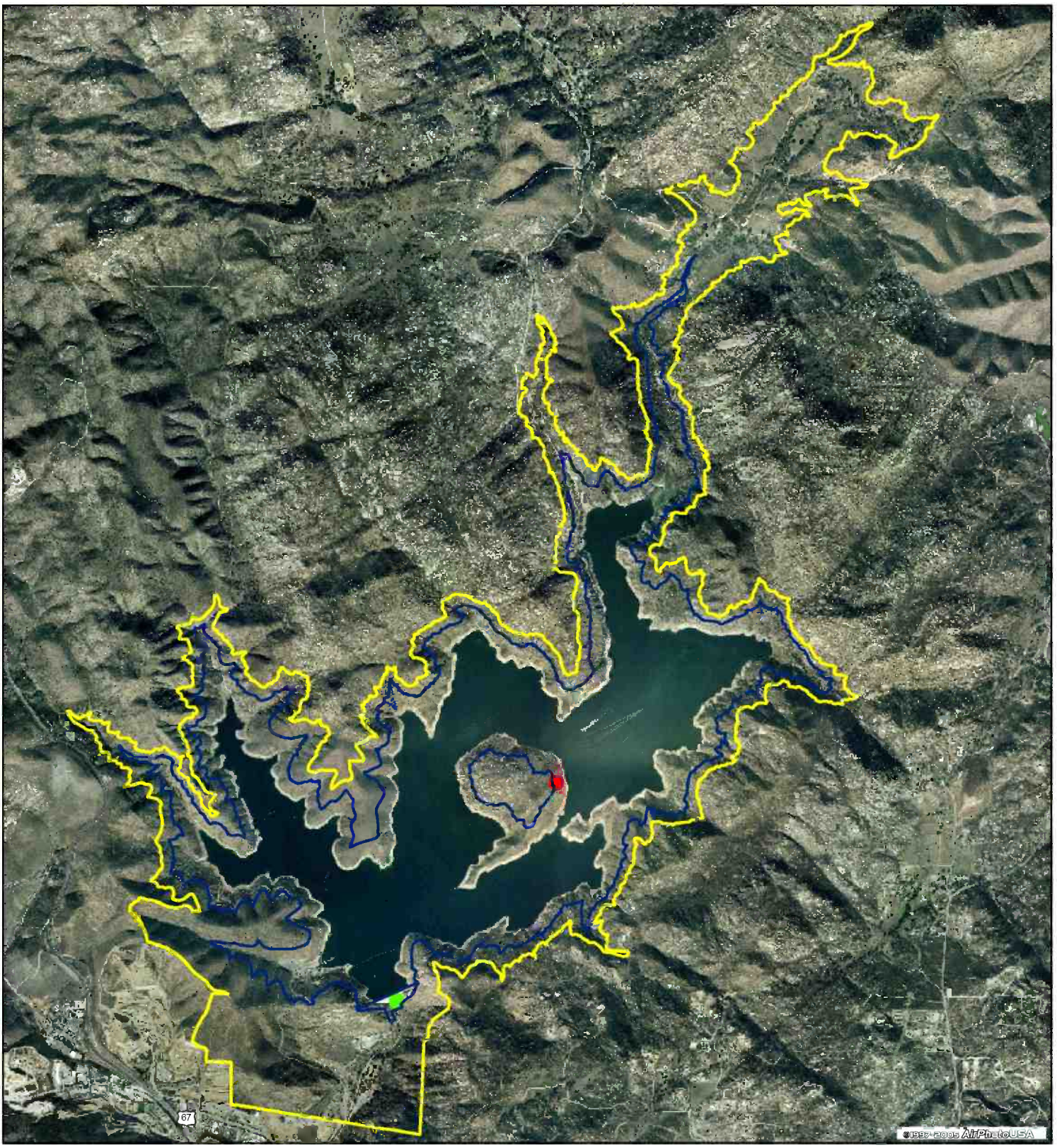
TAIC

Carryover Storage and San Vicente Dam Raise Project
Arroyo Toad Locations and Survey Areas

Figure 2-10

gist\projects\sanvicente\plots\figures\BTR\TE Arroyo Toad.mxd

Date: Apr 26, 2007



Legend

- Elevated Spillway Crest (766 AMSL)
- Bald Eagle (1994)
- Peregrine Falcon (1994)

Basemap Legend

- Study Area

N

Feet

0 3,025

Source: ESP 1994 surveys.

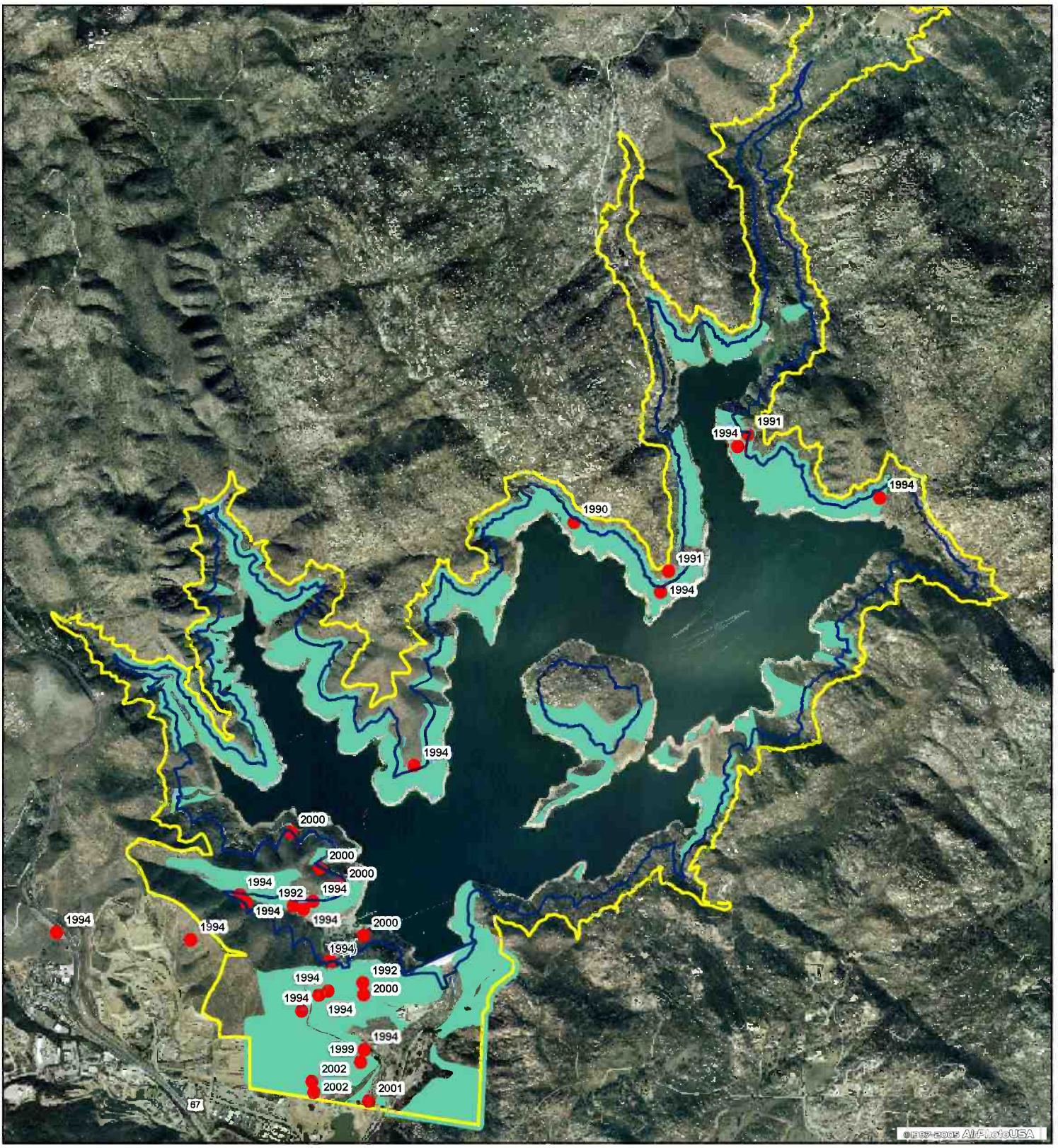
TAIC

Carryover Storage and San Vicente Dam Raise Project
Bald Eagle and Peregrine Falcon Locations

Figure 2-11

gist\projects\sanvicente\plots\figures\BTR\TE Eagle and Falcon.mxd

Date: Apr 26, 2007



Legend

- Elevated Spillway Crest (766 AMSL)
- California Gnatcatcher
- Survey Areas (mapped coastal sage scrub)

Basemap Legend

- Study Area

N

Feet

0 2,500

Note: Gnatcatchers were not detected during the 2006 protocol surveys.
Species Sources: ESP species database, CNDDB, Bird Atlas, SANDAG Regional Species database.
Vegetation Sources: ESP vegetation mapping, TAIC 2005/2006 vegetation mapping.

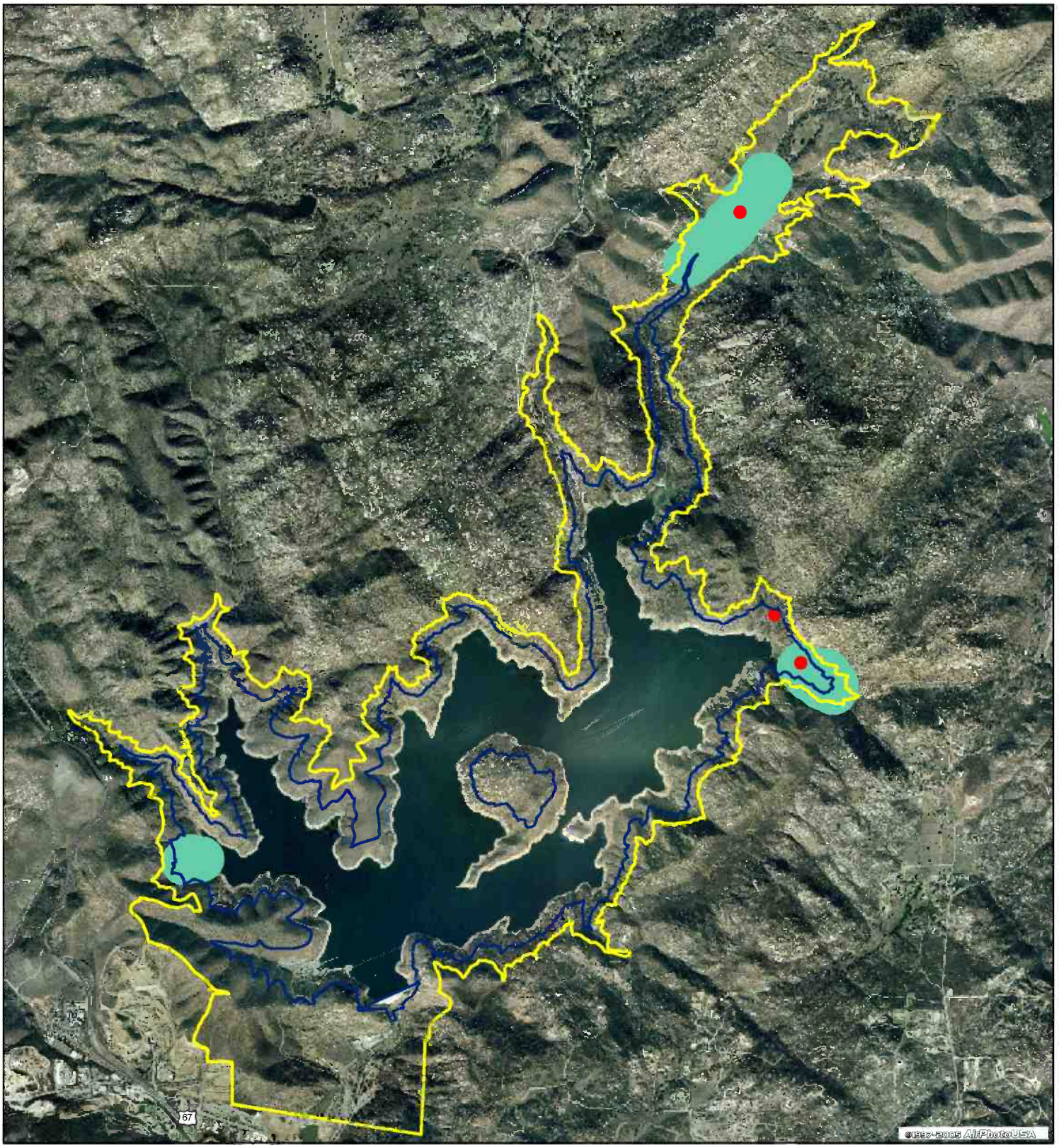
TAIC

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

Figure 2-12

gist\projects\sanvicente\plots\figures\BTR\TE Gnatcatcher.mxd

Date: Apr 26, 2007



Legend

- Elevated Spillway Crest (766 AMSL)
- Least Bell's Vireo (observed in 2005)
- Survey Area (mapped suitable habitat plus a 500-foot buffer)

Basemap Legend

- Study Area

N

Feet

0 3,025

The vireo outside the originally determined survey area was observed multiple times.
Source: TAIC 2005 survey.

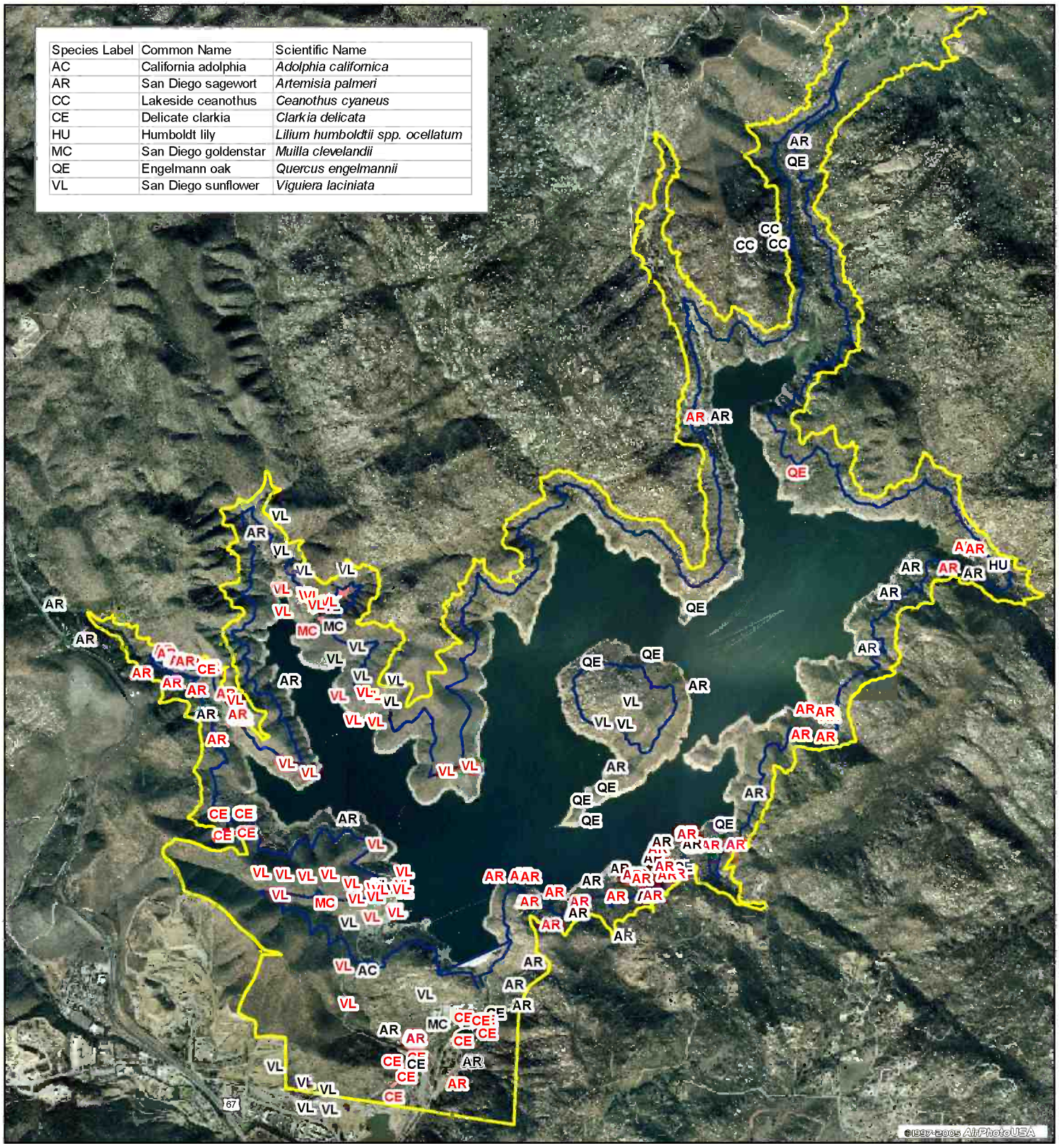
TAIC

Carryover Storage and San Vicente Dam Raise Project
Least Bell's Vireo Locations and Survey Area

Figure 2-13

gist\projects\sanvicente\plots\figures\BTR\TE Least Bells Vireo.mxd

Date: Apr 26, 2007



Species Label	Common Name	Scientific Name
AC	California adolphia	*Adolphia californica*
AR	San Diego sagewort	*Artemisia palmeri*
CC	Lakeside ceanothus	*Ceanothus cyaneus*
CE	Delicate clarkia	*Clarkia delicata*
HU	Humboldt lily	*Lilium humboldtii spp. ocellatum*
MC	San Diego goldenstar	*Muilla clevelandii*
QE	Engelmann oak	*Quercus engelmannii*
VL	San Diego sunflower	*Viguiera laciniata*

Legend

Elevated Spillway Crest (766 AMSL)

Plant Polygons

Red labels were surveyed in 2005/2006

Black labels are prior to 2005

Basemap Legend

Study Area

N

Feet

0 2,500

Sources: TAIC 2005 and 2006 field surveys, ESP species database, CNDDB, SANDAG Regional Species database.

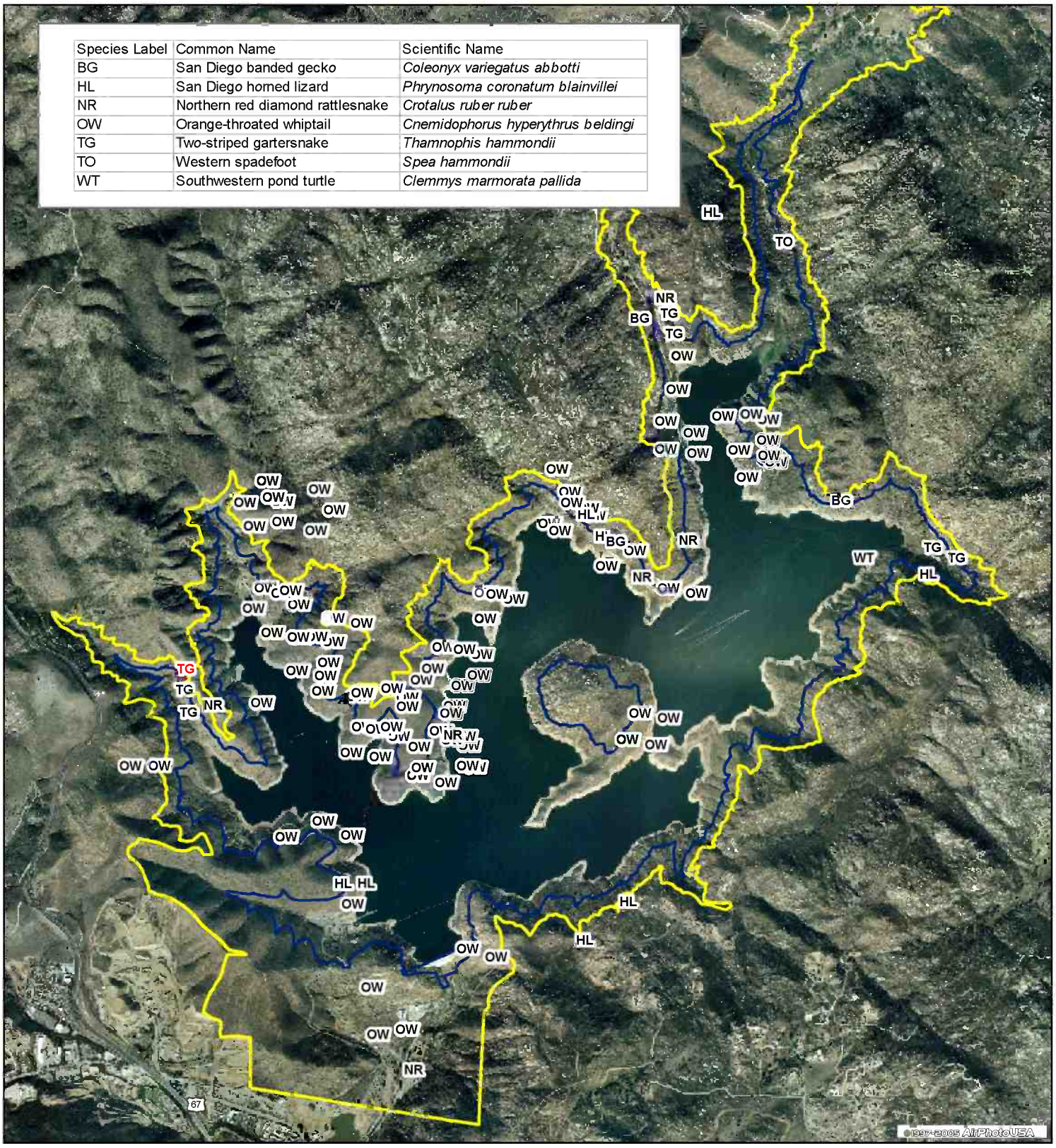
TAIC

Carryover Storage and San Vicente Dam Raise Project
Non-Listed Sensitive Plants

Figure 2-14

gist\projects\sanvicente\plots\figures\BTR\Rare Plants.mxd

Date: Apr 26, 2007



Species Label	Common Name	Scientific Name
BG	San Diego banded gecko	*Coleonyx variegatus abbotti*
HL	San Diego horned lizard	*Phrynosoma coronatum blainvillei*
NR	Northern red diamond rattlesnake	*Crotalus ruber ruber*
OW	Orange-throated whiptail	*Cnemidophorus hyperythrus beldingi*
TG	Two-striped gartersnake	*Thamnophis hammondii*
TO	Western spadefoot	*Spea hammondii*
WT	Southwestern pond turtle	*Clemmys marmorata pallida*

Legend

Elevated Spillway Crest (766 AMSL)

Red labels were surveyed in 2005/2006
Black labels are prior to 2005

Basemap Legend

Study Area

N

Feet

0 2,500

Sources: TAIC 2005 and 2006 field surveys, ESP species database, CNDDB, USFS, USFWS, SANDAG Regional Species database.

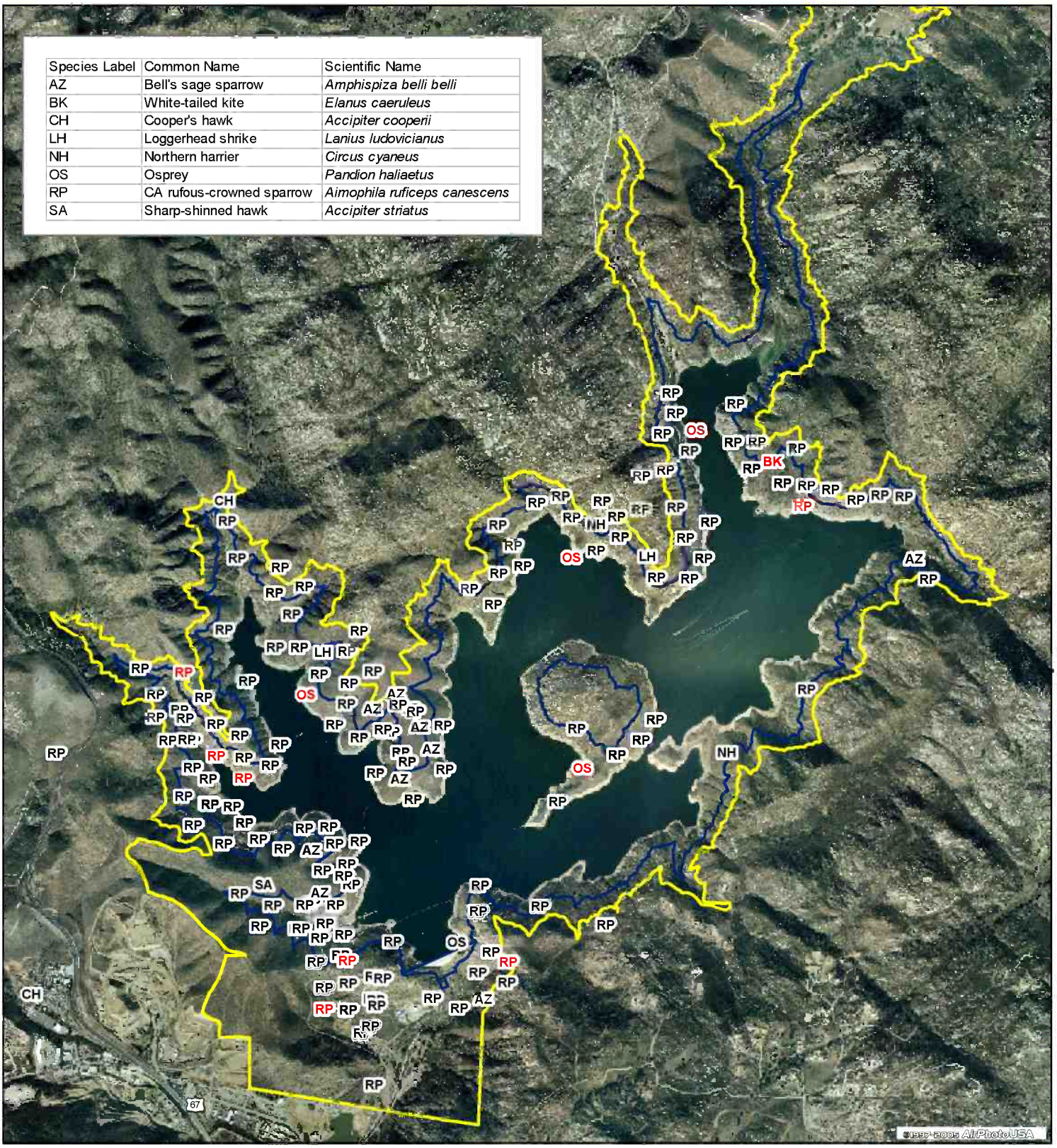
TAIC

Carryover Storage and San Vicente Dam Raise Project
Non-Listed Sensitive Amphibians and Reptiles

Figure 2-15

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

Date: Apr 26, 2007



Species Label	Common Name	Scientific Name
AZ	Bell's sage sparrow	*Amphispiza belli belli*
BK	White-tailed kite	*Elanus caeruleus*
CH	Cooper's hawk	*Accipiter cooperii*
LH	Loggerhead shrike	*Lanius ludovicianus*
NH	Northern harrier	*Circus cyaneus*
OS	Osprey	*Pandion haliaetus*
RP	CA rufous-crowned sparrow	*Aimophila ruficeps canescens*
SA	Sharp-shinned hawk	*Accipiter striatus*

Legend

Elevated Spillway Crest (766 AMSL)

Red labels were surveyed in 2005/2006

Black labels are prior to 2005

Basemap Legend

Study Area

N

Feet

0 2,500

Sources: TAIC 2005 and 2006 field surveys, ESP species database, CNDDB, Bird Atlas, SANDAG Regional Species database.

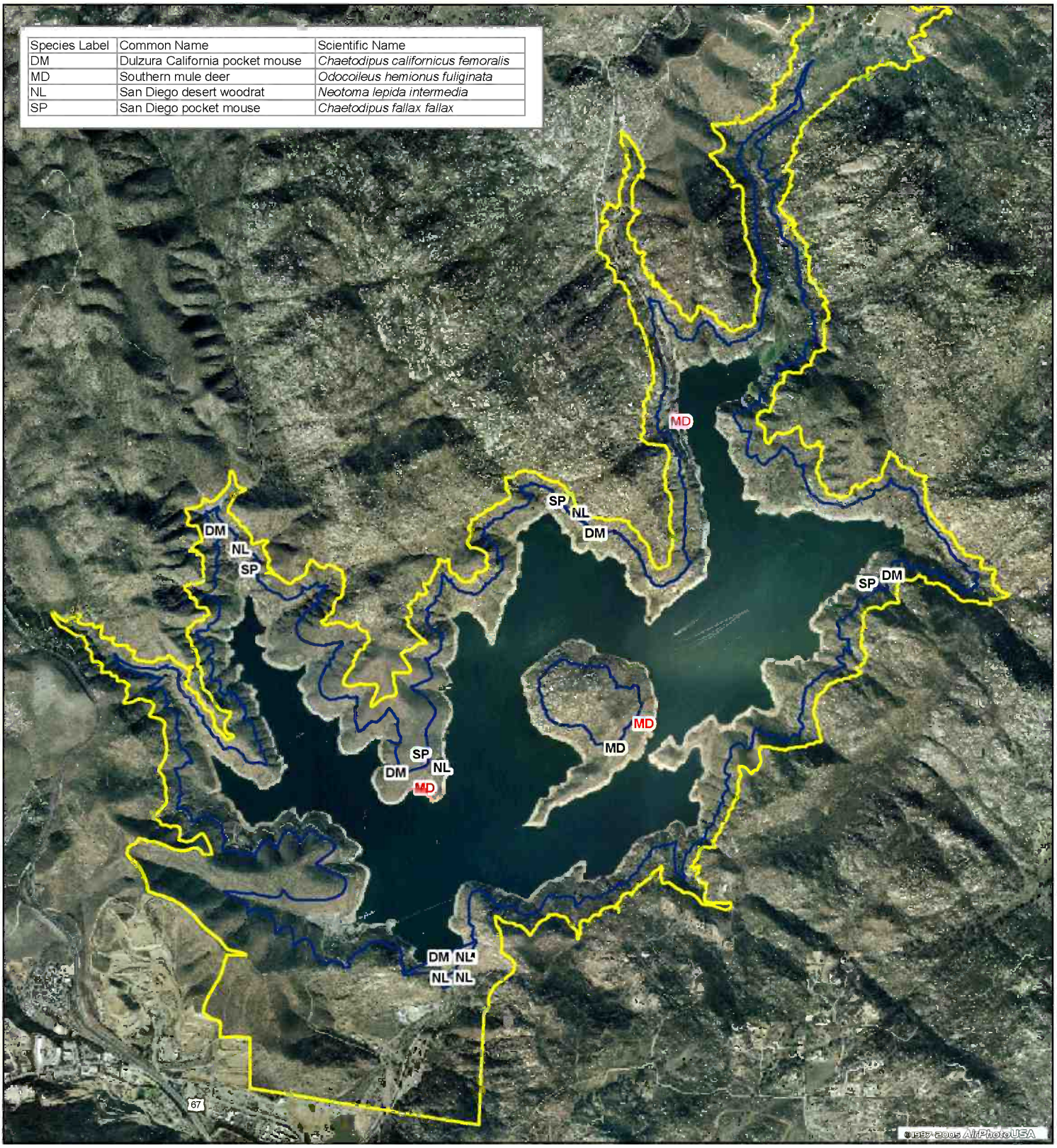
TAIC

Carryover Storage and San Vicente Dam Raise Project
Non-Listed Sensitive Birds

Figure 2-16

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

Date: Apr 26, 2007



Species Label	Common Name	Scientific Name
DM	Dulzura California pocket mouse	*Chaetodipus californicus femoralis*
MD	Southern mule deer	*Odocoileus hemionus fuliginata*
NL	San Diego desert woodrat	*Neotoma lepida intermedia*
SP	San Diego pocket mouse	*Chaetodipus fallax fallax*

Legend

Elevated Spillway Crest (766 AMSL)

Red labels were surveyed in 2005/2006

Black labels are prior to 2005

Basemap Legend

Study Area

N

Feet

0 2,500

Sources: TAIC 2005 and 2006 field surveys, ESP species database, Mammal Atlas, SANDAG Regional Species database.

TAIC

Carryover Storage and San Vicente Dam Raise Project
Non-Listed Sensitive Mammals

Figure 2-17

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

Date: Apr 26, 2007

~~C~~D. Potentially Occurring Sensitive Species

Table 2-6 presents a list of potentially occurring sensitive and MSCP-covered species based on species habitat preferences and distribution. Potentially occurring species are those that; (1) occur outside of, but within 3 kilometer of the study area, and (2) whose habitat preferences are consistent with available habitat within the San Vicente study area, but have not been documented in the study area. Three potentially occurring species are federal and/or state listed, and are therefore regulated by the FESA and CESA. The San Diego thornmint (*Acanthomintha ilicifolia*), Quino checkerspot butterfly (*Euphydryas editha quino*), and golden eagle (*Aquila chrysaetos*) have the potential to occur on site based on habitat preferences and distribution (see species accounts below); however, the San Diego thornmint and Quino checkerspot butterfly were not observed during the 2005 and 2006 field seasons. During the 2005 and 2006 surveys, an occupied golden eagle nest was observed above Kimball Valley at the top of a rocky ridge, but outside the SV 100K study area. The federally threatened California red-legged frog historically occurred in the survey area but is currently presumed extirpated from the county (San Diego Natural History Museum, Amphibian Checklist; U.S. Forest Service Database, 1958), and is therefore not addressed in this report.

~~Eighteen~~ Seventeen additional sensitive and/or MSCP covered species could also potentially occur within the study area. Additionally, the California red-legged frog historically occurred in the survey area but is currently presumed extirpated from the county (San Diego Natural History Museum, Amphibian Checklist; U.S. Forest Service Database, 1958), and is therefore not addressed in this report.

San Diego Thornmint – *Acanthomintha ilicifolia*
Federal Status: Threatened
State Status: Endangered
CNPS List: 1B
MSCP: Covered, Narrow Endemic

San Diego thornmint is restricted in distribution to San Diego County and northern Baja California, Mexico, and is considered to be a narrow endemic species. It occurs on calcareous marine sediments, clay, or gabbro-derived soils and is associated with coastal sage scrub, chaparral, and grassland (Reiser, 1994). It is an annual plant that may experience yearly fluctuations in population size and location. This species appears to be an out-crosser that is insect-pollinated, and may rely on animal vectors, in part, for seed dispersal. Threats to this species include cumulative habitat loss and degradation,

Table 2- 6. Potentially Occurring Sensitive Species

Common Name[1]	Species Name	Status[2]	MSCP Covered
Plants			
Felt-leaved Monardella	*Monardella hypoleuca* ssp. *lanata*	--/SSC, List 1B	Yes, NE[3]
Mission Canyon Blue-Cup	*Githopsis diffusa* ssp. *filicaulis*	--/SSC, List 3	No
Orcutt's Brodiaea	*Brodiaea orcuttii*	--/SSC, List 1B	Yes
San Diego Thornmint	*Acanthomintha ilicifolia*	FE/SE	Yes, NE[3]
San Miguel Savory	*Satureja chandleri*	--/SSC, List 1B	Yes
Summer Holly	*Comarostaphylis diversifolia var. diversifolia*	--/SSC, List 1B	No
Lakeside Ceanothus	*Ceanothus cyaneus*	--/SSC, List 1B	Yes, NE[3]
Invertebrates			
Harbison's Dun Skipper[4]	*Euphyes vestries harbisoni*	--/--	No
Quino Checkerspot Butterfly	*Euphydryas editha quino*	FE/SSC	No
Amphibians			
California Red-legged Frog	*Rana aurora draytonii*	FT/--	Yes
Reptiles			
California Legless Lizard	*Aniella pulchra pulchra*	--/SSC	No
Coast Patch-nosed Snake	*Salvadora hexalepis virgultea*	--/SSC	No
Western Skink	*Eumeces skiltonianus interparietalis*	--/SSC	No
Birds			
Golden Eagle	*Aquila chrysaetos*	BEPA/SFP	Yes
Long-eared Owl	*Asio Otus*	--/SSC	No
Merlin	*Falco columbarius*	--/SSC	No
Mammals			
American Badger	*Taxidea taxus*	--/SSC	Yes
Black-tailed Jackrabbit	*Lepus californicus bennettii*	--/SSC	No
Mountain Lion	*Puma concolor*	--/--	Yes
San Diego Pocket Mouse	*Chaetodipus fallax fallax*	--/SSC	No
Small-footed Myotis[5]	*Myotis ciliolabrum*	--/--	No

[1] **Data Source**: The most recent versions of the following databases were queried within 3 kilometer of the study area –ESP, SANDAG, CNDDB, SDNHM, USFWS, CDFG, and USFS.
[2] **Status**: The format for the species status is [federal status] / [state and/or CNPS status]. A double dash "--" means that there is no official sensitivity status. Federal: FE – endangered, FT – threatened, BEPA – Bald Eagle Protection Act, FD – federally delisted. State: SE – endangered, ST – threatened, SR – rare, 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] **NE** = Narrow Endemic. Species that are confined to a specific geographic region, soil type, and/or habitat
[4] Considered sensitive by CNDDB: G5T1S1 (*E. v. harbisoni* is found only in CA and is extremely endangered throughout its range).
[5] Considered sensitive by CNDDB: G5S2S3 (Global Ranking G5 = Common through worldwide range; State Ranking S2 = Endangered within California; S3 = Restricted range within California).

trampling, illegal dumping, livestock grazing, invasive exotic plants, collecting, edge effects, and, possibly, genetic isolation and herbivory. Although this species has not been observed in the study area, it has been documented at three locations within 3 kilometer.

Quino Checkerspot Butterfly – *Euphydryas editha quino*
Federal Status: Endangered
State Status: None

Currently, the distribution of the Quino checkerspot butterfly is limited to western Riverside County, southern San Diego County, and northern Baja California. This species is associated with open habitats supporting its larval host plants, including sage scrub, open chaparral, native grasslands, forblands, and vernal pools. The Quino checkerspot is generally found at sites where high densities of the host plants occur (USFWS 2002). The primary larval food plant for this species is dwarf plantain *(Plantago erecta)* (Mattoni et al. 1997). Field observations and laboratory studies indicate that other host plants may be used, including owl's clover (*Castilleja exserta*), southern Chinese houses (*Collinsia concolor*), and birds beak (*Cordylanthus rigidus)* (observations by G. Pratt, 1999). Threats limiting the distribution of this species include loss of habitat to development and degradation of habitat.

Suitable habitat for Quino checkerspot currently exists within the study area. The 2003 Cedar fire burned 98 percent of the study area and resulted in the current suitable habitat conditions. Although suitable habitat currently exists within the project footprint, it is expected that the habitat will revert to pre-fire conditions (dense, closed-canopy chaparral) and no longer support sizeable areas of suitable Quino checkerspot habitat. Sensitive butterfly surveys conducted for the ESP project in 1992 and 1993, prior to the species' listing, concluded that a total of 7.6 acres of Quino checkerspot habitat existed at that time, based on the presence of *Plantago erecta* and *Plantago insularis*. However, we understand now that Quino checkerspot habitat is made up of more complex habitat components beyond these plantain species. Therefore, conclusive pre-fire Quino checkerspot habitat assessment data are not available.

Despite the presence of numerous patches of good quality habitat, no Quino checkerspot were detected in the survey area during the 2006 field season. However, in May 2000, Fred Sproul reported a single Quino checkerspot northwest of Foster Canyon approximately 1 kilometer from the study area (M. Klein pers. comm. 2005) (Figure 2-19). Other sightings were reported by David Faulkner within the ridgelines of Sycamore Canyon County Open Space Preserve (approximately 3 kilometer west of study area) in March 2005, and by Dudek and Associates in March 2005 within the boundary of Fanita

Ranch in northern Santee (approximately 7 kilometer southwest of study area) (M. Klein pers. comm. 2005). Figure 2-18 shows the suitable Quino checkerspot habitat within the study area (as mapped in 2006) and the locations of the Sproul and Faulkner observations. The observation by Dudek and Associates is not shown.

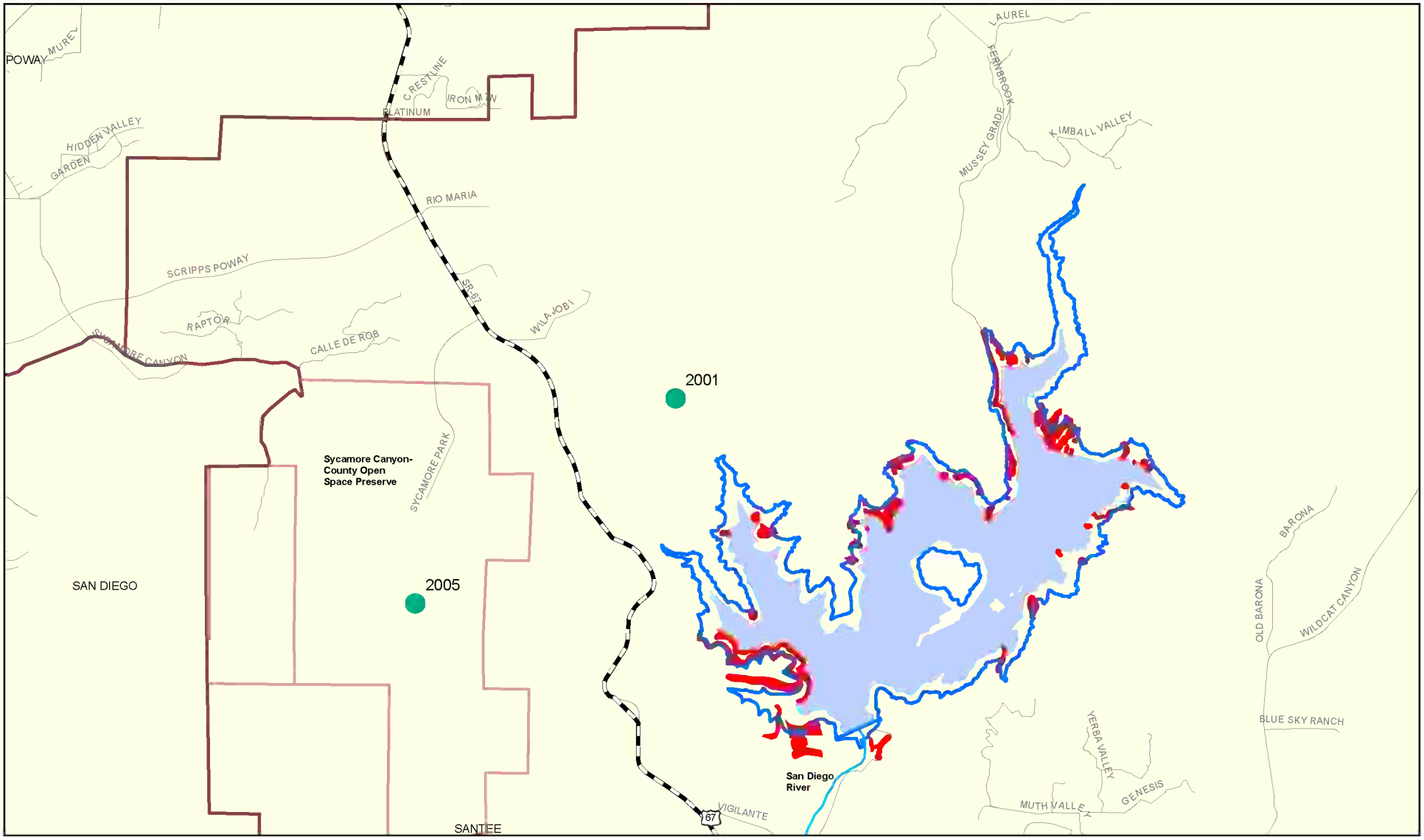
Golden Eagle - *Aquila chrysaetos*
Federal Status: Bald and Golden Eagle Protection Act
State Status: Species of Concern, Fully Protected

Golden eagles are distributed throughout western North America. Although eagle observations are scattered throughout the County, sightings have become rarer in recent years. Golden eagle foraging habitat includes extensive areas of open sage scrub, grasslands, recently burned chaparral, agricultural fields, and oak woodlands and forest. This species nests on cliffs and in large trees capable of supporting a large nest platform in open areas. Human disturbance at active nest sites, loss of foraging habitat, shooting, lead poisoning, and electrocution on power poles (Snow 1973; Scott 1985; Johnsgard 1990) are known factors impacting golden eagle populations. During 2005 and 2006 surveys, an occupied nest was observed above Kimball Valley at the top of a rocky ridge, but outside of the study area. During surveys conducted prior to 2005, a golden eagle was observed south of the occupied nest observed in 2005 and 2006.

2.4.5 Habitat Linkages and Wildlife Movement Corridors

Habitat Linkages

Habitat linkages are patches of native habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. Unlike a wildlife corridor, individual animals may not routinely move through a habitat linkage; however, the linkage is essential as a route for gene flow and long-term dispersal. Habitat linkages may serve both as habitat and avenues of gene flow for small animals such as reptiles, amphibians, and rodents. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat "islands" that function as stepping stones for dispersal and movement (especially for birds and flying insects).



Legend

- Elevated Spillway Crest (766 AMSL)
- Historical Quino Checkerspot Butterfly Locations within 3 km of Study Area
- 2006 Survey Area

Source: USFWS 2001, 2005

Basemap Legend

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

N

Feet

0 4,300

TAIC

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

Figure 2-18

gist\projects\sanvicente\plots\figures\BTR\TE Quino.mxd

Date: Apr 26, 2007

Several coordinated efforts have been made to identify critical wildlife movement corridors and habitat linkages throughout the state of California (CWC 2000), within San Diego County (Ogden 1996b), and in the U.S./Mexico border region (CBI 2003a; CBI 2004). Conserved lands around the perimeter of San Vicente Reservoir form an important east/west habitat linkage that connects protected lands in the Sycamore Canyon/Goodan Ranch Open Space Preserves to Oak Oasis Open Space Preserve and Cleveland National Forest (Ogden 1996b). Additionally, coastal sage scrub habitat south of the dam serves as a habitat linkage for California gnatcatcher dispersal (Ogden, 1996a).

Wildlife Movement Corridors

Wildlife movement corridors are linear features that connect large patches of natural open space and provide habitat conditions for the movement of small and large animals. They serve as avenues for dispersal and migration of animals, as well as the distribution of plants (e.g., via wildlife vectors). Wildlife corridors contribute to population viability in several ways. For example, they (1) assure continual exchange of genes between populations which helps maintain genetic diversity; (2) provide access to adjacent habitat areas representing additional territory for foraging and mating; (3) allow for a greater carrying capacity; and (4) provide routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes.

