VOLUME I
DRAFT ENVIRONMENTAL IMPACT STATEMENT

SAN JUAN CREEK AND WESTERN SAN MATEO CREEK WATERSHED
SPECIAL AREA MANAGEMENT PLAN (SAMP)

U.S. Army Corps of Engineers
915 Wilshire Blvd., 11th Floor
Los Angeles, CA 90017-3401

Contact: Jae Chung

November 2005

VOLUME I

TABLE OF CONTENTS

Chapter **Page**

TABLE OF CONTENTS
(Continued)

Chapter **Page**

TABLE OF CONTENTS
(Continued)

Chapter **Page**

TABLE OF CONTENTS
(Continued)

Chapter **Page**

TABLE OF CONTENTS
(Continued)

Chapter **Page**

TABLE OF CONTENTS
(Continued)

Chapter **Page**

TABLE OF CONTENTS
(Continued)

Chapter **Page**

LIST OF APPENDICES

LIST OF TABLES

LIST OF TABLES
(Continued)

Table **Page**

LIST OF TABLES
(Continued)

Table **Page**

EXECUTIVE SUMMARY

I. PROJECT SCOPE

A Special Area Management Plan (SAMP) is a voluntary watershed-level planning and permitting process involving local landowners and public agencies that seek permit coverage under the federal Clean Water Act Section 404 for future actions affecting jurisdictional Waters of the United States (U.S.). The purpose of a SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated under the SAMP. The proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP would provide a framework for permit coverage for the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed.

The United States Army Corps of Engineers (USACE), Los Angeles District, has developed a comprehensive SAMP planning process to achieve a balance between reasonable economic development and aquatic resource conservation. SAMPs are intended for geographic areas of special sensitivity that are also under intense development pressure.

The three main goals of the SAMP process are to:

- Allow reasonable economic development through one or more proposed permitting procedures that provide regulatory predictability and incentives for comprehensive resource protection, management, and restoration over the long term.

- On a voluntary basis, establish an aquatic resources conservation program that includes preservation, restoration, and management of aquatic resources referred to hereafter as the “Aquatic Resources Conservation Program” (ARCP).

- Minimize individual and cumulative impacts of future projects within the SAMP watersheds by relating permitting for future activities to the SAMP Aquatic Resources Conservation Program, including studies prepared for the SAMP and the Southern Subregion Coordinated Planning Process.

Four elements of the SAMP process have been formulated to further and, to the maximum extent practicable, attain the above goals. The four primary elements of the SAMP process are reviewed in the Environmental Impact Statement (EIS) and are summarized as follows:

- ***Proposed Permitting Procedures*:** Three permitting procedures have been proposed as an integral part of the SAMP process. All three of the SAMP goals are addressed by the proposed permitting procedures, including (1) establishing permitting procedures that would provide regulatory predictability and incentives for comprehensive protection, restoration, and management of aquatic resources over the long term; (2) provisions for preservation, restoration, and management of aquatic resources on lands presently owned or otherwise potentially managed by permittees; and (3) minimization of individual and cumulative impacts of permitting for future activities. Regarding the latter, the EIS reviews the environmental considerations involved in: (a) establishing permitting procedures to be authorized pursuant to a proposed Regional General Permit and a proposed long-term Individual Permit for Rancho Mission Viejo and Santa Margarita Water District (SMWD), and (b) elements of future permitting procedures that will also

require future National Environmental Policy Act (NEPA) environmental review and compliance with the Section 404(b)(1) Guidelines.

- ***Aquatic Resources Preservation*****:** In conjunction with the Natural Community Conservation Plan/Master Streambed Alteration Agreement/Habitat Conservation Plan (NCCP/MSAA/HCP) and General Plan Amendment/Zone Change (GPA/ZC), the other two components of the "coordinated planning process," a wide range of development/ open space alternatives have been identified for environmental review. The SAMP process is intended to examine these alternatives in order to determine the extent to which these alternatives, in conjunction with already protected open space, would preserve ecologically important aquatic resources (identified in connection with USACE and NCCP/MSAA/HCP studies) within the SAMP Study Area. Avoidance/minimization of impacts to aquatic resources is also examined in conjunction with the EIS Section 404(b)(1) Guidelines review of the proposed alternative permitting procedures. At the end of the SAMP process, aquatic resources recommended for permanent preservation would be identified. In this EIS, these areas are termed "Aquatic Resources Conservation Areas" (ARCAs).

- ***Aquatic Resources Restoration*****:** The USACE Engineer Research Development Center (ERDC) has prepared a *Riparian Ecosystem Restoration Plan for San Juan and Western San Mateo Creek Watersheds* to provide a broad-scale restoration template. Area-specific restoration opportunities and measures are identified under the EIS Section 404(b)(1) Guidelines review of proposed permitting procedures. Environmental review of this element in this EIS focuses on the consistency of alternative habitat reserve designs with the restoration recommendations and the extent to which specific habitat restoration measures can provide mitigation for impacts to aquatic resources that could potentially occur in connection with the proposed permitting procedures.

- ***Aquatic Resources Management*****:** Where applicable, management of aquatic resources would be carried out in accordance with the SAMP Aquatic Resources Adaptive Management Program (ARAMP). Adaptive management and monitoring activities would be conducted primarily in areas proposed to be protected in conjunction with proposed permitting procedures as mitigation for impacts to aquatic resources subject to USACE jurisdiction (these management and monitoring activities are described in the Aquatic Resources Adaptive Management Program reviewed in this EIS). The NEPA alternatives analysis will review the extent to which the different development/open space alternatives are consistent with habitat management recommendations set forth in the NCCP Southern Planning Guidelines and the Draft Watershed and Sub-basin Planning Principles (Watershed Planning Principles) at both a watershed- and sub-basin scale.

The last three elements above comprise the Aquatic Resources Conservation Program.

II. SAMP STUDY AREA

The SAMP Study Area covers the San Juan Creek Watershed and western portion of the San Mateo Creek Watershed in the southern portion of Orange County. The SAMP Study Area includes portions of unincorporated Orange County and portions of the cities of Dana Point, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, San Clemente, and San Juan Capistrano.

The San Juan Creek Watershed is approximately 177 square miles (113,000 acres) extending from the Cleveland National Forest in the Santa Ana Mountains to the Pacific Ocean at Doheny

State Beach near Dana Point Harbor. Caspers Wilderness Park and San Mateo Wilderness Area lands are located adjacent to the Cleveland National Forest along the eastern boundary. The western area is highly urbanized encompassing portions of the cities of Mission Viejo and San Juan Capistrano and the planned community of Ladera Ranch. Urbanized areas in the northern portion of the San Juan Creek Watershed include the City of Rancho Santa Margarita. The southern portion of the San Juan Creek Watershed is bound by the cities of Dana Point and San Clemente. The major named streams in the San Juan Watershed include San Juan Creek, Bell Canyon Creek, Cañada Chiquita, Cañada Gobernadora, Verdugo Canyon Creek, Oso Creek Trabuco Creek, and Lucas Canyon Creek.

The entire San Mateo Creek Watershed is located in the southern portion of Orange County, the northern portion of San Diego County, and the western portion of Riverside County. The total San Mateo Creek Watershed is approximately 139 square miles (88,960 acres) and lies mostly within the Cleveland National Forest, the northern portion of the U.S. Marine Corps Base at Camp Pendleton (MCB Camp Pendleton), and ranch lands in south Orange County (Lang et al., 1998). The SAMP Study Area includes the western 23.6-square-mile portion of the San Mateo Creek Watershed within Orange County (approximately 17 percent of the watershed). Major named streams within the SAMP Study Area in the western portion of the San Mateo Watershed are Cristianitos Creek, Gabino Creek, La Paz Creek, and Talega Creek. Rancho Mission Viejo owns the majority of the remaining undeveloped private land in the south-central portion of the San Juan Watershed, as well as almost all of the undeveloped private land within the western portion of the San Mateo Creek Watershed just north of the City of San Clemente. The unincorporated, undeveloped Rancho Mission Viejo land in the two watersheds totals approximately 22,815 acres and is referred to as the "RMV Planning Area."

III. PROPOSED PERMITTING PROCEDURES

Information in this EIS will be used to evaluate the establishment of three proposed permitting procedures that would be established concurrently with the approval of the SAMP. These three proposed future permitting procedures are summarized as follows:

1. Proposed Long-Term Individual Permits/Letters of Permission (LOP) Procedures for long-term activities proposed by Rancho Mission Viejo and the Santa Margarita Water District on the RMV Planning Area in reliance on the SAMP and in conjunction with the review, approval, and implementation of an Aquatic Resources Conservation Program coordinated with the Southern Subregion NCCP/MSAA/HCP. Revocation of selected Nationwide Permits will be associated with these LOP Procedures.

2. The proposed use of LOP Procedures for other future qualifying permit applicants outside the RMV Planning Area whose potential impacts on the Waters of the U.S. would be assessed through reliance on the SAMP at future points in time. Revocation of selected Nationwide Permits will be associated with these other LOPs.

3. Potential establishment of a Regional General Permit (RGP) for certain limited activities and the suspension of selected Nationwide Permits for small-scale activities and ongoing maintenance activities within the SAMP Study Area but outside of the RMV Planning Area.

IV. NEPA REQUIREMENTS

Under the NEPA all federal agencies must conduct NEPA review for "*major federal actions significantly affecting the quality of the human environment*" (42 USC Section 4332). Each federal agency has its own NEPA implementation rules that conform to 40 CFR. The NEPA

scope of this EIS impact analysis follows the directives in 33 CFR 325 that requires the scope of an EIS to be limited to the impacts of the specific activities requiring a Section 404 Permit and only those portions of the project outside of Waters of the U.S. over which the USACE has sufficient control and responsibility to warrant federal review. The USACE is also the lead agency for USACE's Section 404 permitting procedures resulting from the SAMP process and reviewed in this EIS pursuant to the Section 404(b)(1) Guidelines and other applicable criteria. NEPA requires an analysis of the potential environmental impacts of the proposed action (i.e., the proposed permitting procedures), including alternatives to the proposed action and mitigation. As part of the NEPA review and alternatives analysis, the USACE is analyzing impacts on the environment associated with projects that receive authorization under Section 404 of the Clean Water Act.

Information in this EIS is intended to (1) review alternatives to assess avoidance/minimization of impacts on aquatic and other environmental resources, (2) assess potential elements of the SAMP process, (3) evaluate alternative mitigation approaches/measures, and (4) evaluate proposed permitting procedures capable of minimizing and mitigating impacts related to any Least Environmentally Damaging Practicable Alternative (LEDPA) selected in conjunction with the environmental review of one or more of the proposed permitting systems.

This EIS is intended to provide decision-makers, responsible agencies, and the public with sufficient information to assess potential environmental impacts and minimization and mitigation measures pursuant to USACE regulations applicable to the three proposed permitting procedures. NEPA requires that the lead agency review potential significant environmental impacts of all alternatives selected for review and to identify "*any preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference*" (40 CFR 1502.14). In addition to avoidance and minimization measures, mitigation measures are required to be addressed pursuant to 40 CFR 1502(f) and 1502.16(h).

V. AREAS OF CONTROVERSY/ISSUES RAISED DURING SCOPING

The USACE has prepared this EIS in coordination with other resource agencies, including the United States Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (EPA), the San Diego Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Game (CDFG). Throughout the scoping process, the USACE encouraged active participation by the County of Orange, other local governmental agencies, interested landowners and the general public. The major issues, concerns/areas of controversy raised during the scoping process include the following:

- The project should evaluate SAMP-related impacts on surface and groundwater quality, water quality at the ocean, particularly at the mouth of San Mateo Creek, Trestles Beach, and San Onofre State Beach Park. The EIS should identify BMPs, mitigation measures, and water quality standards. These issues are addressed in the EIS in Chapter 4.1.1: Physical Processes and Conditions, Chapter 4.2: Sub-basins Within the San Juan and Western San Mateo Creek Watersheds, Chapter 6.0: Alternatives Analysis, and Chapter 8.0: Compliance With Section 404(b)(1) Guidelines.

- SOCTIIP should be excluded from the SAMP. SOCTIIP is not a part of the SAMP and is not addressed as such in this EIS.

- The project should address impacts to biological resources including: critical habitat for endangered species, displacement, and relocation of wildlife, impacts to state-listed and unlisted species covered by NCCP, wetlands, and wildlife movement corridors. Potential

impacts to biological resources are addressed in Chapter 4.1.1: Physical Processes and Conditions, 4.1.2, Riparian and Wetland Habitats, 4.1.3, Biological Resources, Chapter 4.2: Sub-basins Within the San Juan and Western San Mateo Creek Watersheds, Chapter 6.0: Alternatives Analysis, 7.1: Non-Aquatic Biological Resources, and Chapter 8.0: Compliance With Section 404(b)(1) Guidelines.

- The project should identify impacts of the SAMP on land development, air quality, recreational uses, traffic, noise, floodplains, aesthetics, social values, cultural and historic values, urban quality, and human health. These issues are addressed in this EIS in Chapters 4.0 and 7.0.

- The project should identify impacts of creek modification on flow rate, channel bed erosion, sediment transport, and beach sand supply. These issues are addressed in the EIS in Chapter 4.1.1: Physical Processes and Conditions, Chapter 4.2: Sub-basins Within the San Juan and Western San Mateo Creek Watersheds, Chapter 6.0: Alternatives Analysis, and Chapter 8.0: Compliance With Section 404(b)(1) Guidelines.

- The EIS must consider potential impacts of USACE regulatory decisions on resources other than those regulated under the Clean Water Act. The EIS should evaluate the consistency of the SAMP with the requirements of Section 404 of the Clean Water Act, and include an analysis of consistency with the Section 404(b)(1) Guidelines. The EIS should address how a long-term Section 404 Permit would be affected by future changes in laws related to water quality, wetlands, and endangered species. The consistency analysis is provided as Chapter 8.0: Compliance With Section 404(b)(1) Guidelines.

- The EIS should consider the entire San Mateo Creek Watershed. The SAMP addresses the western portion of the San Mateo Creek Watershed in the southern portion of Orange County.

VI. SAMP PARTICIPANTS

Participants in the SAMP are identified as either “current” participants or “future” participants. Current participants have identified proposed projects within the SAMP Study Area and have undergone extensive pre-application review by the USACE, CDFG, and USFWS and complied with the Section 404(b)(1) Guidelines as part of this EIS evaluation. Current participants have also coordinated with EPA and San Diego RWQCB. Future participants have not identified potential projects, have yet to undergo pre-application review with the aforementioned agencies, and have yet to comply with NEPA and the Section 404(b)(1)Guidelines.

VI.1 CURRENT SAMP PARTICIPANTS

The following private landowner and public agency have identified proposed projects and are current participants in the SAMP:

- Rancho Mission Viejo (RMV), for permitting of residential, commercial/retail, recreational development, and associated infrastructure (roads, storm drainage, sewer and water systems, and other utilities) as well as preservation, restoration, and management of aquatic resources. Rancho Mission Viejo’s proposed project is referred herein as the RMV Proposed Project.

- SMWD, for operation and maintenance of existing water and sewer facilities and development of certain future facilities including the Gobernadora Multipurpose Basin

and three storage reservoirs (two for domestic water and one for non-domestic). SMWD's proposed project is referred herein as the SMWD Proposed Project.

These current participants in the SAMP process would be eligible for permitting via an Individual Permit/LOP. The Individual Permit would set forth requirements for avoidance, minimization, and compensatory mitigation for identified impacts to be implemented over the long-term. The LOP is intended as a verification process for determining consistency with the Individual Permit that would lead to issuance of LOPs as Section 404 permit approval for activities determined to be consistent with the avoidance, minimization, and compensatory mitigation provisions of the Individual Permit.

RMV Planning Area Proposed Project

The RMV Planning Area includes approximately 22,815 acres located in the southern portion of unincorporated Orange County. It constitutes the remaining undeveloped portions of Rancho Mission Viejo within the unincorporated area of the County. The RMV Planning Area is comprised of a series of sub-watersheds (or sub-basins) of the San Juan Creek Watershed and western portion of the San Mateo Creek Watershed.

The Orange County Board of Supervisors approved a GPA and ZC for the RMV Planning Area on November 8, 2004 in the form of the B-10 Modified Alternative. Subsequent to this action by the Board of Supervisors, the B-12 Alternative was developed to further address sub-basin-level Southern Planning Guidelines and the Watershed Planning Principles in addition to the overall goals and objectives of the SAMP and NCCP/MSAA/HCP Programs. This alternative is based on input from the USACE, CDFG, USFWS, the environmental community, and the general public. The B-12 Alternative (RMV Proposed Project) provides for 5,873 acres of development and 16,942 acres of open space within the RMV Planning Area. Alternative B-12 would include 14,000 dwelling units, including up to 6,000 senior housing units. The proposed development would also include urban activity center, business park, neighborhood center, and golf resort uses, as well as a supporting circulation system and infrastructure.

Santa Margarita Water District Proposed Project

The SMWD Proposed Project includes both the operation and maintenance of existing facilities and construction and subsequent operation and maintenance of future facilities. SMWD provides water and sewer service to approximately 52,000 households through a network of existing facilities of water and sewer mains, connections to other water districts, domestic reservoirs, non-domestic reservoirs, water pump stations, pressure reducing stations, non-domestic water pump stations, wells with chlorine injection, sewer lift stations, and sewage treatment plants. These existing facilities require ongoing operation and maintenance, including: (1) periodic grading and clearing of vegetation, periodic improvements and/or upgrades, patrols, and inspections; and (2) facility maintenance, including domestic water, reclaimed/recycled water and sewer lines, valves, vaults, pump stations, and appurtenances. Additionally there are facilities for wastewater treatment, reclamation and recycled water plants, appurtenances and supporting utilities and access roads; maintenance and repair of plant and pipelines, replacement, rehabilitation, retrofitting, and upgrading of plant and pipelines; provision of lay down areas, flushing of blow-off values and pipelines, pumping of storm water from valve vaults, and other activities required by various laws and regulations.

In addition to existing facilities, SMWD has identified the need for several future facilities which may impact Waters of the U.S. in their initial construction and that, subsequent to construction, would require ongoing maintenance and operation as described above. One of the future facilities is the Gobernadora Multipurpose Basin. SMWD in partnership with Rancho Mission

Viejo is proposing to construct the Gobernadora Multipurpose Basin to respond to erosion and sedimentation along Gobernadora Creek, high storm flows damaging the downstream restoration habitat area, excessive surface and groundwater originating upstream, and high bacteria counts resulting in degraded water quality. The Gobernadora Multipurpose Basin is proposed to include a storm detention basin to be established as a wetland and riparian habitat, a system to capture and divert flows to the wetlands, a pump station, and pipeline.

SMWD's long-term planning for the water district has identified the potential need for three storage facilities, two for domestic water and one for seasonal storage of recycled non-domestic water. The purpose of these facilities is to store domestic water for emergency use and to store recycled water supply during the winter months when more supply is available and demands are low, then use the water during summer months when the demands are in excess of supply. The potential sites are: Upper Chiquita Site and San Juan Creek East 3 Site for domestic water storage and San Juan Creek East 3 Site and Trampas Canyon Pit Site for non-domestic water storage. All of the potential sites, except Upper Chiquita, are within an area that would be disturbed to implement the RMV Proposed Project. This EIS addresses these sites as part of the RMV Proposed Project rather than the SMWD Proposed Project.

VI.2 FUTURE SAMP PARTICIPANTS

Areas where development may occur in the future are expected to include portions of the Foothill/Trabuco Specific Plan area (encompasses approximately 3,666 acres) and approximately 494 additional acres of land scattered throughout both unincorporated County jurisdiction and incorporated cities. The 494 acres do not represent all potentially available land within the SAMP Study Area, only those areas where development may affect natural resources. These potential projects may be eligible for either LOP Procedures or, following compliance with NEPA and the Section 404(b)(1) Guidelines, an Individual Permit, with the SAMP providing context for permit review for both types of permitting. A LOP authorization is an abbreviated process for an Individual Permit, whereby a decision to issue permit authorization is made after coordination with federal and state fish and wildlife agencies, a public interest evaluation, and completion of an abbreviated environmental assessment.

In addition to the LOP Procedures/Individual Permit, future participants in the SAMP may be eligible for Section 404 permits through a RGP for certain limited activities and ongoing maintenance activities within the SAMP Study Area. The USACE proposes to establish the RGP program to authorize temporary impacts up to 0.5 acre in lower quality resource areas. In conjunction with establishing the proposed permitting procedures, the USACE would revoke the use of selected NWPs within the San Juan and Western San Mateo Watersheds.

VII. EIS SCOPE

The SAMP involves an evaluation of the extent and condition of existing aquatic resources and provides for an analysis of the direct, indirect, and cumulative impacts to aquatic resources from a reasonable range of development and management alternatives within the SAMP Study Area. The initial phase of the SAMP process involved an extensive series of technical analyses prepared by the USACE and other planning participants. The USACE prepared a comprehensive assessment of existing conditions within the SAMP Study Area including assessments of hydrologic, habitat, and water quality functions. Other planning participants sponsored comprehensive studies including (1) a Baseline Conditions Report reviewing important hydrologic and geomorphic planning considerations on both a watershed and sub-basin basis, (2) an analysis of the Hydrologic and Geomorphic Needs of Aquatic Listed Species, (3) a Slope Wetlands report, (4) a vernal pools report, and (5) a comprehensive assessment of

stormwater hydrology in the SAMP Study Area. Vegetation mapping of aquatic resources was also conducted.

Preparatory planning activities also involved the preparation of a set of SAMP Tenets by the USACE for the purpose of guiding SAMP planning and the review of alternatives, as well as any proposed permitting procedures. The USACE and other planning participants also prepared the Watershed Planning Principles for the purpose of providing additional planning considerations at a watershed and sub-basin scale.

Open space/development alternatives were formulated through the coordinated planning process, involving coordination of the SAMP with the proposed NCCP/MSAA/HCP and the RMV GPA/ZC, which would avoid impacts to important natural habitats, including aquatic resources. The SAMP EIS alternatives analysis evaluates whether one or more of these alternatives with associated management measures would avoid sufficient amounts of aquatic resources without conflicting with the Clean Water Act anti-degradation policy.

This SAMP EIS addresses the environmental implications of the proposed permitting procedures summarized above. The environmental review in this EIS includes the assessment of a series of watershed-scale development/open space alternatives that were formulated in conjunction with a coordinated process established for "The Ranch Plan" project (Ranch Plan Environmental Impact Report 589, certified by the County of Orange Board of Supervisors in November 2004) and NCCP/MSAA/HCP, as well as restoration, management, and proposed permitting procedures elements of the SAMP reviewed in this EIS. Specifically, this EIS includes (1) a review of alternative development/open space designs to assess aquatic resource avoidance/minimization alternatives at a watershed scale and a review of alternatives for the selection of the LEDPA consistent with the requirements of the 404(b)(1) Guidelines; (2) an assessment of potential elements of an Aquatic Resources Conservation Program; (3) in conjunction with the review of proposed USACE Section 404 Individual Permit procedures for Rancho Mission Viejo and SMWD, an evaluation of avoidance, minimization, and mitigation measures including area specific aquatic restoration and management actions capable of minimizing and mitigating impacts related to any LEDPA selected in conjunction with the environmental review of one or more of the proposed permitting procedures.

The alternatives considered in the EIS are:

NEPA Required No Action Alternatives

- Alternative A-1: No Action
- Alternative A-2: No Project/Pre-2004 Zoning
- Alternative A-3: No Project/Housing and Employment
- Alternative A-4: No Project/Incremental Project Review
- Alternative A-5: No Impact to Waters Alternative

Development/Open Space Alternatives

- Alternative B-1: Maximize Open Space
- Alternative B-2: Avoid Development in Chiquita Sub-basin and San Mateo Watershed

- Alternative B-3: Limit New Development in the San Mateo Creek Watershed

- Alternative B-4: Rancho Mission Viejo Filed GPA/ZC Ranch Plan Application

- Alternative B-5: Avoid the San Mateo Creek Watershed and Locate All New Development in the San Juan Creek Watershed

- Alternative B-6: Avoid new development in the Chiquita Sub-basin East of Chiquita Ridge and the Verdugo Sub-basin; Limit new development in the San Mateo Creek Watershed and concentrate development in already disturbed portions of the San Juan Creek Watershed

- Alternative B-7: Provide for limited development in the Chiquita Sub-basin and within the San Mateo Creek Watershed; Limit new development to the disturbed areas of the Talega Sub-basin and lower portions of the Cristianitos/Lower Gabino Sub-basins while avoiding the Upper Gabino, Verdugo, and La Paz Sub-basins

- Alternative B-8: Allow new development in the western portion of the RMV Planning Area adjacent to Ortega Highway, in and around the existing silica mining area in Trampas Canyon, in and adjacent to the existing nursery, ranching, and sand/gravel mining operations in the Gobernadora area, and avoid new development within Chiquita Canyon and the San Mateo Creek Watershed.

- Alternative B-9: Protect resources associated with the Chiquita Sub-basin, by protecting Chiquita Canyon above the treatment plant and west of Chiquita Creek; and the San Mateo Creek Watershed, by concentrating development in and near areas with existing development. This alternative also concentrates development in San Juan Creek Watershed in areas with lower resource values while continuing to protect high resource value areas such as Verdugo Canyon.

- Alternative B-10 Modified: The B-10 Modified Alternative is designed specifically to address housing needs and other related project objectives while being responsive to the sub-basin recommendations contained in the Southern Planning Guidelines and Watershed Planning Principles.

- Alternative B-11: Provide for regional housing needs as identified in OCP-2000 within the RMV Planning Area while being responsive to the sub-basin recommendations contained in the Southern Planning Guidelines and Watershed Planning Principles

- Alternative B-12: Addresses the sub-basin-level Guidelines and Principles and overall goals and objectives of the NCCP/MSAA/HCP and SAMP Programs. This alternative is based on input from the USACE, CDFG, USFWS, environmental community, and the general public. Alternative B-12 focuses on protecting resources associated with (1) the Chiquita Sub-basin, by protecting Chiquita Canyon above the SMWD treatment plant and below Tesoro High School; and by protecting Chiquita Canyon west of Chiquita Creek; (2) Verdugo Canyon; (3) Sulphur Canyon and Gobernadora Creek; (4) wildlife movement along San Juan Creek; (5) habitat linkage connectivity between the San Juan Watershed and the San Mateo Watershed and; (6) the vast majority of the San Mateo Creek Watershed. This alternative also concentrates development in the San Juan Creek Watershed in areas with lower resource values while continuing to protect high resource value areas.

Although the SAMP applies to the greater watershed areas of San Juan Creek and San Mateo Creek within Orange County, the alternatives focus on the activities within the RMV Planning Area. The remaining portion of the watersheds is either predominately developed (e.g., City of Mission Viejo) or set aside as permanent open space (e.g., U.S. Forest Service). Landowners of the few undeveloped parcels and the Foothill/Trabuco Specific Plan Area have not participated in the development of the SAMP. In addition, the alternatives do not explicitly consider, except where noted, the SOCTIIP road alignment, because that process is addressed through a separate EIS. Regardless of the alternative, the areas outside of the RMV Planning Area may be eligible for future LOPs, if they qualify. As a result, the alternatives analysis focuses on the differences in activities that would occur within the RMV Planning Area (along with maintenance of SMWD facilities located outside the RMV Planning Area) in conjunction with the issuance of an individual long-term permit for Rancho Mission Viejo and SMWD.

Regarding the SMWD Proposed Project, no alternatives to the maintenance of existing facilities are proposed because none is considered feasible. With respect to the existing facilities, ongoing maintenance must occur in their current location. The future storage facilities/reservoirs are alternatives. As noted above, there is a need for two domestic reservoirs and one non-domestic storage reservoir; four sites are proposed. Because three of the four sites are located within the impact assessment area for the RMV Planning Area (B-10 Modified and B-12 Alternatives), and therefore would not cause additional impacts beyond those analyzed for these alternatives, only the site in Upper Chiquita is assessed in this EIS as a part of the SMWD Proposed Project. The Upper Chiquita reservoir site is reviewed in Chapter 8.0.

From the total range of alternatives considered, certain alternatives were selected to be carried forward for further review based on: (a) legal mandates for the NEPA required No Action Alternatives ("A" Alternatives) and (b), for the Development/Open Space Alternatives ("B" Alternatives), on the extent to which each of these alternatives addresses the goals and Purposes of the SAMP and the SAMP Tenets and the Watershed Planning Principles. The analysis also reflects a review of the cumulative databases and studies (including biologic, hydrologic, and geomorphic data and studies), relevant state and local laws, regulations and guidelines, public testimony, and the characteristics of the respective alternatives. The alternatives selected for review in Chapter 6.0 of this EIS are two programmatic alternatives (A-4 and A-5) and three open space/development alternatives (B-8, B-10 Modified, and B-12). The USACE, in cooperation with the NCCP/SAMP Working Group, determined that these alternatives represent a reasonable range of SAMP alternatives in accordance with federal laws.

The analysis in Chapter 6.0 focuses on alternative open space/development configurations within the RMV Planning Area to assess whether one or more of the alternatives carried forward for review of consistency with the Section 404(b)(1) Guidelines in Chapter 8.0,, or a modified version of one or more alternatives carried forward, can feasibly attain the SAMP goals and the SAMP "Purpose." The emphasis is on biological resources and physical processes (hydrology/geomorphology) relating to the SAMP Purpose and Need statement, the overall SAMP goals, and the watershed planning perspective that is central to the SAMP. The Chapter 6.0 Alternatives Analysis analyzes the "A" and "B" Alternatives in terms of their ability to provide for the three main elements of an Aquatic Resources Conservation Program: Aquatic Resources Preservation, Restoration, and Management, consistent with the SAMP goals and Purpose and Need Statement.

Because both Alternative B-10 Modified and Alternative B-12 have been determined to be capable of feasibly attaining the SAMP goals and purposes, these alternatives have been assessed in Chapter 7.0 with respect to certain public interest issues. Alternatives A-4 and A-5 are also assessed for purposes of comparison. The public interest issues assessed for these

four alternatives are: non-aquatic biological resources; land use; transportation and circulation; agricultural and aggregate resources; air quality; noise; visual resources; cultural resources; population, housing and employment; and recreation. The analysis is being coordinated with the required analysis of alternatives under the Section 404(b)(1) Guidelines in Chapter 8.0, and with those USACE regulations requiring an evaluation of the probable impacts of proposed activities on the public interest (in conjunction of issuance of permits) (33 CFR 320.4[a]). The public interest issues discussed are considered as the "other environmental consequences" mentioned in the Section 404(b)(1) Guidelines (40 CFR 230.10[a]). Significant adverse environmental consequences with regard to these non-aquatic issues are a consideration in deciding which alternatives to consider as a potential LEDPA in Chapter 8.0. However, with regard to the Section 404(b)(1) Guidelines "other environmental consequences test," the conclusions discussed above for each of the various environmental topics/public interest issues have been determined to not affect the choice of alternatives carried forward into Chapter 8.0.

Chapter 8.0 evaluates the currently proposed projects in the context of the alternatives carried forward from Chapter 6.0 (i.e., Alternative B-10 Modified and Alternative B-12) that are potentially capable of meeting the Purpose and Need of the SAMP as defined in Chapter 3.0 in light of 40 CFR Part 230. The Section 404(b)(1) Guidelines analysis set forth in Chapter 8.0 provides a potential avoidance, minimization, and mitigation framework for consistency assessment under the Section 404(b)(1) Guidelines. The regulations set forth in 40 CFR Part 230 are guidelines issued by the Environmental Protection Agency which generally require the USACE, in order to determine whether to issue a Section 404 permit, to determine whether there are any practicable alternatives to the proposed discharge (i.e., Applicants' Proposed Projects) that would have less adverse impacts on the aquatic ecosystem. Section 230.10(a) of the Section 404(b)(1) Guidelines identifies requirements for identifying "the least environmentally damaging practicable alternative." Specifically:

> *"Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.*

VII.1 LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE

Based on the analysis in this EIS, and more particularly the analysis in Chapter 8.0, the USACE has selected the RMV Proposed Project (Alternative B-12) as the "least environmentally damaging alternative." The USACE also is proposing Alternative B-12 as the agency preferred alternative. The USACE's reasoning, including factual findings, regarding its selection of the RMV Proposed Project (Alternative B-12) is set forth in this EIS.

Based on the analysis in this EIS, and more particularly the analysis in Chapter 8.0, the USACE has selected the RMV Proposed Project (Alternative B-12) as the "least environmentally practicable damaging alternative." The USACE also is proposing Alternative B-12 as the agency preferred alternative. The USACE's reasoning, including factual findings, regarding its selection of the RMV Proposed Project (Alternative B-12) is set forth in this EIS and include such findings as, Alternative B-12 would protect 7,851.5 acres of 8,729.5 acres of riparian habitats within the SAMP Study Area and conserve 1,693.7 acres of 2,174.3 acres of riparian habitat within the RMV Planning Area including the preservation of such mainstem creeks as San Juan Creek, Chiquita Creek, Gobernadora Creek, Cristianitos Creek, La Paz Creek, Gabino Creek and Talega Creek within the RMV Planning Area. Impacts to jurisdictional wetlands and non-wetland waters resulting from development and associated infrastructure will be compensated by permanent protection of certain ARCA and the adaptive management of these areas through implementation of the ARAMP and the Invasive Species Control Plan, as described in

Chapter 8.0, in addition to functions and values provided by 18 acres of existing created/restored wetland habitat within the Gobernadora Ecological Restoration Area; and additional wetlands and vegetated waters acreage, if required, through the successful creation/ restoration of wetlands at a 1:1 ratio pursuant to the Aquatic Resources Restoration Plan before impacts occur. The compensation program is designed to maintain and enhance aquatic ecosystem values over the long term.

CHAPTER 1.0
INTRODUCTION

1.1 PROJECT SCOPE

A Special Area Management Plan (SAMP) is a voluntary watershed-level planning and permitting process involving local landowners and public agencies that seek permit coverage under the federal Clean Water Act Section 404 for future actions affecting jurisdictional Waters of the United States (U.S.). The purpose of a SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated under the SAMP. The proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP would provide a framework for permit coverage for the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed.

Local, state, and federal agencies, in cooperation with local landowners, have coordinated land use and natural resource conservation planning efforts to address future economic development within a portion of south Orange County within the San Juan Creek and Western San Mateo Creek Watersheds. This "coordinated planning process" consists of three separate planning processes which are underway and/or completed: (1) an amendment to Orange County's General Plan and Zone Change (GPA/ZC), (2) development of a SAMP, and (3) development of a Natural Community Conservation Plan/Master Streambed Alteration Agreement/Habitat Conservation Plan (NCCP/MSAA/HCP). A detailed description of the coordinated planning process is provided in subchapter 2.1 of this Environmental Impact Statement (EIS).

The SAMP is an important component of these planning efforts. The United States Army Corps of Engineers (USACE), Los Angeles District, has developed a comprehensive SAMP planning process to achieve a balance between reasonable economic development and aquatic resource conservation. SAMPs are intended for geographic areas of special sensitivity that are also under intense development pressure.

The three main goals of the SAMP process are to:

- Allow reasonable economic development through one or more proposed permitting procedures that provide regulatory predictability and incentives for comprehensive resource protection, management, and restoration over the long term.

- On a voluntary basis, establish an aquatic resources conservation program that includes preservation, restoration, and management of aquatic resources referred to hereafter as the "Aquatic Resources Conservation Program" (ARCP).

- Minimize individual and cumulative impacts of future projects within the SAMP watersheds by relating permitting for future activities to the SAMP Aquatic Resources Conservation Program, including studies prepared for the SAMP and the Southern Subregion Coordinated Planning Process.

Four elements of the SAMP process have been formulated to further and, to the maximum extent practicable, attain the above goals. The four primary elements of the SAMP process are as follows:

- ***Proposed Permitting Procedures*:** Three permitting procedures have been proposed as an integral part of the SAMP process. All three of the SAMP goals are addressed by the proposed permitting procedures, including (1) establishing permitting procedures that would provide regulatory predictability and incentives for comprehensive protection; restoration, and management of aquatic resources over the long term; (2) provisions for preservation, restoration, and management of aquatic resources on lands presently owned or otherwise potentially managed by permittees; and (3) minimization of individual and cumulative impacts of permitting for future activities.

- ***Aquatic Resources Preservation*:** In conjunction with the NCCP/MSAA/HCP and GPA/ZC, the other two components of the "coordinated planning process," a wide range of development/open space alternatives have been identified for environmental review. The SAMP process is intended to examine these alternatives in order to determine the extent to which these alternatives, in conjunction with already protected open space, would preserve significant aquatic resources (identified in connection with USACE and NCCP/MSAA/HCP studies) within the SAMP Study Area. Avoidance/minimization of impacts to aquatic resources would also be examined in conjunction with a Section 404 (b)(1) Guidelines review of permitting procedures. At the end of the SAMP process, aquatic resources recommended for permanent preservation would be identified. In this EIS, these areas are termed "Aquatic Resources Conservation Areas" (ARCAs).

- ***Aquatic Resources Restoration*:** The USACE Engineer Research Development Center (ERDC) has prepared a *Riparian Ecosystem Restoration Plan for San Juan and Western San Mateo Creek Watersheds* to provide a broad-scale restoration template. Area-specific restoration opportunities and measures would be identified under the Section 404 (b)(1) Guidelines review of proposed permitting procedures. Environmental review of this element in this EIS focuses on the consistency of alternative habitat reserve designs with the restoration recommendations and the extent to which specific habitat restoration measures can provide mitigation for impacts to aquatic resources that could potentially occur in connection with the proposed permitting procedures.

- ***Aquatic Resources Management*:** Where applicable, management of aquatic resources would be carried out in accordance with the SAMP Aquatic Resources Adaptive Management Program (ARAMP). Adaptive management and monitoring activities would be conducted primarily in areas proposed to be protected in conjunction with proposed permitting procedures as mitigation for impacts to aquatic resources subject to USACE jurisdiction (these management and monitoring activities are described in the Aquatic Resources Adaptive Management Program reviewed in this EIS). The NEPA alternatives analysis will review the extent to which the different development/open space alternatives are consistent with habitat management recommendations set forth in the NCCP Southern Planning Guidelines and the Draft Watershed and Sub-basin Planning Principles (Watershed Planning Principles) at both a watershed- and sub-basin scale.

The last three elements above comprise the Aquatic Resources Conservation Program.

This EIS provides environmental review for the following major federal action resulting from the SAMP process: Adoption of three permitting procedures for residential, commercial, industrial,

recreational, infrastructure, and maintenance needs within the SAMP Study Area. The Aquatic Resources Conservation Program is an outcome of the mitigation associated with the proposed permitting procedures.

Accordingly, the SAMP EIS includes an alternatives evaluation for the proposed permitting procedures based on the SAMP Purpose as defined in Chapter 3.0 of this EIS. Subchapter 1.4.2 and Chapter 3.0 identify the proposed permitting procedures for the SAMP Study Area and discuss them in detail in Chapter 8.0. Three proposed permitting procedures have been derived from the SAMP planning process. In addition, the SAMP process will identify aquatic resources will be identified for preservation, restoration, and management, and areas with aquatic resources where future activities would be allowed to occur, provided they meet specific criteria set forth in approvals granted under Section 404 of the Clean Water Act.

The SAMP process consists of four phases:

1. Phase I involves the USACE's identification and characterization of aquatic resources in the SAMP Study Area watersheds including (1) both planning-level and geographic-specific delineations of Waters of the U.S. subject to the Clean Water Act; and (2) a riparian ecosystem integrity analysis that ranks the functional integrity of aquatic habitat, water quality, and hydrology throughout the watersheds. The local project proponent, Rancho Mission Viejo, supplemented the USACE study products with a series of studies addressing hydrology, geomorphology, special needs of aquatic listed species, and slope wetlands which were prepared in conjunction with the coordinated planning process reviewed in subchapter 2.1. This phase of the SAMP process has been completed and is discussed in greater detail in Chapter 4.1.2 of this EIS.

2. Phase II involves the preparation and review of a series of watershed-scale development/open space alternatives formulated in conjunction with the GPA/ZC and NCCP/MSAA/HCP components of the coordinated planning process, as well as restoration, management, and proposed permitting procedures elements of the SAMP reviewed in this EIS. This EIS includes (1) a review of alternative development/open space designs to assess aquatic resource avoidance/minimization alternatives at a watershed scale; (2) an assessment of potential elements of an Aquatic Resources Conservation Program; (3) in conjunction with the review of proposed USACE Section 404 Individual Permit procedures, an evaluation of avoidance, minimization, and mitigation measures including area specific aquatic restoration and management actions in relation to development/open space alternatives selected for further review; and (4) an evaluation of the proposed permitting procedures capable of minimizing and mitigating impacts related to any Least Environmentally Damaging Practicable Alternative (LEDPA) selected in conjunction with the environmental review of one or more of the proposed permitting procedures. The proposed permitting procedures reviewed in this EIS are based upon and reviewed pursuant to (1) the Phase I studies referenced above; (2) SAMP Tenets and additional considerations set forth in the Southern Planning Guidelines and Watershed Planning Principles; and (3) the Section 404(b)(1) Guidelines applied to the three proposed permitting procedures where applicable.

3. Phase III involves finalizing this EIS, consideration of the approval of USACE Section 404 permits/permitting procedures and related mitigation programs including a preferred Aquatic Resources Conservation Program to be described in the final EIS.

4. Phase IV would involve the implementation of the three proposed permitting procedures as finalized in Phase III and the Aquatic Resources Conservation Program.

1.2 SAMP STUDY AREA

The SAMP Study Area covers the San Juan Creek Watershed and western portion of the San Mateo Creek Watershed in the southern portion of Orange County. The SAMP Study Area is depicted in its regional context and on an aerial on Figures 1-1 and 1-2, respectively. The SAMP Study Area includes portions of unincorporated Orange County and portions of the cities of Dana Point, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, San Clemente, and San Juan Capistrano.

The San Juan Creek Watershed is approximately 177 square miles (113,000 acres) extending from the Cleveland National Forest in the Santa Ana Mountains to the Pacific Ocean at Doheny State Beach near Dana Point Harbor. Caspers Wilderness Park and San Mateo Wilderness Area lands are located adjacent to the Cleveland National Forest along the eastern boundary. The western area is highly urbanized encompassing portions of the cities of Mission Viejo and San Juan Capistrano and the planned community of Ladera Ranch. Urbanized areas in the northern portion of the San Juan Creek Watershed include the City of Rancho Santa Margarita. The southern portion of the San Juan Creek Watershed is bound by the cities of Dana Point and San Clemente. The major named streams in the San Juan Watershed include San Juan Creek, Bell Canyon Creek, Cañada Chiquita, Cañada Gobernadora, Verdugo Canyon Creek, Oso Creek Trabuco Creek, and Lucas Canyon Creek.

The entire San Mateo Creek Watershed is located in the southern portion of Orange County, the northern portion of San Diego County, and the western portion of Riverside County. The total San Mateo Creek Watershed is approximately 139 square miles (88,960 acres) and lies mostly within the Cleveland National Forest, the northern portion of the U.S. Marine Corps Base at Camp Pendleton (MCB Camp Pendleton), and ranch lands in south Orange County (Lang et al., 1998). The SAMP Study Area includes the western 23.6-square-mile portion of the San Mateo Creek Watershed within Orange County (approximately 17 percent of the watershed). Major named streams within the SAMP Study Area in the western portion of the San Mateo Watershed are Cristianitos Creek, Gabino Creek, La Paz Creek, and Talega Creek. Rancho Mission Viejo owns the majority of the remaining undeveloped land in the south-central portion of the San Juan Watershed, as well as almost all of the undeveloped land within the western portion of the San Mateo Creek Watershed just north of the City of San Clemente. The unincorporated, undeveloped Rancho Mission Viejo land in the two watersheds totals approximately 22,815 acres and is referred to as the “RMV Planning Area” (Figure 1-2). Details of the RMV Planning Area are provided in subchapter 2.3.

1.3 SAMP STUDY AREA AUTHORITY

In accordance with the study resolution adopted by the Committee on Public Works, House of Representatives, adopted May 8, 1964, the United States House of Representatives authorized the USACE, Los Angeles District, Regulatory Branch to initiate a SAMP in the San Juan Creek/Western San Mateo Creek Watersheds in 1999.

1.4 REGULATORY BASIS

1.4.1 FEDERAL LAWS, REGULATIONS, AND POLICIES RELATING TO AQUATIC, WETLAND, AND RIPARIAN RESOURCES

The Clean Water Act is the principal federal law that addresses protection and management of aquatic resources and water quality. The primary objectives of the Clean Water Act are to

"*restore and maintain the chemical, physical, and biological integrity of the Nation's waters*," and to make all surface waters *"fishable*" and "*swimmable*."

1.4.1.1 Waters of the United States

Under Section 404 of the Clean Water Act, the USACE regulates discharges of dredged or fill material into "Waters of the U.S.," including wetlands. Waters of the U.S. is defined 33 CFR 328.3 as:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce.
- All interstate waters including interstate wetlands.
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams)...the use, degradation or destruction of which could affect interstate or foreign commerce.
- All impoundment of waters otherwise defined as Waters of the United States under the definition.
- Tributaries of waters defined in paragraphs (a) (1)-(4) of this Chapter.
- Territorial seas.
- Wetlands adjacent to waters identified above.

The USACE typically regulates as Waters of the U.S. any body of water displaying an "ordinary high water mark" (OHWM). USACE jurisdiction over non-tidal Waters of the U.S. extends laterally to the OHWM or beyond the OHWM to the limit of any adjacent wetlands, if they are present (33 Code of Federal Regulations (CFR) 328.4). The OHWM is defined as "*that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area*" (33 CFR 328.3). Jurisdiction typically extends upstream to the point where the OHWM is no longer perceptible.

The USACE and the U.S. Environmental Protection Agency (EPA) define wetlands as follows: "*Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions*." In order to be considered a "jurisdictional wetland" under Section 404, an area must possess three wetland characteristics: hydrophytic *vegetation*, hydric *soils*, and wetland *hydrology*. Each characteristic has a specific set of mandatory wetland criteria that must be satisfied in order for that particular wetland characteristic to be met. Several parameters may be analyzed to determine whether the criteria are satisfied.

Although "wetlands" are Waters of the U.S., this EIS distinguishes between wetlands and non-wetland Waters of the U.S. The term "wetland" is defined as regulated Waters of the U.S. that meet the hydrologic, hydrophytic vegetation, and hydric soils criteria outlined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). The term non-

wetland Waters of the U.S. refers to non-wetland waters regulated under Section 404 of the Clean Water Act.

1.4.1.2 SWANCC

The U.S. Supreme Court, in the *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (January 21, 2001) case, determined that the Clean Water Act did not extend to isolated waters/wetlands that were jurisdictional solely due to the Migratory Bird Rule of 1986. Merely providing habitat for migratory birds was not a sufficient connection to interstate commerce for inclusion under the Clean Water Act. Therefore, some isolated wetlands, especially vernal pools, may not be regulated by the USACE. Geographical jurisdictional determinations are made by the USACE on a project-by-project basis for wetlands in which adjacency (or proximity) to navigable waters is in question.

1.4.1.3 Section 404 (b)(1) Guidelines

The Section 404 (b)(1) Guidelines are substantive requirements of Section 404 of the Clean Water Act. Per the Section 404(b)(1) Guidelines, a permit may be issued for the LEDPA. The requirements for evaluating whether or not a particular alternative is the LEDPA is discussed in Chapter 8.0 of this EIS.

1.4.1.4 Section 401

The State Water Resources Control Board (SWRCB) has authority over wetlands through Section 401 of the Clean Water Act, as well as the Porter-Cologne Act, California Code of Regulations Section 3831, and California Wetlands Conservation Policy.

The Clean Water Act requires that an applicant for a Section 404 permit (to discharge dredged or fill material into Waters of the U.S.) first obtain a certificate from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the State Water Resources Control Board (SWRCB) to the nine Regional Water Quality Control Boards (RWQCBs). A request for certification or waiver is submitted to the regional board at the same time that an application is filed with the USACE. The RWQCB has 60 days to review the application and act on it.

1.4.1.5 Rivers and Harbors Act–Section 10

Section 10 of the Rivers and Harbors Act regulates activities in navigable Waters of the U.S. The term "navigable waters of the United States" as defined in the Code of Federal Regulations (33 CFR 329.4) includes those areas subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for used to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the water body, and is not extinguished by later actions or events which impede or destroy navigable capacity including filled, drained, diked, or developed lands that at one time were navigable.

A water body that was navigable in its natural or improved state, or that was susceptible to reasonable improvement, retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions. Non-use in the past does not prevent recognition of the potential for future use. Once having attained the character "navigable in law," the federal

authority remains in existence, and cannot be abandoned by administrative officers or court action. Any change to navigable waters, or changes to the surrounding environment that may alter the navigability of these waters (including aerial transmission lines over navigable waterways) are regulated by the USACE.

1.4.1.6 Executive Order 11990–No Net Loss

This order requires federal agencies to "…*avoid to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct and indirect support of new construction in wetlands wherever there is a practicable alternative*…"

1.4.1.7 USACE Regulatory Guidance Letter 86-10—Special Area Management Plans

The USACE regularly publishes Regulatory Guidance Letters to clarify USACE regulations and policies. In 1986, the USACE published Regulatory Guidance Letter 86-10 regarding SAMPs. A SAMP is defined as "a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies, standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas." Although originally conceptualized as a regulatory tool for the coastal zone, SAMPs have just as much applicability within inland areas. SAMPs address limitations inherent in traditional case-by-case review. As a result of a SAMP, developmental interests can plan with predictability and environmental interests are assured that individual and cumulative impacts are analyzed in the context of broad ecosystem needs. SAMPs result in an abbreviated permit processing procedures for specifically defined activities in pre-defined situations and restrictions on undesirable activities, preferably based on local land-use controls.

1.4.1.8 Executive Order 11988–Floodplains

This order requires federal agencies to "…*avoid to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative*…"

1.4.1.9 Executive Order 13112–Invasive Species

This order requires federal agencies to *"…use relevant programs and authorities to…detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; monitor invasive species populations accurately and reliably; provide for the restoration of native species and habitat conditions in ecosystems that have been invaded*…"

1.4.2 NEPA REQUIREMENTS

Under the National Environmental Policy Act (NEPA), all federal agencies must conduct NEPA review for "*major federal actions significantly affecting the quality of the human environment*" (42 USC Section 4332). Each federal agency has its own NEPA implementation rules that conform to 40 CFR. The NEPA scope of this EIS impact analysis follows the directives in 33 CFR 325 that requires the scope of an EIS to be limited to the impacts of the specific activities requiring a Section 404 Permit and only those portions of the project outside of Waters of the U.S. over which the USACE has sufficient control and responsibility to warrant federal

review. The USACE is also the lead agency for USACE's Section 404 permitting procedures resulting from the SAMP process and reviewed in this EIS pursuant to the Section 404(b)(1) Guidelines and other applicable criteria.

Information in this EIS is intended to (1) review alternatives to assess avoidance/minimization, (2) assess potential elements of the SAMP process as described in subchapter 1.1 of this EIS, (3) evaluate alternative mitigation approaches/measures, and (4) evaluate proposed permitting procedures capable of minimizing and mitigating impacts related to any LEDPA selected in conjunction with the environmental review of one or more of the proposed permitting systems.

As noted above, information in this EIS will be used to evaluate the establishment of three proposed permitting procedures that would be established concurrently with the approval of the SAMP. These three proposed future permitting procedures are summarized as follows and described in detail in Chapter 8.0 of this EIS:

1. Proposed Long-Term Individual Permits/Letters of Permission (LOP) procedures for long-term activities proposed by Rancho Mission Viejo and the Santa Margarita Water District on the RMV Planning Area in reliance on the SAMP and in conjunction with the review, approval, and implementation of an Aquatic Resources Conservation Program coordinated with the Southern Subregion NCCP/MSAA/HCP. The potential impacts and compliance with USACE regulatory requirements of proposed long-term Individual Permits will be addressed through this SAMP EIS review process. Figure 1-3 depicts the area where the LOP procedures would apply. Revocation of selected Nationwide Permits will be associated with the RMV Proposed Project and SMWD Proposed Project.

2. The proposed use of LOP Procedures for other future qualifying permit applicants whose potential impacts on the Waters of the U.S. would be assessed through reliance on the SAMP at future points in time. The potential use of the SAMP as the guidance document for identifying avoidance areas within the SAMP Study Area will be addressed through this SAMP EIS process (Figure 1-3). Revocation of selected Nationwide Permits will be associated with these other LOPs.

3. Potential establishment of a Regional General Permit (RGP) for certain limited activities and the suspension of selected Nationwide Permits for small-scale activities and ongoing maintenance activities within the SAMP Study Area but outside of the RMV Planning Area are also depicted on Figure 1-3. The potential impacts and compliance with USACE regulatory requirements of the RGP program will be addressed through this SAMP EIS process.

This EIS is intended to provide decision-makers, responsible agencies, and the public with sufficient information to assess potential environmental impacts and minimization and mitigation measures pursuant to USACE regulations applicable to the three proposed permitting procedures. NEPA requires that the lead agency review potential significant environmental impacts of all alternatives selected for review and to identify "*any preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference*" (40 CFR 1502.14). In addition to avoidance and minimization measures, mitigation measures are required to be addressed pursuant to 40 CFR 1502(f) and 1502.16(h).

1.5 PUBLIC OUTREACH

The USACE has prepared this EIS in coordination with other resource agencies, including the United States Fish and Wildlife Service (USFWS), EPA, the RWQCB, San Diego Regional Water Quality Control Board (San Diego RWQCB), and the California Department of Fish and Game (CDFG). Throughout the process, the USACE encouraged active participation by the County of Orange, other local governments and agencies, interested landowners and the general public.

1.5.1 SCOPING PROCESS

Issues raised by the agencies and public were identified through a scoping process and in the context of the Coordinated Planning Process discussed in subchapter 2.1 of this EIS. The purpose of scoping is to identify potential environmental issues and concerns regarding a proposed project. The scoping process for this EIS included public notification via the Federal Register, newspaper ad, mail to regulatory agencies, local jurisdictions, elected officials, public service providers, organizations, and special interest members of the public, and a public meeting on May 8, 2001. The USACE considered comments received during the scoping process in determining the scope of issues to be evaluated in this EIS.

As described below, two Notices of Intent (NOI) were prepared for the SAMP. The first NOI was issued in April 19, 2001, and is discussed further below. A second NOI was published on May 12, 2005 to explain certain changes to the SAMP (i.e., eliminating the MSAA and eliminating the need for an EIR as part of the SAMP) that have occurred since publication of the first NOI.

1.5.1.1 April 19, 2001 Notice of Intent

In accordance with NEPA requirements, an NOI to prepare a joint EIS/EIR with CDFG was published in the Federal Register on April 19, 2001. A copy of the NOI is included in Appendix A of this EIS. On April 19, 2001, the NOI was mailed to regulatory agencies, local jurisdictions, elected officials, public service providers, organizations, and special interest members of the public.

As part of this scoping process, the USACE and CDFG held a public meeting on May 8, 2001.

The comment period for the first NOI ended on May 18, 2001. The USACE and CDFG received ten comment letters from public agencies and eight comment letters from environmental and community groups, as listed below. A total of 131 letters, comments cards, and emails were received from the general public. Areas of concern that were raised in the scoping meeting and NOP responses letters are summarized below.[1]

Public Agency Comments

In its 2001 comment letter, the USFWS supported the development of a SAMP. The USFWS recommended that Section 7 endangered species consultation with the USACE (for the SAMP) be coordinated with the Section 7 consultation required for the Southern Subregion NCCP/HCP. USFWS also requested regular coordination with the USACE during the development of the SAMP.

[1] The reader should note that references to MSAA and EIR remain part of the summary of comments as this reflects comments made in 2001 when the MSAA was being processed with the SAMP.

The U.S. Geological Survey (USGS) recommended that the USACE review pertinent scientific literature on affected resources and species by using the USGS Biological Database.

The California Coastal Commission expressed its belief that some SAMP/MSAA activities could affect downstream resources in the coastal zone. As a result, the permittee(s) would need to submit a coastal consistency certification to the California Coastal Commission pursuant to the Coastal Zone Management Act. The California Coastal Commission also encouraged coordination with their staff during the preparation of the SAMP/MSAA and implementation of any subsequent permitting process.

Caltrans requested that the EIS/EIR examine possible effects of the project on the Southern Orange County Transportation Infrastructure Improvement Project (SOCTIIP) (previously referred to as the Foothill Transportation Corridor South project). It expressed its position that permittees under the SAMP/MSAA would be responsible for the costs of upgrading state highway drainage facilities affected by future projects, and that encroachment permits would be required for all such modifications.

The San Diego RWQCB requested the EIS/EIR address the following impacts: (1) effect on drainage patterns and new flow; (2) adverse effects on water quality, such as increased temperature, lowered dissolved oxygen, and stormwater pollutants; (3) effects on groundwater levels and flow patterns; and (4) loss or degradation of beneficial uses. The EIS/EIR should include mitigation measures for these impacts. Several permits and approvals from the San Diego RWQCB are required to implement projects under the SAMP/MSAA.

The San Juan Basin Authority requested that the SAMP/MSAA consider the ongoing and future actions under the San Juan Groundwater Management and Facility Plan, and the proposed conjunctive use program being developed by the Authority.

The County of Orange (County) requested that the preparation of the EIS/EIR be coordinated with the concurrent environmental documents addressing the same project area including (1) environmental document being prepared by the County and USFWS for the Southern Subregion NCCP, and (2) environmental document(s) being prepared by the County for land use permits and specific plan(s) for Rancho Mission Viejo. The County recommended that the same baseline data and alternatives be used in all documents. The County also recommended that the preparation of the SAMP/MSAA be coordinated with the USACE's ongoing development of the San Juan Creek Watershed Feasibility Study.

The County recommended that the SAMP/MSAA be compatible with the existing and future flood control facilities in the San Juan Creek Watershed. The SAMP/MSAA should consider sediment transport impacts, including channel bed aggradation and degradation, and beach sand. The EIS/EIR should address changes in peak discharge and total annual runoff due to the SAMP/MSAA, because they may affect downstream channels. Finally, the SAMP/MSAA should allow for maintenance and operation of County flood control facilities in the project area, without a requirement for mitigation and consistent with their original design specifications.

The County recommended that significant riparian areas be placed in "reserves," and that future reserves include Verdugo Canyon to Caspers Wilderness Park; southwestern slopes separating Bell Canyon from Cañada Gobernadora; and Arroyo Trabuco south of O'Neill Regional Park into San Juan Capistrano (excluding the now constructed Rancho Mission Viejo Arroyo Trabuco Golf Course). The County indicated it would accept these areas, in fee, as additions to their regional park system. Existing and future County hiking, horseback riding, and bicycle trails in the project area also needed to be considered.

The County indicated that it would also like the following water quality impacts to be addressed in the EIS/EIR: (1) the effect of stormwater runoff on the existing quality of receiving waters in and downstream of the project area; and (2) the effect of the project on impaired waters, including the fecal coliform impairment at the mouth of San Juan Creek. Identified mitigation for water quality impacts was (1) preparation of a Stormwater Pollution and Prevention Plan, per the requirements of the National Pollutant Discharge Elimination System (NPDES) Program; and (2) long-term post-construction management plan that includes maintenance on non-structural Best Management Practices (BMPs) consistent with the County's Drainage Area Management Plan (DAMP), New Development requirements.

The City of San Juan Capistrano and Capistrano Valley Water District requested that the EIS/EIR address the proposed SAMP's consistency with the District's plans for infrastructure and water supply development for both its domestic and non-domestic systems. The District also requested that its plans for infrastructure and water supply be included among the public projects proposed to be permitted based upon the SAMP/MSAA.

Environmental and Community Group Comments

The main issues identified by environmental and community groups were as follows:

- The project should evaluate SAMP/MSAA project-related impacts on surface and groundwater quality and public and private water supplies. The EIS/EIR should identify BMPs, mitigation measures, and water quality standards.

- SOCTIIP should be excluded from the SAMP/MSAA.

- The project should identify impacts to recreational uses and habitat at San Onofre Beach.

- The project should address impacts to biological resources including: critical habitat for endangered species, displacement, and relocation of wildlife, impacts to state-listed and unlisted species covered by NCCP, wetlands, and wildlife movement corridors.

- The project should identify impacts of land development on outdoor recreation, tourism, and nature preserves.

- The project should identify impacts of the SAMP/MSAA on air quality, traffic, noise, floodplains, aesthetics, social values, cultural and historic values, urban quality, and human health. These impacts should include a discussion of direct, indirect, and cumulative effects.

- The project should identify impacts of creek modification on flow rate, channel bed erosion, sediment transport, and beach sand supply.

- The EIS/EIR must consider potential impacts of USACE regulatory decisions on resources other than those regulated under the Clean Water Act. The EIS/EIR should evaluate consistency the SAMP with the requirements of Section 404 of the Clean Water Act, and include an analysis of consistency with the Section 404(b)(1) Guidelines.

- The EIS/EIR should include "non discharge alternatives." The SAMP/MSAA should prohibit the discharge of dredge or fill materials into wetlands.

General Public and Local Resident Comments

The main issues identified by general public and local residents were as follows:

- SAMP/MSAA could result in urban sprawl and could degrade the quality of life in local communities.
- The removal of open space in the project area could reduce water quality benefits of an undeveloped watershed, displace wildlife, remove a visual amenity, and reduce recreational opportunities.
- Land development in the project area could cause significant impacts on traffic, noise, water supply, public services, schools, and air quality.
- The project could result in the degradation of water quality at the ocean, particularly at the mouth of San Mateo Creek, Trestles Beach, and San Onofre State Beach Park.
- San Mateo Creek is a pristine creek and does not have water quality problems because it is undeveloped.
- Exclude SOCTIIP from the EIS/EIR because it is a separate project and deserves a focused environmental review and public participation process.
- The EIS/EIR should address project impacts on downstream sedimentation and natural beach replenishment, loss of open space, effects on existing nature preserves, increased crime rates as a result of increase population, reduced tourism due to degraded ocean water quality, and loss of open space.
- The EIS/EIR should address lead pollution from a skeet range in the San Mateo Creek Watershed.
- The EIS/EIR should address how a long-term Section 404 Permit issued by the USACE would be affected by future changes in laws related to water quality, wetlands, and endangered species.
- The EIS/EIR should consider the entire San Mateo Creek Watershed.

A summary of the written scoping comments, as well as the comments themselves, are included in Appendix A to this EIS. Concerns regarding environmental issues have been addressed in this EIS.

1.5.1.2 May 12, 2005 Notice of Intent

A second NOI was published on May 12, 2005 to explain that the document will only be a federal document (i.e., EIS) and not a joint federal and state document (i.e., EIS/EIR). The exclusion of the MSAA from the project eliminates the need for an EIR as part of the SAMP. This is a change from the original publication of the first NOI. Because a new scoping period was not started as a part of the revised NOI, additional public comment was not requested. The MSAA will be analyzed as a part of the NCCP/HCP EIS/EIR.

CHAPTER 2.0
PROJECT COORDINATION EFFORTS AND OVERVIEW OF POTENTIAL PROJECTS

2.1 COORDINATED PLANNING PROCESS

The SAMP is being prepared as part of a coordinated public planning process that includes the preparation of two other major planning and regulatory components within the area of the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed. In addition to the SAMP, this coordinated public planning process includes: (1) an NCCP/MSAA/HCP for the Southern Subregion covering 132,000 acres that includes most areas of the watersheds, and (2) a General Plan Amendment and Zone Change (hereafter referred to as the GPA/ZC) for the 22,815-acre RMV Planning Area.

For the reasons outlined below, the County of Orange, participating landowners, and the state and federal agencies with primary planning and regulatory responsibility within the Southern Subregion (USFWS, CDFG, and the USACE) determined that a "coordinated planning process" should be pursued that would be most protective over the long term for the sensitive biological and hydrologic resources located within the two watersheds and NCCP Southern Subregion. The need for the coordinated planning process and the relationship between the program components is summarized below. A summary of the three major planning and regulatory components is set forth in subchapters 2.1.1 through 2.1.3 followed by discussions of the need for and objectives of the coordinated planning process (subchapters 2.1.4 and 2.1.5), the sequence of key agency actions (subchapter 2.1.6), and key product/decision/milestones and linkages (subchapter 2.1.7).

2.1.1 GENERAL PLAN AMENDMENT/ZONE CHANGE

On November 8, 2004, the Orange County California Board of Supervisors approved the Rancho Mission Viejo GPA/ZC (PA 01-114) (also referred to as the "B-10 Modified Alternative"). The approved project would have allowed for the development of various land uses and preservation of open space on the approximately 22,815-acre RMV Planning Area over an approximately 20- to 25-year period. A detailed discussion of the GPA/ZC is provided in the County's EIR (The Ranch Plan Final EIR 589; referred herein to as the GPA/ZC EIR 589) that was certified on November 8, 2004.

Subsequent to this action by the County Board of Supervisors, the B-12 Alternative was developed to address the sub-basin-level Southern Planning Guidelines and the Watershed Planning Principles in addition to the overall goals and objectives of the SAMP Programs and NCCP/MSAA/HCP. This alternative is based on input from the USACE, CDFG, USFWS, the environmental community, and the general public. The following is a description of the B-12 Alternative, the "project" for which one of the current SAMP participants, Rancho Mission Viejo, is requesting Section 404 permits. In this EIS, this project is termed "RMV Proposed Project."

The RMV Proposed Project allows for the development of 5,873 acres of the 22,815-acre RMV Planning Area with up to 14,000 residential dwelling units (of which up to 6,000 are to be senior housing units), urban activity center uses, business park uses, neighborhood retail uses, and golf course uses. Approximately 16,942 acres would be retained in open space. Ranching activities would also be retained within a portion of the proposed open space area. Infrastructure would be constructed to support all of the proposed uses, including road improvements, utility

improvements, and schools. Existing agriculture uses may also be expanded within defined areas subject to certain restrictions concerning the protection of biological resources.

In approving the B-10 Modified Alternative, the County changed the zoning of the RMV Planning Area from A-1 General Agricultural and Sand and Gravel (S&G) Extraction Districts (for portions of San Juan Creek) to Planned Community (PC) zoning district. The PC zoning designation would also apply to the Proposed Project (Alternative B-12). The PC zoning designation is intended to "provide the authority, regulations, and procedures whereby large land areas can be planned, zoned, developed, and administered as individual integrated communities" (County of Orange, 2002). In addition, three elements of the County of Orange General Plan were amended within the 22,815-acre RMV Planning Area as follows:

2.1.1.1 Land Use Element

The land use designation for portions of the RMV Planning Area was amended from Open Space (5) to Rural Residential (1A), Suburban Residential (1B), Employment (3) and Urban Activity Center (6). Remaining areas were retained in their Open Space and Open Space Reserve designations.

2.1.1.2 Transportation Element

The Transportation Element was amended to include the addition of three new roads (Cow Camp Road, Cristianitos Road, and F Street), the reclassification of a portion of another arterial highway (Avenida Talega), and the identification of specific locations/alignments for proposed bikeways and riding and hiking trails within the RMV Planning Area. Scenic highway designations were also amended.

2.1.1.3 Resources Element

Two figures within the Natural Resources Component of the Resources Element were amended to reflect the approved RMV Proposed Project.

2.1.2 SOUTHERN SUBREGION NCCP/MSAA/HCP

The proposed Southern Subregion NCCP/MSAA/HCP is being prepared by the County of Orange in cooperation with CDFG and the USFWS in accordance with the provisions of the state Natural Community Conservation Planning Act of 1991 (NCCP Act), California Endangered Species Act (CESA), federal Endangered Species Act (FESA), and Section 1600 et seq. of the California Fish and Game Code. The Southern Subregion is part of the five-county NCCP Study Area established by the state as the Pilot Study Area under the Southern California Coastal Sage Scrub NCCP Program.

The Southern California Coastal Sage Scrub NCCP Program is the pilot program under the State's NCCP Act. It is being undertaken jointly by the CDFG and the USFWS pursuant to a December 4, 1991 Memorandum of Understanding (MOU). Under the 1991 MOU, CDFG is responsible for developing the NCCP process and for preparing planning guidelines. The USFWS role is to review and approve the process guidelines. The two agencies also agreed to work together to ensure that NCCP/HCPs are prepared by local governments and landowners in a manner that will facilitate compliance with Section 10(a)(1)(B) of FESA, with Section 2800-2840 of the NCCP Act of 1991, and with Sections 2080.1, 2081, 2084, and 2086 of the CESA as set forth in the Fish and Game Code.

The proposed Southern Subregion NCCP/MSAA/HCP would provide for the conservation of designated state and federal listed and unlisted species ("Covered Species") and associated habitats that are currently found within the 132,000-acre Southern Subregion NCCP/MSAA/HCP study area. The NCCP/MSAA/HCP is a voluntary, collaborative planning program involving landowners, local governments, state and federal agencies, environmental organizations, and interested members of the public in the formulation and approval of the NCCP. The purpose of the NCCP Program is to provide long-term, large-scale protection of natural vegetation communities and wildlife diversity while allowing compatible land uses and appropriate development and growth. The NCCP process was initiated to provide an alternative to "single species" conservation efforts. The shift in focus from single species, project-by-project conservation efforts to large scale conservation planning at the natural community level was intended to facilitate regional and subregional protection of a suite of species that inhabit a designated natural community or communities.

Under current federal law, and without the NCCP/MSAA/HCP, each local government/agency/ landowner proposing to impact occupied listed-species habitat would need to obtain either a FESA Section 7 consultation or a Section 10 permit in order to proceed with projects within their respective jurisdictions. Similarly, local governments, agencies, and landowners proposing to alter the bed and/or bank of a stream subject to the jurisdiction of CDFG would need to obtain a Streambed Alteration Agreement (SAA). The NCCP/MSAA/HCP would provide an alternative to a project-by-project, single species review currently practiced under existing state and federal law. Under the NCCP/MSAA/HCP, participating local governments, public and quasi-public agencies, and landowners receive regulatory coverage for projects addressed by the NCCP/MSAA/HCP for all species and habitats identified for coverage in the NCCP/MSAA/HCP. Therefore, a desired effect of the NCCP/MSAA/HCP would be to protect the eight listed species which occur or may occur within the Southern Subregion, a broader suite of unlisted species, and certain habitats while reducing regulatory uncertainty, time delays, and economic impacts on adopted and proposed projects resulting from the state and/or federal listings.

2.1.3 SAMP

As previously addressed in Chapter 1.0, the SAMP is a voluntary watershed-level planning and permitting process involving local landowners and public agencies that seek permit coverage under Clean Water Act Section 404 for future actions affecting jurisdictional Waters of the U.S. Specific to the proposed San Juan and Western San Mateo Watersheds SAMP, permit coverage would be provided for the San Juan Creek and Western San Mateo Creek Watersheds. The purpose of the SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, would be avoided and unavoidable impacts would be minimized and fully mitigated under the SAMP.

2.1.4 NEED FOR A COORDINATED PLANNING AND REGULATORY PROCESS

The desire of the reviewing agencies and participating landowners to coordinate the preparation of a SAMP with the NCCP/MSAA/HCP reflected the experiences of the participants over the past several years of NCCP/HCP planning.

First, the proposed coordinated approach reflects a desire on the part of the involved public agencies to maximize protection and management of aquatic and upland resources and geomorphic and hydrologic processes by coordinating the preparation, approval, and implementation of the two state/federal regulatory programs. Such coordination would provide

the ability to coordinate the long-term implementation of the NCCP/MSAA/HCP adaptive management strategy with the implementation of the SAMP Aquatic Resources Conservation Program in a manner that would enable coordinated and effective long-term protection and management of both upland and aquatic species.

Second, the proposed coordination of these planning/regulatory programs reflects the experience of the private and agency participants involved in earlier NCCP/HCP programs approved in San Diego (MSCP) and Orange counties (Central/Coastal Subregion NCCP/HCP). These participants discovered that state and federal Incidental Take authorizations provided under a NCCP/HCP were of limited practical value if the "planned activities" covered by the NCCP/HCP were not reviewed in coordination with state/federal agencies responsible for issuing permits for aquatic resource impacts (i.e., USACE Section 404 permits and CDFG Section 1600 Streambed Alteration Agreements). Participating landowners found that NCCP/HCP Take authorizations reflecting subregional level analysis did not adequately address Section 404/1600 impacts to aquatic resources taking place at the "project" level. Because "planned activities" approved under the NCCP/HCP could not be implemented without the Section 404/1600 approvals, the ability to assemble a NCCP/HCP Habitat Reserve and implement adaptive management measures in a timely manner consistent with the Environmentally Sensitive Areas (ESAs) and the terms of the NCCP/HCP Implementation Agreement was jeopardized. Therefore, the decision to include preparation of an MSAA in the NCCP/HCP and the coordination of the SAMP with the NCCP/MSAA/HCP is proposed to facilitate implementation of the Aquatic Resources Conservation Program with the larger NCCP/MSAA/HCP Habitat Reserve and adaptive management measures.

Third, the Southern Orange County NCCP Science Advisors (Science Advisors) convened by The Nature Conservancy in 1997 to provide science guidance for the Southern Subregion NCCP/HCP recognized the significant benefits to subregional planning for species and habitats that would accrue if that planning considered the underlying geomorphic and hydrologic processes at work at the "watershed level." The Science Advisors recognized that these hydrologic and geomorphic processes served to sustain the conditions necessary for the survival of the species and habitats being addressed by the NCCP/MSAA/HCP. Whereas the species and habitat database focus on information that provides "snapshots" of conditions at various time intervals, the underlying geomorphic and hydrologic process information provides the basis for understanding how and why much of the observed biological functions and values are present and what kinds of factors need to be considered as part of a program designed to assure effective long-term management of those biological and aquatic resources.

In recognition of these factors, the participating landowners and public agencies decided to coordinate the preparation and public approval processes for the SAMP and the NCCP/MSAA/HCP.

2.1.5 OPERATING ASSUMPTIONS FOR THE COORDINATED PUBLIC PLANNING PROCESS

Consultation among the County of Orange, landowners, and state and federal agencies generated the following conclusions regarding the operating assumptions for the coordinated planning approach:

First, orderly implementation of the NCCP/MSAA/HCP would require coordinated processing of a watershed-level program addressing the protection, restoration, and management of aquatic resources (i.e., the SAMP). The SAMP watershed-level approach would enable participating

public agencies and landowners to obtain necessary permits and agreements for planned activities within the NCCP/MSAA/HCP that would affect aquatic resources regulated under Sections 401 and 404 of the Clean Water Act.

Second, the ability to obtain Section 401 water quality certifications, Section 404 permits resulting from the SAMP process, and Section 1600 Streambed Alteration Agreements under the NCCP/MSAA/HCP, in a timely manner would require that a development application be filed and processed as part of the coordinated program so that the location, type, and intensity of land uses within proposed development areas would be established.

Third, the USACE would be the lead agency responsible for preparing the SAMP. The County and USFWS, in coordination with CDFG would be the lead agencies responsible for preparing the NCCP/MSAA/HCP. This determination is consistent with state and federal requirements.

Fourth, all agencies responsible for reviewing and approving projects that impact wetlands, streams, and other Waters of the U.S. within the SAMP Study Area would be fully involved in the preparation, coordination, and review of each component of the coordinated process.

Fifth, preparation and approval of the GPA/ZC, SAMP, and NCCP/MSAA/NCP should be coordinated to efficiently address major issues. The coordination process would allow for more effective identification of major issues and better resolution of potential conflicts among the various planning and regulatory programs in a timely manner.

Finally, the coordinated process would allow individual regulatory components to be prepared and approved separately while still enabling applicants and lead agencies, other reviewing agencies, and the public to identify and address resource protection, resource management, and cumulative impact issues related to proposed new development in a coordinated fashion.

2.1.6 SEQUENCE OF LEAD AGENCY ACTIONS FOR THE GPA/ZC, SAMP, AND NCCP/MSAA/HCP

As previously addressed, under the coordinated process, the County of Orange, as a lead agency, is responsible for the review and action upon the GPA/ZC project and the NCCP/MSAA/HCP project. The County of Orange Board of Supervisors certified the Final Environmental Impact Report and approved the GPA/ZC project on November 8, 2004 that addressed the GPA/ZC purposes in consideration of the goals and objectives of the SAMP, NCCP, HCP, and MSAA. The next actions by the County would be consideration of certification of the final NCCP/MSAA/HCP EIS/EIR and consideration of approval of the NCCP/MSAA/HCP project and Implementation Agreement.

As lead agency for the SAMP, the USACE would be responsible for issuance of the Record of Decision (ROD), and relevant Section 404 permitting procedures resulting from the SAMP process. Prior to finalization of the SAMP EIS, the USACE is responsible for consultation with the USFWS under Section 7 of the FESA for any effect on listed threatened and/or endangered species and/or adverse modification of designated critical habitat resulting from the federal action of establishing one or more of the three proposed permitting procedures/USACE Section 404 permits. Prior to issuance of any Section 404 authorizations in conjunction with finalizing the SAMP, the applicable RWQCB would be required to issue a Section 401 certification for a proposed action.

In the timeframe of the Section 7 consultation with the USFWS for the federal activity of establishing the proposed permitting procedures, resolution of the effects on listed threatened

and/or endangered species and/or adverse modification of designated critical habitat occurs in two possible ways. The first involves the USFWS approving the NCCP/MSAA/HCP. The USFWS would issue a ROD and a Section 10 permit for incidental take of federally-listed species covered under the HCP component of the NCCP/MSAA/HCP. The USFWS would reference its internal Biological Opinion in issuing a Biological Opinion to the USACE for the proposed permitting procedures. The CDFG would then approve the Master Streambed Alteration Agreement that would provide coverage for planned activities addressed by the MSAA. The second way involves the USFWS issuing a separate Biological Opinion just for the proposed permitting procedures. In the event the USFWS determines not to approve the NCCP/MSAA/HCP, the USFWS could issue an incidental take permit for some or all of the activities analyzed under the SAMP. In any event, the finalization of the SAMP cannot occur until Section 7 consultation with the USFWS has been completed.

It is anticipated that, within the same general timeframe as the USACE takes action on the proposed permitting procedures and SAMP mitigation program, the USFWS and CDFG would consider approval of the NCCP/MSAA/HCP. If approved, the USFWS would issue the ROD and ESA Section 10 permits for Incidental Take of federally-listed species covered under the HCP component of the NCCP/MSAA/HCP. CDFG would publish its Management Authorization for Incidental Take of state-listed species. For the MSAA, the CDFG would approve the Master Streambed Alteration Agreement to provide coverage for planned activities addressed by the MSAA.

It is possible that final actions on the SAMP and related proposed permitting procedures by the USACE could require reconciliation of treatment of some impacts related to the GPA/ZC and NCCP/MSAA/HCP based on differences in the final terms of approval for each of the components. However, the objective of ongoing close coordination is to limit the potential scope of such a reconciliation process.

2.1.7 KEY PRODUCT/DECISION/MILESTONES AND LINKAGES

While it is noted that all proposed work program work products and actions are being coordinated, the sequencing and timing of certain work products and decisions are particularly important to the successful completion of the overall coordinated process. These critical products and milestones, presented in the order of occurrence, include the following:

2.1.7.1 Identification of a Consistent Set of GPA/ZC, NCCP/MSAA/HCP, and SAMP Alternatives

Based on the analysis of goals for each of the coordinated planning process programs, a common set of development/open space alternatives have been developed for analysis in the GPA/ZC EIR 589, the SAMP EIS, and the NCCP/MSAA/HCP EIS/EIR. Areas that are proposed for avoidance for the SAMP within the lands covered by the GPA/ZC are proposed for incorporation into the NCCP/MSAA/HCP reserve design. Identification of project alternatives under each component of the program has been and would continue to be coordinated. For a full description of alternatives, please refer to Chapter 5.0, Development of Alternatives, of this EIS. To date, no component of the coordinated process has limited the range of alternatives that was considered or is being considered as part of any of the other process components, or the selection of any particular alternative.

2.1.7.2 Selecting a Reasonable Range of Alternatives for Each of the Coordinated Planning Process Programs

Based on the analyses of the goals for each of the coordinated planning process programs, a common set of reserve design/development alternatives has been developed for analysis in the GPA/ZC EIR 589, the SAMP EIS, and the NCCP/MSAA/HCP EIS/EIR. The intent has been to identify alternatives that are compatible with each other in order to facilitate achieving program goals and objectives for each of the planning processes. While intending to further coordination among the three planning processes, the common set of alternatives is not intended to limit the formulation of additional alternatives within the framework of the individual planning processes. One important goal of the formulation and review of a common set of alternatives is to assess alternative conservation strategies within each of the planning processes so that compatible conservation and management programs can be selected consistent with regulatory standards and the goals of each of the planning processes.

With respect to the SAMP, the review of alternatives will focus on the SAMP goals set forth in subchapter 1.1 and the SAMP "Purpose" discussed in subchapter 3.1.2. The EIS alternatives analysis is directed toward assessing whether one or more of the alternatives, or a modified version of one or more alternatives, can feasibly attain the goal of a SAMP consistent with the SAMP purpose statement. The alternatives analysis in this EIS uses the ERDC alternatives analysis and the SAMP Tenets in consideration of the findings from the Southern Planning Guidelines and the Watershed Planning Principles and additional aquatic species planning considerations from the Southern Planning Guidelines and the Watershed Planning Principles, as well as other studies referenced in subchapter 1.1 of this EIS. The Southern Planning Guidelines are provided in Appendix B1 and the Watershed Planning Principles are provided in Appendix B2 of this EIS. If the EIS analysis of alternatives identifies one or more alternatives capable of achieving the SAMP Purpose, the alternative(s) is analyzed for compliance with the Section 404 (b)(1) Guidelines. The final EIS would be used to conclude the SAMP process, determine the Clean Water Act Section 404 permitting procedures within specified areas where future activities would be allowed to occur, and identify aquatic areas to be preserved, restored, enhanced, and managed over the long term.

2.1.7.3 Coordinated Preparation and Public Review of Draft Environmental Documents

The public review draft of the EIS for the SAMP and the EIR/EIS for the NCCP/MSAA/HCP would be completed and reviewed by the public in coordinated parallel processes. In this way, the analysis of avoidance, minimization and mitigation, management, and monitoring issues would be carefully coordinated. To assure the overall completeness and consistency of the environmental documents during their preparation, databases are being shared by the respective lead agencies.

2.2 PUBLIC PARTICIPATION

A key feature of the coordinated planning process involved the public consultation that occurred during the initial formulation of the SAMP and the Southern Subregion NCCP/HCP. The public participation process for the SAMP Study Area and the Southern Subregion NCCP/HCP centered on public workshops conducted by the three lead agencies. This process also was supported by the convening of an "Ad Hoc" group by The Nature Conservancy (see subchapter 2.2.2) and by creation of a citizen outreach program by the County Supervisor with responsibility over the Supervisorial District that includes the 22,815-acre RMV Planning Area. This public participation process was initiated following the June 14, 2001 Public Workshop.

2.2.1 PUBLIC WORKSHOPS

The three lead agencies initiated a series of joint "Public Workshops." The Public Workshops preceded and contributed information important to the completion of this EIS and the Draft NCCP/HCP, and related EIS/EIR and Implementation Agreement. Beginning in June 2001, and continuing through May 2003, a total of six public workshops were held. Public attendance at these meetings ranged from 250 to about 500 persons. These workshops were intended to provide a collaborative and consultative public forum. The Public Workshops were conducted to:

- Explain the coordinated approach.
- Identify key planning issues that needed to be addressed and assure that the full range of public policy and planning issues were addressed.
- Discuss SAMP/MSAA and NCCP/HCP reserve design tenets and principles.[1]
- Identify and consider alternative habitat reserve designs.
- Discuss adaptive management and species conservation issues and methodologies.
- Obtain public comments and suggestions prior to preparation of draft documents.

2.2.2 AD HOC MEETINGS

In support of the Public Workshops, The Nature Conservancy, in 2001, convened an "Ad Hoc" group designed to involve representatives of the involved agencies, environmental groups, and local landowners in constructive dialogue within a smaller setting that could focus on SAMP/MSAA and NCCP/HCP issues. The Ad Hoc group met as needed to discuss significant SAMP/MSAA and NCCP/HCP[2] planning issues and to provide comments to the agencies as they prepared agendas and discussion topics for the Public Workshops. The purpose of these meetings was to increase information exchange among the lead agencies, participating landowners, and public by informing the Ad Hoc participants, thereby enabling participants to convey issues and information to their respective organizations/constituents and discuss issues in advance of the public workshops. These meetings also were designed to make the Public Workshops more effective by providing a forum for discussions of significant issues with informed public interests prior to the public workshops.

2.2.3 SCORE MEETINGS

Additionally, Orange County Supervisor Tom Wilson, whose Fifth District includes the RMV Planning Area, initiated another element to support the coordinated participation process by involving interested citizens in planning related to the GPA/ZC for the Rancho Mission Viejo property: the South County Outreach and Review Effort (SCORE) program. The overall goal of the SCORE program was to establish positive and constructive communications among all potentially interested parties including members of the Rancho Mission Viejo staff, Orange

[1] As addressed in subchapter 1.5.1, Scoping Process, of this EIS, the MSAA was originally proposed to be a part of the SAMP document. On May 12, 2005, a second Notice of Intent was published in the Federal Register noting that the SAMP would not be a joint federal and state document and therefore only an EIS was required, and that the MSAA was now a part of the proposed Southern Subregion NCCP/MSAA/HCP document.

[2] Ibid.

County staff and appointed officials, representatives of all the neighboring jurisdictions, representatives of specific community interest groups, and members of the public at large.

Supervisor Wilson convened two task forces to review Rancho Mission Viejo development issues, one to address land use and one to address urban runoff. Each task force was given a scope for review (the charge) and a set of ground rules for operation. The Task Forces produced a joint report (SCORE Phase One Report) containing commentary based on their review of certain preliminary reserve design concepts, and a list of potential solutions to address urban runoff issues. This report was presented to the Orange County Planning Commission on October 23, 2002. Another report (SCORE Phase Two Report) , including a review of draft land use alternatives, was produced in September 2003 and presented to the Orange County Planning Commission.

2.3 SAMP PARTICIPANTS

Participants in the SAMP are identified as either "current" participants or "future" participants. Current participants have identified proposed projects within the SAMP Study Area and have undergone extensive pre-application review by the USACE, CDFG, and USFWS and complied with the Section 404 (b)(1) Guidelines as part of this EIS evaluation. Current participants have also coordinated with EPA and San Diego RWQCB on a more limited basis. Future participants have not identified potential projects, have yet to undergo pre-application review with the aforementioned agencies, and have yet to comply with the Section 404 (b)(1)Guidelines.

2.3.1 CURRENT SAMP PARTICIPANTS

The following private landowner and public agency have identified proposed projects and are current participants in the SAMP:

- Rancho Mission Viejo for permitting of residential, commercial/retail, recreational development, and associated infrastructure (roads, storm drainage, sewer and water systems, and other utilities) as well as preservation, restoration, and management of aquatic resources.

- Santa Margarita Water District (SMWD) for operation and maintenance of existing water and sewer facilities and development of certain future facilities including the Gobernadora Multipurpose Basin and four storage reservoirs on three sites.

Proposed projects are collectively referred to as "Applicants' Proposed Projects" and are briefly described here and discussed in greater detail in Chapter 8.0 of this EIS. These current participants in the SAMP process would be eligible for permitting via an Individual Permit/LOP on the basis of extensive pre-application review by the USACE, CDFG, USFWS, and compliance with the Section 404 (b)(1) Guidelines evaluated as part of this EIS evaluation. The Individual Permit would set forth requirements for avoidance, minimization, and compensatory mitigation for identified impacts to be implemented over the long-term as described in Chapter 8.0 of this EIS. The LOP is intended as a verification process for determining consistency with the Individual Permit that would lead to issuance of LOPs as Section 404 permit approval for activities determined to be consistent with the avoidance, minimization, and compensatory mitigation provisions of the Individual Permit.

2.3.1.1 Description of RMV Planning Area

The RMV Planning Area includes approximately 22,815 acres located in the southern portion of unincorporated Orange County. It constitutes the remaining undeveloped portions of Rancho Mission Viejo within the unincorporated area of the County. The planned community of Ladera Ranch and the cities of Mission Viejo, San Juan Capistrano, and San Clemente bound the RMV Planning Area on the west and south. The City of Rancho Santa Margarita bounds the northern edge of the RMV Planning Area and U.S. Marine Corps Base Camp at Pendleton (MCB Camp Pendleton) in San Diego County bounds the southeastern edge.

Substantial portions of the 22,815-acre RMV Planning Area have been used for ranching and agricultural uses for the past 120 years and these uses continue today. Commercial nursery operations, research and development uses, and natural resources extraction are ongoing activities within the RMV Planning Area through lease agreements. Previous extractions of mineral resources within the RMV Planning Area included rock aggregate, silica sand, clay, and expanded aggregate. Rancho Mission Viejo grows and harvests citrus and avocados on several hundred acres of the ranch.

The RMV Planning Area is comprised of a series of sub-watersheds (or sub-basins) of the San Juan Creek Watershed and western portion of the San Mateo Creek Watershed. The sub-basins of the two watersheds are shown in Figure 2-1. Subchapters 4.1 and 4.2 provide more details on the sub-basins. The sub-basins of the San Juan Creek Watershed that are located within the RMV Planning Area and evaluated as part of this EIS are:

- Verdugo Canyon Sub-basin
- Central San Juan Creek Sub-basin (including Trampas Canyon)
- Cañada Gobernadora Sub-basin (including Wagon Wheel and Sulfur Canyons)
- Cañada Chiquita Sub-basin (including Narrow Canyon)

In the western portion of the San Mateo Creek Watershed, the sub-basins evaluated as a part of this EIS are:

- Gabino Sub-basin (including Blind Canyon)
- La Paz Sub-basin
- Cristianitos Sub-basin
- Talega Sub-basin
- Undesignated area east of Cristianitos Creek (“Other Planning Area”)

San Juan Creek Watershed

The major watercourses located within the RMV Planning Area are: Chiquita Creek, Gobernadora Creek, Verdugo Creek, and Trampas Creek. The headwaters of Chiquita Creek lie outside of the RMV Planning Area boundary in the Upper Chiquita Canyon Conservation Area owned by Rancho Mission Viejo and managed by the Transportation Corridor Agencies

pursuant to a conservation easement granted by Rancho Mission Viejo. Chiquita Creek is a north-south naturally perennial watercourse that confluences with San Juan Creek upstream of the existing Ortega Highway bridge. Chiquita Creek has a sandy substrate and resultant high infiltration rates.

Gobernadora Creek is located in Cañada Gobernadora and is also tributary to San Juan Creek. Gobernadora Creek is also perennial in its upper reaches outside the RMV Planning Area primarily due to urban development. Perennial flow in the lower portion of Gobernadora Creek within the RMV Planning Area is likely a combination of urban runoff (Coto de Caza is a significant contributor), increased recharge from upstream areas, and lateral subsurface inflow to the valley floor. Gobernadora Creek also has a sandy substrate.

Verdugo Creek in Verdugo Canyon is an intermittent watercourse with a predominately coarse substrate. As a tributary to San Juan Creek, Verdugo Creek is an important contributor of coarse sediment to San Juan Creek. Trampas Creek in Trampas Canyon is also tributary to San Juan Creek and is characterized by clayey silts and sands.

San Mateo Creek Watershed

In the western portion of the San Mateo Watershed, Cristianitos Creek is a north-south watercourse that outside the RMV Planning Area confluences with San Mateo Creek. Above the confluence with Gabino Creek, Cristianitos Creek is characterized by a clay substrate that contributes fine sediments downstream. Below the Gabino confluence, the Gabino Creek geomorphology dominates. Tributaries to Cristianitos Creek are Gabino and Blind Creeks. Gabino Creek in Gabino Canyon is an intermittent watercourse characterized by clay substrate in the upper portions of the creek and sands and cobbles in the middle portion of the creek. Substrates in the lower portion are mixed. The coarse sediments are probably important to downstream channel structure and provide geomorphic elements of habitat for sensitive species (i.e., arroyo toad) downstream. Blind Creek in Blind Canyon is characterized by erodible and less erodible clays which also contribute fine sediments downstream. La Paz Creek confluences with Gabino Creek in Gabino Canyon and is characterized by a relatively large proportion of very coarse substrates (i.e., large cobbles and boulders). These coarse substrates are likely mobilized very infrequently during large-scale episodic storm events, at which time they play a significant role in reshaping the geomorphology of the lower portions of the San Mateo Watershed. La Paz Creek is an intermittent watercourse.

Three vernal pools in the RMV Planning Area are located along Radio Tower Road south of San Juan Creek.

Slope wetlands primarily occur in Chiquita Canyon, with five slope wetlands located in the Radio Tower Road area south of San Juan Creek and ten slope wetlands located laterally to Chiquita Creek north of San Juan Creek. One slope wetland is located in a tributary to Gobernadora Creek and one is located on the northern tip of the Donna O'Neill Land Conservancy just west of the RMV Planning Area.

The terrain in the RMV Planning Area and surrounding area has a wide variety of geological characteristics. Two faults–the Mission Viejo fault and the Cristianitos fault–traverse the RMV Planning Area. The Cristianitos fault is classified as inactive; the Mission Viejo fault is classified as potentially active. The nearest known active fault is the Newport-Inglewood fault, located 9.3 miles to the south. Landslides are located throughout the RMV Planning Area with the greatest number located west of the Cristianitos fault.

2.3.1.2 Rancho Mission Viejo Proposed Project

As described in subchapter 2.1.1, the Orange County Board of Supervisors approved a General Plan amendment and zone change for the RMV Planning Area on November 8, 2004 in the form of the B-10 Modified Alternative. Subsequent to this action by the Board of Supervisors, the B-12 Alternative was developed to address the sub-basin-level Southern Planning Guidelines and the Watershed Planning Principles in addition to the overall goals and objectives of the SAMP and NCCP/MSAA/HCP Programs. The following is a description of the B-12 Alternative (RMV Proposed Project). The RMV Proposed Project provides for 5,873 acres of development and 16,942 acres of open space within the RMV Planning Area. Alternative B-12 would include 14,000 dwelling units. The proposed development would also include an urban activity center, business park, neighborhood center, and golf resort uses, as well as supporting circulation system and infrastructure. It is reviewed for consistency for Section 404 (b)(1) Guidelines in Chapter 8.0.

As depicted in Figure 2-2, the RMV Proposed Project provides for development within six planning areas: Planning Areas 1, 2, 3, 4, 5, and 8. Planning Area 9 would be 16,942 acres of open space. In addition to the above development, Rancho Mission Viejo is requesting the approval of the following additional facilities to the extent that these facilities impact aquatic resources under USACE jurisdiction. These additional facilities are:

- relocation of Rancho Mission Viejo headquarters on an approximately 25-acre site
- relocation of CR&R/Solag Disposal Company facility (waste management facility) on an approximately 18.3-acre**Error! Bookmark not defined.** site
- relocation of employee housing on an approximately 14-acre site
- 50 acres of orchards

The RMV Proposed Project is described in further detail in Chapters 5.0 and 8.0.

2.3.1.3 Santa Margarita Water District Proposed Project

Projects identified by SMWD include operation and maintenance of existing facilities and construction and subsequent operation and maintenance of future facilities. The following is an overview of both types of activities. The SWMD projects are collectively referred to in this EIS as "SMWD Proposed Project" and are fully described below and in Chapters 5.0 and 8.0.

Existing Facilities

SMWD provides water and sewer service to approximately 52,000 households through a network of existing facilities of 1,330 miles of water and sewer mains, 15 connections to other water districts, 30 domestic reservoirs (298 million gallons of storage), 4 non-domestic reservoirs (1.5 billion gallons of capacity), 21 water pump stations, 30 pressure reducing stations, 6 non-domestic water pump stations, 2 wells with chlorine injection, 21 sewer lift stations, and 3 sewage treatment plants. These existing facilities are depicted on Figure 2-3. These existing facilities require ongoing operation and maintenance described as follows:

***Access Roads and Right-of-Way*.** Periodic grading and clearing of vegetation, periodic improvements and/or upgrades, patrols, and inspections.

Facilities. Facilities include domestic water, reclaimed/recycled water and sewer lines, valves, vaults, pump stations, and appurtenances. Additionally there are facilities for wastewater treatment, reclamation and recycled water plants, appurtenances and supporting utilities and access roads; maintenance and repair of plant and pipelines, replacement, rehabilitation, retrofitting, and upgrading of plant and pipelines; provision of lay down areas, flushing of blow-off values and pipelines, pumping of storm water from valve vaults, and other activities required by various laws and regulations.

Facilities include open and closed reservoirs and multipurpose basins; and related activities include maintenance and repair of reservoirs, appurtenances and communication facilities, weed and vector abatement, sediment removal, and treatment of open reservoirs.

Future Facilities

In addition to existing facilities, SMWD has identified the need for several future facilities which may impact Waters of the U.S. in their initial construction and that, subsequent to construction, would require ongoing maintenance and operation as described above. The future facilities are the Gobernadora Multipurpose Basin and the storage facilities (Figure 2-3).

Gobernadora Multipurpose Basin

SMWD in partnership with Rancho Mission Viejo is proposing to construct the Gobernadora Multipurpose Basin to respond to erosion and sedimentation along Gobernadora Creek, high storm flows damaging the downstream restoration habitat area, excessive surface and groundwater originating upstream, and high bacteria counts resulting in degraded water quality. The Gobernadora Multipurpose Basin is proposed to include a storm detention basin to be established as a wetland and riparian habitat, a system to capture and divert flows to the wetlands, a pump station, and pipeline. The Gobernadora Multipurpose Basin is proposed to be used to capture and naturally treat urban runoff and storm flows for reuse to (1) reduce downstream erosion and sedimentation, (2) address excessive surface and groundwater, and (3) improve the water quality in the Gobernadora Creek that ultimately flows downstream to the Gobernadora Ecological Restoration Area (GERA).

Cañada Gobernadora is a sub-basin within the San Juan Creek Watershed. The upper portion of the Cañada Gobernadora Sub-basin has been developed over the past two decades primarily as the community of Coto de Caza, a private community in unincorporated Orange County, with over 4,000 dwelling units and two golf courses. Water service is provided to Coto de Caza by SMWD. Coto de Caza was developed prior to the current water quality regulations; therefore, no on-site detention, retention, or water quality treatment facilities are located within the community. All urban runoff and storm flows from the Coto de Caza development are currently directed to Gobernadora Creek, a tributary of San Juan Creek. The urban runoff and storm flows from this development have resulted in high bacteria counts and substantial erosion and degradation along the Gobernadora Creek, which is damaging the existing GERA wetlands. This damage is causing downstream erosion and sedimentation, excessive surface and groundwater, and degraded water quality. This instability is a result of uncontrolled and unretarded flow from upstream development. Additionally, SMWD has experienced damage to existing pipeline right-of-ways within the sub-basin. Rancho Mission Viejo has established a permanent photo monitoring station in Gobernadora Creek to document post-storm event erosion. Historic Rancho Mission Viejo accounts document the excessive surface and groundwater. Ongoing water quality monitoring associated with the SAMP has documented the degraded water quality of both urban runoff and storm flows. Limited positive changes to the

existing conditions have occurred through the education of homeowner associations and golf course managers on proper irrigation management and pesticides use. Therefore, the Gobernadora Multipurpose Basin project is proposed as a management measure to meet the recommendations contained in the Watershed Planning Principles.

To address excessive surface and groundwater, the Gobernadora Multipurpose Basin project is also proposed to include the use of excess water that is not required to support downstream wetland and riparian habitats, and associated wildlife. The amount of excess water budget available would be developed in consideration of the requirements of downstream wetland and riparian habitats. Water not required to support downstream habitats would be pumped to an existing non-potable reservoir owned by the SMWD where the water would be used for irrigation purposes to reduce the demand for imported water.

The Gobernadora Multipurpose Basin is proposed to be constructed off-line from Gobernadora Creek. The drainage area of Gobernadora Creek is 5.88 square miles. It has been estimated, for planning purposes, that the annual water yield for the creek at the Gobernadora Multipurpose Basin site is 1,000 acre-feet.[3] The site is within the boundaries of the RMV Planning Area and its impacts were addressed in the GPA/ZC EIR 589. As such, this EIS addresses the Gobernadora Multipurpose Basin as a part of the RMV Proposed Project rather than the SMWD Proposed Project.

The Gobernadora Multipurpose Basin project is proposed to be a pilot/demonstration project with high-quality precedents and practices that can serve as a prototype for other areas with similar urban runoff and storm flow difficulties within the SMWD region, southern California region, and throughout the state.

Storage Facilities

SMWD's long-term planning for the water district has identified the potential need for three storage facilities, two for domestic water and one for seasonal storage of recycled non-domestic water. The facilities would be built in compliance with the requirements of the California Division of Safety of Dams design standards. The purpose of these facilities is to store domestic water for emergency use and to store recycled water supply during the winter months when more supply is available and demands are low, then use the water during summer months when the demands are in excess of supply. While only three facilities (two domestic and one non-domestic) would be constructed, SMWD has identified multiple potential sites. The report, *Future Seasonal and Emergency Water Storage Needs* (Henry Miedema and Associates, July 2003), recommended further evaluation for four potential sites for each of the domestic storage facilities and the non-domestic seasonal storage facilities.[4] SMWD subsequently refined these four sites to two sites each for the domestic and non-domestic storage: the Upper Chiquita Site and San Juan Creek East 3 Site for domestic water storage and the San Juan Creek East 3 Site and Trampas Canyon Pit Site for non-domestic water storage.

***Upper Chiquita Seasonal Domestic Water Storage Site*.** The Upper Chiquita site is located in a side canyon on the western side of Chiquita Canyon north of Oso Parkway and west of the current terminus of SR-241. The Upper Chiquita site is located east of the community of Las Flores in the City of Rancho Santa Margarita and is outside of the boundaries of the RMV

[3] *Gobernadora Multipurpose Basin Concept Plan and Estimated Yield*, Rivertech, Inc., September 1999.

[4] The *Future Seasonal and Emergency Water Storage Needs* study evaluated 20 different potential sites based on location, hydraulics, capacity potential, geographic dispersion, geotechnical constraints, land uses, and environmental sensitivity.

Planning Area but within the SAMP Study Area. The Upper Chiquita site would include development of an earthfill dam structure and a covered, domestic water reservoir. The reservoir footprint, inclusive of a temporary disturbance area, would be approximately 34.1 acres. It would have a high water level of 820 feet and a storage capacity of 860 acre-feet.

***San Juan Creek East 3 Domestic Seasonal Water Storage Site*.** San Juan Creek East 3 Site is located in a tributary canyon on the south side of Verdugo Canyon east of Ortega Highway. The site is approximately 175 acres and is within the boundaries of the RMV Planning Area (Planning Area 4). The reservoir would be a conventional earthfill dam with a high water level of 600 feet and an estimated storage volume of 1,300 acre-feet. Because this proposed site is within an area that would be disturbed to implement the RMV Proposed Project, this EIS addresses the San Juan Creek East 3 site as part of the RMV Proposed Project rather than the SMWD Proposed Project.

***San Juan Creek East 3 Non-Domestic Seasonal Water Storage Site*.** As noted above, the San Juan Creek East 3 Site is located in a tributary canyon on the south side of Verdugo Canyon east of Ortega Highway. Within the 175 acres, both domestic and non-domestic seasonal water storage facilities would be constructed. The reservoir would be a conventional earthfill dam with a high water level of 600 feet and an estimated storage volume of 4,600 acre-feet. The site is within the boundaries of the RMV Planning Area (Planning Area 4). Because this proposed site is within an area that would be disturbed to implement the RMV Proposed Project, this EIS addresses the San Juan Creek East 3 site as part of the RMV Proposed Project rather than the SMWD Proposed Project.

***Trampas Canyon Pit Non-Domestic Seasonal Water Storage Site*.** Trampas Canyon Pit Site is located in a mined pit on the Oglebay-Norton sand plant within Trampas Canyon. The site is approximately 46 acres and is within the boundaries of the RMV Planning Area (Planning Area 5). The reservoir would have a high water level of 475 feet and an estimated storage volume of 2,020 acre-feet. Because this proposed site is within an area that would be disturbed to implement the RMV Proposed Project, this EIS addresses the Trampas Canyon Pit site as part of the RMV Proposed Project rather than the SMWD Proposed Project.

2.3.2 FUTURE SAMP PARTICIPANTS

Based on a GIS analysis and input from County of Orange staff (T. Neely, pers. com), areas where development may occur in the future are portions of the Foothill/Trabuco Specific Plan area (encompasses approximately 3,666 acres) and approximately 494 additional acres of land scattered throughout both unincorporated County jurisdiction and incorporated cities. These development areas are depicted on Figure 2-4. Landowners within these areas may identify potential projects in the future. It should be noted that these 494 acres do not represent all potentially available land within the SAMP Study Area, only those areas where development may affect natural resources. Vacant parcels within urban areas or redevelopment of existing uses are not considered as part of this analysis. These potential projects may be eligible for either Letter of Permission (LOP) Procedures or an Individual Permit, with the SAMP providing context for permit review for both types of permitting. A LOP authorization is an abbreviated process for an Individual Permit, whereby a decision to issue permit authorization is made after coordination with federal and state fish and wildlife agencies, a public interest evaluation throughout the EIS, and completion of an abbreviated environmental assessment.

In addition to the LOP Procedures/Individual Permit, future participants in the SAMP may be eligible for Section 404 permits through a Regional General Permit (RGP) for certain limited

activities and ongoing maintenance activities within the SAMP Study Area. The USACE proposes to establish the RGP program to authorize temporary impacts up to 0.5 acre in lower quality resource areas.

In conjunction with establishing the proposed permitting procedures, the USACE would revoke the use of selected NWPs within the San Juan and Western San Mateo Watersheds.

The proposed permitting procedures are more fully described in Chapters 3.0 and 8.0 of this EIS.

2.3.3 PROJECTS AND STUDIES IN AND ADJACENT TO THE RMV PLANNING AREA NOT SUBJECT TO THIS PERMITTING ACTION

2.3.3.1 Southern Orange County Transportation Infrastructure Improvement Project (SOCTIIP)

The Southern Orange County Transportation Infrastructure Improvement Project (SOCTIIP) (previously referred to as the Foothill Transportation Corridor South project) is the proposed extension of State Route 241 (SR-241) toll road south to Interstate 5 (I-5) near the City of San Clemente. This extension would traverse the RMV Planning Area. SR-241 extension is the final segment of the Transportation Corridor Agencies' 67-mile public toll road network. The proposed southerly extension is intended to relieve present and future traffic congestion along I-5 and local arterials in south Orange County. The SOCTIIP EIS/Supplemental EIR, distributed for public comment in May 2004, analyzes ten alternatives. The Foothill/Eastern Transportation Corridor Agency Board of Directors and the Federal Highway Administration are responsible for choosing a final alternative. The SOCTIIP Alternatives, in relationship to the SAMP Study Area and RMV Planning Area, are depicted on Figure 2-5. The Transportation Corridor Agencies, in conjunction with the FHWA, is pursuing separate Section 404 authorization for the SOCTIIP. The following are general descriptions of the ten alternatives.[5]

- ***Far East Corridor-West Alternative.*** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to connect with I-5 south near the Orange/San Diego County line in MCB Camp Pendleton. This alternative alignment would cross Ortega Highway approximately 5.2 miles inland of I-5 and would pass through the west side of the Donna O'Neill Land Conservancy. This is the alignment reflected on the County of Orange General Plan and Master Plan of Arterial Highways. At full buildout, this alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Far East Corridor-Modified Alternative*.** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to connect with I-5 at the Orange/San Diego County line in MCB Camp Pendleton. This alternative alignment would cross Ortega Highway approximately 6.1 miles inland of I-5 and would pass through a portion of the east side of the Donna O'Neill Land Conservancy and the inland portion of the San Onofre State Beach Park. At full buildout, this alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Central Corridor Alignment.*** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to connect to I-5 at Avenida Pico in the City of San Clemente. This alternative alignment would cross Ortega Highway approximately

[5] Source: www.thetollroads.com, accessed August 3, 2005.

2.8 miles inland of I-5 and 0.25 miles east of Antonio Parkway. This alignment would run east of San Juan Capistrano city limits, and then enters the City of San Clemente to parallel Avenida Pico before connecting to I-5. Implementation of this alternative would displace existing residences and pass through the Prima Deshecha Landfill. At full buildout, the Central Corridor Alignment Alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Central Corridor-Avenida La Pata Variation Alternative*.** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to Avenida La Pata in the City of San Clemente; it would not connect to I-5. Vehicles would use Avenida La Pata to reach I-5. This alternative alignment would cross Ortega Highway approximately 2.8 miles inland of I-5. This alternative would pass through the Prima Deshecha Landfill. At buildout, this toll road alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Alignment 7 Corridor-Far East Crossover-Modified Alternative*.** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to connect with I-5 at the Orange/San Diego County line. This alternative alignment would cross Ortega Highway approximately four miles inland of I-5 and one mile east of Antonio Parkway. It would pass through the west side of the Donna O'Neill Land Conservancy and the inland portion of the San Onofre State Beach Park. At buildout, this alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Alignment 7 Corridor-Avenida La Pata Variation Alternative.*** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to Avenida La Pata in the City of San Clemente; it would not connect to I-5. Vehicles would use Avenida Pico to reach I-5. This alternative alignment would cross Ortega Highway approximately 3.7 miles inland of I-5. It would displace residences and would pass through the east side of the Prima Deshecha Landfill. At buildout, this toll road alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Arterial Improvements Only Alternative.*** This alternative would involve the widening of Antonio Parkway/Avenida La Pata between Oso Parkway and just south of Camino Las Ramblas to beyond its County Master Plan of Arterial Highways designation. One additional lane would be provided in each direction. Between San Juan Creek and Avenida Pico, six travel lanes would be provided. Between Oso Parkway and San Juan Creek Road, eight travel lanes would be provided. Smart Street/Transportation Systems Management improvements would be constructed in existing rights-of-way (to improve traffic flow) on Avenida Pico, Camino Las Ramblas, Ortega Highway between Antonio Parkway/Avenida La Pata and I-5, and Avenida la Pata between Avenida Pico and south of Camino Las Ramblas.