Regionally, the San Vicente Reservoir is linked via Wildcat Canyon with large expanses of open space located east of the reservoir, including the Iron Mountain Preserve Area, El Capitan County Open Space Preserve and El Capitan Reservoir, and Cuyamaca Rancho State Park/Cleveland National Forest (EDAW 2004). North-south wildlife movement in the area occurs along Sycamore, Clark, Slaughterhouse and Foster Canyons and along San Vicente Creek between San Diego River and undeveloped lands north of San Vicente Reservoir (CBI 2003b; Ogden 1996a). Culverts along State Route 67 (SR 67), south of Scripps-Poway Parkway, serve as east-west corridors that connect the Sycamore Canyon/Goodan Ranch open space preserves with the undeveloped lands east of SR 67. The San Diego Tracking Team monitored these culverts quarterly in 2002 and found that they were being used by large mammals (e.g., bobcats, coyotes) (CBI 2003a). The reservoir provides drinking water for these animals. From the reservoir, animals can continue eastward along Padre Barona Creek and other, smaller, drainages (Ogden, 1996a).

2.5 ENVIRONMENTAL CONSEQUENCES

This section describes the potential impacts to biological resources, habitat linkages, and wildlife movement corridors that could result from implementation of the Proposed Action. Potential project impact areas consist of the areas (1) south and west of the dam, (2) between elevations 650-664 AMSL, and (3) between elevations 710-766 AMSL. Impact acreages for the three on-site quarry options are given in Tables 2-7 to 2-12 in the following order, separated by a forward slash: Southwest Quarry Option/Southeast Quarry Option/Marina Quarry Option. These impact acreages assume that only one of the quarry options would be constructed; impacts are listed for each quarry option plus the Primary Impact Area.

Special attention will be given to biological resources, specifically sensitive habitats and vegetation communities, jurisdictional wetlands and waters, and sensitive plant and animal species. Each component of the Proposed Action, and each quarry option, were analyzed for potential direct, indirect, permanent, and temporary impacts. The significance of these potential impacts is assessed based on the significance thresholds outlined in this document. The following sections are organized in the order that these significance criteria appear in Section 1.4.2.

2.5.1 Biological Resources

2.5.1.1 Vegetation Communities and Sensitive Habitats

Significance Criterion 1: *Would the Proposed Action have a substantial adverse effect on any riparian habitat, submerged vegetation, or other sensitive natural communities identified in policies, or regulations by the CDFG or USFWS.*

Direct Impacts

Implementation of the Proposed Action would permanently impact an estimated ~~15.98~~ 16.97 acres of riparian and wetland habitat, and an estimated low of ~~371.81~~370.81 acres or an estimated high of ~~387.14~~ 387.95 acres of upland habitat (depending on which quarry option (SW Quarry Option, SE Quarry Option, and Marina Quarry Option) is implemented) (Table 2-7; Figures 2-20 to 2-23). Potential temporary impacts include an estimated low of 5.23 acres or an estimated high of 7.40 acres of riparian and wetland habitat and an estimated low of ~~108.53~~ 106.72 acres or an estimated high of 123.39 acres of upland habitat (Table 2-8; Figures 2-20 to 2-23). Riparian vegetation communities are considered sensitive, and, therefore, permanent and temporary impacts to these habitats would be significant. All

riparian habitats are also regulated by CDFG. Table 2-9 and 2-10 categorizes these impacts into "wetlands" and "unvegetated Waters of the State," to be consistent with agency terminology.

Submerged aquatic vegetation is not a vegetation type included in the Holland system (Holland 1986, Oberbauer 2005), and is therefore not included in Tables 2-7 to 2-12. Approximately 20 acres of this habitat type was observed occurring at the water level below the OHWM; at 650 feet ASML, it is estimated that the aquatic vegetation band would amount to 31 acres. The aquatic plants and algae that occur in this band at the water's edge would be affected during the period of drawdown (Jones & Stokes 2006). Submerged aquatic vegetation provides habitat and foraging opportunities for aquatic insects, fish, and other wildlife. Between the time of the drawdown, and when the reservoir refills after the dam is raised, a temporary reduction of this resource would occur. However, the propagules necessary for colonization of aquatic plants and algae would remain in the receding waters. As the reservoir begins to refill, the band of aquatic vegetation is expected to reestablish itself at the new water surface level, which would be maintained at approximately 590 feet AMSL during the dam raise construction period. Because the circumference of the higher reservoir level will be greater than current conditions, implementation of the Proposed Action may result in a net benefit to this resource by increasing the area available for colonization. Therefore, effects to submerged aquatic vegetation during drawdown are less than significant.

Many native upland habitats are considered important or sensitive due to their potential to support sensitive species, their limited regional distribution, and their continued reduction and fragmentation from development. A number of upland habitat types are found within the San Vicente survey area including– coastal sage scrub, chaparral, non-native grassland, coast live oak woodland, eucalyptus woodland, disturbed habitat, and urban and developed.

Diegan coastal sage scrub (in this document referred to as coastal sage scrub), which provides habitat for the federally threatened California gnatcatcher, would be permanently impacted (an estimated low of ~~195.49~~ 195.48 acres to an estimated high of ~~209.58~~ 209.57 acres; Table 2-7; Figures 2-20 to 2-23) and temporarily impacted (an estimated low of 55.31 acres or an estimated high of 62.38 acres; Table 2-8; Figures 2-20 to 2-23). Temporary impacts will be revegetated (including the Marina Quarry contours). All of these impacts are significant.

Although chaparral is regionally more abundant than many other upland communities, it provides habitat for numerous sensitive species within the San Vicente footprint,

~~including Lakeside ceanothus,~~ and non-chaparral obligates such as delicate clarkia, orange-throated whiptail, coast horned lizard, and rufous-crowned sparrow. In order to obtain the benefits of the NCCP Act, the City and County of San Diego regulate impacts to chaparral as one of their conservation measures to implement their respective MSCP Subarea plans.

However, chaparral is regionally and locally well distributed and, per California Government Code Section 53091(d) and (e), the Water Authority is not subject to measures contained in the City and County MSCPs and local land use plans, policies, and ordinances. Permanent impacts to chaparral due to implementation of the Proposed Action would affect approximately 0.02 percent of the total acreage of chaparral to be conserved under the City of San Diego's MSCP (10,424 acres), as reported in the City's annual reports. Therefore, all estimated permanent impacts (~~151.96~~ 152.23 acres) and temporary impacts (an estimated low of 26.71 acres or an estimated high of 41.52 acres) to chaparral habitat are less than significant.

Non-native grassland within the San Vicente footprint provides habitat for foraging raptors; however, this habitat is regionally and locally well distributed. Impacts are small relative to the amount available in the region. No sensitive species were observed within the potentially affected non-native grasslands. Therefore, the estimated 0.04 acres of permanent impacts (Table 2-7; Figures 2-20 to 2-23) and the estimated 2.02 acres of temporary impacts (Table 2-8; Figures 2-20 to 2-23) to non-native grassland are less than significant.

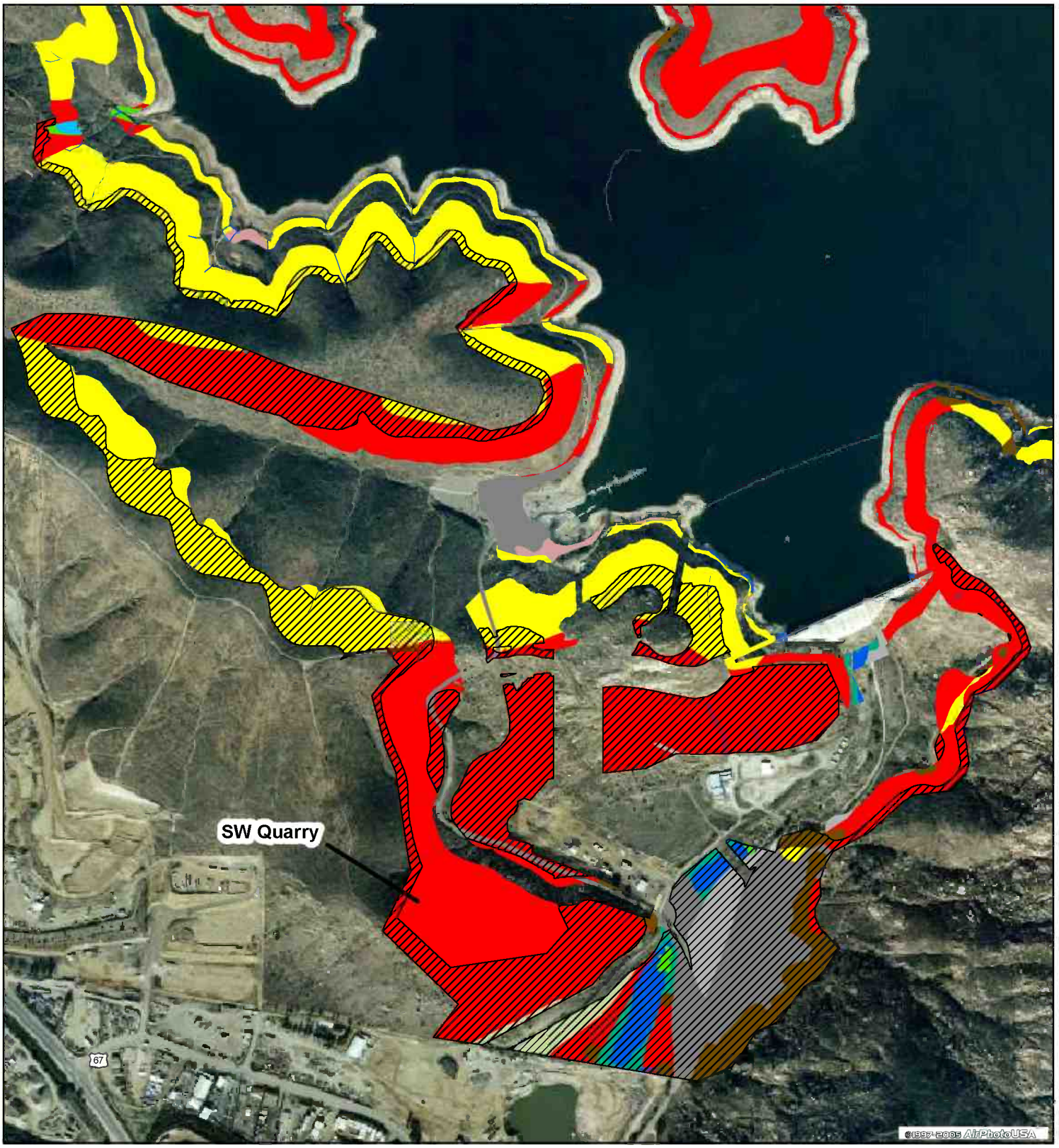
Additionally, impacts to coast live oak woodland, which provides nesting and foraging habitat for sensitive raptors and other woodland birds, are significant as well. These impacts include an estimated low of ~~18.23~~ 16.97 acres or an estimated high of ~~19.47~~ 19.94 acres of permanent impacts (Table 2-7; Figures 2-20 to 2-23) and an estimated low of ~~5.93~~4.69 acres or an estimated high of ~~6.42~~ 5.93 acres of temporary impacts (Table 2-8; Figures 2-20 to 2-23).

Eucalyptus woodland can provide foraging opportunities for native wildlife, such as hummingbirds and woodpeckers, and nesting and roosting sites for breeding birds and raptors; however, eucalyptus woodland is not native to Southern California and is well distributed. In addition, some eucalyptus species tend to be invasive. Permanent impacts include an estimated 1.59 acres (Table 2-7; Figures 2-20 to 2-23), and an estimated 0.13 acre of temporary impacts (Table 2-8; Figures 2-20 to 2-23) occur only with implementation of the Marina/Quarry option. These impacts are less than significant.

Table 2-7. Permanent Direct Impacts to Vegetation Communities within the SV 100K Footprint[1].

Vegetation Community[2]	South and West of Dam (Acres)[3,4]	650-664 AMSL (Acres)[3,4]	710-766 AMSL (Acres)[3,4]	Total Acres[3,4]
Riparian/Wetlands Communities				
~~Unvegetated Channel/Lakeshore Fringe (13200)~~	~~0.34/0.34/0.34~~	~~2.37/2.37/2.37~~	~~3.17/3.17/3.17~~	~~5.88/5.88/5.88~~
Unvegetated Channel/Lakeshore Fringe (13200)	0.34/0.34/0.34	1.88/1.88/1.88	4.71/4.71/4.71	6.93/6.93/6.93
~~Freshwater Marsh (52410)[54]~~	~~0/0/0~~	~~0.01/0.01/0.01~~	~~0.65/0.65/0.65~~	~~0.66/0.66/0.66~~
Freshwater Marsh (52410)[5]	0/0/0	0.01/0.01/0.01	0.74/0.74/0.74	0.75/0.75/0.75
~~So. Coast Live Oak Riparian Forest (61310)[54]~~	~~0/0/0~~	~~0.51/0.51/0.51~~	~~5.08/5.08/5.08~~	~~5.59/5.59/5.59~~
So. Coast Live Oak Riparian Forest (61310)[5]	0/0/0	0.57/0.57/0.57	6.00/6.00/6.00	6.57/6.57/6.57
~~So. Cottonwood-Willow Riparian Forest (61330)[54]~~	~~0/0/0~~	~~0.06/0.06/0.06~~	~~0.49/0.49/0.49~~	~~0.55/0.55/0.55~~
So. Cottonwood-Willow Riparian Forest (61330)[5]	0/0/0	0/0/0	0.21/0.21/0.21	0.21/0.21/0.21
~~Mulefat Scrub (63310)[54]~~	~~0.29/0.29/0.29~~	~~0.08/0.08/0.08~~	~~0.09/0.09/0.09~~	~~0.46/0.46/0.46~~
Mulefat Scrub (63310)[5]	0.29/0.29/0.29	0.34/0.34/0.34	0.09/0.09/0.09	0.72/0.72/0.72
~~Southern Willow Scrub (63320)[54]~~	~~0/0/0~~	~~0.88/0.88/0.88~~	~~1.96/1.96/1.96~~	~~2.84/2.84/2.84~~
Southern Willow Scrub (63320)[5]	0/0/0	0.45/0.45/0.45	1.34/1.34/1.	1.79/1.79/1.79
~~***Total Riparian/Wetland Communities***~~	~~***0.63/0.63/0.63***~~	~~***3.91/3.91/3.91***~~	~~***11.44/11.44/11.44***~~	~~***15.98/15.98/15.98***~~
Total Riparian/Wetland Communities	***0.63/0.63/0.63***	***3.25/3.25/3.25***	***13.09/13.09/13.09***	***16.97/16.97/16.97***
Upland Communities				
~~Diegan Coastal Sage Scrub (32500)[54]~~	~~26.36/31.51/17.42~~	~~37.81/37.81/37.81~~	~~140.26/140.26/140.26~~	~~204.43/209.58/195.49~~
Diegan Coastal Sage Scrub (32500)[5]	26.36/31.51/17.42	37.80/37.80/37.80	140.26/140.26/140.26	204.42/209.57/195.48
~~Chaparral (37000)~~	~~5.73/5.73/5.73~~	~~25.94/25.94/25.94~~	~~120.29/120.29/120.29~~	~~151.96/151.96/151.96~~
Chaparral (37000)	5.73/5.73/5.73	26.51/26.51/26.51	119.99/119.99/119.99	152.23/152.23/152.23
Non-Native Grassland (42200)	0.04/0.04/0.04	0/0/0	0/0/0	0.04/0.04/0.04
~~Coast Live Oak Woodland (71160)[45]~~	~~0.48/1.72~~3.45/0.48	~~2.50/2.50/2.50~~	~~15.25/15.25/15.25~~	~~18.23/19.47/18.23~~
Coast Live Oak Woodland (71160)[45]	0.48/3.45/0.48	2.58/2.58/2.58	13.91/13.91/13.91	16.97/19.94/16.97
Eucalyptus Woodland (11100)	0/0/0	1.59/1.59/1.59	0/0/0	1.59/1.59/1.59
Disturbed Habitat (11300)	0.47/0.47/0.47	0/0/0	0/0/0	0.47/0.47/0.47
~~Urban/Developed (12000)~~	~~0.61/0.61~~0.69/0.61	~~3.27/3.27/3.27~~	~~0.15/0.15/0.15~~	~~4.03/4.03~~4.11/4.03
Urban/Developed (12000)	0.61/0.69/0.61	3.27/3.27/3.27	0.15/0.15/0.15	4.03/4.11/4.03
~~***Total Upland Communities***~~	~~***33.69/40.08~~41.89/24.75~~	~~***71.11/71.11/71.11***~~	~~***275.95/275.95/275.95***~~	~~***380.75/387.14/371.81***~~
Total Upland Communities	***33.69/41.89/24.75***	***71.75/71.75/71.75***	***274.31/274.31/274.31***	***379.75/387.95/370.81***
TOTAL PERMANENT, DIRECT IMPACTS	**34.32/40.71~~42.52~~/25.38**	~~**75.02/75.02/75.02**~~	~~**287.39/287.39/287.39**~~	~~**396.73/403.12/387.79**~~
TOTAL PERMANENT, DIRECT IMPACTS	**34.32/42.52/25.38**	**75.00/75.00/75.00**	**287.40/287.40/287.40**	**396.72/404.92/387.78**

[1] Excludes impacts permitted by ESP.
[2] Holland codes are given in parentheses.
[3] Acreages rounded to nearest hundredth decimal.
[4] Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option
[5] Vegetated communities considered to be a sensitive habitat based on the definition in Section 2.4.4.1.



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Unvegetated Channel/Lakeshore Fringe
- Coastal and Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Mulefat Scrub
- Southern Willow Scrub
- Diegan Coastal Sage Scrub
- Chaparral
- Non-Native Grassland
- Coast Live Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

N

Feet

0 825

Note: Vegetation mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.

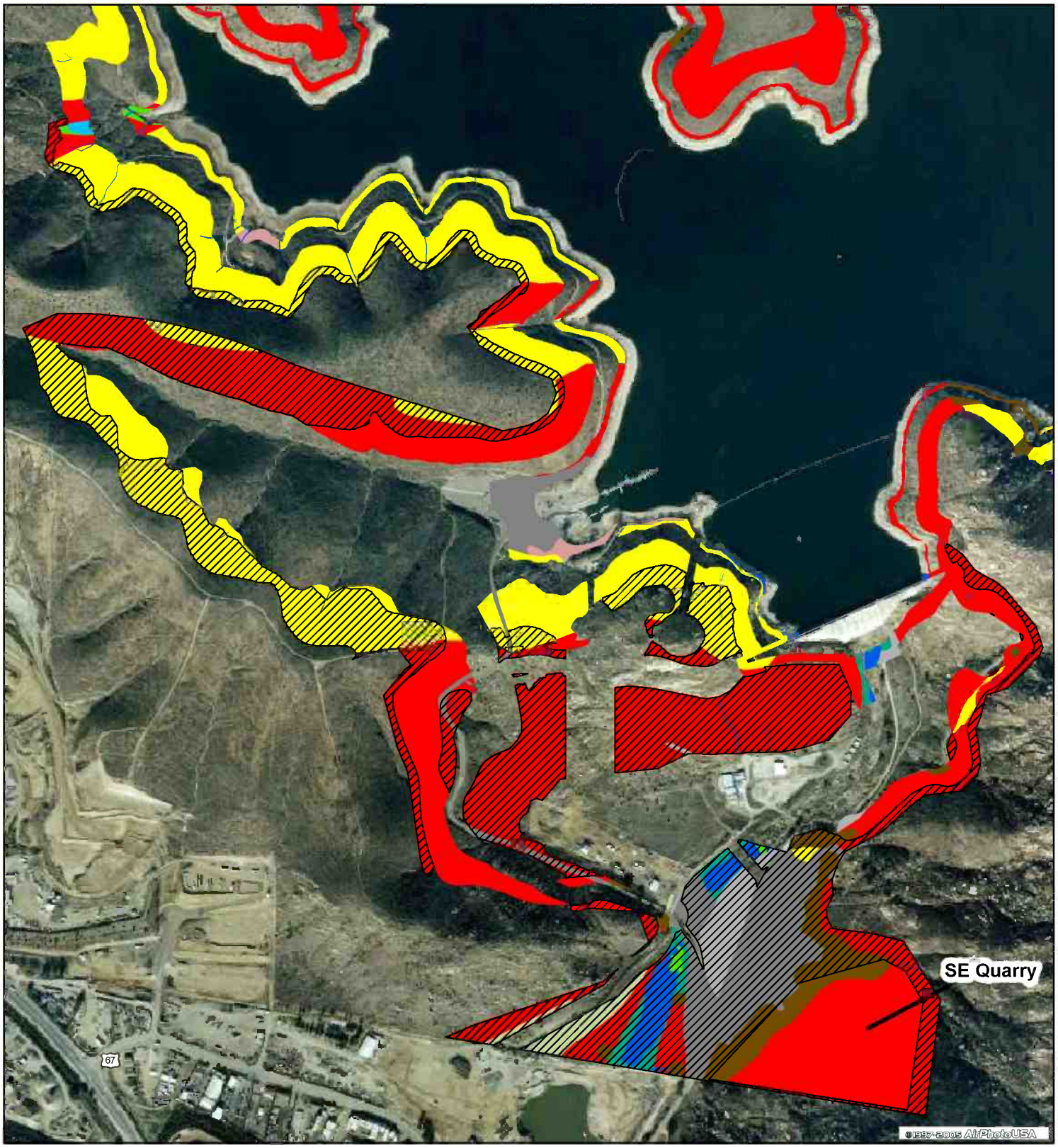
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Vegetation Communities for Southwest Quarry Option - Downstream Construction Area

Figure 2-19

gist\projects\sanvicente\plots\figures\BTR\Impacts-Downstream Vegetation.mxd

Date: Apr 26, 2007



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Unvegetated Channel/Lakeshore Fringe
- Coastal and Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Mulefat Scrub
- Southern Willow Scrub
- Diegan Coastal Sage Scrub
- Chaparral
- Non-Native Grassland
- Coast Live Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

N

Feet

0 825

Note: Vegetation mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.

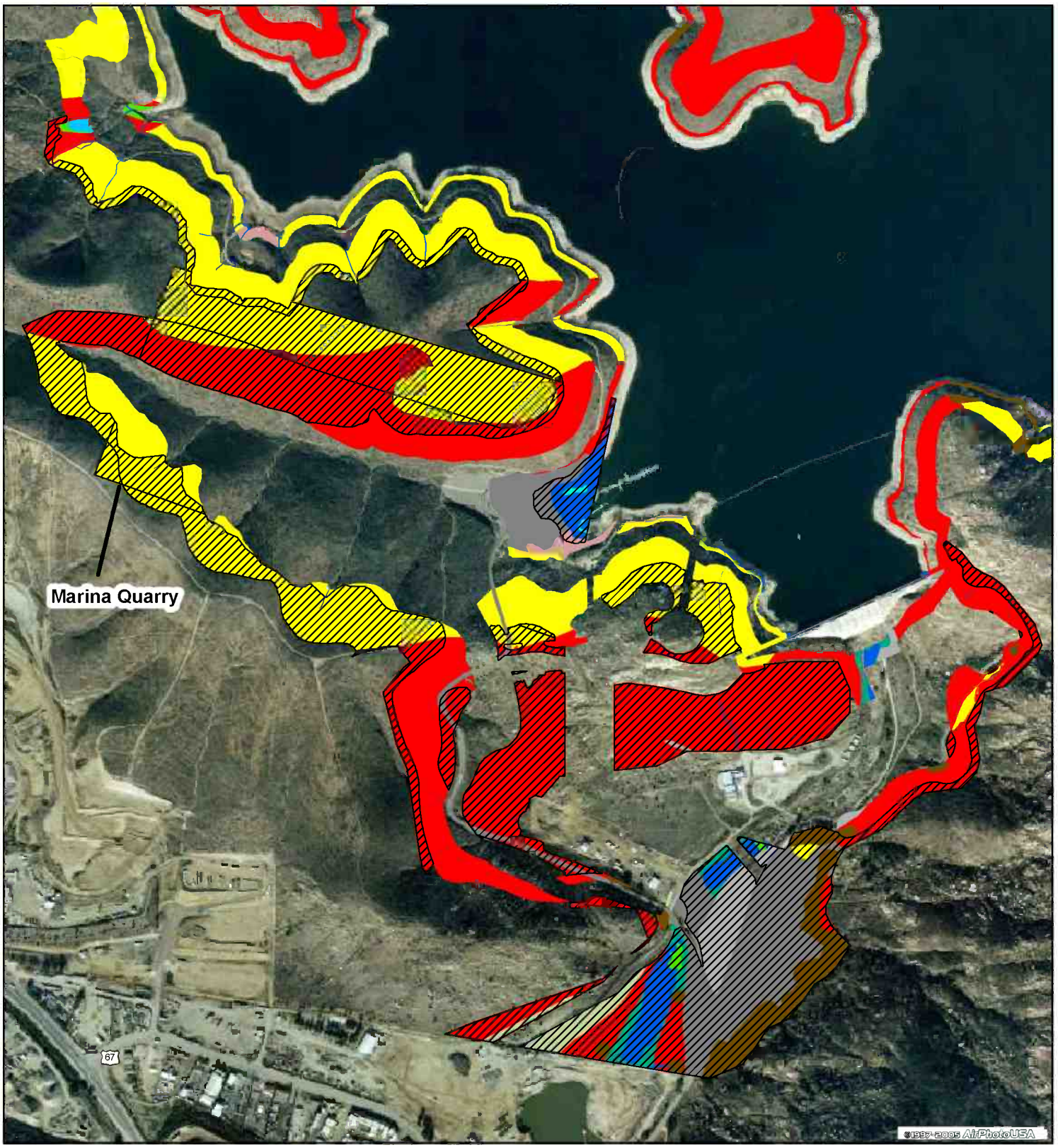
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Vegetation Communities for Southeast Quarry Option - Downstream Construction Area

Figure 2-20

gist\projects\sanvicente\plots\figures\BTR\Impacts-Downstream Vegetation.mxd

Date: Apr 26, 2007



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Unvegetated Channel/Lakeshore Fringe
- Coastal and Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Mulefat Scrub
- Southern Willow Scrub
- Diegan Coastal Sage Scrub
- Chaparral
- Non-Native Grassland
- Coast Live Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

N

Feet

0 825

Note: Vegetation mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.

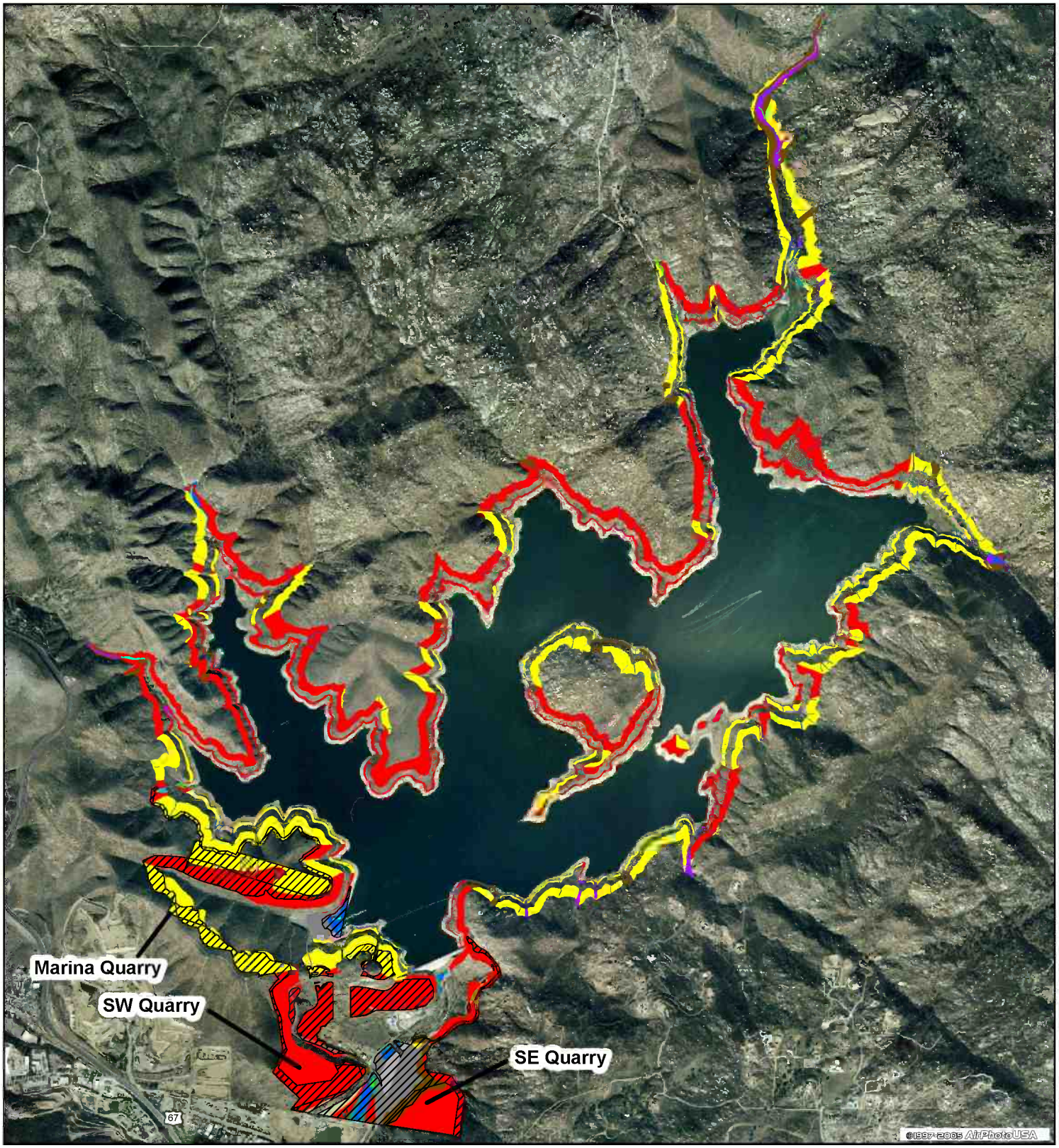
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Vegetation Communities for Marina Quarry Option - Downstream Construction Area

Figure 2-21

gist\projects\sanvicente\plots\figures\BTR\Impacts-Downstream Vegetation-Marina Quarry.mxd

Date: Apr 26, 2007



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Unvegetated Channel/Lakeshore Fringe
- Coastal and Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Mulefat Scrub
- Southern Willow Scrub
- Diegan Coastal Sage Scrub
- Chaparral
- Non-Native Grassland
- Coast Live Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

N

Feet

0 2,350

Note: Vegetation mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.
Note: Only one of the quarry options will be constructed as part of the proposed project. See previous vegetation impact graphics for quarry detail.

TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Vegetation Communities - Overview

Figure 2-22

gist\projects\sanvicente\plots\figures\BTR\Impacts-Overview Vegetation.mxd

Date: Mar 11, 2008

Table 2- 8. Temporary Direct Impacts to Vegetation Communities within the SV 100K Footprint[1].

Vegetation Community[2]	South and West of Dam (Acres)[3,4]	650-664 AMSL (Acres)[3,4]	710-766 AMSL (Acres)[3,4]	Total Acres[3,4]
Riparian/Wetlands Communities				
Unvegetated Channel/Lakeshore Fringe (13200)	3.29/3.30/5.35	0/0/0	0/0/0	3.29/3.30/5.35
Freshwater Marsh (52410)[54]	0/0/0.11	0/0/0	0/0/0	0/0/0.11
Mulefat Scrub (63310)[54]	1.69/1.69/1.69	0/0/0	0/0/0	1.69/1.69/1.69
Southern Willow Scrub (63320)[54]	0.25/0.25/0.25	0/0/0	0/0/0	0.25/0.25/0.25
Total Riparian/Wetland Communities	***5.23/5.24/7.40***	***0/0/0***	***0/0/0***	***5.23/5.24/7.40***
Upland Communities				
Diegan Coastal Sage Scrub (32500)[54]	62.38/55.72/55.31	0/0/0	0/0/0	62.38/55.72/55.31
Chaparral (37000)	26.71/26.71/41.52	0/0/0	0/0/0	26.71/26.71/41.52
Non-Native Grassland (42200)	2.02/2.02/2.02	0/0/0	0/0/0	2.02/2.02/2.02
~~Coast Live Oak Woodland (71160)[54]~~	~~5.93/6.424.69/5.93~~	~~0/0/0~~	~~0/0/0~~	~~5.93/6.424.69/5.93~~
Coast Live Oak Woodland (71160)[5]	5.93/4.69/5.93	0/0/0	0/0/0	5.93/4.69/5.93
Eucalyptus Woodland (11100)	0/0/0.13	0/0/0	0/0/0	0/0/0.13
Disturbed Habitat (11300)	3.45/3.45/3.45	0/0/0	0/0/0	3.45/3.45/3.45
~~Urban/Developed (12000)~~	~~14.21/14.2114.13/15.03~~	~~0/0/0~~	~~0/0/0~~	~~14.21/14.2114.13/15.03~~
Urban/Developed (12000)	14.21/14.13/15.03	0/0/0	0/0/0	14.21/14.13/15.03
~~***Total Upland Communities***~~	~~***114.70/108.53106.72/123.39***~~	~~***0/0/0***~~	~~***0/0/0***~~	~~***114.70/106.72108.53/123.39***~~
Total Upland Communities	***114.70/106.72/123.39***	***0/0/0***	***0/0/0***	***114.70/106.72/123.39***
~~**TOTAL TEMPORARY, DIRECT IMPACTS**~~	~~**119.93/113.77111.96/130.79**~~	~~**0/0/0**~~	~~**0/0/0**~~	~~**119.93/111.96113.77/130.79**~~
TOTAL TEMPORARY, DIRECT IMPACTS	**119.93/111.96/130.79**	**0/0/0**	**0/0/0**	**119.93/111.96/130.79**

[1] Excludes impacts permitted by ESP.
[2] Holland codes are given in parentheses.
[3] Acreages rounded to nearest hundredth decimal.
[43] Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option
[54] Vegetated communities considered to be a sensitive habitat based on the definition in Section 2.4.4.1.

Table 2- 9. Permanent Direct Impacts to CDFG-~~Regulated~~ Defined Wetlands and ~~Waters~~ Unvegetated Waters of the State within the SV 100K Footprint[1].

CDFG-Regulated Wetlands/Waters of the State	South and West of Dam (Acres)[2,3]	650-664 AMSL (Acres)[2,3]	710-766 AMSL (Acres)[2,3]	Total Acres[2,3]
Wetlands				
~~Freshwater Marsh~~	~~0/0/0~~	~~0.01/0.01/0.01~~	~~0.65/0.65/0.65~~	~~0.66/0.66/0.66~~
Freshwater Marsh	0/0/0	0.01/0.01/0.01	0.74/0.74/0.74	0.75/0.75/0.75
~~Southern Coast Live Oak Riparian Forest~~	~~0/0/0~~	~~0.51/0.51/0.51~~	~~5.08/5.08/5.08~~	~~5.59/5.59/5.59~~
Southern Coast Live Oak Riparian Forest	0/0/0	0.57/0.57/0.57	6.00/6.00/6.00	6.57/6.57/6.57
~~Southern Cottonwood-Willow Riparian Forest~~	~~0/0/0~~	~~0.06/0.06/0.06~~	~~0.49/0.49/0.49~~	~~0.55/0.55/0.55~~
Southern Cottonwood-Willow Riparian Forest	0/0/0	0/0/0	0.21/0.21/0.21	0.21/0.21/0.21
~~Mulefat Scrub~~	~~0.29/0.29/0.29~~	~~0.08/0.08/0.08~~	~~0.09/0.09/0.09~~	~~0.46/0.46/0.46~~
Mulefat Scrub	0.29/0.29/0.29	0.34/0.34/0.34	0.09/0.09/0.09	0.72/0.72/0.72
~~Southern Willow Scrub~~	~~0/0/0~~	~~0.88/0.88/0.88~~	~~1.96/1.96/1.96~~	~~2.84/2.84/2.84~~
Southern Willow Scrub	0/0/0	0.45/0.45/0.45	1.34/1.34/1.34	1.79/1.79/1.79
~~*Total Wetlands*~~	~~*0.29/0.29/0.29*~~	~~*1.54/1.54/1.54*~~	~~*8.27/8.27/8.27*~~	~~*10.10/10.10/10.10*~~
Total Wetlands	***0.29/0.29/0.29***	***1.37/1.37/1.37***	***8.38/8.38/8.38***	***10.04/10.04/10.04***
Unvegetated Waters of the State				
~~Lakeshore Fringe[43]~~	~~0.05/0.05/0.05~~	~~1.30/1.30/1.30~~	~~0.10/0.10/0.10~~	~~1.45/1.45/1.45~~
Lakeshore Fringe[4]	0.05/0.05/0.05	0.79/0.79/0.79	0.10/0.10/0.10	0.94/0.94/0.94
~~Unvegetated Channel~~	~~0.29/0.29/0.29~~	~~1.07/1.07/1.07~~	~~3.07/3.07/3.07~~	~~4.43/4.43/4.43~~
Unvegetated Channel	0.29/0.29/0.29	1.09/1.09/1.09	4.61/4.61/4.61	5.99/5.99/5.99
~~*Total Unvegetated Waters*~~	~~*0.34/0.34/0.34*~~	~~*2.37/2.37/2.37*~~	~~*3.17/3.17/3.17*~~	~~*5.88/5.88/5.88*~~
Total Unvegetated Waters	***0.34/0.34/0.34***	***1.88/1.88/1.88***	***4.71/4.71/4.71***	***6.93/6.93/6.93***
~~**TOTAL WETLANDS AND UNVEGETATED WATERS**~~	~~**0.63/0.63/0.63**~~	~~**3.91/3.91/3.91**~~	~~**11.44/11.44/11.44**~~	~~**15.98/15.98/15.98**~~
TOTAL WETLANDS AND UNVEGETATED WATERS	**0.63/0.63/0.63**	**3.25/3.25/3.25**	**13.09/13.09/13.09**	**16.97/16.97/16.97**

[1] Excludes impacts permitted by ESP.
[2] Acreages rounded to nearest hundredth decimal.
[3~~2~~] Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option
[4~~3~~] Lakeshore Fringe – this category is called "Unconsolidated Shore" in the ESP EIR/EIS. Although the community called Lakeshore Fringe includes unvegetated channel per Holland (1986), the corresponding jurisdictional waters are split into two types: Lakeshore Fringe and Seasonal Streambed.

Table 2- 10. Temporary Direct Impacts to CDFG-~~Regulated~~ Defined Wetlands and Unvegetated Waters of the State within the SV 100K Footprint[1].

CDFG-Regulated Wetlands/Waters of the State	South and West of Dam (Acres)[2,3]	650-664 AMSL (Acres)[2,3]	710-766 AMSL (Acres)[2,3]	Total Acres[2,3]
Wetlands				
Freshwater Marsh	0/0/0.11	0/0/0	0/0/0	0/0/0.11
Mulefat Scrub	1.69/1.69/1.69	0/0/0	0/0/0	1.69/1.69/1.69
Southern Willow Scrub	0.25/0.25/0.25	0/0/0	0/0/0	0.25/0.25/0.25
Total Wetlands	***1.94/1.94/2.05***	***0/0/0***	***0/0/0***	***1.94/1.94/2.05***
Unvegetated Waters of the State				
Lakeshore Fringe[4~~3~~]	0/0/2.06	0/0/0	0/0/0	0/0/2.06
Unvegetated Channel	3.29/3.30/3.29	0/0/0	0/0/0	3.29/3.30/3.29
Total Unvegetated Waters	***3.29/3.30/5.35***	***0/0/0***	***0/0/0***	***3.29/3.30/5.35***
TOTAL WETLANDS AND UNVEGETATED WATERS	**5.23/5.24/7.40**	**0/0/0**	**0/0/0**	**5.23/5.24/7.40**

[1] Excludes impacts permitted by ESP.
[2] Acreages rounded to nearest hundredth decimal.
[2] Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option
[3] Lakeshore Fringe – this category is called "Unconsolidated Shore" in the ESP EIR/EIS. Although the community called Lakeshore Fringe includes unvegetated channel per Holland (1986), the corresponding jurisdictional waters are split into two types: Lakeshore Fringe and Unvegetated Channel.

Disturbed habitat has little wildlife value due to the abundance of non-native invasive plants, such as thistles and mustards, which do not provide quality habitat. Within the San Vicente footprint, this vegetation community generally occurs near developed areas. For these reasons, estimated permanent (0.47 acre; Table 2-7; Figures 2-20 to 2-23) and temporary (3.45 acres; Table 2-8; Figures 2-20 to 2-23) impacts to disturbed habitat are less than significant.

Indirect Impacts

Several indirect impacts to vegetation communities may occur from CSP construction activities. For example, erosion and sedimentation could affect water quality or natural hydrologic processes in, or adjacent to riparian plant communities. In addition, construction activities could produce enough dust to affect plants by reducing photosynthesis capabilities and overall plant health if heavy and prolonged enough. Other significant indirect impacts include vegetation trampling and soil compaction from construction personnel and equipment. These disturbances, in addition to activities such as grading and brushing, often lead to invasion by non-native weedy plant species, which often compete with native plants for resources. However, with standard design features implemented (see Section 2.2.1), construction-related indirect impacts will be reduced to a level below significance.

2.5.1.2 Corps-Regulated Wetlands and Waters of the U.S.

Significance Criterion 2: *Would the Proposed Action have a substantial adverse effect on federally protected wetlands and other Waters of the United States, as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, inundation, hydrological interruption, or other means.*

Direct Impacts to Corps-Regulated Wetlands and Waters of the U.S.

Vegetated Wetlands

Direct impacts to vegetated wetlands –include permanent impacts to approximately ~~9.0~~2.15 acres from reservoir inundation (above the OHWM) and construction, and temporary impacts to an estimated low of 0.25 acre or an estimated high of 0.36 acre from construction activities such as staging and access (Tables 2-11 and 2-12; Figures 2-24 to 2-27). All direct impacts to jurisdictional wetlands are considered significant.

Table 2- 11. Permanent Direct Impacts to Corps-Regulated Wetlands/Vegetated ~~and~~ Waters and Unvegetated Waters of the U.S. within the SV 100K Footprint[1].

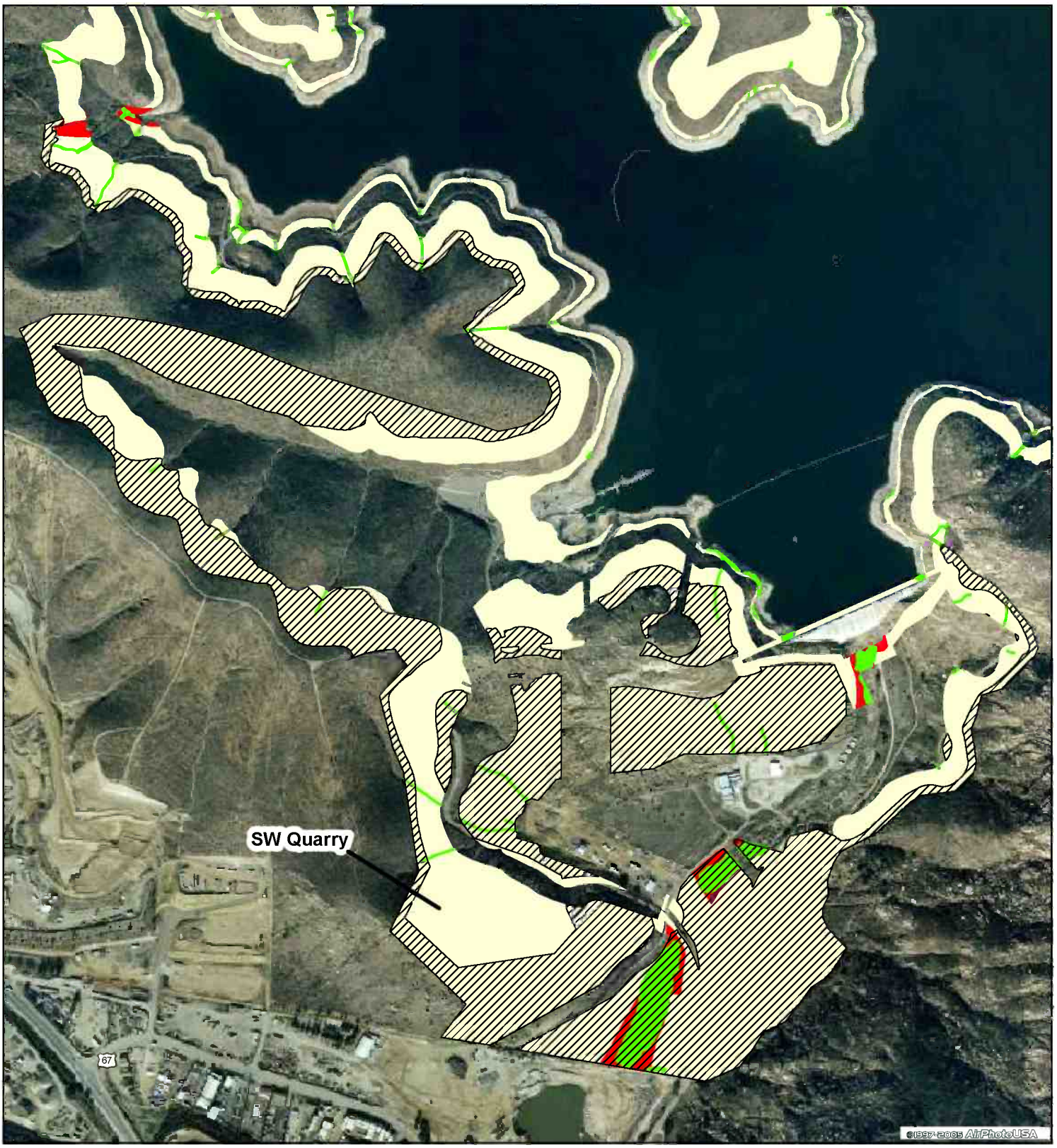
Corps-Regulated Wetlands/Waters of the U.S.	South and West of Dam (Acres)[2,3]	650-664 AMSL (Acres)[2,3]	710-766 AMSL (Acres)[2,3]	Total Acres[2,3]
Wetlands				
~~Freshwater Marsh~~	~~0/0/0~~	~~0.01/0.01/0.01~~	~~0.61/0.61/0.61~~	~~0.62/0.62/0.62~~
Freshwater Marsh	0/0/0	0.01/0.01/0.01	0.69/0.69/0.69	0.70/0.70/0.70
Mulefat Scrub	0/0/0	0.02/0.02/0.02	0.09/0.09/0.09	0.11/0.11/0.11
~~Southern Willow Scrub~~	~~0/0/0~~	~~0.66/0.66/0.66~~	~~1.68/1.68/1.68~~	~~2.34/2.34/2.34~~
Southern Willow Scrub	0/0/0	0.22/0.22/0.22	1.12/1.12/1.12	1.34/1.34/1.34
~~*Total Wetlands*~~	~~*0/0/0*~~	~~*1.26/1.26/1.26*~~	~~*7.74/7.74/7.74*~~	~~*9.00/9.00/9.00*~~
Total Wetlands	*0/0/0*	*0.25/0.25/0.25*	*1.90/1.90/1.90*	*2.15/2.15/2.15*
Unvegetated Waters of the U.S.				
~~Lakeshore Fringe[43]~~	~~0.05/0.05/0.05~~	~~1.30/1.30/1.30~~	~~0.10/0.10/0.10~~	~~1.45/1.45/1.45~~
Lakeshore Fringe[4]	0.05/0.05/0.05	0.79/0.79/0.79	0.10/0.10/0.10	0.94/0.94/0.94
~~Seasonal Streambed~~	~~0.29/0.29/0.29~~	~~1.07/1.07/1.07~~	~~3.07/3.07/3.07~~	~~4.43/4.43/4.43~~
Seasonal Streambed	0.29/0.29/0.29	1.09/1.09/1.09	4.61/4.61/4.61	5.99/5.99/5.99
~~*Total Unvegetated Waters*~~	~~*0.34/0.34/0.34*~~	~~*2.37/2.37/2.37*~~	~~*3.17/3.17/3.17*~~	~~*5.88/5.88/5.88*~~
Total Unvegetated Waters	*0.34/0.34/0.34*	*1.88/1.88/1.88*	*4.71/4.71/4.71*	*6.93/6.93/6.93*
~~TOTAL WETLANDS AND UNVEGETATED WATERS~~	~~0.34/0.34/0.34~~	~~3.63/3.63/3.63~~	~~10.91/10.91/10.91~~	~~14.88/14.88/14.88~~
TOTAL WETLANDS AND UNVEGETATED WATERS	**0.34/0.34/0.34**	**2.13/2.13/2.13**	**6.61/6.61/6.61**	**9.08/9.08/9.08**

[1] Excludes impacts permitted by ESP.
[2] Acreages rounded to nearest hundredth decimal.
[2]—[3]Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option
[3]-[4] Lakeshore Fringe – this category is called -"Unconsolidated Shore" in the ESP EIR/EIS. Although the vegetation community called Lakeshore Fringe includes unvegetated channel per Holland (1986), the corresponding jurisdictional waters are split into two types: Lakeshore Fringe and Seasonal Streambed to conform to Corps terminology.