- ***HOV and Mixed Flow Lanes on I-5 Alternative.*** This alternative would widen I-5 from the I-405/I-5 confluence (El Toro "Y") to the Orange/San Diego County line. This alternative would add one additional high occupancy vehicle lane and one mixed flow lane in each direction between Cristianitos Road and Lake Forest Drive. Auxiliary lanes would be provided in some locations along this segment of I-5. The addition of lanes would require major reconstruction of bridges, interchanges, and other structures and the acquisition of property along I-5.

- ***No Action Alternative−OCP-2000.*** This No Action Alternative assumes the buildout of unincorporated Orange County and cities within the County consistent with their respective General Plans. It uses the demographic forecasts set forth in Orange County Projections-2000 (OCP-2000) which assumes 21,000 dwelling units on the RMV Planning Area. All components of the County Master Plan of Arterial Highways would be implemented with the exception of the southerly extension of the SR-241 Toll Road from its existing terminus at Oso Parkway. The No Action Alternative also assumes the implementation of 2001 Regional Transportation Plan improvements for south Orange County.

- ***No Action Alternative− RMV Development Plan.*** This No Action Alternative is a variation of the No Action Alternative−OCP-2000. This alternative assumes the same background land use and circulation system conditions. The following differences are applicable to this alternative. This alternative uses OCP-2000 projections for the County except for the RMV Planning Area. For the RMV Planning Area, 14,000 dwelling units (instead of 21,000 dwelling units) are assumed, consistent with Rancho Mission Viejo's request to the County and subsequent approval by the County in GPA/ZC EIR 589. Circulation improvements associated with the RMV Planning Area project are also assumed.

Construction of the SOCTIIP is estimated to begin in 2006/2007 with completion expected in 2008/2009 (www.thetollroads.com, accessed August 3, 2005).

2.3.3.2 Prima Deshecha Landfill Expansion

As depicted on Figure 2-6, the 1,530-acre Prima Deshecha Landfill site is located in south Orange County. The Orange County-owned landfill site includes land within the jurisdictions of the cities of San Juan Capistrano (570 acres) and San Clemente (133 acres). The remaining 827 acres are located within unincorporated Orange County. The landfill site is located outside of the SAMP Study Area. The County of Orange is processing a separate Section 404 permit for activities associated with expansion of the landfill. Mitigation for this expansion is anticipated to occur both on the landfill site (i.e., outside the SAMP Study Area) and off-site within Ronald W. Caspers Wilderness Park (within the SAMP Study Area). The Prima Deshecha 2001 General Development Plan and its 2002 Amendment (referred to collectively herein as the Prima Deshecha 2001 GDP) is the planning document that provides guidance for the coordinated long-term implementation of both interim and ultimate landfill site development uses. The Prima Deshecha 2001 GDP provides for the management of multiple uses on the site, including solid waste disposal, various regional park and recreational uses, and implementation of an arterial highway and road extension (Avenida La Pata) included in the County Master Plan of Arterial Highways (MPAH), Orange County Circulation Plan (OCCP), and the cities of San Juan Capistrano and San Clemente General Plan Circulation Elements. The Prima Deshecha 2001 GDP divides the 1,530-acre site into five zones for planning purposes.

- ***Zone 1.*** Zone 1 includes the current active landfill refuse disposal area. By approximately year 2019, Zone 1 is projected to be completely filled based on current assumptions. After closure activities have been completed, satisfactory access established, and sufficient settlement has occurred, the ultimate recreational uses will be identified in a needs analysis. A potential future stockpile area has been identified to the west of the Zone 1 refuse disposal area. The Phase B Landslide Remediation biological mitigation and Pre-mitigation Program areas are located east and south of Zone 1.

- ***Zone 2.*** Zone 2 includes the multiple use recreational trails that traverse the property. On-site city trails around Zone 1 can be used throughout the development of Zones 1 and 4 under the provision that the protection of public health and safety can be provided.

- ***Zone 3.*** Zone 3, Segunda Deshecha, contains native vegetation, including coastal sage scrub habitat−used by the California gnatcatcher−and mixed chaparral. The intent of the Prima Deshecha 2001 GDP is to retain the majority of Zone 3 in a native state. Some habitat restoration or enhancement can be implemented in Zone 3 as part of the Pre-Mitigation Programs. This can occur where portions of these areas have been disturbed or to compensate for a loss of habitat associated with the implementation of the Prima Deshecha 2001 GDP in other areas on-site or with other development areas in Orange County. Portions of Zone 3 are also proposed as supplemental open space for the NCCP Program.

- ***Zone 4.*** Zone 4 is planned for future refuse disposal following the completion of landfill activities in Zone 1 in 2019. The planned post-closure use for Zone 4 is a regional park. However, the actual use will be identified by a needs analysis. It should be noted that recreational uses may be limited over portions of Zone 4 that are designated as supplemental open space by the NCCP Program.

- ***Zone 5.*** Zone 5 encompasses the area of disturbance for construction of La Pata Avenue. The assumption in this EIS is that La Pata Avenue would be constructed prior to implementation to Zone 4.

The Prima Deshecha 2001 GDP does not specify a defined set of uses for the remaining property outside the boundaries of the five zones. This remaining property is currently used for ancillary landfill operations: landfill gas flare facility, Energy Recovery Facility, landfill infrastructure (i.e., scale house, field offices), and viewshed protection. In the future, this property may also be used for biological mitigation, flood control facilities, recreational trail staging area(s) and open space buffer.

2.3.3.3 San Juan Creek Watershed Feasibility Study

The Planning Branch of the USACE, Los Angeles District, began a watershed planning process for the San Juan Creek Watershed with publication of the 1997 Reconnaissance Study for the San Juan and Aliso Creek Watersheds. The Reconnaissance Study examined existing environmental, hydrologic/hydraulic, groundwater, water quality, floodplain, geomorphologic, and economic conditions in the watersheds and identified water resources-related problems. The Reconnaissance Study provided the framework for more detailed studies to be conducted during the feasibility phase. In 1998, the USACE initiated the San Juan Creek Watershed Management Feasibility Study. The Feasibility Study was a team effort sponsored by the USACE and the County to identify solutions to water and related land resource problems in the San Juan Creek Watershed that were identified in the Reconnaissance Study, including existing flooding, environmental degradation, water quality, water supply, and recreation issues. While the study recommended a variety of watershed improvement measures, the Feasibility Study has not been finalized. As a consequence, a subsequent phase to fund and implement recommended measures of the Feasibility Study has not been initiated.

CHAPTER 3.0
PURPOSE AND NEED FOR PROPOSED FEDERAL ACTIONS

3.1 PURPOSE AND NEED

The SAMP involves an evaluation of the extent and condition of existing aquatic resources and provides for an analysis of the direct, indirect, and cumulative impacts to aquatic resources from a reasonable range of development and management alternatives within the SAMP Study Area. At the end of the SAMP process, aquatic resources will be identified for preservation, enhancement, and restoration, while allowing economic activities and development within the SAMP Study Area through advanced planning. The permitting of economic activities and development would occur through comprehensive permitting procedures based on the analysis of opportunities for avoidance, minimization, and compensation for impacts to aquatic resources at both the watershed scale and project level. Through the avoidance of priority aquatic resources using local restrictions on undesirable activities and the requirements for compensatory mitigation, the objective of the SAMP is to accommodate conservation efforts within the watershed in a coordinated, comprehensive fashion. A goal of this process is to facilitate the establishment of a comprehensive reserve and adaptive management program in coordination with the Southern Subregion Natural Communities Conservation Plan/Master Streamed Alteration Agreement/Habitat Conservation Plan (NCCP/MSAA/HCP) that would provide for the protection of aquatic resources and upland natural resources. Finally, approval of the SAMP EIS would allow for specific actions within the SAMP Study Area requiring NEPA compliance to tier off the SAMP EIS.

3.1.1 PROJECT NEED AS PRESENTED BY SAMP PARTICIPANTS

3.1.1.1 SAMP Program Needs and Goals

The San Juan Creek and Western San Mateo Creek Watersheds in Orange County, California, are experiencing disparate needs for aquatic resource protection and for reasonable economic development. The San Juan Creek and Western San Mateo Creek Watersheds have over 9,000 acres of aquatic resources, including wetlands, open water areas, and riparian systems, all of which provide ecosystem functions related to hydrology, water quality, and habitat. These watersheds are also among the fastest growing areas in the nation with numerous proposed commercial and residential development projects and many supporting infrastructure projects. Oftentimes, the need for aquatic resource protection and the need for economic development have been opposing forces. This conflict has presented difficulties for the local stakeholders in both the environmental and the development communities as well as for the USACE, the principal federal regulatory agency addressing impacts to aquatic resources through Section 404 of the Clean Water Act.

Recognizing the need for a more comprehensive planning approach in 1998, a resolution by the United States House of Representative's Committee on Public Works authorized the USACE to initiate a SAMP within the San Juan Creek/Western San Mateo Creek Watersheds. A SAMP is an evaluation and management tool to achieve a balance between aquatic resource protection and economic development. The broad goals of the SAMP are to allow for comprehensive management and protection of aquatic resources and to increase regulatory predictability for development and infrastructure projects that would impact aquatic resources. Advanced planning would allow for more effective consideration of aquatic resource conservation and those development and infrastructure projects affecting aquatic resources. The development

and infrastructure projects include those addressing the needs of the Rancho Mission Viejo, County of Orange, and the SMWD.

3.1.1.2 Rancho Mission Viejo/County of Orange Needs and Goals

Rancho Mission Viejo's primary need is to provide an economically viable mix of residential, commercial, and other urban and natural open space lands capable of addressing the growth projections of an ever-expanding population of southern Orange County. In doing so, Rancho Mission Viejo has stated their purpose is to provide an economically viable mix of residential, commercial, and other urban and natural open space lands capable of addressing the societal needs and goals of southern Orange County as reflected in the plans and policies of the Orange County General Plan and the Orange County Projections (OCP).

Rancho Mission Viejo's primary SAMP goal is to participate in and help implement a coordinated, comprehensive land use, conservation planning, and state/federal/local regulatory and entitlement process, instead of an incremental project-by-project review and approval process, in order to provide land areas compatible with SAMP goals within the Rancho Mission Viejo portions of the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed. Given the scale of planning and economic commitments required to provide for comprehensive resource protection and management within the 22,815-acre RMV Planning Area, Rancho Mission Viejo has stated that its central economic goal is to have a development/open space plan approved that has the capability of providing the financial return necessary for the landowner to offset the level of risk inherent in long-term master plan development, the loss of investment opportunities, and the commitment of land and financial resources necessary to provide for the large-scale protection of many valuable resources, including required dedications for the SAMP.

As noted, growth projections are made in consideration of the Orange County General Plan and the OCP. In fulfilling this need, Rancho Mission Viejo must address a broad range of different environmental, economic, and technological goals that include, but are not limited to, aquatic resource and watershed protection goals of the San Juan Creek and Western San Mateo Creek Watersheds SAMP; habitat protection considerations of sensitive upland and aquatic species, including species listed as threatened and/or endangered under the federal Endangered Species Act in the context of the pending NCCP/MSAA/HCP for the Southern Subregion; and the air quality objectives of the South Coast Air Quality Management Plan.

In managing the ever-expanding population of southern Orange County, the County of Orange approved the Rancho Mission Viejo General Plan Amendment/Zone Change (GPA/ZC), which was done within the environmental planning framework established by County/SCAG planning programs to address a combination of environmental and other societal goals regarding housing and economic development. With regard to housing, transportation, and air quality goals, growth projections were adopted by Orange County (Orange County Projections−2004, "OCP−2004") for incorporation into SCAG's five-county growth forecast for the 2004 Regional Transportation Improvement Plan (RTIP) and the South Coast Air Quality Management District's Air Quality Management Plan (AQMP). OCP-2004 identifies approximately 20,000 housing units on the RMV Planning Area by 2025.

The GPA/ZC originally proposed by Rancho Mission Viejo (the B-4 Alternative) would have provided for 14,000 dwelling units, substantially more housing than allowed under the prior zoning but 6,000 fewer units than the OCP-2000M assumptions. In the course of formulating alternatives for review in the GPA/ZC EIR 589, the County of Orange developed two alternatives, one of which (the B-10 Alternative) provided for housing units comparable to the

B-4 Alternative but with different assumptions for housing and open space and a second alternative (the B-11 Alternative) which included housing units approximating the OCP-2000 projection. In adopting a County Preferred Alternative for the GPA/ZC Final EIR, the County of Orange summarized the elements of its balancing process as follows:

> *"The General Plan provides the goals, objectives, and policies for new developments including goals for affordable housing, habitat preservation, highway and infrastructure construction, recreation, and other general plan topics. Each of these goals is given equal weight in the General Plan; however, to fully attain one goal may preclude attainment of another, competing goal. For example, preserving habitat competes with providing land for housing and jobs, or meeting regional housing projections competes with meeting highway level of service standards.*
>
> *In analyzing which alternative is preferred, the County staff considered the need to balance the competing goals of the General Plan so the preferred plan attains important objectives of each goal without precluding attainment of competing goals. In particular, the County staff sought to balance project objectives relating to the protection of habitats, aquatic resources, and watersheds with the needs and goals of southern Orange County as reflected in the plans and policies of the Orange County General Plan, particularly those related to housing, land use, and transportation."*

The County's preferred alternative, Alternative B-10 Modified, was approved by the County on November 8, 2004. Subsequently, based on further input from the USACE, CDFG, USFWS, environmental community, and the general public, yet another alternative (referred to as Alternative B-12) was formulated. Alternative B-12 (RMV Proposed Project) focuses on further protection of resources by concentrating development in the areas with lower resource values while continuing to protect high resource values, including the vast majority of the western portion of the San Mateo Creek Watershed within the RMV Planning Area. At the same time, Alternative B-12 would provide the same level of housing as the originally proposed B-4 Alternative and the B-10 Modified Alternative.

Rancho Mission Viejo's goals and objectives therefore reflect a balancing of the County goals and objectives in relation to the goals and objectives set forth under the SAMP and the NCCP/MSAA/HCP components of the "coordinated planning process." This balance also considers the County's review of development to dedication ratios in other comparable large-area planning programs (source: GPA/ZC EIR 589; see the analysis of the B-8 Alternative in Chapter 6.0). As such, Rancho Mission Viejo's statement of purpose and need are substantial considerations under the NEPA and Section 404(b)(1) analyses for the proposed permitting procedures and the other SAMP elements set forth in this EIS.

3.1.1.3 Santa Margarita Water District (SMWD) Needs and Goals

SMWD is responsible for providing water and wastewater service for a portion of the San Juan Creek and San Mateo Creek Watersheds. SMWD periodically adopts plans of works and capital improvement programs identifying facilities to be constructed and operated in response to the existing and proposed land uses. SMWD's goal is to plan, design, construct, operate, and maintain those facilities in conjunction with the applicable goals of the SAMP for the watersheds.

3.1.2 PURPOSE

This proposed SAMP is being coordinated with the NCCP/MSAA/HCP environmental review program for the Southern Subregion NCCP.

The broad objectives of the SAMP are to allow for comprehensive management of aquatic resources and to increase regulatory predictability for development and infrastructure projects that would impact aquatic resources. The more specific SAMP Tenets, as set forth in Chapter 6.0, provide a framework for aquatic resource conservation planning and the assessment of avoidance and minimization of impacts to aquatic resources.

The USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters. The Section 404 (b)(1) Guidelines (40 CFR 230) stipulate that the USACE only authorize the least environmentally damaging practicable alternative. According to 40 CFR Part 230.10 Subpart B, an alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose. The Section 404(b)(1) Guidelines make a specific distinction between the basic and overall project purpose (40 CFR Part 230.10[a]).

3.1.2.1 Basic Project Purpose and Water Dependency: Proposed Permitting Procedures

The basic project purpose is used to determine whether a proposed project is water dependent (i.e., whether it requires being located in or in close proximity to a special aquatic site). "Basic project purpose" is a term used in the USACE's regulatory program. As reviewed above, the basic project purpose is to develop a SAMP. The SAMP includes comprehensive permitting procedures for specific economic and development activities. As addressed in Chapter 1.0, three proposed permitting procedures for development within areas containing aquatic resources are proposed for the SAMP.

Proposed development projects to be evaluated under the proposed SAMP permitting procedures would not be water dependent activities. Therefore, it is presumed that practicable alternatives are available that would result in less adverse impacts to special aquatic sites, including wetlands (40 CFR 230.10[a]). Specifically, because under the proposed permitting procedures for a long-term Individual Permit, the placement of fill materials is proposed in wetlands and the activity or action is not water dependent, the Section 404(b)(1) Guidelines require that practicable alternatives are presumed to exist that have less adverse impacts on the special aquatic site, unless demonstrated otherwise (a rebuttable presumption test), provided that the alternative does not have other adverse environmental impacts. Therefore, no discharge of dredged or fill material would be permitted within a special aquatic site if there is a practicable alternative to the proposed discharge, which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.

3.1.2.2 Overall SAMP Study Area Project Purpose for 404(b)(1) Analysis: Proposed Permitting Procedures and Identification of a Comprehensive Aquatic Resources Conservation Program

The overall project purpose is the basic project purpose in consideration of general objectives of the applicant, cost, logistics, and existing technology. An alternative is practicable if it is capable of being accomplished in consideration of cost, existing technology, and logistics in light of the

overall project purpose. The Section 404 (b)(1) Guidelines require that if the overall purpose of a project is practicably met through several alternatives, the USACE can only authorize the Least Environmentally Damaging Practicable Alternative (LEDPA).

The overall project purpose involves two products. First, the SAMP involves allowing reasonable economic activities and development by identifying areas and/or activities suitable for coverage under a comprehensive, abbreviated permitting process for residential, commercial, industrial, recreational, infrastructure, and maintenance needs within the SAMP Study Area. The term "reasonable" is evaluated in consideration of the no federal action alternative, project needs of SAMP participants, and the SAMP tenets. Second, the SAMP involves establishment of an Aquatic Resources Conservation Program (ARCP) consisting of preservation, restoration, and management as mitigation for impacts authorized by the proposed permitting procedures. The Aquatic Resources Conservation Program involves coordination of components of mitigation including avoidance, minimization, and restoration. The Aquatic Resources Conservation Program would be developed in coordination with the Southern Subregion NCCP/MSAA/HCP habitat reserve.

3.2 PROPOSED FEDERAL ACTIONS AND ALTERNATIVES

3.2.1 MAJOR FEDERAL ACTION

As reviewed in Chapter 1.0, the following is the major federal action that is the subject of this SAMP EIS:

> Adoption of three permitting procedures for residential, commercial, industrial, recreational, infrastructure, and maintenance needs within the SAMP Study Area. The Aquatic Resources Conservation Program is an outcome of the mitigation associated with the proposed permitting procedures.

3.2.2 FORMULATION AND REVIEW OF PROPOSED PERMITTING PROCEDURES

As a result of comprehensive studies on the location and quality of aquatic resources within the San Juan Creek and Western San Mateo Creek Watersheds, this SAMP would provide a contextual framework to implement a more effective permitting system that provides additional protections to higher value resources while minimizing delays for projects impacting lower value resources. Through the comprehensive studies, the USACE has identified geographic areas with higher quality aquatic resources.

Several criteria were used to identify these areas with higher quality aquatic resources. First, the USACE used the USACE Engineer Research and Development Center landscape-level functional assessment to identify those aquatic areas with medium to high integrity with respect to hydrology, water quality, and habitat. The USACE Engineer Research and Development Center landscape-level functional assessment evaluates each riparian reach in the watershed using a suite of indicators to assess the hydrologic, water quality, and habitat integrity in relationship to historical baselines. Second, the USACE considered critical habitat designations for federally listed threatened and/or endangered species. For the SAMP Study Area, officially designated critical habitat exists for the California gnatcatcher, Riverside fairy shrimp, and southern steelhead. These critical habitats were added to the map of the higher quality aquatic resources and their contributing uplands. Third, the USACE removed areas that have already been impacted by residential, commercial, and industrial development. Many of these areas do not provide important aquatic resource ecosystem functions and were excluded from the mapping effort.

In addition to these initial steps, areas within the RMV Planning Area were given additional review and consideration. Through the course of the SAMP process, various development alternatives within RMV Planning Area were prepared in consideration of riparian corridors, adequate buffers of protected riparian corridors, threatened and/or endangered species habitat, and equilibrium sediment processes. The ultimate configuration of open space and development within the RMV Planning Area recognizes important areas that contribute to long-term overall riparian integrity for hydrology, water quality, and habitat.

Based on the findings of the resource assessments and mapping, the USACE identified different geographic areas that warrant different permitting considerations that reflect the quality of the aquatic resources in question. For higher quality resources, these areas warrant either complete protection of the aquatic resource through upfront preservation in accordance with the local land use authorities, or full review of projects proposing to impact these aquatic resources by the USACE to ensure all impacts have been avoided, minimized, and compensated through full engagement with the applicant and other regulatory resource agencies. Conversely, for lower quality aquatic resources, projects in these areas warrant a more abbreviated review to provide the regulatory public with certainty in permitting outcomes to allow for better long-term planning, while freeing the regulatory agencies to devote more time towards evaluating potential projects that may have more considerable impacts to the aquatic ecosystem. This new permitting process that explicitly considers the quality of the aquatic resources on an aggregate level which is an improvement compared to the existing permitting process, which cannot make strategic considerations in the context of the watershed landscape.

In order to implement the alternate permitting process that considers the condition of the aquatic resources being affected, the USACE proposes to revoke several Nationwide Permit (NWP) authorizations within the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed consistent with 33 CFR 330.5(c). The revoked Nationwide Permits are listed in Table 3-1, including NWP 03, NWP 07, NWP 12, NWP 13, NWP 14, NWP 16, NWP 17, NWP 18, NWP 19, NWP 25, NWP 27, NWP 31, NWP 33, NWP 39, NWP 40, NWP 41, NWP 42, NWP 43, and NWP 44.

In consideration of the SAMP watershed-wide assessment, these Nationwide Permits may provide an inappropriate level of protection to aquatic resources. For instance, in some situations, the Nationwide Permits may be insufficiently protective of the higher aquatic resource value areas in the context of watershed-level protection. In other situations, some of the Nationwide Permits may be overly restrictive for projects with minor impacts to the aquatic environment. In place of the revoked Nationwide Permits, the alternative permitting process would minimize delays for projects with minimal impacts on the aquatic environment and provide greater efficacy in protecting the aquatic environment by strengthening the review process through increased inter-agency review. The USACE believes these steps would strengthen aquatic resource protections in the watershed's higher value areas and provide regulatory flexibility for activities in lower value resource areas in situations where the impacts are not substantial. A summary of the differences between existing and proposed alternate permitting processes within the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed is provided in Table 3-1. The permitting process applies to only the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed.

TABLE 3-1
COMPARISONS BETWEEN CURRENT AND PROPOSED ALTERNATIVE PERMITTING SYSTEM FOR THE SAN JUAN CREEK AND WESTERN SAN MATEO CREEK WATERSHEDS

	Current System	Proposed System		
		NWPs	LOPs	LOPs
Use Areas	All areas	All areas	Inside areas eligible for abbreviated permitting	Outside those areas eligible for abbreviated permitting
NWPs Revoked in the San Juan Creek and Western San Mateo Creek Watersheds	None	NWP 03, NWP 07, NWP 12, NWP 13, NWP 14, NWP 16, NWP 17, NWP 18, NWP 19, NWP 25, NWP 27, NWP 31, NWP 33, NWP 39, NWP 40, NWP 41, NWP 42, NWP 43, NWP 44	Not applicable	Not applicable
NWPs Retained in the San Juan Creek and Western San Mateo Creek Watersheds	All NWPs	NWP 01, NWP 02, NWP 04, NWP 05, NWP 06, NWP 08, NWP 09, NWP 10, NWP 11, NWP 15, NWP 20, NWP 21, NWP 22, NWP 23, NWP 24, NWP 28, NWP 29, NWP 30, NWP 32, NWP 34, NWP 35, NWP 36, NWP 37, NWP 38	Not applicable	Not applicable
Permanent Impacts to Waters of the U.S. Authorized	Generally $\leq$ 0.5 acre	Generally $\leq$ 0.5 acre	No limit[a.]	$\leq$ 0.1 acre
Temporary Impacts to Waters of the U.S. Authorized	No limit	No limit	No limit[a.]	No limit[a.]
Review Time	$\leq$ 45 days	$\leq$ 45 days	$\leq$ 45 days	$\leq$ 45 days
Pre-application Coordination	Encouraged	Encouraged	Required[b.]	Required[b.]
Inter-agency Review	Generally > 0.5 acre	None	All actions	All actions

NWP: Nationwide Permit
LOP: Letters of Permission

a. Provided full compliance with all LOP procedures
b. For > 0.1 acre of permanent impacts to Waters of the U.S. or >0.25 acre of temporary impacts to Waters of the U.S. with native riparian and/or wetland vegetation

In the place of some of the revoked Nationwide Permits, the USACE proposes a Regional General Permit for maintenance activities and Letters of Permission for all other activities. The applicability of a permit system depends on the location of the proposed activity with respect to the RMV Planning Area and with respect to the areas identified as ineligible for abbreviated permitting (see Figure 1-3, Letter of Permission and Regional General Permit Map).

Comparisons between the existing permitting system and the proposed system in terms of response times by the USACE are summarized in Table 3-2. Determining factors are whether a proposed project is located within the RMV Planning Area, whether a proposed project is located in areas eligible for abbreviated permitting pursuant to the analysis in Chapter 8.0, whether there are temporary or permanent impacts, and the size of the impact to USACE; jurisdictional areas. For most projects, there will be savings in time, allowing for better predictability by the regulated community.

TABLE 3-2
COMPARISONS BETWEEN CURRENT AND PROPOSED ALTERNATIVE PERMITTING SYSTEM IN TERMS OF PROCESSING TIMES FOR THE SAN JUAN CREEK AND WESTERN SAN MATEO CREEK WATERSHEDS

Location	Area Eligible for Abbreviated Permitting?	Situation	Current permitting system	Proposed permitting system
Outside RMV Planning Area	Yes	≤ 0.5 acre temp impact	NWP Response in ≤ 45 days	RGP Response in ≤ 15 days
	Yes	> 0.5 acre temp impact	NWP Response in ≤ 45 days	LOP Response in ≤ 45 days
	Yes	≤ 0.5 acre perm impact	NWP Response in ≤ 45 days	LOP Response in ≤ 45 days
	Yes	> 0.5 acre perm impact	IP Response in ≤ 120 days	LOP Response in ≤ 45 days
	No	All temp impact	NWP or IP Response in 45-120 days	LOP Response in ≤ 45 days
	No	≤ 0.1 acre perm impact	NWP Response in ≤ 45 days	LOP Response in ≤ 45 days
	No	≤ 0.5 acre perm impact	NWP Response in ≤ 45 days	IP Response in ≤ 120 days
	No	> 0.5 acre perm impact	IP Response in ≤ 120 days	IP Response in ≤ 120 days
Inside RMV Planning Area	Yes	Pre-approved development and infrastructure	NWP or IP Response in ≤ 120 days	LOP Response in ≤ 45 days
	No	Pre-approved facility	NWP or IP Response in ≤ 120 days	LOP Response in ≤ 45 days
	No	Other facility	NWP or IP Response in ≤ 120 days	Not allowed

NWP: Nationwide Permit
IP: Individual Permit
RGP: Regional General Permit
LOP: Letters of Permission

3.2.2.1 Regional General Permit Procedures for Maintenance Activities Outside of the RMV Planning Area

In consideration of the comprehensive studies that characterized the functional integrity of riparian resources within the San Juan Creek Watershed and western portion of the San Mateo Creek Watershed and in accordance with USACE's regulations in 33 CFR §325.2(e)(2), the USACE proposes to establish a Regional General Permit to authorize temporary impacts up to 0.5 acre in lower quality aquatic resource areas outside of RMV Planning Area within the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed of which only 0.1 acre may be vegetated with native riparian and/or wetland vegetation. The Regional General Permit would allow for such discharges to be authorized in an abbreviated timeframe (within 15 days of notification) and with no compensatory mitigation requirements because of the lower quality of the aquatic resources, the temporary nature of the impacts, and the limited extent of disturbance. Regional General Permits are issued for activities substantially similar in nature and with minimal impacts to the environment on a regional basis. Areas eligible for the use of this Regional General Permit (Figure 1-3) are limited to aquatic resources within areas

designated as having lower riparian integrity. Details of the Regional General Permit are provided with the Special Public Notice in Appendix A of this EIS.

This proposed Regional General Permit would only cover temporary impacts from the discharge of dredged and/or fill materials. Permanent losses of Waters of the U.S., including impacts from fills, flooding, excavation (beyond a maintenance baseline), or drainage are not permitted under this Regional General Permit. Eligible activities include:

1. Repair, rehabilitation, and replacement of currently serviceable outfall structures, utility lines, pump stations, bank stabilization structures, concrete flood control structures, weirs, drop structures, grade stabilizers, at-grade road crossings, culverts, bridges, pilings, and piers;

2. Temporary construction activities and installation of temporary cofferdams, water diversion structures, and access roads; and

3. Removal of accumulated sediment in flood control channels and basins (debris, retention, and detention) to restore the facility to maintenance baselines and within its design capacity.

As mentioned previously, this Regional General Permit would allow a permittee to commence work in eligible areas 15 days after the USACE receives complete written notification. Upon receipt of a complete notification and within the 15-day notification period, the USACE may verify the activity with a letter. If a notification is not complete, the USACE would, within seven days, notify the applicant of the needed information items and the applicant would be required to resubmit. If the USACE provides no response within 15 days after complete notification, the project proponent may assume USACE approval of the work.

The USACE is seeking a Section 401 certification from the San Diego RWQCB. Section 401 requires that any applicant for an individual Section 404 authorization provide proof of water quality certification to the USACE prior to permit issuance. For the Regional General Permit, the USACE is applying directly to the San Diego RWQCB for Section 401 certification of the Regional General Permit. If the San Diego RWQCB provides a water quality certification for the Regional General Permit, individual water quality certifications would not be required for individual projects. The USACE is submitting all relevant documents to the San Diego RWQCB with respect to the development of the SAMP. In the event the San Diego RWQCB does not provide water quality certification for the Regional General Permit, the USACE would require that an applicant provide proof of water quality certification for each activity.

The USACE also proposes a set of general conditions that would be added to the permit authorization to help ensure that any direct and indirect impacts are minimized. These conditions relate to issues such as implementation of best management practices to control erosion, management of flow conditions, and avoidance of bird breeding season. A complete list of the general conditions is provided in the Special Public Notice (Appendix A). In addition to the general conditions, the USACE reserves the right to require additional special conditions based on more detailed project review.

3.2.2.2 Letter of Permission Procedures For Future Qualifying Applicants Subject to Future Section 404 (b)(1) Guidelines Review Outside the RMV Planning Area

In consideration of the comprehensive studies that characterized the functional integrity of riparian resources within the San Juan Creek Watershed and western portion of the San Mateo

Creek Watershed and in accordance with USACE's regulations in 33 CFR §325.2(e)(1), the USACE proposes to issue Letters of Permission (LOP) for activities outside of the RMV Planning Area that are determined in the future to be consistent with the purposes and goals of the SAMP. Such activities would need to undergo future effective pre-application coordination, include NEPA review, comply with the Section 404 (b)(1) Guidelines, and include effective compensatory mitigation for unavoidable impacts prior to consideration for LOP authorization. The LOP authorization is an abbreviated method for issuing an Individual Permit where a decision to issue permit authorization is made after coordination with federal and state fish and wildlife agencies, a public interest evaluation, and a concise environmental review. In addition, review involving other resource agencies would ensure adverse impacts are minimized to the maximum extent practicable. Details of the LOP process outside of the RMV Planning Area are provided with the Special Public Notice (Appendix A).

The LOP procedures apply to eligible projects that otherwise do not qualify for a Nationwide Permit or a Regional General Permit. Unlike Regional General Permits, LOPs are not limited to certain classes of activities. Generally, the USACE would issue LOPs within 45 days of receipt of a complete application. Within areas eligible for abbreviated permitting, the San Juan Creek and Western San Mateo Creek Watersheds SAMP LOPs would not have acreage thresholds. Despite the higher acreages of permanent impacts that would be allowed, adverse impacts would be avoided because of the more detailed review by the resource agencies as compared to the Nationwide Permit process. Except as authorized pursuant to a future environmental review process and compliance with the Section 404 (b)(1) Guidelines, for areas outside of the RMV Planning Area, the use of LOPs for the permanent discharge of dredged and/or fill materials would be restricted primarily to the lower value aquatic resource areas within the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed. Within areas ineligible for abbreviated permitting, LOPs would authorize temporary impacts for the purpose of maintenance of established structures and would authorize permanent impacts up to 0.1 acre of Waters of the U.S., including projects such as utility substations, small bank protection structures, a single-family home, and recreational trails.

As noted, the proposed LOPs would be subject to future NEPA review and evaluation under the Section 404 (b)(1) Guidelines in order to determine the extent of impacts to riparian and wetland habitats. Given future NEPA and 404(b)(1) review and the provisions of the LOP procedures (including General Conditions and any future Special Conditions) future use of the LOPs would not likely have extensive impacts to higher quality aquatic resources. Subject to NEPA review and the maximum allowable impact allowed under the proposed LOPs for these areas, large amounts of impacts to higher quality USACE jurisdictional habitats including streams, wetlands, and riparian areas are not expected under the future LOP procedures. Within areas proposed to be eligible for abbreviated permitting, there would be no limits on acreage of impacts. Impacts to native habitats within these areas proposed to be eligible for abbreviated permitting would be expected to be lower due to past degradation that had decreased the riparian integrity of such areas. In conjunction with future NEPA review, impacts would be expected to be minimized to the same degree as standard individual permits due to the requirement for upfront coordination with the agencies through the USACE, followed by the USACE formal notification to the other agencies for their comments.

Within eligible areas, numerous activities would be eligible for LOPs (Figure 1-3). Eligible activities include, and not limited to:

1. Public and private utilities, including utility lines and maintenance of utility lines;

2. Public and private drainage and flood control facilities, including construction of outfall and intake structures, construction of bank stabilization structures, and maintenance of all flood control facilities;

3. Public and private roads and bridges, including lengthening, widening, and maintenance;

4. Public and private land development, including residential, commercial, institutional, and recreational uses;

5. Habitat restoration and water quality improvement projects, including wetland restoration and creation and construction of stormwater management facilities; and

6. Public and private water storage facilities and impoundments.

However, certain activities would be ineligible for the LOP process within these lower value resource areas. Such activities still may be permitted under the standard Individual Permit process. The first class of activities ineligible for the LOP process are those substantially altering a compensatory mitigation site. Impacts to aquatic resources created or restored for the purpose of providing compensatory mitigation credits are not eligible to be processed as an LOP. The second class of activities ineligible for the LOP process are capital improvement flood control projects involving conversion of a soft-bottom channel to a concrete-lined channel. Capital improvement projects within the major stream systems such as Oso Creek and Arroyo Trabuco, outside the RMV Planning Area, are ineligible for the LOP process and would require a standard Individual Permit in order to be permitted.

Within the higher value aquatic resource areas that would otherwise be ineligible for abbreviated permitting, some activities would still be eligible for LOPs. These activities would either involve temporary impacts or involve projects with a small permanent impact footprint to waters of the U.S. Such activities include, and not limited to:

1. Maintenance and repair of public and private utilities, including utility lines;

2. Maintenance and repair of public and private drainage and flood control facilities, including outfall and intake structures, bank stabilization structures, flood control channels (consistent with an established maintenance baseline), and flood control basins (consistent with an established maintenance baseline);

3. Maintenance and repair of public and private roads and bridges;

4. Habitat restoration improvement projects, including wetland restoration and creation; and

5. Permanent impacts up to 0.1 acre of Waters of the U.S.

Pre-application coordination is required for projects with permanent losses of Waters of the U.S. greater than 0.1 acre or for projects with temporary impacts greater than 0.25 acre of Waters of the U.S. with native wetland and/or riparian vegetation. For projects permanently impacting 0.1 acre of Waters of the U.S. or less and temporarily impacting 0.25 acre of vegetated Waters of the U.S. or less, pre-application coordination would not be required; the applicant would only need to submit an application directly to the applicable agencies. Pre-application coordination must involve the USACE, the CDFG, the San Diego RWQCB, and the USFWS. For the pre-

application meetings, the applicant may meet with the agencies separately or in small groups, consult by telephone, or schedule a pre-application meeting held bi-monthly at the USACE office. A written record of the proceedings must be provided afterwards to the USACE, documenting substantive issues discussed, agency recommendations, and any pertinent conclusions.

During the pre-application meetings, the USACE would make an initial determination whether or not the project may qualify for the LOP permitting process. The project may qualify based on a preliminary determination that the project meets the Section 404 (b)(1) Guidelines, that the project is consistent with the SAMP, and that standard Individual Permit processing with Public Notice review would not result in a substantive change in the proposed project or mitigation. If the USACE makes an initial determination that the project may not qualify for the LOP permitting process, the USACE would provide recommendations that would enable the project to qualify for the LOP permitting process.

The LOP procedures outside of the RMV Planning Area involve explicit requirements for a complete application and the permitting process. The complete application includes items such as a project description, location map, a wetland delineation, impact acreage to Waters of the U.S. including wetlands, project schedule, a statement addressing Section 404 (b)(1) Guidelines, a compensatory mitigation plan, and documentation to help support compliance with the federal Endangered Species Act and the National Historic Preservation Act. Upon provision of a complete application, specific timelines are provided that would result in a permit decision within 45 days of receiving a complete application. In contrast, a standard Individual Permit typically is issued within 120 days of receiving a complete application. Because much of the resource evaluation was performed upfront, many of the issues related to analysis of impact sites in the context of Section 404 of the Clean Water Act were addressed in the beginning. Details of the complete LOP procedure are provided in the Special Public Notice (Appendix A).

The USACE also proposes a set of general conditions that would be added to the permit authorization to help ensure that any direct and indirect impacts are minimized. These conditions relate to issues such as compensatory mitigation policy, management of flow conditions, avoidance of bird breeding season, exotics species removal, and fish passage. A complete list of the general conditions is provided in the Special Public Notice (Appendix A). In addition to the general conditions, the USACE reserves the right to require additional special conditions based on more detailed project review.

3.2.2.3 Long-Term Individual Permits/Letters of Permission for Dredge and Fill Activities within the RMV Planning Area Including Santa Margarita Water District Activities

Through the SAMP process, two potential applicants, Rancho Mission Viejo and the Santa Margarita Water District (SMWD), have undergone extensive pre-project review with the USACE to avoid and minimize impacts to the aquatic ecosystem to the maximum extent practicable. Consistent with the LOP procedures for projects outside of the RMV Planning Area, these applicants have satisfied some of the proposed requirements for eligibility under LOPs such as extensive pre-project coordination with the resource agencies and implementation of project modifications to ensure compliance with the Section 404 (b)(1) Guidelines through avoidance, initial minimization measures and a comprehensive aquatic resource compensatory mitigation program.

As stated before, a goal of a SAMP is to allow reasonable economic activities and development within the SAMP Study Area. Through the SAMP development process, the two applicants have

allowed their projects to be reviewed by the USACE, resulting in preservation of about 90 percent of probable jurisdictional features in the RMV Planning Area along with appropriate setbacks to minimize indirect impacts to jurisdictional features and to allow for wildlife movement. In exchange for assurances of being able to implement permitted activities over the long-term, proposed permittees would be able to make long-term commitments to aquatic resource protection and management over a large geographic area with focus on protecting higher value aquatic resources. Commitments to long-term certainty provide resource protection benefits deriving from the assured protection and management of aquatic resources in contrast to the more limited protection and management that result from incremental project-by-project review.

Due to the long-range planning timelines involving potentially substantial commitments to aquatic resource protection and management in exchange for predictability in permitting, the USACE is proposing to issue an Individual Permit of extended duration to specify allowable impacts to Waters of the U.S. over the life of the RMV Proposed Project. The RMV Proposed Project's long-term Individual Permit would identify, on a geographic-specific basis, aquatic resource conservation areas to be conserved and areas where impacts to Waters of the U.S. would be allowed (Figure 1-3). However, the RMV Proposed Project's long-term Individual Permit by itself would not allow the discharge of dredged and/or fill materials into Waters of the U.S. because additional review and analysis is needed to ensure minimization of impacts has occurred within areas identified for allowed impacts as project details are developed and in accordance with the terms and conditions of this long-term Individual Permit. Subsequent to the issuance of the RMV Proposed Project's long-term Individual Permit, the USACE proposes to review specific activities under the LOP procedures within the geographic area covered by the Individual Permit as each activity is proposed for implementation. The LOP procedure is intended as a verification process for determining consistency with the long-term Individual Permit and as an avenue for more detailed site-specific review of indirect impacts to Waters of the U.S. adjacent to the development areas within the RMV Planning Area and infrastructure minimization outside of the development areas within the RMV Planning Area consistent with the Special Conditions for the proposed permitting procedures. The process would lead to the issuance of LOPs as the actual Section 404 permit authorization for activities determined to be consistent with the Individual Permit and any other relevant policies.

The SAMP process has provided a planning framework that has facilitated the preparation of the proposed permitting procedures to be reviewed in this EIS. Specific permitting policies have been developed to address the proposed activities that would be subject to the RMV Proposed Project long-term Individual Permit. These permitting policies that apply to the RMV Planning Area allow for long-range planning for development in exchange for the long-term protection of aquatic resources. These policies relate to jurisdictional determinations, avoidance of impacts to aquatic resources, minimization of impacts to aquatic resources, and compensation for unavoidable impacts as summarized below.

The jurisdictional delineation for the RMV Planning Area was approved by the USACE on May 20, 2004. Both RMV and SMWD activities are proposed to occur within the RMV Planning Area, with the exception of SMWD ongoing maintenance activities, trails, and the construction and maintenance of the proposed Upper Chiquita domestic storage reservoir. Although future delineations are possible as specified herein, the jurisdictional delineation approved on May 20, 2004 would be used as the baseline for all subsequent discussions on avoidance, minimization, and compensation. Future projects proposing to impact Waters of the U.S. would only need a re-verification of the 2004 jurisdictional delineation. A re-delineation is required at the time of a project application if a storm with a return interval greater than 10 years has occurred for the purpose of tracking impacts.

In terms of avoidance of aquatic resources, the final project impact limits within RMV Planning Area are identified in Chapter 8.0 and depicted on Figures 2-1, 8-1, 8-2, 8-3a, 83b, 8-3c, 8-4, and 8-5. The final limits would be based on the USACE-approved jurisdictional delineation of 2004. The boundaries of the proposed RMV Planning Area's jurisdictional area impacts represent the considerations given to avoiding high quality aquatic resources in the context of determining the least environmentally damaging practicable alternatives in accordance with the Section 404 (b)(1) Guidelines. For two development planning areas (Planning Areas 4 and 8), due to the need for future development planning, the draft EIS evaluated an overstated impact scenario assuming development of the entirety of each development planning area even though the proposed permitting procedures would authorize considerably smaller impact areas. The maximum impact boundaries that are proposed for impacts comprise 500 acres of development for Planning Area 8, 550 acres of development and 175 acres for a water supply reservoir for Planning Area 4, and 50 acres of orchards within non-wetland areas of Planning Areas 6 and 7. Given that 90 percent of probable jurisdictional aquatic resources are avoided including sufficient buffers of these avoided areas even under the overstated impact scenario, no further avoidance will be required. Future authorizations would be based on verification that a proposed project does not exceed the limits of the impact boundaries authorized under the RMV Proposed Project's long-term Individual Permit.

In terms of minimization of impacts to aquatic resources, initial project minimization measures will be conditioned as part of the RMV long-term individual permit based on the EIS analysis of project impacts. Within designated RMV development planning areas, environmental review analyses are sufficiently detailed to indicate that no additional minimization would be required beyond those set forth in the Individual Permit special conditions. However, for designated infrastructure facilities located on the periphery of and outside designated development area boundaries, details concerning infrastructure facilities have not been finalized. As these infrastructure facility design details become known, the USACE reserves the right to condition activity-specific authorizations through the issuance of conditioned LOPs for the infrastructure facilities on the periphery and outside development planning areas in order to ensure all practicable minimization measures addressing potential indirect effects of development would be implemented consistent with the RMV Proposed Project's long-term Individual Permit Special Conditions. Subsequent project-specific minimization measures would demonstrate compliance with measures for addressing indirect impacts to aquatic resources from development within approved footprints described in the RMV Proposed Project's long-term Individual Permit and associated Special Conditions. These subsequent minimization measures would not result in wholesale project redesign, would not modify project impact boundaries or require additional compensatory mitigation.

In terms of compensation for impacts to aquatic resources, draft compensation measures are identified and reviewed in this EIS. The proposed compensatory mitigation measures are summarized in this EIS and include: (1) a proposed Aquatic Resources Restoration Plan (ARRP) formulated in accordance with the principles of the document entitled *Riparian Ecosystem Restoration Plan for San Juan Creek and Western San Mateo Creek Watersheds: Site Selection and General Design Criteria* referenced under General Mitigation Policies, and (2) an Aquatic Resources Adaptive Management Program designed to provide long-term management and monitoring of aquatic resources to maintain and enhance aquatic functions. The draft compensatory mitigation measures have been developed using a functional approach for assessing aquatic resources. Impact assessment in this EIS, for the purpose of determining compensatory mitigation, is based on the jurisdictional delineation of 2004.

Once the RMV Proposed Project's long-term Individual Permit has been issued, subsequent authorizations for future projects would be processed similar to the LOP procedure for projects

outside the RMV Planning Area. The USACE would issue LOPs within 45 days of receipt of a complete application. The LOP would not have acreage thresholds. Within areas eligible for the LOPs (Figure 1-3), activities eligible for LOPs include:

1. Public and private utilities, including utility lines and maintenance of utility lines;

2. Public and private drainage and flood control facilities, including construction of outfall and intake structures, construction of bank stabilization structures, and maintenance of all flood control facilities;

3. Public and private roads and bridges, including lengthening, widening, and maintenance;

4. Public and private land development, including residential, commercial, institutional, and recreational uses;

5. Habitat restoration and water quality improvement projects, including wetland restoration and creation and construction of stormwater management facilities; and

6. Public and private water storage facilities and impoundments.

Within the higher value aquatic resources, most of which would be protected in perpetuity, some activities would still be eligible for LOPs. These activities either would have mostly small, temporary impacts that could be restored after the project or would have been evaluated in the development of the SAMP resulting in upfront avoidance and minimization measures. Such activities include:

1. Maintenance and repair of public and private utilities, including utility lines;

2. Maintenance and repair of public and private drainage and flood control facilities, including outfall and intake structures, bank stabilization structures, flood control channels (consistent with an established maintenance baseline), and flood control basins (consistent with an established maintenance baseline);

3. Maintenance and repair of public and private roads and bridges;

4. Habitat restoration improvement projects, including wetland restoration and creation; and

5. Permanent impacts associated with reviewed infrastructure projects including:

    a. Establishment of public and private utilities;

    b. Crossings of any stream using complete spans or partial spans with in-channel piers/piles;

Unlike the LOPs that would be issued outside of the RMV Planning Area, projects within the RMV Planning Area would not need formal pre-application consultations. Within the RMV Planning Area, Rancho Mission Viejo has already undergone extensive pre-application coordination with the USACE, obviating the requirement of additional formal pre-application coordination.

Like the LOP procedures outside the RMV Planning Area, the LOP procedures inside the RMV Planning Area involve explicit requirements for a complete application and the permitting process. The complete application includes items such as a project description, location map,

wetland delineation, impact acreage to Waters of the U.S. including wetlands, project schedule, a statement relating compliance with the Section 404 (b)(1) Guidelines that were discussed in the EIS, a compensatory mitigation plan pursuant to the Aquatic Resources Restoration Program reviewed in Chapter 8.0 and documentation to help support compliance with the Endangered Species Act and the National Historic Preservation Act. Upon provision of a complete application, specific timelines are provided that would result in a permit decision within 45 days of receiving a complete application. In contrast, a standard Individual Permit typically is issued within 120 days of receiving a complete application. Because much of the resource evaluation was performed upfront, many of the issues related to analysis of impact sites in the context of Section 404 of the Clean Water Act were addressed in the beginning. Details of the complete LOP procedure are provided in the Special Public Notice (Appendix A).

The USACE also proposes a set of Special Conditions that would be added to the permit authorization to help ensure that any direct and indirect impacts are minimized. The Special Conditions relate to issues such as management of flow conditions, the avoidance of bird breeding season, exotics species removal, fish passage, protecting channel geomorphology, minimizing indirect impacts to large mammals, ensuring long-term viability of the arroyo toad, making culverts more hospitable to potentially migrating southern steelhead, etc. A complete list of the Special Conditions is provided in the Special Public Notice (Appendix A).

The decision to adopt the three regulatory procedures for the proposed activities in the San Juan Creek and Western San Mateo Creek Watersheds (including the proposal to suspend use of selected Nationwide Permits for the RGP procedures) would be based on the probable impacts, including cumulative impacts, of the proposed activity on the public interest. In accordance with 33 CFR 235.3(c)(1), the decisions regarding each of the three proposed regulatory procedures would reflect the national and regional concerns for both protection and utilization of important resources. The benefit that reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. Factors that would be considered include conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water quality, safety, food production and, in general, the needs and welfare of the people. In addition, if a proposed activity(ies) would result in the discharge of dredged or fill material, the evaluation of the activity in conjunction with the review of the SAMP EIS must include the application of the EPA Guidelines (40 CFR 230) as required by Section 404(b)(1) of the Clean Water Act with respect to the proposed long-term framework Individual Permit. The USACE believes that the SAMP comprehensive planning process would provide a thorough basis for the review of avoidance, minimization, and potential impacts/mitigation regarding permits proposed to be authorized in conjunction with the review provided through this EIS. With respect to future qualifying permit applicants for LOP Procedures, the SAMP would provide a basis for required Section 404(b)(1) Guidelines analyses.

3.2.3 FORMULATION AND REVIEW OF ALTERNATIVES

The initial phase of the SAMP process involved an extensive series of technical analyses prepared by the USACE and other planning participants. On the part of the USACE, the Cold Regions Research and Engineering Laboratory (CRREL) and the Engineer Research and Development Center (ERDC) prepared a comprehensive assessment of existing conditions within the SAMP Study Area including assessments of hydrologic, habitat, and water quality functions. Specific functional ratings were compiled under each of the three sets of functions at a riparian reach scale of analysis and a simplified mapping representation has been prepared illustrating the results of these assessments at a watershed scale. Other planning participants

sponsored comprehensive studies including (1) a Baseline Conditions Report reviewing important hydrologic and geomorphic planning considerations on both a watershed and sub-basin basis, (2) an analysis of the Hydrologic and Geomorphic Needs of Aquatic Listed Species, (3) a Slope Wetlands report, (4) a vernal pools report, and (5) a comprehensive assessment of stormwater hydrology in the SAMP Study Area. Vegetation mapping of aquatic resources was also conducted through the creation of the NCCP vegetation database and through a site-specific delineation of areas subject to USACE Section 404 jurisdiction and CDFG streambed alteration agreement jurisdiction (California Fish and Game Code Section 1600 et seq.) (Appendix E3).

Preparatory planning activities also involved the preparation of a set of SAMP Tenets by the USACE for the purpose of guiding SAMP planning and the review of alternatives, as well as any proposed permitting procedures. The USACE and other planning participants also participated in the preparation of the Watershed Planning Principles intended to complement the SAMP Tenets by providing additional planning considerations at a watershed and sub-basin scale; the Watershed Planning Principles were prepared as an integral part of the "coordinated planning process" summarized in Chapter 1.0 and reviewed more extensively in Chapter 4.0.

Another important planning activity was the formulation of open space/development alternatives through the coordinated planning process that would avoid impacts to important natural habitats, including aquatic resources. The SAMP and the NCCP/MSAA/HCP working group formulated a broad range of alternatives that accommodated different conservation strategies for protecting the major vegetation communities addressed, including aquatic resources, within the coordinated planning process. The SAMP EIS alternatives analysis evaluates whether one or more of these alternatives with associated management measures would avoid sufficient amounts of aquatic resources without conflicting with the Clean Water Act anti-degradation policy. Specifically, the SAMP EIS alternatives analysis assesses the aquatic resource protection, restoration, and management attributes of each of the alternatives in relation to the following three elements of the SAMP process:

1. ***Aquatic Resources Protection.*** The SAMP process will examine the development/open space alternatives in order to determine the extent to which these alternatives, in conjunction with already protected open space, would protect significant aquatic resources (identified in connection with USACE and NCCP/MSAA/HCP studies) within the SAMP Study Area. (Avoidance/minimization of impacts to aquatic resources will also be examined in conjunction with Section 404(b)(1) Guidelines review of proposed permitting procedures.) At the completion of the SAMP process, areas recommended for permanent protection would be identified.

2. ***Aquatic Resources Restoration.*** ERDC has prepared a *Riparian Ecosystem Restoration Plan for San Juan and Western San Mateo Creek Watersheds* to provide a broad-scale restoration template. Environmental review in this document will focus on the consistency of alternative habitat reserve designs with the Aquatic Resources Restoration Program element of the SAMP process and the extent to which specific habitat restoration measures can provide mitigation for impacts to aquatic resources that could potentially occur in connection with the proposed permitting procedures.

3. ***Aquatic Resource Management.*** Where applicable, management of aquatic resources would be carried out in accordance with the SAMP Aquatic Resources Management Plan. Management applied to the Aquatic Resources Conservation Areas (ARCAs) would be comprised of adaptive management and monitoring activities that would be conducted primarily in areas proposed to be protected in conjunction with proposed

permitting procedures as mitigation for impacts to aquatic resources subject to USACE jurisdiction (these management and monitoring activities are described in the Aquatic Resources Adaptive Management Program reviewed in this EIS). The NEPA alternatives analysis will review the extent to which the different development/open space alternatives are consistent with habitat management recommendations set forth in the Watershed Planning Principles at both a watershed- and sub-basin-scale.

CHAPTER 4.0
EXISTING CONDITIONS

4.1 WATERSHED EXISTING CONDITIONS

Although the sub-basins in the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed are hydrologically and biologically connected, each major sub-basin has somewhat unique or distinctive attributes. Therefore two scales of analysis are used in this EIS, the watershed-scale and the sub-basin scale. To assist the reader to understand the existing conditions at the watershed-scale and sub-basin scale and the relationships between the two, this EIS examines both scales depending on the topic being discussed.

4.1.1 PHYSICAL PROCESSES AND CONDITIONS

4.1.1.1 Overview of San Juan Creek Watershed

The San Juan Creek Watershed is located in southern Orange County. The watershed encompasses a drainage area of approximately 176 square miles and extends from the Cleveland National Forest in the Santa Ana Mountains to the Pacific Ocean at Doheny State Beach near Dana Point Harbor. The upstream tributaries of the San Juan Creek Watershed flow out of steep canyons and widen into several alluvial floodplains. As depicted in Figure 4.1.1-1, the major streams in the San Juan Creek Watershed include San Juan Creek, Bell Canyon Creek, Cañada Chiquita, Cañada Gobernadora, Verdugo Canyon Creek, Oso Creek, Trabuco Creek, and Lucas Canyon Creek. Elevations range from over 5,800 feet above sea level at Santiago Peak to sea level at the mouth of San Juan Creek (USACE, 1999).

The San Juan Creek Watershed is bound on the north by the San Diego Creek, Aliso Creek, and Salt Creek Watersheds, and on the south by the San Mateo Creek Watershed. The Lake Elsinore Watershed, which is a tributary of the Santa Ana River Watershed, is adjacent to the eastern edge of the San Juan Creek Watershed.

The lower portion of the watershed is mostly urbanized with a mix of commercial, industrial, and residential land uses. The northwestern portion is dominated by mostly suburban neighborhoods, and the eastern portion is mostly open space with pockets of residential, agricultural, mineral extraction, and commercial business parks. The major transportation routes that cross the watershed include: I-5, State Highway 1, State Highway 73, State Route 74 (Ortega Highway), State Route 241, Marguerite Parkway, Oso Parkway, Santa Margarita Parkway, Crown Valley Parkway, and Camino Capistrano. Numerous bridges have been constructed along these and other routes at crossings of the major and minor tributaries within the watershed.

Many hydraulic structures have been constructed along San Juan Creek and its tributaries. Detention basins have been constructed for the primary purpose of flood control. Drop structures have been constructed to provide grade control, primarily to protect transportation infrastructure (bridges, roads, and utilities). Additionally, segments of the Creek have been converted to concrete channel for bank protection and flood conveyance. Major hydraulic structures contained in the San Juan Creek Watershed area are listed in Table 4.1.1-1.

TABLE 4.1.1-1
MAJOR HYDRAULIC STRUCTURES IN SAN JUAN CREEK WATERSHED

Water Course	Description	Location
Detention Structures		
Oso Creek	Galivan Detention Basin Off-line detention basin	Along Cabot Road just north of Crown Valley Parkway
Drop Structures		
San Juan Creek	Grade control structure to protect access road	Caspers Regional Park at access road near main entrance
San Juan Creek	Grade control structure to stabilize stream bed	Approximately 500 feet downstream of Caspers Regional Park access road
Trabuco Creek	Grade control structure to protect Rancho Viejo, I-5, Camino Capistrano Bridges	Below Rancho Viejo Road
Trabuco Creek	Grade control structure to protect Metrolink railroad bridge	Near Camino Capistrano just upstream of the Oso Creek/Trabuco Creek confluence
Trabuco Creek	Series of small (1-3 feet) drop structures for grade control	From San Juan Creek confluence to upstream of Del Obispo Road
Oso Creek	Rip-rap energy dissipater	At terminus of rectangular concrete box channel
Channel Modifications		
San Juan Creek	Trapezoidal soft-bottomed channel with concrete side slopes	From ocean outfall to I-5
San Juan Creek	Gabion side slope protection	Within Caspers Regional Park
Trabuco Creek	Rectangular concrete box channel	Beneath Rancho Viejo, I-5 Camino Capistrano Creek crossings
Trabuco Creek	Trapezoidal soft-bottomed channel with concrete side slopes	From San Juan Creek confluence to just upstream of Del Obispo Road
Oso Creek	Trapezoidal soft-bottomed channel with rip-rap sides slopes	From just upstream of the Camino Capistrano Road crossing to just upstream of Crown Valley Parkway
Oso Creek	Rectangular concrete box channel	From just upstream of Crown Valley Parkway to just downstream of Rancho Capistrano property
Source: U.S. Army Corps of Engineers, 2002		

4.1.1.2 Overview of San Mateo Creek Watershed

The San Mateo Creek Watershed is located in the southern portion of Orange County, the northern portion of San Diego County, and the western portion of Riverside County. The watershed is bound on the north and west by the San Juan Creek Watershed, to the south by the San Onofre Creek Watershed, and to the northeast by the Lake Elsinore Watershed. San Mateo Creek flows 22 miles from its headwaters in the Cleveland National Forest to the ocean just south of the City of San Clemente. The total watershed is approximately 139 square miles and lies mostly in currently undeveloped areas of the Cleveland National Forest, the northern portion of MCB Camp Pendleton, and ranch lands in southern Orange County. Major named streams in the San Mateo Creek Watershed include Cristianitos Creek, Gabino Creek, La Paz Creek, Talega Creek, Cold Spring Creek, and Devil Canyon Creek (Figure 4.1.1-1). The SAMP Study Area includes only the portion of the San Mateo Creek drainage within Orange County (approximately 17 percent of the watershed). Elevations range from approximately 3,340 feet above sea level in the mountains of the Cleveland National Forest to sea level at the mouth of

San Mateo Creek. No flood control structures or sediment basins are located within the San Mateo Creek Watershed within the Study Area. Land use is mostly cattle grazing with limited tree crop production and one industrial use–the Northrop Grumman Space Technology TRW Capistrano Test Site.

4.1.1.3 Geology, Geomorphology, and Terrains

Regional Geology

The San Juan Creek and San Mateo Creek Watersheds are located on the western slopes of the Santa Ana Mountains, which are part of the Peninsular Ranges that extend from the tip of Baja California northward to the Palos Verdes peninsula and Santa Catalina Island. The geology of the region is complex and has been dominated by alternating periods of depression and uplift, mass wasting, and sediment deposition. Figure 4.1.1-2 shows the surficial geology of the SAMP Study Area. Within the watersheds, the Santa Ana Mountains are composed of igneous, metavolcanic, and metasedimentary rocks of Jurassic age and younger. The exposed rocks in the mountainous areas are slightly metamorphosed volcanics, which have been intruded by granitic rocks of Cretaceous age, principally granites, gabbros, and tonalites. Overlying these rocks are several thousand stratigraphic feet of younger sandstones, siltstones, and conglomerates of upper Cretaceous age, composed largely of material eroded from the older igneous and metavolcanic rocks now underlying the Santa Ana Mountains.

Younger sedimentary rocks comprise the bedrock between the Santa Ana Mountains, their foothills, and the Pacific Ocean. Most of the SAMP Study Area is underlain by these marine and non-marine sandstones, limestones, siltstones, mudstones, shales, and conglomerates, many of which weather, erode, and/or hold groundwater in characteristic ways. Overlying them are Quaternary stream terrace deposits and Holocene stream channel deposits.

During the past two million years or longer, at least three processes that fundamentally affect structure and process along the major stream channels have affected the two watersheds:

- Continuing uplift, typically 400 feet or more, which has left at least four major stream terrace levels along the major streams.

- Down cutting of the main canyons to sea levels, which have fluctuated widely during the global glaciations.[1] The flat valley floors were deposited as the sea level rose, leaving often-sharp slope breaks at the base of the existing hillsides and tributary valleys. These materials are geologically young, soft, and prone to incision under certain conditions.

- Soils formed under climates both warmer/colder and drier/wetter than at present, which led to development of hardpans that have been eroded to form mesas. These hardpan mesas have minimal infiltration and presently channel flows into headwater streams.

Seismicity

There are several Quaternary faults in the SAMP Study Area. The most significant is the Newport-Inglewood-Rose Canyon fault, which is found about six miles offshore of the mouth of San Juan Creek. This fault parallels the coastline. Two fault zones are located north and east of San Juan Capistrano: the Cristianitos fault and the Mission Viejo fault. The Cristianitos fault

[1] As recently as 18,000 years ago, the sea level was about 380 feet lower, and the shoreline was several miles further west than at present. San Juan, Chiquita, Gobernadora, San Mateo, and Cristianitos Creeks (among others) flowed in valleys 60 to 120 feet lower than at present.

parallels Oso Creek in a northwest-southeast direction, crosses San Juan Creek about four miles east of San Juan Capistrano, and passes into the Pacific Ocean in San Clemente, about seven miles down coast of the mouth of San Juan Creek. The Mission Viejo fault zone is parallel to the Cristianitos fault zone, crosses San Juan Creek about nine miles east of San Juan Capistrano, then passes offshore into the Pacific Ocean below San Mateo Point in San Diego County. The Newport-Inglewood-Rose Canyon fault is known to be active; the Cristianitos fault is thought by some to be active.

The earliest recorded earthquake event in the project area occurred near San Juan Capistrano in 1812, and almost demolished the nearby mission. The Point Loma Earthquake of 1862, with a calculated magnitude of 6.5, was located 60 to 65 miles from the SAMP Study Area. The Long Beach Earthquake of 1933 was located about 20 miles northwest of the SAMP Study Area and had a magnitude of 6.3. A magnitude 5.5 event occurred in 1938 within Upper Trabuco Canyon, about 20 miles northwest of San Juan Capistrano. A maximum credible event of 7.1 on the Newport-Inglewood-Rose Canyon fault would produce a peak bedrock site acceleration of 0.39 g at San Juan Capistrano.

Terrains

Terrain designations are largely based on soils, geology, and topography, as these provide many of the fundamental factors that influence the hydrology and geomorphology characteristic of each terrain. Bedrock is the raw material from which soils are weathered, and, as such, it determines the size and types of particles that will comprise the soil. The resistance of different kinds of bedrock to weathering and erosion also controls the topography of the landscape within a given terrain and, therefore, influences the hydrology of the watersheds and morphology of the drainage networks. Watershed hydrology is also strongly influenced by the climatic patterns typical of southern California.

There are three major geomorphic terrains found within the San Juan Creek and San Mateo Creek Watersheds: (a) sandy and silty-sandy, (b) clayey, and (c) crystalline. These terrains are manifested primarily as roughly north-south oriented bands of different soil types.[2] Figure 4.1.1-3 shows landscape-scale terrains and shallow substrate erodibility. The soils and bedrock that comprise the western portions of the San Juan Creek Watershed (i.e., Oso Creek, Arroyo Trabuco, and the lower third of San Juan Creek) contain a high percentage of clays in the soils. The soils typical of the clayey terrain include the Alo and Bosanko clays on upland slopes and the Sorrento and Mocho loams in floodplain areas. In contrast, the middle portion of the San Juan basin, (i.e., Cañada Chiquita, Bell Canyon, and the middle reaches of San Juan Creek) is a region characterized by silty-sandy substrate that features the Cieneba, Anaheim, and Soper loams on the hill slopes and the Metz and San Emigdio loams on the floodplains. The upstream portions the San Juan Creek Watershed, which comprise the headwaters of San Juan Creek, Lucas Canyon Creek, Bell Creek, and Trabuco Creek, may be characterized as a "crystalline" terrain because the bedrock underlying this mountainous region is composed of igneous and metamorphic rocks. Here, slopes are covered by the Friant, Exchequer, and Cieneba soils, while stream valleys contain deposits of rock and cobbley sand. The upland slopes east of both Chiquita and Gobernadora Canyons are unique in that they contain somewhat of a hybrid terrain. Although underlain by deep sandy substrates, these areas are locally overlain by between two and six feet of exhumed hardpan.

[2] The different bands of terrain types should be considered as general trends; not every stream is comprised of a single terrain, and inclusions of other soil types occur within each terrain.

Runoff Patterns of Specific Terrains

Runoff patterns typical of each terrain are affected by basin slope, configuration of the drainage network, land use/vegetation, and, perhaps, most importantly the underlying terrain type. Although all three terrains exhibit fairly rapid runoff, undisturbed sandy slopes contribute less runoff than clayey ones because it is easier for water to infiltrate into the coarser substrate. Runoff in crystalline terrains tends to be rapid and is highly influenced by the presence and density of coverage of impervious areas of rock outcrop that typify the terrain. As a result, the volume of runoff generated by the same amount and intensity of rainfall in a sandy watershed is generally lower than that generated in a clayey or crystalline watershed. When comparing clayey and crystalline terrains, the former seals and becomes impervious upon saturation, while the latter allows for some infiltration through shallow sands that overlay bedrock. Therefore, runoff in clayey terrains is generally more rapid than in crystalline terrains, not withstanding site-specific differences such as slope and land cover/vegetation.

Expected runoff patterns based on terrains should be distinguished from estimated runoff potential based on soil hydrogroups. Although both provide valid, and typically congruent information, the effect of terrains predominates at low to moderate return interval events (i.e., 2-, 5-, and 10-year events), while the effect of soil hydrogroups predominate at larger return-interval events (e.g., 25-, 50-, and 100-year events).

During low to moderate storm events terrains influence the likelihood and extent of channel migration, avulsion, or incision. However, during extreme storm events, the influence of terrains is minimal and runoff is more strongly influenced by soil hydrogroup. For example, a Type C soil in a sandy terrain would produce less runoff during a 5-year event than a Type C soil in a clayey terrain. However, during a larger storm event, runoff from both terrains would be comparable (assuming similar vegetation, slope, and land use).

Channel Characteristics of Specific Terrains

Sandy and silt-sandy terrains are generally able to infiltrate larger volumes of water than are clayey and crystalline terrains. As a result (a) sandy terrains play a vital role in groundwater recharge, (b) undisturbed sandy terrains are typified by lower runoff rates than clayey or crystalline terrains, (c) stream valleys in undisturbed sandy terrains tend to have wide floodplains and are often channel-less, (d) flows tend to persist longer after storms or further into the summer within sandy watersheds, and (e) there is a greater contrast between runoff conditions in undeveloped and urbanized watersheds in sandy terrains than in clayey or crystalline terrains.

Crystalline terrains are typified by narrow, well-defined stream valleys nestled between steep mountainous slopes. Unlike sandy streams that are susceptible to incision, streams in crystalline areas often flow over bedrock and have stable grades. The topography, soils, and hydrography of the crystalline geomorphic terrain are all inherently controlled and influenced by the underlying bedrock.

In southern California, clayey terrains are also typified by more gentle topography than sandy or crystalline areas. Ridges tend to be lower and broader because the underlying bedrock is often more easily eroded. Clayey terrains also feature streams with fairly well-defined channels that have evolved to handle the higher runoff rates associated with clayey slopes. Clayey terrains are generally less susceptible to many of the environmental problems that plague sandier soils (such as enhanced sediment loading, incision, and headcutting), although specific sites may

exhibit different characteristics (e.g., Borrego Wash and Serrano Creek in Orange County which are clay soils and do exhibit erosion).

Of the three terrains present in the San Juan Creek Watershed, streams in sandy terrains are the most vulnerable to channel incision or channel widening associated with land use changes. The two main risks associated with development within sandy terrains are dramatically increased peak discharge and channel incision accompanied by headward erosion. To a certain extent, the two are inherently linked, and both result from the unique erosion and runoff properties of sandy watersheds. Studies have shown and as depicted on Figure 4.1.1-4, urbanization in sandy watersheds can result in a proportionately greater increase in storm peaks and associated alteration of downstream channel morphology than in more clayey watersheds.[3] Sandy terrains are often typified (under undisturbed conditions) by the presence of poorly defined channels along grassy, vegetated valley floors. Increased flood peaks due to urbanization can not only cause channel incision along grassy swales, but channel incision itself further serves to increase flood peaks through enhanced conveyance. The result is an amplified cycle of erosion and down cutting that destroys floodplain interaction, increases sediment yields, and the tendency for flooding downstream, and significantly alters habitat.

4.1.1.4 Historic Context

Physical and biological conditions in the watersheds have been affected over time by both natural and anthropogenic forces. Early historical accounts of lower San Juan Creek suggest near-perennial flow, with a freshwater lagoon near the mouth and a “green valley full of willows, alders and live oak, and other trees not known to us” (c.f., Friar Crespi in 1769). Natural events that have helped shaped the current conditions in the watershed include wet and dry cycles, flooding, and fires. Anthropogenic effects include changes in patterns of water use, urban development, mining, grazing, and agriculture. The spatial and temporal effect of key historical events is based on not only the scale of the event, but the timing relative to other events. Investigating these patterns can be valuable for understanding natural processes and for long-range planning of future land use changes.

Natural Processes

The geology, topography, and climate of the coastal watersheds of southern California make them unique among the watersheds in the United States. The Transverse and Peninsular Ranges are intensely sheared and steep due to ongoing uplift and tectonic activity. In addition, these ranges are located close to the coast, resulting in steeper, shorter watersheds than those found in most other portions of the country.

The Mediterranean climate in southern California is characterized by brief, intense storms between November and March. It is not unusual for a majority of the annual precipitation to fall during a few storms proximate to each other. The higher elevation portions of the watershed (typically the headwater areas) typically receive significantly greater precipitation, due to orographic effects. In addition, rainfall patterns are subject to extreme variations from year to year and longer term wet and dry cycles. The combination of steep, short watersheds; brief intense storms; and extreme temporal variability in rainfall result in “flashy” systems where stream discharge can vary by several orders of magnitude over very short periods of time.

[3] Differences in the susceptibility of streams in the three terrains to increased runoff are most pronounced for moderate runoff events (e.g., 10- to 25-year events). During extreme runoff events, streams in all three terrains are susceptible to channel incision and headcutting.

Wet and Dry Cycles

Wet and dry cycles, typically lasting up to 15 to 20 years, are characteristic of southern California. The region presently appears to be emerging from a wetter than normal cycle of years beginning in 1993. Previously, five consecutive years of sub-normal rainfall and runoff occurred in 1987 through 1991.

Prior droughts of recent note include the brief, "hard" droughts of 1946 to 1951 and 1976 to 1977. Previous notable wet periods of the recent past were observed in 1937 to 1944, 1978 to 1983, and 2004/2005. An unusually protracted sequence of generally dry years began in 1945 and continued through 1977.[4] During this period, rainfall was approximately 25 percent below the average for the prior 70 years. Both recharge and (especially) sediment transport were diminished to even greater degrees. Although wet years did occur during this period, dry conditions were sufficiently persistent to lower groundwater levels and contract the extent of riparian corridors. In many areas, landslide activity was much less than during strings of wet years. Throughout Chiquita and Gobernadora Canyons, many of the channel segments that may have cut across debris aprons formed by the 1938 floods and subsequent wet years may have refilled during this period. At a broader regional scale, the 33 years of below-average rainfall, recharge, and sediment entrainment coincided with the post-World War II period of especially intensive hydrologic data collection, resulting in underestimates of hydrologic activity. Most of the hydrologic design studies performed in southern Orange County were based on data collected between 1960 through 1985, when rainfall, recharge, and sediment yields were below longer-term norms. Therefore, they may not account for variations in flow and sediment associated with long-term climate trends.

Floods

Major, flood-related disturbance of the channel and riparian systems may be expected with mean recurrences of 10 to 20 years. Large floods occurred in coastal southern California in 1907, 1916, 1937, 1938, 1969, 1978, 1983, 1993, 1995, and 1998. Historical accounts of the 1916 flood indicate that San Juan Creek extended fully across the valley downstream from the San Juan Capistrano Mission and what is now I-5. Peak runoff values were estimated to be in the range of 104 to 151 cubic feet per second per square mile (cfs/sq.mi.) for Aliso, Trabuco, San Juan, and San Onofre creeks, and 234 cfs/sq.mi. for Laguna Creek in the City of Laguna Beach in a more clay-rich watershed.[5] No data are available for either flood from San Mateo Creek or its major tributaries. The February 1969 peak flows were long-duration events, which eventually generated peak flows of 22,400 cfs at the La Novia gauging station in the City of San Juan Capistrano, the highest reported prior to general urbanization in the watershed. The January and March 1995 events led to peaks of 15,200 cfs and 25,600 cfs, respectively, the latter being the largest flow recorded on San Juan Creek. Five distinct major crests were observed in February 1998, with a peak flow of 17,000 cfs.

Watershed-Scale Fires

Historic fire data indicates that large wildland fires have occurred frequently in the SAMP Study Area. Since the 1940s, the California Department of Forestry and Fire Protection and later the Orange County Fire Authority (OCFA) have documented all wildland fire events for the entire

[4] Inman and Jenkins have classified the time period between 1948 and 1977 as a relatively dry cycle and the period of October 1977 to the present as a relatively wet cycle.

[5] Substantially higher peaks were observed February 6, 1937, in the Aliso (230 cfs/sq.mi.) and Trabuco (255 cfs/sq.mi.) Watersheds during what were described as a minor regional storm; San Juan Creek conveyed 80 cfs/sq.mi. during the 1937 storm.

county. Figure 4.1.1-5 depicts the recorded wildland fires history for the SAMP Study Area for years 1911 to 2002. Most of these fire events were of human origin, associated with roadways, arson, and other human-related activities. Exceptions include the Santiago Canyon Fire of 1998, where multiple lighting strikes caused this fire. The 1958 Wiegard Fire is the largest fire to date within the SAMP Study Area. The most recent fires are the Antonio and Avery fires of 2002. Most, but not all, of the SAMP Study Area lands have experienced a wildfire one or more times in the past 50 years. The fire history of the SAMP Study Area is such that some areas of the SAMP Study Area have burned multiple times (for example, Talega and Gabino Sub-basins). Some areas within the SAMP Study Area have no recorded burns (for example Trampas Sub-basin).

The primary hydrologic effects of the fires are sharp increases in sediment yields and often aggradations in the channel downstream. It should be noted that not all areas falling within a mapped fire periphery have actually been burnt. Generally, north-facing slopes and riparian corridors are much less likely to burn, and other areas may be affected only by a rapidly moving (and less destructive) ground fire. Pockets of soil and vegetation have survived for many decades (or perhaps centuries) without high-intensity burning occurring throughout the two watersheds.

Fires can result in shifts or changes in the vegetation community. Coastal sage scrub is generally considered to be relatively resilient to disturbance. However, frequent or intense fires may result in temporary to long-term increases in grassland species. In extreme instances, frequent or intense fires may result in a type-conversion from sage scrub to grassland. Such a conversion may decrease infiltration and increase runoff and erosion into streams that drain the burned sub-basins.

The combination of fire, followed by high rainfall runoff shortly thereafter, can be one of the most significant sequences of events that shape the riparian corridors. This series of events can result in mobilization of large sediment stores that significantly alter the geometry and elevation of downstream channels. Much of the eastern San Juan Creek Watershed was last burned in 1959. The combination of this fire and the subsequent 1969 floods (described above) may have resulted in considerable deposition within the channels and floodplains, which have subsequently incised for many years.

Grazing

Non-native plant invasions associated with European settlement in the 1700s and 1800s (Froke 1993) led to vegetation type conversions on Rancho Mission Viejo lands, and only active management approaches will allow managers to restore and maintain lands in a condition that approximates those historical circumstances that are most beneficial to native plant and animal species of concern (Allen et al. 2000; Bartolome and Gemmill 1981; Heady 1988; Stylinski and Allen 1999; Whelan 1989; White 1967). Much of the land currently designated as reserved open space has undergone nearly complete conversion to non-native annual grasslands, either from perennial grasslands and forblands, or from coastal sage scrub. The causes of this type conversion are many and complex (Allen et al. 2000; Klopatek et al. 1979; Minnich and Dezzani 1998; Pavlik et al. 1993; Zedler et al. 1983), and include past grazing practices. Regardless of the mechanism of the conversion, strategies must be developed to maintain diverse, interdigitated grasslands and open stands of coastal sage scrub.

An often-cited review article by Fleischner (1993) concluded that livestock grazing, especially in the arid west, is virtually exclusively deleterious to environmental health and should be terminated in nearly all circumstances. Brussard et al. (1994) challenged that conclusion,

warning that the premise was faulty, and, importantly, that Fleischner's treatment of the issue was biased in its presentation of both standing literature and then current knowledge. Certainly, there are many examples that show that grassland ecosystems that are overgrazed, especially during periods of stress from drought, can be negatively impacted and that overgrazed grasslands frequently manifest reduced biomass and native plant species diversity. However, at lowest levels, grazing can have inconsequential, or immeasurable, effects on native plant and animal species diversity. At low but consequential levels, grazing can be selective, serving to reduce biomass and the likelihood of devastating wildfire, and selecting against undesired non-native plants that may compete with desired native species. It has become clear that grazing is a necessary component of conservation strategies that target native plant and animal species where atmospheric nitrogen deposition is creating a fertilizer load on coastal California grasslands (Cione et al. 2002; Padgett and Allen 1999; Padgett et al. 1999; Weiss 1999). Many conservation planning efforts have incorporated livestock grazing as a tool to assist managers in meeting explicit species diversity goals or other productivity-related targets (Wallis Devries and Raemakers 2001; Kimball and Schiffman 2003; Soderstrom 1999; Harrison et al. 2003).

According to Menke (1996), herbivory and fire are natural and necessary processes which remove litter, recycle nutrients, stimulate tillering, and reduce seed banks of competitive annual plants. Recognition that grazing is important to the evolved ecology of grasslands is not however, as Edwards (1992) notes, license to use it indiscriminately; nor is understanding that grazing is not always needed license to eliminate it in advance of analyzing site-specific needs.

4.1.1.5 Hydrology: San Juan Creek Watershed

Drainage Network

Hydrologically, the San Juan Creek Watershed can be organized into three regions: (1) the western portion of the watershed with the highly developed Oso Creek Sub-basin and the moderately developed Trabuco Creek Sub-basin; (2) the relatively undeveloped sub-basins of the central San Juan Creek Watershed (i.e., Cañada Chiquita, Cañada Gobernadora, Bell Canyon, Lucas Canyon, Trampas Canyon, and Verdugo Canyon); and (3) the steeper eastern headwater canyons. The drainage density of the entire watershed is 10 mi/sq.mi. This value is somewhat low compared to other published data which suggest average drainage densities for various geomorphic settings, including southern California, of between 20 to 30 mi/sq.mi. Geologic, soil, and basin configuration issues may all contribute to this lower than expected drainage density value. In the San Juan Creek Watershed, many tributary valleys are comprised of sandy terrains and, as such, include swales that do not have a clearly defined channel form (i.e., channel-less swales). Omitting these swales from the calculated surface drainage network also reduces the drainage density of San Juan Creek Watershed.

Infiltration

The infiltration rate, or the amount of water that enters the soil pores over a given length of time, is largely determined by rainfall intensity, substrate type, land cover, timing of inter-storm events, and the antecedent moisture conditions. As the soil's storage capacity fills, the infiltration rate decreases. If the rate of rainfall exceeds the infiltration capacity of the soil, the excess water either ponds on the surface or travels down slope as surface runoff. A portion of the water that infiltrates may reach a restrictive layer and move as interflow (or lateral subsurface flow), eventually discharging to the adjacent stream.

Infiltration was estimated using the U.S. Department of Agriculture hydrologic soil group classification. This standard classification is based upon estimated runoff potential based upon

soil properties that influence runoff. Soils are classified into hydrologic soil groups A, B, C, or D, depending upon infiltration rates measured when the soils are thoroughly wet. A-type soils have the highest infiltration rates and type D soils have the lowest infiltration potential. In general, Type A soils contain a higher proportion of coarser textures (sand and gravel) and/or have a deeper soil profile. These conditions result in good drainage with higher rates of water transmission into the subsurface. Type D soils are likely to contain a less permeable restricting clay layer, or are shallow, resulting in slower rates of water transmission into the subsurface. Conditions for type B and C soils are intermediate to type A and D soils. The distribution of hydrologic soil groups in the San Juan Creek Watershed is shown in Figure 4.1.1-6.

Overall, infiltration in the San Juan Creek Watershed is relatively low because of the prominence of poorly infiltrating soils (e.g., 79.8 percent of the watershed in underlain by soil types C or D) and the significant proportion of development in the San Juan Creek Watershed. However, there are significant pockets of the watershed, particularly in the central watershed, which have more permeable soils and offer better potential infiltration. Following the methods described in the Orange County Hydrology Manual, Soil Conservation Service runoff curve numbers were assigned throughout the watershed. The Soil Conservation Service curve numbers were used in the hydrologic model of the watershed to translate rainfall depths to runoff quantities, accounting for the hydrologic losses associated with the local soil types, land use, vegetation, and infiltration processes.

Figure 4.1.1-7 and Table 4.1.1-2 show the distribution of Soil Conservation Service runoff curve numbers for the San Juan Creek Watershed. Assigned runoff curve numbers range from 30 to 97, with an area-averaged curve number of 80.5 for the entire watershed. The majority of the watershed (91 percent) was characterized by higher curve numbers between 70 and 97. For modeling purposes, higher curve numbers result in a greater proportion of rainfall becoming surface runoff (i.e., less infiltration). The highly developed western watershed and the northern portion of Cañada Gobernadora have the highest runoff curve numbers. Lower curve numbers occur mostly along riparian corridors and alluvial valley floors. Arroyo Trabuco, Wagon Wheel Canyon, Cañada Gobernadora, Bell Canyon, Lucas Canyon, Verdugo Canyon, and the Central San Juan catchments all contain zones of lower curve numbers along their valley bottoms.

Storm Event Runoff

When the infiltration capacity of soil is exceeded, additional water flows as runoff. Runoff can occur as overland sheet flow, tributary flow, or channelized flow. Similar to infiltration, runoff patterns are affected by basin size and slope, configuration of the drainage network, land cover, and the underlying terrain type. Within the SAMP Study Area, there are three general terrains: (1) sand and sandy-silty terrains that favor the infiltration of storm water and produce proportionately less surface runoff, (2) clayey terrains that are characterized by very high surface runoff rates, with little contribution to groundwater, and (3) crystalline terrains that have high runoff rates during large storms and are typified by rock outcrops and other impervious surfaces (Figure 4.1.1-3).

TABLE 4.1.1-2
SAN JUAN CREEK WATERSHED PHYSICAL CHARACTERISTICS

Sub-Watershed Region	Area (sq. mi.)	Area as % of Upstream Watershed Area	Length (mi)	Elevation (ft.)		Percentage Area with Hydrologic Soil Group				Area-Averaged Curve Number (AMC II)[a.]	Impervious Area (%) of Total Sub-basin
				Max.	Min.	A	B	C	D		
Lucas Canyon	7.17	14.31%	7.99	3,022	430	3.62	0.17	48.57	47.64	78.60	0.20
Verdugo Canyon	4.80	6.21%	6.02	2,487	358	8.30	1.25	61.81	28.63	74.80	0.05
Bell Canyon	5.12		5.47	4,485	1,178	1.94	0.00	9.15	88.91	82.30	0.00
	9.10		6.86	3,061	584	3.41	2.95	43.29	50.34	78.80	7.44
	6.35		8.86	2,405	358	8.12	5.64	45.83	40.41	74.00	0.02
Area Averages	20.57	28.42%				4.50	3.05	35.58	56.87	78.20	3.30
Cañada Gobernadora	2.99		3.17	1,237	656	3.43	35.25	54.36	6.96	79.50	29.84
	2.93		4.31	1,050	390	7.37	27.82	60.71	4.11	76.50	12.05
Wagon Wheel Canyon	1.77		3.49	1,063	390	0.69	30.59	62.96	5.76	74.50	1.77
	3.40		4.01	797	230	4.40	19.89	38.90	36.81	79.40	0.26
Area Averages	11.08	11.58%				4.33	27.83	52.67	15.16	77.88	11.59
Cañada Chiquita	4.58		5.59	1,168	358	0.00	36.55	41.89	21.56	77.70	0.35
	4.66		3.82	656	154	3.27	14.95	31.65	50.13	79.20	1.72
Area Averages	9.24	8.80%				1.65	25.65	36.73	35.98	78.49	1.04
Central San Juan Catchments	7.42	8.77%	4.48	892	230	6.07	12.08	52.62	29.24	75.90	3.14
Entire Watershed	175.97	100.00 %				4.74	15.42	27.80	52.04	80.50	21.84

a. normal antecedent moisture conditions

Source: PWA, 2000

The 2-year, 10-year, and 100-year storm events were analyzed using the HEC-1 model for the San Juan Creek Watershed. Peak flows computed for four locations in the San Juan Creek Watershed are summarized in Table 4.1.1-3.

TABLE 4.1.1-3
SAN JUAN CREEK WATERSHED SUMMARY OF PEAK FLOWS (CFS)

Watershed Location	2-Year Event		10-Year Event		100-Year Event	
	cfs	cfs/sq.mi.	cfs	cfs/sq.mi.	cfs	cfs/sq.mi.
Oso Creek, upstream of Trabuco Creek	1,490	92	4,650	286	6,180	380
Lower Trabuco Creek, upstream of San Juan Creek	2,560	47	10,600	194	20,040	366
San Juan Creek, upstream of Horno Creek	2,940	27	18,280	167	44,120	403
San Juan Creek at Pacific Ocean	5,170	29	29,820	169	67,820	385

cfs: cubic feet per second
cfs/sq.mi.: cubic feet per second per square mile

Source: PWA HEC-1 Analysis, 2000

Total runoff volumes and runoff per unit area for San Juan Creek at the Pacific Ocean are shown in Table 4.1.1-4 for the 2-year, 10-year, and 100-year events. Runoff volume per unit area is generally higher for the overall San Juan Creek Watershed than it is for the individual sub-basins because the individual sub-basins of the central watershed are generally undeveloped. Increased runoff from the more developed western portions of the watershed increases the overall watershed-averaged runoff volumes (Table 4.1.1-4).

TABLE 4.1.1-4
SAN JUAN CREEK WATERSHED AT THE PACIFIC OCEAN
STORM EVENT RUNOFF VOLUMES

Event	Total Runoff Volume (acre-feet)	Runoff Volume per Unit Area (acre-feet/square mile)
2-Year	6,410	36
10-Year	31,040	176
100-Year	70,800	402

Source: PWA HEC-1 Analysis, 2000

Peak flows and runoff volumes per unit area are fairly similar for the sub-basins within each watershed. Within the San Juan Creek Watershed, runoff volumes per unit area are lowest for the Chiquita, Gobernadora, and central San Juan Creek Sub-basins, which have the sandiest terrains and the highest infiltration rates (i.e., highest relative proportion of Type A and Type B soils). Gobernadora has slightly higher peak flows per unit area than would be expected, given the inherent properties of the sub-basin; this likely results from (1) the upstream development, which acts to increase volume and decrease time of concentration; and (2) from the hardpan layer which covers much of the upslope areas in the sub-basin. Hydrologic and sediment transport conditions in these individual sub-basins are described in further detail in this chapter.

4.1.1.6 Hydrology: San Mateo Creek Watershed

Drainage Network

The 133.2-square-mile San Mateo Creek Watershed has two principal drainage systems that join in the lower stream valley approximately 2.7 miles upstream of the ocean. The focus area of the SAMP analysis is the western portion of the watershed north of the main stem of San Mateo Creek. The sub-basins of interest include La Paz, Gabino, Cristianitos, Blind, and Talega Canyons upstream of the Cristianitos and San Mateo Creek confluence. Approximately 17 percent of the total runoff in the San Mateo Creek basin emanates from these tributaries.

The predicted drainage density for the San Mateo Creek Watershed is 8 mi/sq.mi. Since the ERDC/Cold Regions Research Laboratory (CRRL) study mapped only the portion of the San Mateo Creek Watershed within the SAMP Study Area, complete calibration of the basin channel mapping was not possible. However, the predicted channel networks and drainage densities for the northwestern portion of the watershed (within the area mapped by ERDC/CRRL) have comparable accuracy to those in the San Juan Creek Watershed.

Infiltration

Overall, infiltration in the San Mateo Creek Watershed is relatively low due to the prominence of poorly infiltrating soils (e.g., 89.8 percent of the watershed is underlain by soil types C or D). However, there are pockets of the San Mateo Creek Watershed, particularly in the upper western watershed, which do have more permeable soils and offer higher infiltration. Figure 4.1.1-8 shows the distribution of hydrologic soil groups for the San Mateo Creek Watershed. Using the Orange County Hydrology Manual methods, Soil Conservation Service runoff curve numbers were assigned to synthesize the effect of soil type, land use, vegetation, and infiltration processes and offer an integrated overall “hydrologic loss” rate. Figure 4.1.1-9 and Table 4.1.1-5 display the distribution of Soil Conservation Service runoff curve numbers for the San Mateo Creek Watershed.

Assigned runoff curve numbers range from 31 to 97, with an area-averaged curve number of 78.7 for the whole watershed. The majority of the watershed (93 percent) was characterized by higher curve numbers between 70 and 97. Higher curve numbers result in a greater proportion of rainfall becoming surface runoff. The lower valley zones and riparian corridors along Cristianitos, Gabino, La Paz, and Talega canyons, as well as some reaches along the main San Mateo Creek upstream, include several areas of lower curve numbers.

TABLE 4.1.1-5
SAN MATEO CREEK WATERSHED PHYSICAL CHARACTERISTICS

Sub-Watershed Region	Area (sq.mi.)	Length (mi)	Elevation (ft)		Percentage Area with Hydrologic Soil Group				Area-Averaged Curve Number (AMC II)	Impervious Area (%)
			max	min	A	B	C	D		
La Paz Canyon	7.25	6.8	2,497	436	6.70	1.72	43.77	47.81	77.0	0.03
Upper Gabino Canyon	5.03	5.82	1,923	436	5.59	7.68	55.72	31.02	74.9	0.00
Lower Gabino Canyon with Blind Canyon	3.28	4.02	1,050	282	3.46	2.54	33.99	60.00	78.4	1.67
Upper Cristianitos Canyon	3.67	3.69	1,007	282	0.63	12.86	43.86	42.66	77.2	< 1.00
Talega Canyon	8.38	10.08	2,438	177	2.91	2.63	18.83	75.63	79.2	0.55
Entire Watershed	133.28	28.81	3,412	0	1.92	8.29	49.31	40.48	78.7	3.917
Source: PWA HEC-1 Analysis, 2000										

Storm Event Runoff

The 2-year, 10-year, and 100-year storm events were analyzed using the HEC-1 model of the San Mateo Creek Watershed. Peak flows for four locations in the watershed are summarized in Table 4.1.1-6.

TABLE 4.1.1-6
SAN MATEO CREEK WATERSHED SUMMARY OF PEAK FLOWS (cfs)

Watershed Location	2-Year Event		10-Year Event		100-Year Event	
	(cfs)	(cfs/mi.2)	(cfs)	(cfs/mi.2)	(cfs)	(cfs/mi.2)
Cristianitos Creek at Talega Canyon	740	27	5,220	189	11,800	427
San Mateo Creek at Nickel/Tenaja Canyons	2,980	37	16,990	211	39,440	489
San Mateo Creek downstream of Cristianitos Creek	3,200	25	19,100	148	47,070	366
San Mateo Creek at Pacific Ocean	3,200	24	19,160	144	47,530	357
Source: PWA HEC-1 Analysis, 2001						

Total runoff volumes and runoff per unit area for San Mateo Creek at the Pacific Ocean are shown in Table 4.1.1-7 below for the three modeled events. The individual sub-basins of the western portion of the San Mateo Creek Watershed have generally higher infiltration conditions and less runoff per unit area than the overall San Mateo Creek Watershed rates. It should be noted that for the 10-year and 100-year events, runoff volume per unit area for the relatively undeveloped San Mateo Creek Watershed is comparable to the more developed San Juan Creek Watershed to the north. However, peak discharge per unit area for the San Mateo Sub-basins is generally higher than for the San Juan Creek Sub-basins due to differences in terrain and slope between the two watersheds. In comparing runoff and discharge between the San Mateo sub-basins, the absolute discharges are highest for the Gabino Sub-basin due to its large area. However, discharge per unit area is slightly higher for the Cristianitos and La Paz Sub-basins primarily due to their shape and predominance of poorly infiltrating soils.

TABLE 4.1.1-7
SAN MATEO CREEK WATERSHED AT THE PACIFIC OCEAN
STORM EVENT RUNOFF VOLUMES

Event	**Total Runoff**Error! Bookmark not defined. **Volume (acre-feet)**	Runoff Volume per Unit Area (acre-feet/square mile)
2-Year	4,550	34
10-Year	24,970	187
100-Year	59,100	443
Source: PWA HEC-1 Analysis, 2000		

Low-Flow Conditions

The potential effect of urbanization on low-flow conditions was investigated by analyzing the Oso Creek Sub-basin as an example of what could potentially happen in other parts of the San Juan Creek or San Mateo Creek Watersheds if similar urbanization was to occur. The results of the trend analysis conducted for Oso Creek show that annual minimum stream flows and mean summer flows consistently increased over time as the basin progressively developed. The effect of upstream development on dry season flows is currently observable in the northern portion of the Cañada Gobernadora Sub-basin, where the Coto de Caza development has increased the

magnitude and persistence of low flows to the central Cañada Gobernadora Watershed. The effect of increased urbanization on low-flow conditions varies based on the underlying terrains. In general, the sandy terrains of the central San Juan Creek Watershed is more susceptible to increased low flow associated with urbanization. In contrast, crystalline terrains found in the eastern San Juan Creek Watershed and portions of the San Mateo Creek Watershed have intrinsically low infiltration rates. Therefore, the proportionate increase in low flow associated with urbanization in these areas may be less than in the sandy portions of the SAMP Study Area.

4.1.1.7 Sediment Processes

Sediment Yield

Sediment yield is the result of all of the erosive processes that take place in a watershed. Hill slope sediment yield consists of the process of sheet wash, rilling, and gullying, which are responsible for producing much of the sediment that is delivered to a stream on an average annual basis (excluding large episodic events). Sediment transport capacity is the ability of any given stream to transport the sediment yield from a watershed. Once the infiltration capacity in a contributing catchment is exceeded, water flows downhill and typically erodes and transports sediment with the water flow. Minor irregularities in the surface of hill slopes (either natural or human induced) can cause flow to coalesce. This localized concentration of flow increases shear stress and can result in rilling (i.e., tiny incisions or channels in the hill slope). As rills deepen and coalesce, they form gullies, which over time can supply significant amounts of sediment to the receiving water courses.

Rates of erosion in coastal southern California are among the highest in the world, and in the semi-arid environment of southern California, more sediment is typically shed from upland slopes than can be transported by stream networks. Floodplains and stream valleys, therefore, serve as areas of sediment deposition and temporary storage. Erosion rates tend to increase with both the seasonality of rainfall and the tendency toward relatively large, infrequent storms. Hill slopes are episodically subjected to fire and channels tend to periodically incise into their valley floors, processes that may generate most of the sediment yielded by some watersheds.

Hill slope sediment yield contributes sediment supply to streams, which in turn affects the geometry of the channel and the substrate properties in the stream. The nature and volume of the sediment generated form the contributing watershed as well as the ability for this sediment to be transported to the stream, influences whether streams have a sand bed, gravel bed, or cobble bed.

Many factors affect sediment yield. Among the most significant are geology, topography, rainfall, vegetation, multi-year wet and dry climatic cycles, fires, floods, landslides, and land use. Of these factors, fires, floods, and landslides are all episodic events that interact with the geology, topography, vegetation, and land use to affect the volume and timing of sediment delivery in the SAMP Study Area.

Sediment yields for the San Juan Creek and San Mateo Creek Watersheds were estimated from existing data on measured sediment discharge in San Juan Creek and other creeks in the region, estimates of upland sediment yield rates in southern California, and the application of the USACE, Los Angeles District debris method and the Modified Universal Soil Loss Equation (MUSLE).

Using measurements of stream flow and suspended sediment discharge, as well as estimates of bedload sediment discharge based on the modified Einstein method, Kroll and Porterfield (1969) estimated that long-term total sediment discharge for the San Juan Creek drainage basin between 1931 and 1968 was approximately 1,230 tons per square mile per year (tons/sq.mi./yr.). This value is believed to underestimate total sediment yield from the watershed because: (a) it is an estimate of the sediment that is actually transported by the streams rather than the total amount of sediment provided to them; and (b) the data from which long-term sediment yields were extrapolated were collected during two years that did not experience significant floods. Because most sediment is moved during extreme events, such as relatively large floods, this last point is key.

Taylor (1981) developed a catchment sediment yield model based on data from 36 water conservation reservoirs, flood control reservoirs, and debris basins throughout southern California. Taylor's denudation rates, expressed as base sediment yield rates, for the sub-watersheds in the San Juan Creek and San Mateo Creek drainages are shown in Table 4.1.1-8 and Table 4.1.1-9 respectively. Computed denudation rates are highest in the mountainous crystalline areas, where projected sediment yields are almost 6,000 tons/sq.mi./yr. In the foothills, projected base sediment yield rates range from approximately 2,500 to 3,100 tons/sq.mi./yr. The Base Sediment Yields and Particle Size foothill denudation rates calculated by Taylor are approximately twice the average annual sediment load for San Juan Creek estimated by Kroll (1969). This difference may be attributable to the fact that: (a) denudation rates represent the amount of material available to streams for transport rather than the amount that they are actually able to move on a regular basis; (b) as discussed previously, Kroll may have underestimated sediment transport during large storms; and (c) sediment sampling and calculation of yearly sediment budgets by Kroll do not appear to include the bedload sediment being transported.[6]

The sediment yields estimated based on the USACE, Los Angeles District and the MUSLE methods are expressed as cubic yards per square mile (cy/sq.mi.) for specific design discharge events, including the 2-year, 25-year, 50-year, 100-year, 200-year, and 500-year floods, making direct comparison with historical measured or estimated sediment yields obtained from other sources difficult. Computed sediment yields based on the USACE, Los Angeles District method were 145 tons/sq.mi. and 10,270 tons/sq.mi. for the 2-year to 100-year floods, respectively, in the San Juan Creek Watershed and 640 tons/sq.mi. and 14,840 tons/sq.mi. for the same design storms in the Arroyo Trabuco Watershed. Sediment yield estimates obtained using the MUSLE method were 71 tons/sq.mi. and 7,800 tons/sq.mi. in the San Juan Creek Watershed for the 2-year and 100-year floods, respectively, and 200 tons/sq.mi. and 8,900 tons/sq.mi. in the Arroyo Trabuco Watershed for the same design storms. Yields calculated using the MUSLE and USACE, Los Angeles District methods for the 25-year and 50-year events are within a similar range of baseline sediment yields estimated by Taylor's denudation rate formula. Table 4.1.1-10 provides a comparison of estimated sediment yields in the San Juan Creek Watershed using the techniques discussed above.

[6] Sediment yield associated with episodic events is the most significant factor in the overall sediment budget for southern California coastal watersheds. Bedload transport accounts for a small fraction of the overall sediment movement in the watershed, and is a minor factor in shaping stream geomorphology.

TABLE 4.1.1-8
SAN JUAN CREEK WATERSHED
BASE SEDIMENT YIELDS AND PARTICLE SIZE DISTRIBUTIONS

Stream	Major Geologic (Unit[s])	Weathers to:[a.]	Streambed Characteristics	Transport Characteristics	Base Sediment Yield Rate[b.] (mm/year)	Base Sediment Yield Rate (tons/sq.mi./yr.)	Particle Size Distribution					Percent Bedload
							Suspended Load		Bedload			
							Clay/Silt	Sand	Sand	Gravel	Cobble	
Oso	Niguel Sandstone	clayey and sandy silt	Sand, silt, clay	supply limited	0.35	2,491	high	high	high	very low	very low	15 to 25
	Capistrano Siltstone	clayey silt, expansive clay, some sand										
Trabuco	Bedford Canyon Metamorphics	sand, silt, clay, pebbles	gravel, sand, silt, clay	transport limited	0.35	2,491	high	high	high	med	low	10 to 20
	Santiago Peak Volcanics	angular pebbles and clay										
	Sespe and Vaqueros Sandstone and Conglomerate	clay, silt, sand, gravels										
	Old channel deposits	clay, silt, sand, gravels, cobbles										
	Monterey Shale	silt and clay										
	San Onofre Breccia	silt, sand, gravels, cobbles										
	Niguel Sandstone	clayey and sandy silt										
	Capistrano Siltstone	clayey silt, expansive clay, some sand										

TABLE 4.1.1-8 (Continued)
SAN JUAN CREEK WATERSHED
BASE SEDIMENT YIELDS AND PARTICLE SIZE DISTRIBUTIONS

Stream	Major Geologic (Unit[s])	Weathers to:[a.]	Streambed Characteristics	Transport Characteristics	Base Sediment Yield Rate[b.] (mm/year)	Base Sediment Yield Rate (tons/sq.mi./yr.)	Particle Size Distribution					Percent Bedload
							Suspended Load		Bedload			
							Clay/Silt	Sand	Sand	Gravel	Cobble	
Chiquita	Sespe Sandstone and Conglomerate	clay, sand, gravels	sand, some silt	supply limited	0.41-0.45	2,918 to 3,202	high	high	high	very low	very low	5
	Santiago Sandstone, Siltstone, Claystone	clayey sand										
	San Onofre Breccia	silt, sand, gravels, cobbles										
Gobernadora	Sespe Sandstone and Conglomerate	sand, silt, clay, minor gravels	sand, silt, clay	supply limited	0.41	2,918	high	high	high	low	very low	5 to 10
	Santiago Sandstone, Siltstone, Claystone	clayey sand										
Bell	Bedford Canyon Metamorphics	sand, silt, clay, pebbles	cobbles, gravels, sand	transport limited	0.38	2,704	med	med	med	high	high	50 to 60
	Starr Fanglomerate and Sandstone	silt with pebbles and cobbles										
	Santiago Sandstone, Siltstone, Claystone	clayey sand										

TABLE 4.1.1-8 (Continued)
SAN JUAN CREEK WATERSHED
BASE SEDIMENT YIELDS AND PARTICLE SIZE DISTRIBUTIONS

Stream	Major Geologic (Unit[s])	Weathers to:[a.]	Streambed Characteristics	Transport Characteristics	Base Sediment Yield Rate[b.] (mm/year)	Base Sediment Yield Rate (tons/sq.mi./yr.)	Particle Size Distribution					Percent Bedload
							Suspended Load		Bedload			
							Clay/Silt	Sand	Sand	Gravel	Cobble	
Upper San Juan	granitic	sand or smaller with large boulders	bedrock, gravels	supply limited	0.84	5,978	low	high	med	med	high	60 to 80
	meta-sedimentary	sand, silt, clay, pebbles										
	Santiago Peak Volcanic	angular pebbles and clay										
	Trabuco Conglomerate	sand, cobbles, boulders										
	Starr Fanglomerate and Sandstone	silt with pebbles and cobbles										
Verdugo	Trabuco Conglomerate	sand, cobbles, boulders	cobbles, gravels, sand, silt	transport limited	0.44	3,131	med	high	high	med	high	50 to 60
	Starr Fanglomerate and Sandstone	silt with pebbles and cobbles										
Trampas	Shultz Ranch Sandstone	sand and silt	sand, silt, clay	supply limited			low	high	high	very low	very low	40 to 50
	Santiago Sandstone	sand and clay										
	Monterey Shale	silt and clay										
	San Onofre Breccia	silt, sand, gravels, cobbles										

TABLE 4.1.1-8 (Continued)
SAN JUAN CREEK WATERSHED
BASE SEDIMENT YIELDS AND PARTICLE SIZE DISTRIBUTIONS

Stream	Major Geologic (Unit[s])	Weathers to:[a.]	Streambed Characteristics	Transport Characteristics	Base Sediment Yield Rate[b.] (mm/year)	Base Sediment Yield Rate (tons/sq.mi./yr.)	Particle Size Distribution					Percent Bedload
							Suspended Load		Bedload			
							Clay/Silt	Sand	Sand	Gravel	Cobble	
Lucas	Trabuco Conglomerate	sand, cobbles, boulders	cobbles, gravels, sand, silt	transport limited	0.44	3,131	low	med	low	high	high	50 to 60
	Starr Fanglomerate and Sandstone	silt with pebbles and cobbles										
	Shultz Ranch Sandstone	sand and silt										

a. Gravels are 2 to 64 mm. Pebbles are a subset of larger gravels (16 to 64 mm). Cobbles are 64 to 256 mm (2.5 to 10 inches). Boulders are larger.
b. Sediment yield rates presented are based on Taylor (1981) and should be revised to reflect a more refined understanding of local conditions. Data are presented as calculated to allow replication; readers should be aware that these values should be read to no more than two significant figures.

Source: Balance Hydrologics, 2000

TABLE 4.1.1-9
SAN MATEO CREEK WATERSHED
BASE SEDIMENT YIELDS AND PARTICLE SIZE DISTRIBUTIONS WITHIN SAMP STUDY AREA

	Stream	Major Geologic (Unit[s])	Weathers To:	Streambed Characteristics	Base Sediment Yield Rate[b.] (mm/year)	Base Sediment Yield Rate (tons/sq.mi./yr.)	Particle Size Distribution					Percent Bedload
							Suspended Load		Bedload			
							Clay/Silt	Sand	Sand	Gravel	Cobble	
Within SAMP Study Area	Cristianitos	Santiago Sandstone, Siltstone, Claystone	clayey sand	Sand, silt, clay,	0.48	3,416	high	high	high	low	low	40 to 50
	Gabino	Williams Sandstone, Conglomerate	sand, silt, gravels	Sand, silt, gravel, cobbles	0.42	2,989	med	med	med	med	med	50 to 60
		Shultz Ranch Sandstone	sand and silt									
		Santiago Sandstone, Siltstone, Claystone	clayey sand									
	La Paz	Trabuco Conglomerate	gravels, cobbles, boulders, sand	Sand, silt, gravel, cobbles	0.42	2,989	med	med	med	med	low	50 to 70
		Williams Sandstone, Conglomerate	sand, silt, gravels									
		Shultz Ranch Sandstone	sand and silt									
		Santiago Sandstone, Siltstone, Claystone	clayey sand									

TABLE 4.1-9 (Continued)
SAN MATEO CREEK WATERSHED
BASE SEDIMENT YIELDS AND PARTICLE SIZE DISTRIBUTIONS WITHIN SAMP STUDY AREA

	Stream	Major Geologic (Unit[s])	Weathers To:	Streambed Characteristics	Base Sediment Yield Rate[b.] (mm/year)	Base Sediment Yield Rate (tons/sq.mi./yr.)	Particle Size Distribution					Percent Bedload
							Suspended Load		Bedload			
							Clay/Silt	Sand	Sand	Gravel	Cobble	
Outside of SAMP Study Area	Talega	volcanics and meta-volcanics	sand, silt, clay, gravels, cobbles	n/a	0.39	2,775	high	n/a	n/a	high	n/a	20 to 40
		Williams Sandstone, Conglomerate	sand, silt, gravels									
		Santiago Sandstone, Siltstone, Claystone	clayey sand									
		Capistrano Siltstone, Sandstone	clay, silt, sand									
	Devil Canyon	Granodiorite	sand or smaller with large boulders	bedrock, gravel, sand	0.35	2,490	med	high	high	high	high	30 to 50
		volcanics and meta-volcanics	sand, silt, clay, gravels, cobbles									
	Lower San Mateo (south of confluence with Cristianitos)	mid-Miocene marine	sand, silt, clay	Sand, silt, cobble, gravel (sandiest near mouth)	0.35	2,490	high	high	low	low	very low	20 to 40
		upper Miocene marine	silt and clay									
		Pleistocene marine terrace	sand, silt, clay; minor cobbles, gravels									
	Upper San Mateo	upper Cretaceous marine	sand, silt, clay	bedrock, gravel, sand, silt	0.35	2,490	low	high	med	med	high	20 to 40
		Santiago Sandstone, Siltstone, Claystone	clayey sand									

n/a: not available

a. Taylor classified Devil Canyon and Upper San Mateo as hills not mountains which leads to an anomalously low base sediment yield. Therefore, the estimated denudation rate has been increased from 0.30 to 0.35 mm/yr.

b. Sediment yield rates presented are based on Taylor (1981) and should be revised to reflect a more refined understanding of local conditions. Data are presented as calculated to allow replication. The reader should not that these values should be read to no more than two significant figures.