Table 2- 12. Temporary Direct Impacts to Corps-Regulated Wetlands/Vegetated ~~and~~ Waters and Unvegetated Waters of the U.S. within the SV 100K Footprint[1].

Corps-Regulated Wetlands/Waters of the U.S.	South and West of Dam (Acres)[2,3]	650-664 AMSL (Acres)[2,3]	710-766 AMSL (Acres)[2,3]	Total Acres[2,3]
Wetlands				
Freshwater Marsh	0/0/0.11	0/0/0	0/0/0	0/0/0.11
Southern Willow Scrub	0.25/0.25/0.25	0/0/0	0/0/0	0.25/0.25/0.25
Total Wetlands	***0.25/0.25/0.36***	***0/0/0***	***0/0/0***	***0.25/0.25/0.36***
Unvegetated Waters of the U.S.				
Lakeshore Fringe[4~~3~~]	0/0/2.06	0/0/0	0/0/0	0/0/2.06
Seasonal Streambed	3.29/3.30/3.29	0/0/0	0/0/0	3.29/3.30/3.29
Total Unvegetated Waters	***3.29/3.30/5.35***	***0/0/0***	***0/0/0***	***3.29/3.30/5.35***
TOTAL WETLANDS AND UNVEGETATED WATERS	**3.54/3.55/5.71**	**0/0/0**	**0/0/0**	**3.54/3.55/5.71**

[1] Excludes impacts permitted by ESP.
[2] Acreages rounded to nearest hundredth decimal.
[2] [3]Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option
[3] [4] Lakeshore Fringe – this category is called "Unconsolidated Shore" in the ESP EIR/EIS. Although the vegetation community called Lakeshore Fringe includes unvegetated channel per Holland (1986), the corresponding jurisdictional waters are split into two types: Lakeshore Fringe and Seasonal Streambed to conform to Corps terminology.



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands and Waters
- Non-Wetlands within Impact Footprint

N

Feet

0 825

Note: Wetland mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.

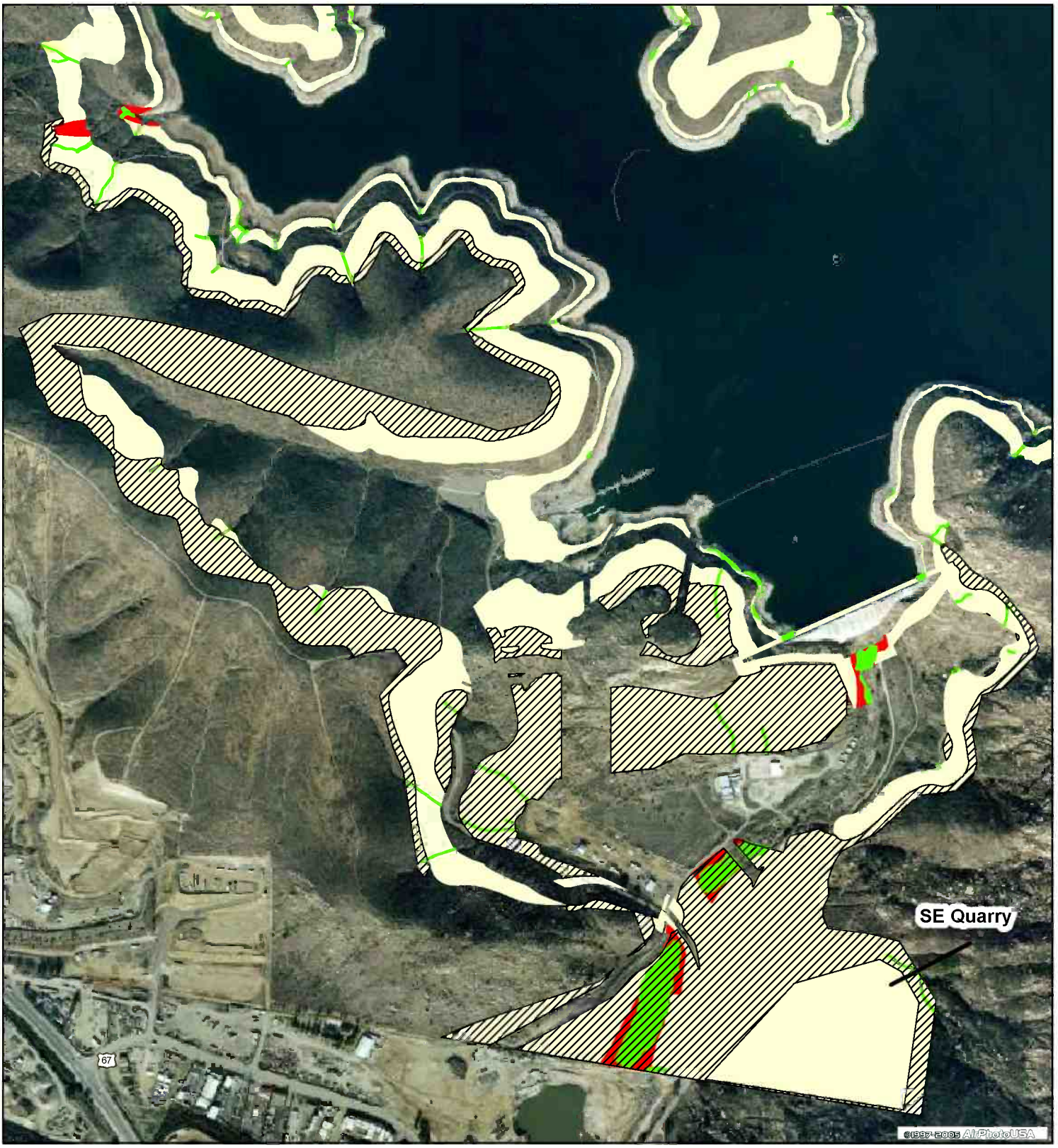
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Jurisdictional Wetlands and Waters for Southwest Quarry Option - Downstream Construction Area

Figure 2-23

gist\projects\sanvicente\plots\figures\BTR\Impacts-Downstream Wetlands SW Quarry.mxd

Date: Apr 26, 2007



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands and Waters
- Non-Wetlands within Impact Footprint

N

Feet

0 825

Note: Wetland mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.

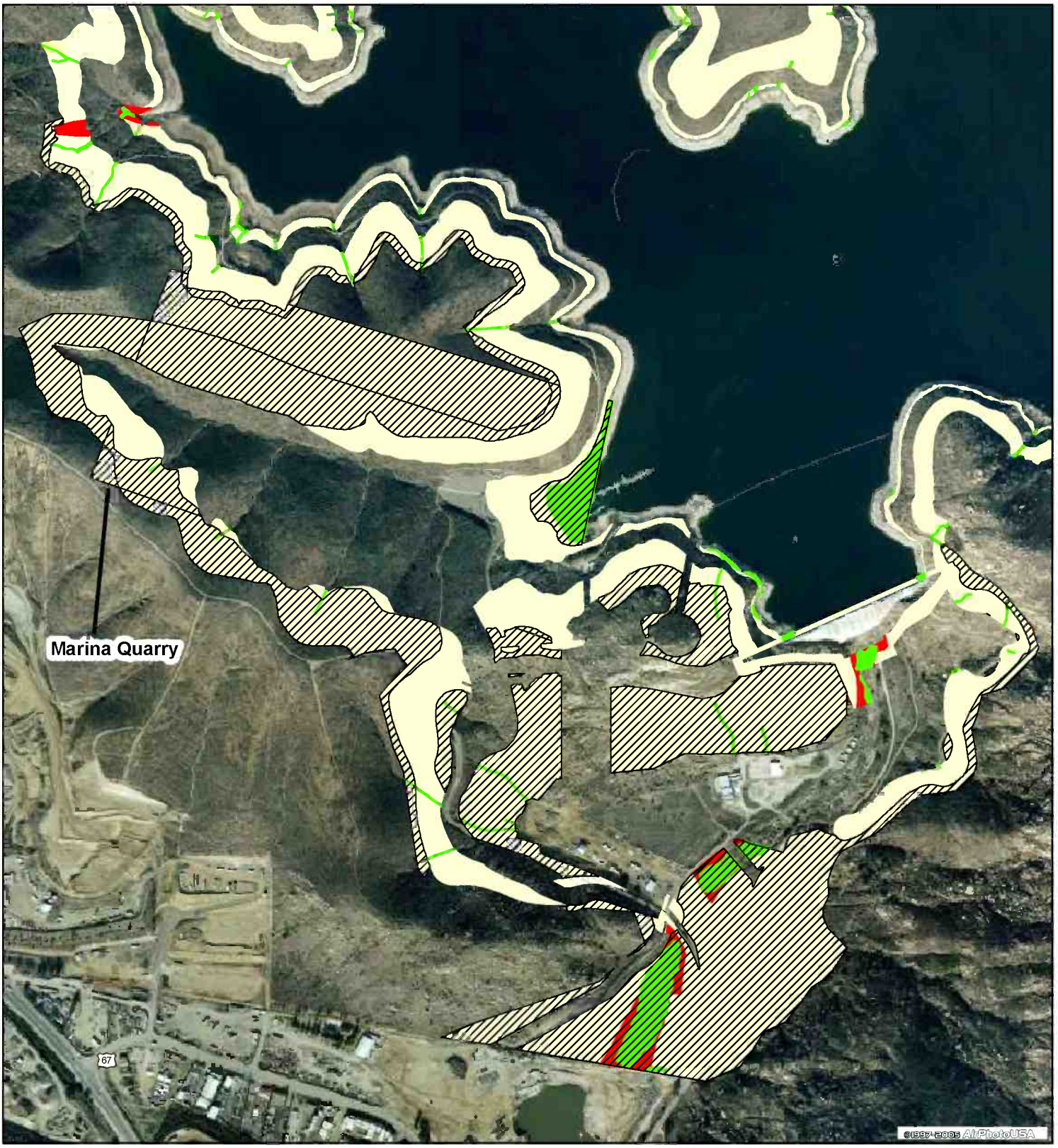
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Jurisdictional Wetlands and Waters for Southeast Quarry Option - Downstream Construction Area

Figure 2-24

gist\projects\sanvicente\plots\figures\BTR\Impacts-Downstream Wetlands SE Quarry.mxd

Date: Apr 26, 2007



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands and Waters
- Non-Wetlands within Impact Footprint

N

Feet

0 825

Note: Wetland mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.

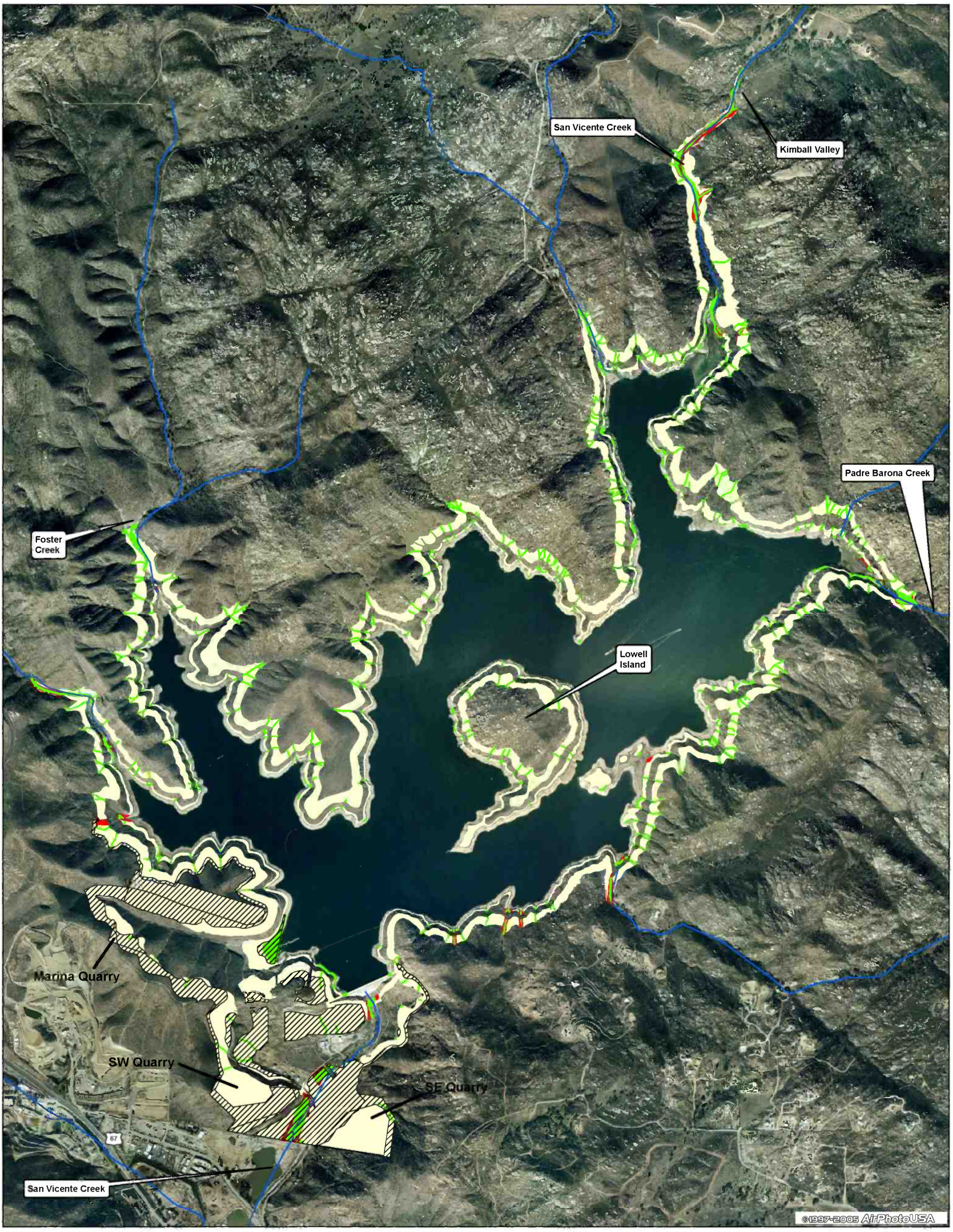
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Jurisdictional Wetlands and Waters for Marina Quarry Option - Downstream Construction Area

Figure 2-25

gist\projects\sanvicente\plots\figures\BTR\Impacts-Downstream Wetlands Marina Quarry.mxd

Date: Apr 26, 2007



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands
- Non-Wetlands within Impact Footprint

Basemap Legend

- Streams

N

Feet

0 1,650

Note: Wetland mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.

Note: Only one of the quarry options will be constructed as part of the proposed project. See previous wetlands and waters impact graphics for quarry detail.

TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Jurisdictional Wetlands and Waters - Overview

Figure 2-26

/gist/projects/sanvicente/plots/figures/BTR/Impacts-Overview Wetlands.mxd

Date: Mar 11, 2008

Unvegetated Waters

Areas below the OHWM (which has been established as the lower limit of the San Vicente footprint and serves as the baseline condition for this project) are subject to reservoir operations and are therefore not ~~considered jurisdictional~~regulated under Section 404 of the CWA (Jones & Stokes 2006). As such, impacts that may occur below the OHWM are not addressed in this analysis. Table ~~2-10~~ 2-11 and 2-12 shows project impacts to unvegetated Waters of the U.S. above the OHWM

During drawdown, the volume of open water will be reduced during dam construction. Open water provides habitat for fish, waterfowl, raptors such as eagles and ospreys, and aquatic wildlife such as frogs, toads, and the two-striped garter snake. Changes to open water during drawdown will occur below the OHWM, and have been addressed and permitted during the ESP process.

Indirect Impacts to Corps-Regulated Wetlands and Waters of the U.S.

Several indirect impacts to jurisdictional resources may occur as a result of the Proposed Action ~~-~~construction activities. For example, erosion and sedimentation could affect water quality or natural hydrologic processes in, or adjacent to, wetlands and unvegetated waters. Pollution sources, such as chemical spills or trash, could impact these resources as well. In addition, construction activities could produce enough dust to affect wetland plants by reducing photosynthesis capabilities and overall plant health if heavy and prolonged enough. Other indirect impacts include vegetation trampling and soil compaction from construction personnel and equipment. These disturbances, in addition to activities such as grading and brushing, often lead to invasion by non-native weedy plant species, which often compete with native plants for resources. However, with standard design features implemented (see Section 2.2.1), construction-related indirect impacts will be reduced to a level below significance.

2.5.1.3 Sensitive Species

Significance Criterion 3: *Would the Proposed Action have a substantial adverse effect, either directly (e.g., habitat loss) or indirectly (e.g., noise effects on wildlife) through habitat modifications, on any species identified or published as an endangered, threatened, candidate, sensitive, or special-status species by the California Department of Fish and Game (CDFG) or U.S. Fish and Wildlife Service (USFWS).*

A. Listed Species

Potential impacts to rare, threatened, or endangered species, as determined by state and federal resource agencies, are described below and summarized in Table 2-13. Direct impacts are discussed first, followed by a discussion of indirect impacts. Additionally, a determination of impact significance is included at the end of each paragraph. With the exception of California gnatcatcher, no listed species have been documented at the locations of the quarries. Only the SW and Marina quarries would impact the California gnatcatcher. California gnatcatchers would also be impacted in the Primary Impact Area. Figures 2-28 and 2-31 show occurrences of all rare, threatened, and endangered species that fall within the SV 100K footprint.

Table 2-13. Summary of Potential Impacts to Federally and State Listed Species within the SV 100K Footprint[1].

Species	Direct Impacts		Indirect impacts
	Permanent	Temporary	
Quino Checkerspot Butterfly[3]	Less than Significant (38.45/38.45/37.97[5] acres of unoccupied habitat)[4]	Less than Significant (10.31/10.31/16.95[5] acres of unoccupied habitat)[4]	Less than Significant
Arroyo Toad	Significant (30.7 acres of occupied habitat)	None	None
~~California Gnatcatcher~~	~~Significant (8/8/9[5] territories, 204.43/209.58/225.29[5] acres of habitat)~~	~~Significant (7/4/4[5] territories, 62.38/55.72/25.51[5] acres of habitat)~~	~~Significant (Noise)[6]~~
California Gnatcatcher	Significant (8/8/9[5] territories, 204.42/209.57/210.38[5] acres of habitat)	Significant (7/4/4[5] territories, 62.38/55.72/40.41[5] acres of habitat)	Significant (Noise)[6]
Least Bell's Vireo	Significant (1.94 acres)	None	None

[1] Excludes impacts permitted by ESP.
[2] The Fish and Game Commission, at its December 7, 2006 meeting, accepted for consideration the petition submitted by the CDFG to remove slender-pod jewelflower (*Caulanthus stenocarpus*) from the list of rare plants. Within one year of the date of publication of the Notice of Findings, dated December 12, 2006, CDFG shall submit a written report indicating whether the petition action is warranted. CNPS currently does not list this species in its Inventory of Rare and Endangered Plants.
[3] Potentially occurring species.
[4] Quino checkerspot habitat is likely going to regress in favor of gnatcatcher habitat as a result of post Cedar Fire recovery.
[5] SW Quarry Option/SE Quarry Option/Marina Quarry Option
[6] Other indirect impacts to California gnatcatcher include nighttime lighting and construction-related dust. Standard Project design features will reduce these impacts to a level below significance.

Direct Impacts

San Diego Thornmint. No direct actions are expected to impact this potentially occurring species; the species was not observed during survey efforts for the ESP and CSP.

Quino Checkerspot Butterfly. Although no Quino checkerspot were detected during 2006 surveys, potential habitat currently exists within the project footprint (Figure 2-19). Patches of dwarf plantain, the primary larval host plant for Quino checkerspot in the region, and owl's clover, a secondary host plant, were recorded at several locations in the study area (See Klein et al. 2006, Appendix A). In addition, a number of adult nectar sources, such as popcorn flower (*Plagiobothrys* spp.) and goldfields (*Lasthenia californica*) were abundant throughout the study area. The nearest documented observations of Quino checkerspot are in Foster Canyon approximately 1 kilometer from the study area (May 2000), within the ridgelines of Sycamore Canyon Open Space Preserve (March 2005), and in Fanita Ranch, northern Santee (March 2005). Based on habitat assessments conducted in the study area in 2006, SV 100K implementation is expected to permanently impact 38.45 acres (SW or SE Quarry Option) or 37.97 acres (Marina Quarry Option), and temporarily impact 10.31 acres (SW or SE Quarry Option) or 16.95 acres (Marina Quarry Option) of Quino checkerspot habitat. Although potential habitat currently exists in the project footprint, it is expected to revert to its pre-fire condition, and some of it (e.g., closed canopy chaparral) would no longer be suitable as Quino checkerspot habitat (Klein, pers. comm.). Prior to the listing the species, sensitive butterfly surveys conducted for the ESP project in 1992 and 1993 detected 7.6 acres of potential Quino checkerspot habitat in the ESP inundation and dam construction footprints. This assessment was narrowly based on the presence of *Plantago erecta* and *Plantago insularis*; no other Quino habitat components were considered. No individual Quino checkerspots have been documented in the San Vicente impact area during 2006 surveys, which were conducted during unsuitable seasonal conditions (late onset of rains and relatively dry weather conditions). Due to the absence of the species and the likelihood that Quino checkerspot habitat will decrease by the time the proposed action is implemented, the Quino checkerspot butterfly would not be significantly affected by the project.

Arroyo Toad. Suitable breeding habitat for the arroyo toad occurs along the entire reach of San Vicente Creek in Kimball Valley (Figure 2-12). Surveys conducted in 2005 determined that the upper reaches of Kimball Valley were occupied by the arroyo toad (LaCoste 2005, Figure 2-3, and Appendix A). During the time of the 2005 surveys, downstream habitat was unsuitable because of heavy flows resulting from late rains that contributed to a lack of still breeding ponds at that time. Additionally, in compliance

with USFWS arroyo toad survey protocol, surveys were terminated once a toad presence (adult, juvenile, eggs) was determined. However, suitable habitat and species observations have been documented prior to 2005 in the downstream portions of the creek, including data collected for the ESP.

Arroyo toads are known to winter in upland habitat within 1 kilometer of breeding sites (Holland 1998). Therefore, all suitable habitat within 1 kilometer of documented toad observations is considered occupied. In addition, USFWS designated areas along Kimball Valley as essential but not critical habitat for arroyo toad (U.S. Federal Register, 66 FR 9414). Within this habitat designation, an estimated 30.7 acres of toad habitat would be permanently impacted by reservoir inundation (for SV 100K). Because of the endangered status of this species, this impact would be significant.

Bald Eagle. This species is not known to nest or breed in the vicinity of the survey area, and therefore, no direct impacts are expected to occur. However, temporary impacts to foraging habitat of this potentially occurring species would occur during drawdown of the reservoir. This impact was addressed in the ESP, and therefore, will not be considered here. With implementation of the Proposed Action, foraging habitat for this species would increase.

Peregrine Falcon. Large flocks of waterfowl, the preferred prey of the peregrine falcon, do not generally occur at the San Vicente Reservoir possibly due to human presence. Nesting opportunities, such as cliffs or tall buildings, are also lacking in the survey area. Therefore, no direct impacts are expected to occur. However, the peregrine falcon has been observed foraging on terns on the reservoir waters. Therefore, a temporary effect to its foraging habitat is expected during drawdown of the reservoir. This impact was previously addressed in the ESP, and will not be considered here.

California Gnatcatcher. Gnatcatchers were not detected in the study area during the 2006 focused species surveys. The lack of gnatcatchers is likely the result of the 2003 Cedar Fire, which burned 98 percent of the CSP survey area. Prior to the fire, the study area supported 16 gnatcatcher territories (Figure 2-31), according to ESP, CNDDB, SANDAG, and SDNHM species databases. Three territories were previously identified in coastal sage scrub along the northeastern portion of the reservoir, but the majority of those observations were made in the area from north of the marina to the downstream end of the dam. At this time, the area was covered with mature dense chaparral and coastal sage scrub interspersed with patches of oak woodland, riparian forest, and riparian scrub.

Legend

Project Impact Area

Historic Sighting

California Gnatcatcher

N

Feet

0 825

Note: Species mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.

TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Rare, Threatened and Endangered Species for Southwest Quarry Option - Downstream Construction Area

Figure 2-27

gist\projects\sanvicente\plots\figures\BTR\Impacts-Downstream TE Species SW Quarry.mxd

Date: Apr 26, 2007

Legend

Project Impact Area

Historic Sighting

California Gnatcatcher

N

Feet

0 825

Note: Species mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.

TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Rare, Threatened and Endangered Species for Southeast Quarry Option - Downstream Construction Area

Figure 2-28

gist\projects\sanvicente\plots\figures\BTR\Impacts-Downstream TE Species SE Quarry.mxd

Date: Apr 26, 2007

Legend

Project Impact Area

Historic Sighting

California Gnatcatcher

N

Feet

0 825

Note: Species mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.

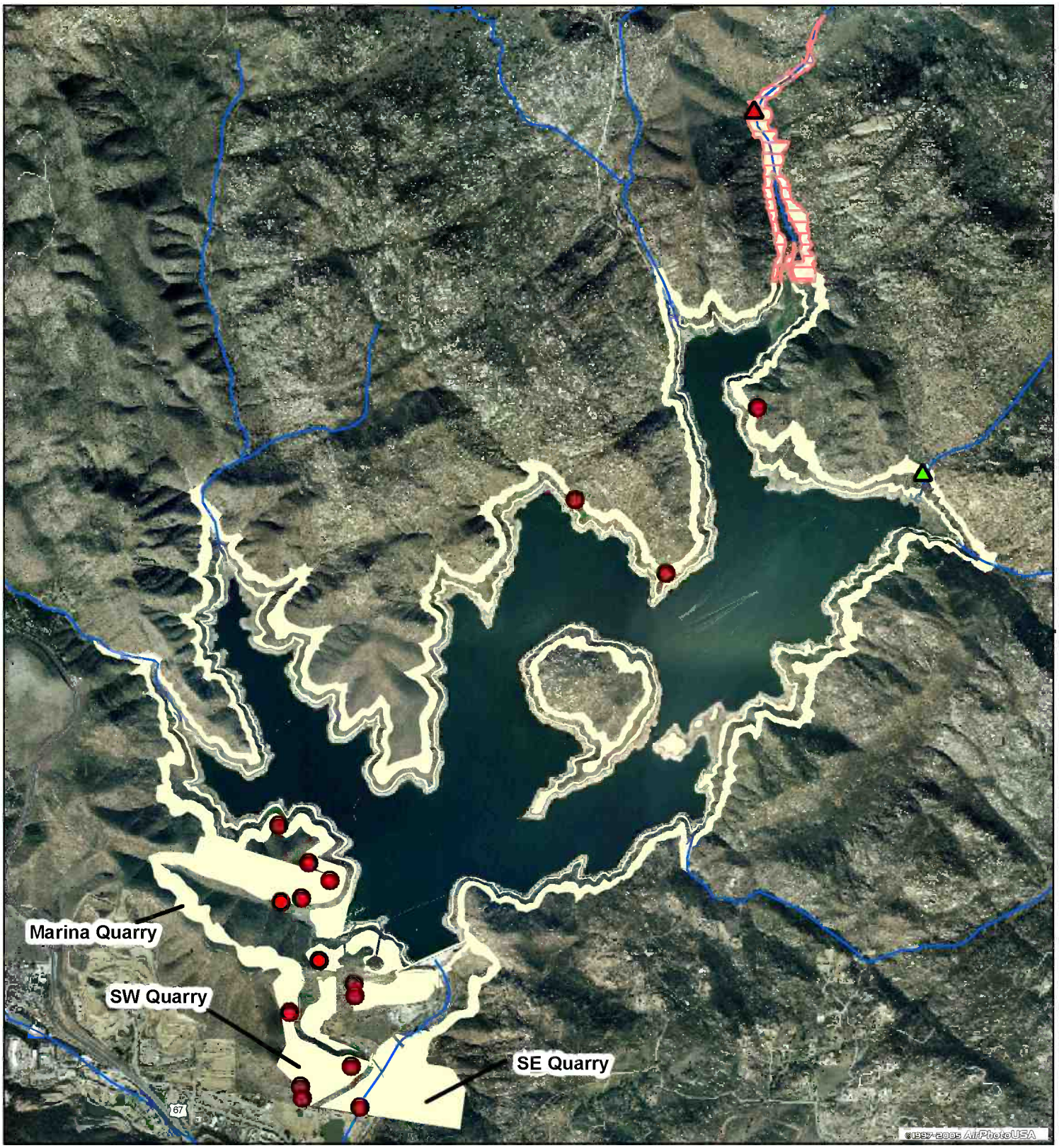
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Rare, Threatened and Endangered Species for Marina Quarry Option - Downstream Construction Area

Figure 2-29

gist\projects\sanvicente\plots\figures\BTR\Impacts-Downstream TE Species Marina Quarry.mxd

Date: Apr 26, 2007



Legend

Current Surveys (2005 and 2006)

- Least Bell's Vireo

Historic Sighting

- California Gnatcatcher
- Arroyo Toad
- USFWS Arroyo Toad Critical Habitat - Excluded Essential Habitat
- Project Impact Area

Note: Species locations within previously permitted ESP and San Vicente Pipeline footprints are not shown on this map.
Note: Only one of the quarry options will be constructed as part of the proposed project. See previous rare, threatened, and endangered species impact graphics for quarry detail.

N

Feet

0 2,350

TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 100K Impacted Rare, Threatened and Endangered Species - Overview

Figure 2-30

gist\projects\sanvicente\plots\figures\BTR\Impacts-Overview TE Species.mxd

Date: May 30, 2007

Currently, the habitat is in a post-fire condition, and has been in recovery for approximately 3 years. Generally, it takes at least 5 years for vegetation communities to fully recover after a fire. Historical evidence from fire-recovered coastal sage scrub suggests that the habitat will fully recover through post-fire succession and that gnatcatchers will reestablish populations at the San Vicente Reservoir to the extent reported prior to the 2003 Cedar Fire. Therefore, observations made prior to the 2003 wildfire are assessed in this document (Figure 2-31). Impacts to gnatcatchers and their habitat are listed for each quarry option plus the Primary Impact area; only one of the three quarry options will be implemented. Although coastal sage scrub temporarily impacted by the Marina Quarry Option will be revegetated with native species, it is likely that functional gnatcatcher habitat cannot be re-established due to re-contouring constraints following aggregate production (the nature of the remaining slopes, including grade and aspect, likely preclude the establishment of functioning gnatcatcher habitat in the future). Therefore, impacts to the California gnatcatcher and its habitat from the Marina Quarry Option are considered permanent.

Implementation of the Proposed Action would result in the following impacts to territories and gnatcatcher habitat, all of which are significant:

Southwest Quarry Option:

- A total of 15 gnatcatcher territories would be impacted (3 within the quarry footprint, and 12 elsewhere within the Primary Impact area)
    1. Temporary impacts to 3 territories within the quarry footprint
    2. Permanent impacts to 8 territories within the Primary Impact Area
    3. Temporary impacts to 4 territories within the Primary Impact Area
- Permanent impacts to approximately ~~204.43~~ 204.42 acres of gnatcatcher habitat
- Temporary impacts to approximately 62.38 acres of gnatcatcher habitat

Southeast Quarry Option:

- A total of 12 territories would be impacted (0 within the quarry footprint, and 12 elsewhere within the Primary Impact Area)
    1. No impacts to territories within the quarry footprint
    2. Permanent impacts to 8 territories within the Primary Impact Area
    3. Temporary impacts to 4 territories within the Primary Impact Area
- Permanent impacts to approximately ~~209.58~~ 209.57 acres of gnatcatcher habitat
- Temporary impacts to approximately 55.72 acres of gnatcatcher habitat

Marina Quarry Option

- A total of 13 territories would be permanently impacted (1 within the quarry footprint and 12 elsewhere within the Primary Impact Area)
    1. Permanent impacts to 1 territory within the quarry footprint
    2. Permanent impacts to 8 territories within the Primary Impact Area
    3. Temporary impacts to 4 territories within the Primary Impact Area
- Permanent impacts to approximately ~~225.29~~ 210.38 acres of gnatcatcher habitat.
- Temporary impacts to approximately ~~25.51~~ 40.41 acres of gnatcatcher habitat

Least Bell's Vireo. The habitat in the San Vicente impact area is atypical for the least Bell's vireo; however, three individuals were detected during 2005 surveys (Figure 2-31). A single vireo was observed twice in Kimball valley during the end of the season; a single vireo (probably a juvenile) was observed at the mouth of Padre Barona Creek; and a single individual was observed throughout most of the breeding season in poor quality habitat on the north-eastern slopes of the reservoir and Padre Barona Creek. The habitat in Kimball Valley and Padre Barona Creek is in a post-fire condition. It consists of scrub uplands, oak woodland, and southern willow scrub. The willow scrub habitat occurs in small, isolated patches, and does not support a dense understory, typical of quality vireo habitat.

The habitat is expected to recover to pre-fire conditions; however, even prior to the fire, potential vireo habitat was not high quality or extensive (Ogden 1995). However, all impacts to federally listed species are significant. Implementation of the Proposed Action is expected to permanently impact approximately 1.94 acres of vireo habitat.~~, including approximately 0.34 acre of southern cottonwood willow riparian forest and approximately 1.60 acres of southern willow scrub habitat~~. Occupied habitat occurs in Kimball Valley and Barona Valley (Figure 2-16). No temporary impacts to vireo habitat are expected.

During refilling of the reservoir, which has been accounted for in permits issued for the ESP, potential indirect impacts may occur to the least Bell's vireo, if this species uses vegetation that could re-establish within the refill area. The least Bell's vireo had not been documented at the San Vicente reservoir in the ESP. However, the ESP BO (1-6-97-F-13) and the Consistency Determination issued by CDFG (tracking #2080-2000-003-5) pursuant to Section 2080.1 of the Fish and Game Code allowed the take of one vireo pair during the refilling of the San Vicente reservoir during the construction of the ESP. According to 2006 focused survey results, the implementation of the CSP could significantly impact more than one vireo pair (pending preconstruction surveys) during refilling of the reservoir. In addition, the CSP would extend the refilling period longer than the ESP, thereby increasing the time additional sensitive species could occupy re-established habitat and exacerbating

potential direct impacts to such species due to inundation of the habitat from refilling of the reservoir. Impacts to least Bell's vireo from refilling of the reservoir are considered significant.

Indirect Impacts

Quino Checkerspot Butterfly. No indirect impacts are expected to Quino checkerspot habitat, if project design features are implemented.

Arroyo Toad. No indirect impacts are expected to the arroyo toad.

California Gnatcatcher. Indirect impacts from projected construction during the breeding season, such as dust, noise, lighting, could adversely affect gnatcatchers that have been previously recorded south of the dam in the project construction area. All these indirect impacts, with the exception of noise, will be avoided through the implementation of project design features (see Section 2.1.1). Noise impacts in excess of 60dBA Leq from construction of the Proposed Action are considered to be significant.

Least Bell's Vireo. Indirect impacts to this species may include construction-related noise and nighttime lighting (see Section 1.4.1), both of which can disrupt breeding populations and cause nest abandonment. However, because construction activities are restricted to areas away from potential vireo habitat, no indirect impacts to this species are expected.

B. Non-listed Sensitive Species

Figures 2-10, 2-13, 2-14, and 2-18 show the locations of non-listed sensitive plant and animal species that have been documented within the San Vicente study area. A rare plants survey was conducted by TAIC in 2006, and results of these surveys are shown in red (Figure 2-10). Additionally, incidental sightings of plants and animals made in 2005 and 2006 by TAIC during general biological resources surveys, focused species surveys, or wetlands delineation are included on these figures. Species points shown in black were obtained by querying species databases, including the ESP, CNDDB, and SANDAG species databases. Potential direct and indirect impacts to these species are discussed below (Table 2-14).

Direct Impacts

Impacts are considered significant if they are expected to affect a major population, or if they would impact the species metapopulation (e.g., if one of only a few known populations occurs in the impact zone, or if the species has extremely narrow habitat

requirements). Table 2-14 summarizes the permanent and temporary direct impacts to non-listed sensitive species. There are no differences in the quarry options for impacts to non-listed sensitive species. CSP construction would result in permanent loss of 1,065 delicate clarkia plants in 11 locations. Out of 31 remaining clarkia populations in San Diego County, the San Vicente population is considered one of the largest. The numbers of plants within most extant populations are not available, however, populations reported by the Natural History Museum range between 25 and 300 individuals. Impacting over 1,000 individual plants may eliminate half of the remaining plants in the County. The project would affect a large number of individuals from a major delicate clarkia population, a species of special concern. Therefore, permanent impacts would be significant.

~~Additionally, the southwestern pond turtle would be permanently impacted by CSP construction. Although table 2-14 shows only one observation being impacted, this species is highly secretive and it is assumed that the reservoir is currently occupied by more than one individual. The slow filling of the reservoir is expected to negatively impact the species by disrupting foraging areas, destroying basking and nesting sites, and increasing predation. In addition, the time required for shoreline vegetation to re-establish would negatively impact the species. This species is considered uncommon in San Diego County and nearly all populations in the County experience impacts threatening their persistence (Hollingsworth pers. comm.). Therefore, impacts to this population are considered significant. Focused surveys for the species should be conducted prior to construction to determine the population size and collect data for a potential capture and release program.~~

Although the southwestern pond turtle was detected during 1993 ESP field surveys, the species it not expected to be currently occupying the reservoir. Extensive visual and trapping surveys for the pond turtle were conducted by USGS in 2002 (USGS 2005). Although the San Vicente Reservoir was determined to support suitable pond turtle habitat, no pond turtles were detected during these surveys. Based on these findings, it is assumed that the species is no longer occupying the reservoir. Therefore, no impacts to the southwestern pond turtle are expected.

Less than significant permanent or temporary impacts would occur to several species, and are not expected to substantially affect species or populations because either (1) a small number of individuals would be impacted; or (2) the species is locally common and fairly abundant in the region. Additionally, the white-tailed kite, a fully protected species, was not observed nesting in the area of impact.

Table 2-14. Summary of Potential Impacts to Non-Listed Sensitive Species within the SV 100K Footprint[1].

Species	Direct Impacts[2]		Indirect Impact[2]	Status
	Permanent	Temporary		
Plants				
Delicate Clarkia	Significant (1,065 plants, 11 locations)	None	Less than significant	--/SSC, List 1B
Engelmann Oak	Less than Significant (13 trees, 10 locations)	None	None	--/SSC, List 4
San Diego Goldenstar	None	None	None	--/SSC, List 1B
San Diego Sagewort	Less than Significant (85 plants, 29 locations)	Less than Significant (41 plants, 2 locations)	Less than significant	--/SSC, List 4
~~San Diego Sunflower~~	~~Less than Significant (1,249 plants, 18 locations)~~	~~Less than Significant (24 plants, 7 locations)~~	~~Less than significant~~	~~--/SSC, List 4~~
San Diego County Viguiera	Less than Significant (1,249 plants, 18 locations)	Less than Significant (24 plants, 7 locations)	Less than significant	--/SSC, List 4
Reptiles				
Orange-throated Whiptail	Less than Significant (32 observations)	None	Less than significant	--/SSC
Red Diamond Rattlesnake	Less than Significant (3 observations)	Less than Significant (1 observation)	None	--/SSC
~~Southwestern Pond Turtle~~	~~Significant (1 observation)~~	~~None~~	~~None~~	~~--/SCC~~
Southwestern Pond Turtle	None	None	None	--/SCC
Two-striped Garter Snake	Less than Significant (1 observation)	None	None	--/SSC
Birds				
Bell's Sage Sparrow	Less than Significant (2 observations)	Less than Significant (1 observations)	None	--/SSC
Cooper's Hawk	None	None	None	--/SSC
Horned Lark	None	None	None	--/SSC
Loggerhead Shrike	Less than Significant (2 observations)	None	None	--/SSC
Osprey	Less than Significant (2 observations)	None	None	--/SSC
Rufous-crowned Sparrow	Less than Significant (45 observations)	Less than Significant (7 observations)	Less than significant	--/SSC
White-tailed Kite	Less than Significant (1 observation)	None	None	--/SFP
Yellow-breasted Chat	None	None	None	--/SSC

[1] Excludes impacts permitted by ESP.
[2] There is no difference in impacts for the three quarry options.

Indirect Impacts

Indirect impacts to nesting birds and other non-listed sensitive species during construction, such as noise, human presence, and nighttime lighting, are expected. However, project design features (see Section 2.1.1) will bring indirect impacts to non-listed sensitive species to a level below significance.

C. Potentially Occurring Sensitive Species

No significant direct or indirect impacts to other potentially occurring species are expected because none of these species (Table 2-6) was documented in the study area. Insignificant impacts would occur to foraging and dispersal habitat of species documented outside the study area, such as golden eagle, black-tailed jackrabbit, mountain lion, and San Diego pocket mouse. However, ample dispersal and foraging habitat for these species remains in the City's Cornerstone Lands and open space surrounding the San Vicente Reservoir. Preconstruction surveys for Quino checkerspot will be performed pursuant to requirements in the ESP BO (1-6-97-F-13). However, it is expected that fire recovery after the 2003 Cedar Fire will result in canopy closure and the elimination or reduction of Quino checkerspot habitat in the study area.

2.5.2 Habitat Linkages and Wildlife Movement Corridors

Significance Criterion 4: *Would the Proposed Action interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*

Significant impacts to habitat linkages and wildlife movement corridors may include permanent or temporary direct impacts resulting in blockages, constrictions, or degradation of habitat that would substantially limit movement, dispersal, or genetic flow between or within blocks of habitat. Significant indirect impacts may include construction-related activity, noise and nighttime lighting that would inhibit wildlife movement.

The SV 100K implementation is not expected to cause any significant direct impacts to habitat linkages or wildlife movement corridors for the following reasons: no regional or local movement corridors would be permanently blocked; multiple north-south and east-west corridors would remain after project implementation; and the Proposed Action would not impede movement through the area. Construction noise in excess of 60 dBA Leq (see Section 1.4.1) and nighttime lighting south of the dam may temporarily affect

the breeding of the California gnatcatcher within the SV 100K footprint. However, these affects are not expected to impact bird dispersal. During drawdown, the reservoir water level will be maintained at 590 feet AMSL and, as such, wildlife will not lose access to this source of drinking water.

2.5.3 Compliance with Adopted Regional Plans and Ordinances

Significance Criterion 5: *Would the Proposed Action substantially conflicts with the policies and provisions of an adopted local or regional Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP) for the area where the project is located or with any of these plans' efforts to conserve "covered species."*

2.5.3.1 Vegetation Communities and Sensitive Habitats

The Water Authority is not seeking third party beneficiary status under the City of San Diego MSCP permit because impacts from the Proposed Action to federally and state listed species and supporting habitats will be authorized through the Corps, USFWS, RWQCB and CDFG permitting processes. The Water Authority is not a signatory to the MSCP Implementing Agreement; therefore, the MSCP Subregional/Subarea Plans do not govern the Water Authority's land use policies.

As detailed in the City's MSCP Subarea Plan, the City exempts lands up to the 800-foot contour plus a 300-foot horizontal buffer surrounding the reservoir from the San Vicente Reservoir Cornerstone Lands Preserve (MHPA), specifically for the Water Authority's ESP (City of San Diego MSCP Subarea Plan, pg. 31). However, because San Vicente Reservoir is within the City's MSCP regional planning area boundaries, an evaluation of consistency with relevant MSCP planning policies and design guidelines was conducted. The conditions for compatibility outlined in the MSCP's planning policies and design guidelines call for minimizing environmental impacts and avoiding disturbance of the habitat of MSCP covered species and wetlands. Except for eucalyptus woodland, disturbed habitat, and developed lands, the MSCP regulates all of the vegetation communities identified within the study area as environmentally sensitive vegetation communities (Table 2-8), including chaparral and non-native grassland. Where avoidance is infeasible, mitigation is required in order to maintain the assurances provided by the MSCP. The Water Authority, however, is not seeking coverage or third-party beneficiary status under the terms of the MSCP and is not bound to its significance criteria or mitigation requirements.

Consistency with MSCP Conservation Goals

Much of the Proposed Action's impacts to the habitats of MSCP covered species would be avoided or mitigated. ~~However, the Proposed Action would not be consistent with the above referenced planning policies and design guidelines of the City of San Diego's MSCP because impacts to chaparral and non-native grassland habitats would not be mitigated pursuant to these MSCP guidelines.~~

As previously mentioned under Significance Criterion 3, project impacts to chaparral are less than significant because this vegetation community is considered locally and regionally well distributed by the Water Authority. In addition, the minor permanent impact to non-native grassland would not substantially affect the regional distribution of this habitat.

Permanent impacts to 151.5 acres of chaparral habitat occur "outside the MHPA" (i.e., exempt from the City's Cornerstone Lands; the exempt area extents to the 800-foot contour plus a 300-foot buffer). Just over 0.5 acre of permanent impact occurs inside the MHPA (Marina/Quarry Option within Cornerstone Lands). Most (approximately 9.5 acres) of the impacts to Cornerstone Lands (not exempt) are temporary. Pursuant to the MSCP and the City's Environmentally Sensitive Lands (ESL) Code, the City requires mitigation for Tier III A vegetation communities (including chaparral). The City of San Diego has achieved much of the required chaparral habitat conservation and acquisition, as anticipated by the MSCP. Of 10,424 acres of required chaparral conservation, the City has conserved a total of 7,614 acres; 7,187 acres (70 percent of the total required chaparral conservation) occur inside the MHCP Preserve. In addition, 71 percent of cumulative habitat gain of chaparral habitat has been achieved within the entire MSCP area (including other jurisdictions within the MSCP plan area).