Source: Baseline Hydrologics, 2000.

TABLE 4.1.1-10
COMPARISON OF SEDIMENT YIELD ESTIMATES

Watershed	County	Author	Dominant Substrate Type	Method	Time Period	Sediment Type (tons/ mi.2)	Comments
San Juan	Orange	Kroll & Porterfield	crystalline & sedimentary	rating curve applied to gauging record	1931-1968	1,230	based on measurements taken during 1967-1968
San Juan	Orange	Taylor	crystalline & sedimentary	calculated denudation rate	—	1,500 to 6,000	highest in mountainous areas, lower in foothills
San Juan	Orange	SLA	crystalline & sedimentary	LADB	—	4,350 to 6,850	indicated range is Q25 to Q50 with no burn
San Juan	Orange	SLA	crystalline & sedimentary	MUSLE	—	3,000 to 5,000	indicated range is Q25 to Q50
Arroyo Trabuco	Orange	SLA	crystalline & sedimentary	LADB	—	5,700 to 9,950	indicated range is Q25 to Q50 with no burn
Arroyo Trabuco	Orange	SLA	crystalline & sedimentary	MUSLE	—	3,000 to 5,500	indicated range is Q25 to Q50
San Diego	Orange	Orange County Public Facilities and Resources Department (OCPFRD)	crystalline & sedimentary	sampled sediment transport	1983-1998	1,800	suspended sediment only
San Diego	Orange	OCPFRD	crystalline & sedimentary	debris basin sediment removal	1983-1998	395	low trap efficiency

Source: Balance Hydrologics, 2000

For all methods, calculated sediment yields that attempt to quantify the amount of material available for stream transport exceed estimates and measurements of transported sediment loads by more than a factor of two. This may accurately reflect the condition of watersheds in an arid environment, where far more material is weathered and eroded than can typically be conveyed to and transported by local stream systems.

Mass Movements/Debris Flows (Episodic Events)

In central and southern California, up to 98 percent of the amount of sediment moved in any single decade is often mobilized during one or two intense flow events creating mass movements and debris flows. This conclusion is supported by estimates of sediment discharge in Arroyo Trabuco and in San Juan Creek near the City of San Juan Capistrano over a period from 1932 to 1968. The amount of sediment mobilized during an intense flow event is governed by available sources in the watershed, landform, and time since the last major fire. In fact, an estimated 70 percent of all sediment production in California's chaparral is triggered by fire.

Large volumes of sediment and debris produced during mass movements can dam rivers and facilitate channel migration and sediment deposition, resulting in abandoned floodplains and formation of new terraces. More typically, mass movements may impinge stream flow, resulting in localized erosion or down cutting. In many cases, it may take decades or longer for streams to cut through sediments deposited during mass movement, during which time the deposited mass of sediment and debris acts as a source of sediment to downstream areas.

Mass movements such as rotational slumps, block glides, and soil slips have been observed and mapped in different portions of the San Juan Creek and San Mateo Creek Watersheds. Residual bedrock landslide debris covers more than 3.7 square miles in the San Juan Creek Watershed. It has been estimated by PCR et al (2001) that more than one billion tons of landslide debris is ready for transit down this drainage area during a major flood event.

Landslides cover more than one-third of the Cristianitos fault zone; composite slides as large as 630 acres are also present. Although impressive in aerial extent and important from a geotechnical perspective, these large bedrock slides are likely geologically-old relict features thought to contribute less sediment to streams than do shallow failures on much steeper slopes.

West of the Cristianitos fault zone, the landscape is comprised mostly of low hills that terminate at a broad, wave cut terrace formed by marine erosion at the coast line. This area is not marked by extensive landslides because capping deposits help to protect the underlying bedrock, and stream erosion is not significantly active near the coast. Landslides in the hills between the coastal terrace and the Cristianitos fault zone are prevalent and consist mainly of bedrock failures that generally occur along the slopes of streams as discrete units or as aprons of coalescing slides. Although earth movement is common in these areas, localized slides do not contribute significantly to episodic sediment yields unless they impinge directly into the channel; rather, they contribute to baseline sediment yields.

East of the Cristianitos fault zone, landslides cover less than one percent of the area. More importantly, from the perspective of sediment yield, the area east of the fault zone has a propensity for the occurrence of mud debris flows, notably in the Trabuco and Williams Formations. During periods of extended rainfall, such as during the 1969 floods, mud debris flows emanating from the heads of steep canyons were commonplace.

In Channel Sediment Transport

Once sediment is delivered to a channel via hill slope sediment yield or mass movements, it may move downstream as bed load or suspended load. Bed load transport is the movement of coarser sediments along the channel substrate under shear force, most of which typically occurs in pulses during large storm events. Suspended load is the movement of particles (which may be finer grained) within the water column, typically during higher flow events. Mobilization of sediments stored in-channel or within the floodplain can be caused by increases in stream discharge, decreases in sediment supply, or a combination of the two. Circumstances that mobilize stored sediment may be caused by (1) land practices that alter flow or sediment delivery to streams, (2) natural responses to episodic events, or (3) ongoing adjustment to geologic changes in the valley platform. In-channel sediment transport processes affect the channel geometry and bedform. The erosion and movement of sediment within a channel can result in changes in the channel width and depth, and affect the structure of floodplain benches.

Peak sediment transport rates were calculated for each major sub-basin in the SAMP Study Area for the 2-year, 10-year, and 100-year discharge events. Peak transport rates per unit area were also calculated for each of the sub-basins. It should be noted that these rates represent estimates of the capacity for the system to transport sediment and may not describe actual sediment transport rates. Actual sediment transport is determined by both transport capacity and sediment supply.

San Juan Creek Watershed

Absolute peak sediment transport capacities for each major sub-basin during the 100-year flow event are compared in Figure 4.1.1-10. Transport rates are given at the most downstream end of each sub-basin. The Cañada Gobernadora and Bell Canyon Sub-basins had the highest absolute sediment transport rates in the San Juan Creek Watershed. This result is likely explained by the relatively large size of these two canyons (11.08 square miles and 20.57 square miles, respectively), although Cañada Gobernadora also has a relatively high transport capacity per unit area (Figure 4.1.1-10). After the Bell Canyon and Cañada Gobernadora Sub-basins, the main stem of the Central San Juan Creek Sub-basin had the next highest absolute sediment transport rate. Peak transport rates from the Lucas Canyon Sub-basin were the lowest of the San Juan Creek Watershed sub-basins.

Transport rates per unit area at the most downstream reach of each sub-basin for a 100-year flow event are shown in Figure 4.1.1-11. Since these transport rates are independent of sub-basin size, they reflect sediment shedding properties, integrating factors of channel geometry, runoff rates, and geology. The Trampas Canyon Sub-basin had the highest transport rates per unit area of any of the studied sub-basins entering San Juan Creek. The Cañada Gobernadora, Verdugo Canyon, and Lucas Canyon Sub-basins had the next highest transport capacities per unit area. Transport rates per unit area are likely highest for Trampas Canyon because of steep channel slopes at the basin mouth, transportable sediment sizes, and a small drainage area. In many ways, the Trampas Canyon Sub-basin is different from the other studied sub-basins which are larger canyon systems that occupy broader valleys. Trampas Canyon is more representative of the steeper headwater systems of the San Juan Creek Watershed where sediment yields are much higher. Conversely, sediment yields per unit area for the main San Juan Channel are the lowest.

Calculated sediment yields for the 2-year, 10-year, and 100-year storm events are shown in Figure 4.1.1-12. These results represent the potential volume of sediment delivered to the main stem of San Juan Creek from each of the tributary sub-basins during various magnitude storm

events. In general, average annual measures of sediment yield (Table 4.1.1-10) are consistent with the absolute transport rates for a 2-year storm event estimated by PWA. The Bell Canyon Sub-basin exhibited the highest sediment yield to San Juan Creek. This finding is expected since Bell is the largest of the sub-basins and produced relatively high transport rates. The main stem of the Central San Juan Sub-basin and the Gobernadora, Trampas, and Lucas Canyons Sub-basins also produced relatively high yields. The Cañada Chiquita Sub-basin had the lowest yields of the San Juan Creek Watershed sub-basins (Figure 4.1.1-12). The Trampas Canyon Sub-basin has the highest yields per area. This finding is consistent with the results for transport rates described above for this steep, small tributary catchment. Of the studied canyon sub-basins, Verdugo Canyon had the highest yield per unit area.

Based on the in-channel yield results, sediment mass balances were calculated for the four modeled reaches of the main stem of San Juan Creek to assess if the reaches were erosional or depositional. Upstream sediment input to San Juan Creek (from the upper watershed above Lucas Canyon) was estimated using results from Balance Hydrologics. Although the magnitude of results varies somewhat for the two sediment transport functions, both functions indicate a general pattern of deposition in three of the four modeled reaches during large flood events. The most downstream reach was predicted to be slightly erosional during extreme flood events. The delivery of sediment from the canyon sub-basins to the main San Juan Creek channel likely plays a significant role in this depositional pattern observed in the three upstream reaches.

San Mateo Creek Watershed

In the San Mateo Creek Watershed, the Gabino Canyon Sub-basin (upstream of the Cristianitos Creek confluence) was calculated to have the highest sediment transport capacity (Figure 4.1.1-10). This absolute rate is the highest of all modeled sub-basins in the San Juan Creek and San Mateo Creek Watersheds and is similar in magnitude to rates calculated for the Gobernadora and Bell Canyons Sub-basins in the San Juan Creek Watershed. Transport rates calculated for the La Paz and Cristianitos Canyons Sub-basins are the lowest of the modeled San Mateo sub-basins and are similar to values calculated for the Lucas and Verdugo Canyons Sub-basins. The Upper Cristianitos Sub-basin (3.67 square miles) had the highest transport capacity per unit area of the three modeled San Mateo sub-basins (Figure 4.1.1-11). The Upper Cristianitos Sub-basin's per unit area transport rate surpasses rates calculated for all other sub-basins except the Trampas Canyon Sub-basin. This rate implies that the hydrology, geology, and geomorphology of Upper Cristianitos Creek are conducive to transporting sediment. The transport capacity per unit area of the Gabino Canyon Sub-basin is intermediate between estimated rates for the La Paz and Cristianitos Canyons Sub-basins. Of the modeled sub-basins in the San Mateo Creek Watershed, the La Paz Canyon Sub-basin had the lowest transport rates per unit, only slightly higher than those for the Lucas Canyon Sub-basin.

Calculated sediment yields at the mouth of the sub-basins for the 2-year, 10-year, and 100-year storm events are shown in Figure 4.1.1-12. This figure illustrates that the Gabino Canyon Sub-basin has the highest sediment yield of the three San Mateo Creek Watershed Sub-basins. This fact is most likely due to the somewhat larger size of Gabino Canyon when compared to the Upper Cristianitos and La Paz Sub-basins. Although the Upper Cristianitos Sub-basin is half the size of the La Paz Sub-basin, its relatively high rate of sediment transport per unit area (see Figure 4.1.1-11) resulted in total sediment yields that were slightly higher than those from the La Paz Sub-basin for the 10-year and 100-year events.

In comparing yield figures or sediment rating curves for different basins, it is important to note differences between the basins in the primary factors that affect sediment yields and transport. These differences include precipitation regime, geology and soils, relief, bank and bed stability,

drainage area, type of stream (i.e., alluvial or bedrock), tectonic setting, and fire and land use history of a basin. Of particular interest are subwatersheds underlain by Monterey shale, which have steeply sloping sediment rating curves. This diatomaceous, chalky rock weathers quickly and yields high quantities of sediments at all flows. Very little sand is produced from Monterey shale. In contrast, the crystalline bedrock sediment yield is highly episodic. At most flows, Monterey shale produces few sediments. However, at extremely high flows and/or after fires, it yields high quantities of sediments. In general, suspended sediment discharge in San Mateo Creek is less than in San Juan Creek for all measured flows. One factor that may contribute to the lower suspended sediment discharge in San Mateo Creek is the absence of Monterey shale in the drainage geology. Monterey shale underlies ten percent of the drainage area in San Juan Creek. Another factor contributing to the lower rate of suspended sediment transport in San Mateo Creek is its smaller drainage area size.

4.1.1.8 Water Quality

Regulatory Setting

The federal Water Pollution Control Act (also known as the Clean Water Act) was amended in 1972 to prohibit the discharge of any pollutants into waters of the United States unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) Permit. The Clean Water Act amendments of 1990 required NPDES permits for nonpoint source discharges including urban runoff and storm water from construction activities, municipal areas discharging to municipal separate storm sewer systems (MS4s), and certain industrial facilities. The SWRCB and nine RWQCBs administer the water quality control programs in California and issue NPDES permits. Each RWQCB is required to adopt a Water Quality Control Plan (referred to as the Basin Plan) that describes the existing water quality conditions and problems in the region, establishes beneficial uses of the surface waters and groundwaters in the region along with water quality objectives to protect those beneficial uses. The San Juan Creek and San Mateo Creek Watersheds are located within the San Diego Region and governed by the Basin Plan for the San Diego Basin. The San Diego Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all waters in the region.

Storm water discharges from construction activities are regulated by the SWRCB under the General Permit for Storm Water Discharges Associated with Construction Activities (99-08-DWQ) (General Construction Permit). The permit regulates pollutants in storm water discharges from activities disturbing one acre or more of soil. Issuance of the permit requires preparation and implementation of a Construction Storm Water Pollution Prevention Plan (SWPPP) that outlines BMPs to control sediment and other construction material pollutants in storm water discharges from the construction site

Beginning in 1990, the County of Orange, the Orange County Flood Control District and the incorporated cities in Orange County collectively received a NPDES MS4 Permit (MS4 Permit) for storm water discharges into watersheds within the permitting jurisdiction of the San Diego RWQCB. This permit was renewed in 2002. The jurisdictional area covered by the San Diego RWQCB MS4 Permit can generally be described as the southerly portion of Orange County including the cities of Aliso Viejo, Dana Point, Laguna Beach, Lake Forest, Laguna Hills, Laguna Niguel, Laguna Woods, Mission Viejo, Rancho Santa Margarita, San Clemente, San Juan Capistrano, and the County of Orange and the County Flood Control District. Major surface water bodies within the MS4 Permit area include Cañada Gobernadora, Arroyo Trabuco, Prima Deshecha Cañada, Segunda Deshecha Cañada, the Pacific Ocean, Moro Canyon, Laguna Canyon, Aliso, English Canyon, Sulphur, Wood Canyon, Salt, San Juan, Bell Canyon, and Oso Creeks.

The MS4 Permit requires implementation of storm water management practices, control techniques, system design, and engineering methods to protect beneficial uses of receiving waters to the maximum extent practicable. Programs and activities required by the MS4 Permit are in the Orange County Drainage Area Management Plan (DAMP). The County of Orange and each city has developed a Local Implementation Plan for implementation of the Orange County DAMP program elements within their jurisdiction. The Local Implementation Plan is also known as the Jurisdictional Urban Runoff Management Plan by the San Diego RWQCB.

The MS4 Permit requires the cities/county to implement programs that minimize the short-term and long-term impacts on receiving water quality from new development and significant redevelopment. The Orange County DAMP and city/county Local Implementation Plans require applicants of new development projects to submit a Water Quality Management Plan (WQMP) for approval by the county or city prior to issuance of a grading permit. The WQMP must meet specific criteria of the MS4 Permit to minimize the effects of development on site hydrology, runoff flow rate and velocities, and pollutant loads to the maximum extent practicable. The WQMP for a new development project must incorporate a variety of post-development Best Management Practices (BMPs) that control the volume and rate of storm water runoff and reduce pollutants in storm water discharges. The four categories of BMPs that can be incorporated into a proposed project as specified in the DAMP/Local Implementation Plan are site design, routine non-structural source control, routine structural source control, and treatment BMPs. As required by the MS4 Permit, the DAMP specifies that new development must meet specific volume-based and flow-based numerical sizing criteria for treating storm water runoff.

Applicable Beneficial Uses and Water Quality Objectives

As part of the San Diego Basin Plan, the San Diego RWQCB has designated beneficial uses (pursuant to Section 303 of the Clean Water Act) for San Juan Creek and San Mateo Creek. These designated beneficial uses for the receiving waters of these watersheds are defined and listed in Table 4.1.1-11. In addition, applicable surface water quality standards established by the San Diego RWQCB and the SWRCB under the California Toxics Rule are summarized in Table 4.1.1-12. Applicable groundwater quality standards established by the San Diego RWQCB and the SWRCB are provided in Table 4.1.1-13.

Section 303(d) of the federal Clean Water Act (CWA, 33 USC 1250, et seq., at 1313 [d]), requires States to identify waters that do not meet water quality standards. States are required to compile this information in a list and submit the list to EPA for review and approval. This list is known as the Section 303(d) list of impaired waters. As part of this listing process, states are required to prioritize the impaired waters/watersheds for future establishment of total daily maximum load (TMDL) allocations for point and non-point source discharges into the impaired waters. California's most recent Section 303(d) list of impaired water bodies was approved by EPA in July 2003 and contains 509 water bodies, many listed as being impaired for multiple pollutants. For the San Juan Creek and San Mateo Creek Watersheds, the Section (303)(d) list specifies San Juan Creek as being impaired for bacteria. The San Diego RWQCB has indicated that establishment of a TMDL for this impairment is of medium priority.

TABLE 4.1.1-11
SAN DIEGO BASIN PLAN DESIGNATED BENEFICIAL USES

Description of Use	San Juan Creek Watershed	San Mateo Creek Watershed
Agricultural Supply (AGR)—Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.	Yes	
Industrial Service Supply (IND)—Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.	Yes	
Contact Water Recreation (REC-1)—Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.	Yes	
Non-Contact Water Recreation (REC-2)—Includes the uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.	Yes	Yes
Warm Freshwater Habitat (WARM)—Includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.	Yes	Yes
Cold Freshwater Habitat (COLD)—Includes uses of water that support cold water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.	Yes	
Wildlife Habitat (WILD)—Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.	Yes	Yes
Rare, Threatened, or Endangered Species (RARE)—Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.	a.	Yes (lower reaches only)

a. Although the San Juan Creek Watershed supports endangered species, such as the arroyo toad, the San Diego Water Board has not designated RARE as a beneficial use for this watershed.

Source: San Diego Water Quality Control Board

TABLE 4.1.1-12
BASIN PLAN AND CALIFORNIA TOXIC RULE STANDARDS AND OBJECTIVES APPLICABLE TO SURFACE WATERS IN SAMP STUDY AREA

Constituent	Units	California Drinking Water Standards[a.]	Basin Plan Objectives[b.]	California Toxics Rule[f.] (CMC)[g.]	California Toxics Rule[f.] (CCC)[h.]
Inorganic Chemicals					
Aluminum	mg/l	1	–	–	–
Antimony	mg/l	0.006	–	–	–
Arsenic	mg/l	0.05	–	0.34	0.15
Asbestos	MFL	7	–	–	–
Barium	mg/l	1	–	–	–
Beryllium	mg/l	0.004	–	–	–
Boron	mg/l	– [c.]	0.75	–	–
Cadmium	mg/l	0.005	–	0.0043	0.0022
Chromium	mg/l	0.05	–	0.016	0.011
Chloride	mg/l	none	250	–	–
Copper	mg/l	1.3	–	0.013	0.009
Cyanide	mg/l	0.2	–	–	–
Fluoride	mg/l	2	1	–	–
Iron	mg/l	0.3	0.3	–	–
Lead	mg/l	0.015	–	0.065	0.0025
Manganese	mg/l	0.05	0.05	–	–
Mercury	mg/l	0.002	–	–	–
Nickel	mg/l	0.1	–	0.47	0.52
Nitrate+Nitrite (as N)	mg/l	10	–	–	–
Nitrite (as N)	mg/l	1	–	–	–
Selenium	mg/l	0.01	–	–	0.005
Silver	mg/l	0.05	–	0.0034	–
Sodium	%	– [c]	60	–	–
Sulfate	mg/l	250, 500	250	–	–
Thallium	mg/l	0.002	–	–	–
Zinc	mg/l	5	–	0.12	0.12
Others					
PH	pH Units	6.5-8.5	6.5-8.5	–	–
Specific Conductance	(μs)	900, 1600	–	–	–
Total dissolved solids	mg/l	500	500	–	–
Ammonia (as N)	mg/l	30	4	–	–
Fecal coliform bacteria	MPN/100m	log mean <20	–	–	–

mg/l: milligrams per liter

a. Maximum contaminant levels established by the Department of Health Services, from Title 22 of the California Code of Regulations, April 2000. Where two values are shown, they represent the "recommended" and "mandatory" values.
b. Concentrations not to be exceeded more than 10 percent of the time during any one year period.
c. No primary drinking water standards have been established for boron or sodium. At elevated concentrations, these constituents may constrain plant or crop growth.
d. Un-ionized ammonia concentrations exceeding 0.0025 mg/l can be toxic.
e. Biostimulating constituents.
f. California Toxics Rule (CTR) freshwater aquatic life criteria.
g. Criteria Maximum Concentration (CMC) equals the highest concentration to which aquatic life can be exposed for a short time period.
h. Criteria Continuous Concentration (CMC) equals the highest concentration to which aquatic life can be exposed for an extended (4 days) period of time.

Source: Balance Hydrologics, Inc., 2001

TABLE 4.1.1-13
WATER QUALITY OBJECTIVES APPLICABLE TO GROUNDWATER IN THE SAMP STUDY AREA

Constituent	Units	California Drinking Water Standards [a.]	Basin Plan Objectives [b.]
Inorganic Chemicals			
Aluminum	mg/l	1	–
Antimony	mg/l	0.006	–
Arsenic	mg/l	0.05	–
Asbestos	MFL	7	–
Barium	mg/l	1	–
Beryllium	mg/l	0.004	–
Boron	mg/l	– [c.]	0.75
Cadmium	mg/l	0.005	–
Chromium	mg/l	0.05	–
Chloride	mg/l	none	250
Chlorine	mg/l	–	250,375,400
Copper	mg/l	1.3	–
Cyanide	mg/l	0.2	–
Fluoride	mg/l	2	–
Fluorine	mg/l	–	1.0
Iron	mg/l	0.3	0.3
Lead	mg/l	0.015	–
Manganese	mg/l	0.05	0.05
Mercury	mg/l	0.002	–
Nickel	mg/l	0.1	–
Nitrate (NO_3)	mg/l		45
Nitrate+Nitrite (as N)	mg/l	10	– [e.]
Nitrite (as N)	mg/l	1	–
Selenium	mg/l	0.01	–
Silver	mg/l	0.05	–
Sodium	%	– [c.]	60
Sulfate	mg/l	250, 500	250,375,500
Thallium	mg/l	0.002	–
Zinc	mg/l	5	–
Others			
Color	Color Units	15	15
Methylene Blue-Activated Substances (MBAS)	mg/l	–	0.5
Odor		3	none
PH	pH Units	6.5-8.5	–
Specific Conductance	(μs)	900, 1600	–
Total dissolved solids	mg/l	500	500,750,1200
Turbidity	NTU	5	5
Ammonia (as N)	mg/l	30[d.]	–
Fecal coliform bacteria	MPN/100m	log mean <20	–

mg/l: milligrams per liter

a. Maximum contaminant levels established by the Department of health Services, from Title 22 of the California Code of Regulations, April 2000. Where two values are shown, they represent the "recommended" and "mandatory" values.
b. Concentrations not to be exceeded more than 10 percent of the time during any one year period. Where three values are shown, they represent the upper, middle, and lower San Juan Creek hydrologic sub areas.
c. No primary drinking water standards have been established for boron or sodium. At elevated concentrations, these constituents may constrain plant or crop growth.
d. Un-ionized ammonia concentrations exceeding 0.0025 mg/l can be toxic.
e. Biostimulating constituents.

Source: Balance Hydrologics, Inc., 2001 and URS, 2003

Overview of Existing Water Quality Conditions

The information presented below is based on information contained in *Baseline Biologic, Hydrologic and Geomorphic Conditions, Rancho Mission Viejo: San Juan and Upper San Mateo Watersheds* (PCR, PWA and Balance Hydrologics, Inc., May 2001). This report is included as Appendix C to this EIS. Additional discussion and quantification of water quality conditions can be obtained from the source document. The Water Quality Management Plans and technical memorandum are provided in this EIS as Appendix D.

Pollutant pathways and cycles within settings as diverse as the San Juan Creek and San Mateo Creek Watersheds can be complex. Constituents of concern in these watersheds include temperature, turbidity, nutrients (primarily nitrogen and phosphorus), metals, and pesticides (primarily diazinon and chlorpyrifos).

In general, pollutants are transported and sometimes transformed into other compounds with storm water runoff. They are either in dissolved form, particulate form, or are adsorbed to other particles in the water (clays, colloids, etc.). The availability of particulates, pH, and dissolved oxygen affect the distribution of pollutants between dissolved and bound forms. Therefore, land use characteristics that promote infiltration and slow the flow of water allowing sediments to settle or filter out are the main factors that control pollutant mobility.

Geology can also have a direct impact on specific water quality constituent concentrations. For example, the Monterey shale bedrock, which occurs in several of the San Juan Creek sub-basins, is a source of high levels of phosphate and certain metals, such as cadmium.

Terrain can influence the mobilization, loading, and cycling of pollutants. Some general water quality characteristics of the major terrains in the SAMP Study Area (Figure 4.1.1-3) are:

- **Sandy terrains.** Sandy terrains generally favor infiltration of rainfall and therefore have the potential to direct pollutants mobilized in low to moderate rainfall events into sub-surface pathways, with little or no actual biogeochemical cycling taking place in surface waters. Sequestered in sands, pollutants have the opportunity to degrade and attenuate via contact with soils and plants in the root/vadose zones before passage to groundwater or mobilization and transport to surface waters during larger storm events.

- **Silty terrains.** Silty terrains are characterized by higher runoff rates and tend to favor surface water pathways more than sandy terrains (but less than clayey terrains). Silty substrates can also be a significant source of turbidity (i.e., fine sediments). Conversely, the finer sediments derived from the silty substrates promote the transport of metals and certain pesticides in particulate form. This factor makes them less readily available in first- and second-order stream reaches, but potentially allows transport to higher order streams and subsequent deposition over long distances.

- **Clayey terrains.** Clayey terrains are characterized by very high rates of surface runoff during low and moderate storm events. Although clay soils are generally quite resistant to erosion, they can be very significant sources of turbidity during extreme rainfall events when erosion occurs and/or headcutting or incision within the streambed begins.

- **Crystalline terrains.** Crystalline terrains are common only in the uppermost reaches of the San Juan Creek and San Mateo Creek systems where development and agricultural activities are absent. Similar to clayey terrains and in contrast to sandy terrains, during low to moderate rainfall events, primary pollutant pathways will be in surface water flow, leading to the potential for rapid mobilization and transport of constituents. Unlike clayey terrains, the crystalline substrates may be relatively poor in the finer particles that cause turbidity. Like all terrain types, extreme events would likely result in the mobilization and transport of all sizes of sediments from these areas.

Existing Water Quality Data for the San Juan Creek Watershed

The County of Orange has collected a significant amount of water quality data for San Juan Creek since the 1950s.[7] Most of recent water quality monitoring data in the San Juan Creek Watershed was collected by the Orange County Public Facilities and Resources Department in the 1990s at three sampling points that allow for a generalized comparison among land use and terrain types. The sampling points were: (a) the main stem of San Juan Creek at La Novia bridge in the City of San Juan Capistrano which has a large drainage area that includes all terrain types and contains diverse land uses; (b) the main stem of San Juan Creek at Caspers Regional Park (approximately 10 miles upstream of San Juan Capistrano) which represents runoff from primarily open space coastal scrub and chaparral on crystalline terrains; and (c) the Oso Creek sample location represents mostly urban land uses on clayey terrains.

The data for the key nutrients (nitrate, ammonia, and phosphate) monitored by the County of Orange is summarized in Table 4.1.1-14. This table includes statistical summaries for the measured concentrations of these nutrients as a function of the 3-day antecedent rainfall measured at the Tustin rain gauge.[8] It is important to note that the measured nutrient concentrations, especially during dry periods, were at or below the detection limit for one or more of these constituents.

[7] Concurrent discharge measurements were not taken at the time of sampling for much of the data, creating some limitations on its use.

[8] Rainfall data from the Tustin gauge was chosen due to the completeness of the data and the relative proximity of the gauge to the watershed. The gauge is operated by the Orange County PFRD and is located northwest of the water quality stations on San Juan and Oso Creeks. Additionally, the gauge is located at an elevation (and, thus, mean annual rainfall) similar to the monitored watersheds. It is reasonable to assume that storm patterns and relative intensities observed at Tustin will be generally representative of conditions within the San Juan, Arroyo Trabuco, and Oso Creek sub-watersheds. Additional insight could be gained with precipitation data collected, and especially stream discharge data, collected within these basins.

TABLE 4.1.1-14
SUMMARY OF WATER QUALITY DATA MEASURED BY THE ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT AS FUNCTION OF ANTECEDENT RAINFALL, WY 1991 TO WY 1999

3-Day Rainfall[a.]	Caspers Regional Park			La Novia			Oso Creek/Mission Viejo		
	# of Samples	Mean	Median	# of Samples	Mean	Median	# of Samples	Mean	Median
Nitrate Concentrations (mg/l NO_3 as N)									
0.00	32	0.1	0.1	43	0.3	0.2	10	0.9	1.0
0.01-0.50	10	0.2	0.1	21	0.5	0.5	23	1.2	1.3
0.51-1.00	6	0.9	0.1	15	1.2	1.2	15	1.2	1.2
1.00-1.50	1	0.7	0.7	7	1.5	1.7	15	1.4	1.3
>1.50	0	n.d.	n.d.	5	0.4	0.4	18	1.0	0.8
Ammonia Concentrations (mg/l NH_3 as N)									
0.00	31	0.1	0.1	42	0.1	0.1	10	0.9	1.0
0.01-0.50	9	0.4	0.1	20	0.1	0.1	23	1.2	1.3
0.51-1.00	5	2.5	0.5	14	0.1	0.1	15	1.2	1.2
1.00-1.50	1	0.5	0.5	7	0.3	0.6	15	1.4	1.3
>1.50	0	n.d.	n.d.	5	0.1	0.1	18	1.0	0.8
Phosphate Concentrations mg/l PO_4 as P)									
0.00	31	0.1	0.1	43	0.1	0.1	10	0.7	0.6
0.01-0.50	9	0.4	0.1	21	0.2	0.2	23	0.4	0.3
0.51-1.00	5	3.4	3.6	15	0.6	0.4	15	0.7	0.5
1.00-1.50	1	1.0	1.0	7	0.7	0.7	15	0.7	0.6
>1.50	0	n.d.	n.d.	5	0.5	0.5	18	1.0	0.5
Zinc Concentrations (Total Zn mg/l)									
0.00	11	23	22	12	28	16	10	68	63
0.01-0.50	9	77	23	17	52	20	23	61	49
0.51-1.00	7	87	100	18	48	32	15	87	92
1.00-1.50	1	38	38	7	51	43	14	135	58
>1.50	0	n.d.	n.d.	5	30	24	18	58	54

mg/l: milligrams per liter
n.d. = no data
a. Sum of three-day rainfall in inches as measured at the Orange County PFRD gauge in Tustin.
Source: Balance Hydrologics, 2000

Nitrates and Phosphates

Several observations can be made on the basis of this data.

- The data suggest that there are one or more significant sources of nitrogen loading between the Caspers and La Novia monitoring stations. It is not possible with the available data to ascertain the sources of the additional loading, but it may include factors such as the location of several nursery operations downstream of the Caspers site, development on San Juan Creek tributaries (e.g., Coto de Caza on Cañada Gobernadora), and the large amount of grassland in the sub-basins below Caspers.[9] There is insufficient reliable data to determine whether a similar situation exists with regard to phosphate loadings between the two sites.

- The monitoring results for nitrate provide strong indications that nitrate is introduced into the lower San Juan Creek system by a mechanism that generally increases proportionally with precipitation up to 1.50 inches of 3-day rainfall. The data are consistent with nitrate mobilization either through direct transport by surface storm water runoff or by the displacement of nitrate-rich groundwater into the stream system.

- The monitoring results for phosphate at the La Novia monitoring station indicate that there is a tendency to higher phosphate levels with increases in both 3-day antecedent rainfall and discharge. The apparent relationship between phosphate and rainfall/ discharge is consistent with erosion being the primary contributor of phosphorus loading. Unfortunately, insufficient samples were collected at the Caspers monitoring station to ascertain whether this observation applies to the whole watershed or only to that portion below Bell Canyon.

It is possible that channel incision can be a contributing factor to both nitrogen and phosphorus loading in the San Juan system. The link between channel incision and phosphorus loading is relatively straightforward: erosion of channel and floodplain terrace material can release significant quantities of stored phosphates. The link to nitrogen loading may be less apparent and focuses on the potential for changes to groundwater inflows to stream reaches as the channel bed degrades. Deeper groundwater is often enriched in nitrate. As a stream incises, it dewaters adjacent aquifers from progressively greater depths thereby increasing the nitrogen loading in the surface waters under base flow conditions,

The ratio of available nitrogen to available phosphorus within a water body often has an important regulating effect on the growth of aquatic plants and animals.[10] The monitoring data support the contention that these systems are generally nitrogen limited (i.e., N/P ratio < 10).[11] One notable exception is found for San Juan Creek at La Novia.

At this monitoring location, it appears that the San Juan system is nitrogen limited at both very low and very high flow rates. Intermediate flow rates correspond with the period when the nitrate

[9] Grasslands (both native and non-native) have been shown to contribute relatively high loadings of nitrogen (N) in studies carried out in several locations. One obvious potential contributing factor is the fact that grasslands are ideal for livestock grazing with the associated potential for N mobilization from animal wastes. Additionally, grassland soils are typically roughly 4 to 5 percent N by weight, and this N is available to rainfall passing over or through these soils.

[10] Aquatic organisms, such as algae, require carbon, nitrogen, and phosphorus to fuel their basic metabolic processes. If one of these elements is present at low concentrations in the environment, it may become a limiting factor in their growth. The nitrogen/phosphorus ratio (N/P) is often used to indicate which element is limiting, with ratios below 10 indicating that nitrogen is limiting and ratios above 10 indicating that phosphorus is limiting.

[11] It should be noted that the threshold of N/P <10 is generalized from a wide range of aquatic systems. The actual level in the SAMP watersheds may vary with location, time of year and particular species being considered.

concentrations have increased (with increasing rainfall as discussed above) but phosphate levels have yet to increase significantly. Once discharge increases, with the associated general tendency to increase phosphate levels, nitrogen once again becomes the limiting nutrient. Although the overall nitrogen values in the more urbanized Oso Creek sub-Watershed are higher, phosphate levels are still high enough to lead to nitrogen limitation.

Zinc

Monitoring carried out by the Orange County Public Facilities and Resources Department in the 1990s in San Juan Creek included analysis of several metals: cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), nickel (Ni), silver (Ag), and zinc (Zn). The results are reported in this EIS (Appendix C), *Baseline Biologic, Hydrologic and Geomorphic Conditions, Rancho Mission Viejo: San Juan and Upper San Mateo Watersheds*. In waters with typical pH levels of 7 to 8, as found in San Juan Creek, metals are most likely to be found in their particulate phase. Therefore, one can assume that the more bio-available dissolved fraction would have a much lower concentration. Because metals are typically found in their particulate form and are, therefore, transported in the same manner as sediments, it is unlikely that significant metal transport would occur during dry weather, as the majority of sediment transport occurs during storm events. An initial examination of the San Juan Creek monitoring data shows that, with the notable exception of zinc, most metals are found in concentrations below the detection limit. Several observations can be made on the basis of these data:

- The data do not indicate a significant difference in zinc concentrations between the Caspers and La Novia monitoring stations. This suggests that equivalent zinc sources are found both upstream and downstream of the Caspers monitoring site. Such sources likely include galvanized metal products (e.g., steel culverts), automobile tire wear, roof drainage, and natural mineral weathering.

- Zinc mobility with rainfall. The relationship between measured zinc concentrations and 3-day antecedent rainfall suggest that zinc concentrations increase with increasing rainfall until approximately 1 inch of 3-day cumulative antecedent rainfall is reached, at which point zinc concentrations begin to decrease.

- Total zinc concentrations in water samples collected from San Juan Creek range from below the detection limit to 420 μg/L (measured at Caspers Regional Park on November 15, 1993). As a point of comparison, the monitoring results indicate that, on several occasions, zinc concentrations surpassed the 120 milligrams per liter (mg/l) criteria (for both acute and chronic levels) that have been established for priority toxic pollutants under the California Toxics Rule. In general, it is expected that the dissolved fraction of total zinc has much lower concentrations than particle-bound fractions.

Total Dissolved Solids

Sources of total dissolved solids include both natural weathering of bedrock and soils as well as anthropogenic sources from agriculture and urbanization. The data suggests that total dissolved solids concentrations in San Juan Creek increase from 200 mg/l at its upper reaches to over 1,000 mg/l in the lower reach. Given the minimal urbanization of the Watershed in the 1960s, this 500 percent increase in total dissolved solids is likely the result of: (a) inputs from sub-basins that drain highly erodible substrates such as Monterey Shale (e.g., Cañada Chiquita and Oso Creek); (b) irrigation return flows in Oso Creek, Cañada Chiquita, and Cañada Gobernadora; and (c) evaporative processes that concentrate salts in the water column

throughout the length of San Juan Creek. These data suggest that high total dissolved solids are indicative of a baseline condition for the lower San Juan Watershed.

Bacteria

Frequent but spatially limited bacteria monitoring data are available for the lower reaches of San Juan Creek under a program carried out by the South East Regional Reclamation Agency. These data indicate persistently high counts of total and fecal coliform (FC) and enterococcus (EC), both at the mouth of San Juan Creek and upstream of the Latham Treatment Plant. The San Diego RWQCB water quality objective for contact recreation of 200/100 ml of fecal coliform (log mean over 30-day period) is consistently exceeded. However, the water quality objective for non-contact recreation of 2,000/100 ml of fecal coliform is generally attained at the upstream monitoring site. For calendar year 2000, the log mean fecal coliform concentration at Del Obispo Park was approximately 300/ml. The EPA guidelines for enterococcus that are cited in the San Diego Basin Plan (151/ml for infrequently used freshwater areas) was met on only roughly one-third of the samples taken over recent years at the upstream Del Obispo Park monitoring site. The log mean enterococci concentration for calendar year 2000 was approximately 540/ml.

It is important to note that both of the South East Regional Reclamation Agency monitoring sites are located at the most downstream reaches of San Juan Creek, within and below extensive urbanized areas. The sources of these bacterial contaminants cannot be ascertained with existing data.

Existing Water Quality Data for the San Mateo Creek Watershed

Comparable baseline water quality data for San Mateo Creek are limited. As a part of the GPA/ZC EIR 589, water quality monitoring was conducted by Rivertech Inc. The sampling plan, begun in early 2001, identified a comprehensive analysis of both storm event and dry weather samples to be collected from nine locations in the SAMP Study Area, including two sites within the San Mateo Creek Watershed (Cristianitos and Gabino Creeks). These data were supplemented by continuous monitoring of temperature, conductivity, dissolved oxygen, pH, and flow at four stations (including Cristianitos Creek).

4.1.1.9 Groundwater

The information presented below is based on information contained in *Baseline Biologic, Hydrologic and Geomorphic Conditions, Rancho Mission Viejo: San Juan and Upper San Mateo Watersheds*, by PCR, PWA, and Balance Hydrologics, Inc. (May 2001).

The majority of the San Juan Creek and San Mateo Creek Watersheds is underlain by semi-consolidated sandstones and alluvial and terrace sediments derived from sandstones that have the capacity to store groundwater. Several of the bedrock geologic units in the central portion of the San Juan Creek Watershed are moderately sandy and largely uncemented that provide opportunities for infiltration and groundwater storage. In this portion of the San Juan Creek Watershed, the sandy deposits in the floodplain and stream valleys are permeable and therefore, can be a major source of groundwater recharge to both local and regional aquifers. Clay portions of the San Juan Creek Watershed and areas with geologic units composed of siltstones, shales, and mudstones, contain few beds of water-bearing sandy sediments. These areas also tend to have the highest groundwater salinity because negatively charged clay particles are often coated with ions that are released into the groundwater. Weathered and fractured crystalline rocks yield moderate amounts of water sustaining springs and base flows, commonly in the more mountainous upper portions of the two watersheds and their neighboring

basins. These flows support some of the more significant and continuous bands of riparian vegetation. They are typically the least mineralized and highest quality of the groundwaters in both watersheds, and their contributions to base flows are often significant in maintaining water quality in the alluvial aquifers downstream within levels suitable for aquatic habitat functions.

There are three shallow alluvial basins that sustain perennial or near-perennial stream flow in the San Juan Creek Watershed. These alluvial basins are located in Chiquita Canyon above the "Narrows," Chiquita Canyon below the "Narrows," and Gobernadora Canyon. These alluvial basins are all recharged primarily by ground water emanating from the adjoining bedrock aquifers. The shallow alluvial aquifers of the Gobernadora and Chiquita valleys are partially isolated from the San Juan aquifer via a "damming effect" resulting from the presence of fine-grained lake-bed deposits, which underlay their lower reaches.

At the landscape scale, most of the riparian and aquatic habitats have at least transient reliance on groundwater. The exception to this would be in Chiquita and Gobernadora Canyons, which contain some of the largest areas of sandy soils and the greatest volumes of aquifer storage. The low permeability lake-bed deposits in these canyons form sand wedges that help sustain shallow groundwater levels in the lower half mile of the Chiquita and Gobernadora Canyons. These shallow groundwater conditions are an important component of maintenance of riparian habitat in these areas. Slope wetlands in the SAMP Study Area are also sustained by groundwater. Approximately half of the slope wetlands are sustained by water emanating directly from landslides, while others may be supported by groundwater stored in the Santiago formation that is upwelling along bedrock fractures and faults. Generally, both the yields and the quality of groundwater vary considerably over the course of a season. Detailed analysis of groundwater in the SAMP Study Area is provided in the *Baseline Biologic, Hydrologic and Geomorphic Conditions, Rancho Mission Viejo: San Juan and Upper San Mateo Watersheds* (Appendix C of this EIS).

4.1.2 RIPARIAN AND WETLAND HABITATS

4.1.2.1 Regulatory Background

Impacts to riparian and wetland habitats require authorizations from regulatory agencies at the federal and state level. On the federal level, the USACE is authorized to issue permits for specific activities that affect jurisdictional wetland and non-wetland waters. On the state level, CDFG and the SWRCB, through the RWQCBs, are authorized to issue authorizations for specific activities that affect Waters of the State.

U.S. Army Corps of Engineers

The U.S. Congress authorized the USACE to issue permits for specific activities that affect jurisdictional water bodies, including certain non-wetland waters and wetlands. The two main statutory authorities providing this responsibility are Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) within navigable Waters of the U.S. and Section 404 of the Clean Water Act (33 USC 1344) within Waters of the U.S. For this SAMP Study Area, the extent of navigable waters is limited to a small area along the Pacific Ocean. Most of the activities involving the USACE involve activities within Waters of the U.S.

Section 10 of the Rivers and Harbors Act prohibits unauthorized obstruction or alteration of any navigable water of the United States. Within navigable Waters of the U.S., construction of any structure, excavation of materials, or any other work that affects the course, location, condition, or capacity of such waters is unlawful unless authorized by the USACE. Navigable Waters of the U.S. include tidally influenced water bodies such as oceans, large lakes, and navigable rivers. As stated before, the extent of navigable waters is limited to a small area along the Pacific Ocean. For the purposes of this SAMP, the Rivers and Harbors Act is a very minor issue.

Section 404 of the Clean Water Act authorizes the USACE to issue permits for the discharge of dredged and/or fill materials into Waters of the U.S. at specified sites. Within Waters of the U.S., activities that discharge dredged and/or fill materials associated with developments, linear transportation crossings, bank stabilization, maintenance, and other activities require a permit from the USACE. Activities that do not discharge dredged and/or fill materials such as vegetation clearing where the soil is not disturbed, groundwater extraction, and grazing do not require a permit from the USACE. Under Section 404 of the Clean Water Act, the USACE regulates discharges of dredged or fill material into “Waters of the U.S.,” including wetlands. Waters of the U.S. is defined 33 CFR 328.3 as:

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

- Territorial seas; and

- Wetlands adjacent to waters identified above.

The USACE authorizes the discharge of dredged and fill materials through two mechanisms. Small and routine activities involving temporary discharge of dredged and/or fill materials or permanent discharges less than 0.5 acre are processed as general permits. General permits are generally issued within 45 days of a receipt of a complete application and do not involve coordination with the public or other resource agencies. General permits are issued for similar classes of activities that are similar and have minimal impacts individually and cumulatively. As identified in Table 4.1.2-1. Nationwide general permits are issued for various activities. Regional general permits have been issued for certain classes of activities within a smaller geographic area such as maintenance dredge in Newport Bay in Orange County, California and exotics removal in southern California and Arizona. Activities seeking to be authorized under an existing general permit often need verification by the USACE that the activity does comply with a given general permit.

Larger activities that do not qualify for a general permit are processed as an individual permit. Individual permits are issued after dissemination of a public notice with a 15- to 30-day comment period and writing of an environmental assessment. The environmental assessment includes documentation showing compliance of the activity with the Section 404(b)(1) Guidelines, which requires that the activity satisfy requirements of an analysis of alternatives; not degrade water quality, not jeopardize endangered species, not violate toxic effluent standards; and not contribute to the significant degradation of waters; and minimize all impacts. The environmental assessment must also address public interest factors of the proposed action on the physical, biological, and human environments. Individual permits are generally issued approximately 120 days after receipt of a complete application.

Before a permit authorization is issued, the activity must demonstrate compliance with other relevant statutes. Applicable statutes include, but are not limited to, Section 7 of the Endangered Species Act, National Historic Preservation Act, Section 401 of the Clean Water Act, National Environmental Policy Act, and Section 307 of the Coastal Zone Management Act. Compliance with applicable statutes are required only when applicable issues present themselves, because not all proposed projects have issues related to listed endangered species, cultural resources, effects on the coastal zone, etc.

California Department of Fish and Game

Pursuant to Section 1602 of the California Fish and Game Code, “an entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, unless…(t)he department receives written notification regarding the activity in the manner prescribed by the department…”

TABLE 4.1.2-1
SUMMARY OF 2002 NATIONWIDE PERMITS

Nationwide Permit	Statutory Authority	Limits	Pre-Construction Notification (PCN) Threshold	Delineation Required?	Applicable Water
NWP 1–Aids to Navigation	10	None	PCN not required	No	Navigable waters of the U.S.
NWP 2–Aids to Navigation	10	None	PCN not required	No	Navigable waters of the U.S.
NWP 3–Maintenance	10/404				
(i) repair, rehabilitation, and replacement of previously authorized, currently serviceable structures or fills		Authorizes only minor deviations for maintenance	PCN not required	No	All waters of the U.S.
(ii) discharges associated with removal of accumulated sediments and debris in the vicinity of existing structures		200 feet from structure	All activities	No	All waters of the U.S.
(iii) discharges associated with restoration of upland areas damaged by a storm, flood, or other discrete event		Restore to original ordinary high water mark; dredge up to 50 cubic years	All activities	No	All waters of the U.S.
NWP 4–Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities	10/404	None	PCN not required	No	All waters of the U.S.
NWP 5–Scientific Measurement Devices	10/404	25 cubic yards for weirs and flumes	10 to 25 cubic yards for weirs and flumes	No	All waters of the U.S.
NWP 6–Survey Activities	10/404	None	PCN not required	No	All waters of the U.S.
NWP 7–Outfall Structures and Maintenance	10/404				
(i) construction of outfall structures and associated intake structures		None	All activities	No	All waters of the U.S.
(ii) maintenance excavation and dredging to remove accumulated sediments		None	PCN not required	Yes	All waters of the U.S.
NWP 8–Oil and Gas Structures	10	None	PCN not required	No	Navigable waters of the U.S.
NWP 9–Structures in Fleeting and Anchorage Areas	10	None	PCN not required	No	Navigable waters of the U.S.
NWP 10–Mooring Buoys	10	None	PCN not required	No	Navigable waters of the U.S.
NWP 11–Temporary Recreational Structures	10	None	PCN not required	No	Navigable waters of the U.S.

TABLE 4.1.2-1 (Continued)
SUMMARY OF 2002 NATIONWIDE PERMITS

Nationwide Permit	Statutory Authority	Limits	Pre-Construction Notification (PCN) Threshold	Delineation Required?	Applicable Water
NWP 12–Utility Line Activities	10/404	1/2 acre	See text of NWP	Yes	
(i) utility lines			See text of NWP	Yes	
(ii) utility line substations		1/2 acre	>1/10 acre	Yes	Non-tidal waters of the U.S., except non-tidal wetlands adjacent to tidal waters
(iii) foundations for overhead utility line towers, poles, and anchors		Minimum necessary	See text of NWP	Yes	All waters of the U.S.
(iv) access roads		1/2 acre	>500 feet in waters of U.S.; construction with impervious materials	Yes	Non-tidal waters of the U.S., except non-tidal wetlands adjacent to tidal waters
NWP 13–Bank Stabilization	10/404	Minimum necessary	>500 linear feet, or >1 cubic yard per running foot	No	All waters of the U.S., except special aquatic sites
NWP 14–Linear Transportation Projects	10/404	1/2 acre in non-tidal waters, or 1/3 acre in tidal waters	>1/10 acre; discharges into special aquatic sites	Yes	All waters of the U.S.
NWP 15–U.S. Coast Guard Approved Bridges	404	None	PCN not required	No	Navigable waters of the U.S.
NWP 16–Return Water from Upland Contained Disposal Areas	404	None	PCN not required	No	All waters of the U.S.
NWP 17–Hydropower Projects	404	None	All activities	No	All waters of the U.S., except navigable waters
NWP 18–Minor Discharges	10/404	25 cubic yards; 1/10 acre of special aquatic sites	>10 cubic yards or discharges into special aquatic sites	Yes	All waters of the U.S.
NWP 19–Minor Dredging	10/404	25 cubic yards	PCN not required	No	Navigable waters of the U.S.
NWP 20–Oil Spill Cleanup	404	None	PCN not required	No	Navigable waters of the U.S.
NWP 21–Surface Coal Mining Activities	10/404	None	All activities	Yes	All waters of the U.S.
NWP 22–Removal of Vessels	10/404	None	Removal of vessels listed or eligible for National Register of Historic Places	No	All waters of the U.S.
NWP 23–Approved Categorical Exclusions	10/404	None	PCN not required	No	All waters of the U.S.

TABLE 4.1.2-1 (Continued)
SUMMARY OF 2002 NATIONWIDE PERMITS

Nationwide Permit	Statutory Authority	Limits	Pre-Construction Notification (PCN) Threshold	Delineation Required?	Applicable Water
NWP 24–State Administered Section 404 Program	10	None	PCN not required	No	Navigable waters of the U.S.
NWP 25–Structural Discharges	404	None	PCN not required	No	All waters of the U.S.
NWP 27–Stream and Wetland Restoration Activities	10/404	None	Certain activities on public and private land (see text of NWP)	No	All waters of the U.S.
NWP 28–Modifications of Existing Marinas	10	Activities limited to authorized marina area	PCN not required	No	Navigable waters of the U.S.
NWP 29–Single Family Housing	10/404	1/4 acre	All activities	Yes	Non-tidal waters of the U.S., including non-tidal wetlands
NWP 30–Moist Soil Management for Wildlife	404	None	PCN not required	No	All waters of the U.S., except navigable waters
NWP 31–Maintenance of Existing Flood Control Facilities	10/404	Maintenance baseline approved by district engineer	All activities Yes	Yes	All waters of the U.S.
NWP 32–Completed Enforcement Actions	10/404	5 acres of non-tidal wetlands or 1 acre of tidal wetlands (see text of NWP)	All activities	No	All waters of the U.S.
NWP 33–Temporary Construction, Access, and Dewatering	10/404	None	All activities	No	All waters of the U.S.
NWP 34–Cranberry Production Activities	404	10 acres, but activity cannot result in net loss of wetland acreage	All activities	Yes	All waters of the U.S., except navigable waters
NWP 35–Maintenance Dredging of Existing Basins	10	Dredging to previously authorized depths or controlling depths, whichever is less	PCN not required	No	navigable waters of the U.S.
NWP 36–Boat Ramps	10/404	50 cubic yards of fill; 20 foot width for boat ramp	PCN not required	No	All waters of the U.S., except special aquatic sites
NWP 37–Emergency Watershed Protection and Rehabilitation	10/404	None	All activities	No	All waters of the U.S.

TABLE 4.1.2-1 (Continued)
SUMMARY OF 2002 NATIONWIDE PERMITS

Nationwide Permit	Statutory Authority	Limits	Pre-Construction Notification (PCN) Threshold	Delineation Required?	Applicable Water
NWP 38–Cleanup of Hazardous and Toxic Waste	10/404	None	all activities	Yes	All waters of the U.S.
NWP 39–Residential, Commercial, and Institutional Developments	10/404	1/2 acre; 300 linear feet of perennial or intermittent stream bed	>1/10 acre; discharges into open waters	Yes	Non-tidal waters of the U.S., except non-tidal wetlands adjacent to tidal waters
NWP 40–Agricultural Activities	404	1/2 acre; 300 linear feet of perennial or intermittent stream bed	>1/10 acre; >300 linear feet of intermittent stream bed; construction of farm buildings in farmed wetlands	Yes	Non-tidal waters of the U.S., except non-tidal wetlands adjacent to tidal waters and navigable waters of the U.S.
NWP 41–Reshaping Existing Drainage Ditches	404	None	reshape >500 linear feet of drainage ditch	Yes	Non-tidal waters of the U.S., except non-tidal wetlands adjacent to tidal waters and navigable waters of the U.S.
NWP 42–Stormwater Management Facilities	404	1/2 acre; 300 linear feet of perennial or intermittent stream bed	>1/10 acre; >300 linear feet of intermittent stream bed	Yes	Non-tidal waters of the U.S., except non-tidal wetlands adjacent to tidal waters and navigable waters of the U.S.
NWP 43–Stormwater Management Facilities	404	1/2 acre for construction of new facilities; 300 linear feet of perennial or intermittent stream bed	>1/10 acre; >300 linear feet of intermittent stream bed	Yes	Non-tidal waters of the U.S., except non-tidal wetlands adjacent to tidal waters and navigable waters of the U.S.
NWP 44–Mining Activities	10/404	1/2 acre	All activities	No	Isolated waters and non-tidal wetlands adjacent to headwater streams; aggregate mining in lower perennial streams

Pursuant to Section 1603, after the notification is deemed complete, CDFG determines whether the activity may substantially adversely affect an existing fish and wildlife resource. If CDFG determines that the activity may have that effect, CDFG shall provide a draft agreement to the entity within 60 days after the notification is complete. The draft agreement describes the fish and wildlife resources that CDFG has determined the activity may substantially adversely affect and includes measures to protect those resources. CDFG's description of the affected resources must be specific and detailed, and CDFG must make available, upon request, the information upon which its determination of substantial adverse effect is based.

In *A Field Guide to Lake and Streambed Alteration Agreements: Section 1600-1607 California Fish and Game Code*, CDFG personnel are provided the following guidance relative to implementation of the Section 1600 Program.

> *While there is no definition for the term lake in the Fish and Game Code or associated regulations, there has been little problem with applying the agreement process to lake bed alterations. The term stream, which includes creeks and rivers, is defined in Title 14, California Code of Regulations (CCR), Section 1.72 as follows:*
>
> > *"A stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."*
>
> *However, this definition is not complete with respect to Sections 1601 or 1603 because it does not define the terms bed, channel, or bank and does not define other stream-related features such as aquatic life, riparian vegetation, etc. It is therefore incumbent on Department personnel to develop a sense of what constitutes a stream for purposes of implementing and enforcing sections 1600–1607 and Lake/Streambed Alteration Agreements.*
>
> *The following concepts have therefore been developed to assist Department employees in this endeavor.*
>
> 1. *The term stream can include intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams (United States Geological Survey Maps, USGS), and watercourses with subsurface flow. Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent wildlife.*
>
> 2. *Biologic components of a stream may include aquatic and riparian vegetation, all aquatic animals including fish, amphibians, reptiles, invertebrates, and terrestrial species, which derive benefits from the stream system.*
>
> 3. *As a physical stream, a stream not only includes water (at least on an intermittent or ephemeral basis), but also a bed, bank, and/or levee, instream features such as logs or snags, and various floodplains depending on the return frequency of the flood event being considered (i.e., 10, 50, or 100 years, etc.)*
>
> 4. *The lateral extent of a stream can be measured in ways depending on a particular situation and the type of fish or wildlife resources at risk. The following criteria are presented in order from the most inclusive to the least inclusive.*

A. *The floodplain of a stream can be the broadest measurement of a stream's lateral extent depending on the return frequency of the flood event used. For most flood control purposes, the 100-year flood event is the standard measurement and maps of the 100-year floodplain exist for many streams. However, the 100-year floodplain may include significant amounts of upland or urban habitat and therefore may not be appropriate in many cases.*

B. *The outer edge of riparian vegetation is generally used as the line of demarcation between riparian and upland habitats and is therefore a reasonable and identifiable boundary for the lateral extent of a stream. In most cases, the use of this criterion should result in protecting the fish and wildlife resources at risk.*

C. *Most streams have a natural bank which confines flows to the bed or channel except during flooding. In some instances, particularly on smaller streams or dry washes with little or no riparian habitat, the bank should be used to mark the lateral extent of a stream.*

D. *A levee or other artificial stream bank could be used to mark the lateral extent of a stream. However, in many instances, there can be extensive areas of valuable riparian habitat located behind a levee.*

Any of the above criteria could be applicable in determining what constitutes a stream depending on the potential for the proposed activity to adversely affect fish and other stream-dependent wildlife resources.

Therefore, with respect to the areas evaluated for the SAMP, the outer limits of CDFG jurisdiction would be defined as the outer limits of habitat functionally considered to be riparian as contrasted with "uplands" habitat.

Regional Water Quality Control Board

Pursuant to 33 CFR 330.4(c), the USACE cannot issue a Section 404 Permit until an Individual 401 Water Quality Certification has been obtained. In California on non-tribal lands, Section 401 Certifications are issued by the RWQCBs.

Subsequent to the SWANCC decision, the Chief Counsel for the SWRCB issued a memorandum that addressed the effects of the SWANCC decision on the Section 401 Water Quality Certification Program.[1] The memorandum states:

California's right and duty to evaluate certification requests under section 401 is pendant to (or dependent upon) a valid application for a section 404 permit from the Corps, or another application for a federal license or permit. Thus if the Corps determines that the water body in question is not subject to regulation under the COE's 404 program, for instance, no application for 401 certification will be required…

The SWANCC decision does not affect the Porter Cologne authorities to regulate discharges to isolated, non-navigable waters of the states….

[1] Wilson, Craig M. January 25, 2001. Memorandum addressed to State Board Members and Regional Board Executive Officers.

> *Water Code section 13260 requires "any person discharging waste, or proposing to discharge waste, within any region that could affect the waters of the state to file a report of discharge (an application for waste discharge requirements)." (Water Code § 13260(a)(1) (emphasis added).) The term "waters of the state" is defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." (Water Code § 13050(e).) The U.S. Supreme Court's ruling in SWANCC has no bearing on the Porter-Cologne definition. While all waters of the United States that are within the borders of California are also waters of the state, the converse is not true – waters of the United States is a subset of waters of the state. Thus, since Porter-Cologne was enacted California always had and retains authority to regulate discharges of waste into any waters of the state, regardless of whether the COE has concurrent jurisdiction under section 404. The fact that often Regional Boards opted to regulate discharges to, e.g., vernal pools, through the 401 program in lieu of or in addition to issuing waste discharge requirements (or waivers thereof) does not preclude the regions from issuing WDRs (or waivers of WDRs) in the absence of a request for 401 certification….*

In this memorandum, the SWRCB's Chief Counsel has made the clear assumption that fill material to be discharged into isolated Waters of the U.S. is to be considered equivalent to "waste" and therefore subject to the authority of the Porter-Cologne Water Quality Act. However, while providing a recounting of the Porter-Cologne Water Quality Act's definition of Waters of the U.S., this memorandum does not also reference the Porter-Cologne Water Quality Act's own definition of waste:

> *"Waste" includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.*

The lack of inclusion of a reference to "fill material," "dirt," "earth" or other similar terms in the Porter-Cologne Water Quality Act's definition of "waste," or elsewhere in the Porter-Cologne Water Quality Act, suggests that no such association was intended. Thus, the Chief Counsel's memorandum signals that the SWRCB is attempting to retain jurisdiction over discharge of fill material into isolated Waters of the U.S. by administratively expanding the definition of "waste" to include "fill material" without actually seeking amendment of the Porter-Cologne Water Quality Act's definition of waste (an amendment would require action by the state legislature). Consequently, discharge of fill material into Waters of the State not subject to the jurisdiction of the USACE pursuant to Section 404 of the Clean Water Act may require authorization pursuant to the Porter-Cologne Water Quality Act through application for waste discharge requirements (WDRs) or through waiver of WDRs, despite the lack of a clear regulatory imperative.

4.1.2.2 Existing Riparian Resources in the Watersheds

Terminology

Use of the terms "riparian" and "wetland" may lead to confusion unless explicitly defined. Within this EIS, the following definitions apply:

Aquatic General reference to various water-oriented habitats such as rivers, streams, creeks, ponds, lakes, etc. These resources may be perennial, intermittent, or ephemeral in nature.

Waters of the U.S. Refers to Federally regulated streams classified as non-wetlands, as well as wetlands, bordered by an Ordinary High Water Mark (OHWM). Waters of the U.S. are regulated by the USACE.

Wetland Refers to the Federal definition, and requires three parameters to be present: hydrologic indicators, hydric soil, and hydrophytic vegetation. Wetlands are a subset of Waters of the U.S. Wetlands in a riparian context are regulated by the USACE.

Riparian Term used for areas within and adjacent to rivers, streams, and creeks. These areas typically support plant species adapted to (or can tolerate) occasional or permanent flooding and/or saturated soils.

Riparian Habitat Refers to habitat found in a riparian setting, and includes areas within the jurisdiction of the USACE. Riparian habitat would contain the applicable river, stream, or creek (within an OHWM). Riparian habitat may contain three-parameter wetlands (Federal definition), but usually does not.

Riparian Ecosystem An ecosystem defined by linear corridors of variable width occurring along rivers, streams, and creeks. Hydrologic interaction (with a river, stream, or creek) and distinct geomorphic features are two unique components of this ecosystem.

Several efforts to map aquatic resources within the SAMP Study Area have been undertaken to support SAMP planning. These include (1) a planning-level delineation performed by the USACE to identify potentially regulated wetlands and Waters of the U.S. over a large area (watershed-scale), (2) a functional assessment performed by the USACE to characterize and rank the "integrity" of the SAMP Study Area riparian ecosystems in order to provide the basis for evaluating the impacts of various open space/development alternatives on riparian ecosystems, (3) an on-site (or project-level) jurisdictional delineation performed by Glenn Lukos Associates (GLA) and approved by the USACE to identify actual (versus potentially) regulated wetlands and Waters of the U.S. within the RMV Planning Area, and (4) mapping of invasive species within the RMV Planning Area and Caspers Regional Park riparian ecosystems performed by PCR and GLA (for the RMV Planning Area) and County of Orange staff (Caspers Regional Park). These efforts are discussed in further detail below.

4.1.2.3 Planning-Level Delineation of Riparian Ecosystems

The USACE (Lichvar et al. 2000) conducted a delineation of aquatic resources within the San Juan Watershed and the western portion of the San Mateo Watershed within the SAMP Study Area, including riparian habitats, wetlands, and non-vegetated streams within the jurisdictions of the USACE. Aquatic resources were identified using a high precision planning-level delineation approach that adjusts the sampling methods outlined in the *Corps Wetlands Delineation Manual* ("Wetlands Manual") (Environmental Laboratory, 1987)[2] and 33 CFR 328, and applies them at a watershed scale. This planning-level delineation approach allowed for the identification of different types of potentially regulated wetlands and Waters of the U.S. over a large area (watershed scale). Details of the planning-level delineation methodology are included in Appendix E1. While the approach provides a high quality map of probable jurisdictional

[2] Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1, U.S. Army Engineer Waterways Experimental Station, Vicksburg, Mississippi.

wetlands and Waters of the U.S., suitable for use in large scale project planning, it does not serve as a substitute for the on-site jurisdictional delineation that is normally conducted as part of Section 404 Permit review process. In this SAMP, a planning-level delineation was used in the formulation of different open space/development alternatives. An on-site jurisdictional delineation has been completed for the RMV Planning Area. This detailed on-site jurisdictional delineation is used to determine impacts to jurisdictional Waters of the U.S.

Lichvar et al. (2000) evaluated the existing vegetation spatial databases (maps) supplied by the County of Orange. However, Lichvar et al. (2000) did not uses these maps because of the following limitations: (1) numerous rectification problems, (2) lacked of sufficient detail to produce acceptable wetland maps, and (3) a spatial extent of the map units was too large to be used for the SAMP Study Area. In order to develop the wetland delineation map units, Lichvar et al. (2000) developed a new spatial database for use in this project (Appendix E1).

The narrow streams were digitized by stereoscoping the locations on aerial photographs and then digitizing the coverage by using the rectified orthophoto quadrangle as a background. The first-order streams, identified on the coverages as lines (referred to as 'WoUS1'), were 15 feet or less wide.

Planning-Level Delineation Results

Based on the planning-level delineation, aquatic resources including riparian and Waters of the U.S. within San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed, are depicted in Figure 4.1.2-1. There were 984 miles (1,585 km) of ephemeral and intermittent stream channels identified as potentially Waters of the U.S. These areas were mostly first and second order streams and located higher in the watersheds.

Thirty-one vegetation (riparian and some upland) and aquatic resource categories were identified by Lichvar et al. (2000). Thirteen distinct associations of riparian vegetation are present in the SAMP Study Area. Additional information about species typically found in these community designations may be found in Lichvar et al. (2000), USACE (2001), and Jones and Stokes Associates (1993). Descriptions of the riparian vegetation types are provided below.

Riparian Communities in the SAMP Study Area

As identified on Table 4.1.2-2 and as previously depicted on Figure 4.1.2-1, there are 9,287.6 acres of aquatic habitats in the SAMP Study Area. Of these, about 3,222.2 acres would qualify as Waters of the U.S. based on geomorphology (bankfull channel or active floodplain) and hydrophytic vegetation within the terraces (jurisdictional rating of 1-4) and non-floodplain areas (jurisdictional rating of 1-3). Thirteen of the Lichvar categories represent distinct associations of riparian or wetland vegetation that occur in the SAMP Study Area with an additional nine associations that are typically associated with uplands. Three of the aquatic categories represent aquatic features (e.g., open water, fluctuating shoreline, or spreading grounds and detention basins) and one category (Mitigation Site) is not identified relative to the cover type. In order of prevalence, the vegetation associations represented are: southern coast live oak riparian forest, coast live oak woodland, mule fat scrub, willow riparian scrub (southern willow scrub), southern sycamore riparian woodland, bigcone spruce-canyon live oak forest, white alder riparian forest, open water, southern arroyo willow riparian forest, floodplain sage scrub, canyon live oak ravine forest, coast live oak forest, canyon live oak forest, coastal freshwater marsh, herbaceous riparian, lemonadeberry riparian, *Arundo donax*, annual grassland, coast live oak savanna, ruderal wetland, eucalyptus, narrow-leaved willow riparian forest, chamise-scrub, and southern coastal salt marsh. The lemonadeberry riparian, narrow-

leaved riparian, eucalyptus, ruderal wetland, and *Arundo donax* associations are not included in the Gray and Bramlet (1992) habitat classification system, but were mapped in the Lichvar et al. (2000) and PCR/BALANCE/PWA studies based on the dominance of particular species. The descriptions of these riparian communities primarily are based on Gray and Bramlet (1992) and Michael Brandman Associates (1996).

TABLE 4.1.2-2
RIPARIAN AND WETLAND HABITATS IN THE SAMP STUDY AREA

Vegetation Community	Total Acres	Waters of the U.S. Acres
Riparian/Wetland Habitats		
Annual Grassland	9.7	0
Arundo donax	15.3	15.3
Bigcone Spruce-Canyon Live Oak Forest	477.7	0
Canyon Live Oak Forest	195.0	0
Canyon Live Oak Ravine Forest	243.9	30.9
Chamise-Sage Scrub	0.5	0
Coast Live Oak Forest	239.5	0
Coast Live Oak Savanna	5.6	0
Coast Live Oak Woodland	851.1	0.1
Coastal Freshwater Marsh	141.3	141.3
Eucalyptus	2.8	0.3
Floodplain Sage Scrub	280.2	69.0
Fluctuating Shorelines	4.7	4.7
Mitigation site	21.8	21.8
Mulefat Scrub	778.7	584.3
Open Water	345.0	345.0
Rhus integrifolia	16.2	4.6
Riparian Herb	22.1	3.7
Ruderal	4.3	0
Salix exigua	1.9	1.9
Southern Arroyo Willow Forest	307.7	307.7
Southern Coast Live Oak Riparian Forest	3,018.6	30.0
Southern Coastal Salt Marsh	0.2	0.2
Southern Sycamore Riparian Woodland	619.9	293.4
Southern Willow Scrub	727.8	727.8
Spreading Grounds and Detention Basins	21.7	21.7
White Alder Riparian Forest	342.1	26.2
Riparian/Wetland Habitats Subtotal	8,695.3	2629.9
Watercourses		
Intermittent Rivers and Streams	304.5	304.5
Perennial Rivers and Streams	112.3	112.3
Flood Control Channels	28.4	28.4
Ephemeral Rivers and Streams[a.]	147.1	147.1
Watercourses Subtotal	592.3	592.3
Total Aquatic Habitats	9,287.6	3,222.2

a. Assuming specific widths of 1 foot for 1st order Strahler streams, 3 feet width for 2nd order Strahler streams, and 5 feet width for 3rd order Strahler streams, there were about 146.48 acres of ephemeral streams. The estimate for acreage of ephemeral streams is 147.07 acres, after including 0.59 acre of the larger order ephemeral streams.

Source: Lichvar et al. database (2000)

***Annual Grassland*.** Areas of annual grassland occur on terraces adjacent to the bankfull channel and form a mosaic with wetland and riparian habitats, accounting for 9.7 acres in the SAMP Study Area. Areas of annual grassland are dominated by grasses of Mediterranean origin including wild oats (*Avena fatua*, Obligate Upland [UPL]), slender wild oats (*Avena barbata*, UPL), red brome (*Bromus madritensis* ssp. *rubens*, Neutral Indicator [NI]), ripgut brome (*Bromus diandrus*, UPL), softchess (*Bromus hordeaceus*, Facultative Upland [FACU]), and hare barley (*Hordeum murinum* ssp. *leporinum*, NI).

Arundo Donax. Giant reed or *Arundo donax* riparian refers to areas dominated by the non-native giant reed (*Arundo donax*, Facultative Wetlands [FACW]). It is a classification used in Lichvar et al. (2000) and is not included in the Gray and Bramlet (1992) habitat classification system. Giant reed riparian comprises approximately 15.3 acres in the SAMP Study Area, occurring in scattered patches in Arroyo Trabuco below Oso Parkway and in various locations in San Juan Creek.

Bigcone Spruce-Canyon Live Oak Forest. Bigcone spruce-canyon live oak forest is a montane riparian community of steep headwaters of mainstreams dominated by bigcone Douglas fir (*Pseudotsuga macrocarpa*, UPL) and canyon live oak (*Quercus chrysolepis*, UPL). Big-leaf maple (*Acer macrophyllum,* Facultative [FAC]), California laurel (*Umbellularia californica*, FAC), coast live oak (*Quercus agrifolia*, UPL), and interior live oak (*Quercus wislizeni*, UPL) are also associated with this habitat. Bigcone spruce-canyon live oak forest covers approximately 477.7 acres in the SAMP Study Area and occurs in scattered locations in the Cleveland National Forest generally north of Arroyo Trabuco.

Canyon Live Oak Forest and Live Oak Ravine Forest. Both communities are montane habitats with Canyon live oak ravine forest generally associated with the steep headwaters of mainstem drainages. Both communities are dominated by canyon live oak, big-leaf maple, California laurel, coast live oak, bigcone Douglas fir, and interior live oak. Canyon live oak forest accounts for approximately 195 acres in the SAMP Study Area and canyon live oak ravine forest covers about 243.9 acres in the SAMP Study Area. Both occur in scattered locations in the Cleveland National Forest generally north of Arroyo Trabuco.

Chamise Sage Scrub. Chamise sage scrub is generally an upland community throughout the SAMP Study Area and is limited to approximately 0.5 acre where it occurs on terraces or within the flood prone area of drainages in the SAMP Study Area.

***Coast Live Oak Forest, Coast Live Oak Savanna, and Coast Live Oak Woodlands*.** Oak-dominated habitats occur within canyons and slopes throughout the SAMP Study Area and are dominated by coast live oak which can form areas of dense canopy in the coast live oak forest and open canopies in the savanna and woodland communities. These communities account for approximately 239.5, 5.6, and 851.12 acres, respectively, within the SAMP Study Area.

***Coastal Freshwater Marsh*.** Coastal and valley freshwater marshes are seasonally or permanently flooded sites typically dominated by perennial hydrophytic monocots up to 6.5 feet in height (Gray and Bramlet 1992; Kramer 1988). Freshwater marsh supports cattails (*Typha domingensis,* Obligate Wetland [OBL]; *T. angustifolia*, OBL), bulrush (*Scirpus americanus,* OBL; *S. maritimus,* OBL; *S. californicus,* OBL; *S. acutus,* OBL, *S. microcarpus*, OBL), sedges (*Cyperus eragrostis,* FACW; *C. niger,* OBL; *C. odoratus,* FACW; *C. esculentus*, FACW), spikerushes (*Eleocharis acicularis,* OBL; *E. macrostachya*, OBL), and yerba mansa (*Anemopsis californica*, OBL) (Barbour and Major 1977; Holland and Keil 1995; Michael Brandman Associates 1996; Sawyer and Keeler-Wolf 1995). Forbs in freshwater marsh include marsh fleabane (*Pluchea odorata*, OBL), common monkeyflower (*Mimulus guttatus*, OBL), scarlet

monkeyflower (*Mimulus cardinalis*, OBL), willow weed (*Polygonum lapathifolium*, OBL), whorled dock (*Rumex conglomerates*, FACW), willow dock (*Rumex salicifolius*, OBL), willow-herb (*Epilobium ciliatum*, FACW), yellow waterweed (*Ludwigia peploides*, OBL), cut-leaf water parsnip (*Berula erecta*, OBL), slender aster (*Aster subulatus* var. *ligulatus*, FACW), rosilla (*Helenium puberulum*, FACW), western goldenrod (*Euthamia occidentalis* OBL), white water-cress (*Rorippa nasturtium-aquaticum*, OBL), and stinging nettle (*Urtica dioica* ssp. *holosericea*, FACW) (Michael Brandman Associates 1996). Grasses associated with freshwater marsh include rabbits-foot grass (*Polypogon monspeliensis*, FACW+), knotgrass (*Paspalum distichum*, OBL), water bent (*Agrostis viridis*, FACW), Mexican sprangletop (*Leptochloa uninervia*, FACW), and western witchgrass (*Panicum capillare*, FAC).

Freshwater marsh occurs throughout the SAMP Study Area, accounting for approximately 141.3 acres, generally in association with creeks and drainages, including Arroyo Trabuco, Chiquita Canyon, Cañada Gobernadora, San Juan Creek, Cristianitos Creek, upper Gabino Canyon, and Dove Canyon.

***Eucalyptus*.** The non-native blue gum eucalyptus (*Eucalyptus globules*, UPL) occurs adjacent to drainage courses within the SAMP Study Area, accounting for approximately 2.8 acres.

***Floodplain Sage Scrub*.** Floodplain sage scrub is associated with high-energy drainages such as San Juan Creek, Verdugo Creek and Cristianitos Creek, occurring on the drier terraces that are subject to scouring flows during large storm events (i.e., ten-year return interval or greater). Dominant species include scalebroom (*Lepidospartum squamatum*, UPL), California bricklebush (*Brickellia californica*, FACU), California buckwheat (*Eriogonum fasciculatum*, UPL), California sagebrush (*Artemisia* californica, UPL), Sonora everlasting (*Gnaphalium leucocephalum*, UPL), and mule fat (*Baccharis salicifolia*, FACW). This community accounts for approximately 280.2 acres within the SAMP Study Area.

Fluctuating Shorelines. Fluctuating shorelines consist of fringe habitat along natural or man-made lacustrine waterbodies. Natural lacustrine fluctuating shoreline hydrology respond to water levels driven by seasonal precipitation events, with inundation occurring in winter and early spring and exposure occurring in summer and fall. Along man-made waterbodies, fluctuating shoreline hydrology responds to inputs and outputs of water for the purpose of water supply and treatment. Due to the regular inundation, fluctuating shorelines are generally unvegetated with occasional opportunistic growth of more ruderal wetland species. They are located in the Upper Oso Reservoir and Dove Canyon Reservoir.

Mitigation Sites. Mitigation sites are aquatic resource habitats created by humans. Oftentimes, the mitigation sites are created to compensate the loss of aquatic resource habitat elsewhere. The habitat types within mitigation sites vary from herbaceous marsh to southern willow scrub to sycamore woodland, depending on the goals and purposes of the mitigation. The mitigation sites are located in Chiquita Creek and Gobernadora Creek.

***Mule Fat Scrub*.** Mule fat scrub is dominated by mule fat, but also may include willows (*Salix* spp.), sedges (*Carex* spp.), stinging nettle, Bermuda grass (*Cynodon dactylon*, FAC), western ragweed (*Ambrosia psilostachya*, FAC), California mugwort (*Artemisia douglasiana*, FACW), Douglas nightshade (*Solanum douglasii*, FAC), castorbean (*Ricinus communis*, FACU), cocklebur (*Xanthium* spp.), rabbit's-foot grass, knotgrass, and barnyard grass (*Echinochloa crus-galli*, FACW). (Gray and Bramlet 1992; Holland 1986; Sawyer and Keeler-Wolf 1995). Mule fat scrub usually occurs in intermittent streambeds, seeps, and the toe of landslides where local seeps develop.

Mule fat scrub comprises approximately 778.7 acres in the SAMP Study Area and occurs in drainages throughout the SAMP Study Area. Areas with large concentrations of mule fat scrub include Arroyo Trabuco, San Juan Creek, Cañada Gobernadora, Bell Canyon, lower Gabino Canyon, La Paz Canyon, Verdugo Canyon, and upper Cristianitos Creek.

Open Water. Open water refers to permanent or semi-permanent bodies that hold water year-round or for the majority of the year (as opposed to vernal pools which are more ephemeral). They may support vegetation that is tolerant of, or requires, permanently flooded conditions (Gray and Bramlet 1992). Open water often contains several phytoplankton species and filamentous blue-green and green algae (Gray and Bramlet 1992). Other vegetation in lakes and reservoirs includes aquatic species such as horned-pondweed (*Zannichellia palutris*), mosquito fern (*Azolla filiculoides*), duckweed (*Lemna* spp.), milfoil (*Myriophyllum* spp.), waterwort (*Elatine* sp.), fennel-leaved pondweed (*Potamogeton pectinatus*), common water nymph (*Najas guadalupensis*), and hornwort (*Ceratophyllum demersum*) (Gray and Bramlet 1992; Michael Brandman Associates 1996). Emergent hydrophytes include cattail, bulrush, nutsedge, spikerush, and knotgrass (Michael Brandman Associates 1996). Terrestrial species along the fluctuating shoreline of lakes and reservoirs include willow, mule fat, dock, sharp-leaved Timothy (*Crypsis vaginiflora*, OBL), toad rush (*Juncus bufonius*, FACW=), hyssop loosestrife (*Lythrum hyssopifolium*, FACW), and cocklebur. Invasive forbs and grasses along shorelines include Bermuda grass, barnyard grass, *Setaria* spp., *Chenopodium* spp., and pigweed (*Amaranthus* spp.).

A variety of migratory and resident wildlife use open water and the associated emergent and shoreline vegetation for breeding, foraging, and resting. Wildlife species indicative of open water and the potential presence of other species using these habitats include great blue heron (*Ardea herodias*), black-crowned night heron (*Nycticorax nycticorax*), snowy egret (*Egretta thula*), pied-billed grebe (*Podilymbus podiceps*), tricolored blackbird (*Agelaius tricolor*), red-winged blackbird (*Agelaius phoeniceus*), sora, common yellowthroat, southwestern pond turtle (*Emys* [*Clemmys*] *marmorata pallida*), Pacific chorus frog (*Pseudacris* [*Hyla*] *regilla*), western toad (*Bufo boreas*), and various bats (Science Advisors 1997).

The SAMP Study Area includes 345 acres of open waters ranging in size from small lakes and ponds to large reservoirs such as Lake Mission Viejo and Upper Oso Reservoir. Smaller bodies of open water are scattered throughout the SAMP Study Area, including Cristianitos Canyon, upper Gabino Canyon (Jerome's Lake), San Juan Creek (CalMat Lake), Lower Arroyo Trabuco, and Coto de Caza (Portola Reservoir).

***Lemonadeberry (Rhus Integrifolia) Riparian*.** Lemonadeberry riparian is a classification used in the USACE Engineer Research and Development Center/CRREL and PCR/BALANCE/PWA study and is not included in the Gray and Bramlet (1992) habitat classification system. It comprises approximately 16 acres in the planning area and only occurs in patchy locations in upper Gabino Canyon, Verdugo Canyon, Lucas Canyon, and an unnamed drainage adjacent to Cristianitos Road northwest of Cristianitos Creek. It was not mapped in the Cleveland National Forest. Lemonadeberry is a xeric-adapted chaparral species that is not dependent upon stream or river courses. Lemonadeberry is listed by Reed (1988)[3] as an upland species (UPL) and by Sawyer and Keeler-Wolfe (1996)[4] (under sumac series) as "uplands" vegetation type and is thus not a riparian species when considered in the context of aquatic functions.

[3] Reed, P.B., Jr. 1988. *National List of Plant Species that Occur in Wetlands*. U.S. Fish and Wildlife Service Biological Report 88(26.10).

[4] Saywer, John, O. and Todd Keerler-Wolfe. 1995. *A Manual of California Vegetation*. California Native Plant Society, Sacramento.

In all cases, the vegetation identified by USACE Engineer Research and Development Center/CRREL as lemonadeberry were classified as southern willow scrub or upland non-riparian habitat in the Southern Subregion NCCP/HCP vegetation mapping. In addition, the three polygons that occur within the GLA project-level delineation SAMP Study Area were identified in the field as upland habitat with which CDFG concurred.

***Ruderal Wetland*.** Ruderal wetland is characterized by a predominance of non-native herbaceous species, consistent with disturbance. Approximately 4.3 acres of this association occurs within the SAMP Study Area. Characteristic species include bristly ox-tongue (*Picris echioides*, FAC*), Spanish sunflower (*Pulicaria paludosa*, FACW), prickly sow-thistle (*Sonchus asper*, FAC), hyssop loosestrife, lambsquarters (*Chenopodium album*, FAC), tumbling pigweed (*Amaranthus albus*, FAC), sharp-leaved timothy, and five-hook bassia (*Bassia hyssopifolia*, FAC).

***Riparian Herb*.** Riparian herb typically comprises an early successional stage of riparian scrub or forest typically resulting from occasional to frequent flooding or scouring of woody vegetation. Disturbed sites are colonized by both native and non-native, mostly annual opportunistic wetland species such as knotgrass, willow herb, barnyard grass, cattails, Mexican sprangletop, smooth cocklebur, Johnson grass (*Sorghum halapense*, FACW), rabbits-foot grass, white watercress, water speedwell, willow knotweed, tall nutsedge, toad rush, Mexican tea (*Chenopodium ambrosioides*, FAC), and yellow nutsedge.

Riparian herb comprises approximately 22 acres in the SAMP Study Area. Herbaceous riparian occurs in scattered locations, including Chiquita Canyon, Cañada Gobernadora, Trampas Canyon, upper Arroyo Trabuco, and lower Hot Spring Canyon. This vegetation type is typically associated with areas that exhibit an abundance of water and there is generally a distinct boundary between the herbaceous understory and the adjacent upland scrub or grassland habitat.

***Narrow-leaved Willow (Salix exigua) Riparian*.** Narrow-leaved willow riparian forest is a classification created by the USACE Engineer Research and Development Center/CRREL and PCR/BALANCE/PWA study. It refers to areas dominated by narrow-leaved willow (*Salix exigua*, OBL). Narrow-leaved willow riparian forest comprises only two acres in two patches in San Juan Creek and upper La Paz Canyon. This vegetation type is typically associated with areas that exhibit intermittent flows and/or high groundwater levels (e.g., within 10 to 15 feet of the surface during the dry season). There is generally a distinct boundary between the willow canopy and the adjacent upland scrub or grassland habitat.

***Southern Arroyo Willow Riparian Forest*.** Southern arroyo willow riparian forest has a closed canopy of arroyo willow in arborescent form. Arroyo willow (*Salix lasiolepis*, FACW) is the dominant species; however, the canopy can also include red willow (*S. laevigeta*, FACW), black willow (*S. gooddingii*, OBL) and occasionally yellow willow (*S. lucida* ssp. *lasiandra*, OBL) and black cottonwood (*Populus balsamifera* ssp. *trichocarpa*, FACW). Understory components include mugwort, mule fat, Olney's bulrush, and marsh fleabane. It comprises nearly 308 acres in the SAMP Study Area. This vegetation community occurs in Chiquita Canyon south of Oso Parkway, portions of lower Arroyo Trabuco, San Juan Creek south of its confluence with Bell Canyon, Cañada Gobernadora throughout Coto de Caza, above and associated with Oso Reservoir, and lower Cristianitos Creek. This vegetation type is typically associated with areas that exhibit an abundance of surface water or areas of high groundwater and there is generally a distinct boundary between the willow canopy and the adjacent upland scrub or grassland habitat.

***Southern Coast Live Oak Riparian Forest*.** Southern coast live oak riparian forest is dominated by coast live oak, with western sycamore (*Platanus racemosa*, FACW) and Mexican elderberry (*Sambucus mexicana*, FAC) as subdominants. Arroyo willow, red willow, and Gooding's black willow sometimes occur in the most mesic areas as small clumps or patches. Understory vegetation includes holly-leaf redberry (*Rhamnus ilicifolia*, UPL), California coffeeberry (*Rhamnus californica*, UPL), mule fat, coastal goldenbush (*Isocoma menziesii* ssp. *veneta*, UPL), poison oak (*Toxicodendron diversilobum*, UPL), toyon (*Heteromeles arbutifolia*, UPL), laurel sumac (*Malosma laurina*, UPL), California mugwort, and Douglas nightshade.

Southern coast live oak riparian forest is by far the most common riparian vegetation community in the SAMP Study Area. USACE Engineer Research and Development Center/CRREL mapped approximately 3,018 acres. This habitat type occurs throughout the SAMP Study Area, including Arroyo Trabuco, San Juan Creek, Cañada Gobernadora, Chiquita Canyon, Cristianitos Creek and its tributaries, Gabino Canyon, Airplane Canyon, Verdugo Canyon, Bell Canyon, Crow Canyon, Trampas Canyon, Live Oak Canyon, Lion Canyon, Hot Spring Canyon, Hickey Canyon, and Rose Canyon.

***Southern Coastal Salt Marsh*.** Southern coastal salt marsh is limited in the SAMP Study Area to approximately 0.20 acre near the mouth of San Juan Creek. Characteristic species include common pickleweed (*Salicornia virginica*, OBL), alkali heath (*Frankenia salina*, FACW), fleshy jaumea (*Jaumea carnosa*, OBL), and saltgrass (*Distichlis spicata*). This association is typically associated with intermittent tidal flooding and freshwater flooding during the winter and spring rainy season.

***Southern Sycamore Riparian Woodland*.** Southern sycamore riparian woodland is an open to dense woodland dominated by western sycamore and coast live oak. Understory vegetation includes scalebroom, mule fat, willow riparian scrub (see description below), holly-leaf redberry, California coffeeberry, laurel sumac, Mexican elderberry, fuchsia-flowered gooseberry (*Ribes speciosum*, UPL), poison-oak, giant ryegrass (*Leymus condensatus*, UPL), beardless wild rye (*Leymus tritocoides*, FAC), lemonadeberry (*Rhus integrifolia*, UPL), Douglas nightshade, and California mugwort. Large patches of grassland dominated by upland brome and Italian ryegrass (*Lolium multiflorum*, UPL) also may be present.

Sycamore riparian woodland comprises approximately 619 acres in the SAMP Study Area. It generally is associated with floodplains and terraces of larger streams such Arroyo Trabuco, upper San Juan Creek, upper Bell Canyon, Fox Canyon, Lion Canyon, Gabino Canyon, and La Paz Canyon. This vegetation type does not exhibit an abrupt boundary with adjacent uplands. Western sycamore is a phreatophyte, meaning that it is deep rooted (sometimes at 60 feet or more), in contact with deep groundwater that is often beyond the rooting depth of upland species. This results in a community/vegetation type that supports FACW, FAC, and UPL species with western sycamore exhibiting an indicator status of FACW.

***Southern Willow Scrub*.** Southern willow scrub is dominated by willows (*Salix* spp.) but typically lack the arborescent form of the southern arroyo willow forest. Associated species typically include gooseberry (*Ribes* spp.), Mexican elderberry, mule fat, and an understory of herbaceous hydrophytes. Arroyo willow is the dominant species within perennial and intermittent stream channels at elevations up to about 2,450 feet.

Southern willow scrub comprises approximately 727.8 acres in the SAMP Study Area and is found in lower Arroyo Trabuco and patchy distributions in upper Chiquita Canyon, throughout Cañada Gobernadora, lower San Juan Creek, Cristianitos Canyon, Trampas Canyon, tributaries to Verdugo Canyon, and in various smaller drainages and tributaries throughout the SAMP

Study Area in the Cleveland National Forest. As noted above, this vegetation type is typically associated with areas that exhibit intermittent surface water and perched groundwater at depths where it available to the plants during the dry season. Typically there is a distinct boundary between the willow canopy and the adjacent upland scrub or grassland habitat.

Spreading Grounds and Detention Basins. Spreading grounds and detention basins consist of impoundments of streambeds for the control of flooding and sediments. Spreading grounds and detention basins are generally soft-bottom and are routinely maintained by flood control agencies or private landowners. Sometimes there are opportunistic growth of herbaceous riparian, willow riparian scrub, and mule fat scrub vegetation in between maintenance cycles. Within the SAMP Study Area, spreading grounds and detention basins are limited to less than 22 acres.

***White Alder Riparian Forest*.** White alder riparian forest typically is a riparian association associated with perennial streams and is dominated by white alder (*Alnus rhombifolia*, FACW). In lower elevations, this association often forms a mosaic with willow-dominated associations. In upper elevation areas within the Cleveland National Forest, associated species include California laurel and big-leaf maple. California mugwort, California rose (*Rosa californica,* FACW), and California blackberry (*Rubus ursinus*, FACW) occur as understory species. White alder riparian forest comprises approximately 342 acres and occurs in upper Arroyo Trabuco and its tributaries Holy Jim Canyon and Falls Canyon, as well as upper Bell Canyon, Hot Spring Canyon, and Cold Spring Canyon. It also occurs in small patches at lower elevations in Cristianitos Creek and Bell Canyon. This vegetation type is typically associated with areas that exhibit an abundance of surface water and there is generally a distinct boundary between the alder canopy and the adjacent upland scrub or grassland habitat.

Description of Watercourses

***Intermittent Rivers and Streams*.** Intermittent streams and creeks include watercourses such as streams and rivers that temporarily contain water during rain events and shortly thereafter. Portions of intermittent streams and creeks can be vegetated with plants found in the herbaceous riparian vegetation type and/or the willow riparian scrub, woodland, or forest vegetation types. These drainage features may provide functions such as nutrient cycling, groundwater recharge, and habitat support. Lichvar et al. (2000) mapped intermittent rivers and streams, perennial rivers and streams, flood control channels, and ephemeral rivers and streams (Figure 4.1.2-1). Intermittent rivers and streams were mapped for upper Arroyo Trabuco, Bell Canyon, and San Juan Creek and comprise the majority (303 acres) of the mapped watercourses in the SAMP Study Area.

***Perennial Rivers and Streams*.** Perennial rivers and streams include watercourses such as flood control channels, streams, and rivers that contain water year-round. Portions of perennial rivers and streams can be vegetated with plants found in the herbaceous riparian vegetation type and/or the willow riparian scrub, woodland, or forest vegetation types. Within the San Juan Creek Watershed, most perennial streams result from dry-season runoff from residential areas with the notable exception of Chiquita Creek. Perennial streams and rivers comprise approximately 110 acres and are limited to smaller areas in Arroyo Trabuco between Oso Parkway and Crown Valley Parkway and a small portion of San Juan Creek.

***Flood Control Channels*.** Flood control channels consist of engineered concrete-lined and soft-bottomed watercourses designed to convey large volumes of water during rain events. Flood control channels are generally unvegetated but vary greatly and may support herbaceous riparian, willow riparian scrub, and mule fat scrub vegetation types. Many of these channels are

routinely maintained by the County of Orange (or private landowners), and usually do not contain substantial vegetation growth. Flood control channels are limited to about 28 acres in the SAMP Study Area, a small segment of San Juan Creek, a small drainage located north of La Paz Road and east of Marguerite Parkway, and a small drainage north of Olympia Road and west of Melinda Road.

***Ephemeral Rivers and Streams*.** These drainages flow during and for up to one day after precipitation events. They are delineated solely by hydrologic indicators such as the presence of an Ordinary High Water Mark (OHWM). These drainage features typically provide limited biogeochemical functions such as energy dissipation and transport of organic carbon. 'WoUS1,' described above, would fall under this descriptor. Since the Lichvar aquatic resource habitat mapping identified only those stream features greater than 10 feet in width, only 0.59 acre of ephemeral streams and washes were mapped as aquatic resource polygons. However, there is a large amount of ephemeral drainages less than 15 feet that were mapped separately as linear features. Assuming specific widths of 1 feet width for 1st order Strahler streams, 3 feet width for 2nd order Strahler streams, and 5 feet width for 3rd order Strahler streams, there were about 146.48 acres of ephemeral streams. The estimate for acreage of ephemeral streams is 147.07 acres (0.59 + 146.48) (rounded to 141.7 in Table 4.1.2-2).

Wildlife

The multiple strata (e.g., canopy, shrubs, herbaceous species) of riparian communities provide diverse and valuable habitat for terrestrial wildlife, including breeding areas, shade, cover, water, and food (Warner and Hendrix 1984). Fish and other aquatic species benefit from important shading and other attributes. Riparian areas are of particular importance because the moisture of the stream channels is important as a water source in the dry California landscape and the areas are productive during the summer months when upland plant communities tend to be dormant (Warner and Hendrix 1984; Grenfell 1988; Holland and Keil 1995). Riparian areas also function as important movement, migration, and dispersal corridors for a variety of wildlife. Wildlife species that are indicative of healthy riparian systems and the potential presence of other riparian species include red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperii*), sora (*Porzana carolina*), common yellowthroat (*Geothlypis trichas*), two-striped garter snake (*Thamnophis hammondii*), red racer (coachwhip) (*Masticophis flagellum piceus*), arroyo toad (*Bufo californicus*), California chorus frog (*Pseudacris* [*Hyla*] *cadaverina*), southwestern pond turtle, arroyo chub, threespine stickleback (*Gasterosteus aculeatus*), and several bats (Science Advisors 1997). It should be noted, however, that these species do not all occur in all types of riparian habitat. For example, the pond turtle requires perennial water and would not be expected to occur in sycamore alluvial woodland unless it is associated with a pond or perennial river or stream.

The type of wildlife species associated with watercourses depends on the location and type of watercourse (e.g., a natural stream course versus an artificial flood control channel), intermixing with riparian and wetland habitats, and availability of perennial and ephemeral water sources. Natural stream courses in San Juan Creek, lower Gabino Canyon, and Talega Canyon support the arroyo toad. Watercourses with perennial water provide habitat for two-striped garter snake, southwestern pond turtle, arroyo chub (*Gila orcutti*), threespine stickleback, and various bats (foraging habitat). Watercourses with at least ephemeral water provide habitat for other amphibian species, such as western toad and Pacific chorus frog, and reptiles, such as silvery legless lizard (*Anniella pulchra pulchra*) and red racer. Watercourses also provide movement and dispersal habitat for mammals, such as coyote (*Canis latrans*) and bobcat (*Lynx rufus*).

Human-Related Disturbances and Threats

Riparian habitats are directly threatened by conversion to other uses (e.g., agriculture, mineral extraction, and sand and gravel mining), flood control projects, and cattle grazing. Riparian areas also are directly and indirectly threatened by adjacent activities such as agriculture and urban development. These activities have many adverse effects, including reduction of the floodplain, alterations to normal fluvial processes, degradation of water quality, and colonization by exotic plant species.

4.1.2.4 Landscape-Level Functional Assessment

The USACE (Smith 2000) conducted an assessment of the riparian ecosystems of the San Juan Creek and Western San Mateo Creek Watersheds. The overall objective of the assessment was to characterize and rank the "integrity" of the riparian ecosystems in order to provide the basis for evaluating the impacts of the SAMP alternatives on riparian ecosystems. The assessment was accomplished by dividing the riparian ecosystem along the SAMP Study Area drainages into assessment units or "riparian reaches" and assessing each riparian reach using a suite of indicators of ecosystem integrity. The landscape-level Functional Assessment is included as Appendix E2.

Riparian ecosystems consist of the biological, physical, and hydrologic features that occur along perennial, intermittent, and ephemeral drainages of the SAMP Study Area. The center of the ecosystem consists of the stream channel. The hydrologic interaction between the stream channel and the adjacent areas typically results in two distinct zones. The first zone is called the active floodplain. It includes areas that are inundated by overbank flooding, which typically occurs at least once every five years. This zone exhibits the fluvial features associated with recurring flooding such as point bars, areas of scour, sediment accumulation, and debris. The second zone consists of abandoned floodplains and historical terraces formed by infrequent fluvial processes. Vegetation in the stream channel consists of aquatic species and short-lived herbaceous plants that are adapted to continual disturbances by scouring. Vegetation in the two floodplain zones are composed of woody perennials that rely on the high water tables present in the riparian zone and capable of re-establishment after floods. A profile of a typical riparian ecosystem is provided in Figure 4.1.2-2.

"Waters of the United States" consist of drainages and wetlands subject to regulation under Section 404 of the Clean Water Act, and are often a subset of the aquatic resources regulated by the CDFG. Within riparian ecosystems, "waters" include (1) perennial, intermittent, ephemeral stream channels exhibiting a distinctive bed and bank, and (2) wetland vegetation in the floodplain zones that meet the hydrologic, hydrophytic vegetation, and hydric soils criteria outlined in the Wetlands Manual. Not all vegetation in the floodplain zones meets these criteria and represents jurisdictional "waters."

Smith (2000) defined riparian ecosystems with high ecosystem "integrity" as riparian areas that (1) exhibit the full range of physical, chemical, and biological attributes and processes that characterized riparian ecosystems in the southern California region over short- and long-term cycles prior to cultural alteration; and (2) support a balanced, integrated, and adaptive biological community resulting from natural evolutionary and biogeographic processes. The concept of ecosystem integrity involves many characteristics and processes and, consequently, there is no single, direct measure of ecosystem integrity. In order to focus on the most important characteristics and processes contributing to ecosystem integrity, the USACE (2001) identified three ecosystem attributes to represent ecosystem integrity: hydrologic, water quality, and habitat integrity. The selection of these attributes follows directly from the mandate in

Section 101(a) of the Clean Water Act to "…*restore and maintain the chemical, physical, and biological integrity of the Nation's waters*."

Ecosystem Integrity Assessment Methods

In order to assess riparian ecosystem integrity, the USACE defined a standard of comparison or "reference condition." It represents a conceptual condition under which riparian ecosystems achieve and sustain a high level of integrity. For the assessment, Smith (2000) defined the reference condition as the "culturally unaltered condition," which consists of the conditions in riparian ecosystems at the SAMP Study Area that existed prior to grazing, agriculture, fire suppression, water resource management, transportation corridors, urbanization, and other cultural alterations.

"Culturally unaltered" was selected as the reference condition for the assessment because it represents the physical, chemical, and biological conditions under which riparian ecosystems have naturally evolved and, therefore, represents the physical, chemical, and biological conditions that the Clean Water Act mandates should be maintained. Culturally unaltered reference conditions are expected to be uncommon in the watershed because of the various urban and agricultural disturbances in the watershed since Spanish colonization. However, Smith (2000) states that it is possible to make reasonable speculations as to what culturally unaltered conditions were like based on examples of apparently unaltered riparian ecosystems in other portions of southern California.

In order to assess the three ecosystem integrity attributes (hydrologic, water quality, and habitat), Smith (2000) developed "indicators," which represent indirect measures of the attributes that can be readily measured through field, map, and aerial photograph investigations. A summary of the three ecosystem attributes and the indicators used by the USACE to rate the attributes of ecosystem integrity at the SAMP Study Area are provided below.

Hydrologic Integrity

Hydrologic integrity is defined as the range of frequency, magnitude, and temporal distribution of stream discharge along with a concomitant surface and subsurface interaction with the floodplain that historically characterized riparian ecosystems in the region. In southern California, this translates into seasonal intermittent, ephemeral, or low flow periods with annual bank-full discharges superimposed on a background of episodic, and often catastrophic, larger magnitude floods that inundate historical terraces.

Indicators used to assess hydrologic integrity included factors that influence the frequency, magnitude, and temporal distribution of stream discharge, and factors that influence the hydrologic linkage between the stream channel and the active floodplain and adjacent terraces, as listed below:

- **Altered Hydraulic Conveyance** – a measure of the extent of man-made modifications to drainage channels such as concrete channels.

- **Surface Water Retention** – a measure of the degree to which the hydrologic regime has been altered due to storage in sediment and retention basins.

- **Perennialized Stream Flow** – a measure of the amount of supplemental stream flows, primarily in the summer, due to man-made return flows from irrigation and/or urban runoff.

- **Import, Export, or Diversion of Surface Water** − a measure of the amount of water imported, exported, or diverted from the natural drainage.

- **Floodplain Interaction** – a measure of the degree to which the stream channel has been disconnected from the adjacent floodplain due to culturally accelerated channel incision, bank protection, and levees.

Water Quality Integrity

Water quality integrity is defined as the range of pollutant loading (i.e., nutrients, pesticides, hydrocarbons, and sediments) similar to that which historically characterized riparian ecosystems in the region. In addition to all the indicators used for hydrologic integrity, additional indicators of water quality integrity used in the USACE (2001) study included:

- **Land Use/Land Cover** – a measure of the extent to which the loading of nutrients, pesticides, hydrocarbons, and sediments exceeds natural levels.

- **Sediment Regime** – a measure of the degree to which sediment dynamics in the stream channel are in equilibrium with the upstream sediment supply, and the erosion and deposition processes in the channel.

- **Area of Native Riparian Vegetation** – a measure of the degree to which native riparian vegetation occurs in the floodplain

Habitat Integrity

Riparian ecosystems with habitat integrity exhibit the quality and quantity of habitat necessary to support and maintain a balanced, integrated, adaptive biological system having the full range of characteristics, processes, and organisms that historically characterized riparian ecosystems in the region. Several factors were considered in selecting indicators of habitat integrity including the spatial extent and quality of riparian habitat, the “connectedness” of riparian habitats at the riparian reach and drainage basin scales, and the spatial extent and quality of upland habitat in the landscape adjacent to riparian ecosystems. The key indicators of habitat integrity included:

- **Area of Native Riparian Vegetation** – a measure of the degree to which native riparian vegetation occurs in the floodplain.

- **Riparian Corridor Continuity** – a measure of the extent of continuous, uninterrupted riparian vegetation along the drainage.

- **Land Use/Land Cover: Riparian Ecosystem Boundary** – a measure of the presence of man-made features at the boundary of riparian ecosystems and uplands that would inhibit normal movement of wildlife between riparian and upland habitats.

- **Land Use/Land Cover: Upland Buffer** – a measure of the degree to which the land uses in the upland areas adjacent to riparian ecosystems have been converted to man-made uses (e.g., urban, agricultural).

Functional Assessment Tasks

The assessment of riparian ecosystem integrity was conducted by completing the following sequential tasks (Smith 2000):

Task 1: Identification of riparian reach assessment units

Task 2: Characterization of riparian reaches

Task 3: Assessment of indicators

Task 4: Assigning indicator scores and calculation of indices

Task 5: Archiving of information

The drainages in the watershed were divided into assessment units called "riparian reaches." A riparian reach was defined as a segment of the stream channel and the adjacent riparian ecosystem exhibiting relatively homogenous characteristics with respect to geology, geomorphology, channel morphology, substrate type, vegetation communities, and cultural alteration. In association with each riparian reach and as illustrated on Figure 4.1.2-3, two other areas were defined including a "local drainage area" and a "drainage basin." The local drainage area of a riparian reach included the area from which surface water drained directly to the mainstem channel or tributaries that entered the mainstem channel in the riparian reach. The local drainage area did not include areas that drained to the mainstem channel of upstream riparian reaches.

Most riparian reaches were characterized based on field surveys. Inaccessible reaches were characterized by aerial photographs and topographic maps. Ecosystem integrity indicators were measured using a combination of fieldwork and spatial analysis in GIS. Indicator values were assigned as a percent deviation from the reference condition (i.e., 0 to 100 percent). The range of indicator values was then divided into five categories and assigned an indicator score of 1 to 5 to simplify the calculation of endpoint indices, and facilitate presentation of results in tables, charts, and GIS. A score of 5 represents close concurrence with the reference condition, and consequently a high level of integrity. A score of 1 represents a deviation of 50 percent or more the reference condition, and consequently a low level of integrity.

Overall hydrologic, water quality, and habitat integrity indices were calculated in the spreadsheet by summing the scores of the indicators associated with hydrologic, water quality, and habitat integrity as discussed above. Individual indicator scores and summary indices were presented in tabular form in the spreadsheet and spatially in GIS. Scores and indices were presented for individual riparian reaches, as well as for entire drainages.

Functional Assessment Results

Smith (2000) identified 388 riparian reaches in the San Juan Creek/San Mateo Creek Watersheds with drainage basins averaging 325 acres. In general, the index values exhibited a relatively wide and even spread across the possible range of index values suggesting that indicators were scaled appropriately and were sensitive enough to distinguish varying degrees of hydrologic, water quality, and habitat integrity. A summary of the ecosystem integrity scores for the three key ecosystem attributes for all drainages in the watershed is presented in Table 4.1.2-3.

TABLE 4.1.2-3
SUMMARY OF ECOSYSTEM INTEGRITY SCORES:
ALL DRAINAGES COMBINED

Ecosystem Integrity Attribute	Mean Score	Range	Maximum Possible Score
Hydrologic	23.8	6-30	30
Water Quality	32.6	13-41	45
Habitat	18.2	5-25	25

The spatial distribution of ecosystem integrity scores is shown on Figures 4.1.2-4, -5 and -6 for the following ecosystem attributes: hydrologic, water quality, and habitat, respectively. The maps show the rankings for each riparian reach. Dark areas represent high scores where the attribute integrity score is high. Lighter areas represent reaches where the ecosystem attribute has been reduced due to man-made disturbances and factors. The lowest hydrologic, water quality, and habitat integrity scores were observed along creeks where land development has altered the channels and local drainage basins.