The Water Authority is ~~not~~ proposing to mitigate for the estimated 151.5 acres of less than significant permanent impacts to chaparral and the estimated 0.04 acre of less-than-significant permanent impact to NNG at a 0.5:1 ratio by debiting upland credits from its Crestridge Habitat Management Area and San Miguel Conservation Bank.- ~~Therefore, the City will lose 76 acres of chaparral in their MSCP planning area pursuant to the City's Implementing Agreement with USFWS and CDFG. If the City of San Diego is able to conserve approximately 3,000 acres of chaparral in the area to fulfill its chaparral conservation goals, the loss of 76 acres of unmitigated chaparral is less than significant. Therefore, CSP conflicts with relevant planning policies and design guidelines of the City of San Diego's MSCP would not substantially interfere with the City's ability to~~

~~implement the MSCP and, therefore, these impacts are considered to be less than significant.~~

~~In conclusion, temporary and permanent impacts to approximately 194 acres of chaparral due to the Proposed Action may affect the ability of the City of San Diego to implement the MSCP. However~~ In addition, the city is currently at 91.9 percent of its conservation goal (52,727 acres), with the remaining 8.1 percent comprised of privately owned lands (City of San Diego MSCP Annual Report, 2006). Impacts to chaparral within the SV 100K footprint would occur on publicly owned land and, as evaluated in Threshold 3 above, these impacts would be less than significant because this vegetation community is considered locally and regionally well distributed by the Water Authority. The loss of this vegetation community would not affect MSCP conservation goals on a regional basis. Therefore, impacts to biological resources associated with MSCP conservation goals would be less than significant.

Consistency with Preserve Designation

A small portion of the SV 100K footprint in the southeastern marina and Marina Quarry Option area (conceptual footprint) extend beyond the boundary (800-foot ASML contour plus 300-foot horizontal buffer) that exempts the project from the City's Cornerstone Land Preserve. The Marina Quarry Option would be located north of the existing dam and would extend approximately 10 acres into a portion of the City's Cornerstone MHPA (non-exempt area).

If the Marina Quarry Option was constructed, there would be no need for the Southwest and Southeast Quarry options and existing habitat in these two areas would continue to contribute biological value to the surrounding area. The Southwest Quarry contains pre-fire (2003 Cedar Fire) gnatcatcher-occupied coastal sage scrub habitat and the Southeast Quarry would contribute valuable coastal sage scrub habitat to the regional MSCP preserve system. Overall, the Marina Quarry Option would substantially reduce the acreage anticipated to be used for aggregate production for the dam expansion (by approximately 15 acres); in addition, impacts from quarrying at the Marina Quarry are temporary because the quarry will be back-filled and revegetated with native species after aggregate production. Therefore, the project impacts to City's Cornerstone Lands are considered to be less than significant.

2.5.3.2 MSCP Covered Species

Impacts to the majority of MSCP-covered species have been addressed under Significance Criterion 3 (See Tables 2-5 and 2-6 for MSCP status, and Section 2.5.1.3 for a discussion of impacts to sensitive species). The two exceptions are the western bluebird and the southern mule deer. Although the bluebird was observed (two incidental observations) in the oak woodland onsite, the Proposed Action is not expected to significantly impact local or regional bluebird populations because impacts to its habitat are minor, and large amounts of habitat remain in the region. Mule deer were seen numerous times throughout the study area. This species is common in the region and is not expected to be negatively impacted by the Proposed Action. Therefore, the SV 100K project would not significantly impact any MSCP-covered species other than those considered sensitive as described in Section 2.5.1.3.

2.6 MITIGATION MEASURES

Mitigation is needed to reduce any significant environmental effects to biological and wetlands resources to a level below significance after the implementation of the project design features (Section 2.2.1). To mitigate biological resources impacts, the Water Authority will implement the mitigation measures described in the EIS/EIR for this project.

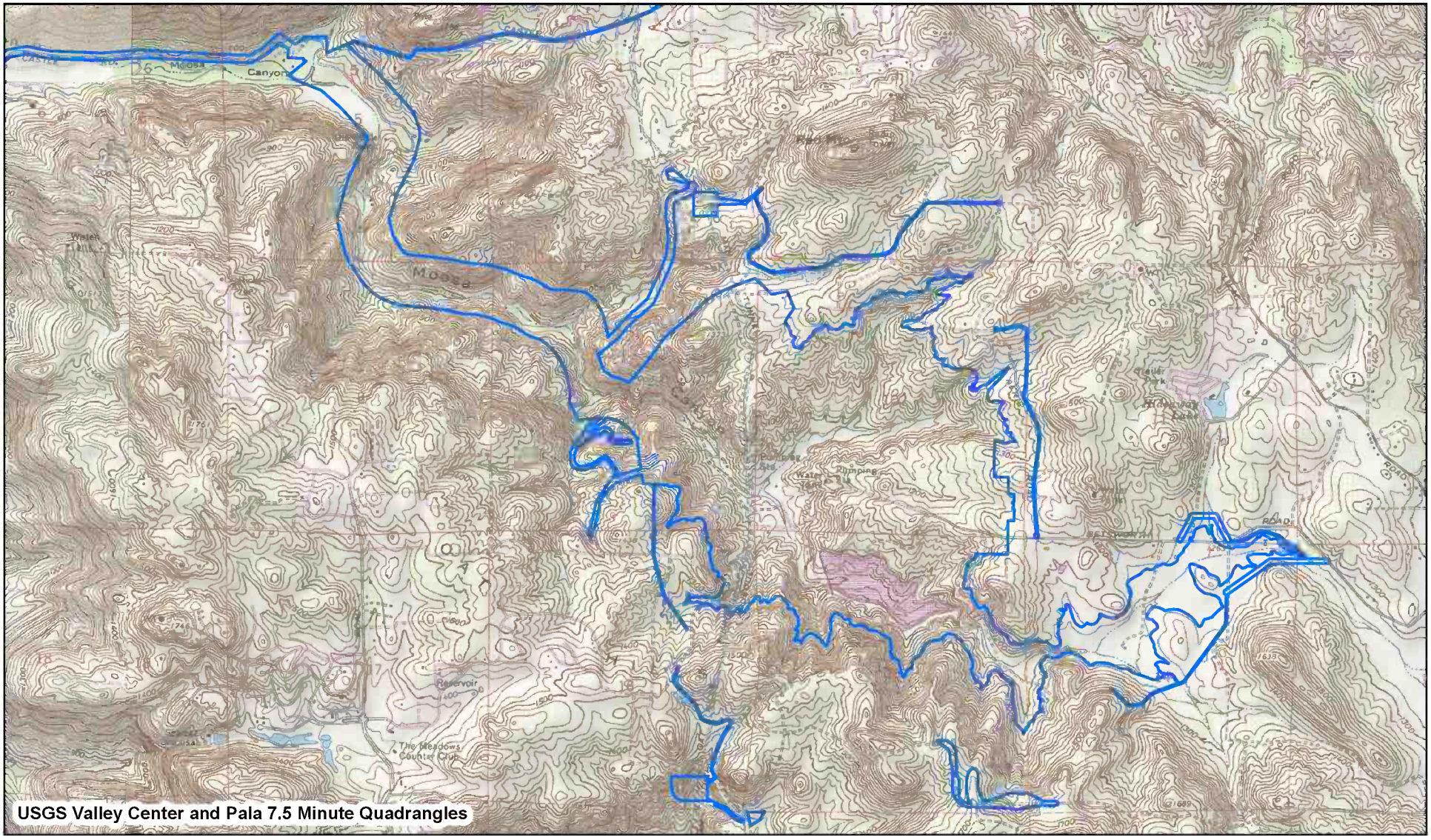
3.0 ALTERNATIVE 2: MOOSA 100,000 ACRE-FEET

3.1 ENVIRONMENTAL SETTING

Moosa Valley is located in a relatively unpopulated area 3.5 miles northwest of Valley Center in San Diego County (Figures 1-1). The site is approximately 15 miles north of the City of Escondido and 4 miles east of Interstate 15 (I-15). The site is within the USGS 7.5-minute Valley Center and Pala quadrangles, Township 10 South, Range 2 West, Section 33; Township 11 South, Range 2 West, Sections 3, 4, 5, 6, 8, 9, 10, 11, 13, 14, 15, 16, 21, and 22; Township 11 South, Range 3 West, Sections 1 and 2; and Township 15 South, Range 9 East, Section 30 (Figure 3-1). Access to the site is via Old Castle Road, Lilac Road and Betsworth Road. Existing land uses within Moosa Valley include Turner Reservoir, scattered residences, agricultural lands (mostly avocado orchards), and undeveloped areas.

3.2 PROJECT DESCRIPTION

This alternative (herein referred to as the Moosa 100K alternative) would provide for approximately 100,000 AF of carryover storage at Moosa Valley through construction of a new dam and inundation of a natural canyon (Figures 3-2 and 3-3). A new 384-foot high dam would be constructed. The dam crest length would be approximately 2,370, and the elevation would be 1,258 feet AMSL. A saddle dam with spillway would be constructed approximately 1,000 feet to the northeast of the main dam; the spillway elevation would be 1,246 feet AMSL. The impact calculations and graphics used the 1,250-foot contour for this alternative since the contour data for the Moosa vicinity was only available in 25-foot contour intervals. The saddle dam/spillway would be approximately 84 feet high and 1,090 feet long. Both the main dam and saddle dam would be concrete-face rockfill dams. Dam construction is estimated to take about four years.



Legend

1250' Contour, Pipeline Corridor, and Outlying Project Components*

* Project component details are displayed on Figures 3-2 and 3-3.
Note: The western portion of the pipeline falls within existing roads, therefore it is not displayed on this graphic.

N

Feet

0 2,800

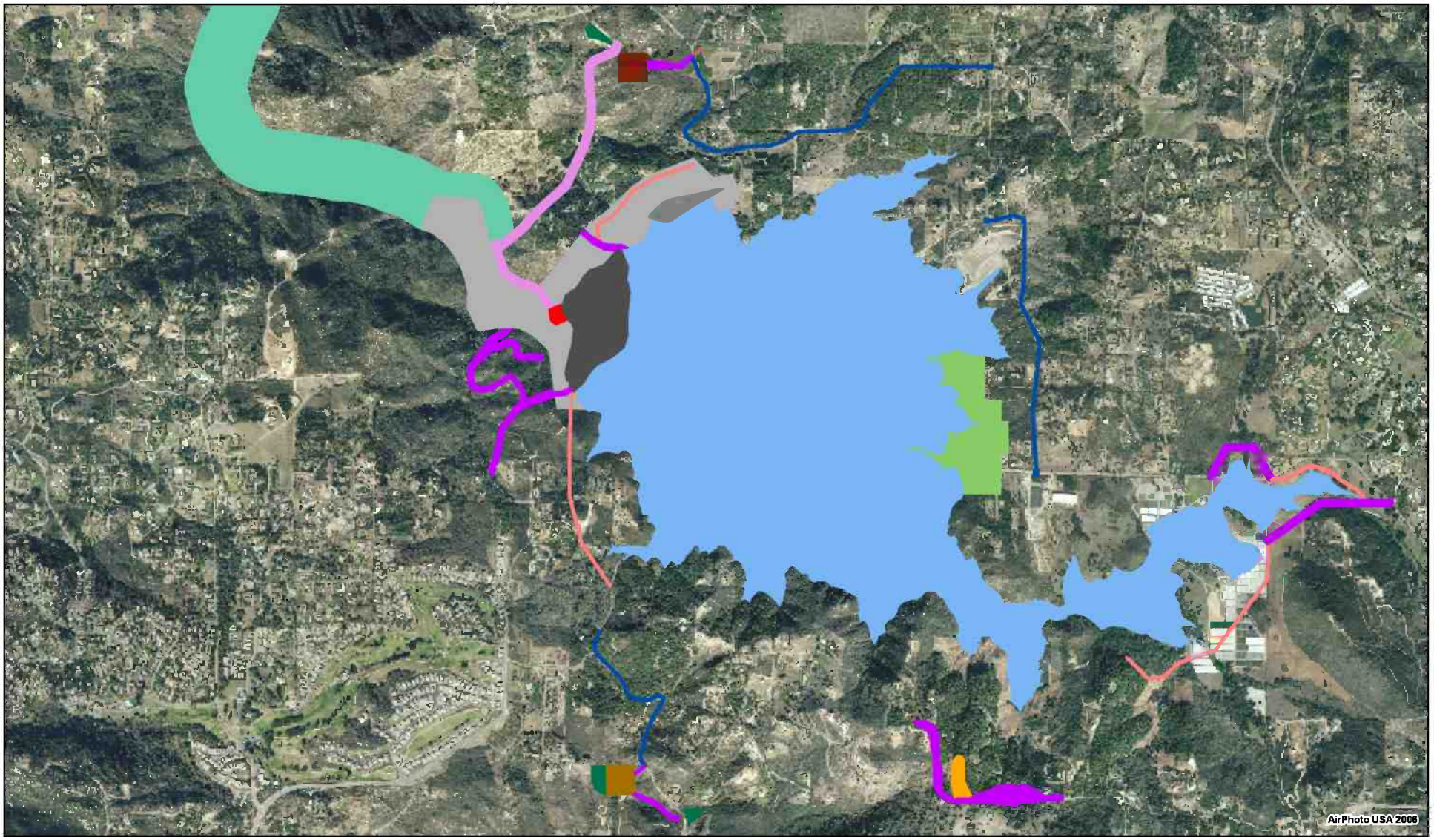
TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa 100K Project Footprint on USGS Topographic Quadrangle Map

Figure 3-1

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\USGS.mxd

Date: Apr 26, 2007



Legend

- Reservoir Inundation Area (1250' contour)
- Dam
- Saddle Dam with Spillway
- Marina
- VCMWD North Pump Station
- VCMWD South Pump Station
- First Aqueduct Tunnel Portal
- Access/Construction/Relocated Road
- Borrow Area
- Dam Construction Zone - Temporary Impact
- First Aqueduct Pipeline Relocation - Temporary Impact
- Staging Area - Temporary Impact
- New Electrical Line - Temporary Impact
- Electrical Line Relocation - Temporary Impact
- Water Line Relocation - Temporary Impact
- Pipeline to 2nd Aqueduct - Temporary Impact*

*Temporary impacts from pipeline trenching would actually be less than what is shown because this corridor is a conceptual study area to allow for future engineering studies to determine the specific location of the alignment, if this alternative were selected.

N

Feet

0 2,300

TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa Reservoir 100K Project Components

Figure 3-2

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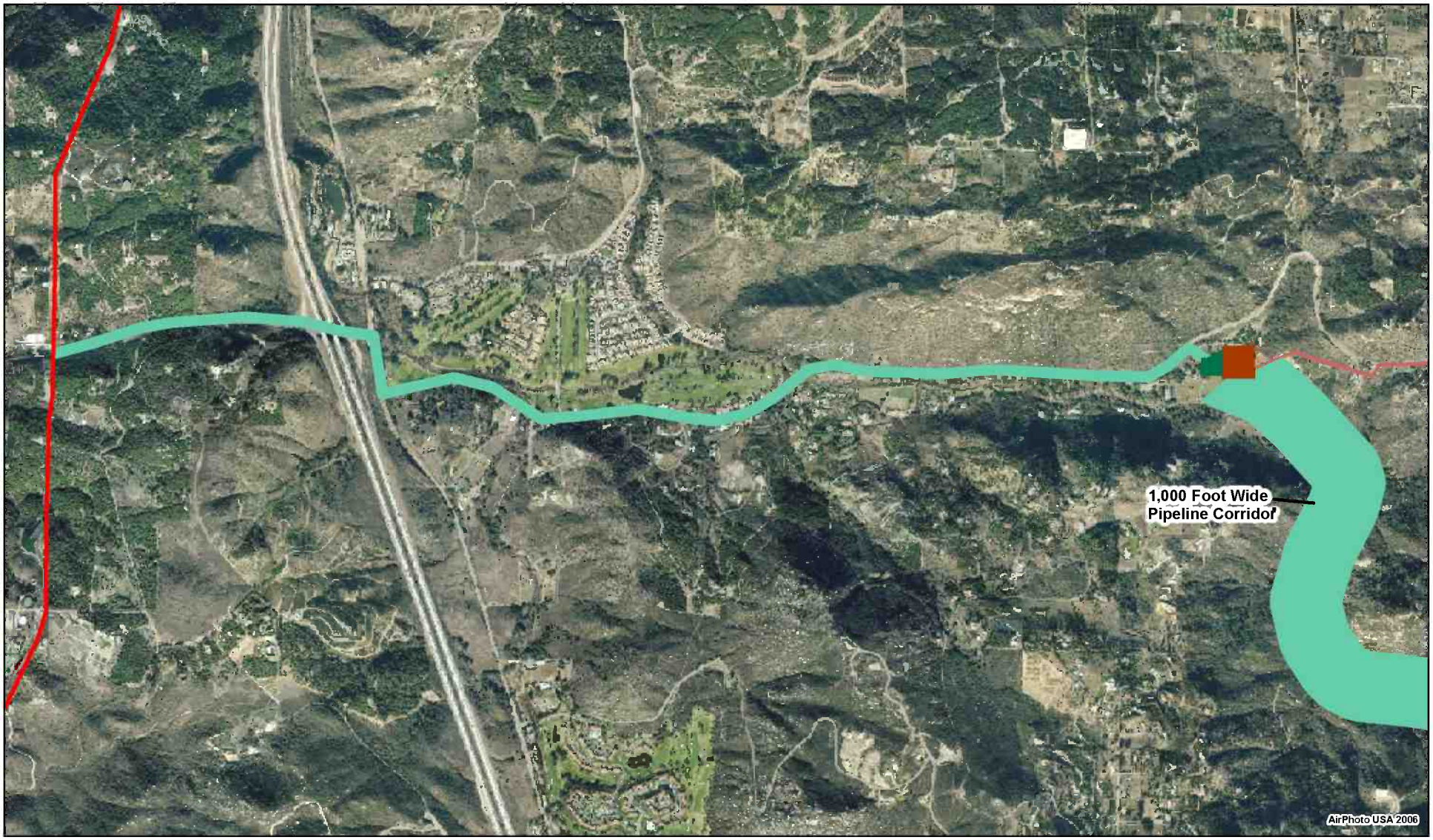
Date: Mar 09, 2007



Legend

- Moosa Canyon Pump Station
- Staging Area
- New Electrical Line
- Pipeline to 2nd Aqueduct - Temporary Impact*

*Temporary impacts from pipeline trenching within the 1,000 foot wide corridor would actually be less than what is shown because this corridor is a conceptual study area to allow for future engineering studies to determine the specific location of the alignment, if this alternative were selected.

Basemap Legend

- Couny Water Authority 2nd Aqueduct

N

Feet

0 2,000

TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa Pipeline to 2nd Aqueduct

Figure 3-3

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Pipeline Project Components.mxd

Date: Apr 13, 2007

The following new conveyance facilities would be required to connect the reservoir to the Water Authority's aqueduct system: three pump stations, flow regulatory storage tank, pipeline, and appurtenant facilities. The Moosa Creek pump station would lift water from the Moosa Reservoir to a flow regulatory storage tank. Water would be conveyed by gravity from the tank to the Second Aqueduct via a 6.4-mile-long, 90-inch-diameter steel pipeline. The pipeline alignment would follow Moosa Creek to Old Castle Road and continue west to the Second Aqueduct on the west side of I-15. The pipeline would be installed within an open-cut trench, except for the portion crossing I-15, which would be in a tunnel. Additional facilities would include a marina, new access roads, and new electrical supply to the pump station and other facilities. A portion of the Water Authority's First Aqueduct located below the reservoir inundation area would be relocated around the reservoir.

3.2.1 Project Design Features

Project design features implemented during and after construction are the same as described for the SV 100K. Please refer to Section 2.2.1.

3.3 FIELD SURVEY METHODS

An overview of methods, including literature reviews, species database queries, and field surveys that were used to determine the type and extent of biological resources within the study areas is given in Section 1.3. This section includes, with greater detail, the methods for surveys conducted in 2006 for the Moosa 100K alternative. Focused species surveys were not performed for this alternative.

3.3.1 Field Reconnaissance

Field surveys for the Moosa 100K alternative were conducted within selected portions of the study area in October of 2006 (Table 3-1). Biological reconnaissance surveys were conducted by TAIC to confirm existing biological conditions within the project footprint that were documented during 1992-93 field surveys for the ESP project.

Table 3- 1. Summary of Field Surveys Conducted by TAIC in 2006

Survey Type	Dates	Personnel[1]	Survey Location
Vegetation communities delineation and mapping and general biological resources survey	October 17, 2006	MH, EK, JK, MR	Turner Reservoir, off Betsworth Road
Vegetation communities delineation and mapping and general biological resources survey	October 18, 2006	MH, EK, JK, MR	Moosa Canyon and pipeline area in northwest region of footprint
Vegetation communities delineation and mapping and general biological resources survey	October 25, 2006	MH, MR	Northern region of footprint and several outlying, individual parcels

[1] Personnel: MH = Marissa Hedman (TAIC), EK = Eric Kershner (TAIC), JK = John Konecny (independent consultant), MR = Mark Roll (TAIC)

A limited number of parcels within the 3,700-acre study area, mostly privately-owned, were selected for pedestrian surveys based on an analysis of biologically prominent areas on aerial photographs. The GIS vegetation layer was overlain onto a 400-scale (1" = 400') color aerial photograph, along with available sensitive species data, parcel boundaries, roads and Moosa 100K alternative footprint overlay. Areas within the footprint with potentially occurring sensitive species or vegetation communities, according to aerial signature of relatively undisturbed native habitats, were determined to hold the highest priority for physical surveys. Survey parcels along with access parcels were identified and access was requested via letters of permission from the San Diego County Water Authority to the property owners of the parcels. Only those parcels that received and responded to letters of permission were accessed.

Vegetation mapping

Vegetation communities mapped during 1992-93 field surveys for the ESP were verified in the field using GIS-generated maps with vegetation layers overlain on the aerial photographs, and comparing vegetation boundaries with vegetation communities on the ground. During vegetation mapping, incidental observations or evidence of sensitive plants and wildlife were recorded and mapped. The natural vegetation community classification used in this report follows Holland (1986) and Oberbauer (2005).

General biological resources surveys

General biological resource surveys were conducted from October 17 to October 25, 2006 (Table 3-1). Species of plants, invertebrates, amphibians, reptiles, birds and mammals (including animal sign) that were observed during the survey period were recorded. A complete species inventory is included in this report for reference (Appendix

B). This list includes results from the 2006 surveys as well as data acquired from the ESP surveys, database queries, and a literature review.

Focused species surveys

Sensitive species information was obtained from regional databases (PSBS 1991a, 1991b, 1993; ESP species database, SDNHM 2005 and 2006; CNDDB 2006, USFS 2006; SANDAG 2006; General biological resources surveys conducted by TAIC, 2006). Focused species surveys were not conducted for the Moosa study area. Data collected during 1992/93 ESP focused surveys were used as the best available data.

Jurisdictional wetlands delineation

Jurisdictional wetland delineations were not conducted for the Moosa study area. Data obtained from the ESP project, however, were visually confirmed in the field where feasible. Areas not covered by the ESP wetlands delineations (mainly in the eastern portion of the study area) were analyzed by wetlands associated vegetation communities; Corps jurisdiction was not determined in these areas

3.3.2 Survey Limitations

The 2006 biological survey results are limited due to restricted access to private parcels in the surveys area. The entire study area was not included in the surveys, although much of the study area was surveyed in 1992/3 for the ESP project. Limitations of the 2006 biological resources surveys also include a seasonal bias for plant and bird species. Herbaceous annual or perennial plant species that flower in the spring or summer would be difficult to observe during fall surveys. Migratory birds, such as the least Bell's vireo, that are only present during part of the year, may not be detected. The presence of certain species would only be detected through focused surveys, which were determined not necessary for this effort.

Limitations also include a diurnal wildlife bias. Wildlife species that are secretive in their habitats, nocturnally active, or may require trapping efforts to determine presence/absence would not have been observed or detected during the general wildlife surveys. Birds represent the largest component of the vertebrate fauna, and because most birds are active in the daytime, diurnal surveys maximize the number of observations of this portion of fauna. Daytime surveys usually result in few observations of mammals, many of which may only be active at night. Many species of reptiles and amphibians are

secretive in their habits and are difficult to observe in the daytime. Daytime air temperatures may not have been warm enough for reptiles or amphibians to be active.

Terrain in the field was too steep and densely covered with shrubby vegetation to allow biologists to survey the whole area. Therefore, surveys mostly had to take place along access roads or established trails. Access to selected parcels was also limited by private property boundaries. On the parcels that could not be walked, a visual overview of the vegetation types was done from an area of higher elevation.

3.4 AFFECTED ENVIRONMENT

3.4.1 Physical Conditions

The Moosa Canyon area is located in the foothills of northwestern San Diego County, approximately 18 miles from the Pacific Coast in Valley Center. The rugged terrain in this area is characterized by steep slopes with massive rock outcroppings and deep canyons containing intermittent and perennial surface flow. The Moosa area is climatically similar to the eastern portion of the San Vicente area in that it experiences a Mediterranean climate. Soils in this area range from acid igneous rock on slopes and peaks to sandy loams in streambeds and floodplains.

Moosa Canyon, a deep, steep-sided canyon, dominates the landscape at the Moosa Reservoir site and the southeastern portion of the pipeline corridor. This east-to-west trending canyon was formed by Moosa Creek, a perennial stream that supports well-developed riparian forest habitat. A number of smaller intermittent and perennial tributaries to Moosa Creek support a variety of riparian habitat ranging from marsh to riparian forest. The central portion of the Moosa Pipeline follows one of these tributaries that flow into Moosa Creek from the north. Turner Reservoir, located in the southeastern portion of the reservoir site, was formed by damming Moosa Creek. The easternmost reach of the proposed reservoir site is characterized by a broad, relatively flat valley that supports riparian habitat along the streams and grassland and dense oak woodland in upland areas.

3.4.2 Flora

This section includes an overview of the flora and vegetation communities that occur in the study area. Sensitive habitats and sensitive species are discussed separately in Section 3.4.4 below.

3.4.2.1 Plant Species

Southern California has been called a biodiversity hotspot, a biogeographic region that contains a high diversity of plant and animal species and is threatened by destruction. The Moosa survey area contains a high number of sensitive and non-sensitive plant species. Along with the typical species of each vegetation community occurring in the survey footprint, a number of sensitive species have been documented from this area including Engelmann oak, wart-stemmed ceanothus (*Ceanothus verrucosus*), rush-like bristleweed (*Machaeranthera juncea*), and summer holly (*Comarostaphylos diversifolia* var. *diversifolia*).

3.4.2.2 Vegetation Communities

Vegetation on the slopes of the Moosa Reservoir and pipeline sites consists primarily of southern mixed chaparral. Scattered stands of coastal sage scrub also occur in this area but comprise a small proportion of the vegetation. Although large stands of relatively high quality native vegetation remain in this area, they are somewhat fragmented and disturbed due to the moderate amounts of agricultural and some residential land use in the area. These activities have resulted in conversion of considerable portions of the native landscape to avocado groves and large private ranches, especially on the upper slopes of the reservoir site and along the northwestern portion of the pipeline corridor. Twenty vegetation communities have been mapped in the Moosa study area and are shown in Figures 3-4 and 3-5 and listed and quantified in Table 3-2.

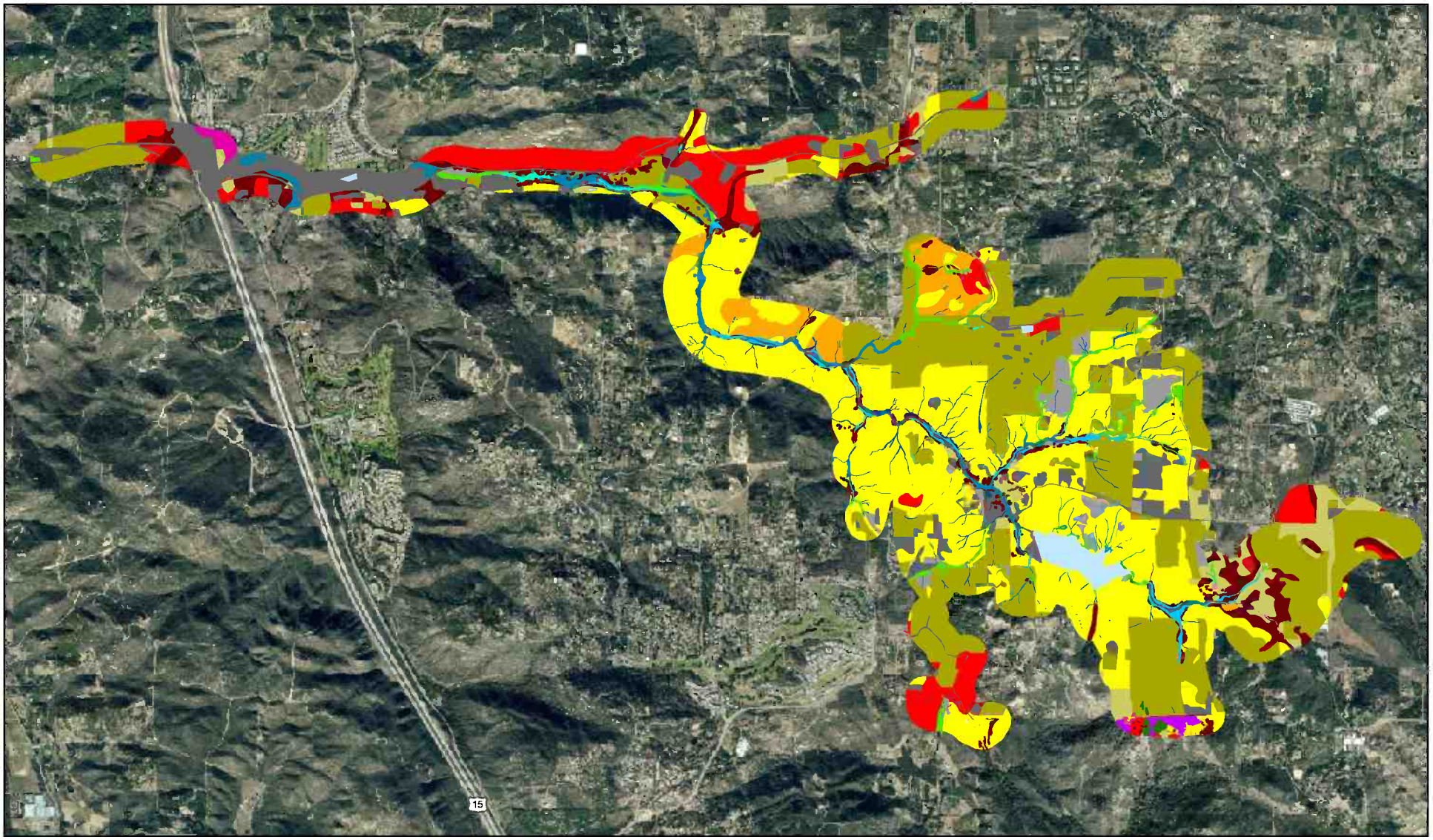
The vegetation communities were classified according to the Oberbauer modification of Holland Community Types (Holland, 1986; Oberbauer, 2005), which uses an arbitrary code to identify vegetation types. Riparian and wetland communities are discussed first in order of Holland Code, followed by a discussion of upland communities, also discussed in order of Holland Code. Each summary includes the acreage and locations of each plant community within the study area. A full description of most vegetation

communities found within the Moosa 100K footprint is contained in the San Vicente 100K alternative (Section 2.4.4.2)

Table 3-2. Vegetation Communities in the Moosa Study Area.

Vegetation Community	Acres
Riparian/Wetland Communities[1]	
Open Water (reservoir)/Freshwater (13140)[2]	44.52[3]
Unvegetated Channel/Lakeshore Fringe (13200)[2]	14.20
Freshwater Marsh (52410)[2]	7.90
Southern Coast Live Oak Riparian Forest (61310)[2]	31.64
Southern Cottonwood-Willow Riparian Forest (61330)[2]	72.01
Southern Sycamore-Alder Riparian Woodland (62400)[2]	10.78
Mulefat Scrub (63310)[2]	0.83
Southern Willow Scrub (63320)[2]	51.82
Disturbed Wetland (11200)[2]	0.53
Total Riparian/Wetland Communities	***234.23***
Upland Communities	
Coastal Sage Scrub (32500)[2]	300.85
Chaparral (37120)	1,180.29
Coastal Sage-Chaparral Scrub (37G00)[2]	113.84
Valley Needlegrass Grassland (42110)[2]	4.38
Non-Native Grassland (42200)	141.12
Coast Live Oak Woodland (71160)[2]	186.67
Open Engelmann Oak Woodland (71181)[2]	10.87
Eucalyptus Woodland (11100)	1.28
Disturbed Habitat (11300)	79.10
Agriculture (18000)	1,123.63
Urban/Developed (12000)	348.55
Total Upland Communities	***3,490.58***
TOTAL VEGETATION COMMUNITIES	**3,724.81**

[1] Holland codes are given in parentheses.
[2] Vegetation communities regulated or considered sensitive by federal, or state agencies.
[3] Includes 0.20 acre of perennial/seasonal pond.



Legend

- Open Water (reservoir)/Freshwater
- Unvegetated Channel/Lakeshore Fringe
- Perennial/Seasonal Pond
- Coastal/Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Southern Sycamore-Alder Riparian Woodland
- Mulefat Scrub
- Southern Willow Scrub
- Disturbed Wetland
- Diegan Coastal Sage Scrub
- Chaparral
- Coastal Sage-Chaparral Scrub
- Valley Needlegrass Grassland
- Non-Native Grassland
- Coast Live Oak Woodland
- Open Engelmann Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Agriculture
- Urban/Developed

N

Feet

0 3,850

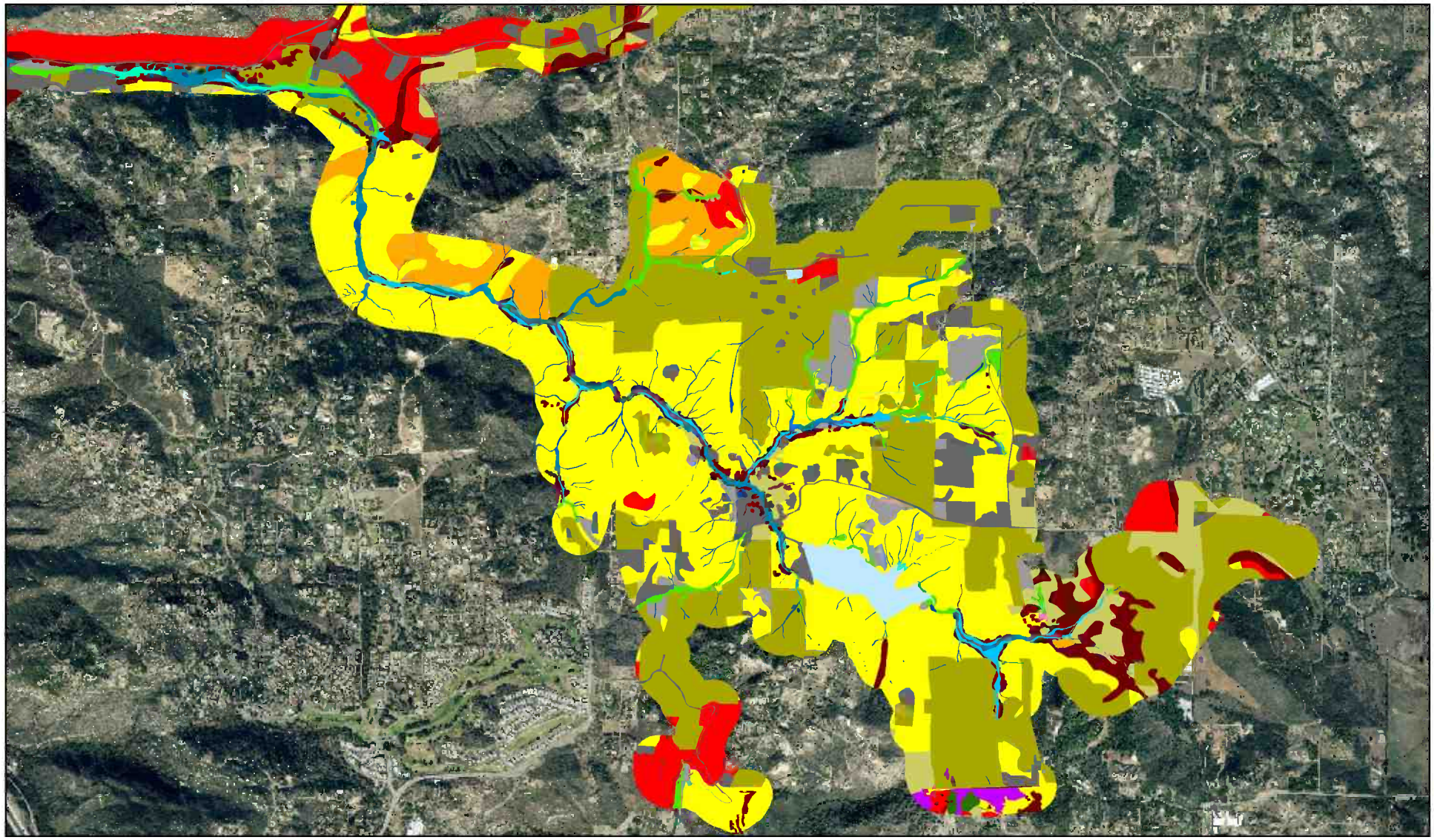
TAIC

Carryover Storage and San Vicente Dam Raise Project
Vegetation Communities within the Moosa Study Area

Figure 3-4

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Overall Vegetation.mxd

Date: Jun 05, 2007



Legend

- Open Water (reservoir)/Freshwater
- Unvegetated Channel/Lakeshore Fringe
- Perennial/Seasonal Pond
- Coastal/Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Southern Sycamore-Alder Riparian Woodland
- Mulefat Scrub
- Southern Willow Scrub
- Disturbed Wetland
- Diegan Coastal Sage Scrub
- Chaparral
- Coastal Sage-Chaparral Scrub
- Valley Needlegrass Grassland
- Non-Native Grassland
- Coast Live Oak Woodland
- Open Engelmann Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Agriculture
- Urban/Developed

N

Feet

0 2,900

TAIC

Carryover Storage and San Vicente Dam Raise Project
Vegetation Communities within the Moosa Reservoir Area

Figure 3-5

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Reservoir Vegetation.mxd

Date: Apr 13, 2007

RIPARIAN/WETLAND COMMUNITIES

Open Water (reservoir)/Freshwater (13140)

Within the Moosa study area, Turner Reservoir and Moosa Creek and supporting tributaries support this vegetation community. An estimated 0.20 acre of perennial/seasonal pond habitat is included in this category. This estimated 0.20 acre accounts for two perennial/seasonal ponds found within the study area. Moosa Creek flows through Moosa Canyon into Turner Reservoir, the reservoir in the southeastern portion of the study area. An estimated 44.52 acres of open water/freshwater occur in the study area.

Submerged aquatic vegetation. During 2006 field surveys this vegetation community was not surveyed and quantified. Turner Reservoir does not show evidence of frequent fluctuations in water level; therefore, there is potential for this habitat type to occur in the shallows of the lake.

Unvegetated Channel/Lakeshore Fringe (13200)

An estimated 14.20 acres of unvegetated channel/lakeshore fringe habitat occurs around the circumference of Turner Reservoir and along seasonal drainages leading to the reservoir.

Freshwater Marsh (52410)

Within the Moosa study area, an estimated 7.90 acres of freshwater marsh occurs along the shoreline of Turner Reservoir, as well as within a number of the drainages in this area and at the dam site.

Southern Coast Live Oak Riparian Forest (61310)

This vegetation community occurs along Moosa Creek and several of its tributaries. An estimated 31.64 acres of this habitat type occurs within the study area..

Southern Cottonwood-Willow Riparian Forest (61330)

The study area consists of an estimated 72.01 acres of this habitat type, occurring along Moosa Creek and several of its tributaries.

Southern Sycamore-Alder Riparian Woodland (62400)

This vegetation community can be defined as a tall, open, broadleafed, winter-deciduous streamside woodland dominated by western sycamore (*Platanus racemosa*) and white alder (*Alnus rhombifolia*). Stands of this community rarely form closed canopy forests. The understory is often dominated by poison oak (*Toxicodendron diversilobum*) and California blackberry (*Rubus ursinus*). Within the Moosa study area, an estimated 10.78 acres of this vegetation type is found west of Turner Reservoir in Moosa Canyon.

Mulefat Scrub (63310)

Within the Moosa study area, an estimated 0.83 acre of mulefat scrub occur along a seasonal stream channel.

Southern Willow Scrub (63320)

An estimated 51.82 acres of southern willow scrub occur along a number of seasonal stream channels and in scattered areas along the shore of Turner Reservoir.

Disturbed Wetland (11200)

Areas mapped as disturbed wetlands include wetland habitat that has been recently cleared and/or is dominated by herbaceous, non-native plant species. Sites classified as disturbed wetland generally have hydric soils and/or wetland indicator plant species, including non-native plants. Hydric, or potentially hydric, soils in the study region include Chino (ChA, CkA), Indio (InA, IoA, IsA), Riverwash (Ru), and Tujunga sand (TuB) soil complexes, among others. Herbaceous, non-native wetland species typically found in disturbed wetlands in the study region include eastern cocklebur (*Xanthium strumarium* var. *canadense*) and dock (*Rumex* spp.), among others. Within the study area, a small patch (approximately 0.53 acre) of disturbed wetland occurs east of Turner Reservoir.

UPLAND COMMUNITIES

Diegan Coastal Sage Scrub (32500)

Within the study area, coastal sage scrub habitat is fragmented occurring at scattered locations in the inundation and construction footprint. A number of continuous stands occur along Old Castle Road. It occurs in smaller stands at the eastern, southern, and southeastern portions of the study area and makes up a small proportion (approximately 300.85 acres) of the total vegetation within the study area.

Chaparral (37000)

Chaparral is widely distributed throughout California on dry slopes and ridges at low and medium elevations where it occupies thin, rocky, or heavy soils. It is typically composed of broad-leaved, sclerophyllous shrubs, although species composition varies considerably with location. The plants of this community have developed the ability to survive recurrent fires by producing seeds that require a fire-related cue to stimulate germination and/or by stump sprouting after being burned. Species of the following genera are characteristic in chaparral associations: *Adenostoma*, *Arctostaphylos*, *Ceanothus*, *Cercocarpus*, *Heteromeles*, shrubby *Quercus*, and *Rhamnus.*

Chaparral is the most common vegetation community in the study area (approximately 1,180.29 acres). It is the predominant upland vegetation community within the Moosa Canyon inundation area and is also abundant around Turner Reservoir. The majority of this habitat within the study area is characterized as dense, high quality chaparral. Although considered environmentally sensitive by the City and County of San Diego primarily due to its wildlife value and gradual loss as a result of development, chaparral is not considered a sensitive vegetation community by the Water Authority.

Two distinct chaparral associations, as recognized by Holland (1986), occur within the study area: chamise chaparral and southern mixed chaparral. The two types are discussed separately below but no distinction is made between the two in Figures 3-4 and 3-5 or when analyzing impacts.

> Chamise chaparral (37200) is characterized by nearly monotypic stands of chamise (*Adenostoma fasciculatum*) to 1-3 m (3-9 feet) in height. Additional shrub species, such as mission manzanita and our Lord's candle (*Yucca whipplei*),

may be present, but contribute little to the overall cover. The herbaceous component of this association is largely lacking. Chamise chaparral occurs on xeric slopes and ridges, and is found on shallower, drier soils or at somewhat lower elevations than southern mixed chaparral.

Southern mixed chaparral (37120) tends to occur on steeper, more mesic north-facing slopes than chamise chaparral. This vegetation community type is characterized by relatively high species diversity. Typical species include chamise, Eastwood manzanita (*Arctostaphylos glandulosa* ssp. *glandulosa*), scrub oak (*Quercus dumosa*), holly-leaf cherry, toyon, and winter currant (*Ribes indecorum*). The understory component is generally better-developed in this association than in chamise chaparral, and may include species such as mariposa-lily (*Calochortus* spp.), soap plant (*Chlorogalum* spp.), and bedstraw (*Galium* spp.), among others.

Coastal Sage-Chaparral Scrub (37G00)

This mixed community includes both drought-deciduous sage scrub species and woody chaparral species, and is a post-fire successional community. Total vegetative cover includes roughly equal amounts of both scrub and chaparral species. Characteristic dominant species include chamise, California sagebrush, ceanothus (*Ceanothus* spp.), black sage, and poison-oak. Coastal sage-chaparral scrub is generally considered sensitive and is regulated similarly to coastal sage scrub.

Few stands of coastal sage-chaparral scrub are found within the study area totaling an estimated 113.84 acres. Three larger stands are found along Moosa Canyon, primarily on the northeastern side of the canyon. One smaller stand of coastal sage-chaparral scrub is located at the northwestern end of Moosa Canyon.

Valley Needlegrass Grassland (42110)

Valley needlegrass grassland is characterized by a dense herbaceous cover of perennial, tussock-forming needlegrass species (*Nasella* spp.). Native and introduced annuals occur between the needlegrass, often exceeding the *Nasella* in cover (Holland 1986). This association generally occurs on fine-textured clay soils that are moist or wet in winter, but very dry in summer. Shrubs are infrequent, probably due to the unstable clay soils.

The degree of habitat quality in native grasslands varies greatly, depending on the history of grazing, cultivation, or other disturbance factors.

Native grassland or valley needlegrass grassland is considered sensitive by the City and County of San Diego and the CNDDB 2006 (Holland 1986) because of its limited distribution, potential for supporting sensitive plant species, and habitat loss from agricultural activities and urban and rural development. Within the Moosa study area, this vegetation community occurs at one of the construction/access road sites and one of borrow areas. An estimated 4.38 acres of this habitat type occurs within the study area.

Non-Native Grassland (42200)

Non-native grassland habitat is found at a number of scattered locations within the study area. The largest stand of this habitat type is found near the southeastern boundary of the study area. An estimated 141.12 acres of this habitat type occurs within the study area.

Coast Live Oak Woodland (71160)

Coast live oak woodland habitat is found throughout the study area, totaling an estimated 186.67 acres. It is found in patches along Old Castle Road, in Moosa Canyon, and in larger stands in the southeastern portion of the study area.