General types of impairments that reduced the integrity of various riparian reaches were as follows:

- Discontinuity in riparian corridor due to habitat disturbances.
- Increased low-flows due to irrigation return flows and runoff from developed areas.
- Presence of non-native vegetation along certain reaches.
- Presence of adjacent land uses that reduce habitat quality and increase nutrient, pesticide, and sediment loading.
- Disturbances along channel margins that impede wildife movement to and from uplands.
- Land use and channel modifications that have disrupted natural sediment dynamics in the watershed and channel, respectively.

The results of the functional assessment provided a means for determining which of several proposed alternative development scenarios would result in the least impact to riparian ecosystem integrity in the watershed. By simulating changes that could be expected to occur as a result of a proposed alternative scenario in terms of indicators, the existing information and tools were used to generate new indicator scores and indices for riparian reaches. These scores and indices were then compared with baseline indicator scores and integrity indices to show how the proposed alternative scenarios would impact riparian ecosystem integrity in the watershed. A discussion of indicator scores for each alternative is discussed in Chapter 6.0, Alternatives Analysis, of this EIS.

4.1.2.5 RMV Planning Area On-site Jurisdictional Delineation

While a planning-level delineation provides for high quality mapping of jurisdictional wetlands and Waters of the U.S. suitable for project planning, it does not substitute for the on-site jurisdictional delineation as part of the Section 404 permit review process. In order to facilitate advanced project-level review, regulatory specialists from GLA conducted an on-site (or project-level) jurisdictional delineation between October 29, 2002 and November 5, 2003 to identify and

quantify the extent of areas subject to the jurisdiction of the USACE pursuant to Section 404 of the Clean Water Act within the RMV Planning Area for purposes of evaluating the SAMP alternatives. The delineation is depicted on Figures 4.1.2-7a through 4.1.2-7i. Appendix E3 contains the project-level delineation report. The following is a summary of the delineation methodology and results. The USACE approved the delineation on May 20, 2004.

In addition, areas subject to the jurisdiction of the CDFG pursuant to Section 1600 et seq. of the Fish and Game Code were also identified to support preparation of the MSAA portion of the NCCP/MSAA/HCP. As caveated by Lichvar et al. (2000), the planning-level delineation serves as a planning-level tool, and subsequent refinements are expected from ground-level delineations for both USACE and CDFG jurisdiction. Because of the availability of more detailed delineations, riparian habitat in the RMV Planning Areas is defined by the GLA delineation for the purposes of this EIS.

Nine development areas (areas of potential development shown on the alternatives) within the RMV Planning Area were evaluated, with the maximum potential limits (i.e., the largest development footprint of any alternative) of each planning area subject to the project-level Section 404 delineation. All major roadway alignments not included within the nine planning areas were also examined.

Methodology

Prior to conducting the field delineation, a 200-scale color aerial photograph, a 200-scale topographic base map of the property, and the USGS topographic maps (Cañada Gobernadora [dated 1968, photo revised in 1988], San Clemente [dated 1968 and photo revised in 1975], and San Juan Capistrano [dated 1968 and photo revised in 1981]) were examined to determine the locations of potential areas of USACE and CDFG jurisdiction. Prior to completing the jurisdictional delineation, GLA reviewed the planning-level delineation prepared by the USACE (September 2000). All areas identified as potentially jurisdictional in the planning-level delineation were evaluated for USACE and CDFG jurisdiction. All suspected jurisdictional areas were field checked for the presence of definable channels and/or wetland vegetation, soils, and hydrology. Suspected wetland habitats were evaluated using the methodology previously described. While in the field, the jurisdictional area was recorded onto a 200-scale color aerial photograph using visible landmarks. Other data were recorded onto wetland data sheets.

Beginning on March 11, 2003, Regulatory Specialists from GLA; a representative of Rancho Mission Viejo; representatives of the USACE, including Russell Kaiser, Corice Farrar, and Rob Lawrence; and representatives of CDFG including Don Chadwick, Bradley Henderson, and Donna Cobb conducted a field verification of the project-level delineation. Prior to beginning the field-level verification, the USACE representative, Mr. Kaiser, noted that the USACE would generally assert jurisdiction over drainages that conduct flows during 10-year storm events or less, and that drainages that do not conduct flows during 10-year events are not considered as Waters of the U.S. Following the initial site visits in early March 2003, the area experienced a rainfall event on March 15, 2003 that averaged over five inches over most of the SAMP Study Area, corresponding very closely with a 10-year event. The 10-year storm event resulted in clear discharge in many of the drainages evaluated, including the presence of litter/debris (e.g., oak leaves or other plant materials), sediment deposits, and destruction of terrestrial vegetation (through scouring or buried by sediments). Many of the features failed to exhibit any signs of discharge. The 10-year storm event recorded on March 15, 2003 allowed for determination of the (1) presence of an OHWM, and where present, (2) the lateral extent of the OHWM.

Field verification was completed on October 27, 2003 with the exception of specific areas addressed during a field review on November 20, 2003 with senior staff from the USACE (Appendix E3 lists specific field dates). During the field verification, all areas identified in the Lichvar (2000) planning-level delineation as well as by GLA in the project-level delineation were examined. The results of the field verification are incorporated into the delineation.

Summary of Results

Nine potential development areas within the RMV Planning Area were evaluated plus areas subject to potential impacts associated with major arterials that connect the potential development areas.[5] Total USACE jurisdiction identified within the potential development areas and the potential arterial right-of-ways is 267.12 acres, of which 158.92 acres consist of jurisdictional wetlands. Table 4.1.2-4 summarizes the jurisdictional totals for the development areas of the RMV Planning Area.

TABLE 4.1.2-4
JURISDICTIONAL TOTALS FOR RESOLVED FEATURES

Development Areas in RMV Planning Area	Wetland[a.]	Non-Wetland Waters[b.]	Total USACE[c.]
Ortega Gateway	0.04	2.19	2.23
Chiquita	11.44	2.64	14.08
Gobernadora	11.93	8.81	20.74
East Ortega	23.41	13.64	37.05
Trampas	0.82	9.48	10.30
Cristianitos Meadows	5.30	0.88	6.18
Cristianitos Canyon	4.74	7.80	12.54
TRW	1.05	7.71	8.76
O'Neill Ranch	58.73	10.18	68.91
Road Gaps	41.46	44.87	86.33
Totals[d.]	**158.92**	**108.2**	**267.12**

a. Total area (acres) of three-parameter wetland features subject to USACE jurisdiction pursuant to Section 404 of the Clean Water Act.
b. Total area (acres) of non-wetland tributaries subject to USACE jurisdiction pursuant to Section 404 of the Clean Water Act.
c. Total area (acres) of features subject to USACE jurisdiction (consists of both wetlands and non-wetland waters).
d. These totals may change depending upon USACE determinations regarding proposed non-jurisdictional and isolated features.

As stated before, the on-site delineation by GLA focused on the nine planning areas identified for potential development by the various alternatives. The GLA delineation did not cover the entire 22,815-acre RMV Planning Area due to its immense size. In lieu of the GLA delineation, the USACE Planning-Level Delineation approximated the extent of Waters of the U.S. in the entire 22,815-acre RMV Planning Area. Based on (bankfull channel or active floodplain) and hydrophytic vegetation within the terraces (jurisdictional rating of 1-4) and non-floodplain areas (jurisdictional rating of 1-3), there are about 857.1 acres of Waters of U.S. within the entire RMV Planning Area.

[5] Glenn Lukos Associates. 2003. *Jurisdictional Delineation of Areas Subject to the Jurisdiction of the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act*. November 2003.

Determination of Riparian Error! Bookmark not defined. **Habitat per CDFG Jurisdiction**

As is the case for Waters of the U.S., the planning level delineation does not substitute for an on-site jurisdictional determination for jurisdictional riparian habitat under CDFG. In order to facilitate advanced project level review, regulatory specialists from GLA conducted a project-level jurisdictional determination in 2002 and 2003 for the areas proposed for development under the SAMP including Alternatives B-4, B-5, B-6, B-8, and B-9 to identify the limits of jurisdiction pursuant to Section 1600 et seq. of the Fish and Game Code, including areas of riparian habitat. The delineation determined that the potential development areas contain 398.14 acres within the jurisdiction of the CDFG, of which 368.40 acres consist of vegetated riparian habitat.[6] For many streams and lakes, CDFG jurisdiction extends beyond USACE jurisdiction. Where it was determined that riparian resources extended beyond the limits of USACE jurisdiction, the following approach was used.

The methodology described here, incorporated the wetland indicator status for each species as provided by Reed (1988), with the hydrologic requirements as noted above. The methodology also follows Smith (2000) and is also consistent with the guidance provided by CDFG. The convention for application of these tools in the field for the project-level delineation was developed with direct input from CDFG biologists during the verification process. The methodology for defining the dimensions of riparian habitat in the field is summarized as follows:

- Designation of an area as "riparian habitat" was generally limited to stands of vegetation that included a predominance of species that exhibited an indicator status of Facultative, Facultative Wetland, or Obligate. (Coast live oaks were included as riparian habitat in specific instances as further described/discussed below.)

- Where all riparian habitat was included within the bank-full stream channel (e.g., riparian herb), the outermost limits of either the bank or riparian habitat was mapped as the limits of CDFG riparian jurisdiction/habitat.

- Where riparian habitat extended beyond the bank-full channel to the active floodplain, and did not extend outside the active floodplain, the outermost limits of either the active floodplain or riparian habitat was mapped as the limits of CDFG riparian jurisdiction/ habitat. By inclusion of the active flood plain and associated riparian habitat, the hydrologic, biogeochemical, and habitat functions not specifically associated with riparian vegetation, such as areas with localized ponding that support aquatic organisms (e.g., invertebrates, amphibians), but providing such hydrologic, biogeochemical and habitat functions, were captured and included within the jurisdictional area(s).

- Where riparian habitat extended beyond the active floodplain to active terraces, the outermost limits of the riparian habitat on the terrace (i.e., canopy edge or "drip line") was mapped as the limits of CDFG riparian jurisdiction/habitat. Similar to inclusion of the floodplain described above, inclusion of the active terraces ensured that functions such as hydrologic exchange with the adjacent uplands, nutrient cycling, shading by overhanging vegetation, bank and channel stabilization by roots, as well as habitat functions were included in the jurisdictional area(s).

[6] An additional 91.70 acres have been evaluated in the field, including 55.88 acres of cattail marsh and 35.82 acres of open water, for which Rancho Mission Viejo and CDFG have not reached concurrence relative to their jurisdictional status (i.e., unresolved features). These unresolved features are located within Trampas Canyon (Planning Area 5) of the RMV Planning Area and consist of the ONIS artificial tailings facility and other mining related facilities. GLA noted that these features do not meet the definition of a streambed or lake under the Fish and Game Code at the time of project implementation (GLA 2004).

This latter case (i.e., channel stabilization by roots) was most typically applied to southern coast live oak riparian forest. In some cases, particularly in U-shaped canyons, the limits of the active terrace were not always discernible. In such cases, coast live oaks (and in a few instances California sycamores) were included as riparian where they either (1) exhibited roots that reached the banks of the drainage, thereby, benefiting from the drainage or by providing stabilization for the banks (i.e., a benefit for the stream) or (2) where meaningful portions of the canopy overhung the stream, thereby providing for shading or litter (nutrient cycling) which would benefit the stream. In some instances, facultative wetland species such as Mexican rush (*Juncus mexicanus*) or clustered field sedge (*Carex praegracilis*) were indicators of shallow subsurface water that was at least seasonally available to the stream environment. Coast live oaks (and California sycamores) located above active terraces or (where terraces were not distinct) beyond where either roots or shading provided direct benefits to the stream, or that supported a predominance of UPL vegetation, were not included as CDFG-regulated riparian vegetation.

4.1.2.6 Invasive Plant Species within Riparian Habitats of the SAMP Study Area

An important detrimental impact to riparian habitat is the presence and expansion of invasive plant species. These plant species are non-native to California and have the potential to displace native species and alter riparian ecosystem functioning. The California Exotic Pest Plant Council (CalEPPC 1999) rated invasive species according to their "invasiveness" in California:

- **List A−** Most Invasive Wildland Pest Plants; documented as aggressive invaders that displace natives and disrupt natural habitats. Includes two sub-lists: List A-1and List A-2.

- **List B−** Wildland Pest Plants of Lesser Invasiveness; invasive pest plants that spread less rapidly and cause a lesser degree of habitat disruption; may be widespread or regional.

Various invasive plant species occur within the riparian habitat of the watershed, including (with CalEPPC list rating) saltcedar (*Tamarix* spp.; A1), pampas grass (*Cortaderia* sp.; A1), giant reed (*Arundo donax*; A1), black mustard (*Brassica nigra*; A1), Eucalyptus (*E.* spp.; A1), tree-of-heaven (*Ailanthus altissima*; A2), castor bean (*Ricinus communis*; B), poison hemlock (*Conium maculatum*; B), and Brazilian pepper (*Schinus terebinthifolius*; B).

Various efforts to control the extent of invasive species have occurred within the SAMP Study Area as follows:

County of Orange

The County of Orange has performed eradication of *Arundo donax* from selected reaches of San Juan Creek and Trabuco Creek during the last decade, and in some areas the eradication programs are ongoing. In general, the County has attempted to implement a "top-down" approach, beginning in upper portions of the watersheds, and working downstream so as to eliminate sources of reintroduction from upper watershed areas. The County's efforts in San Juan Creek have generally been required as mitigation for projects that have impacted jurisdictional waters (e.g., Antonio Parkway) and the programs have been completed. In some areas, such as areas in San Juan Creek near the confluence with Hot Springs Canyon, the *Arundo donax* has become re-established.

County of Orange eradication efforts in Trabuco Creek have also primarily been tied to project mitigation (e.g., Forster Ranch contributed funds to the County for ongoing eradication of *Arundo donax* from 5.8 acres of Trabuco Creek[7]). The County has also conducted a program to eliminate 3.5 acres of *Arundo donax* (combined cover of numerous small patches) from an approximately 8,000-foot reach of Trabuco Creek for impacts associated with construction of the Crown Valley Parkway Bridge.

Rancho Mission Viejo

As part of its cattle ranching operations, Rancho Mission Viejo has performed eradication of artichoke thistle across most of its property since the 1970s and efforts continue annually. A comprehensive artichoke thistle removal program has also been implemented for the approximately 1,600-acre Ladera open space area that has been ongoing since 2001. Rancho Mission Viejo has also begun a program to control Spanish sunflower (*Pulicaria paludosa*) in Gobernadora Creek and Chiquita Creek; however, this program is currently in the beginning phases with a pilot program that is comparing control methods (i.e., hand removal versus spraying). Finally, in coordination with the County of Orange, Rancho Mission Viejo has implemented an *Arundo donax* eradication program in Trabuco Creek to remove two acres (combined cover of *Arundo donax* clumps) from the reach immediately downstream of the County's Crown Valley Parkway and Forster Ranch eradication areas.

Northrop Grumman Space Technology TRW Capistrano Test Site

Pursuant to Biological Opinion 1-6-00-F-6 and Department of the Army Permit 199915591 RLK, Northrop Grumman Space Technology TRW Capistrano Test Site has conducted invasive species eradication in lower Cristianitos Creek. This program is to be continued through the life of the lease which extends through 2018. The program has achieved performance standards reflective of no invasive species, a condition consistent with monitoring reports submitted to Northrop Grumman.

Invasive Species Mapping with the RMV Planning Area

To support the SAMP effort, invasive species mapping within RMV Planning Area riparian systems and adjacent or contiguous upland areas was conducted by PCR. This effort began with a review of previous riparian mapping and classification of the RMV Planning Area drainages, and included photographic interpretation of historic and current aerial imagery, field mapping and data collection, and report preparation (details on the methodology of the mapping are discussed in Appendix F4). Artichoke thistle was mapped in the Ladera Land Conservancy open space areas by PCR. Artichoke thistle mapping throughout the rest of the RMV Planning Area was performed by GLA.

San Juan Creek Watershed

Arroyo Trabuco. Results from Neill and Giessow identified a Priority 1 species, *Arundo donax* giant reed, as "common" within the side slopes of reach TB-06b, and "common" within the floodplain of reaches TB-06c and TB-06d. A Priority 2 species, castor bean, was also identified as "common" along the terraces of reach TB-06c, and "present" within the floodplain of reach TB-06d. Another Priority 2 species, pampas grass, was identified as "common" within the floodplain of TB-06c, and "present" within the floodplain of TB-06d. It should be noted that immediately upstream of the RMV Planning Area's northwestern boundary, *Arundo donax* and

[7] The County's Forster Ranch program is a five-year program that was initiated in 2001 and will be completed in 2005.

pampas grass are "common" within the floodplain and tamarisk is "present" within the Arroyo Trabuco Channel. Results from the Neill and Giessow Investigation's January 2002 survey identified the entire RMV Planning Area portion of Arroyo Trabuco as containing an "abundance" of *Arundo donax*. This mapping effort recorded the highest occurrence of *Arundo donax* north of the RMV Planning Area near cabins in Holy Jim Canyon, approximately two miles upstream from the Cleveland National Forest boundary. Additionally, it was noted that during winter 2000/2001, the upper two miles of Trabuco Creek within O'Neill Regional Park was cleared by County of Orange staff and prison crews. The current investigation identified Priority 1 species, *Arundo donax*, and Priority 2 species, pampas grass and castor bean, but did not observe tamarisk. *Arundo donax* is abundant within Arroyo Trabuco. Pampas grass and castor bean individuals were located throughout the RMV Planning Area portions of this drainage with pampas grass spreading rapidly in some areas.

Cañada Chiquita. Invasive species occurrences were not previously documented within this drainage. The current investigation identified only one Priority 2 species, pampas grass, and one Priority 3 species, tree tobacco. Two isolated pampas grass individuals were located within reaches CH-02 and CH-06a. Isolated tree tobacco individuals were located within downstream reaches CH-01, CH-02, and CH-06b; scattered within reach CH-06a; and abundant within reach CH-04a (central). Spanish sunflower occurs at scattered locations, typically in wetter areas associated with Chiquita Creek.

Cañada Gobernadora. Invasive species occurrences were not previously documented within this drainage. The PCR investigation identified one Priority 1 species, *Arundo donax*, and one Priority 3 species, tree tobacco. Isolated individuals of *Arundo donax* were located within reaches GO-02 and GO-07. Isolated individuals of tree tobacco were located within downstream reaches GO-02 and GO-03 and abundant within GO-07 upstream. In addition, Spanish sunflower (which was not mapped by PCR) has been identified by GLA as an invasive exotic within localized portions of the riparian areas associated with Gobernadora Creek.

San Juan Creek. Results from the Neill and Giessow Investigation (2002) characterized the upstream and downstream RMV Planning Area portions of San Juan Creek as containing an "abundance" of *Arundo donax*; the central portion of the drainage contained "scattered" populations of the same species. This mapping effort documented the spread of *Arundo donax* downstream from early plantings at San Juan Hot Springs and nearby cabins outside the Cleveland National Forest boundary. According to the Neill and Giessow Investigation, *Arundo donax* was cleared within Caspers Wilderness Park from 1997 to 1998. Other efforts to clear infestations of *Arundo donax* occurred downstream and south of the RMV Planning Area portion of the Habitat Reserve in the City of San Juan Capistrano between La Novia Avenue and I-5 in 1995, but the species has subsequently reinvaded. The current investigation identified all of the Priority 1, 2, and 3 species. *Arundo donax* is abundant throughout San Juan Creek. Isolated castor bean and tamarisk individuals were located throughout the RMV Planning Area portions of this drainage. Scattered tree tobacco occurrences were located within the mainstem as well as tributary reaches along the southern bank of the mainstem, as was Spanish sunflower.

Verdugo Creek. Invasive species occurrences were not previously documented within this drainage or its tributaries. The current investigation identified one Priority 1 species, *Arundo donax*, and one Priority 3 species, tree tobacco. One isolated *Arundo donax* individual was located within reach VD-01. Isolated tree tobacco occurrences were located within downstream reach VD-01 and increased in abundance upstream with a dominance of this species located within reach VD-05b.

San Mateo Creek Watershed

***Gabino Creek*.** The Neill and Giessow results identified tamarisk, a Priority 1 species in the San Mateo Creek Watershed, as being "present" within the LP-13, LP-14, which are tributary to Gabino Creek as well as associated with Gabino Creek (LP-15) near the confluence with Blind Canyon Creek. These occurrences were confirmed during field reconnaissance by GLA. The PCR investigation also identified one Priority 2 species, pampas grass, and one Priority 3 species, tree tobacco, associated with Gabino Creek and its tributaries. These included abundant occurrences of pampas grass within reach LP-14 and scattered occurrences in LP-12. Tree tobacco was identified within the mainstem of Gabino Creek (GA-18, LP-10, LP-12, and LP-15).

La Paz Canyon Creek. Previous investigations did not identify invasive species as associated with La Paz Canyon Creek. Two occurrences of tree tobacco were identified in LP-10 immediately upstream of the confluence of La Paz Canyon Creek and Gabino Creeks

Cristianitos Creek. Invasive species occurrences were not previously documented within this drainage or its tributaries. The current investigation identified all of the Priority 1, 2, and 3 species as present in Cristianitos Creek. *Arundo donax* is scattered in the downstream portion of this drainage (CR-18). Isolated castor bean and tamarisk individuals were located throughout the RMV Planning Area portion of this drainage. Abundant occurrences of pampas grass were located within the central (CR-14) and southern (CR-18) portion of the drainage. Scattered tree tobacco and Spanish sunflower occurrences were located along the entire mainstem.

Talega Creek. Invasive species occurrences were not previously documented within this drainage. The current investigation did not detect any occurrences.

To supplement mapping of invasive species within the RMV Planning Area, particularly San Juan Creek, the County of Orange followed up on its early mapping efforts and mapped invasive species in Caspers Regional Park according to the same methodology described above. The results are shown on Figure 4.1.2-8.

4.1.3 BIOLOGICAL RESOURCES

This chapter describes the biological setting of the San Juan Creek and western San Mateo Creek Watersheds within the SAMP Study Area, including the Cleveland National Forest (Cleveland National Forest). The SAMP Study Area is approximately 113,000 acres. The main focus of the watersheds study is the RMV Planning Area where future the County of Orange has approved a development project (The Ranch Plan) in November 2004. Rancho Mission Viejo owns the only significant areas in the SAMP Study Area that are not already entitled or dedicated as open space.

For the most part, those portions of the SAMP Study Area outside the RMV Planning Area are under public ownership. Overall, approximately 40 percent of the watersheds are already protected open space, including the Cleveland National Forest, which occupies the majority of the upper watersheds. Caspers Wilderness Park and Starr Ranch Audubon Sanctuary also comprise a large area of the upper San Juan Watershed. The middle portion of the Arroyo Trabuco is within O'Neill Regional Park and portions of lower Arroyo Trabuco are in the process of being added to the County of Orange regional park system. Other protected areas in the San Juan Creek Watershed include Upper Chiquita Canyon Conservation Area, Chiquita Ridge Open Space, General Thomas F. Riley Regional Park, Tijeras Creek Open Space, Cañada Gobernadora Ecological Restoration Area (GERA), and the Ladera Ranch Open Space. The majority of the Donna O'Neill Land Conservancy is within the San Mateo Creek Watershed. The majority of upper San Mateo Creek Watershed remains undeveloped. However, portions of the upper watershed and most of the lower San Mateo Creek Watershed are on Department of Defense lands occupied by MCB Camp Pendleton. MCB Camp Pendleton lands in the San Mateo Creek Watershed are used for military training, agriculture, and recreation.

To describe the biological setting of the San Juan Creek and Western San Mateo Creek Watersheds SAMP Study Area, this chapter includes the following subchapters:

Subchapter 4.1.3.1 Database Development Methods

Subchapter 4.1.3.2 Vegetation Communities and Associated Species. This subchapter addresses the SAMP Study Area and the key wildlife species that are typical of, or indicate, high quality vegetation communities.

Subchapter 4.1.3.3 Sensitive Wildlife and Plant Species in the SAMP Study Area

Subchapter 4.1.3.4 Wildlife Habitat Linkages and Corridors

4.1.3.1 Database Development Methods

The information used to prepare this biological setting discussion is derived from various databases prepared specifically for the SAMP Study Area. The database originally consisted of a vegetation map and sensitive species information compiled into Geographic Information System (GIS) coverages by the County of Orange for the 132,000-acre Southern Subregion NCCP planning area and for the Central and Coastal NCCP planning area. These databases were provided to the NCCP/HCP consultant by the County in 1993 for the Southern Subregion NCCP and 2005 for the Central and Coastal NCCP portion of the SAMP Study Area west of I-5. The methods used to prepare the SAMP Study Area databases are briefly described below, and are described in more depth later in this subchapter.

Habitat and Vegetation Communities

The vegetation layer of the database is based on habitat mapping originally performed by Dames and Moore (circa 1992). The mapping was based primarily on color aerial photo (circa 1990) interpretation. The mapping used the Orange County Land Cover/Habitat Classification System (Gray and Bramlet 1992) which is a hierarchical system that identifies separate vegetation associations and sub-associations. The classification system facilitates data analysis and reserve design while maintaining the level of detail required to accurately identify habitat areas of high biological and/or strategic value.

As depicted on Figure 4.1.3-1, the vegetation layer has been modified in-house by Dudek in response to changing biological conditions in the portion of the SAMP Study Area in the Southern Subregion since 1993, primarily where grading for various large-scale developments has removed vegetation (e.g., Ladera Ranch and Talega in south Orange County). The Central and Coastal Subregion database was not modified. Please note that vegetation communities discussed in this subchapter are upland vegetation communities. Aquatic vegetation communities are discussed in Chapter 4.1.2.

Focus Sensitive Wildlife and Plant Species

The database for sensitive wildlife and plant species locations and/or suitable habitat in the SAMP Study Area was compiled from the cumulative results of a number of general and focused biological survey efforts and existing databases, including the following:

- Coastal California gnatcatcher surveys conducted by Michael Brandman Associates on various private lands in 1990 and 1991 and for the Southern Orange County Transportation Infrastructure Improvement Project (SOCTIIP) (previously referred to as the Foothill Transportation Corridor South project in 1994-1996.

- Bird surveys conducted by Sweetwater Environmental Biologists on County of Orange park land in 1993.

- Focused surveys for the orange-throated whiptail conducted by Lilburn Corporation on portions of the RMV Planning Area in 1994.

- Focused surveys conducted by Bontrager for the coastal California gnatcatcher (1989), coastal cactus wren (1989 to 1990), and tricolored blackbird (1989) on the RMV Planning Area.

- A general survey of the distributions of sensitive biological resources and wildlife corridors on the RMV Planning Area (Bontrager 1990).

- Focused bird surveys conducted by Dudek in three areas: Coto de Caza/Dove Canyon, Northrop Grumman Space Technology TRW Capistrano Test Site, and Reservoir Canyon.

- A wildlife corridor study conducted by Dudek throughout the NCCP Subregion in 1994.

- A cumulative database on nesting raptors in the NCCP planning area compiled by P. Bloom between 1990 and 2000.

- Pitfall trap data for Audubon Starr Ranch provided by P. DiSimone.

- Focused surveys conducted in 1998 by Dudek and Harmsworth Associates throughout the RMV Planning Area for riparian birds.

- Focused surveys for sensitive and rare plants conducted in 1998 and 2003 by (GLA) throughout the RMV Planning Area and in lower Arroyo Trabuco in 2000.

- Focused surveys conducted in 1998 by P. Bloom throughout the NCCP planning area for arroyo toad and western spadefoot toad and additional arroyo toad data collected in 2001 by Bloom and Niemela.

- Focused surveys by Dudek for least Bell's vireo, southwestern willow flycatcher, coastal California gnatcatcher, and arroyo toad in lower Arroyo Trabuco in 1997.

- Focused surveys for sensitive wildlife and plants by Dudek in middle Chiquita Canyon in 1998.

- Focused surveys for California gnatcatcher by Dudek in 2003 on the Donna O'Neill Land Conservancy.

- Focused surveys for rare plants conducted by F. Roberts and D. Bramlet in 2003 on the Donna O'Neill Land Conservancy.

- Vernal pool and fairy shrimp surveys conducted in 2001 on the RMV Planning Area jointly by Dudek and PCR.

- The California Natural Diversity Database.

- A cumulative database for sensitive and rare plants compiled by botanist F. Roberts (submitted when Mr. Roberts was USFWS staff).

- CRREL and PCR/BALANCE/PWA studies of riverine and non-riverine wetlands in support of the SAMP and NCCP.

- Sensitive species data collected by P&D Consultants in 2001 for SOCTIIP.

- Updates to the listed species database from the USFWS in 2002 incorporating surveys conducted under federal permits from 1999 to 2002.

- Various other studies and anecdotal records of species from the Science Advisors and other biologists for the NCCP planning area and specific projects (e.g., Beier and Barrett 1993; Padley 1992; Harmsworth Associates 1997, 1998, 2000).

These various survey and study efforts have resulted in a cumulative database that provides a strong portrayal of the abundance, richness, and distribution of biological resources in the SAMP Study Area.

Role of the NCCP Science Advisors

As part of the Southern Subregion NCCP planning process, a panel of scientists with conservation biology, species, and regional and local expertise was brought together by The Nature Conservancy. This panel, known as the Southern Orange County NCCP Science Advisors (Science Advisors), prepared a document titled *Principles of Reserve Design and*

Species Conservation for the Southern Orange County NCCP (1997). The Science Advisors were brought together to provide scientific information and experience to assist the conservation planning process for the Southern Subregion NCCP. They were tasked to develop three products: (1) principles of reserve design, (2) principles for conservation of species and habitats, and (3) principles and goals for an adaptive management program. Under the second task, the Science Advisors developed a list of species to be addressed as part of the conservation planning process. This list of species was not confined to those primarily associated with coastal sage scrub, but included species using all types of wildlands in the Southern Subregion NCCP planning area.

4.1.3.2 Vegetation Communities and Associated Species

Coastal Sage Scrub

General Description

Coastal sage scrub is represented by several major associations that occur discontinuously from the San Francisco Bay area south to El Rosario in Baja California, Mexico. Some classification systems are based on dominant species (e.g., Holland 1986; Sawyer and Keeler-Wolf 1995; White and Padley 1997), while others are based on geographic location (e.g., Axelrod 1978; Westman 1982). The most commonly cited geographic-based associations include those of Axelrod (Fransiscan, Diablan, Lucian, Venturan, Diegan, and Riversidean) and Westman (Diablan, Venturan, Riversidean, Diegan, Martirian, and Vizcainan). Coastal sage scrub is found most extensively at lower elevations of coastal southern California, but occurs up to 4,265 feet in elevation in the Coast Ranges. It transitions into Mojave Desert vegetation to the east and to Sonoran Desert vegetation in Baja California, Mexico (Axelrod 1978; Westman 1981a).

Coastal sage scrub is dominated by a characteristic suite of low-statured, aromatic, drought-deciduous shrubs and subshrub species. Composition varies substantially depending on physical circumstances and the successional status of the habitat. Characteristic species include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), California encelia (*Encelia californica*), and several species of sage (e.g., *Salvia mellifera*, *Salvia apiana*) (Holland 1986; Sawyer and Keeler-Wolf 1995). Other common species include brittlebush (*Encelia farinosa*), lemonadeberry (*Rhus integrifolia*), sugarbush (*Rhus ovata*), yellow bush penstemon (*Keckiella antirrhinoides*), Mexican elderberry (*Sambucus mexicana*), sweetbush (*Bebbia juncea*), boxthorn (*Lycium spp.*), prickly-pear (*Opuntia littoralis*), coastal cholla (*Opuntia prolifera*), tall prickly-pear (*Opuntia oricola*), and several species of dudleya. Sage scrub often is patchily distributed throughout its range (O'Leary 1990). Over a scale of several miles, it can be found in diverse habitat mosaics with other plant communities, particularly grassland and chaparral, and oak/riparian woodland in more mesic areas. Coastal sage scrub may convert to chaparral or grassland, depending on slope, aspect, climate, fire history, and other physical factors and biological phenomena. Conversely, chaparral or grassland areas may convert to coastal sage scrub (Axelrod 1978; White 1995; O'Leary 1995; Allen et al. 1999).

Coastal sage scrub typically is found on xeric sites, notably steep, south-facing slopes with thin and/or rocky soils. It also is found on exposed sea bluffs, coastal and river terraces composed of coarse alluvial outwash and coastal dunes (Axelrod 1978). The more open nature of the canopy permits persistence of a diverse herbaceous component of forbs, grasses, and succulents in mature stands than usually is associated with chaparral. It often is mixed with

chaparral and grassland communities and the distinct boundaries between each can sometimes be difficult to delineate.

Coastal Sage Scrub Communities in the SAMP Study Area

Gray and Bramlet (1992) proposed a complex and highly detailed classification system, modified from Holland (1986), for use in mapping vegetation types in Orange County, California. Within "scrub" habitats, Gray and Bramlet (1992) identified eight major subtypes: (1) southern coastal bluff scrub, (2) maritime succulent scrub, (3) Venturan-Diegan transitional coastal sage scrub, (4) southern cactus scrub, (5) Riversidean coastal sage scrub, (6) floodplain sage scrub, (7) chenopod scrub, and (8) sage scrub-grassland ecotone. Within the Venturan-Diegan transitional coastal sage scrub subtype, 12 distinct subassociations were identified based on the dominant species. Within the sage scrub-grassland ecotone subtype, five distinct subassociations were identified based on the same criterion.

"Scrub" as defined for this SAMP Study Area, roughly corresponds to Holland's (1986) descriptions of Venturan-Diegan coastal sage scrub (a transitional community containing elements of two major types described by Holland), southern coastal bluff scrub, and Riversidean coastal sage scrub. In the SAMP Study Area, scrub is a more or less open community composed of low, drought deciduous shrubs, with a sparse understory of annual and perennial grasses and forbs.

***Venturan-Diegan Sage Scrub*.** This variable scrub community occurs on rocky, well-drained slopes away from the immediate coast (where it is replaced by the "coastal bluff scrub" community). This community is defined by the presence of one or more shrub species characteristic of coastal sage scrub, such as California sagebrush, California buckwheat, bluff monkeyflower (*Mimulus longiflorus*), goldenbush (*Isocoma* spp.), and prickly-pear. The understory is variable and frequently includes annual and perennial grasses; in spring, annual wildflowers may occupy open ground in relatively undisturbed scrub.

***Southern Cactus Scrub*.** Southern cactus scrub generally contains greater than 20 percent cactus (*Opuntia* spp.) with the remainder of the community consisting of other typical Venturan-Diegan sage scrub species. This community occurs primarily on south-facing slopes on low foothills away from the immediate coast. This community is of particular value to the coastal populations of the cactus wren (*Campylorhynchus brunneicapillus*).

***Coastal Bluff Scrub*.** Coastal bluff scrub consists of low scrub vegetation on exposed bluffs and cliffs, usually immediately adjacent to the ocean.

***Brittlebush/Buckwheat Scrub (Riversidean Coastal Sage Scrub)*.** Brittlebush/buckwheat scrub fits within Holland's (1986) description of Riversidean sage scrub. It is typically found on shallow, rocky soils (Kirkpatrick and Hutchinson 1980).

***Other Scrub Types and Ecotones*.** Scalebroom scrub (*Lepidospartum squamatum*) is associated primarily with broad floodplains and alluvial fans of interior Orange County, and is characterized by the presence of scalebroom. Saltbush scrub is defined by the presence of Brewer's saltbush (*Atriplex lentiformis* spp. *breweri*) as a dominant. In Orange County, this community typically occurs in low, saline places near the coast. California gnatcatchers (*Polioptila californica*) have been known to nest in pure stands of saltbush scrub, at least in coastal areas where gnatcatcher density is relatively high. Scrub/grassland ecotones are defined as an open scrub/grassland with shrub cover of 5 to 20 percent. Scrub/eucalyptus is an ecotone occurring where eucalyptus trees have been planted within extant scrub. Until the

eucalyptus trees become dominant to the point that the scrub is excluded from this community, scrub/eucalyptus may provide valuable wildlife habitat, including sensitive species such as California gnatcatcher and Belding's orange-throated whiptail (*Aspidoscelis* [*Cnemidophorus hyperythra beldingi*]).

Distribution of Coastal Sage Scrub in the SAMP Study Area

As identified on Table 4.1.3-1, there are 24,434 acres of coastal sage scrub in the SAMP Study Area. Coastal sage scrub is well distributed throughout the SAMP Study Area. At the lower elevations in the western portion of the SAMP Study Area, it occurs in a mosaic with grasslands, while in the eastern and northern parts of the SAMP Study Area, it is more interspersed with chaparral. Coastal sage scrub comprises approximately 33 percent of the remaining natural uplands in the SAMP Study Area.

TABLE 4.1.3-1
UPLAND VEGETATION COMMUNITIES/LAND COVERS IN THE SAMP STUDY AREA[a.]

Vegetation Community/Land Cover	Acres in SAMP Study Area
Upland Communities	
Coastal Sage Scrub	24,434
Chaparral	32,305
Grassland	12,468
Forest	2,698
Coast Live Oak Woodland	1,786
Cliff and Rocks	66
Upland Communities Subtotal	**73,757**
Non-Wildlands	
Agriculture	4,440
Disturbed	1,285
Developed	26,188
Non-Wildlands Subtotal	**31,913**
Total Upland Habitats	**105,670**

a. Source: Southern Subregional NCCP Vegetation Database (1993), as revised by Dudek & Associates, Inc. and Central and Coastal NCCP Database (1993), as received by Dudek in 2005.

Wildlife in Coastal Sage Scrub

Coastal sage scrub supports a rich diversity of wildlife species, including birds, mammals, reptiles, and invertebrates. While many widely ranging species that occur throughout shrublands in California may be encountered in coastal sage scrub, some species are restricted almost exclusively to this habitat type. Species that are indicative of high quality coastal sage scrub and of the potential presence of other species dependent on this vegetation community include the California gnatcatcher, cactus wren, Dulzura kangaroo rat (*Dipodomys simulans*), Dulzura California pocket mouse (*Chaetodipus californicus femoralis*), northern red-diamond rattlesnake (*Crotalus ruber ruber*), orange-throated whiptail, San Diego horned lizard (*Phrynosoma coronatum blainvillei*), and spotted night snake (*Hypsiglena torquata*) (Science Advisors 1997).

Human-Related Disturbances and Threats to Coastal Sage Scrub

Human-related disturbances have affected and continue to affect coastal sage scrub associations throughout the region. Of all human-related effects, livestock grazing and potentially increased fire frequency from fires intentionally set or otherwise caused by human activities have had the greatest and most pervasive effects on extant scrub in the region (Hobbs 1983; Monroe et al. 1992; Keeley and Keeley 1984; Westman 1976). Grazing by livestock has affected coastal sage scrub ecosystems for about 500 years. Humans may have ignited wildfires in coastal scrub for several thousand years, and naturally-ignited fires have occurred both before and during that period.

***Grazing*.** Grazing of livestock has, in many areas, affected both the extent and quality of coastal sage scrub. The degree of impact on scrub habitats from grazing often depends on whether or not a grazing management plan is prepared and grazing is conducted in accordance with the management plan. As an example, on Santa Cruz Island, 130 years of uncontrolled grazing by feral sheep reduced the coastal sage scrub cover to only six percent of the island (Brumbaugh and Leishman 1982). Westman (1987) observed that heavy sheep grazing has extensively impacted the understory of some stands of coastal sage scrub in Riverside County. Similar effects occur as a result of uncontrolled cattle grazing. Conversely, many researchers have found that removing intense grazing pressure from grasslands may encourage establishment of coastal sage scrub (Vogl 1976; Burcham 1957; Hobbs 1983; Kirkpatrick and Hutchinson 1980).

***Fire*.** As coastal sage scrub has evolved in a Mediterranean climate, it generally is assumed (based upon studies conducted in chaparral) that coastal sage scrub adapts to periodic wildfire disturbance. These inferences, however, should not be generalized to all coastal sage scrub associations because there are a number of characteristics of coastal sage scrub that differ from chaparral which could affect fire ecology. Coastal sage scrub's resilience to periodic wildfire is not completely understood, but seems to be a product of the reproductive strategies of the constituent species and the nature of the fire regime. Compared to chaparral, coastal sage scrub has lower shrub cover, higher volatile oil content, greater cover by herbaceous (or understory) species, shorter duration of nitrogen-fixing species, and more marked variation in post-fire sprouting patterns (Westman et al. 1981). Typically, coastal sage scrub has much less standing biomass and litter accumulation and constituent shrub species also are capable of continual reproduction by seed, unlike many chaparral species.

There appears to be a difference in recovery patterns dependent upon the geographic location of the coastal sage scrub and, perhaps, fire regimes (White 1995). In coastal areas, most sage scrub species resprout from underground root crowns, although there can be substantial seedling germination. This is not the case in inland areas, where there is little or no regeneration from sprouting and virtually all recovery is dependent upon seed germination. Habitat recovery in these areas is lower. This may be due to an adaptation to a fire interval that was longer than occurs today or that these species once were more effective in recolonizing from seed. Coastal sage scrub assemblages that regenerate primarily by seeding may be inherently more vulnerable to the effects of non-native species than stands that regenerate by sprouting (O'Leary 1990; White 1995). The SAMP Study Area is coastal; therefore, sprouting from root crowns is expected to be of primary importance for the regeneration of coastal sage scrub in this area.

Wildfires and controlled burns occur with increasing frequency in southern California (Zedler et al. 1983). High fire frequency (i.e., short intervals between fires) may permanently alter the floristic composition and structure of a site, including the extirpation of weak resprouting species such as California sagebrush (Malanson and O'Leary 1982). Fires at 5- to 10-year intervals may

result in type conversion from chaparral to coastal sage scrub (Keeley 1987; O'Leary et al.1992). Type conversion from coastal sage scrub or chaparral to grassland may result from repeated burning in successive or alternate years (Zedler et al. 1983).

Chaparral

General Description

Chaparral vegetation occurs along the Pacific Coast to the mountain foothills at 0 to 6,562 feet from southern Oregon to the San Pedro Martir Mountains in Baja California, Mexico (Detling 1961; Axelrod 1973). The distribution of chaparral mostly is in California where it is one of the most widespread vegetation types, encompassing an estimated 11,197 square miles or about seven percent of the total land area of the state (Davis et al. 1994). Species composition is varied within California where as many as 50 different subassociations have been recognized (Sawyer and Keeler-Wolf 1995). Additional forms of chaparral are known from Arizona and northeastern Mexico, and the Rocky Mountain Region but these types are isolated by greater than 77 square miles of desert, and are adapted to higher summer rainfall and a different fire regime (Keeley 2000).

Chaparral is a shrub-dominated habitat that is composed largely of evergreen, sclerophyllous species that range from approximately 3 to 13 feet in height (Keeley 2000). Other growth forms, including soft-leaved subshrubs, perennial herbs, geophytes (bulbs and corms), and annual herbs, are less abundant in mature chaparral, but can be present in abundance in early and late successional stands (Keeley 2000). Sparse stands of trees can occur within chaparral, typically within transition areas with conifers at higher elevations and oaks on north-facing slopes or ravines (Hanes 1977; Keeley 2000). Depending on the species composition and underlying topography and soil, the structure of chaparral can range from low, monotonous, smooth-textured vegetation to more heterogeneous stands approaching the vertical structure of woodlands (Keeley 2000).

From inland and high elevations to coastal locations, chaparral occurs in both large continuous stands or within a patchwork of habitats including coastal sage scrub, grasslands, oak woodlands, coniferous habitats and several wetland habitats (Heady 1977; Hanes 1977; Callaway and Davis 1993). Chaparral near the coast tends to occur in disjunct patches occupying more mesic habitats, whereas coastal sage scrub is distributed more extensively in drier habitats (Kirkpatrick and Hutchinson 1980; Malanson and O'Leary 1994). Mountain foothill and high elevation stands of chaparral are larger and more continuous, with coastal sage scrub occurring in smaller patches generally restricted to steep and south-facing exposures (Keeley 2000). Oak woodlands border chaparral in more mesic areas (e.g., ravines, north-facing slopes) that have developed deeper soils (Griffen 1977). Oak woodlands are thought to develop within late successional chaparral in areas with more developed soils (Cooper 1922; Wells 1962). The native grassland-chaparral interface is not well understood; however, research has shown cases of type conversion from chaparral to annual grasslands with frequent fire or mechanical disturbance (Zedler et al. 1983).

Chaparral generally is thought to be a fire-dependent system based on the many adaptations of its characteristic species, and its resilience in form and species composition to periodic burning (Keeley 1986, 1992). Most of the characteristic shrub species in chaparral can be organized generally into three adaptive strategies related to fire: (1) shrubs that have stems that regenerate following fire from below ground burls (resprouters), (2) shrubs that produce large amounts of dormant seed that persist for long periods of time and germinate by heat or chemical processes initiated by fire (obligate seeders), and (3) plants that apply both strategies

(Keeley 1977). Within chaparral vegetation, non-shrub plant growth forms may also employ these strategies or fire avoidance to persist within this fire prone system (e.g., geophyte species whose bulbs or corms persist following fire, annual herb species with long seed dormancy and heavy annual seed production, and annuals with the ability to disperse seeds over long distances) (Keeley 1986).

The species composition of a particular chaparral stand is largely influenced by fire. Chaparral generally returns to pre-fire structure and composition within a normal fire regime (Keeley 1986); however, considerable research has documented various effects of fire regime on species mortality (Keeley 2000). Frequency of fire has been shown to affect chaparral species composition, where short fire intervals may eliminate obligate seeding species in favor of resprouters (Keeley 1986, 1992). Additional research has shown that fire temperature or intensity also has a strong influence on post-fire species composition (Davis et al. 1989; Rice 1993; Tyler 1995). Stand age following fire is thought to influence the reproduction of species based on reproductive strategies. Research has shown that seedling recruitment is more common for resprouting species in old (>56 years) stands of chaparral whereas seedling recruitment for obligate seeding species was extremely uncommon (Keeley 1986, 1992). This research has led to the conclusion that short-interval fires may adversely affect the presence of obligate resprouting species in favor of obligate seeders.

The floristic composition of chaparral varies depending on biogeography, local habitat characteristics, and fire history. Of the many growth forms present in chaparral, woody evergreen perennials are the dominant plants and, as such, exert the most influence on the habitat. The most common and widespread species within chaparral is chamise (*Adenostoma fasciculatum*) (Hanes 1971). This species occurs in most stands of chaparral and is the dominant plant in drier habitats (Keeley 2000). The ubiquity of this species is likely explained by its many adaptations to drought, fire, and disturbance (Hanes 1977). Other common shrub species include representatives from manzanita (*Arctostaphylos* spp.), wild-lilac (*Ceanothus* spp.), silk-tassel bush (*Garrya* spp.), oak (*Quercus* spp.), redberry (*Rhamnus* spp.), *Rhus* spp., laurel sumac, mountain-mahogany (*Cercocarpus betuloides*), toyon (*Heteromeles arbutifolia*), holly-leaf cherry (*Prunus ilicifolia*), and mission manzanita (*Xylococcus bicolor*) (Holland 1986). Soft-leaved subshrubs are less common in chaparral than in coastal sage scrub but occur within canopy gaps of mature stands, and may be more prevalent following fire (Holland 1986; Keeley 2000; Sawyer and Keeler-Wolf 1995). Common species include California buckwheat, sages (*Salvia* spp.), California sagebrush, and monkeyflower. Suffrutescent and perennial herbaceous species commonly include deerweed (*Lotus scoparius*), nightshade (*Solanum* spp.), Spanish bayonet (*Yucca whipplei*), rock-rose (*Helianthemum scoparium*), golden yarrow (*Eriophyllum confertiflorum*), *Bloomeria* spp., *Brodiaea* spp., onion (*Allium* spp.), sanicle (*Sanicula* spp.), *Lomatium* spp., soap plant (*Chlorogalum* spp.), and bunch grasses (*Nassella* spp. and *Melica* spp.) (Holland 1986; Sawyer and Keeler-Wolf 1995). Vines commonly present in chaparral include wild cucumber (*Marah* spp.), dodder (*Cuscuta* spp.), chaparral-pea (*Lathyrus* spp.), bedstraw (*Galium* spp.), poison-oak (*Toxicodendron diversilobum*), and honeysuckle (*Lonicera* spp.). Annual species persisting in mature chaparral or in the post-burn flora vary according to geographic location, but typically include lupine (*Lupinus* spp.), *Lotus* spp., California thread-stem (*Pterostegia drymarioides*), *Claytonia* spp., *Gnaphalium* spp., *Phacelia* spp., *Gilia* spp., whispering bells (*Emmenanthe penduliflora*), and fiesta-flower (*Pholistoma* spp.) (Holland 1986; Sawyer and Keeler-Wolf 1995).

Chaparral Communities in the SAMP Study Area

Gray and Bramlet (1992) identify several chaparral and scrub-chaparral ecotone/sere associations in Orange County. The subassociations generally are self-descriptive by their titles.

Chaparral subassociations known from the SAMP Study Area include southern mixed chaparral, chamise chaparral, scrub oak chaparral, toyon-sumac chaparral, snowball ceanothus chaparral, and manzanita chaparral. The scrub-chaparral ecotone/sere subassociations are characterized by gradations between scrub and chaparral vegetation communities. Two scrub-chaparral ecotone/sere subassociations known from the SAMP Study Area are chamise-sage scrub and maritime chaparral-sagebrush, the former dominated by chamise and California sagebrush, the latter dominated by lemonadeberry, laurel sumac, and toyon.

Distribution of Chaparral in the SAMP Study Area

A total of 32,305 acres of chaparral has been mapped within the SAMP Study Area (Table 4.1.3-1). Chaparral generally occurs in a mosaic with coastal sage scrub in the eastern and central portions of the SAMP Study Area in association with rugged topography and higher elevations. Chaparral is the dominant vegetation community in the Cleveland National Forest. Chaparral comprises approximately 44 percent of the remaining wildlands in the SAMP Study Area.

Wildlife in Chaparral

Wildlife species typically associated with high-quality chaparral include wrentit (*Chamaea fasciata*), bushtit (*Psaltriparus minimus*), spotted towhee (*Pipilo maculatus*), California thrasher (*Toxostoma redivivum*), black-chinned sparrow (*Spizella atrogularis*), Dulzura kangaroo rat, Dulzura California pocket mouse, coastal rosy boa (*Charina trivirgata roseofusca*), coastal western whiptail (*Aspidoscelis* [*Cnemidophorus*] *tigris stejnegeri*), northern red-diamond rattlesnake, and lyre snake (*Trimorphodon biscutatus*) (Science Advisors 1997).

Human-Related Disturbances and Threats to Chaparral

Because chaparral and many of its component species are widely distributed, there are no identified direct threats to chaparral as a vegetation type. Certain locations of chaparral, endemic sensitive species or unique chaparral associations; however, may be vulnerable to local extirpation. Large-scale changes in climate or pollution may affect the distribution of chaparral species, but research on the effects of potential changes is not well developed. Fire suppression has been described as a threat to chaparral, but this also has not been demonstrated over large areas (see discussion above for fire and chaparral relationships).

Grasslands

General Description

California grasslands are described as two grassland associations: (1) non-native, annual grassland, and (2) native perennial grassland (Heady 1977; Keeley 1990; Sims and Risser 2000). There is a basic disagreement about the historic distribution of native grasses in California before the introduction of non-natives. Some have suggested that the extant perennial grasslands represent stands of “pristine” native grasslands (Heady 1977; Keeley 1990; Sims and Risser 2000). In a critical review of past research on native grasslands in California, Hamilton (1997) argued that most of the current distribution of annual grasslands in central and southern California historically was not extensively perennial grasslands, but rather shrublands, woodlands, or desert scrub vegetation. Although there is debate about the distribution and pristine nature of native grasslands, it is agreed that areas supporting native grasses in southern California currently are uncommon and support a high diversity of native, and often sensitive, plant species.

Annual Grasslands. Annual grasslands primarily are composed of annual grass species introduced from the Mediterranean basin and other Mediterranean-climate regions with variable presence of non-native and native herbaceous species (Baker 1989; Mack 1989). Species composition of annual grasslands may vary over time and place based on grazing or fire regimes, soil disturbance, and annual precipitation patterns (McNaughton 1968; Heady 1977; Keeley 1990). Annual grasslands are likely to be dominated by several species of grasses that have evolved to persist in concert with human agricultural practices (Jackson 1985; cited in Sims and Risser 2000) such as: slender oat (*Avena barbata*), wild oat (*Avena fatua*), foxtail chess (*Bromus madritensis*), soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus*), barleys (*Hordeum* spp.), Italian ryegrass (*Lolium multiflorum*), perennial ryegrass (*Lolium perenne*), rat-tail fescue (*Vulpia myuros*), and Mediterranean schismus (*Schismus barbatus*). Annual grasslands also typically support an array of annual forbs from the Mediterranean-climate regions such as red-stemmed filaree (*Erodium cicutarium*), broad-lobed filaree (*Erodium botrys*), mustards ([(*Brassica* spp.], short-podded mustard [*Hirschfeldia incana*], wild radish [*Raphanus sativus*]), tocalote (*Centaurea melitensis*), Italian thistle (*Carduus pycnocephalus*), artichoke thistle or cardoon (*Cynara cardunculus*), common catchfly (*Silene gallica*), burclover (*Medicago* spp.), and cat's-ear *(Hypochaeris* spp.) (Keeley 1990). Low abundances of native species are sometimes present within annual grasslands.

These native species usually include disturbance specialists with several different growth forms such as: subshrubs (e.g., *Lotus* spp., *Eriogonum* spp., *Lessingia* spp., *Isocoma* spp., *Ericameria* spp.); succulents (*Opuntia* spp.); perennial geophytes (e.g., blue dicks [*Dichelostemma capitatum*]), and herbaceous annuals (e.g., doveweed [*Eremocarpus setigerus*], vinegar weed [*Trichostemma lanceolatum*], and tarweed [*Centromadia, Deinandra, Hemizonia*]) (Holland 1986; Sawyer and Keeler-Wolf 1995; Keeley 1990).

Most annual grasslands likely have developed as a result of past agricultural or urban development-related activities, including discing, brushing, grading, or overgrazing of native habitats. Because annual grasslands generally are associated with these disturbances, abiotic factors (excluding fire) probably play a diminished role in determining their distribution. Some large-scale physical environmental factors (e.g., climates with summer drought) may facilitate development of annual grassland within native habitats (Sims 1988; Keeley 1990). However, it is doubtful that annual grasslands would develop in most habitats in the absence of fire, grazing, or other form of disturbance. Species composition varies from one site to another but several annual grass species appear to show site preferences based on annual rainfall (Janes 1969). This research described grassland species along a rainfall gradient with soft chess and broad-lobed filaree on the mesic end (less than 8 inches of annual rainfall) and foxtail chess and red-stemmed filaree in more xeric conditions (less than 7.5 inches) (Janes 1969). Abiotic factors also are thought to influence the species composition of annual grasslands on a local scale. Seasonal variation in temperature, rainfall, and physical microsite differences have been shown to influence annual grassland species composition (Evans and Young 1989; cited in Sawyer and Keeler-Wolf 1995).