Open Engelmann Oak Woodland (71181)

The open phase of Engelmann oak woodland is an evergreen woodland dominated by Engelmann oak and has an understory of herbaceous species that are typical of grassland habitat. This habitat occurs in moist sites on fine-textured soils of gentle slopes and valley bottoms (Holland 1986). In wetter sites, coast live oak can be an additional component of this association. Two stands of open Engelmann oak woodland are found at the southern-most portion of the study area, totaling an estimated 10.87 acres.

Eucalyptus Woodland (11100)

A small stand of eucalyptus woodland (approximately 1.28 acres) is found north of Turner Reservoir, adjacent to a larger stand of disturbed habitat.

Disturbed Habitat (11300)

An estimated 79.10 acres of disturbed habitat occurs within the study area. The majority of this habitat occurs next to agricultural lands north of Turner Reservoir.

Agriculture (18000)

Agriculture lands within the project area are used primarily for intensive agriculture practices, such as growing orchard crops. Four specific types of agriculture lands occur within the Moosa study area, orchard and vineyards, intensive agriculture, field and pasture, and row crops. In Figures 3-4 and 3-5 these are aggregated into a single agriculture designation.

Agriculture lands are the second most common habitat community (approximately 1,123.63 acres) within the study area. Large avocado groves occur throughout the Moosa inundation area and at the dam, spillway, and dam and spillway construction zones. Agriculture lands also occur at the northwestern and northeastern end of the study area, along Old Castle Road.

Urban/Developed (12000)

Development (approximately 348.55 acres) occurs along Old Castle Road in the northwestern portion of the study area. In addition, there are a number of scattered locations of development found throughout the study area.

3.4.3 Wildlife

The Moosa 100K alternative study area covers a wide range of ecosystems, from coastal sage scrub and chaparral, to riparian scrub, oak woodlands and grasslands. Correspondingly, like most of San Diego County, there is a wide diversity of wildlife in the study area, similar to what has been documented during the San Vicente surveys and analysis. However, the Moosa study area is not as rocky as the terrain found at San Vicente. This may result in a larger abundance of small mammal species in the Moosa study area. During 2006 general biological surveys, observations of bird species made up the majority of species detected. Some common bird species detected include the California towhee (*Pipilo crissalis*), California quail (*Callipepla californica*), wrentit (*Chamaea fasciata*), Bewick's wren (*Thryomanes bewickii*), spotted towhee (*Pipilo*

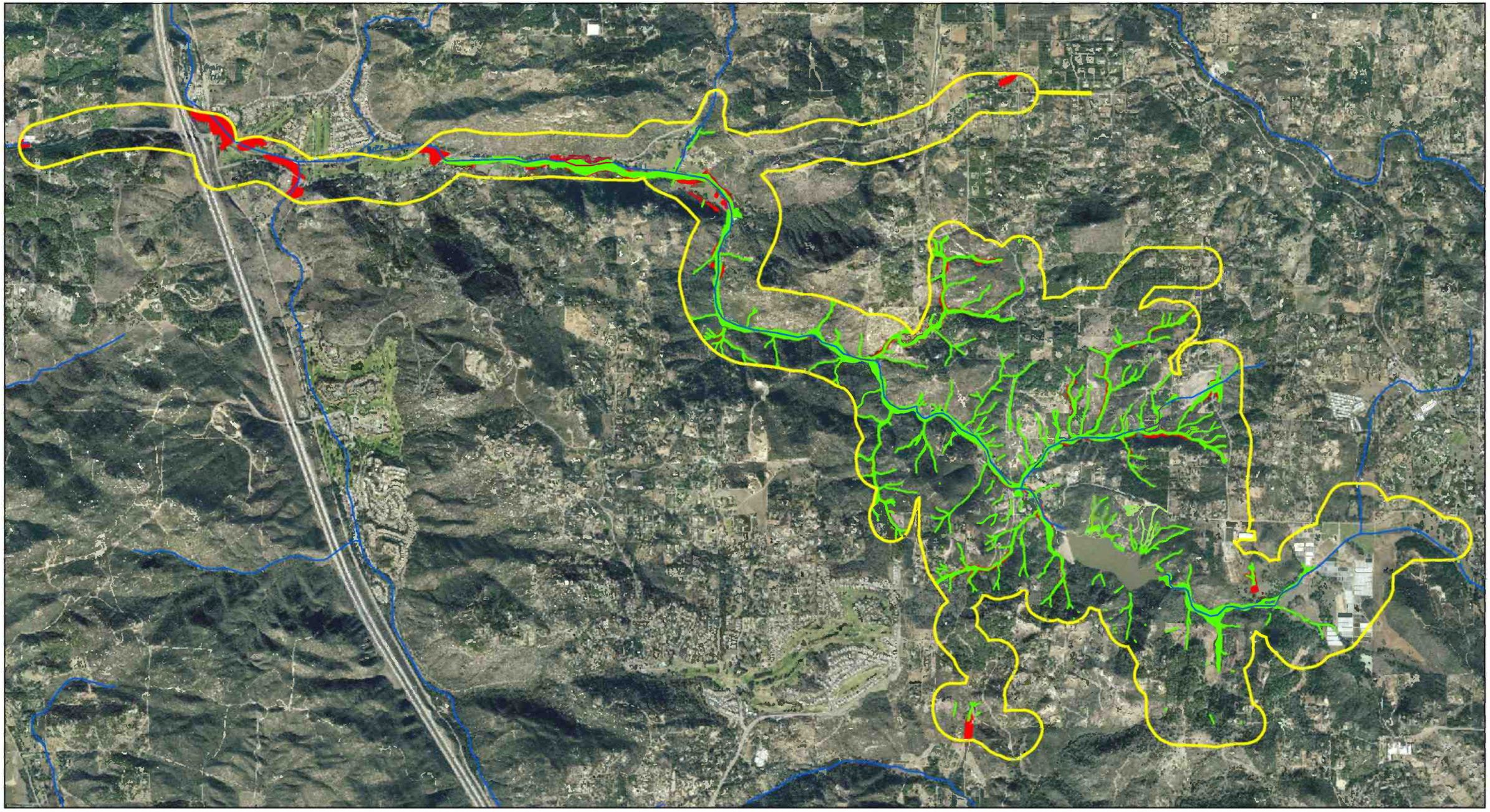
maculatus), bushtit (*Psaltriparus minimus*), California thrasher (*Toxostoma redivivum*), and American coot (*Fulica americana*). For this alternative, GIS database searches, literature searches, and reconnaissance-level biological resources surveys were used to identify important wildlife resources.

3.4.4 Sensitive Biological Resources

3.4.4.1 Sensitive Vegetation Communities

CDFG-Defined Wetlands and Unvegetated Waters of the State

For a discussion of CDFG-Defined Wetlands and Unvegetated Waters of the State refer to Section 2.4.4.1 of the SV 100K chapter 2.0. Seven types of CDFG-regulated wetlands occur within the Moosa study area (Table 3-3): freshwater marsh, southern coast live oak riparian forest, southern cottonwood-willow riparian forest, southern sycamore-alder riparian forest, mulefat scrub, southern willow scrub, and disturbed wetland. Categories of unvegetated channel regulated by CDFG in the Moosa study area include open water (reservoir)/freshwater, lakeshore fringe, and unvegetated channel (Table 3-3; Figures 3-6 and 3-7). These are described in the San Vicente 100K chapter (the latter two CDFG-defined waters correspond to a single, combined vegetation community (Oberbauer 2005) and Corps jurisdictional term: unvegetated channel/lakeshore fringe). Table 3-3 summarizes the CDFG wetlands and waters within the study area.



Legend

- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands and Waters

Basemap Legend

- Study Area
- Streams

N

Feet

0 2,450

Note: Open water (existing reservoir) mapping not displayed.

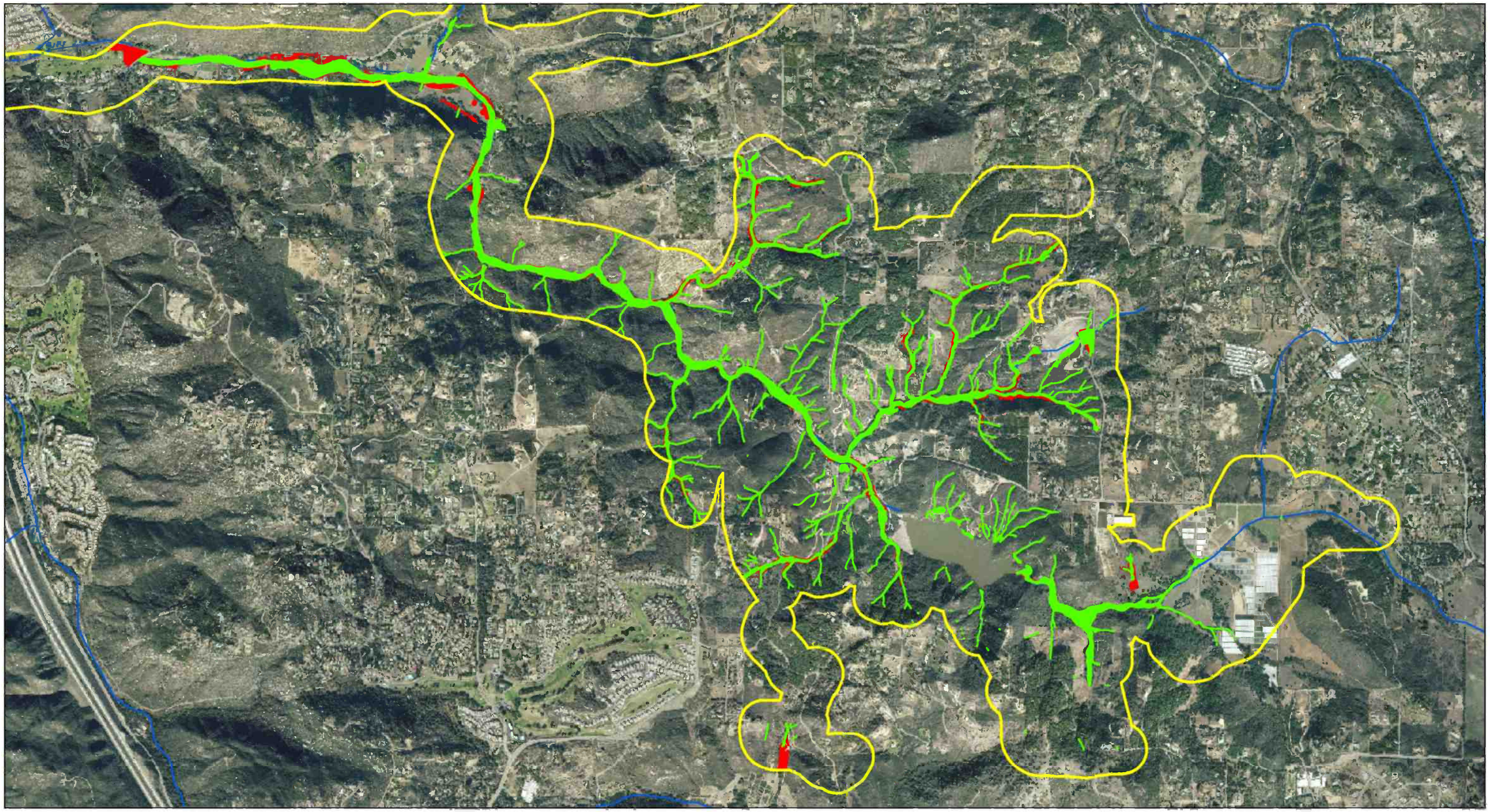
TAIC

Carryover Storage and San Vicente Dam Raise Project
Jurisdictional Wetlands and Waters within the Moosa Study Area

Figure 3-6

File: T:\projects\sanvicente\plots\figures\Moosa BTR\Overall Wetlands.mxd

Date: Mar 09, 2007



Legend

- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands and Waters

Basemap Legend

- Study Area
- Streams

N

Feet

0 2,000

Note: Open water (existing reservoir) mapping not displayed.

TAIC

Carryover Storage and San Vicente Dam Raise Project
Jurisdictional Wetlands and Waters within the Moosa Reservoir Area

Figure 3-7

File: T:\projects\sanvicente\plots\figures\Moosa BTR\Reservoir Wetlands.mxd

Date: Mar 09, 2007

Table 3-3.CDFG-Defined Wetlands and Unvegetated Waters of the State within the Moosa 100K Footprint.

CDFG-Defined Wetlands/Unvegetated Waters of the State	Acres
WETLANDS	
Freshwater Marsh	7.90
Southern Coast Live Oak Riparian Forest	31.64
Southern Cottonwood-Willow Riparian Forest	72.01
Southern Sycamore-Alder Riparian Woodland	10.78
Mulefat Scrub	0.83
Southern Willow Scrub	51.82
Disturbed Wetland	0.53
Total Wetlands	***175.51***
UNVEGETATED WATERS OF THE STATE	
Open Water (reservoir)/Freshwater	44.52[1]
Lakeshore Fringe	2.38
Unvegetated Channel	11.82
Total Unvegetated Waters.	***58.72***
TOTAL WETLANDS AND UNVEGETATED WATERS	**234.23**

[1] Includes 0.20 acre of perennial/seasonal pond.

Corps-Regulated Wetlands and Unvegetated Waters of the U.S.

For a detailed discussion of Corps-regulated Wetlands and Unvegetated Waters of the U.S. refer to Section 2.4.4.1 of the SV 100K chapter. Six types of Corps regulated wetlands occur within the Moosa study area (Table 3-4): freshwater marsh, southern coast live oak riparian forest, southern cottonwood-willow riparian forest, mulefat scrub, southern willow scrub, and disturbed wetland. Detailed descriptions, acreage, and locations of these wetlands are given in Section 3.4.2.2 above. Categories of Corps regulated waters (Corps Waters of the U.S.) in the study area include open water, lakeshore fringe, and seasonal streambed (Table 3-4; Figures 3-6 and 3-7) with the exception of perennial/seasonal pond, which, according to the SWNCC Decision of 2001 (Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 9-1178 (January 9, 2001)) is considered "isolated wetlands" (those waters and wetlands that are not hydrologically connected to Corps-regulated navigable waters). These are described in Section 3.4.2.2 above (seasonal streambed and lakeshore fringe correspond to a single, combined vegetation community: unvegetated channel/lakeshore fringe according to Oberbauer (2005)). Corps jurisdictional boundaries had been determined in

1992/3 for the ESP footprint, but were not determined for areas of this alternative that extend outside the ESP footprint. While the ESP delineations considered the isolated perennial pond jurisdictional, these delineations were conducted prior to the SWANCC Decision of 2001. Reconnaissance-level field surveys conducted by TAIC in 2006 concluded that the pond was isolated and would, therefore, not be regulated by the Corps. However, formal jurisdictional wetlands delineations should be performed to confirm this finding. Since format wetlands delineations were not required, we are taking a conservative approach in this document and assume Corps' jurisdiction over the seasonal pond. This finding will be adjusted during the formal permit application process with the Corps.

Table 3-4. Corps-Regulated Wetlands and Unvegetated Waters of the U.S. within the Moosa 100K Footprint.

Corps-Regulated Wetlands / Unvegetated Waters of U.S.	Acres
WETLANDS	
Freshwater Marsh	6.35
Southern Coast Live Oak Riparian Forest	29.29
Southern Cottonwood-Willow Riparian Forest	44.34
Mulefat Scrub	0.77
Southern Willow Scrub	35.24
Disturbed Wetland	0.11
Total Wetlands	***116.10***
UNVEGETATED WATERS OF THE U.S.	
Open Water (reservoir)/Freshwater	44.32
Lakeshore Fringe	2.38
Seasonal Streambed	11.82
Perennial/Seasonal Pond	0.20
Total Unvegetated Waters	***58.72***
TOTAL WETLANDS AND UNVEGETATED WATERS	**174.82**

3.4.4.2 Sensitive Species

See Section 2.4.4 in the SV 100K chapter for a discussion of sensitive species. Sensitive species documented from the Moosa study area are listed in Table 3-5 and shown in Figures 3-8 through 3-12.

Table 3-5. Documented Sensitive Species from the Moosa Survey Area

Common Name[1]	Species Name	Status[2]	Data Source[3]
Plants			
Engelmann Oak[4]	*Quercus engelmannii*	--/SSC[5], List 4	SANDAG, ESP
Fish's Milkwort[4]	*Polygala cornuta* ssp. *fishiae*	--/SSC[5], List 4	ESP
Mission Canyon Blue-cup[4]	*Githopsis diffusa* ssp. *filicaulis*	--/SSC[5], List 1B	ESP
Southern Tarplant[4]	*Centromadia parryi* spp. *australis*	--/SSC[5], List 1B	ESP
Summer Holly[4]	*Comarostaphylos diversifolia* var. *diversifolia*	--/SSC[5], List 1B	ESP, SANDAG, CNDDB
Wart-stemmed Ceanothus[4]	*Ceanothus verrucosus*	--/SSC[5], List 2	ESP
Reptiles			
Coronado Island Skink[4]	*Eumeces skitonianus interparietalis*	--/SSC	ESP, CNDDB
Orange-throated Whiptail[4]	*Cnemidophorus hyperythrus*	--/SSC	SANDAG, ESP, CNDDB
Northern Red Diamond Rattlesnake[4]	*Crotalus ruber rubber*	--/SSC	ESP, CNDDB
Coast Horned Lizard	*Phrynosoma coronatum blainvillei*	--/SSC	SANDAG, ESP, CSP
Southwestern Pond Turtle[4]	*Clemmys marmorata pallida*	--/SSC	SANDAG, ESP
Silvery Legless Lizard[4]	*Aniella pulchra puchra*	--/SSC	ESP
Two-striped Garter Snake[4]	*Thamnophis hammondii*	--/SSC	ESP, SANDAG
Birds			
Rufous-crowned Sparrow	*Aimophila ruficeps canescens*	--/SSC	SANDAG, ESP, San Diego Bird Atlas, CSP
California Gnatcatcher	*Polioptila californica californica*	FT/SSC	SANDAG, USFWS, CSP, San Diego Bird Atlas, CNDDB
Cooper's Hawk	*Accipiter cooperi*	--/SSC	ESP, CSP, SANDAG, San Diego Bird Atlas
Golden Eagle[4]	*Aquila chrysaetos*	BEPA/SFP	ESP, SANDAG
Least Bell's Vireo[4]	*Vireo bellii pusillus*	FE/SE	CNDDB, SANDAG
Loggerhead Shrike[4]	*Lanius ludovicianus*	--/SSC	ESP, SANDAG
Northern Harrier[4]	*Circus cyaneus*	--/SSC	SANDAG, ESP, San Diego Bird Atlas

Common Name[1]	Species Name	Status[2]	Data Source[3]
Osprey	*Pandion haliaetus*	--/SSC	ESP, CSP
Prairie Falcon[4]	*Falco mexicanus*	--/SSC	ESP, San Diego Bird Atlas
Sharp-shinned Hawk[4]	*Accipiter striatus*	--/SSC	ESP
White-tailed Kite	*Elanus caeruleus*	--/SFP	ESP, CSP, SANDAG
Yellow-breasted Chat[4]	*Icteria virens*	--/SSC	ESP, SANDAG
Yellow Warbler[4]	*Dendroica petechia*	--/SSC	ESP
Mammals			
Dulzura California Pocket Mouse[4]	*Chaetodipus californicus femoralis*	--/SSC	ESP
San Diego Black-tailed Jackrabbit[4]	*Lepus californicus bennetti*	--/SSC	ESP
San Diego Desert Woodrat[4]	*Neotoma lepida intermedia*	--/SSC	ESP, San Diego Mammal Atlas
Western Mastiff Bat[4]	*Eumops perotis californicus*	--/SSC	San Diego Mammal Atlas

[1] Some of the observed species are included in the species compendium (Appendix B) but are not shown in the figures.
[2] **Status**: Federal: FE – endangered, FT – threatened, BEPA – Bald and Golden Eagle Protection Act, FD – federally delisted. State: SE – endangered, ST – threatened, SR – rare, 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] **Data Source**: PSBS 1991a, 1991b, 1993; ESP species database, SDNHM 2005 and 2006; CNDDB 2006, USFWS 2006; SANDAG 2006; CSP General biological resources surveys conducted by TAIC, 2006
[4] Not observed during TAIC's 2006 surveys (data are from regional databases or ESP)
[5] CDFG maintains a species of special concern (SSC) list based on CNPS listing. However, CDFG does not specifically assign plant species with the SSC designation.

Subsection A summarizes the state or federally listed species documented onsite and provides species accounts for each listed species. Subsection B summarizes the sensitive species (as defined in 2.4.4.2) documented onsite, which are not listed (e.g., not regulated by CESA or FESA). Subsection B also includes species that may be considered sensitive by the scientific community, but are not on a formal sensitive species list sanctioned by the CDFG or USFWS. Species accounts are provided for only those non-listed species observed by TAIC during 2006 general biological field surveys. Finally, Subsection C summarizes species that have the potential to occur onsite, but that have not been documented within the study area boundaries.

A. Rare, Threatened, and Endangered Species (Listed Species)

Two federally threatened and endangered species, the least Bell's vireo and California gnatcatcher, have been documented from the Moosa study area (Figure 3-12) (see Section 1.3.1 for source information). The least Bell's vireo is also state listed (endangered) and is the only state listed species documented from the study area. The following species accounts are specific to the Moosa 100K alternative.

California gnatcatcher – *Polioptila califonica californica*
Federal Status: Threatened
State Status: Species of Concern

A full species account is contained in the SV 100K chapter. During 1992/93 ESP field surveys, the California gnatcatcher was not detected during several focused surveys. However, there are three previously documented locations in the area of the proposed pipeline, along Old Castle Road. These three locations include two occurrences on the east and west sides of Interstate 15 and an occurrence further east along Old Castle Road. During 2006 general field surveys, one gnatcatcher was heard calling northeast of Turner Reservoir (Figure 3-12).

Final critical habitat for the California gnatcatcher was published for public review in the Federal Register (FSR Vol. 72, No. 63) on April 3, 2007 the designation includes an area within the Moosa 100K study area (Figure 3-12). This habitat designation covers much of the pipeline footprint in the northwest portion of the study area. Additionally, critical habitat encroaches into the inundation area at the southwest portion of the study area.

Least Bell's vireo – *Vireo bellii pusillus*
Federal Status: Endangered
State Status: Endangered

A full species account is contained in the SV 100K chapter. The least Bell's vireo was not observed during 1992/93 ESP field surveys. However, there is one 1978 records from a previously documented location east of I-15, in the area of Castle Creek Country Club (CNDDB 1978) (Figure 3-12). The individual was detected on a golf course, which lacks sufficient suitable habitat. The individual may have been a transient. This species was not detected during 2006 field surveys. The least Bell's vireo is a breeding migrant in southern California. It arrives in San Diego County in late March and early April and

leaves for its wintering ground in September. Since 2006 field surveys were conducted in October it was highly unlikely that this species would have been observed.

B. Other (Non-Listed) Sensitive Species

Non-listed sensitive plant and wildlife species are listed in Table 3-5 and depicted in figures 3-8 through 3-11. The following accounts provide species-specific information about distribution, habitat preferences, and locations of the species observed by TAIC in 2006. Only species observed during focused species surveys for the ESP project are mapped. All incidental observations are documented in the species compendium (Appendix B).

Coast horned lizard - *Phrynosoma coronatum blainvillei*
Federal Status: None
State Status: Species of Concern

In California, this species ranges from the Transverse Ranges in Kern, Los Angeles, Santa Barbara, San Bernardino, and Ventura counties, southward to the Peninsular Ranges in Orange, Riverside, and San Diego counties. It is found on loose, fine soils in a variety of habitat types including coastal sage scrub, oak woodland, annual grasslands, chaparral, riparian woodland, and coniferous forests. This species prefers areas with pockets of open, disturbed habitat, such as graded roads. This species is threatened by commercial collecting, habitat loss due to agriculture and urbanization, and invasion of non-native ant species, such as Argentine ants, which displace native ant species. This species is known from a number of areas north and south of Turner Reservoir. Several occurrences have also been documented from Moosa Canyon, east of Turner Reservoir (Figure 3-9). During 2006 field surveys, this species was observed on a graded road north of Turner Reservoir.

Cooper's hawk - *Accipiter cooperi*
Federal Status: None
State Status: Species of Concern

A full species account is contained in the SV 100K chapter. This species is known to occur in the pipeline area west of and also within Moosa Canyon. Several occurrences were documented in the area east of Turner Reservoir (Figure 3-10). During 2006 field surveys, a Cooper's hawk was observed east of Turner Reservoir, near the location to that of a previously documented individual.

Osprey - *Pandion haliaetus*
Federal Status: None
State Status: Species of Concern

A full species account is contained in the SV 100K chapter. This species has been known to occur just east of Turner Reservoir (Figure 3-10). During the 2006 field surveys this species was observed flying overhead west of Turner Reservoir.

Rufous-crowned sparrow - *Aimophila ruficeps canescens*
Federal Status: None
State Status: Species of Concern

A full species account is contained in the SV 100K chapter. The rufous-crowned sparrow has been documented as occurring throughout the entire study area, from the pipeline region, through Moosa Canyon and around the Turner Reservoir area (Figure 3-10). During the 2006 field surveys, this species was observed in a developed area, bordering on orchards and coastal sage scrub, in a southwestern parcel of the study area and east of Turner Reservoir in Moosa Canyon in chaparral.

White-tailed kite - *Elanus leucurus*
Federal Status: None
State Status: Fully Protected

A full species account is contained in the SV 100K chapter. This species has been documented in the pipeline region west of Moosa Canyon (Figure 3-10). During the 2006 field surveys this species was observed on the southwestern shore of Turner Reservoir.

C. Potentially Occurring Sensitive Species

Table 3-6 presents a list of potentially occurring sensitive species based on species habitat preferences and distribution. Potentially occurring species are those that (1) occur outside of, but within 3 kilometer of the study area, and (2) whose habitat preferences are consistent with available habitat within the Moosa study area.

Three potentially occurring species are federal and/or state listed, and are therefore regulated by the FESA and CESA. Although the federally endangered Quino checkerspot butterfly, federally endangered and state threatened Stephens' kangaroo rat, and the federally threatened and state endangered San Diego thornmint have not been

documented in the study area, suitable habitat for these species occurs within the project footprint. Surveys for Stephens' kangaroo rat were conducted in 1992 and 1993 for the ESP project, and the species was not detected within the ESP Moosa footprint. It is unknown if this suitable habitat is currently occupied because no focused surveys were conducted for this species within the Moosa 100K footprint. Likewise, it is unknown whether suitable Quino habitat is occupied; no Quino surveys were conducted for the ESP as the species was not listed at that time. Therefore, there is a low to moderate chance of these species to occur in the study area. The federally threatened California red-legged frog historically occurred in the survey area, but is currently presumed extirpated from the county, and is therefore not addressed in this report.

San Diego Thornmint – *Acanthomintha ilicifolia*
Federal Status: Threatened
State Status: Endangered
CNPS List: 1B

A full species account is contained in the SV 100K chapter. This species occurs within 3 km of the Moosa 100K footprint.

Quino Checkerspot Butterfly – *Euphydryas editha quino*
Federal Status: Endangered
State Status: None

A full species account is contained in the SV 100K chapter. Suitable habitat occurs within the Moosa 100K footprint, however, it is unknown if this habitat is currently occupied by this species.

Stephens' Kangaroo Rat - *Dipodomys stephensi*
Federal Status: Endangered
State Status: Threatened

The Stephens' kangaroo rat is known from northern San Diego County, western Riverside County, and along the southwestern edge of San Bernardino County (Bleich 1977). The species is known to inhabit open grassland and open coastal sage scrub habitats in areas with penetrable soils and flat to moderately (<30%) sloping topography. As a fossorial animal, the Stephens' kangaroo rat typically is found in sandy and sandy loam soils with a low clay to gravel content, although there are exceptions where they can utilize the burrows of Botta's pocket gopher (*Thomomys bottae*) and California ground squirrel

(*Spermophilus beecheyi*). The species is threatened by destruction, fragmentation, and degradation of its habitat through human and human-induced activities. Adverse impacts to kangaroo rat habitat result from clearing of land for urban and suburban development and for agriculture, water projects, military activities, wildland- or prescribed fires, OHVs, livestock use, and invasion of non-native plant species. Suitable habitat exists within the Moosa study area, including native and nonnative grassland and open, disturbed habitat. Some of this habitat was deemed unoccupied during surveys conducted for the ESP project. However, it is unknown if this habitat and potentially suitable habitat that was not included in the ESP footprint but is included in the CSP footprint, is currently occupied.

Table 3-6. Potentially Occurring Sensitive Species within the Moosa 100K Study Area.

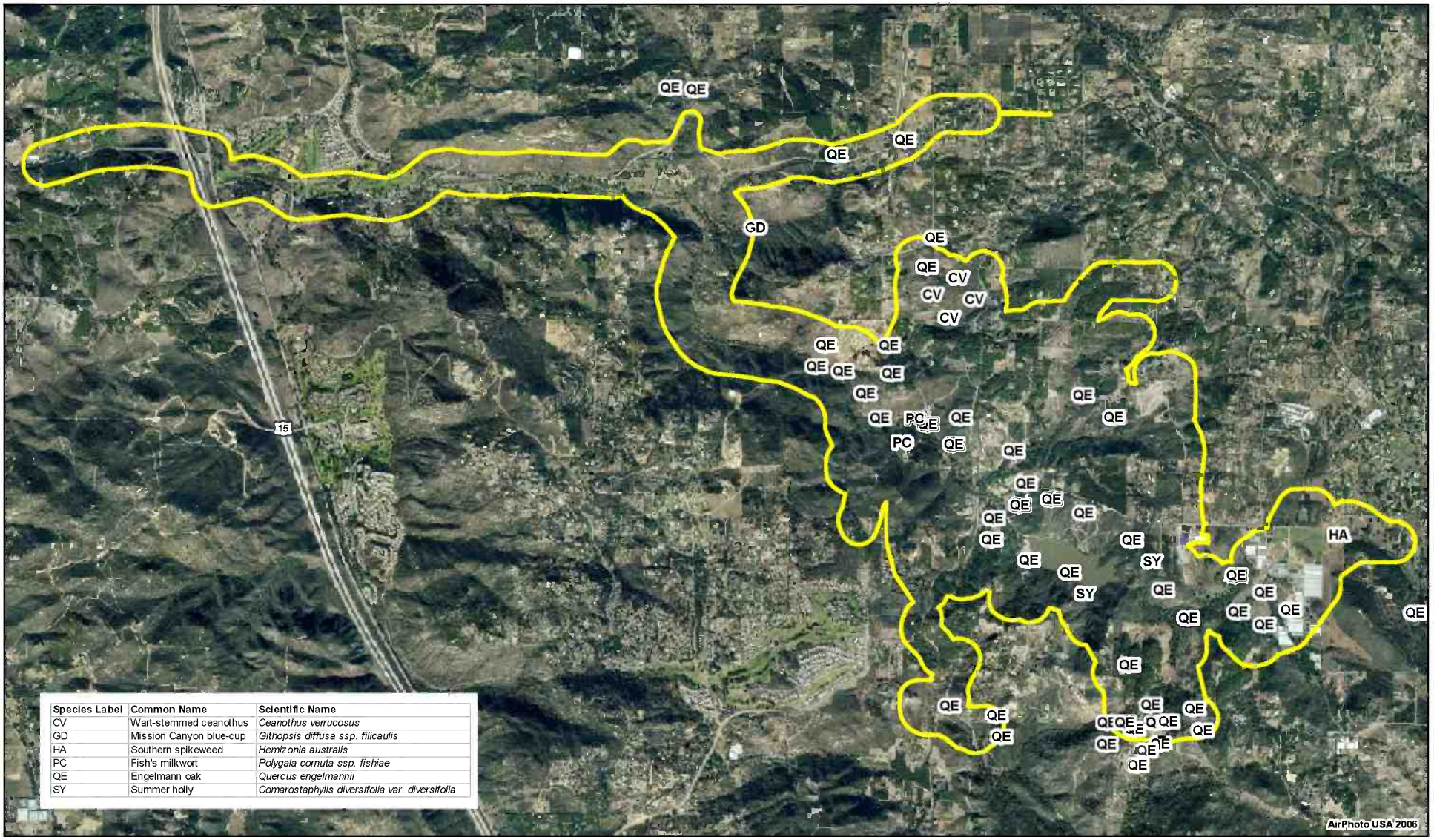
Common Name	Species Name	Status[1]	Addressed by MSCP[2]	Data Source[3]
Plants				
Felt-leaved Monardella	*Monardella hypoleuca* ssp. *lanata*	--/SSC[4], List 1B	No	SANDAG
Peninsular Manzanita	*Arctostaphylos peninsularis*	--/SSC[4], List 4	No	SANDAG
San Diego Marsh-elder	*Iva hayesiana*	--/SSC[4], List 2	No	SANDAG
San Diego Sagewort	*Artemisia palmeri*	--/SSC[4], List 2	No	SANDAG
San Diego Thornmint	*Acanthomintha ilicifolia*	FT/SE/List 1B	Yes	SANDAG
Southwestern Spiny Rush	*Juncus acutus* var. *sphaerocarpus*	--/SSC[4], List 4	No	SANDAG
Variegated Dudleya	*Dudleya variegata*	--/SSC[4], List 1B	No	SANDAG
Western Dichondra	*Dichondra occidentalis*	--/SSC[4], List 4	No	SANDAG
Invertebrates				
Quino Checkerspot Butterfly	*Euphydryas editha quino*	FE/--	Yes	TAIC CSP
Amphibians				
California Red-legged Frog	*Rana aurora draytoni*	FT/SSC	No	USFWS
Western Spadefoot Toad	*Spea hammondii*	--/SSC	Yes	CNDDB
Birds				
Bell's Sage Sparrow	*Amphispiza belli belli*	--/SSC	Yes	SANDAG
Mammals				
Stephens' Kangaroo Rat	*Dipodomys stephensi*	FE/ST	Yes	ESP

[1] **Status**: Federal: FE – endangered, FT – threatened, BEPA – Bald and Golden Eagle Protection Act, FD – federally delisted. State: SE – endangered, ST – threatened, SR – rare, 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).

[2] Species addressed by *Draft* North County MSCP.

[3] **Data Source**: PSBS 1991a, 1991b, 1993; ESP species database; SDNHM 2005 and 2006; CNDDB 2006; USFWS 2006; SANDAG 2006; CSP General biological resources surveys conducted by TAIC, 2006

[4] CDFG maintains a species of special concern (SSC) list based on CNPS listing. However, CDFG does not specifically assign plant species with the SSC designation.



Species Label	Common Name	Scientific Name
CV	Wart-stemmed ceanothus	*Ceanothus verrucosus*
GD	Mission Canyon blue-cup	*Githopsis diffusa ssp. filicaulis*
HA	Southern spikeweed	*Hemizonia australis*
PC	Fish's milkwort	*Polygala cornuta ssp. fishiae*
QE	Engelmann oak	*Quercus engelmannii*
SY	Summer holly	*Comarostaphylis diversifolia var. diversifolia*

Legend

Study Area

Black labels are prior to 2005

Sources: TAIC 2006 field surveys, ESP species database, SANDAG Regional Species database.

N

Feet

0 3,850

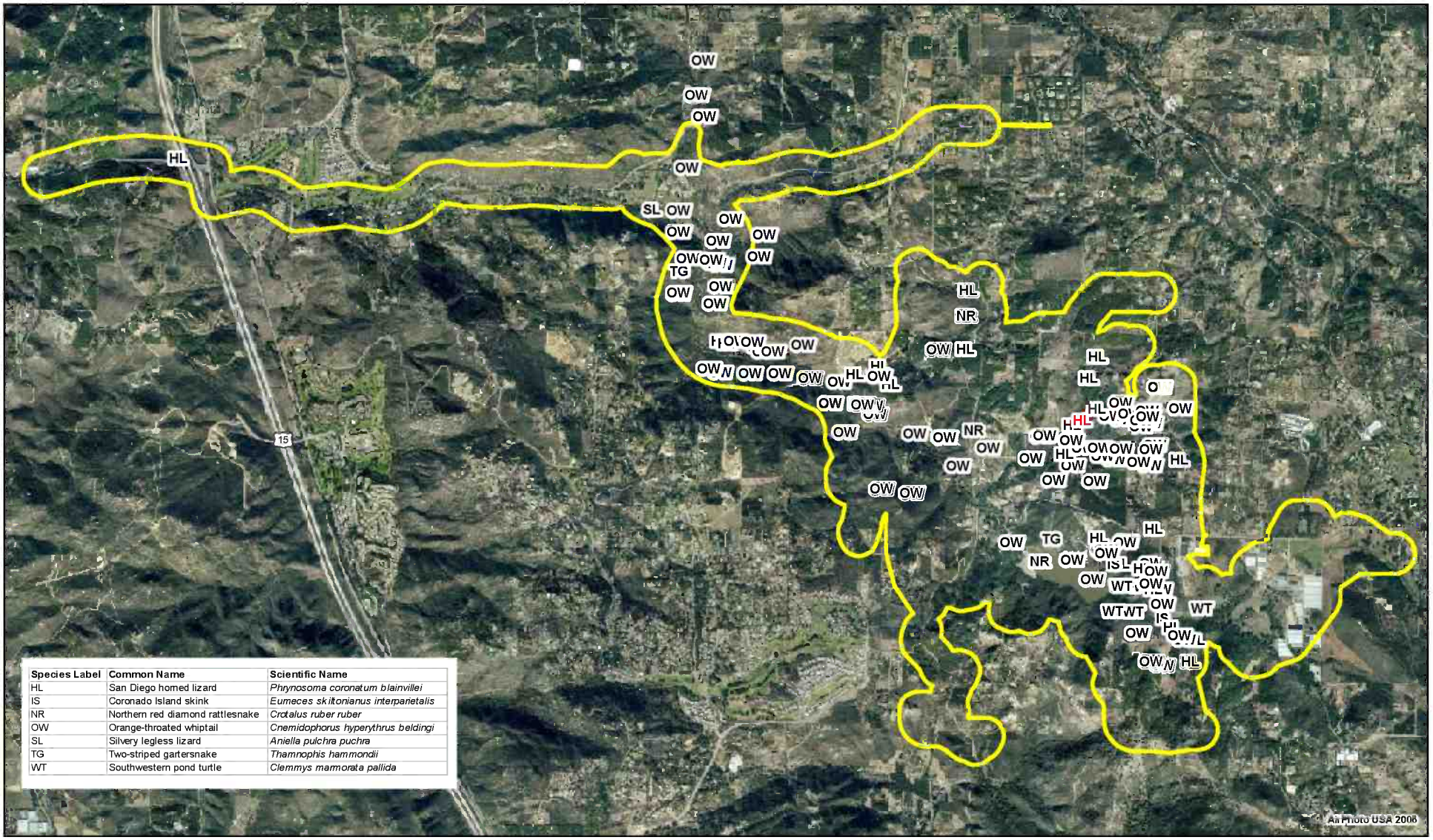
TAIC

Carryover Storage and San Vicente Dam Raise Project
Non-Listed Sensitive Plants within the Moosa Study Area

Figure 3-8

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Plants.mxd

Date: Apr 13, 2007



Species Label	Common Name	Scientific Name
HL	San Diego horned lizard	*Phrynosoma coronatum blainvillei*
IS	Coronado Island skink	*Eumeces skiltonianus interparietalis*
NR	Northern red diamond rattlesnake	*Crotalus ruber ruber*
OW	Orange-throated whiptail	*Cnemidophorus hyperythrus beldingi*
SL	Silvery legless lizard	*Aniella pulchra puchra*
TG	Two-striped gartersnake	*Thamnophis hammondii*
WT	Southwestern pond turtle	*Clemmys marmorata pallida*

Legend

Study Area

Red labels were surveyed in 2005/2006
Black labels are prior to 2005

Sources: TAIC 2006 field surveys, ESP species database, SANDAG Regional Species database.

N

Feet

0 3,850

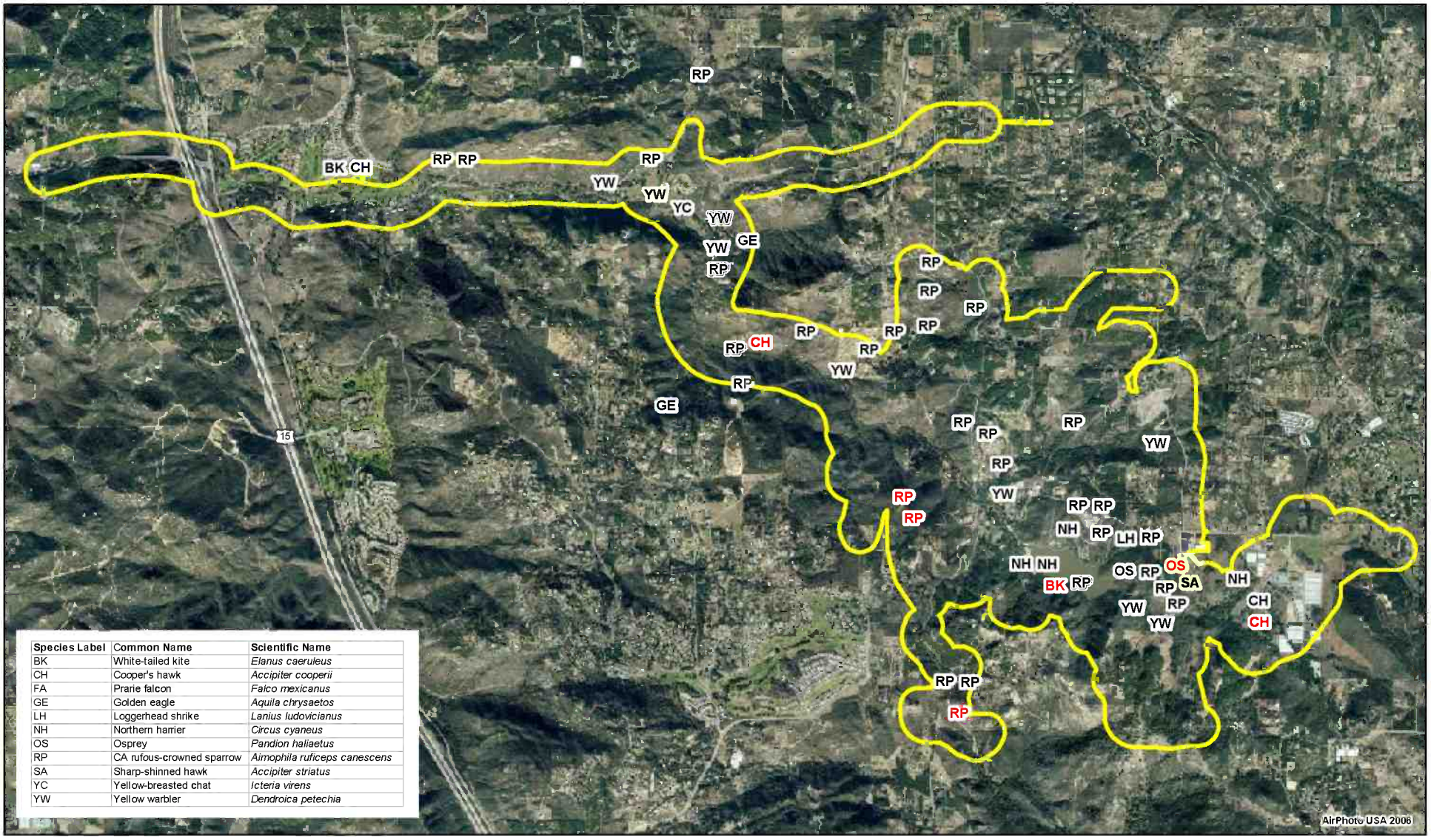
TAIC

Carryover Storage and San Vicente Dam Raise Project
Non-Listed Sensitive Invertebrates, Amphibians and Reptiles within the Moosa Study Area

Figure 3-9

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Reptiles.mxd

Date: Apr 13, 2007



Species Label	Common Name	Scientific Name
BK	White-tailed kite	*Elanus caeruleus*
CH	Cooper's hawk	*Accipiter cooperii*
FA	Prarie falcon	*Falco mexicanus*
GE	Golden eagle	*Aquila chrysaetos*
LH	Loggerhead shrike	*Lanius ludovicianus*
NH	Northern harrier	*Circus cyaneus*
OS	Osprey	*Pandion haliaetus*
RP	CA rufous-crowned sparrow	*Aimophila ruficeps canescens*
SA	Sharp-shinned hawk	*Accipiter striatus*
YC	Yellow-breasted chat	*Icteria virens*
YW	Yellow warbler	*Dendroica petechia*

Legend

Study Area

Red labels were surveyed in 2005/2006
Black labels are prior to 2005

Sources: TAIC 2006 field surveys, ESP species database, CNDDB, Bird Atlas, SANDAG Regional Species database.

N

Feet

0 3,850

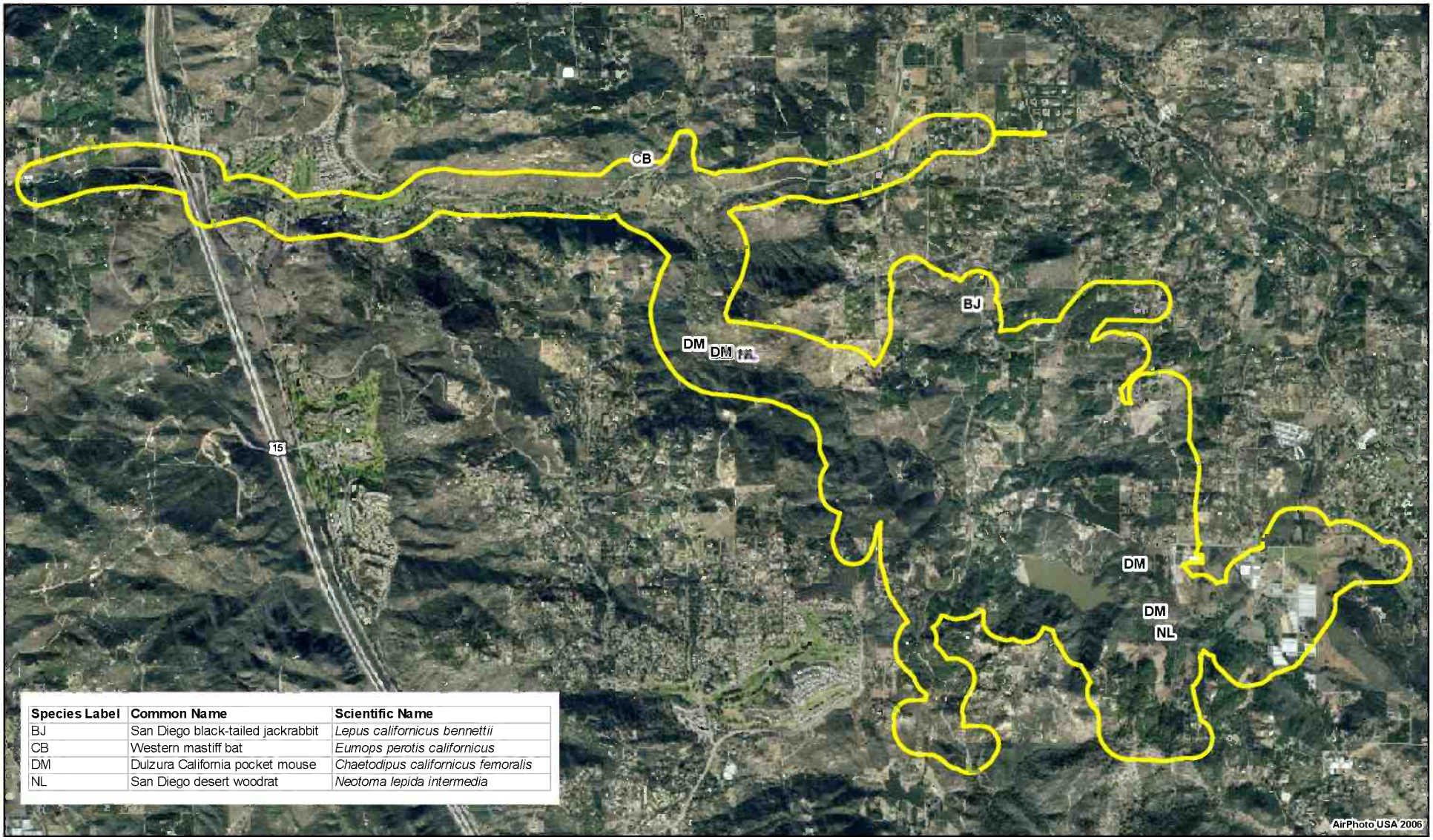
TAIC

Carryover Storage and San Vicente Dam Raise Project
Non-Listed Sensitive Birds within the Moosa Study Area

Figure 3-10

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Birds.mxd

Date: Apr 13, 2007



Species Label	Common Name	Scientific Name
BJ	San Diego black-tailed jackrabbit	*Lepus californicus bennettii*
CB	Western mastiff bat	*Eumops perotis californicus*
DM	Dulzura California pocket mouse	*Chaetodipus californicus femoralis*
NL	San Diego desert woodrat	*Neotoma lepida intermedia*

Legend

Study Area

Black labels are prior to 2005

Sources: ESP species database, Mammal Atlas, SANDAG Regional Species database.

N

Feet

0 3,850

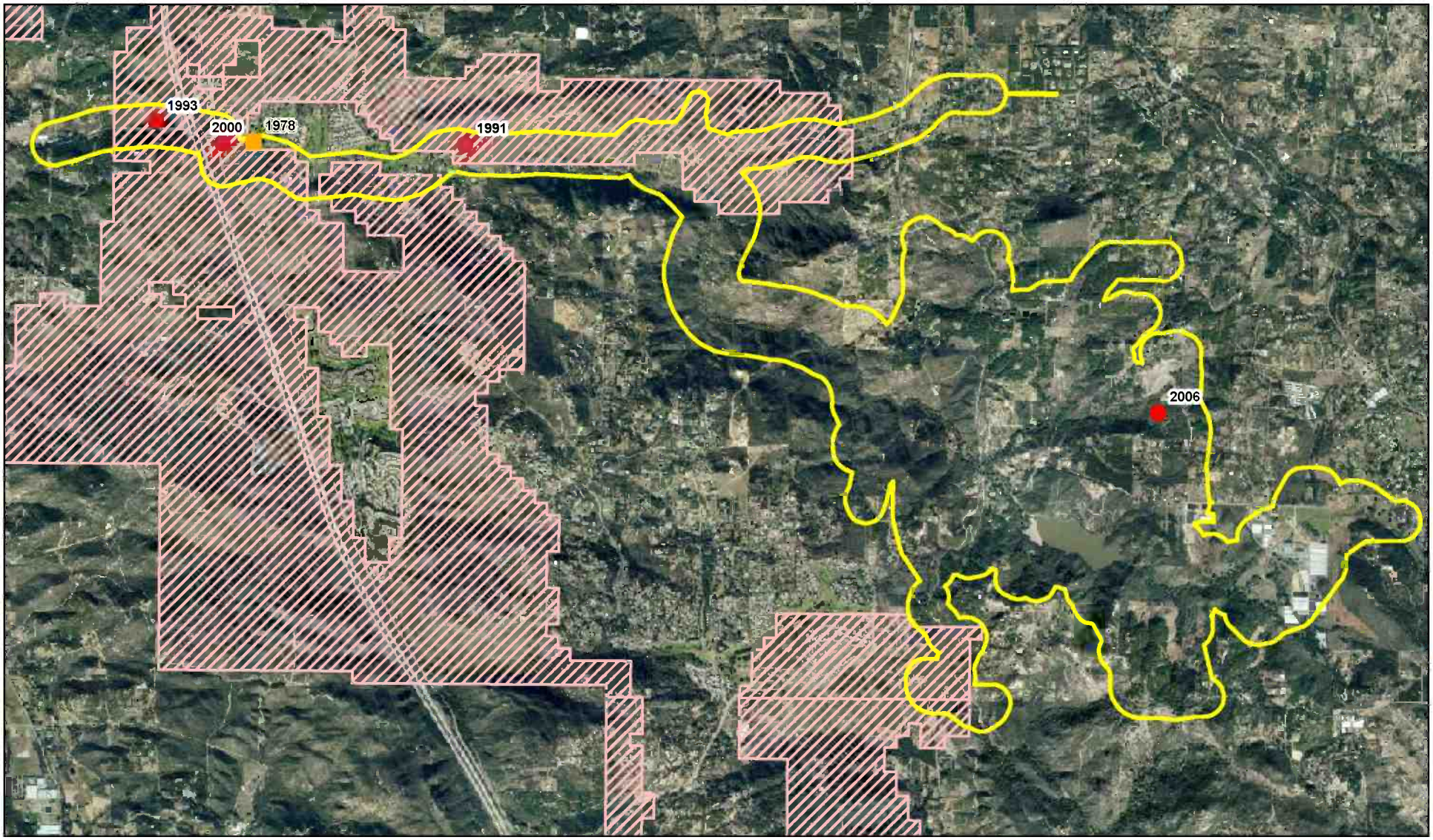
TAIC

Carryover Storage and San Vicente Dam Raise Project
Non-Listed Sensitive Mammals within the Moosa Study Area

Figure 3-11

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Mammals.mxd

Date: Apr 13, 2007



Legend

- USFWS California Gnatcatcher - Final Critical Habitat
- California Gnatcatcher
- Least Bell's Vireo

Basemap Legend

- Study Area

N

Feet

0 3,850

Sources: TAIC 2006 field surveys, ESP species database, USFWS, CNDDB, SANDAG Regional Species database.

TAIC

Carryover Storage and San Vicente Dam Raise Project
Rare, Threatened, and Endangered Species within the Moosa Study Area

Figure 3-12

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Overall TE Species.mxd

Date: May 30, 2007

3.4.5 Habitat Linkages and Wildlife Movement Corridors

Habitat linkages are patches of native habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. For a greater description of habitat linkages see SV 100K Section 2.4.5.

The proposed Moosa 100K alternative closely follows Moosa Canyon, a major east-west connection through an otherwise dry and rugged area. The habitat along the creek provides water, shelter, and a movement corridor between the Valley Center and Bonsall areas. Therefore, this canyon is likely to function as a significant regional movement corridor (Ogden 1995). Much of the region surrounding the alignment is natural open space, orchards, and farmland. The primary constraints to wildlife movement in the area are scattered houses along drainages and long stretches of open farmland lacking cover. The canyon extending north from the Old Castle Road area is a linkage across a steep ridgeline to the undeveloped land on the mesa to the north. No major wildlife movement along the northern end of the inundation area would be expected because of the agricultural land uses and lack of cover in the area.

3.5 ENVIRONMENTAL CONSEQUENCES

This section describes the potential impacts to biological resources, habitat linkages, and wildlife movement corridors that could result from implementation of the Moosa 100K alternative. Special attention will be given to sensitive biological resources, which include sensitive habitats, jurisdictional wetlands and waters, and sensitive plant and animal species. Each component of the Moosa 100K alternative was analyzed for its potential direct, indirect, permanent, and temporary impacts within the study area. The significance of these impacts is discussed as well.

3.5.1 Biological Resources

3.5.1.1 Vegetation Communities

Significance Criterion 1: *Would the Moosa 100K Alternative have a substantial adverse effect on any riparian habitat, submerged aquatic vegetation, or other sensitive natural communities identified in policies or regulations by the CDFG or USFWS.*

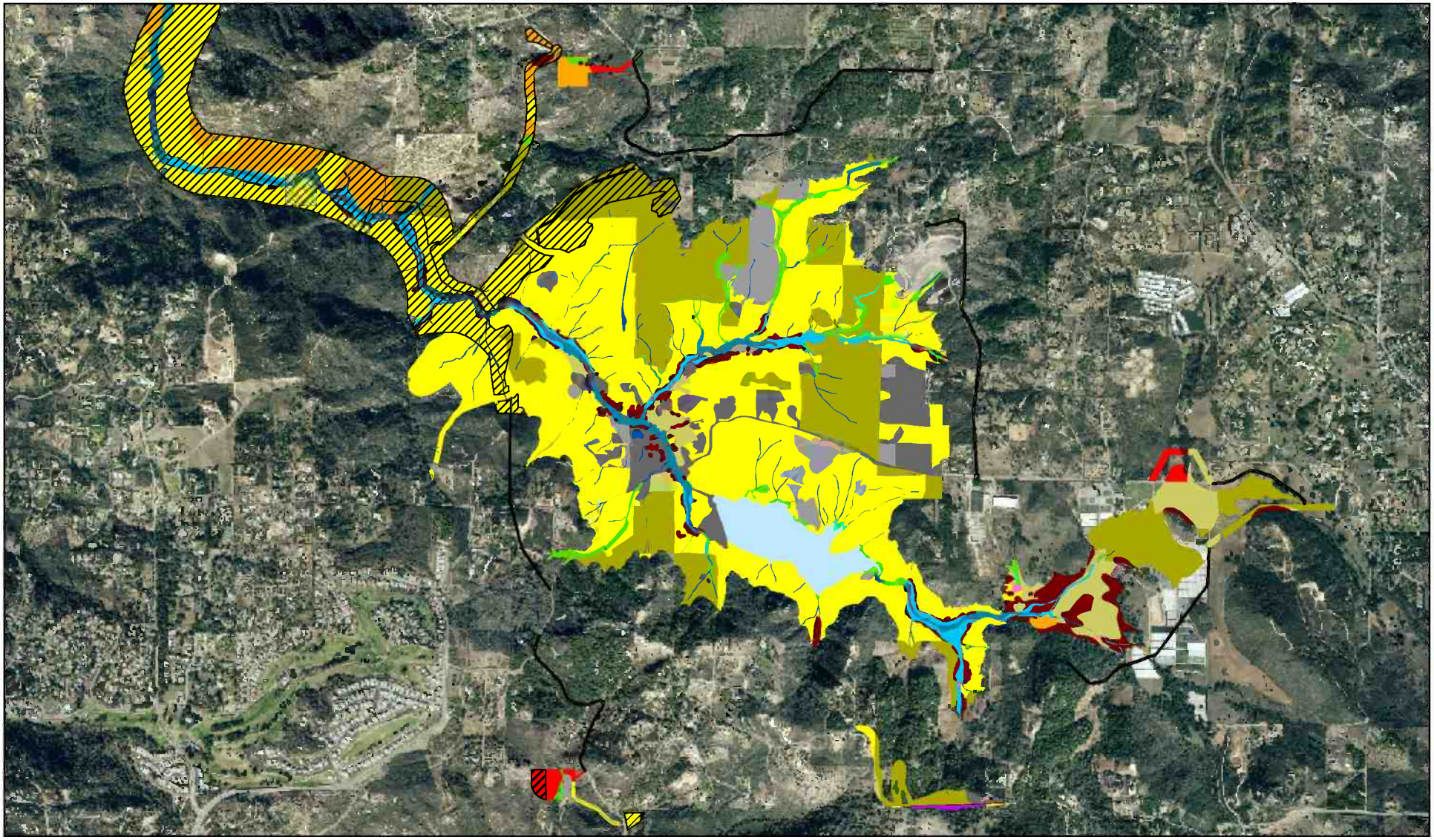
Direct Impacts

Implementation of the Moosa 100K alternative is expected to permanently impact an estimated 69.10 acres of riparian and wetland habitat, and an estimated 915.58 acres of upland habitat (Table 3-7, Figures 3-13 and 3-14). Potential temporary impacts include approximately 45.08 acres of riparian and wetland habitat and approximately 365.21 acres of upland habitat (Table 3-8). Riparian vegetation communities are considered sensitive, and therefore, permanent and temporary impacts to these habitats are considered significant.

Submerged aquatic vegetation is not a vegetation type included in the Holland system (Holland 1986, Oberbauer 2005), and is therefore not included in Tables 3-7 through 3-9. Additionally, this habitat type was not surveyed during 2006 field surveys. However, submerged aquatic vegetation potentially occurs around the circumference of Turner Reservoir. This vegetation type provides habitat and foraging opportunities for aquatic insects, fish, and other wildlife. When the Moosa Reservoir is filled after the dam is constructed, there is expected to be a temporary loss of this resource at Turner Reservoir due to inundation. However, the aquatic vegetation is expected to become re-established along the water's edge of the new reservoir and travel upward as the reservoir slowly fills. Because the circumference of the higher reservoir level is expected to be greater than around the existing Turner Reservoir, implementation of the Moosa 100K alternative would result in a net benefit of this resource. Therefore, although short-term temporary effects would occur, the long-term effects to submerged aquatic vegetation during inundation are less than significant and likely beneficial.

Impacts to open water (reservoir)/freshwater only include the permanent impacts expected to one of the two perennial/seasonal ponds (approximately 0.12 acre) in the dam construction area, not to be confused with Turner Reservoir. This habitat type is included in open water (reservoir)/freshwater for vegetation communities and CDFG regulated habitats. The permanent impacts to this habitat type are considered significant because the pond could contain sensitive species. While the Corps does not regulate isolated waters, CDFG and the RWQCB regulate this pond as wetlands of the state (Porter-Cologne Water Quality Control Act, (California Water Code, Division 7. Water Quality). Impacts to this resource will need to be permitted by these respective regulatory agencies.

All riparian vegetation communities are also regulated by CDFG (Figures 3-15 and 3-16). Table 3-9 categorizes these impacts into "vegetated wetlands" to be consistent with agency terminology.



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Open Water (reservoir)/Freshwater
- Unvegetated Channel/Lakeshore Fringe
- Perennial/Seasonal Pond
- Coastal/Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Southern Sycamore-Alder Riparian Woodland
- Mulefat Scrub
- Southern Willow Scrub
- Disturbed Wetland
- Diegan Coastal Sage Scrub
- Chaparral
- Coastal Sage-Chaparral Scrub
- Valley Needlegrass Grassland
- Non-Native Grassland
- Coast Live Oak Woodland
- Open Engelmann Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Agriculture
- Urban/Developed

Note: Open water (existing reservoir) mapping not displayed.

N

Feet

0 2,300

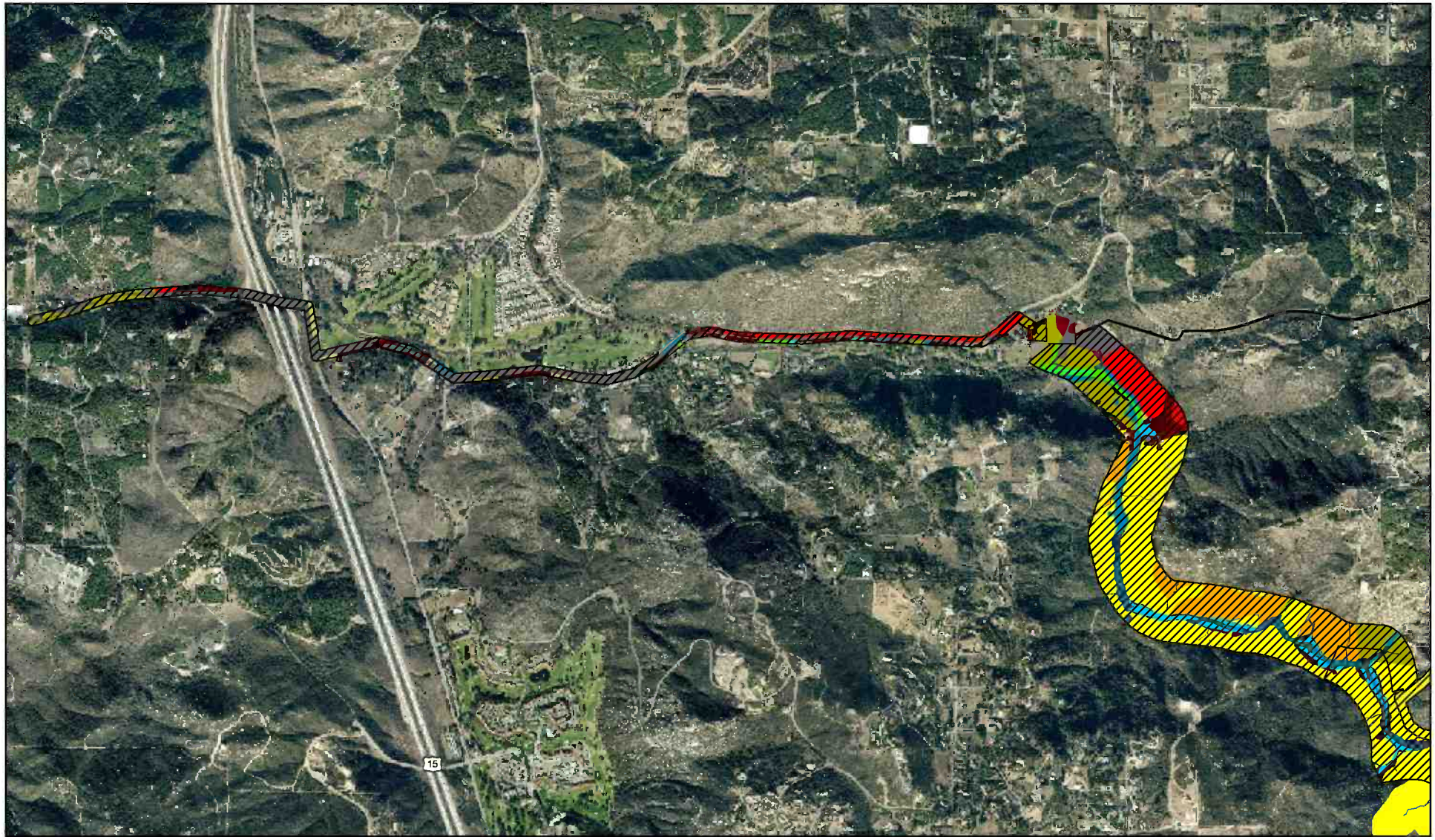
TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa 100K - Impacted Vegetation Communities within the Reservoir Area

Figure 3-13

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Impacts-Reservoir Vegetation.mxd

Date: Apr 13, 2007



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Open Water (reservoir)/Freshwater
- Unvegetated Channel/Lakeshore Fringe
- Perennial/Seasonal Pond
- Coastal/Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Southern Sycamore-Alder Riparian Woodland
- Mulefat Scrub
- Southern Willow Scrub
- Disturbed Wetland
- Diegan Coastal Sage Scrub
- Chaparral
- Coastal Sage-Chaparral Scrub
- Valley Needlegrass Grassland
- Non-Native Grassland
- Coast Live Oak Woodland
- Open Engelmann Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Agriculture
- Urban/Developed

N

Feet

0 2,300

TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa 100K - Impacted Vegetation Communities along the Pipeline

Figure 3-14

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Impacts-Pipeline Vegetation.mxd

Date: Apr 13, 2007

Table 3-7. Permanent Direct Impacts to Vegetation Communities within the Moosa 100K Footprint.

Vegetation Community[1]	Acres
Riparian/Wetland Communities	
Open Water (reservoir)/Freshwater (13140)[2]	0.12[3]
Unvegetated Channel/Lakeshore Fringe (13200)[2]	7.09
Freshwater Marsh (52410)[2]	0.73
Southern Coast Live Oak Riparian Forest (61310)[2]	19.71
Southern Cottonwood-Willow Riparian Forest (61330)[2]	20.16
Mulefat Scrub (63310)[2]	0.29
Southern Willow Scrub (63320)[2]	20.49
Disturbed Wetland (11200)[2]	0.51
Total Riparian/Wetland Communities	***69.10***
Upland Communities	
Coastal Sage Scrub (32500)[2]	7.84
Chaparral (37000)	459.85
Coastal Sage-Chaparral Scrub (37G00)[2]	6.04
Valley Needlegrass Grassland (42110)[2]	0.37
Non-Native Grassland (42200)	47.48
Coast Live Oak Woodland (71160)[2]	43.73
Open Engelmann Oak Woodland (71181)[2]	1.29
Eucalyptus Woodland (11100)	0.70
Disturbed Habitat (11300)	44.71
Agriculture (18000)	237.28
Urban/Developed (12000)	66.29
Total Upland Communities	***915.58***
TOTAL PERMANENT, DIRECT IMPACTS	**984.68**

[1] Holland codes are given in parentheses

[2] Vegetated communities considered to be a sensitive habitat based on the definition in Section 2.4.4.1.

[3] Includes only permanent impacts to one of the two perennial/seasonal ponds.

Table 3-8. Temporary Direct Impacts to Vegetation Communities within the Moosa 100K Footprint.

Vegetation Community[1]	Acres
Riparian/Wetland Communities	
Unvegetated Channel/Lakeshore Fringe (13200)[2]	2.39
Freshwater Marsh (52410)[2]	0.73
Southern Coast Live Oak Riparian Forest (61310)[2]	9.90
Southern Cottonwood-Willow Riparian Forest (61330)[2]	25.38
Southern Sycamore-Alder Riparian Woodland (62400)[2]	0.02
Southern Willow Scrub (63320)[2]	6.65
Disturbed Wetland (11200)[2]	0.01
Total Riparian/Wetland Communities	***45.08***
Upland Communities	
Coastal Sage Scrub (32500)[2]	27.03
Chaparral (37000)	158.72
Coastal Sage-Chaparral Scrub (37G00)[2]	40.07
Non-Native Grassland (42200)	3.21
Coast Live Oak Woodland (71160)[2]	24.90
Disturbed Habitat (11300)	1.12
Agriculture (18000)	62.68
Urban/Developed (12000)	47.48
Total Upland Communities	***365.21***
TOTAL TEMPORARY, DIRECT IMPACTS	**410.29**

4 Holland codes are given in parentheses

5 Vegetated communities considered to be a sensitive habitat based on the definition in Section 2.4.4.1.

Many native upland habitats are considered important or sensitive due to their potential to support sensitive species, their limited regional distribution, and their continued reduction and fragmentation from development. A number of upland habitat types are found within the Moosa survey area including coastal sage scrub, chaparral, coastal sage-chaparral scrub mix, valley needlegrass grassland, non-native grassland, coast live oak woodland, open Engelmann oak woodland, eucalyptus woodland, disturbed habitat, agriculture, and urban and developed.

Coastal sage scrub, which provides potential habitat for the federally endangered Quino checkerspot butterfly and San Diego thornmint, and the threatened California gnatcatcher, would be permanently (approximately 7.84 acres) and temporarily

(approximately 27.03 acres) impacted. All impacts to this habitat are considered significant, because this habitat is suitable for and occupied by the federally threatened California gnatcatcher.

Although chaparral is regionally more abundant than many other sensitive upland habitats, it provides habitat for numerous sensitive species within the Moosa study area, including wart-stemmed ceanothus, non-chaparral obligates orange throated whiptail, coast horned lizard, and rufous-crowned sparrow. Chaparral is regionally and locally well distributed and, per California Government Code Section 53091(d) and (e), the Water Authority is not subject to measures contained in the County local land use plans, policies, and ordinances. Therefore all permanent (approximately 459.85) and temporary (approximately 158.72) impacts to chaparral vegetative community are considered less than significant.

Table 3-9. Permanent and Temporary Impacts to CDFG-Defined Wetlands and Unvegetated Waters of the State within the Moosa 100K Footprint.

CDFG-Defined Wetlands/Unvegetated Waters of the State	Acres	
	Permanent	Temporary
Wetlands		
Freshwater Marsh	0.73	0.73
Southern Coast Live Oak Riparian Forest	19.71	9.90
Southern Cottonwood-Willow Riparian Forest	20.16	25.38
Southern Sycamore-Alder Riparian Woodland	0.00	0.02
Mulefat Scrub	0.29	0.00
Southern Willow Scrub	20.49	6.65
Disturbed Wetland	0.51	0.01
Total Wetlands	***61.89***	***42.69***
Unvegetated Waters of the State		
Open Water (reservoir)/Freshwater[1]	0.12	0.00
Lakeshore Fringe	0.91	0.71
Unvegetated Channel	6.18	1.68
Total Unvegetated Waters	***7.21***	***2.39***
TOTAL WETLANDS AND UNVEGETATED WATERS	**69.10**	**45.08**

[1] Includes only permanent impacts to one of the two perennial/seasonal ponds.

Coastal sage-chaparral scrub is considered a sensitive vegetation community because it provides habitat for threatened and endangered species, such as the California gnatcatcher. This vegetation community would be permanently (approximately 6.04 acres) and temporarily (approximately 40.07 acres) impacted. These impacts are considered significant.

Valley needlegrass grassland is considered a sensitive vegetation community because of its extremely limited distribution, potential for supporting sensitive species, and regional reduction due to agricultural activities, replacement with non-native grassland, and urban and rural development. For this reason all permanent impacts (approximately 0.37 acre) to this community are considered significant.

See SV 100K alternative chapter for a discussion of non-native grasslands. Permanent (approximately 47.48 acres) and temporary (approximately 3.21 acres) impacts to non-native grassland are less than significant because this vegetation community is regionally and locally well distributed, impacts are small relative to the amount available in the region, and no sensitive species were observed within the potentially affected non-native grasslands.

Coast live oak woodland provides habitat for raptors and other woodland birds such as the downy woodpecker (*Picoides pubescens*); coast live oak woodlands are considered sensitive pursuant to State Senate Bill 1334 (Oak Woodland Conservation Act). Impacts to this vegetation community are significant, including approximately 43.73 acres of permanent and approximately 24.90 acres of temporary impacts.

Open Engelmann oak woodland is considered a sensitive vegetation community according to State Senate Bill 1334 and due to its limited distribution (CNSP List 4). Impacts to this vegetation community from the construction of the Moosa 100K alternative are significant because a relatively large number of trees (21 locations) will be affected, and include approximately 1.29 acres of permanent impacts to this vegetation community.

See SV 100K alternative chapter for a discussion of eucalyptus woodlands. Permanent (approximately 0.70 acres) impacts to eucalyptus woodland are also less than significant due to the non-native nature of this vegetation community. Impacts to birds potentially nesting in eucalyptus trees are addressed under wildlife species.

Disturbed habitat has little wildlife value due to the abundance of non-native invasive plants, such as thistles and mustards, which do not provide quality habitat. Within the Moosa footprint, this vegetation community generally occurs near developed areas. For these reasons, permanent (approximately 44.71 acres) and temporary (approximately 1.12 acres) impacts to disturbed habitat are both less than significant.

Indirect Impacts

See SV Section 2.5.1.1 for discussion of indirect impacts.

3.5.1.2 Corps-Regulated Wetlands and Unvegetated Waters of the U.S.

Significance Criterion 2: *Would the Moosa 100K Alternative have a substantial adverse effect on Corps-jurisdictional waters of the U.S., including wetlands, as defined by Section 404 of the CWA through direct or indirect removal, filling, inundation, hydrological interruption, or other means.*

Direct Impacts to Corps-Regulated Wetlands and Unvegetated Waters of the U.S.

Vegetated Wetlands

Direct impacts to vegetated wetlands include permanent and temporary impacts in excess of the acres reported herein because impact determinations were made using wetlands delineation data derived from the ESP surveys, which did not cover the entire Moosa 100K footprint. If this alternative were chosen, jurisdictional wetlands delineations would be necessary to confirm previous delineations and to survey areas outside the ESP footprint not previously delineated. The following information is available: direct impact would occur from reservoir inundation and construction in significant excess of approximately 48.92 acres, and temporary impacts would occur to more than approximately 33.94 acres from construction activities such as staging and access (Table 3-10, Figures 3-15 and 3-16). All direct impacts to jurisdictional wetlands are considered significant.

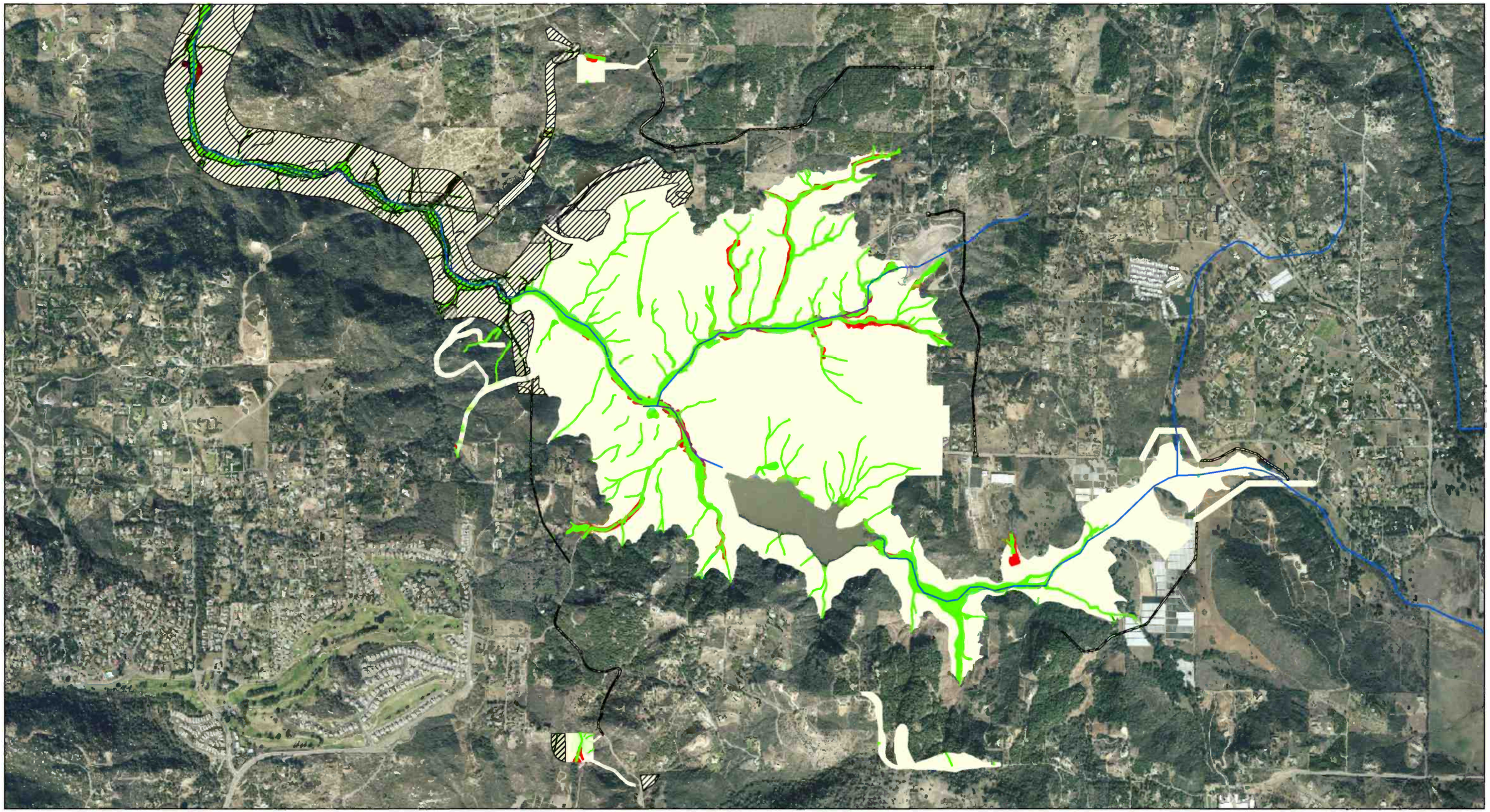
Table 3-10. Permanent and Temporary Impacts to Corps-Regulated Wetlands and Unvegetated Waters of the U.S. within the Moosa 100K Footprint[1]

Corps-Regulated Wetlands/Unvegetated Waters of U.S.	Acres	
	Permanent	Temporary
Wetlands		
Freshwater Marsh	0.73	0.62
Southern Coast Live Oak Riparian Forest	17.45	9.89
So. Cottonwood-Willow Riparian Forest	16.79	17.21
Mulefat Scrub	0.29	0.00
Southern Willow Scrub	13.56	6.21
Disturbed Wetland	0.10	0.01
Total Wetlands	***48.92***	***33.94***
Unvegetated Waters of the U.S.		
Lakeshore Fringe	0.91	0.71
Seasonal Streambed	6.18	1.68
Perennial/Seasonal Pond	0.12	0.00
Total Unvegetated Waters	***7.21***	***2.39***
TOTAL WETLANDS AND UNVEGETATED WATERS	**56.13**	**36.33**

[1]The above quantification of impacts is based on wetlands delineation survey results of the ESP project. The alternative described herein is likely to generate additional impacts to Corps jurisdictional wetlands in areas not covered by the ESP delineations. CDFG wetlands are assessed, however, and it is likely that Corps wetlands are contained therein.

Unvegetated Waters of the U.S.

Turner Reservoir will not be drawn down during construction of Moosa Dam with the exception of short-term water level fluctuations for the purpose of flood protection. The ultimate filling of Moosa Reservoir would increase the volume of open water that exists within Turner Reservoir. Open water provides habitat for fish, waterfowl, raptors such as eagles and ospreys, and aquatic wildlife such as frogs, toads, and the two-striped garter snake. Changes to open water at Turner Reservoir would temporarily impact this resource until the Moosa Reservoir has been filled. This impact is considered insignificant as open water will occur in much larger quantities at the new reservoir than currently exists at Turner Reservoir.



Legend

- Temporary Impact Overlay (wetlands without overlay are permanently impacted)
- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands and Waters
- Non-Wetlands within Impact Footprint

Note: Open water (existing reservoir) mapping not displayed.

Basemap Legend

- Streams

N

Feet

0 1,600

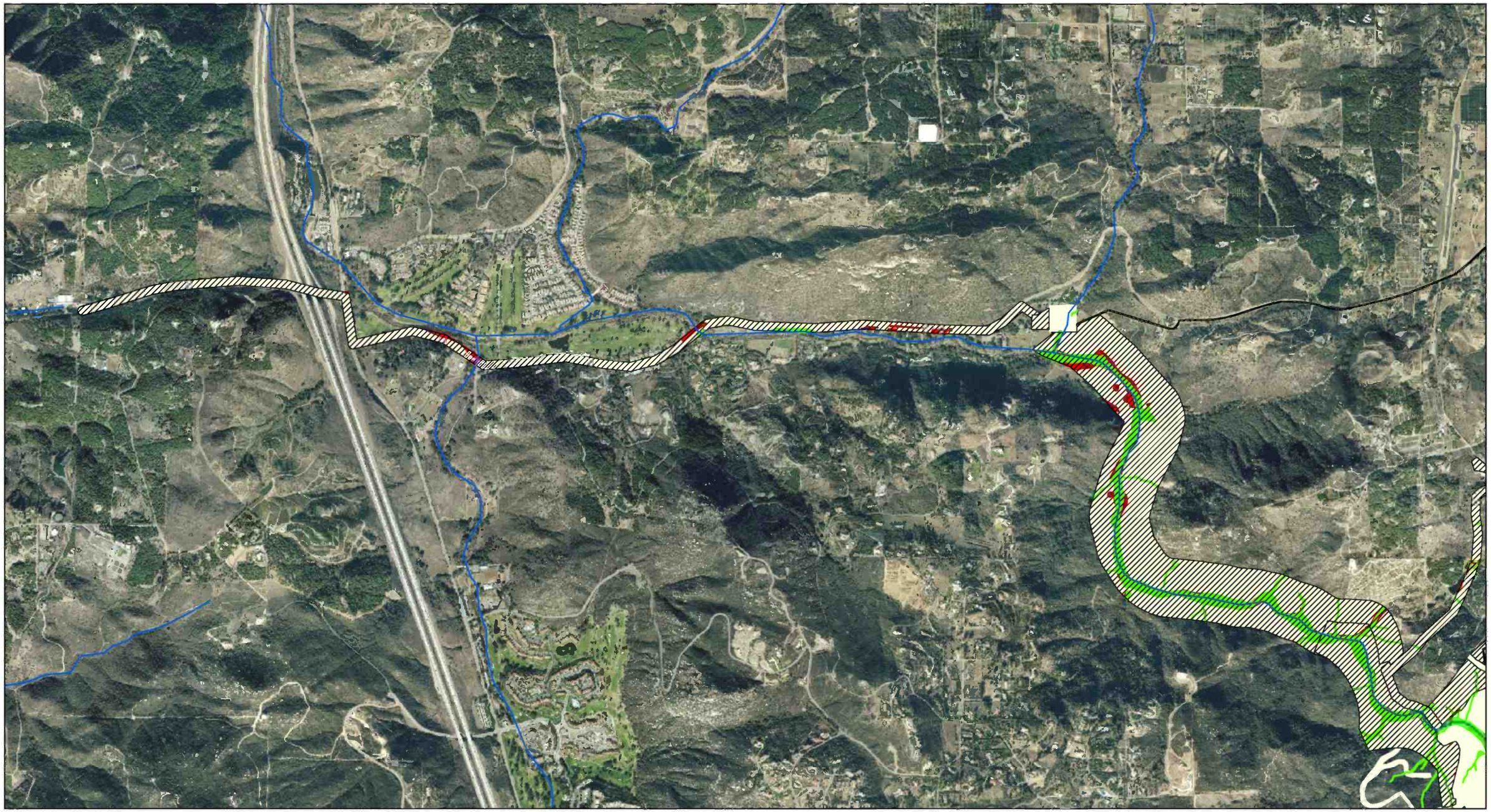
TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa 100K - Impacted Jurisdictional Wetlands and Waters within the Reservoir Area

Figure 3-15

File: T:\projects\sanvicente\plots\figures\Moosa BTR\Impacts-Reservoir Wetlands.mxd

Date: Mar 09, 2007



Legend

- Temporary Impact Overlay (wetlands without overlay are permanently impacted)
- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands and Waters
- Non-Wetlands within Impact Footprint

Basemap Legend

- Streams

N

Feet

0 1,600

TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa - Impacted Jurisdictional Wetlands and Waters along the Pipeline

Figure 3-16

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Impacts-Pipeline Wetlands.mxd

Date: Apr 10, 2007

Unvegetated waters occur along Moosa Creek and associated tributaries. Because lakeshore fringe vegetation is sparse, it does not provide quality habitat for wildlife or highly functioning wetlands. However, all jurisdictional wetlands are regulated by the Corps' no-net-loss policy, and therefore all direct impacts to this resource are significant.

The perennial, isolated pond in the dam construction zone would be permanently impacted by dam construction (0.12 acre). Due to its isolation from navigable waters, it is likely that this pond would not be regulated by the Corps; however, Corps jurisdiction will ultimately be determined by the results of jurisdictional wetlands delineations that will be performed upon application of the Section 404 permit for this project, should this alternative be selected.

Indirect Impacts to Corps-Regulated Wetlands and Unvegetated Waters of the U.S.

See SV 100K Section 2.5.1.2 for a discussion of indirect impacts.

3.5.1.3 Sensitive Species

A. Listed Species

Significance Criterion 3: *Would the Moosa 100K Alternative Have a substantial adverse effect, either directly (e.g., habitat loss) or indirectly (e.g., noise effects on wildlife) through habitat modifications, on any species identified or published as an endangered, threatened, candidate, sensitive, or special-status species by the CDFG or USFWS.*

The California gnatcatcher, a federally listed species, was documented in the study area during 2006 field surveys. The least Bell's vireo, both federally and state listed, has been previously documented within the Moosa footprint. Figure 3-12 shows documented occurrences of these two species within the Moosa footprint. Direct and indirect impacts to these species are summarized in Table 3-11 below. In addition, impacts to golden eagle and white-tailed kite nesting and foraging habitat would be considered significant because of the regional decline of their habitat (urbanization of grasslands threaten the kit's recovery, and the golden eagle's population has dropped significantly (Unitt 2004).

Direct Impacts

California Gnatcatcher. Direct impacts to California gnatcatcher include permanent impacts to one location and approximately 7.84 acres of potential Diegan coastal sage scrub habitat. In addition, the proposed alternative would temporarily impact

approximately 27.03 acres of potential Diegan coastal sage scrub habitat. Impacts to gnatcatcher critical habitat include permanent (approximately 9.62 acres) and temporary (approximately 90.13 acres) impacts. However, the critical habitat that has been designated within the study area includes habitat that may not be suitable for gnatcatchers. Therefore, only impacts to suitable Diegan coastal sage scrub are accounted for. The majority of coastal sage scrub within the study area falls within the critical habitat designation. These impacts are considered significant. It is recommended that focused surveys for this species be conducted prior to construction to substantiate this determination.

Table 3-11. Summary of Potential Impacts to State and Federally Listed Species within the Moosa 100K Footprint.

Species	Direct Impacts to Individuals and Acres of Habitat		Indirect Impacts
	Permanent	Temporary	
California Gnatcatcher	Significant (1 observation, 7.84 acres)	Significant (27.03 acres)	Significant (Noise)[1]
Least Bell's Vireo	Significant (40.65 acres)	Significant (32.05 acres)	Significant (Noise)[1]

[1] Other indirect impacts include construction related dust and nighttime lighting. Standard project design features will reduce these impacts to a level below significance.

Least Bell's Vireo. No direct impacts to previously observed least Bell's vireo are expected. One individual had been reported in 1978 outside the impact area on the golf course at Castle Creek Country Club where potential habitat no longer exists (Figure 3-12). Although this species was not observed during 2006 field surveys, potentially occupied habitat occurs within the footprint, especially along Moosa Creek. Therefore, approximately 40.65 acres of permanent impacts and approximately 32.05 acres of temporary impacts to potential riparian forest and southern willow scrub are expected. These impacts are considered significant. It is recommended that focused surveys for this species be conducted prior to construction.

Indirect

California Gnatcatcher. Indirect impacts from projected activities during the breeding season, such as dust, noise, nighttime lighting, could adversely affect gnatcatchers that have been previously recorded along the proposed pipeline. Standard project design features (Section 2.1.1) will avoid indirect impacts from construction-related dust and nighttime lighting. Indirect impacts from noise beyond 60 dBA Leq are considered significant.

Legend

Listed Species

- California Gnatcatcher (2006 survey)
- USFWS California Gnatcatcher - Final Critical Habitat
- Project Impact Area

N

Feet

0 3,900

TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa 100K - Impacted Rare, Threatened, and Endangered Species

Figure 3-17

File: \\Rio\gist\projects\sanvicente\plots\figures\Moosa BTR\Impacts-Moosa TE Species.mxd

Date: May 30, 2007

Least Bell's Vireo. Should habitat in the study area be occupied, indirect impacts to this species may include construction-related dust, noise (in excess of 60 dBA Leq) and nighttime lighting, both of which can disrupt breeding populations and cause nest abandonment. Standard project design features (see Section 2.1.1) will avoid indirect impacts with the exception of noise–related impacts that are considered significant. Preconstruction surveys will be conducted to determine that presence of least Bell's vireo and vireo nesting activity within a 500-foot buffer of the construction area. The onsite environmental monitor shall be notified prior to beginning any biological surveys at the site. If no nesting sensitive birds occur within this area, construction would be allowed to proceed. However, if sensitive birds are observed nesting within this area, development shall be postponed until all nesting has ceased or until after August 31.

B. Non-listed Sensitive Species

Figures 3-8 through 3-11 show the locations of non-listed sensitive plant and animal species that have been documented within the Moosa study area.

Direct Impacts

Table 3-12 summarizes the permanent and temporary direct impacts to non-listed sensitive species. Impacts to Engelmann oaks are addressed under impacts to Open Engelmann Woodlands above.

Southern tarplant is almost extirpated from San Diego County. It is likely that the only conserved stand of this plant species exists within the Ramona Grasslands and on the Cumming Ranch property in Ramona. Therefore, direct impacts to this species are considered significant.

The southwestern pond turtle has been documented from Turner Reservoir and would be permanently (5 observations) impacted. Refer to Section 2.5.1.3 (B) of the SV 100K chapter for a discussion of significant impacts to this species.

One osprey has been documented near Turner Reservoir outside the Moosa 100K footprint; however, the osprey is likely using Turner Reservoir for foraging. Although there would be a loss of foraging habitat for other raptors, this impacts is considered insignificant because of the abundance of foraging habitat in the agricultural areas surrounding the study area and the increase of foraging habitat upon establishment of the larger Moosa Reservoir.

Less than significant permanent or temporary impacts would occur to several species, and are not expected to substantially affect species or populations because either (1) a small number of individuals would be impacted; or (2) the species is locally common and fairly abundant in the region. Additionally, the white-tailed kite, a fully protected species, was not observed nesting in the area of impact.

Table 3-12. Summary of Potential Impacts to Non-Listed Sensitive Species within the Moosa 100K Footprint.

Species	Permanent Impacts		Indirect Impact	Status
	Permanent	Temporary		
Plants				
Engelmann Oak	Significant (21 locations)	Less than Significant (5 locations)	Less than significant	--/SSC, List 4
Fish's Milkwort	Less than Significant (2 locations, 15 plants)	None	Less than significant	--/SSC, List 4
Southern Tarplant	Significant (1 location, 1,400 plants)	None	Less than significant	--/SSC, List 1B
Summer Holly	Less than Significant (1 location, 1 plant)	None	Less than significant	--/SSC, List 1B
Wart-stemmed Ceanothus	Less than Significant (1 location)	None	Less than significant	--/SSC, List 2
Reptiles				
Coronado Island Skink	Less than Significant (2 observations)	None	None	--/SSC
Orange-throated Whiptail	Less than Significant (41 observations)	Less than Significant (29 observations)	Less than significant	--/SSC
Red Diamond Rattlesnake	Less than Significant (2 observations)	None	None	--/SSC
Coast Horned Lizard	Less than Significant (14 observations)	Less than Significant (6 observations)	Less than significant	--/SSC
Southwestern Pond Turtle	Significant (5 observations)	None	Less than significant	--/SSC
Two-striped Garter Snake	Less than Significant (1 observation)	Less than Significant (1 observation)	None	--/SSC
Birds				
Cooper's Hawk	Less than Significant (2 observations)	Less than Significant (1 observation)	None	--/SSC
Loggerhead Shrike	Less than Significant (1 observation)	None	None	--/SSC
Northern Harrier	Less than Significant (3 observations)	None	None	--/SSC
Rufous-crowned Sparrow	Less than Significant (11 observations)	Less than Significant (7 observations)	Less than significant	--/SSC
White-tailed Kite	Less than Significant (1 observation)	None	None	--/SFP
Yellow Warbler	Less than Significant (4 observations)	Less than Significant (4 observations)	None	--/SSC

Species	Permanent Impacts		Indirect Impact	Status
	Permanent	Temporary		
Mammals				
Dulzura Pocket Mouse	Less than Significant (2 observation)	Less than Significant (1 observation)	None	--/SSC
San Diego Desert Woodrat	Less than Significant (1 observation)	Less than Significant (1 observation)	None	--/SSC

Indirect Impacts

Indirect construction impacts, such as dust, human presence, noise (in excess of 60 dBA Leq), and nighttime lighting, to nesting birds and other non-listed sensitive species will be avoided; no significant impact to these species will occur due to the application of project design features (see Section 2.1.1).

C. Potentially Occurring Sensitive Species

San Diego Thornmint. One occurrence of this species has been documented outside but within 3 kilometer of the study area, in an area southwest of the western-most extent of the pipeline footprint. This species has a moderate potential to occur within the Moosa 100K footprint because suitable habitat exists. Directed surveys for this species would need to be performed should this alternative be chosen. Potential impacts to this federally and state listed species would be considered significant.

Quino Checkerspot Butterfly. The presence of suitable Quino checkerspot habitat has not been determined pursuant to USFWS protocol habitat assessments. However, 2006 surveys indicate that potentially suitable habitat exists within the project footprint. During 1992 and 1993 ESP surveys, sensitive butterfly species surveys were performed in areas determined suitable based on presence/absence of specific host plants and habitats. However, this species was not listed at the time of the ESP surveys (listed as endangered in 1997 by USFWS) and therefore, focused surveys for this species were not conducted. Potential habitat does exist within the Moosa footprint (hilltops, coastal sage scrub, valley needlegrass grassland, non-native grassland, disturbed habitat, and coastal sage-chaparral). Permanent (approximately 106.44 acres of suitable habitat) and temporary (approximately 71.43 acres of suitable habitat) impacts would be considered significant. Standard project design features (see Section 2.1.1) will reduce indirect impacts to potential Quino checkerspot habitat to a level below significance.

Stephens' Kangaroo Rat. Potential habitat exists for this species within the Moosa footprint. Focused 1992 and 1993 ESP surveys for the Stephens' kangaroo rat found that

this species does not occur and is not expected to occur within the footprint. However, potential habitat exists outside the ESP survey areas, within the Moosa 100K footprint. However, based on best available data regarding distribution and habitat preference for this species, it is unlikely that the Stephens' kangaroo rat occurs within the Moosa 100K footprint. No impacts to this species are expected. Should this alternative be selected, a focused Stephens' kangaroo rat trapping study should be conducted to substantiate this determination.

3.5.2 Habitat Linkages and Wildlife Movement Corridors

Significance Criterion 4: *Would the Moosa 100K Alternative interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*

The proposed Moosa 100K alternative closely follows Moosa Canyon, a major east-west connection through an otherwise dry and rugged area. The implementation of this alternative would flood about 2.5 miles of the canyon and create an approximately 870-acre lake. The habitat along the creek provides water, shelter, and a movement corridor between the Valley Center and Bonsall areas. Therefore, Moosa Canyon is likely to function as a significant regional movement corridor (see Section 3.4.5). The inundation area of the proposed Moosa Reservoir would block passage of animal movement through Moosa Creek. Therefore, implementation of this alternative would substantially interfere with movement of wildlife. This is considered a significant impacts to a regional wildlife corridor.

3.5.3 Compliance with Adopted Regional Plans and Ordinances

Significance Criterion 5: *Would the Moosa 100K Alternative substantially conflicts with the policies and provisions of an adopted local or regional Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP) for the area where the project is located or with any of these plans' efforts to conserve "covered species".*

The study area does not occur within the boundaries of any adopted HCP or NCCP plans, and, therefore, there are no known conflicts with any adopted plans. The development of the North County MSCP is currently in process, and the study area occurs within this planning area. However, the plan is not final. The Water Authority is not a participant in the future planning agreements for this plan.

The project footprint (pump station and road relocation) slightly encroaches into the City of Escondido's Daley Ranch Open Space Preserve. The City will need to vacate this easement for the construction of the Moosa 100K alternative as permanent impacts from these features to the Open Space Preserve will be likely.

3.6 MITIGATION MEASURES

Mitigation measures for this alternative are described in the CSP EIS/EIR.

4.0 ALTERNATIVE 3: SAN VICENTE 50,000 ACRE-FEET + MOOSA 50,000 ACRE-FEET

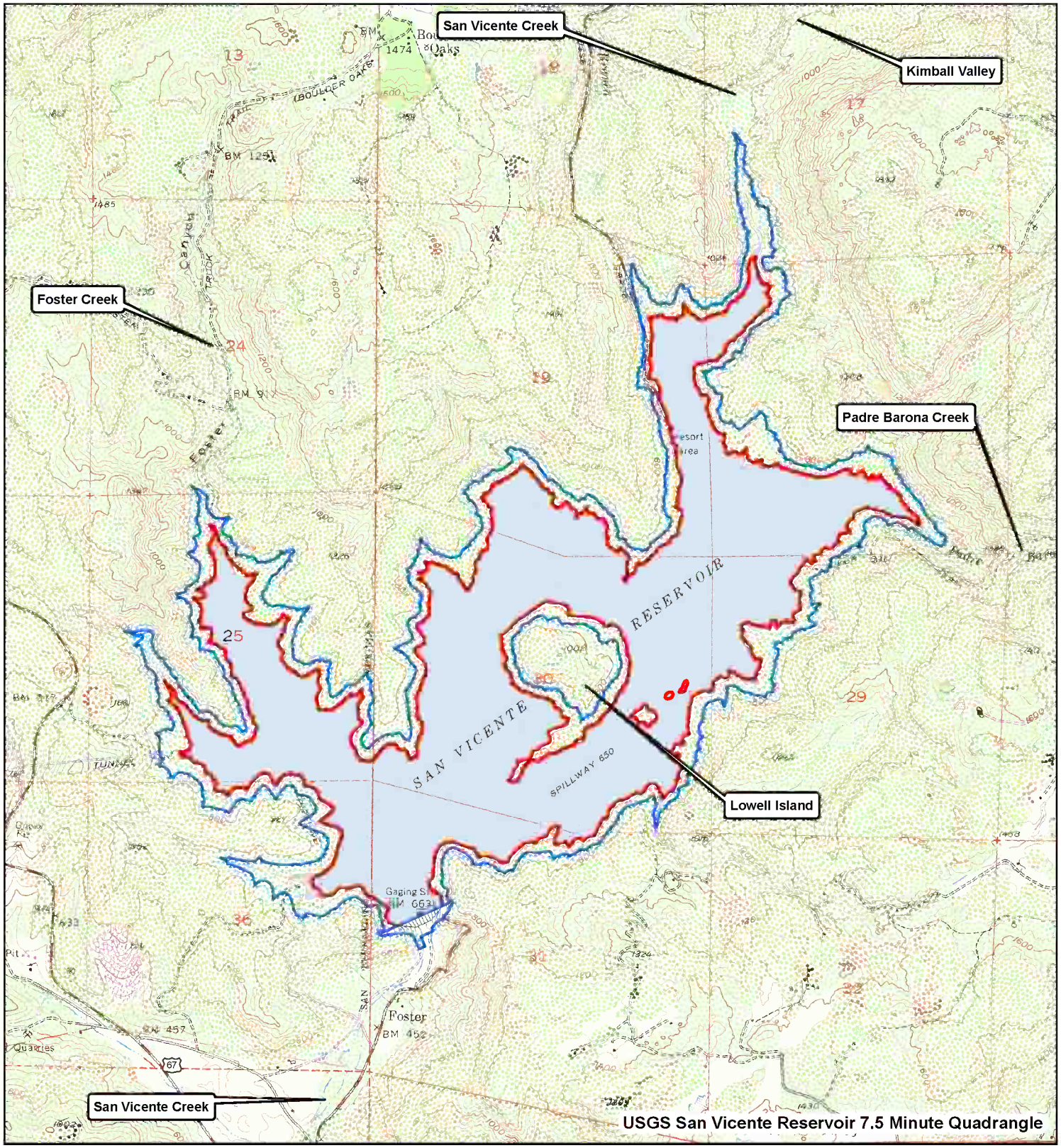
4.1 ENVIRONMENTAL SETTING

The locations of San Vicente Reservoir and Moosa Valley are described previously in Sections 2.0 and 3.0 (figures 1-1, 2-1, and 3-1), along with existing and surrounding uses, USGS coordinates, and access provisions.

4.2 PROJECT DESCRIPTION

This alternative (referred to herein as the SV 50K/Moosa 50K Alternative) involves a reduced raise of San Vicente Dam, which would provide approximately 50,000 AF of carryover storage capacity at San Vicente Reservoir, and construction of a new dam at Moosa Valley to create a new reservoir that would provide another 50,000 AF of carry storage capacity. Figures 4-1, 4-3, 4-4, and 4-5 depict the 50,000 AF inundation limits at San Vicente Reservoir. Figures 4-2 and 4-6 depict the 50,000 AF inundation limits at Moosa Valley. The two projects taken together would provide a combined 100,000 AF of carryover storage capacity. It is assumed that both projects would be constructed concurrently.

Under this alternative, San Vicente Dam would be raised an additional 32 feet beyond the approved 54-foot dam raise for the ESP, increasing the overall height of the dam by 86 feet (or a total dam height of 306 feet). The dam raise would increase the usable volume of San Vicente Reservoir by approximately 102,100 AF. The elevation of the spillway crest would be raised from 650 to 735 feet AMSL. The San Vicente Dam raise associated with alternative 3 would be accomplished using the same methods and techniques described for the Proposed Action: Continuous (20 to 24 hours per day) RCC placement on the downstream face of the dam. The same options for the provision of aggregate for RCC production that are under consideration for the Proposed Action are also being evaluated for this alternative. Reservoir water level lowering would be the same as described for the Proposed Action. The reduced increase in reservoir capacity and elevation, as compared to the Proposed Action, would not require the construction of saddle dams. As with the Proposed Action, additional facilities associated with this alternative would include a downstream control facility, outlet pipeline, relocated Bypass Pipeline, relocated marina facilities, and new access roads to the dam crest, relocated marina, and Diversion Structure.



Legend

650' Contour

Elevated Spillway Crest (736 AMSL)

N

Feet

0 2,500

Project component details are displayed on Figure 4-3.
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.

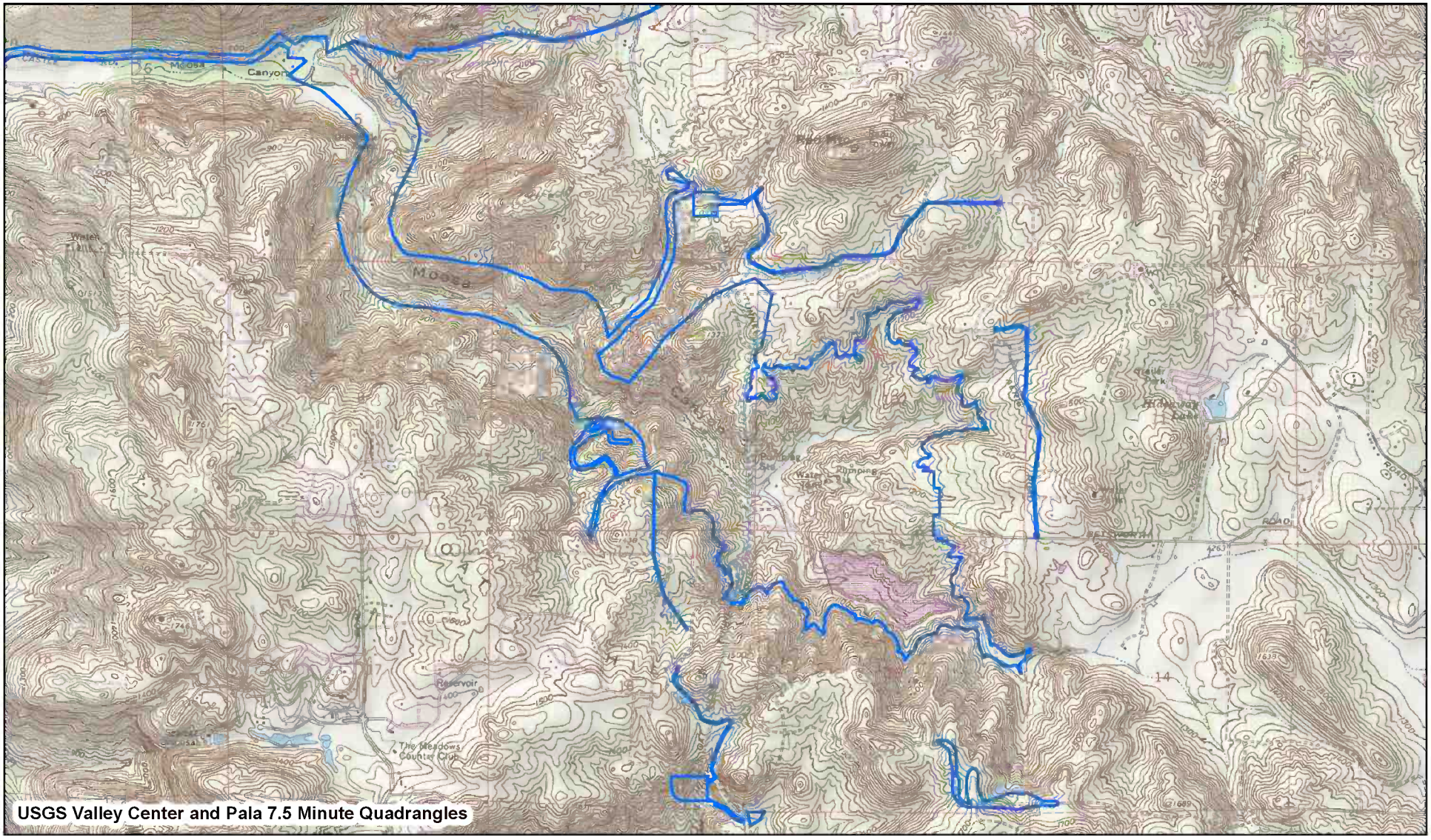
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 50K Elevated Spillway Crest on USGS Topographic Quadrangle Map

Figure 4-1

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

Date: Apr 26, 2007



Legend

1175' Contour, Pipeline Corridor, and Outlying Project Components*

* Project component details are displayed on Figure 4-6.
Note: The western portion of the pipeline falls within existing roads, therefore it is not displayed on this graphic.

N

Feet

0 2,800

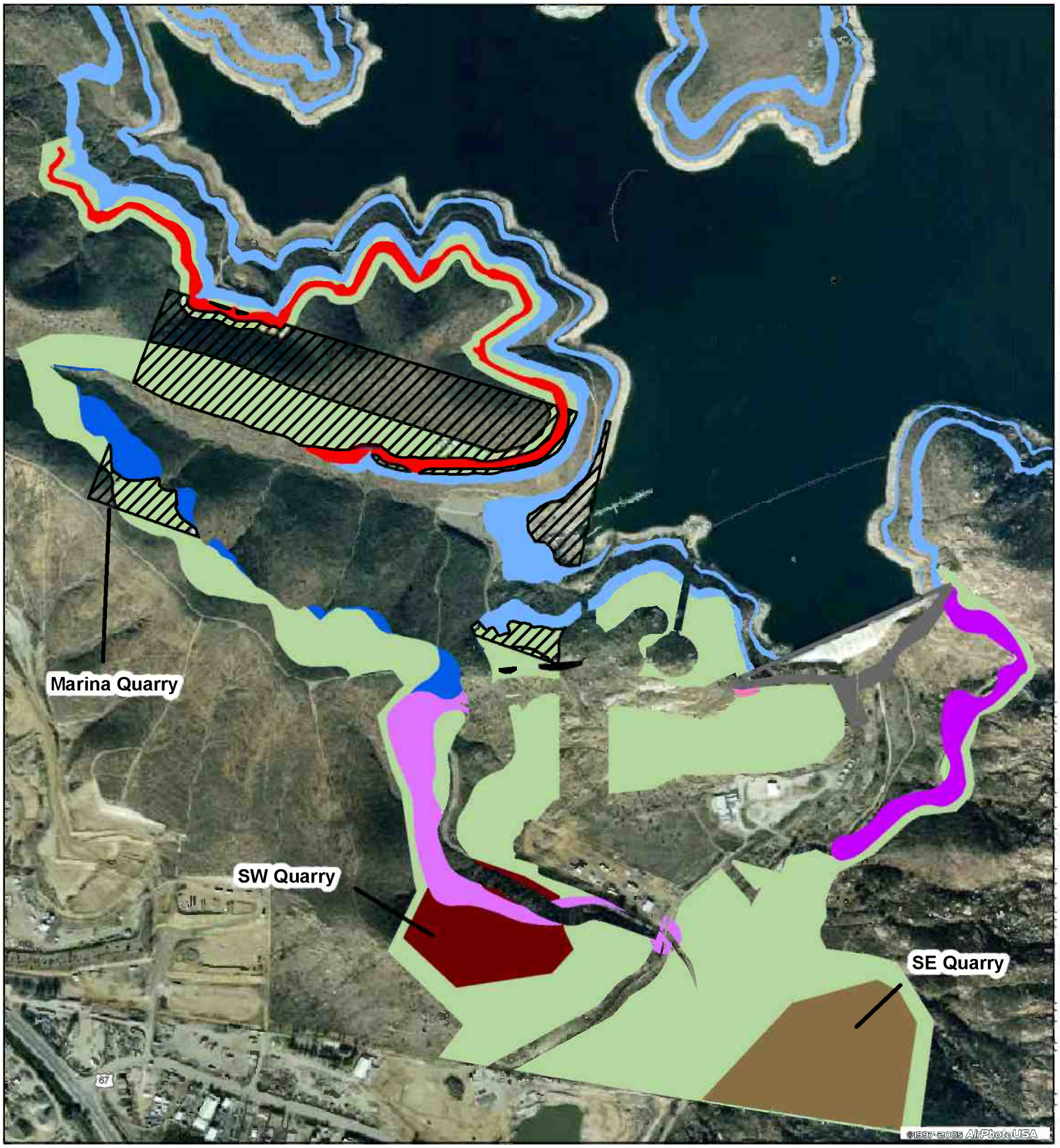
TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa 50K Project Footprint on USGS Topographic Quadrangle Map

Figure 4-2

File: \\Rio\gist\projects\sanvicente\plots\figures\50K Alternatives BTR\Moosa USGS.mxd

Date: Apr 26, 2007



Legend

- Marina Quarry Option* (temporary impact)
- Southeast Quarry Option (permanent impact)
- Southwest Quarry Option (permanent impact)
- Inundation Area (650' to 664' and 710' to 736' contours)
- Dam
- Saddle Dam
- Marina
- Marina Road
- Left Abutment Road
- Right Abutment Road
- Bypass Pipeline
- Temporary Limits of Disturbance

Note: The previously permitted ESP and San Vicente Pipeline footprints are not shown on this map.

* Diagonal hatching represents general study boundaries for the Marina Quarry Option for purposes of EIR/EIS 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

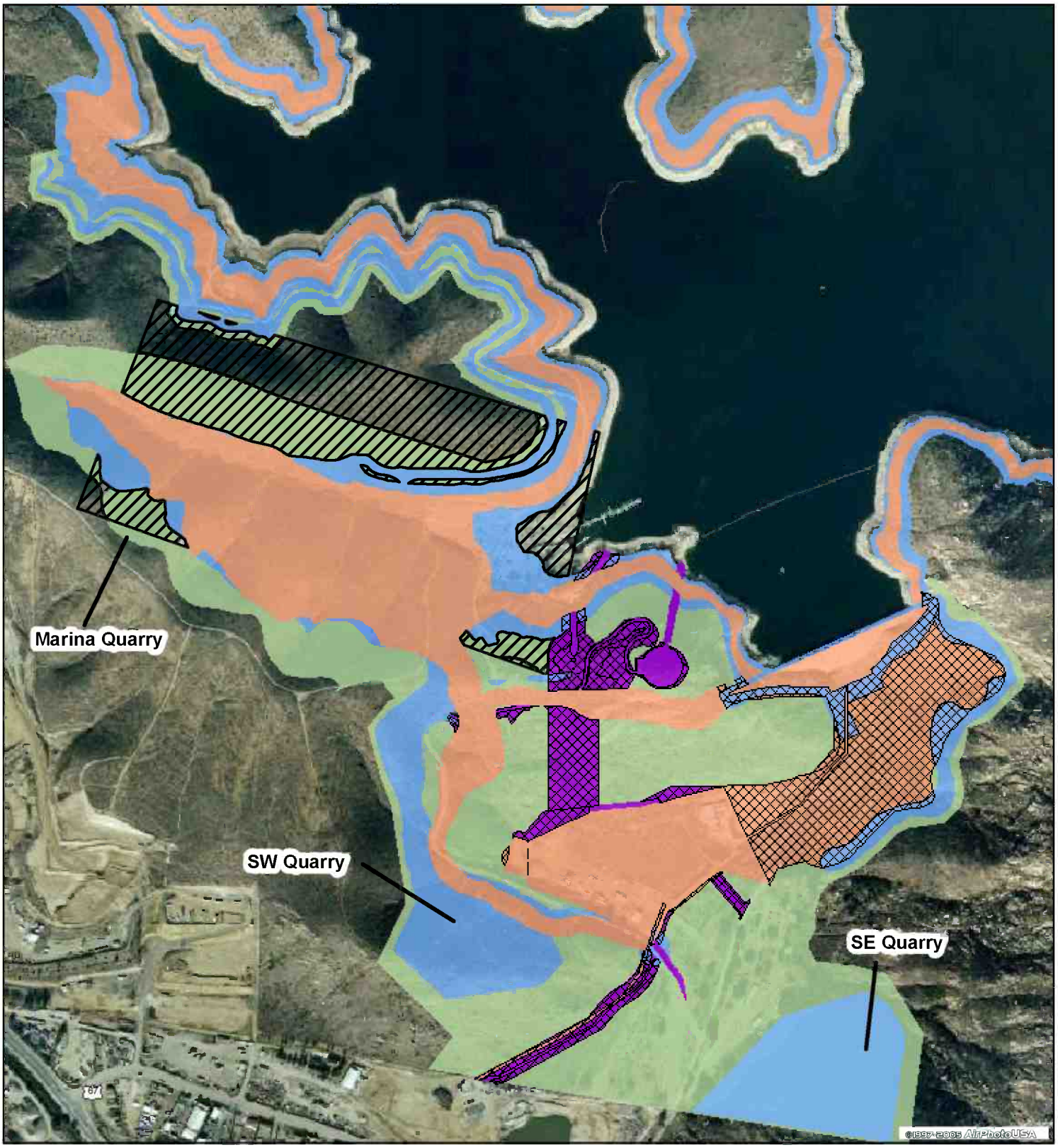
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 50K Project Components - Downstream Construction Area

Figure 4-3

gist\projects\sanvicente\plots\figures\BTR\CSP Project Detail.mxd

Date: Mar 06, 2007



Legend

- ESP and SVP Temporary Impact Overlay
- San Vicente 50K Permanent Impacts
- San Vicente 50K Temporary Impacts
- ESP Permanent Impacts
- SVP Permanent Impacts
- Marina Quarry Option* (temporary impact)

* Diagonal hatching represents general study boundaries for the Marina Quarry Option for purposes of EIR/EIS 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. The Marina Quarry Option would be considered a permanent impact.

N

Feet

0 825

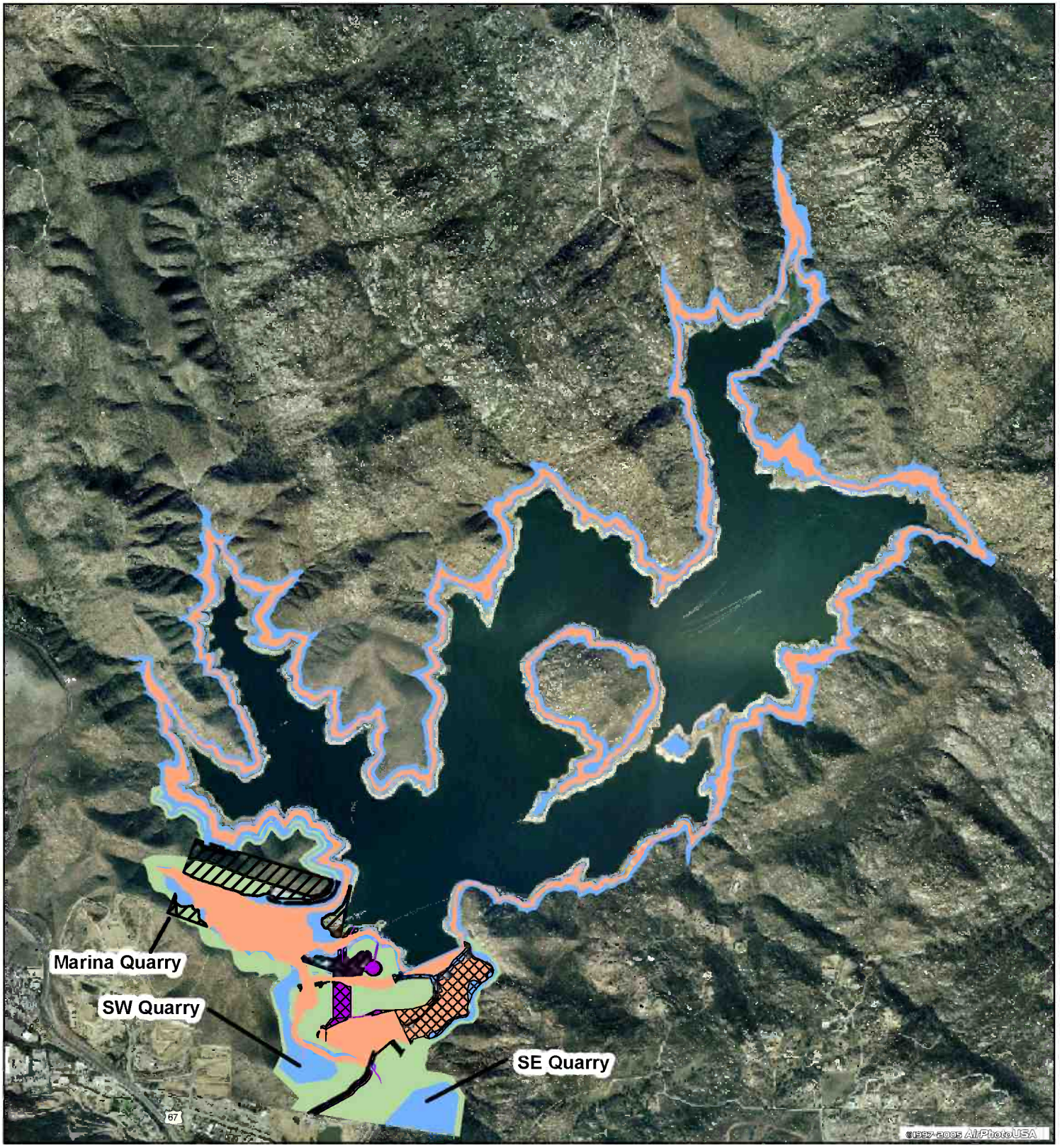
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 50K, ESP and SVP Impact Areas - Downstream Construction Area

Figure 4-4

gist\projects\sanvicente\plots\figures\BTR\CSP and Other Impact.mxd

Date: Mar 06, 2007



Legend

- ESP and SVP Temporary Impact Overlay
- San Vicente 50K Permanent Impacts
- San Vicente 50K Temporary Impacts
- ESP Permanent Impacts
- SVP Permanent Impacts
- Marina Quarry Option* (temporary impact)

* Diagonal hatching represents general study boundaries for the Marina Quarry Option for purposes of EIR/EIS 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. The Marina Quarry Option would be considered a permanent impact.

N

Feet

0 2,350

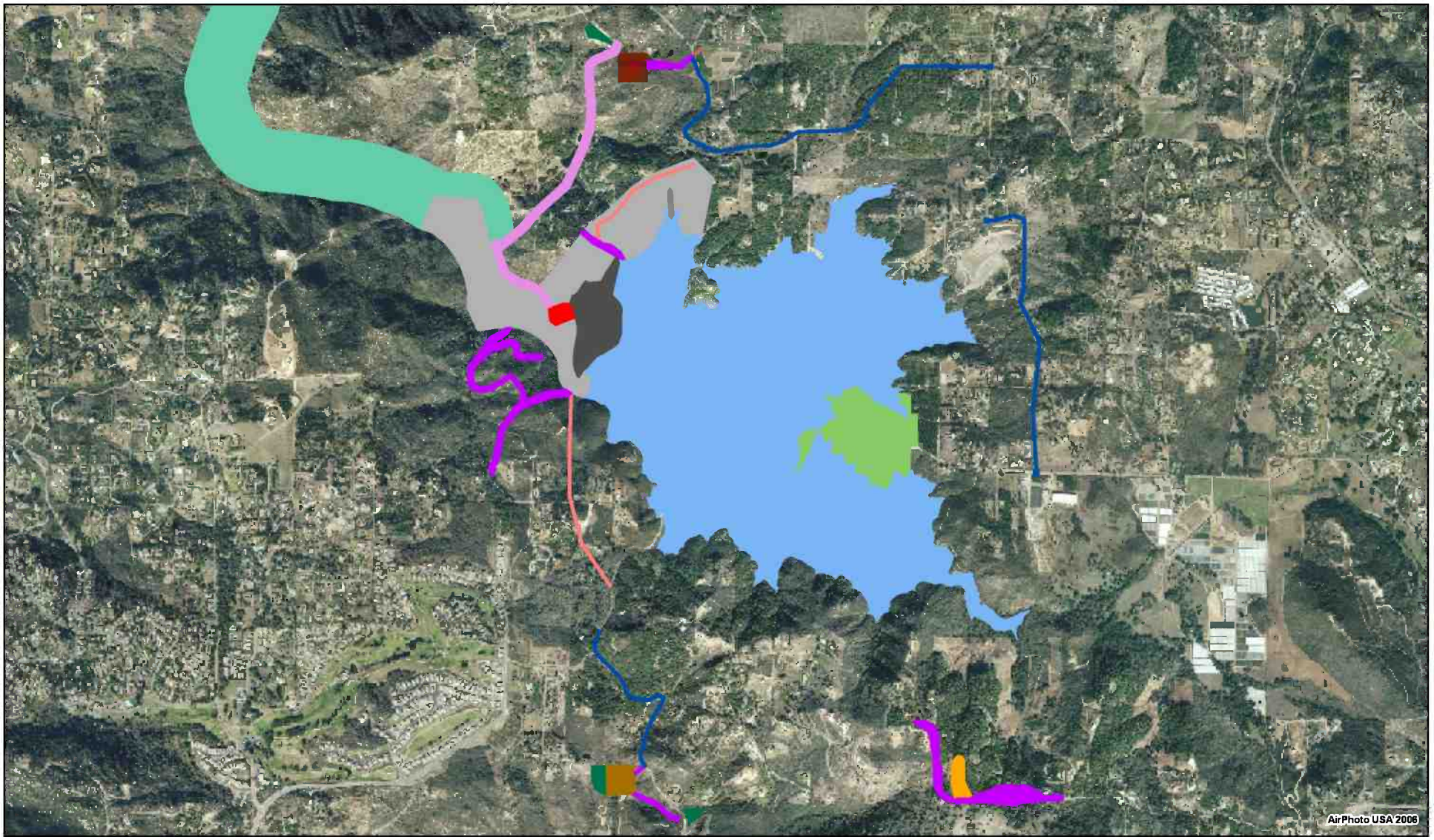
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 50K, ESP and SVP Impact Areas

Figure 4-5

gist\projects\sanvicente\plots\figures\BTR\CSP and Other Impact Overview.mxd

Date: Mar 06, 2007



Legend

- Reservoir Inundation Area (1175' contour)
- Dam
- Spillway
- Marina
- VCMWD North Pump Station
- VCMWD South Pump Station
- First Aqueduct Tunnel Portal
- Access/Construction/Relocated Road
- Borrow Area
- Dam Construction Zone - Temporary Impact
- First Aqueduct Pipeline Relocation - Temporary Impact
- Staging Area - Temporary Impact
- New Electrical Line - Temporary Impact
- Electrical Line Relocation - Temporary Impact
- Water Line Relocation - Temporary Impact
- Pipeline to 2nd Aqueduct - Temporary Impact*

*Temporary impacts from pipeline trenching would actually be less than what is shown because this corridor is a conceptual study area to allow for future engineering studies to determine the specific location of the alignment, if this alternative were selected.

N

Feet

0 2,300

TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa Reservoir 50K Project Components

Figure 4-6

File: T:\projects\sanvicente\plots\figures\50K Alternatives BTR\Moosa Reservoir Project Components.mxd

Date: Mar 09, 2007

In addition to an approximate 50,000-AF increase in the capacity of San Vicente Reservoir, a new 300-foot high dam would be constructed at Moosa Valley to create a reservoir with 50,000 AF of carryover storage capacity. The dam crest elevation would be 1,185 feet AMSL. A spillway would be constructed approximately 1,500 feet to the northeast of the main dam; the spillway crest elevation would be 1,170 feet AMSL. As described in the Moosa 100K alternative, the main dam would be a concrete-face rockfill dam. This alternative would involve the same conveyance facilities as the Moosa 100K alternative. The pipeline would follow the same alignment described in Alternative 2. Additional facilities would include a marina, new access roads, and new electrical supply to the pump station and other facilities. A portion of the Water Authority's First Aqueduct located below the reservoir inundation area would be relocated around the reservoir.

The 50K AF reservoir inundation limits for San Vicente and Moosa were determined by 1) calculating the elevation limit at San Vicente Reservoir that would yield a water volume increase of 50,000 AF above the 90,000 AF increase contemplated for the ESP dam raise, and by 2) calculating the elevation limit at Moosa Canyon that would yield a 50K AF capacity reservoir at that location. The impact calculations and graphics used the 736-foot contour for the SV 50K since the contour data for the San Vicente reservoir was only available in 2-foot contour intervals. The impact calculations and graphics used the 1,175-foot contour for the Moosa 50K since the contour data for the Moosa vicinity was only available in 25-foot contour intervals. The study areas beyond the inundation limits were determined are similar to those for the San Vicente and Moosa 100K alternatives, including the dam construction zones. There are slight differences between Moosa 100K and Moosa 50K study areas regarding of the number of project components and outlying features; however, the pipeline corridors are the same.

4.3 FIELD SURVEY METHODS

Refer to the SV 100K and Moosa 100K alternatives for a description of field survey methods for the San Vicente and Moosa study areas.

4.4 AFFECTED ENVIRONMENT

4.4.1 Physical Conditions

Refer to the SV 100K and Moosa 100K alternatives chapters for a discussion of the physical conditions of the affected areas.

4.4.2 Flora

Refer to the SV 100K and Moosa 100K alternatives chapters for a discussion of the botanical resources at each site.

4.4.2.1 Plant Species

Refer to the SV 100K and Moosa 100K alternatives chapters for a discussion of the plant species occurring at each site.

4.4.2.2 Vegetation Communities

With the exception of disturbed wetland, all vegetation communities that exist in the 100K footprint for both Moosa and San Vicente occur within both 50K footprints (Figures 4-7 and 4-8) for the combined 50K alternative. Refer to the SV 100K and Moosa 100K alternatives chapters for a discussion of these vegetation communities. Disturbed wetland is discussed below.

Disturbed Wetland (11200)

Refer to Moosa 100K alternative chapter for a detailed discussion of this vegetation community. This vegetation community was found within the Moosa 100K footprint but is not present within the Moosa 50K footprint.

4.4.3 Wildlife

Refer to the SV 100K and Moosa 100K alternatives chapters for a discussion of the wildlife species occurring at each site.

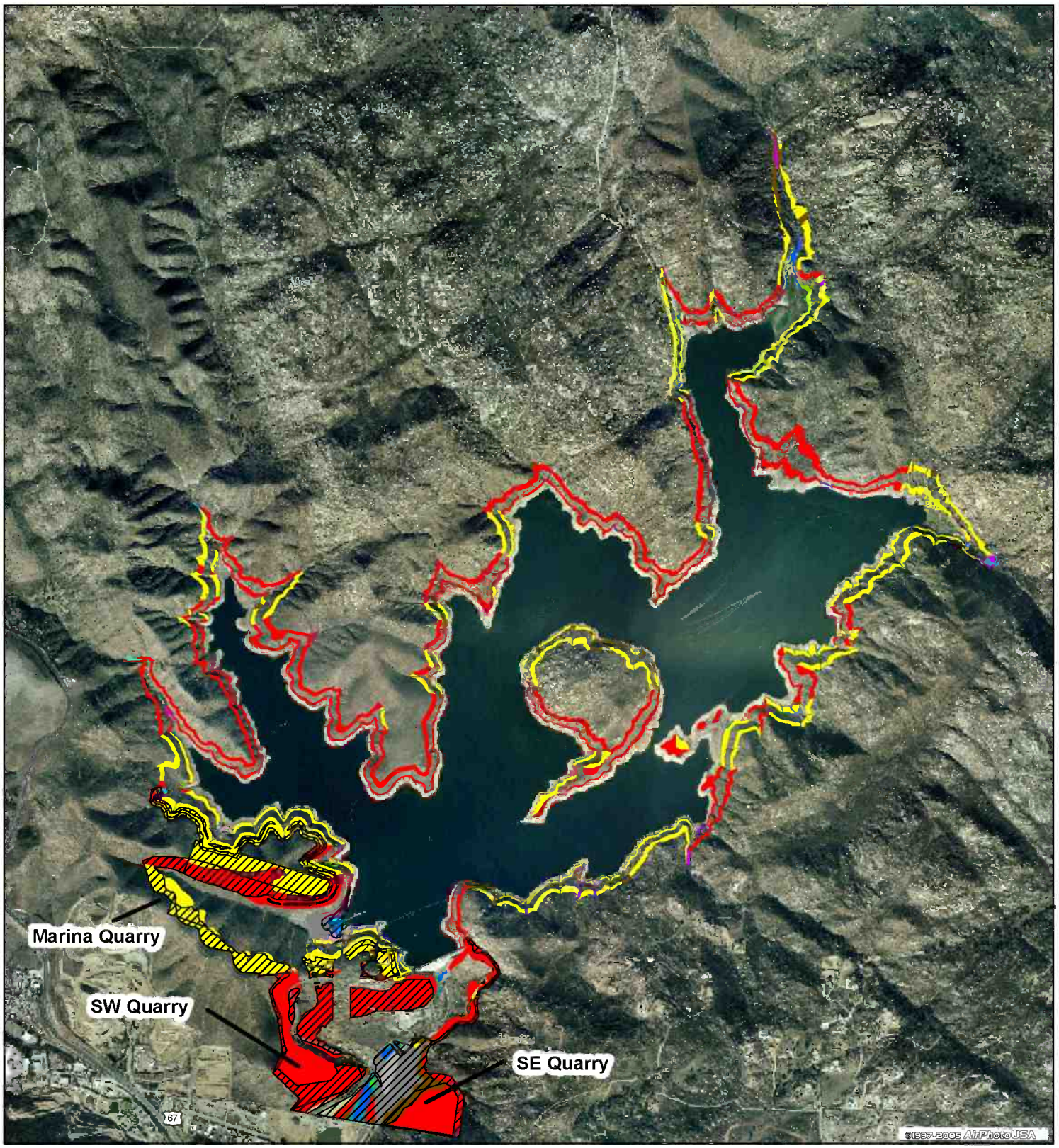
4.4.4 Sensitive Biological Resources

4.4.4.1 Sensitive Vegetation Communities

Refer to the SV 100K and Moosa 100K alternatives chapters for discussion of the sensitive habitats occurring at each site.

4.4.4.2 Sensitive Species

Refer to the SV 100K and Moosa 100K alternatives chapters for a discussion of the sensitive species occurring at each site.



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Unvegetated Channel/Lakeshore Fringe
- Coastal and Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Mulefat Scrub
- Southern Willow Scrub
- Diegan Coastal Sage Scrub
- Chaparral
- Non-Native Grassland
- Coast Live Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

N

Feet

0 2,350

Note: Vegetation mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.
Note: Only one of the quarry options will be constructed as part of the proposed project.

TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 50K Impacted Vegetation Communities - Overview

Figure 4-7

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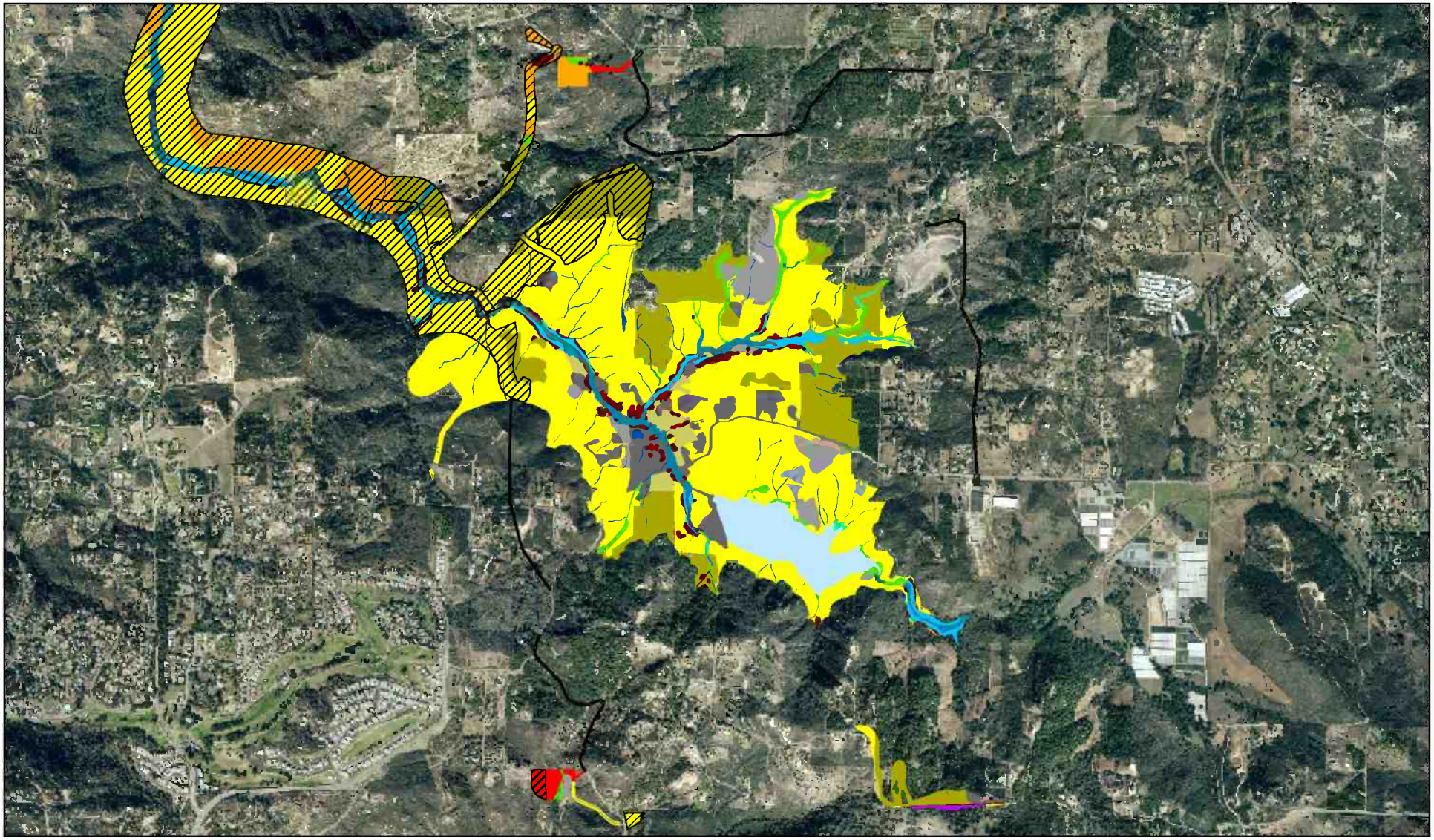
Date: Apr 13, 2007



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Open Water (reservoir)/Freshwater
- Unvegetated Channel/Lakeshore Fringe
- Perennial/Seasonal Pond
- Coastal/Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood-Willow Riparian Forest
- Southern Sycamore-Alder Riparian Woodland
- Mulefat Scrub
- Southern Willow Scrub
- Disturbed Wetland
- Diegan Coastal Sage Scrub
- Chaparral
- Coastal Sage-Chaparral Scrub
- Valley Needlegrass Grassland
- Non-Native Grassland
- Coast Live Oak Woodland
- Open Engelmann Oak Woodland
- Eucalyptus Woodland
- Disturbed Habitat
- Agriculture
- Urban/Developed

Note: Open water (existing reservoir) mapping not displayed.

N

Feet

0 2,300

TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa 50K - Impacted Vegetation Communities within the Reservoir Area

Figure 4-8

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Date: Apr 13, 2007

A. Rare, Threatened, and Endangered Species (Listed Species)

All listed species found within the SV 100K and Moosa 100K footprints are found or have the potential to be found within the 50K footprints. Refer to the SV 100K and Moosa 100K alternatives chapters for discussion of these species.

B. Other (Non-Listed) Sensitive Species

Refer to the SV 100K and Moosa 100K alternatives chapters for discussion of the non-listed sensitive species occurring at each site.

C. Potentially Occurring Sensitive Species

Refer to the SV 100K and Moosa 100K alternatives chapters for a discussion of the sensitive species with the potential to occur at each site; these species would potentially also occur within the 50K footprint.

4.4.5 Habitat Linkages and Wildlife Movement Corridors

Refer to the SV 100K and Moosa 100K alternatives chapters for discussion.

4.5 ENVIRONMENTAL CONSEQUENCES

4.5.1 Biological Resources

Significance Criterion 1: *Would the SV 50K/Moosa 50K Alternative have a substantial adverse effect on any riparian habitat, submerged aquatic vegetation, or other sensitive natural communities identified in policies or regulations by the CDFG or USFWS.*

2.5.1.1 Vegetation Communities and Sensitive Habitats

Direct Impacts

Implementation of the SV 50K/Moosa 50K Combined alternative is expected to permanently impact an estimated low of 62.00 acres or an estimated high of 62.16 acres (depending on which quarry option (SW Quarry Option, SE Quarry Option, and Marina Quarry Option) is implemented) of riparian and wetland habitat, and an estimated low of 792.96 acres or an estimated high of 807.10 of upland habitat (Table 4-1; Figures 4-7 and 4-9, and 4-8 and 4-10). Potential temporary impacts include an estimated low of 50.68

acres or an estimated high of 52.85 acres of riparian and wetland habitat and an estimated low of 488.60 acres or an estimated high of 505.27 acres of upland habitat (Table 4-2). Riparian vegetation communities are considered sensitive, and therefore, permanent and temporary impacts to these habitats are significant. No impacts would occur to disturbed wetlands with implementation of this alternative.

Table 4-1. Permanent Direct Impacts to Vegetation Communities within the SV 50K/Moosa 50K Footprints.

Vegetation Community	Acres		
	San Vicente 50K[1]	Moosa 50K	Moosa 50K and San Vicente 50K Combined[1,3]
Riparian/Wetland Communities			
Open Water (reservoir)/Freshwater (13140)[4]	0/0/0	0.12	0.12/0.12/0.12
Unvegetated Channel/Lakeshore Fringe (13200)	4.20/4.20/4.36	5.43	9.63/9.63/9.79
Freshwater Marsh (52410)	0.39/0.39/0.39	0.64	1.03/1.03/1.03
Southern Coast Live Oak Riparian Forest (61310)	2.27/2.27/2.27	13.85	16.12/16.12/16.12
So. Cottonwood-Willow Riparian Forest (61330)	0.40/0.40/0.40	17.16	17.56/17.56/17.56
Mulefat Scrub (63310)	0.45/0.45/0.45	0.29	0.74/0.74/0.74
Southern Willow Scrub (63320)	1.10/1.10/1.10	15.70	16.80/16.80/16.80
Total Riparian/WetlandC ommunities	***8.81/8.81/8.97***	***53.19***	***62.00/62.00/62.16***
Upland Communities			
Coastal Sage Scrub (32500)	133.41/138.56/127.47	4.48	137.89/143.04/131.95
Chaparral (37000)	89.87/89.87/89.87	337.83	427.70/427.70/427.70
Coastal Sage-Chaparral Scrub (37G00)	NA[2]	4.49	4.49/4.49/4.49
Valley Needlegrass Grassland (42110)	NA[2]	0.37	0.37/0.37/0.37
Non-Native Grassland (42200)	0.04/0.04/0.04	12.59	12.63/12.63/12.63
Coast Live Oak Woodland (71160)	7.48/10.45/7.48	17.86	25.34/28.31/25.34
Open Engelmann Oak Woodland (71181)	NA[2]	1.29	1.29/1.29/1.29
Eucalyptus Woodland (11100)	1.59/1.59/1.59	0.70	2.29/2.29/2.29
Disturbed Habitat (11300)	0.47/0.47/0.47	33.66	34.13/34.13/34.13
Agriculture (18000)	NA[2]	107.49	107.49/107.49/107.49
Urban/Developed (12000)	3.93/4.01/3.93	41.35	45.28/45.36/45.28
Total Upland Communities	***236.79/244.99/230.85***	***562.11***	***798.90/807.10/792.96***
TOTAL PERMANENT, DIRECT IMPACTS	**245.60/253.80/239.82**	**615.30**	**860.90/869.10/855.12**

[1] Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option.
[2] This habitat community does not occur within footprint.
[3] Combined total calculated by adding each San Vicente quarry option separately with Moosa.
[4] Includes only permanent impacts to perennial/seasonal pond within the Moosa 50K footprint.

Table 4-2. Temporary Direct Impacts to Vegetation Communities within the SV 50K/Moosa 50K Footprints.

Vegetation Community	Acres		
	San Vicente 50K[1]	Moosa 50K	Moosa 50K and San Vicente 50K Combined[1,3]
Riparian/Wetland Communities			
Unvegetated Channel/Lakeshore Fringe (13200)	3.30/3.31/5.36	2.38	5.68/5.69/7.74
Freshwater Marsh (52410)	0/0/0.11	0.73	0.73/0.73/0.84
Southern Coast Live Oak Riparian Forest (61310)	0/0/0	9.91	9.91/9.91/9.91
Southern Cottonwood-Willow Riparian Forest (61330)	0.07/0.07/0.07	25.63	25.70/25.70/25.70
Southern Sycamore-Alder Riparian Woodland (62400)	NA[2]	0.02	0.02/0.02/0.02
Mulefat Scrub (63310)	1.69/1.69/1.69	0	1.69/1.69/1.69
Southern Willow Scrub (63320)	0.30/0.30/0.30	6.65	6.95/6.95/6.95
Total Riparian/Wetland Communities	***5.36/5.37/7.53***	***45.32***	***50.68/50.69/52.85***
Upland Communities			
Coastal Sage Scrub (32500)	64.08/57.42/57.01	27.03	91.11/84.45/84.04
Chaparral (37000)	33.80/33.80/48.61	166.24	200.04/200.04/214.85
Coastal Sage-Chaparral Scrub (37G00)	NA[2]	40.07	40.07/40.07/40.07
Valley Needlegrass Grassland (42110)	NA[2]	0	0/0/0
Non-Native Grassland (42200)	2.02/2.02/2.02	2.72	4.74/4.74/4.74
Coast Live Oak Woodland (71160)	5.93/4.69/5.93	24.85	30.78/29.54/30.78
Open Engelmann Oak Woodland (71181)	NA[2]	0	0/0/0
Eucalyptus Woodland (11100)	0/0/0.13	0	0/0/0.13
Disturbed Habitat (11300)	3.45/3.45/3.45	1.12	4.57/4.57/4.57
Agriculture (18000)	NA[2]	63.63	63.63/63.63/63.63
Urban/Developed (12000)	14.31/14.23/15.13	47.33	61.64/61.56/62.46
Total Upland Communities	***123.59/115.61/132.28***	***372.99***	***496.58/488.60/505.27***
TOTAL TEMPORARY, DIRECT IMPACTS	**128.95/120.98/139.81**	**418.31**	**547.26/539.29/558.12**

[1] Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option.
[2] This habitat community does not occur within footprint.
[3] Combined total calculated by adding each San Vicente quarry option separately with Moosa.

Table 4-3. Permanent Direct Impacts to CDFG-Defined Wetlands and Unvegetated Waters of the State within the SV 50K/Moosa 50K Footprints.

CDFG-Defined Wetlands/Unvegetated Waters of the State	Acres		
	San Vicente 50K[1]	Moosa 50K	Moosa 50K and San Vicente 50K Combined[1,2]
Wetlands			
Freshwater Marsh	0.39/0.39/0.39	0.64	1.03/1.03/1.03
Southern Coast Live Oak Riparian Forest	2.27/2.27/2.27	13.85	16.12/16.12/16.12
Southern Cottonwood-Willow Riparian Forest	0.40/0.40/0.40	17.16	17.56/17.56/17.56
Mulefat Scrub	0.45/0.45/0.45	0.29	0.74/0.74/0.74
Southern Willow Scrub	1.10/1.10/1.10	15.70	16.80/16.80/16.80
Total Wetlands	***4.61/4.61/4.61***	***47.64***	***52.25/52.25/52.25***
Unvegetated Waters of the State			
Open Water (reservoir)/Freshwater[3]	0/0/0	0.12	0.12/0.12/0.12
Lakeshore Fringe	1.45/1.45/1.61	0.91	2.36/2.36/2.52
Unvegetated Channel	2.75/2.75/2.75	4.52	7.27/7.27/7.27
Total Unvegetated Waters	***4.20/4.20/4.36***	***5.55***	***9.75/9.75/9.91***
TOTAL WETLANDS AND UNVEGETATED WATERS	**8.81/8.81/8.97**	**53.19**	**62.00/62.00 62.16**

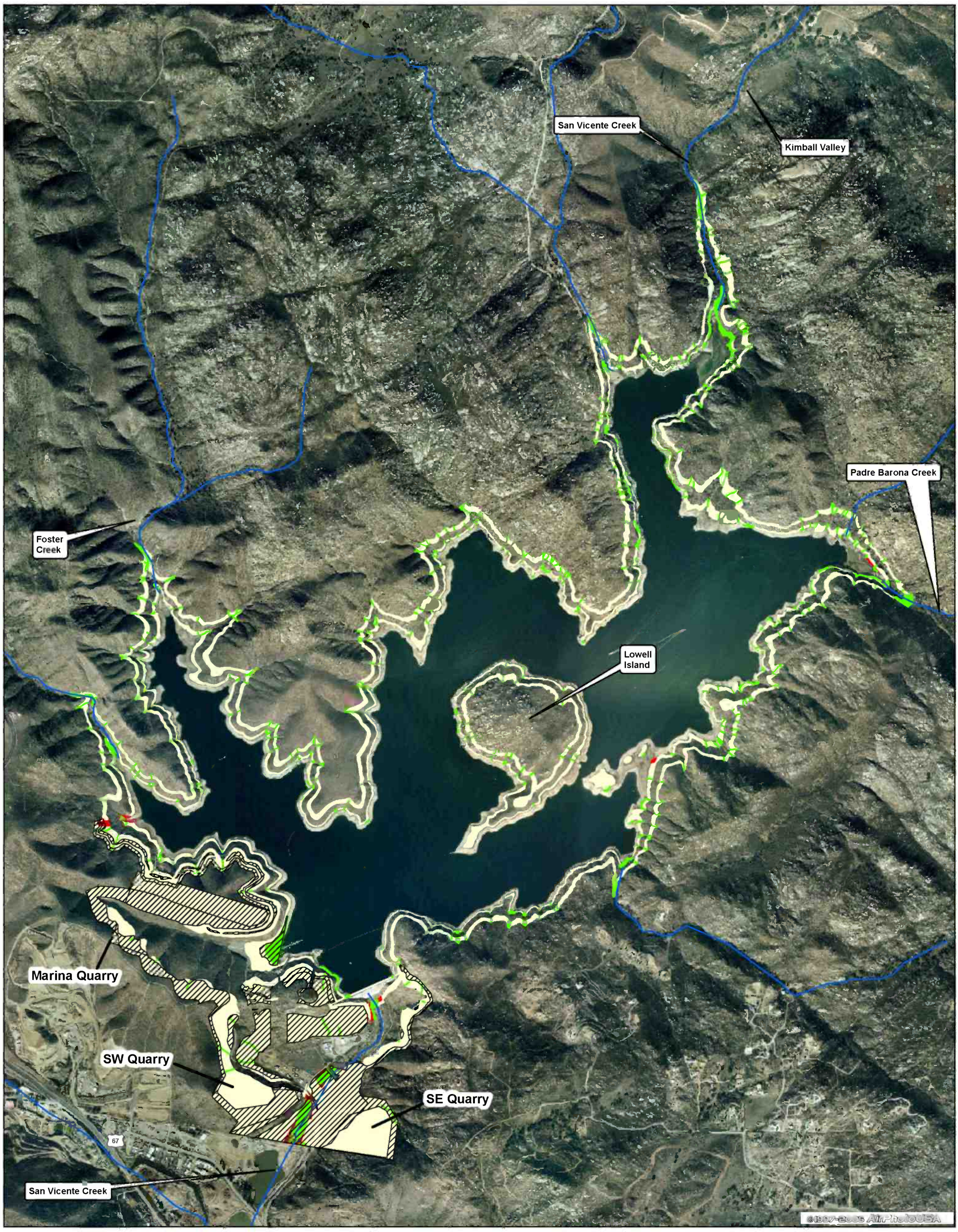
[1] Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option.
[2] Combined total calculated by adding each San Vicente quarry option separately with Moosa.
[3] Includes only permanent impacts to perennial/seasonal pond within the Moosa 50K footprint.

Table 4-4. Temporary Direct Impacts to CDFG–Defined Wetlands and Unvegetated Waters of the State within the SV 50K/Moosa 50K Footprints.

CDFG-Defined Wetlands/Unvegetated Waters of the State	Acres		
	San Vicente 50K[1]	Moosa 50K	Moosa 50K and San Vicente 50K Combined[1,2]
Wetlands			
Freshwater Marsh	0/0/0.11	0.73	0.73/0.73/0.84
Southern Coast Live Oak Riparian Forest	0/0/0	9.91	9.91/9.91/9.91
Southern Cottonwood-Willow Riparian Forest	0.07/0.07/0.07	25.63	25.70/25.70/25.70
Southern Sycamore-Alder Riparian Woodland	N/A	0.02	0.02/0.02/0.02
Mulefat Scrub	1.69/1.69/1.69	0	1.69/1.69/1.69
Southern Willow Scrub	0.30/0.30/0.30	6.65	6.95/6.95/6.95
Total Wetlands	***2.06/2.06/2.17***	***42.94***	***45.00/45.00/45.11***
Unvegetated Waters of the State			
Lakeshore Fringe	0/0/2.06	0.71	0.71/0.71/2.77
Unvegetated Channel	3.30/3.31/3.30	1.67	4.97/4.98/4.97
Total Unvegetated Waters	***3.30/3.31/5.36***	***2.38***	***5.68/5.69/7.74***
TOTAL WETLANDS AND UNVEGETATED WATERS	**5.36/5.37/7.53**	**45.32**	**50.68/50.69/52.85**

[1] Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option.

[2] Combined total calculated by adding each San Vicente quarry option separately with Mo



Legend

- Temporary Impact Overlay (vegetation without overlay is permanently impacted)
- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetland
- Non-Wetlands within Impact Footprint

Basemap Legend

- Streams

N

Feet

0 1,650

Note: Wetland mapping within previously permitted ESP and San Vicente Pipeline footprints is not shown on this map.
Note: Only one of the quarry options will be constructed as part of the proposed project.

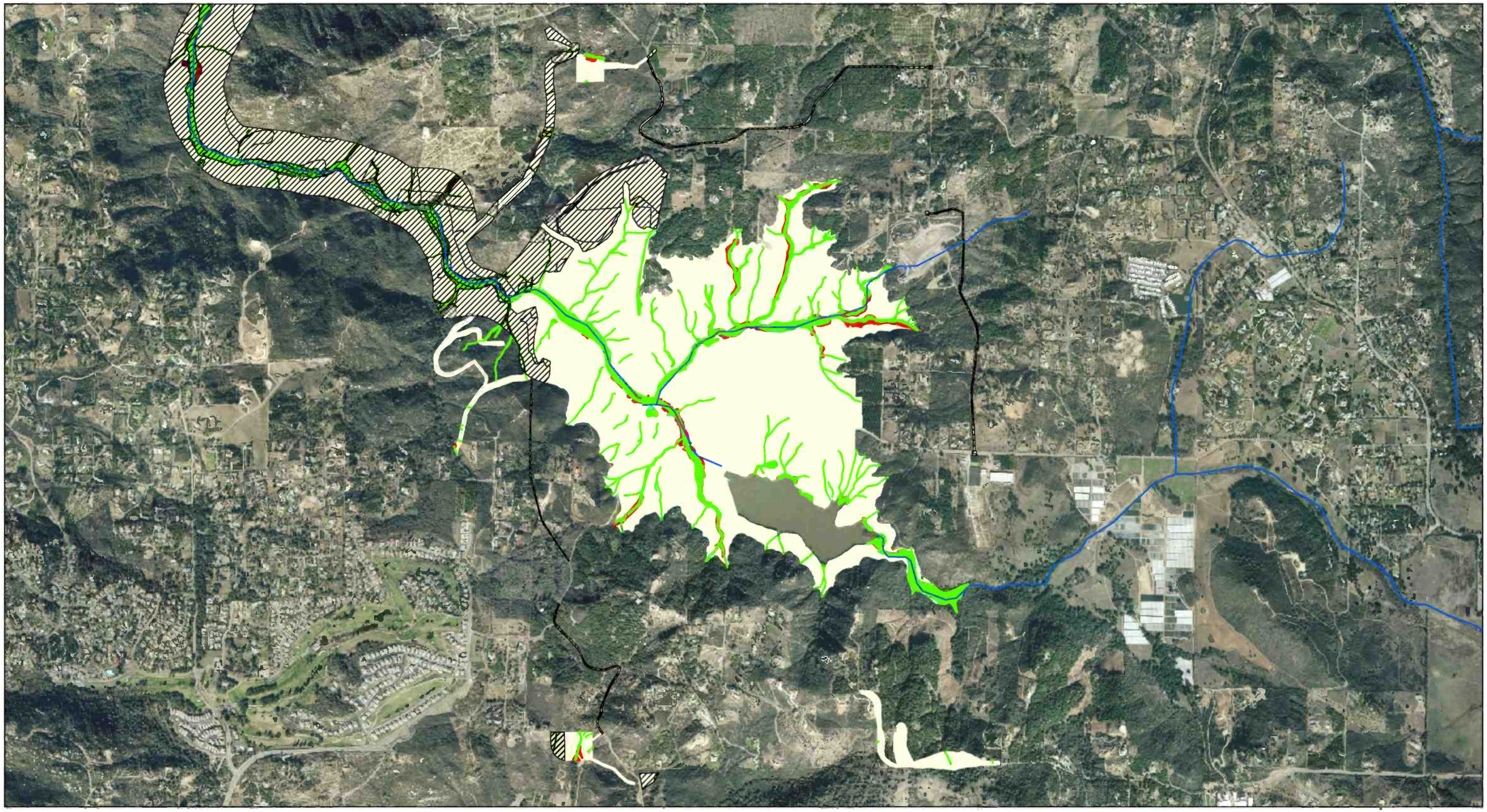
TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 50K Impacted Jurisdictional Wetlands and Waters - Overview

Figure 4-9

/gist/projects/sanvicente/plots/figures/BTR/Impacts-Overview Wetlands.mxd

Date: Mar 07, 2007



Legend

- Temporary Impact Overlay (wetlands without overlay are permanently impacted)
- Corps and CDFG Jurisdictional Wetlands and Waters
- CDFG Jurisdictional Wetlands and Waters
- Non-Wetlands within Impact Footprint

Note: Open water (existing reservoir) mapping not displayed.

Basemap Legend

- Streams

N

Feet

0 1,600

TAIC

Carryover Storage and San Vicente Dam Raise Project
Moosa 50K - Impacted Jurisdictional Wetlands and Waters within the Reservoir Area

Figure 4-10

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Date: Mar 09, 2007

All riparian habitats are also regulated by CDFG (Figures 4-9 and 4-10). Tables 4-3 and 4-4 categorize these impacts into "wetlands" and "unvegetated waters of the State," to be consistent with agency terminology.

Impacts to open water (reservoir)/freshwater only include the permanent impacts expected to perennial/seasonal pond (approximately 0.12 acre). The permanent impacts to this habitat type are considered significant because sensitive biological resources may occur in the pond, and this habitat is regulated by CDFG and RWQCB. Tuner Lake would not be impacted because the water surface would increase with creation of the Moosa Reservoir, which is considered a net benefit to open water.

Refer to the SV 100K and Moosa 100K alternatives chapters for the discussion of submerged aquatic vegetation.

Several native upland habitats are considered sensitive because of their potential to support sensitive species, limited regional distribution, and continued loss and fragmentation from urbanization. Coastal sage scrub, which provides potential habitat for the federally endangered San Diego thornmint and Quino checkerspot butterfly and the federally threatened California gnatcatcher, would be permanently (an estimated low of 131.95 acres or an estimated high of 143.04 acres) and temporarily (an estimated low of 84.04 acres or an estimated high of 91.11 acres) impacted (Tables 4-1 and 4-2, and Figures 4-7 and 4-8). Most of this loss occurs at the SV 50K site. All of these impacts are significant.

Although chaparral is regionally more abundant than many other sensitive upland habitats, it provides habitat for numerous sensitive species within the San Vicente and Moosa footprints, including Lakeside ceanothus, and non-chaparral obligates such as slender-pod jewelflower, delicate clarkia, orange-throated whiptail, coast horned lizard, and rufous-crowned sparrow. For this and other reasons, conservation of chaparral has been included in the MSCP and the draft MCSP North subregional plans. However, chaparral is not identified as a sensitive vegetation community by CDFG, USFWS, or the Water Authority. In addition, the Water Authority is not subject to local land use plans, policies, and ordinances, per California Government Code Section 53091(d) and (e). Therefore, all permanent (427.70 acres) and temporary (a low of 200.04 acres or a high of 214.85 acres) impacts to chaparral habitat are less than significant because the Water Authority does not consider this vegetation community to be sensitive. For a more detailed discussion of impacts to chaparral, refer to Section 2.5.1.1.

Coastal sage-chaparral scrub is considered a sensitive habitat because it provides habitat for threatened and endangered species. This vegetation community would be permanently (approximately 4.49 acres) and temporarily (approximately 40.07 acres) impacted. Impacts to this community are considered significant.

Valley needlegrass grassland is also considered a sensitive vegetation community because of its limited distribution, potential for supporting sensitive species, and regional reduction due to agricultural activities and urban and rural development. For this reason all permanent impacts (approximately 0.37 acre) are considered significant.

Non-native grassland within the San Vicente and Moosa footprints provides habitat for occurring or potentially occurring sensitive species, such as the federally endangered Quino checkerspot butterfly, grasshopper sparrow, and is foraging habitat for raptors. However, the estimated 12.63 acres of permanent impacts and the estimated 4.74 acres of temporary impacts to non-native grassland are less than significant because the Water Authority does not consider this habitat to be sensitive as there is an abundance of this habitat type within the county.

Additionally, all permanent and temporary impacts to coast live oak woodland, which contains sensitive oaks and provides nesting and foraging habitat for raptors and other birds such as the western bluebird, are significant as well. These impacts include an estimated low of 25.34 acres or an estimated high of 28.31 acres of permanent impacts and an estimated low of 29.54 acres or an estimated high of 30.78 acres of temporary impacts.

Open Engelmann oak woodland is considered a sensitive habitat by the State and would be permanently impacted (approximately 1.29 acres) as part of the construction of the Moosa 50K alternative. All impacts to this habitat are significant.

Eucalyptus woodland can provide foraging opportunities for native wildlife, such as hummingbirds and woodpeckers, and nesting and roosting sites for breeding birds and raptors. However, the estimated 2.29 acres of permanent impacts and temporary impacts (an estimated low of 0 acres or an estimated high of 0.13 acre) to eucalyptus woodland providing habitat to sensitive species are less than significant because the Water Authority does not consider this habitat to be sensitive as there is an abundance of this habitat type within the county.

Disturbed habitat has little wildlife value due to the abundance of non-native invasive plants, such as thistles and mustards, which do not provide quality habitat. Within the San Vicente and Moosa footprint, this vegetation community generally occurs near developed areas. For these reasons, permanent or temporary impacts to disturbed habitat are less than significant.

Indirect Impacts

Refer to the SV 100K and Moosa 100K alternatives chapters for a discussion of indirect impacts to vegetation communities and sensitive habitats at each site.

4.5.1.2 Corps-Regulated Wetlands and Unvegetated Waters of the U.S.

Significance Criterion 2: *Would the SV 50K/Moosa 50K Alternative have a substantial adverse effect on Corps-jurisdictional waters of the U.S., including wetlands, as defined by Section 404 of the CWA through direct or indirect removal, filling, inundation, hydrological interruption, or other means.*

Direct Impacts to Corps-Regulated Wetlands and Unvegetated Waters of the U.S.

Vegetated Wetlands

Direct impacts to vegetated wetlands include permanent impacts to 41.21 acres from reservoir inundation (above the OHWM) and construction, and temporary impacts to an estimated low of 34.45 acres or an estimated high of 34.56 acres (depending on which quarry option (SW Quarry Option, SE Quarry Option, and Marina Quarry Option) is implemented) from construction activities such as staging and access (Tables 4-5 and 4-6; Figures 4-9 and 4-10). All direct impacts to jurisdictional wetlands are considered significant.

Unvegetated Waters of the U.S.

During drawdown and refilling of the San Vicente Reservoir and filling of Turner Reservoir, the volume of open water will be reduced during dam construction. Open water provides habitat for waterfowl, raptors such as eagles and ospreys, fish and other water-associated wildlife such as frogs, toads, and the two-striped garter snake. Changes to open water during drawdown would occur below the OHWM for the SV 50K portion,

and have been addressed and permitted during the ESP process. Lakeshore fringe occurs along the shore of the San Vicente reservoir, in the area of water level fluctuation, and along Moosa Creek and associated tributaries. Because of the fluctuation at San Vicente reservoir, it is difficult for vegetation to become established. Some riparian vegetation, such as upright burhead, cocklebur, and salt heliotrope (*Heliotropium curassavicum*) fluctuate with the water level. Other, more established riparian shrubs or trees, such as mulefat or willows, do not move with the water level. Because lakeshore fringe vegetation is sparse, it does not provide quality habitat for wildlife or highly functioning wetlands. However, all wetlands are regulated by the Corps' no-net-loss policy, and therefore all direct impacts to this resource are significant (Table 4-5, Figures 4-9 and 4-10). Permanent impacts to unvegetated waters would amount to an estimated low of 9.75 acres and an estimated high of 9.91 acres (Table 4-5); temporary impacts would occur from an estimated low of 5.68 acres to an estimated high of 7.74 acres (Table 4-6). In addition, approximately 0.12 acre of seasonal pond within the Moosa 50K construction area would also be permanently and significantly impacted, as discussed above. Tuner Lake will not be emptied and, therefore, no impacts are expected to this open water resource; the water body will be increased through construction of the Moosa Reservoir, which his considered a net benefit of this jurisdictional resource.

Indirect Impacts to Corps-Regulated Wetlands and Waters of the U.S.

Refer to the SV 100K and Moosa 100K alternatives chapters for a discussion of indirect impacts to Corps jurisdictional resources.

Table 4-5. Permanent Direct Impacts to Corps–Regulated Wetlands and Unvegetated Waters of the U.S within the SV 50K/Moosa 50K Footprints.

Corps-Regulated Wetlands/Unvegetated Waters of U.S.	Acres		
	San Vicente 50K[1]	Moosa 50K	Moosa 50K and San Vicente 50K Combined[1,2]
Wetlands			
Freshwater Marsh	0.36/0.36/0.36	0.64	1.00/1.00/1.00
Southern Coast Live Oak Riparian Forest	2.27/2.27/2.27	11.74	14.01/14.01/14.01
Southern Cottonwood-Willow Riparian Forest	0.26/0.26/0.26	14.31	14.57/14.57/14.57
Mulefat Scrub	0.11/0.11/0.11	0.29	0.40/0.40/0.40
Southern Willow Scrub	0.79/0.79/0.79	10.44	11.23/11.23/11.23
Total Wetlands	***3.79/3.79/3.79***	***37.42***	***41.21/41.21/41.21***
Unvegetated Waters of the U.S.			
Lakeshore Fringe	1.45/1.45/1.61	0.91	2.36/2.36/2.52
Seasonal Streambed	2.75/2.75/2.75	4.52	7.27/7.27/7.27
Perennial/Seasonal Pond	0/0/0	0.12	0.12/0.12/0.12
Total Unvegetated Waters	***4.20/4.20/4.36***	***5.55***	***9.75/9.75/9.91***
TOTAL WETLANDS AND UNVEGETATED WATERS	**7.99/7.99/8.15**	**42.97**	**50.96/50.96/51.12**

[1] Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option.

[2] Combined total calculated by adding impacts that result from each San Vicente quarry option separately with impacts at Moosa.

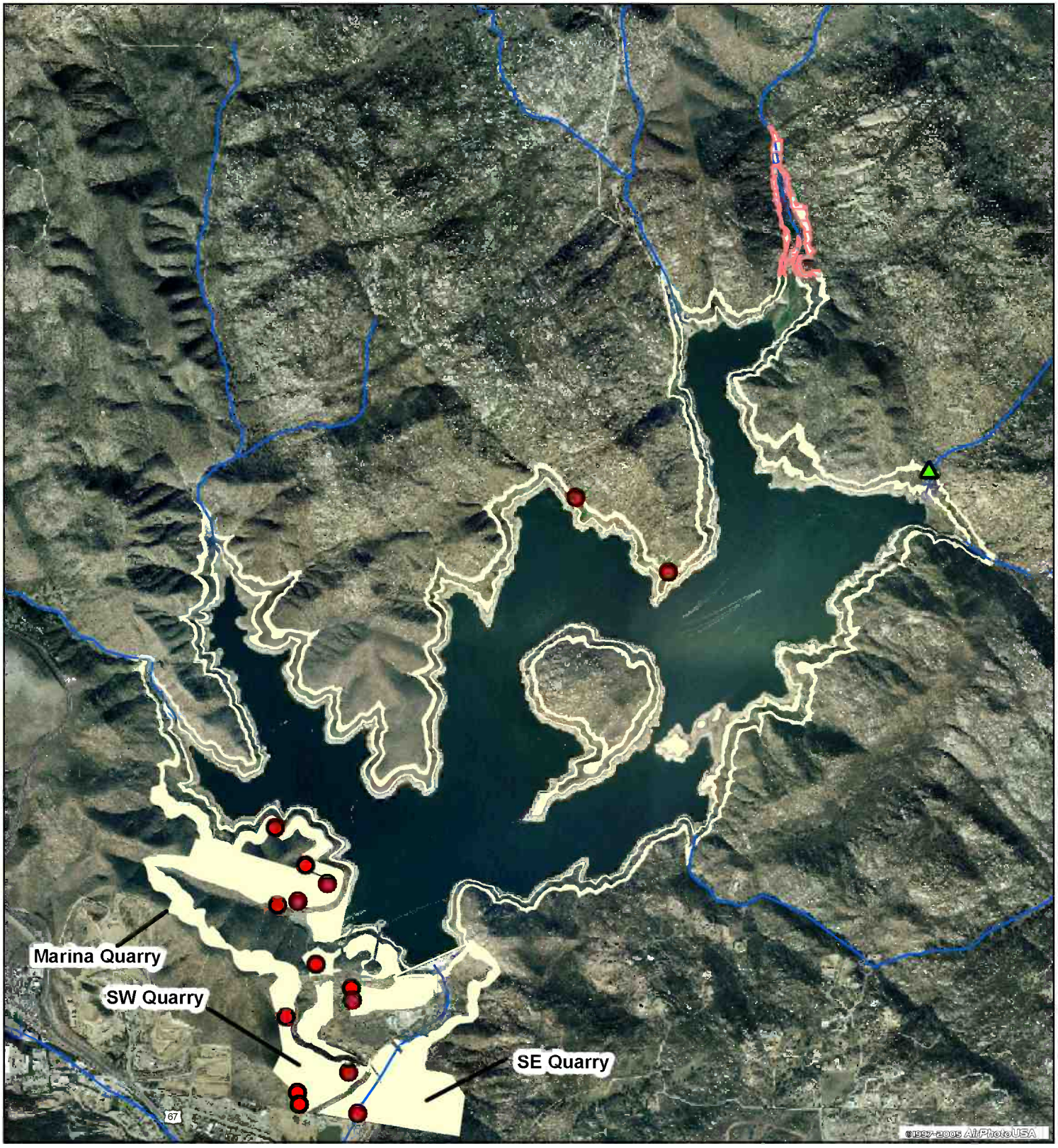
Table 4-6. Temporary Direct Impacts to Corps-Regulated Wetlands and Waters of the U.S. within the SV 50K/Moosa 50K Footprints.

Corps–Regulated Wetlands/Waters of U.S.	Acres		
	San Vicente 50K[1]	Moosa 50K	Moosa 50K and San Vicente 50K Combined[1, 2]
Wetlands			
Freshwater Marsh	0/0/0.11	0.62	0.62/0.62/0.73
Southern Coast Live Oak Riparian Forest	0/0/0	9.91	9.91/9.91/9.91
Southern Cottonwood-Willow Riparian Forest	0/0/0	17.46	17.46/17.46/17.46
Mulefat Scrub	0/0/0	0	0/0/0
Southern Willow Scrub	0.25/0.25/0.25	6.21	6.46/6.46/6.46
Total Wetlands	***0.25/0.25/0.36***	***34.20***	***34.45/34.45/34.56***
Unvegetated Waters of the U.S.			
Lakeshore Fringe	0/0/2.06	0.71	0.71/0.71/2.77
Seasonal Streambed	3.30/3.31/3.30	1.67	4.97/4.98/4.97
Perennial/Seasonal Pond	0/0/0	0	0/0/0
Total Unvegetated Waters	***3.30/3.31/5.36***	***2.38***	***5.68/5.69/7.74***
TOTAL WETLANDS AND UNVEGETATED WATERS	**3.55/3.56/5.72**	**36.58**	**40.13/40.14/42.30**

[1] Impact acres are given in the following order, separated by a forward slash: SW Quarry Option/SE Quarry Option/Marina Quarry Option.
[2] Combined total calculated by adding each San Vicente quarry option separately with Moosa.

4.5.1.3 Sensitive Species

Significance Criterion 3: *Would the SV 50K/Moosa 50K Alternative have a substantial adverse effect, either directly (e.g., habitat loss) or indirectly (e.g., noise effects on wildlife) through habitat modifications, on any species identified or published as an endangered, threatened, candidate, sensitive, or special-status species by the CDFG or USFWS.*



Legend

Current Surveys (2005 and 2006)

- Least Bell's Vireo

Historic Sighting

- California Gnatcatcher
- USFWS Arroyo Toad Critical Habitat - Excluded Essential Habitat
- Project Impact Area

Note: Species locations within previously permitted ESP and San Vicente Pipeline footprints are not shown on this map.
Note: Only one of the quarry options will be constructed as part of the proposed project.

N

Feet

0 2,350

TAIC

Carryover Storage and San Vicente Dam Raise Project
San Vicente 50K Impacted Rare, Threatened and Endangered Species - Overview

Figure 4-11

gist\projects\sanvicente\plots\figures\BTR\Impacts-Overview TE Species.mxd

Date: Jul 16, 2007

Legend

USFWS California Gnatcatcher - Final Critical Habitat

Project Impact Area

N

Feet

0 3,900

TAIC

Carryover Storage and San Vicente Dam Raise Project

Moosa 50K - Impacted Designated Critical Habitat for the California Gnatcatcher

Figure 4-12

File: \\Rio\gist\projects\sanvicente\plots\figures\50K Alternatives BTR\Impacts-Moosa TE Species.mxd

Date: Jun 05, 2007

A. Listed Species

Potential impacts to rare, threatened, or endangered species, as determined by state and federal resource agencies, are described below and summarized in Table 4-7. Direct impacts are discussed first, followed by a discussion of indirect impacts. Additionally, a determination of impact significance is included at the end of each paragraph. With the exception of California gnatcatcher, no listed species have been documented at the locations of quarry options in the San Vicente study area and, therefore, there is no difference in impacts between these options. There are no documented rare, threatened, or endangered species within the Moosa 50K footprint. However, habitat for several sensitive species occurs, including critical habitat for the California gnatcatcher. Figure 4-11 shows occurrences of all rare, threatened, and endangered species that fall within the SV 50K footprint. Figure 4-12 shows the impacted areas of final gnatcatcher critical habitat within the Moosa 50K footprint.

Table 4-7. Summary of Potential Impacts to State and Federally Listed Species within the SV 50K/Moosa 50K Footprints.

Species	Direct Impacts to Individuals and/or Acres of Habitat		Indirect impacts
	Permanent	Temporary	
Slender-pod Jewelflower	Significant (74 plants, 24 locations)	Less than Significant (5 plants, 1 location)	None
Quino Checkerspot Butterfly	Less than Significant (23.20 acres)	Less than Significant (13.34/13.34/19.98 acres)[1]	Less than Significant (Construction-Related dust)
Arroyo Toad	Significant (9.73 acres of habitat)	None	None
California Gnatcatcher	Significant (6/6/7 territories 142.37/147.52/152.13 acres of suitable habitat)[1, 2]	Significant (8/5/5 territories 118.14/111.48/95.37 acres of suitable habitat)[1, 3]	Significant (Noise)[4]
Least Bell's Vireo	Significant (33.19 acres of total suitable habitat)[5]	Significant (32.28 acres of total suitable habitat)[5, 6]	Significant (Noise)[4]

[1] SW Quarry Option/SE Quarry Option/Marina Quarry Option
[2] Total includes approximately 4.48 acres of permanent impacts to potential Diegan coastal sage scrub habitat within the Moosa 50K footprint.
[3] Total includes approximately 27.03 acres of temporary impacts to potential Diegan coastal sage scrub habitat within the Moosa 50K footprint.
[4] Standard project design features will reduce indirect impacts from construction-related dust and nighttime lighting to a level below significance.
[5] Total impacts to all suitable habitat within San Vicente and Moosa footprints. Suitable habitat includes southern willow scrub and southern cottonwood-willow riparian forest. Focused surveys for the Moosa alternative are needed to confirm occupancy and suitable habitat acreage.
[6] Temporary impacts include only impacts to suitable habitat within Moosa footprint. No temporary impacts at San Vicente expected.

Direct Impacts

Quino Checkerspot Butterfly. Refer to the SV and Moosa 100K alternative chapters for a discussion of the potential for Quino checkerspot in the study areas. Implementation of this alternative would permanently impact an estimated 23.20 acres (SW or SE or Marina Quarry Option), and temporarily impact an estimated 13.34 acres (SW or SE Quarry Option) or 19.98 (Marina Quarry Option) of Quino checkerspot habitat. Because no individual Quino checkerspots have been documented in the San Vicente or Moosa impact area, implementation of the SV 50K/Moosa 50K Alternative is not expected to significantly affect this species. Additionally, although potential habitat currently exists in the San Vicente project (SVP) footprint, it is expected to revert to its pre-fire condition, and much of it (e.g., closed canopy chaparral) would no longer be suitable (M. Klein, pers comm.).

Arroyo Toad. Refer to the SV 100K alternative chapter for a discussion of the arroyo toad within the San Vicente study area. This species is not likely to occur within the Moosa study area due to lack of suitable habitat; therefore, all impacts are associated with the SV 50K footprint. Approximately 9.73 acres of suitable toad habitat would be permanently impacted by reservoir inundation. No temporary impacts are expected. Because of the endangered status of this species, this impact would be significant.

California Gnatcatcher. Refer to the SV 100K alternative chapters for a discussion of the potential for gnatcatchers in the San Vicente study area and associated significant impacts. Below are the impacts to gnatcatcher territories and habitat within the SV 50K footprint. Although there are no impacts to individual gnatcatchers within the Moosa 50K footprint, permanent (approximately 4.48 acres) and temporary (approximately 27.03 acres) impacts to potential Diegan coastal sage scrub habitat within the Moosa 50K footprint are expected (Figure 4-12). Refer to Section 3.5.1.3 of the Moosa 100K alternative chapter for a discussion of impacts to gnatcatcher critical habitat.

Southwest Quarry Option:

- A total of 14 territories would be impacted (3 within the quarry footprint, and 11 elsewhere within the Primary Impact area)
    1. Temporary impacts to 3 territories within the quarry footprint
    2. Permanent impacts to 6 territories within the Primary Impact Area
    3. Temporary impacts to 5 territories within the Primary Impact Area
- Permanent impacts to 137.89 acres of gnatcatcher habitat

- Temporary impacts to 91.11 acres of gnatcatcher habitat

Southeast Quarry Option:

- A total of 11 territories would be impacted (0 within the quarry footprint, and 11 elsewhere within the Primary Impact Area)
    1. No impacts to territories within the quarry footprint
    2. Permanent impacts to 6 territories within the Primary Impact Area
    3. Temporary impacts to 5 territories within the Primary Impact Area
- Permanent impacts to 143.04 acres of gnatcatcher habitat
- Temporary impacts to 84.45 acres of gnatcatcher habitat

Marina Quarry Option

- A total of 12 territories would be impacted (1 within the quarry footprint and 11 elsewhere within the Primary Impact Area)
    1. Permanent impacts to 1 territory within the quarry footprint
    2. Permanent impacts to 6 territories within the Primary Impact Area
    3. Temporary impacts to 5 territories within the Primary Impact Area
- Permanent impacts to 147.65 acres of gnatcatcher habitat
- Temporary impacts to 68.34 acres of gnatcatcher habitat.

Least Bell's Vireo. Refer to the SV 100K and Moosa 100K alternative chapters for a discussion of the potential for least Bell's vireo in these study areas. Implementation of the Moosa 50K and SV 50K Alternative is would permanently impact an estimated 0.33 acre of vireo habitat within the San Vicente 50K footprint and 32.86 acres within the Moosa 50K footprint (33.19 acres total). This includes impacts to all potentially suitable habitat (southern cottonwood-willow riparian forest and southern willow scrub) in both alternatives. Temporary impacts include an estimated 32.28 acres of potentially suitable habitat within the Moosa 50K footprint. No temporary impacts to vireo habitat within the SV 50K footprint are expected. Therefore, an estimated total of 32.38 acres of temporary impacts to potentially suitable vireo habitat would occur from implementation of the SV 50K/Moosa 50K Alternative. All impacts to least Bell's vireo are considered significant due to the listing status as federally and state endangered.

Indirect

Refer to the SV 100K and Moosa 100K alternatives chapters for a discussion of indirect impacts to listed sensitive species.

B. Non-listed Sensitive Species

Direct Impacts

Refer to SV 100K and Moosa 100K alternative chapters for a discussion of direct impacts to sensitive species, including significant impacts to delicate clarkia and southwestern pond turtle as discussed for the SV 100K alternative. Table 4-8 summarizes the permanent and temporary direct impacts to non-listed sensitive species. Impacts are considered significant if they are expected to affect a major population, or if they would impact the species' metapopulation (see significance determination criteria in Section 1.4.2).

Indirect Impacts

Refer to the SV 100K and Moosa 100K alternatives chapters for discussion.

C. Potentially Occurring Sensitive Species

Refer to the SV 100K and Moosa 100K alternatives chapters for discussion. The San Diego thornmint has the potential to occur in suitable habitat within the Moosa pipeline corridor footprint. Additionally, the Quino checkerspot butterfly and Stephens' kangaroo rat have the potential to occur in suitable habitat within the Moosa footprint. See Section 3.5.1.3 for more detailed discussion.

Table 4-8. Summary of Potential Impacts to Non-Listed Sensitive Species within the San Vicente 50K and Moosa 50K Footprints.

Species	Direct Impacts to Individuals and/or Acres of Habitat[1]						Indirect Impact	Status
	San Vicente 50K		Moosa 50K		San Vicente 50K and Moosa 50K Combined			
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary		
Plants								
Delicate Clarkia	10 locations, 1,065 plants	None	N/A	N/A	Significant (10 locations, 1,065 plants)	None	Less than significant	--/SSC, List 1B
Engelmann Oak	7 locations	None	19 locations	5 locations	Significant (26 locations)	Less than Significant (5 locations)	None	--/SSC, List 4
San Diego Sagewort	16 locations, 58 plants	2 locations, 41 plants	N/A	N/A	Less than Significant (16 locations, 58 plants)	Less than Significant (2 locations, 41 plants)	Less than significant	--/SSC, List 4
San Diego Sunflower	15 locations, 848 plants	7 locations, 24 plants	N/A	N/A	Less than Significant (15 locations, 848 plants)	Less than Significant (7 locations, 24 plants)	Less than significant	--/SSC, List 4
Wart-stemmed Ceanothus	N/A	N/A	1 location	None	Less than Significant (1 location)	None	None	--/SSC, List 2
Summer Holly	N/A	N/A	1 location, 1 plant	None	Less than Significant (1 location, 1 plant)	None	None	--/SSC, List 1B
Fish's Milkwort	N/A	N/A	2 locations, 15 plants	None	Less than Significant (2 locations, 15 plants)	None	None	--/SSC, List 4

Species	Direct Impacts to Individuals and/or Acres of Habitat[1]						Indirect Impact	Status
	San Vicente 50K		Moosa 50K		San Vicente 50K and Moosa 50K Combined			
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary		
Reptiles								
Southwestern Pond Turtle	1 observation	N/A	4 observations	1 observation	Less than Significant (4 observations)	None	Less than significant	--/SSC
Coast Horned Lizard	1 observation	None	5 observations	6 observations	Less than Significant (6 observations)	Less than Significant (6 observations)	Less than significant	--/SSC
Orange-throated Whiptail	22 observations	None	29 observations	29 observations	Less than Significant (51 observations)	Less than Significant (29 observations)	Less than significant	--/SSC
Red Diamond Rattlesnake	1 observation	1 observation	2 observations	None	Less than Significant (3 observations)	Less than Significant (1 observation)	None	--/SSC
Coronado Island Skink	N/A	N/A	1 observation	None	Less than Significant (1 observation)	None	None	--/SSC
Two-striped Garter Snake	1 observation	None	1 observation	1 observation	Less than Significant (2 observations)	Less than Significant (1 observation)	None	--/SSC
Birds								
Rufous-crowned Sparrow	30 observations	8 observations	8 observations	7 observations	Less than Significant (38 observations)	Less than Significant (15 observations)	Less than significant	--/SSC
Cooper's Hawk	N/A	N/A	None	1 observation	None	Less than Significant (1 observation)	None	--/SSC
Bell's Sage Sparrow	1 observation	1 observation	N/A	N/A	Less than Significant (1 observation)	Less than Significant (1 observation)	None	--/SSC

Species	Direct Impacts to Individuals and/or Acres of Habitat[1]						Indirect Impact	Status
	San Vicente 50K		Moosa 50K		San Vicente 50K and Moosa 50K Combined			
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary		
Northern Harrier	N/A	N/A	3 observations	None	Less than Significant (3 observations)	None	None	--/SSC
Loggerhead Shrike	2 observations	None	N/A	N/A	Less than Significant (2 observations)	None	None	--/SSC
Osprey	1 observation	None	N/A	N/A	Less than Significant (1 observation)	None	None	--/SSC
Yellow Warbler	N/A	N/A	4 observations	4 observations	Less than Significant (4 observations)	Less than Significant (4 observations)	None	--/SSC
White-tailed Kite	N/A	N/A	1 observation	None	Less than Significant (1 observation)	None	None	--/SFP
Mammals								
San Diego Desert Woodrat	1 observation	None	1 observation	1 observation	Less than Significant (2 observations)	Less than Significant (1 observation)	None	--/SSC
Dulzura Pocket Mouse	2 observations	None	1 observation	1 observation	Less than Significant (2 observations)	Less than Significant (1 observation)	None	--/SSC
San Diego Pocket Mouse	2 observations	None	N/A	N/A	Less than Significant (2 observations)	None	None	--/SSC

[1] N/A: the species does not occur within the footprint.

4.5.2 Habitat Linkages and Wildlife Movement Corridors

Significance Criterion 4: *Would the SV 50K/Moosa 50K Alternative interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*

There are no impacts to any habitat linkages or wildlife movement from the SV 50K alternative; however, wildlife movement may potentially be affected in Moosa Valley along Moosa Creek due to the inundation of a major wildlife corridor along Moosa Canyon. Refer to the SV 100K and Moosa 100K alternatives chapters for discussion of this significant, potentially unmitigable, impact to wildlife movement.

4.5.3 Compliance with Adopted Regional Plans and Ordinances

Significance Criterion 5: *Would the SV 50K/Moosa 50K Alternative substantially conflicts with the policies and provisions of an adopted local or regional Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP) for the area where the project is located or with any of these plans' efforts to conserve "covered species".*

Refer to the SV 100K and Moosa 100K alternatives chapters for discussion. The western bluebird does not occur within the SV 50K footprint; therefore, it would not be impacted by this alternative. However, the southern mule deer does occur within the San Vicente 50K footprint. Refer to SV 100K alternative chapter for a discussion of southern mule deer. There is no adopted HCP or NCCP in place for the Moosa alternative; therefore, no conflicts exist for the Moosa 50K portion of the alternatives. No significant conflicts with policies or provisions of any adopted HCP or NCCP would arise from implementation of the 50K alternative.

4.6 MITIGATION MEASURES

Mitigation measures for this alternative are discussed in the EIS/EIR for this project.

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