It is clear that annual grasslands have expanded into the former ranges of native grasslands (*sensu.* Clements 1920), coastal sage scrub (O'Leary and Westman 1988; Minnich and Dezzani 1998), chaparral (Zedler et al. 1983), and oak woodlands (Callaway and Davis 1993). The scientific literature on type conversion of native systems generally has shown that altered fire frequencies, grazing pressure, or other physical disturbance, combined with competitive exclusion by non-native species, have caused the expansion of annual grasslands into native habitats previously occupied by perennial species. Minnich and Dezzani (1998) documented changes in the distribution of coastal sage scrub and annual grassland within a portion of

western Riverside County. Annual grasslands in this region currently are expanding into areas formerly supporting coastal sage scrub.

Some authors have noted that annual grasslands have remained stable over time and it has been proposed that annual grassland species should be accepted as "new natives" and managed as though they were native systems (Heady 1977). However, acceptance of the current distribution of annual grasslands may be shortsighted because recent research in the coastal sage scrub/annual grassland interface has shown that the stability of annual grasslands may be related to permanent changes in soil nutrient and moisture regimes caused by the presence of exotic species (Heunneke and Mooney 1989) and air pollution (Allen et al. 1996; Padgett et al. 1999; Minnich and Dezzani 1998).

Valley and Foothill Grasslands. Native grasslands have been described as occurring in many topographic locations within California (Sawyer and Keeler-Wolf 1995), with affinities toward more mesic north and east slope-aspects within a limited region (Keeley 1991, 1993). It is more likely that native grasslands usually are associated with soil characteristics particular to a local area. Statewide, native grasslands occur on a large variety of soil series; however, most of these support oak woodlands and other vegetation types (Barry 1972; Heady 1977). The current distribution of valley and foothill grasslands within southern California is limited to areas supporting deep clayey soils that have not been heavily disturbed by mechanical disturbance (Keeley 1993). Most research has provided descriptive accounts of the soil conditions supporting perennial grasslands as deep, brown, fertile, and having high clay content (Adams 1964; Heady 1977; Keeley 1990; Sims and Risser 2000). For example, soil affinities for valley and foothill grasslands have been established within southeastern Ventura County where soil depth and percentage clay particles were positively related, and percentage rock was negatively related to percentage cover of native perennial grasses (Keeley 1993). Few soil chemical studies have been conducted within valley and foothill grasslands and no strong relationship has been established between native grasses and soil nutrients (nitrogen, potassium, or phosphate) (Keeley 1993). Another consistent theme is that native grasslands occur on soils that remain saturated during the winter and become completely dry during summer months (Keeley 1990; Holland 1986).

No conclusive evidence has emerged concerning the relationship between valley and foothill grasslands and other shrubland or woodland habitats within the same landscape. Research on the role of fire in the distribution and maintenance of valley and foothill grasslands has offered few conclusive findings. Some research suggests that the distribution of native grasslands was related to a long history of burning by Native Americans (Sampson 1944; Bean and Lawton 1973; Timbrook et al. 1982). Others dismiss burning by Native Americans as not playing a significant role in the distribution of native grasslands, suggesting alternatively that lightning-caused fires were more important for maintaining grassland ecology (Heady 1977). Evidence supporting this assertion includes the finding that more common native grassland dominants (*Nassella pulchra, N. lepida*) are adapted to fire by resprouting and producing greater volumes of seed following fire (Ahmed 1983; Keeley and Keeley 1984). Several field studies have reported an increased cover of *Nassella* spp. after burn treatments (Hatch et al. 1991; Dyer et al. 1996; Wills pers. comm. 1995), while other studies have shown mixed effects of burning on species abundance (Hatch et al. 1999). Although preliminary research has pointed to increasing abundance of native grasses following fire, there is little research describing the role of fire on maintaining other native species within valley and foothill grassland habitat.

The effects of grazing on valley and foothill grasslands also remains unclear. In spite of the fact that a long history of intensive grazing in California has been cited as one of the primary reasons for the demise of native grasslands (Burcham 1957; Dasmann 1966 as cited; Keeley

1990; Bartolome and Gemmill 1981), most research has found that some intensity of grazing is beneficial to, or at least does not negatively affect, native grasses (Huntsinger et al. 1996). Conversely, several researchers have documented cases where native grasses have not increased in abundance on sites that have been excluded from grazing over 20- to 40-year periods (White 1967; Bartolome and Gemmill 1981; Goode 1981). Heady (1968, 1977) suggested that large native herbivores present prior to European colonization may have been an important factor in grassland formation and ecology. This assertion supports findings that some form of managed grazing may be useful as part of efforts to maintain or restore native grasses. Menke (1996), for example, considers "Prescribed grazing to constitute the primary component of the first phase of a perennial grassland restoration program."

Grasslands in the SAMP Study Area

The NCCP vegetation database for the SAMP Study Area does not reliably distinguish between annual and native grasslands.[1] However, several individual mapping efforts have been conducted in various areas of the SAMP Study Area which allow for a general characterization of the annual and native grasslands.

Annual Grasslands. Annual grasslands in the SAMP Study Area are dominated by bromes (*Bromus madritensis, Bromus diandrus, Bromus hordeaceus*), wild oats (*Avena barbata, Avena fatua*), rat-tail vescue, barleys (*Hordeum* spp.), and Italian ryegrass (Gray and Bramlet 1992; Michael Brandman Associates 1996; Dudek 2001). Annual forbs common to non-native grasslands in the SAMP Study Area include Indian milkweed (*Asclepias eriocarpa*), tocalote, common fiddleneck (*Amsinckia menziesii*), popcornflower (*Plagiobothrys* spp.), black mustard (*Brassica nigra*), field mustard (*Brassica rapa*), common catchfly, stickwort (*Spergula arvensis*), miniature lupine (*Lupinus bicolor*), white-whorl lupine (*Lupinus densiflorus* var. *austrocollium*), burclover (*Medicago polymorpha*), bristled clover (*Trifolium hirtum*), red-stemmed filaree, white-stemmed filaree (*Erodium moschatum*), and fluellin (*Kickxia spurria*) (Michael Brandman Associates 1996). Tarweeds and doveweed become dominant in later summer and fall (Michael Brandman Associates 1996). Large portions of the grasslands in the SAMP Study Area also are dominated by dense stands of cardoon. Gray and Bramlet (1992) describe ruderal grassland that consists of early successional grassland dominated by pioneering herbaceous species of several genera such as *Centaurea, Brassica, Malva, Salsola, Eremocarpus, Amaranthus,* and *Atriplex.*

Native Grasslands. Native grasslands in the SAMP Study Area are designated as valley needlegrass grassland (called southern coastal needlegrass grassland by Gray and Bramlet). Needlegrass grassland is defined as a grassland with more than 10 percent cover of purple needlegrass (*Nassella pulchra*). It is associated with the annual grasses listed above: leafy bentgrass (*Agrostis pallens*), junegrass (*Koeleria macrantha*), cane bluestem (*Bothriochloa barbinodis*), coast range melic (*Melica imperfecta*), and annual forbs such as common goldenstar (*Bloomeria crocea*), blue dicks, Cleveland's goldenstar (*Dodecatheon clevelandii*), smooth cat's-ear (*Hypochaeris glabra*), lilac mariposa lily (*Calochortus splendens*), many-stemmed dudleya (*Dudleya multicaulis*), blue-eyed grass (*Sisyrinchium bellum*), and rosin weed (*Calycadenia truncata*) (Gray and Bramlet 1992; Dudek 2001; Michael Brandman Associates 1996).

[1] The NCCP database does include mapping for native and annual grasslands, but a comparison with recent field studies (e.g., Dudek 2001) indicates that the database is not accurate.

Distribution of Grasslands in the SAMP Study Area

There are 12,468 acres of grassland in the SAMP Study Area (Table 4.1.3-1). Grasslands are scattered throughout the lower elevations of the SAMP Study Area with the largest, contiguous concentration in the southern portion. Other areas supporting large patches of grassland include Chiquita Ridge, Ladera Open Space, Thomas F. Riley Regional Park, Cristianitos Canyon, the Northrop Grumman Space Technology TRW Capistrano Test Site, and upper Gabino Canyon. Only 135 acres of grassland are mapped in the Cleveland National Forest. Grassland accounts for approximately 17 percent of the natural uplands in the SAMP Study Area.

Although annual and native grasslands are not reliably differentiated in the NCCP vegetation database, some survey work was done on the RMV Planning Area by St. John in 1989 (St. John 1990); later mapping in specific areas was completed by Dudek (1997, 2001) and Michael Brandman Associates (1996). Generally, native grasslands are patchy north of Ortega Highway, with patches occurring in Ladera Open Space east of Arroyo Trabuco (Dudek 2001) and Chiquita Canyon (St. John 1990; Dudek 1997, 2001; Michael Brandman Associates 1996). Much of the native grassland is located in the western San Mateo Watershed portion of the SAMP Study Area in upper Gabino Canyon (St. John 1990; Dudek 2001), Verdugo Canyon (St. John 1990), and Cristianitos Canyon (St. John 1990; Michael Brandman Associates 1996; Dudek 2001). St. John made a preliminary estimate of approximately 3,300 to 4,000 acres of native grassland on the RMV Planning Area, but based on the Dudek's refined mapping of native grasslands, the total appears to be closer to 1,100 acres. Major areas of native grassland include Cristianitos Canyon (approximately 405 acres) and upper Gabino Canyon (276 acres) with smaller areas of native grassland in Blind Canyon (102 acres) and middle and lower Chiquita Canyon (76 acres). There are likely to be several smaller patches of unmapped native grassland scattered throughout the SAMP Study Area, but individual patches are unlikely to be more than a few tens of acres in size. The cumulative total of these unmapped areas is likely to be no more than a few hundred acres.

Wildlife in Grasslands

Wildlife species that are indicative of grasslands and the potential presence of other grassland species include white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), burrowing owl (*Athene cunicularia*), grasshopper sparrow (*Ammodramus savannarum*), California horned lark (*Eremophila alpestris actia*), Savannah sparrow (*Passerculus sandwichensis*), lark sparrow (*Chondestes grammacus*), western meadowlark (*Sturnella neglecta*), loggerhead shrike (*Lanius ludovicianus*), American badger (*Taxidea taxus*), western skink (*Eumeces skiltonianus*), ring-necked snake (*Diadophis punctatus*), western spadefoot toad (*Spea* [*Scaphiopus*] *hammondii*), and a variety of bats (Science Advisors 1997). Several other raptors depend on grasslands for foraging, including red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), turkey vulture (*Cathartes aura*), and merlin (*Falco columbarius*). It should be noted that although the Science Advisors (1997) listed burrowing owl as a grassland indicator species, they are quite rare in the SAMP Study Area and currently there are no known nesting sites (Hamilton and Willick 1996).

Human-Related Disturbances and Threats to Grasslands

Threats to valley and foothill grasslands may include disturbance of clay soils by agricultural activities, invasion of exotic species, grazing and urban development.

Woodlands and Forest

General Description

Woodlands and forests in the SAMP Study Area consist of coast live oak woodland, coast live oak forest, canyon live oak forest, and bigcone spruce forest.

Oak woodlands consist of multilayered vegetation with a canopy that is 20 to 80 percent tree cover (Gray and Bramlet 1992). Oak woodlands occur throughout the lower elevations of western California, generally from sea level to 4,291 feet (Holland and Keil 1995). Oak forests are similar to oak woodlands, but have 80 percent or more canopy cover (Gray and Bramlet 1992).

Thorne (1976) distinguishes between northern, foothill, southern, and island oak communities in California. Southern and coastal woodlands, including coast live oak woodland found in the SAMP Study Area, extend from eastern Mendocino County at 40 degrees north latitude through the North Coast, Central Coast, and Transverse ranges on north-facing and coast-facing slopes and in canyons below 3,937 feet (Barbour and Minnich 2000). The range continues through the interior valleys and foothill slopes of the Penninsular ranges, mainly between 492 feet and 4,593 feet, and south to the Sierra San Pedro Martir at 30^{o} N latitude in Baja California, Mexico (Barbour and Minnich 2000). According to Munz and Keck (1949), the southern oak woodlands are found in the valleys of southern California between Los Angeles and San Diego counties east to about 5,003 feet in the San Jacinto Mountains of western Riverside County. According to Holland and Keil (1995), coast live oak woodlands range from Sonoma County to Baja California, generally in mesic areas including canyon bottoms and north-facing slopes, whereas southern oak woodlands extend from Ventura County southward. This roughly corresponds with Griffin (1977) who distinguishes oak woodlands from the Santa Ynez Mountains of Santa Barbara County southward as southern oak woodland.

Generally, oak woodlands are open where moisture is limited in drier more exposed aspects, and densest in moist areas (Holland and Keil 1995). North-facing slope occurrences are also denser than south-facing slope occurrences (Holland and Keil 1995). Average annual rainfall of areas supporting oak woodlands is between 15 and 25 inches. Runoff tends to be rapid. The growing season is seven to 10 months (Munz and Keck 1949). Oak trees, in general, require 60 to 80 years to mature (Holland 1988).

Soils that commonly support coast live oak include sandstone and shale-derived soils (Sawyer and Keeler-Wolf 1995). Coast live oak typically occupies slopes with deep soils, alluvial terraces, and the recent alluvium of canyon bottoms (Griffin 1977; Brown 1982). Open woodlands form where soils are shallow (Holland and Keil 1995).

Canyon live oak forest is similar in composition to coast live oak forest, but is dominated by canyon live oak.

Bigcone spruce forest is dominated by bigcone Douglas-fir (*Pseudotsuga macrocarpa*) and canyon live oak (*Quercus chrysolepis*), with lesser amounts of interior live oak (*Quercus wislizeni*), big-leaf maple (*Acer macrophyllum*), California laurel (*Umbellularia californica*), and California ash (*Fraxinus dipetala*) (Gray and Bramlet 1992). McDonald (1990) noted that Douglas-fir and canyon live oak are strongly associated and may be considered a climax community.

Woodlands and Forest in the SAMP Study Area

Many understory shrubs in woodlands and forest are shade tolerant and include scrub oak (*Quercus berberidifolia*), California blackberry, snowberry (*Symphoricarpos mollis*), California walnut (*Juglans californica*), California-lilac (*Ceanothus* spp.), laurel sumac, gooseberry, toyon, California laurel, manzanita *(Arctostaphylos* spp.), poison-oak, Mexican elderberry, mountain-mahogany, sugarbush, big-leaf maple, and white alder. Herbaceous understory species include California goldenrod (*Solidago californica*), western wild rye (*Elymus glaucus*), giant ryegrass, *Melica* spp., *Stellaria* spp., *Claytonia* spp., ripgut grass, wild cucumber, Douglas' nightshade (*Solanum douglasii*), *Phacelia* spp., and common eucrypta (*Eucrypta chrysanthemifolia*) (Gray and Bramlet 1992).

Distribution of Woodlands and Forest in the SAMP Study Area

Coast live oak woodlands and forest occur throughout the SAMP Study Area and comprise approximately 4,484 acres (Table 4.1.3-1). The largest areas of coast live oak woodland are in the eastern portion of the SAMP Study Area in Caspers Wilderness Park, the hills west of Bell Canyon, and in the northern portion of the SAMP Study Area in Live Oak Canyon and upper Arroyo Trabuco. Live oak forest primarily occurs on the Donna O'Neill Conservancy, at the head of Cristianitos Creek, on the northern slopes of Blind Canyon, and in small patches in lower Chiquita Canyon and east of Cañada Gobernadora. Canyon live oak forest and bigcone spruce forest are limited to upper elevations of the Cleveland National Forest.

Wildlife in Woodlands and Forest

Woodlands and forests provide habitat for a variety of species, including nesting, cover, and food. Wildlife species that are indicators of high quality oak woodlands and the potential presence of other woodland species include Cooper's hawk, long-eared owl (*Asio otus*), western screech owl (*Megascops kennicottii*), acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Picoides nuttallii*), ash-throated flycatcher (*Myiarchus cinerascens*), bobcat (*Lynx rufus*), brush mouse (*Peromyscus boylii*), Pacific slender salamander (*Batrachoseps pacificus*), and various bats (Science Advisors 1997).

Human-Related Disturbances and Threats to Woodlands and Forest

Threats to oak woodlands primarily stem from habitat destruction, reproductive depression, and disease. Holland and Keil (1995) state that in the vast majority of California oak woodland sites, oak reproduction ceased around 1900. The loss of acorn viability can be attributed to cattle and sheep in rangelands and an overabundance of deer in many northern California areas (Holland and Keil 1995). The oak woodland habitat also has been altered by the replacement of native bunch grasses with exotic annual grasses which produce many more seeds. Man's reduction in the number of predators of seed-eating animals which predate oak acorns also has been found to be a threat (Holland and Keil 1995). Introduced annual grasses, due to their rapid growth and uptake of available surface water, also contribute to the loss of native grasses historically present in oak woodlands and savannas as well as diminishing water supplies for oak seedlings (Stephenson and Calcarone 1999). In some areas, it appears that California laurel is replacing coast live oak, possibly due to grazing (Holland 1988). Wood cutting, although not as prevalent in southern California, has left areas of stumps because oaks were not able to reestablish (Holland 1988). Root rot, caused by over watering during the summer in urban oaks also has been known to cause mortality (Holland and Keil 1995). Since about 1995, a die off of oaks in Santa Cruz and Marin counties, termed Sudden Oak Death, has occurred, apparently indirectly from a water mold of the genus *Phytophthora* (EBCNPS 2001). This water mold breaks down

the tree's circulatory system and makes it vulnerable to invasion by bark beetles, which normally cannot invade healthy trees. This water mold is infecting at least three species of oak: coast live oak, tanoak (*Lithocarpus densiflorus*), and black oak (*Quercus kelloggii*).

Cliff and Rock

General Description

Cliff and rock habitats support a variety of vascular plants and lichens, depending on the amount of water and microhabitat conditions of the particular site (Gray and Bramlet 1992). Gray and Bramlet distinguish between xeric and mesic cliffs and rock outcrops.

Xeric cliffs typically are on inland, south- and southwest-facing slopes. Plant species on xeric cliffs include California brickellbush (*Brickellia californica*), long-stemmed buckwheat (*Eriogonum elongatum*), chia (*Salvia columbariae*), Bigelow's spike-moss (*Selaginella bigelovii*), bird's-foot fern (*Pellaea mucronata*), wild canterbury-bell (*Phacelia minor*), dudleya (*Dudleya* spp.), littleseed muhly (*Muhlenbergia microsperma*), California fluffweed (*Filago californica*), grape soda lupine (*Lupinus excubitus*), Spanish bayonet, needlegrass (*Achnatherum coronatum*), strigose deerweed (*Lotus strigosus*), San Diego jewelflower (*Caulanthus heterophyllus*), sapphire eriastrum (*Eriastrum sapphirinum*), white pincushion (*Chaenactis artemisiifolia*), and bicolor cudweed (*Gnaphalium bicolor*).

Mesic cliffs typically occur in moist canyons and ravines near perennial water sources. Plant species on mesic cliffs include California wishbone (*Mirabilis californica*), Bigelow's spike-moss, *Phacelia* spp., coffee fern (*Pellaea andromedifolia*), lanceleaf dudleya (*Dudleya lanceolata*), snapdragon (*Antirrihinum* spp.), California polypody (*Polypodium californicum*), silverback fern (*Pentagramma triangularis*), California cloak fern (*Notholaena californica*), and California threadstem (*Pterostegia drymarioides*). Mesic cliffs also support foliose- and cructose-type lichens, mosses, and liverworts (Gray and Bramlet 1992).

Rock outcrops are similar to vegetated cliffs, but occur on gentler slopes and support a different vegetation community (Gray and Bramlet 1992). Typical species found on rocks include pine-bush (*Ericameria pinifolia*), dot-seed plantain (*Plantago erecta*), rat-tail fescue, California croton (*Croton californicus*), rosin-weed (*Osmadenia tenella*), many-stemmed dudleya (*Dudleya multicaulis*), turkish rugging (*Chorizanthe staticoides*), rattlesnake spurge (*Chamaesyce albomarginata*), sapphire eriastrum, Bigelow's spike-moss, awn grass (*Aristida* spp.), cottonweed (*Micropus* spp.), nest straw (*Stylocline* spp.), herba impia (*Filago* spp.), and cryptantha (*Cryptantha* spp.).

Cliff and Rock in the SAMP Study Area

Cliff and rock within the SAMP Study Area include xeric cliffs, mesic cliffs, and rock outcrops, and associated species as described above.

Distribution of Cliff and Rock in the SAMP Study Area

Of the 66 acres of mapped cliff and rock habitat in the SAMP Study Area, about 57 acres are in the Cleveland National Forest. About nine acres of cliff and rock outside the Cleveland National Forest are found in three general locations: west of Trampas Canyon, in the southern portion of the Donna O'Neill Land Conservancy, and in middle Gabino Canyon.

Wildlife in Cliff and Rock

Cliff and rock may be used by a variety of wildlife. Prominent species associated cliff and rock habitats include golden eagle, prairie falcon (*Falco mexicanus*), coastal rosy boa, banded gecko (*Coleonyx variegatus*), woodrats (*Neotoma* spp.), and various bats.

Human-Related Disturbances and Threats to Cliff and Rock

No specific disturbances or threats have been identified for cliff and rock areas in the SAMP Study Area. However, public recreation such as hiking and rock climbing generally may be a threat to plants that are endemic to cliff and rock microhabitats and sensitive wildlife species that use and depend on these areas such as golden eagle, prairie falcon, coastal rosy boa, and bats.

Non-Natural Land Covers

Agriculture

Agriculture consists of annual crops, vineyards, orchards, dairies, stockyards, and other farming and ranching activities (Gray and Bramlet 1992). Agriculture in the SAMP Study Area primarily is cattle grazing, orchards, and nursery operations on the RMV Planning Area. Agriculture comprises approximately 4,440 acres of the SAMP Study Area. Chiquita Canyon, Cañada Gobernadora, Cristianitos Canyon, Blind Canyon, and upper Gabino Canyon have historically been grazed. The Color Spot and Tree of Life nurseries are located in the RMV Planning Area adjacent to San Juan Creek. Citrus orchards are located adjacent to Color Spot Nursery and in Chiquita Canyon and Cristianitos Canyon.

Disturbed Habitat

Disturbed habitat includes cleared or graded, burned, and mined areas. Disturbed areas may be barren or support ruderal (weedy) vegetation such as tocalote, wild oat, black mustard, prickly sow-thistle (*Sonchus asper*), and prickly lettuce (*Lactuca serriola*) (Gray and Bramlet 1992). Disturbed areas in the SAMP Study Area include active and former sand and gravel mining operations in Arroyo Trabuco, Trampas Canyon, and San Juan Creek and clay mining in Cristianitos Canyon, as well as various pre-construction cleared areas. Disturbed habitat comprises approximately 1,285 acres in the SAMP Study Area.

Developed

The developed category includes all urban areas, road, non-natural parks, and cleared and graded areas (may overlap with the disturbed category) (Gray and Bramlet 1992). Most of the City of Mission Viejo is developed, as are large portions of the City of San Juan Capistrano. “Developed” is the third largest land cover in the SAMP Study Area after chaparral and coastal sage scrub, totaling 26,188 acres, and accounting for about 23 percent of the 113,000-acre SAMP Study Area.

4.1.3.3 Sensitive Wildlife and Plant Species in the SAMP Study Area

The County of Orange, landowners, and wildlife agencies provided the Science Advisors with a list of wildlife and plant species to be considered in the conservation planning process. While the list provided to the Science Advisors was not exhaustive of all species that might be of concern for conservation planning in southern California, it provided a wide range of species

that are representative of the wildland habitats in the SAMP Study Area and species which ultimately may be selected for regulatory coverage. These species are depicted on Figure 4.1.3-2.

Listed Species and Other Planning Species

Draft NCCP/HCP Southern Planning Guidelines and Watershed Planning Principles

The Science Advisors developed a species planning hierarchy for the purpose of conducting conservation analyses based on life history characteristics, degree of rarity or endemism, regional and global context, response to management, extant population size and trend, genetics, and other variables as necessary. Species were assigned to one of three groups based on these factors.

Group 1: Minimal conservation action is needed for Group 1 species. Their conservation would be minimally affected by the outcome of the planning process based on the following criteria:

- The conservation would have a very limited impact on the species;
- The species is not found or is insignificant in the SAMP Study Area; and/or
- The species has very high population numbers in the SAMP Study Area.

The Group 1 species include:

Birds

Allen's hummingbird (*Selasphorus sasin*)
American bittern (*Botaurus lentiginosus*)
bald eagle (*Haliaeetus leucocephalus*)
bank swallow (*Riparia riparia*)
Belding's Savannah sparrow (*Passerculus sandwichensis beldingi*)
black rail (*Laterallus jamaicensis*)
black swift (*Cypseloides niger*)
black tern (*Chlidonias niger*)
Brewer's sparrow (*Spizella breweri*)
brown pelican (*Pelecanus occidentalis*)
canvasback (*Aythya valisineria*)
clapper rail (*Rallus longirostris*)
common loon (*Gavia immer*)
Costa's hummingbird (*Calypte costae*)
gull-billed tern (*Sterna nilotica*)
hairy woodpecker (*Picoides villosus*)
harlequin duck (*Histrionicus histrionicus*)
hepatic tanager (*Piranga flava*)
hermit warbler (*Dendroica occidentalis*)
horned grebe (*Podiceps auritus*)
least bittern (*Ixobrychus exilis*)
California least tern (*Sterna antillarum browni*)
Lewis' woodpecker (*Melanerpes lewis*)
long-billed curlew (*Numenius americanus*)
mountain plover (*Charadrius montanus*)

olive-sided flycatcher (*Contopus cooperi*)
osprey (*Pandion haliaetus*)
peregrine falcon (*Falco peregrinus*)
prairie falcon (*Falco mexicanus*)
purple martin (*Progne subis*)
reddish egret (*Egretta rufescens*)
rufous hummingbird (*Selasphorus rufus*)
large-billed Savannah sparrow (*Passerculus sandwichensis rostratus*)
western snowy plover (*Charadrius alexandrinus nivosus*)
spotted owl (*Strix occidentalis*)
summer tanager (*Piranga rubra*)
Vaux's swift (*Chaetura vauxi*)
Virginia warbler (*Vermivora virginiae*)
western grebe (*Aechmophorus occidentalis*)
white-faced ibis (*Plegadis chihi*)
yellow rail (*Coturnicops noveboracensis*)

Reptiles

southern sagebrush lizard (*Sceloporus graciosus vandenburgianus*)

Mammals

San Diego desert woodrat (*Neotoma lepida intermedia*)
Stephens' kangaroo rat (*Dipodomys stephensi*)

Group 2: Group 2 species are best conserved by protecting habitats at a landscape-level through general NCCP reserve design tenets and through adaptive management. Their conservation can be inferred from a well planned and managed network of reserves in a functioning landscape. Criteria for Group 2 species include one or more of the following:

- The species is relatively widespread in the SAMP Study Area;
- The species occurs in relatively robust populations within the SAMP Study Area and possibly elsewhere;
- Life history characteristics respond to habitat/landscape-level conservation;
- Detailed surveys or inventories are not crucial in order to conserve the species;
- The species is known to, or likely to, respond well to habitat management;
- The species is locally genetically indistinct; or
- No individual action is needed other than habitat conservation and management.

Group 2 wildlife species are listed in Table 4.1.3-2 and Group 2 plant species are listed in Table 4.1.3-3.

Group 3: Group 3 species are best conserved at the species-specific level. They require one or more of three types of conservation action: (1) refinement of reserve design or specific management activities, (2) reintroduction and/or specific enhancement, or (3) additional data

and research to determine basic needs. Criteria for Group 3 species include one or more of the following:

- The species is known or predicted to occur in extremely low populations;
- The species is narrowly endemic in the SAMP Study Area;
- The species has highly specialized life history requirements;
- The SAMP Study Area is known to be crucial to the survival of the entire species;
- The species is known or suspected to respond poorly to management;
- The species is highly sensitive to small changes in the landscape or habitat;
- The species is dependent on intensive conservation activities; or
- The species is widespread, but extremely uncommon.

Group 3 wildlife species also are listed in Table 4.1.3-2 and Group 3 plant species are listed in Table 4.1.3-3.

TABLE 4.1.3-2
GROUP 2 AND GROUP 3 WILDLIFE SPECIES

Common Name Scientific Name	Federal/State/ Science Advisors Group	Habitat Associations	Number of Locations/ Populations	Potential Habitat Acreage
Birds				
American white pelican *Pelecanus erythrorhynchos*	–/CSC/2	open water	No data points	346
barn owl *Tyto alba*	–/–/2, Umbrella Species	grassland, agriculture, riparian, woodland	59 nest sites	27,573
Bell's sage sparrow *Amphispiza belli belli*	FSC, BCC/CSC/2	coastal sage scrub, chaparral	2 points	56,739
Bewick's wren *Thyromanes bewickii*	–/–/2	coastal sage scrub, chaparral, riparian, woodland	No data points	67,358
black skimmer *Rynchops niger*	FSC, BCC/CSC/2	open water, marsh	No data points	487
burrowing owl *Athene cunicularia*	FSC, BCC/CSC/3	grassland, agriculture, coastal sage scrub	No data points	41,342
cactus wren *Campylorhynchus brunneicapillus* (San Diego and Orange County populations only)	BCC/CSC/2	coastal sage scrub w/southern cactus scrub	1,387 points	24,434
California gnatcatcher *Polioptila californica*	FT/CSC/2	coastal sage scrub	691 points	24,434
California gull *Larus californicus*	–/CSC/2	agriculture, water, beach, marsh	No data points	4,722
California horned lark *Eremophila alpestris actia*	–/CSC/2	grassland, agriculture, woodland	17 points	21,438
California thrasher *Toxostoma redivivum*	FSC/–/2	coastal sage scrub, chaparral	No data points	56,739

TABLE 4.1.3-2 (Continued)
GROUP 2 AND GROUP 3 WILDLIFE SPECIES

Common Name Scientific Name	Federal/State/ Science Advisors Group	Habitat Associations	Number of Locations/ Populations	Potential Habitat Acreage
Cooper's hawk *Accipiter cooperii*	–/CSC/2	woodland, riparian	44 nest sites	10,619
double-crested cormorant *Phalacrocorax auritus*	–/CSC/2	open water, salt marsh	No data points	346
elegant tern *Sterna elegans*	FSC, BCC/CSC/2	open water	No data points	346
ferruginous hawk *Buteo regalis*	FSC, BCC/CSC/3	grassland, agriculture	No data points	15,954
golden eagle *Aquila chrysaetos*	BEPA, BCC/CSC, SFP/2, Umbrella Species	coastal sage scrub, chaparral, grassland, agriculture, cliff and rocks	1 nest site	73,759
grasshopper sparrow *Ammodramus savannarum*	–/–/2	Grassland	676 points	12,468
lark sparrow *Chondestes grammacus*	FSC/–/2	grassland-shrub-woodland margins	No data points	NA[a.]
Lawrence's goldfinch *Carduelis lawrencei*	FSC, BCC/–/2	coastal sage scrub, chaparral	1 point	56,734
least Bell's vireo *Vireo bellii pusillus*	FE/SE/3	southern willow scrub riparian	45 nesting sites	1,073
loggerhead shrike *Lanius ludovicianus*	FSC, BCC/CSC/2	coastal sage scrub, grassland, agriculture	19 points	41,342
long-eared owl *Asio otus*	–/CSC/3	woodland, riparian	8 nest sites	10,619
merlin *Falco columbarius*	–/CSC/2	grassland, agriculture	No data points	16,954
northern harrier *Circus cyaneus*	–/CSC/2	marsh breeding; grassland, agriculture, coastal sage scrub foraging	3 nest sites	41,342 foraging
Pacific slope flycatcher *Empidonax difficilis*	–/–/2	woodland, chaparral	No data points	36,789
red-breasted sapsucker *Sphyrapicus ruber*	FSC/--/2	woodland, riparian	No data points	10,619
red-shouldered hawk *Buteo lineatus*	–/–/2	woodland, riparian	65 nest sites	10,619
rufous-crowned sparrow *Aimophila ruficeps*	–/CSC/2	coastal sage scrub	400 points	24,434
sharp-shinned hawk *Accipiter striatus*	–/CSC/2	coastal sage scrub, grassland, woodland	No data points	41,434
short-eared owl *Asio flammeus*	–/CSC/2	salt marsh, grassland, agriculture	No data points	16,551
southwestern willow flycatcher *Empidonax traillii extimus*	FE/SE/3	southern willow scrub riparian	6 nest sites	1,073
Swainson's hawk *Buteo swainsoni*	FSC, BBC/ST/2	grassland, agriculture	No data points	16,954
tricolored blackbird *Agelaius tricolor*	FSC, BBC/CSC/3	marsh breeding; grassland, agriculture foraging	Two recent breeding locations	16,954 foraging
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FC, BCC/SE/3	riparian	No data points	6,135

TABLE 4.1.3-2 (Continued)
GROUP 2 AND GROUP 3 WILDLIFE SPECIES

Common Name Scientific Name	Federal/State/ Science Advisors Group	Habitat Associations	Number of Locations/ Populations	Potential Habitat Acreage
white-tailed kite *Elanus leucurus*	FSC/SFP/3	riparian, woodland, grassland, agriculture, coastal sage scrub	37 nest sites	52,007
yellow-breasted chat *Icteria virens*	–/CSC/3	riparian	128 points	6,135
yellow warbler *Dendroica petechia*	–/CSC/3	riparian	33 points	6,135
Reptiles and Amphibians				
arroyo toad *Bufo californicus*	FE/CSC/3	riparian, water courses with sandy benches along streams	See text	See text
California glossy snake *Arizona elegans occidentalis*	–/–/3	coastal sage scrub, chaparral, grassland	4 points	69,253
California red-legged frog *Rana aurora draytonii*	FT/CSC/3	riparian, water courses	No data points	NA
coast patch-nosed snake *Salvadora hexalepis virgultea*	–/CSC/2	coastal sage scrub, chaparral, grassland	3 points	69,253
coast range newt *Taricha torosa*	–/CSC/2	coastal sage scrub, chaparral in association with water	No data points	NA
Coastal rosy boa *Charina trivirgata roseofusca*	–/–/2	chaparral, coastal sage scrub with cliff and rock	3 points	NA
coastal western whiptail *Aspidoscelis* [*Cnemidophorus*] *tigris stejnegeri*	–/–/2	coastal sage scrub	84 points	24,434
northern red-diamond rattlesnake *Crotalus ruber ruber*	–/CSC/3	coastal sage scrub, grassland	17 points	36,948
orange-throated whiptail *Aspidoscelis* [*Cnemidophorus*] *hyperythra beldingi*	–/CSC/2	coastal sage scrub, chaparral, woodland	174 points	61,223
San Diego banded gecko *Coleonyx variegatus abbotti*	–/–/3	chaparral, coastal sage scrub with cliff and rock	1 point	NA
San Diego horned lizard *Phrynosoma coronatum blainvillei*	–/CSC/2	coastal sage scrub, chaparral	42 points	56,739
California mountain kingsnake *Lampropeltis zonata* San Diego population	–/CSC/2	coniferous forest, chaparral high elevation	No data points	NA
San Diego ringneck snake *Diadophis punctatus similis*	–/–/2	woodland, grassland, agriculture, riparian	9 points	27,527
silvery legless lizard *Anniella pulchra pulchra*	FSC/CSC/3	coastal sage scrub, chaparral, riparian, beach; sandy soils	No data points	NA
southwestern pond turtle Emys [*Clemmys*] *marmorata pallida*	FSC/CSC/3	ponds, water courses	12 points	NA
two-striped garter snake *Thamnophis hammondii*	–/CSC/3	riparian, vernal pool, marsh, open water, water courses	7 points	6,840

TABLE 4.1.3-2 (Continued)
GROUP 2 AND GROUP 3 WILDLIFE SPECIES

Common Name Scientific Name	Federal/State/ Science Advisors Group	Habitat Associations	Number of Locations/ Populations	Potential Habitat Acreage
Coronado skink *Eumeces skiltonianus interparietalis*	–/CSC/2	chaparral, grassland, coastal sage scrub, coniferous forest	20 points for *Eumeces skiltonianus*. May not all be Coronado skink	NA
western spadefoot toad Spea [*Scaphiopus*] *hammondii*	FSC/CSC/3	coastal sage scrub, chaparral, grassland, vernal pool	23 points	NA
Mammals				
California leaf-nosed bat *Macrotus californicus*	–/CSC/2	habitat associations not well understood	No data points	NA
Dulzura California pocket mouse *Chaetodipus californicus femoralis*	–/CSC/2	coastal sage scrub, chaparral	No data points	56,739
long-legged myotis *Myotis volans*	FSC/–/2	woodland, riparian	No data points	10,619
northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	–/CSC/2	coastal sage scrub sparse	No data points	NA
Pacific pocket mouse *Perognathus longimembris pacificus*	FE/CSC/3	coastal sage scrub sparse	No data points	NA
pallid bat *Antrozous pallidus*	–/CSC/2	coastal sage scrub, chaparral, woodland	No data points	61,223
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	–/CSC/3	coastal sage scrub, chaparral, grassland, agriculture	No data points	NA
southern grasshopper mouse *Onychomys torridus ramona*	FSC/CSC/3	grassland, sparse coastal sage scrub	No data points	NA
spotted bat *Euderma maculatum*	FSC/CSC/2	riparian forages over water	No data points	6,135
Townsend's western big-eared bat *Corynorhinus townsendii townsendii*	FSC/CSC/2	grassland, agriculture, woodland, caves, crevices, buildings	No data points	21,438
western mastiff bat *Eumops perotis californicus*	FSC/CSC/2	cliff and rock; forages widely	No data points	NA
Fish				
arroyo chub *Gila orcutti*	–/CSC/3	Riparian, water courses	Arroyo Trabuco, San Juan Creek, lower Cañada Gobernadora	NA
southern steelhead *Oncorhynchus mykiss*	FE/CSC/3	Riparian, water courses	Outside SAMP Study Area in Devil Canyon in the San Mateo Watershed & Salt Creek in San Juan Creek Watershed	NA

TABLE 4.1.3-2 (Continued)
GROUP 2 AND GROUP 3 WILDLIFE SPECIES

Common Name Scientific Name	Federal/State/ Science Advisors Group	Habitat Associations	Number of Locations/ Populations	Potential Habitat Acreage
threespine stickleback *Gasterosteus aculeatus* spp.	–/–/3	Riparian, water courses	Arroyo Trabuco, upper San Juan Creek, upper Bell Canyon	NA
tidewater goby *Eucyclogobius newberryi*	FE/CSC/2	Riparian, water courses	Downstream of SAMP Study Area in San Mateo Watershed	NA
Invertebrates				
Harbison's dun skipper *Euphyes vestris harbisoni*	–/–/3	woodland with larval host plant San Diego sedge *Carex spissa*	No data points	NA
Quino checkerspot butterfly *Euphydryas editha quino*	FE/–/3	coastal sage scrub, grassland with larval host plant dot-seed plantain *Plantago erecta*	No data points. Considered to be extirpated from Orange County	NA
Riverside fair shrimp *Streptocephalus woottoni*	FE/–/3	vernal pools	3 general locations: Chiquita Ridge, Saddleback Meadows, Radio Tower Rd.	NA
San Diego fairy shrimp *Branchinecta sandiegonensis*	FE/–/3	vernal pools	2 general locations: Chiquita Ridge, Radio Tower Rd.	NA

NA: not applicable
BCC: Birds of Conservation Concern USFWS
BEPA: Bald Eagle Protection Act
CSC: California Special Concern Species
FC: Federal Candidate Species
FE: Federally Listed Endangered Species
FSC: Federal Species of Concern
FT: Federally Listed Threatened Species
SE: State Listed Endangered
SFP: State Fully Protected
ST: State Threatened

a. Potential habitat was not estimated for species with specific microhabitat requirements.

Science Advisors Categories

1. Species whose conservation is minimally affected by the reserve planning process
2. Species conserved most effectively at the habitat or landscape level.
3. Species requiring species-level conservation action.

Umbrella Species - Species that have large or broad habitat requirements that could serve other species

TABLE 4.1.3-3
GROUP 2 AND GROUP 3 PLANT SPECIES

Common Name Scientific Name	Status Federal/State/ CNPS/Science Advisors Group	Habitat Associations	Occurrence in SAMP Study Area: Locations/No. Counted or Estimated Individuals
Blochman's dudleya *Dudleya blochmaniae* ssp. *blochmaniae*	–/–/List 1B, 2-3-2/3	coastal bluff scrub, coastal sage scrub, Valley and foothill needlegrass grassland	One location in the Study Area west of I-5.
Catalina mariposa lily *Calochortus catalinae*	–/–/List 4, 1-2-3/2	coastal sage scrub, chaparral, Valley and foothill needlegrass grasslands in heavy soils	118/5,051 Occurs on Chiquita Ridge, in Cañada Gobernadora, the northeast portion of the Talega Development and the Saddleback Meadows area.
Chaparral beargrass *Nolina cismontana*	–/–/List 1B, 3-2-3/3	chaparral and coastal sage scrub; mostly associated with Cieneba sandy loam and Cieneba-Rock outcrop complex	7/7 Occurs in two areas: 1 location east of Live Oak Canyon Road and 6 locations on the steep, south-facing slopes east of the TRW facility.
cliff spurge *Euphorbia misera*	–/–/List 2, 2-2-1/3	sea bluffs, coastal sage scrub	No locations in database.
coastal goldenbush *Isocoma menziesii* var. *sedoides*	–/–/3	exposed areas on coastal bluffs, coastal bluff scrub	No locations in database.
Coulter's matilija poppy *Romneya coulteri*	–/–/List 4, 1-2-3/2	Coastal sage scrub and chaparral, dry washes, canyons, and mesic slopes	No locations in database, but one location known from upper Chiquita Canyon north of Oso Parkway.
Coulter's saltbush *Atriplex coulteri*	–/–/List 1B, 2-2-2/3	coastal bluff scrub, coastal sage scrub, Valley and foothill needlegrass grasslands; associated with alkaline or clay soils	Coulter's saltbush is known from three general locations in the SAMP Study Area: Chiquita Canyon, upper Cristianitos Canyon, and upper Gabino Canyon. Coulter's saltbush occurs in alkaline soils and is associated with southern tarplant in Chiquita Canyon.
graceful tarplant *Holocarpha virgata* ssp. *elongata*	–/–/List 4, 1-2-3/2	coastal sage scrub, Valley and foothill needlegrass grasslands, chaparral, and cismontane woodland	No locations in database.
heart-leaved pitcher sage *Lepechinia cardiophylla*	–/–/List 1B, 3-2-2/3	chaparral above 1,000 feet, cismontane woodland, coniferous forest	Two populations known from Trabuco Peak in the Cleveland National Forest.
many stemmed dudleya *Dudleya multicaulis*	–/–/List 1B, 1-2-3/3	coastal sage scrub, chaparral, Valley needlegrass grasslands; mesic barrens and cobbly clay soils	339/57,128 Known from five main areas in the SAMP Study Area: Chiquita Ridge; Chiquadora Ridge; Gobernadora/Central San Juan east of Gobernadora Creek and north of Color Spot Nursery; Trampas Canyon/Cristianitos Canyon extending south to the Talega development in the San Clemente Watershed; and upper

TABLE 4.1.3-3 (Continued)
GROUP 2 AND GROUP 3 PLANT SPECIES

Common Name Scientific Name	Status Federal/State/ CNPS/Science Advisors Group	Habitat Associations	Occurrence in SAMP Study Area: Locations/No. Counted or Estimated Individuals
			Gabino and La Paz canyons. A smaller cluster occurs east of the Northrop-Grumman facilities on the mesa. There also is a single record for the Bell Canyon area on Starr Ranch F. Roberts 1997 and locations in Caspers Wilderness Park not in the database, but these populations are considered to be small.
ocellated Humboldt lily *Lilium humboldtii* spp. *ocellatum*	–/–/List 4, 1-2-3/3	oak woodland and stream courses in foothill-mountain transition zone	Suitable habitat on Starr Ranch, Caspers Wilderness Park and in the Cleveland National Forest Potentially in the Foothill/Trabuco Specific Plan Area.
Pacific saltbush *Atriplex pacifica*	–/–/List 1B, 3-2-2/3	coastal bluff scrub, coastal sage scrub, alkali playas	No locations in database.
Palmer's grapplinghook *Harpagonella palmeri*	–/–/List4, 1-2-1/2	open patches of coastal sage scrub, coastal sage scrub-grassland ecotone, purple needlegrass grassland	82/27,147 Occurs on Chiquadora Ridge, east of Gobernadora Creek in the Gobernadora and Central San Juan Sub-basins, and in Cristianitos Canyon.
Parish's brittlescale *Atriplex parishii*	–/–/List 1B, 3-3-2/3	alkali swales, sinks, depressions, and grasslands with heavy clay-alkali components	No locations in database.
Parry's tetracoccus *Tetracoccus dioicus*	–/–/List 1B, 3-2-2/3	chaparral and coastal sage scrub on gabbroic soils	Only known from Cleveland National Forest.
prostrate spineflower *Chorizanthe procumbens*	–/–/–/3	chaparral, coastal sage scrub, pinyon-juniper woodland, Valley needlegrass grassland; associated with weathered mesa soils and gabbroic clay	No locations in database in SAMP Study Area but found along Cristianitos Road south of SAMP Study Area.
rayless ragwort *Senecio aphanactis*	–/–/List 2, 3-2-1/2	coastal sage scrub, cismontane woodland, alkaline soils	No locations in database.
San Miguel savory *Satureja chandleri*	–/–/List 1B, 2-2-2/3	chaparral, oak woodlands, oak forest, shaded stream courses	Known from Upper Hot Spring Canyon
southern tarplant *Centromadia parryi* spp. *australis*	–/–/List 1B, 3-3-2/3	alkali soils, sinks, depressions, and grasslands with heavy clay-alkali components	38/145,000+ Limited to two sub-basins in the SAMP Study Area. The largest population is in Chiquita Canyon and, including the Tesoro mitigation site, numbers more than 135,000 individuals. A large population numbering 10,000+ individuals occurs on the GERA site in Gobernadora.

TABLE 4.1.3-3 (Continued)
GROUP 2 AND GROUP 3 PLANT SPECIES

Common Name Scientific Name	Status Federal/State/ CNPS/Science Advisors Group	Habitat Associations	Occurrence in SAMP Study Area: Locations/No. Counted or Estimated Individuals
sticky dudleya *Dudleya viscida*	–/–/List 1B, 2-2-3/3	coastal bluff scrub, coastal sage scrub, chaparral; on shaded steep rocky cliffs and canyon walls	No locations in database. Suitable habitat on Starr Ranch, Caspers Wilderness Park and in Cleveland National Forest.
summer-holly *Comarostaphylis diversifolia* spp. *diversifolia*	–/–/List 1B, 2-2-2/2	chaparral	No locations in database.
thread-leaved brodiaea *Brodiaea filifolia*	FT/SE/List 1B, 3-3-3/3	coastal sage scrub, chaparral, grassland, vernal pools; heavy clay soils	33/9,618 Found in seven general locations in the SAMP Study Area, excluding the translocated population at Forster Ranch: Chiquadora Ridge; Cristianitos Canyon; Trampas Canyon, lower Gabino Canyon; middle Gabino Canyon, Talega ridgeline east of Northrop-Grumman; and just east of Trabuco Creek in the Arroyo Trabuco Golf Course project area.
western dichondra *Dichondra occidentalis*	–/–/List 4, 1-2-1/2	coastal sage scrub, chaparral, burned areas	4/individuals not counted Occurs in a 25-acre mapped area in the upper/middle portion of Gabino Canyon and several small populations in Cristianitos Canyon.

CNPS- California Native Plant Society

Lists
- 1A Presumed Extinct in California
- 1B Rare or Endangered in California and Elsewhere
- 2 Rare or Endangered in California, More Common Elsewhere
- 3 Need More Information
- 4 Plants of Limited Distribution

R-E-D code e.g., 3-3-3

- R Rarity
- 1 Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
- 2 Occurrence confined to several populations or to one extended population.
- 3 Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

- E Endangerment
- 1 Not endangered
- 2 Endangered in a portion of its range
- 3 Endangered throughout its range

- D Distribution
- 1 More or less widespread outside of California
- 2 Rare outside California
- 3 Endemic to California

In addition to the Group 1, 2, and 3 species, the Science Advisors identified several wildlife species that may serve as effective "umbrella" species for conservation planning purposes. These umbrella species have habitat requirements that would provide for other species. For example, mountain lion (*Puma concolor*) and bobcat require landscape-level habitat linkages and movement corridors that may serve other species. Species with large foraging territories such as large raptors provide habitat for other species. Umbrella species identified by the Science Advisors include:

American badger (*Taxidea taxus*)
barn owl (*Tyto alba*)
bobcat (*Lynx rufus*)
coyote (*Canis latrans*)
golden eagle (*Aquila chrysaetos*)
great horned owl (*Bubo virginianus*)
mountain lion (*Puma concolor*)
red-tailed hawk (*Buteo jamaicensis*)

Planning Species

The NCCP/HCP Southern Planning Guidelines notes that certain species were selected as conservation planning surrogates for identifying habitat areas that should be considered for protection. The NCCP/HCP Southern Planning Guidelines "Planning Species" include the following:

State- and Federally-Listed Species

Arroyo toad
California gnatcatcher
Least Bell's vireo
Southwestern willow flycatcher
San Diego fairy shrimp
Riverside fairy shrimp
Thread-leaved brodiaea

Unlisted Species

Cactus wren
Yellow warbler
Yellow-breasted chat
Tricolored blackbird
Grasshopper sparrow
White-tailed kite
Copper's hawk
Merlin
Golden eagle
Western spadefoot toad
Western pond turtle
San Diego horned lizard
Orange-throated whiptail
Mule deer
Mountain lion
Many-stemmed dudleya

Intermediate mariposa lily
Southern tarplant
Coulter's saltbush
Mud nama
Chaparral Beargrass
Saltspring Checkerbloom

Sensitive Wildlife and Plant Species Distribution in SAMP Study Area

The SAMP Study Area is divided into the San Juan Creek Watershed and the Western San Mateo Creek Watershed and their respective sub-basins for the purpose of discussing the distribution of listed and other sensitive wildlife (Figure 2-1). The San Juan Creek Watershed also includes areas that have not been subdivided into discrete sub-basins for planning purposes. These areas include the Cleveland National Forest, the Foothill/Trabuco Specific Plan area, and Arroyo Trabuco extending south from the Cleveland National Forest to the boundary of San Juan Capistrano.

San Juan Creek Watershed

Chiquita Canyon Sub-basin. The Chiquita Canyon Sub-basin is divided into three geographic areas: upper Chiquita Canyon, defined as the portion of the sub-basin north of Oso Parkway, middle Chiquita, defined as the portion of the sub-basin south of Oso Parkway to the "Narrows," and lower Chiquita Canyon defined as the portion of the sub-basin from the "Narrows" to the sub-basin boundary south of San Juan Creek and Ortega Highway. For discussion purposes, the western portion of the Gobernadora Sub-basin, referred to here as "Chiquadora Ridge," is included in the description below because this area is physically and biologically associated with the Chiquita Sub-basin (Figure 2-1).

Upland habitats mostly are comprised of coastal sage scrub, agriculture, patches of native and annual grassland, and patches of chaparral. As depicted on Figure 4.1.3-3, the 1,548 acres of coastal sage scrub in the Chiquita Canyon Sub-basin, including Chiquadora Ridge, supports 302 mapped locations of the California gnatcatcher, or about 44 percent of the locations in the SAMP Study Area. The sub-basin provides breeding and/or foraging habitat for a variety of other sensitive wildlife species, including cactus wren, ferruginous hawk, prairie falcon, merlin, northern harrier, wintering burrowing owls, loggerhead shrike, grasshopper sparrow, rufous-crowned sparrow, California horned lark, orange-throated whiptail, coastal western whiptail, San Diego horned lizard, northern red-diamond rattlesnake, mule deer, and mountain lion. Golden eagles whose territories are located in the Cleveland National Forest are known to occasionally forage in grasslands and agricultural areas of the sub-basin.

The mainstem creek supports herbaceous riparian, southern willow scrub, arroyo willow riparian forest, and coast live oak riparian forest habitats that generally are suitable for the least Bell's vireo and several other sensitive riparian and aquatic species, including yellow-breasted chat, yellow warbler, southwestern pond turtle (near the confluence with San Juan Creek), western spadefoot toad, and two-striped garter snake. As depicted on Figure 4.1.3-4, the riparian and woodland habitats in the mainstem creek and side canyons also provide nest sites for several raptor species, including Cooper's hawk, white-tailed kite, red-shouldered hawk, great horned owl, and barn owl. A tricolored blackbird breeding colony recently has been observed on slopes south of San Juan Creek behind a Rancho Mission Viejo residence in the recent past (define recent) (over 300 pairs in 2001; P. Bloom, pers. comm. 2002) and a small breeding colony was observed by Michael Brandman Associates in 1994 above the "Narrows" (Michael Brandman Associates 1996).

Vernal pools along Radio Tower Road south of Ortega Highway appear to be associated with localized bedrock landslides from the San Onofre and Monterey formations and support both the federally-listed Riverside fairy shrimp (vernal pool 2) and San Diego fairy shrimp (vernal pools 1 and 2), mud nama (*Nama stenocarpum*) (CNPS List 2), and the western spadefoot toad.

The Chiquita Canyon Sub-basin provides both north-south and east-west movement opportunities for mountain lion, mule deer, bobcat, coyote, and gray fox (see subchapter 4.1.3.4). Coastal sage scrub habitat along Chiquita Ridge provides north-south movement opportunities for California gnatcatchers, cactus wrens, and other sensitive sage scrub species. A known important east-west movement route includes a wildlife corridor from Arroyo Trabuco situated between the Ladera Ranch and Las Flores developments. Based on existing landscape features, potential habitat linkages from Chiquita Ridge to Sulphur Canyon are located just north of the SMWD wastewater treatment plant and through the "Narrows" area south of Tesoro High School.

Five locations of the state- and federally-listed thread-leaved brodiaea occur on Chiquadora Ridge southeast of the SMWD wastewater treatment plant, including the eastern portion of the Chiquita Sub-basin and the western portion of the Gobernadora Sub-basin and are illustrated on Figure 4.1.3-5. The population total for four of the five locations is only 85 flowering stalks, but the easternmost population on Chiquadora Ridge has about 2,000 individuals.

Lower Chiquita Canyon (south of the SMWD wastewater treatment plant), Chiquita Ridge, and Chiquadora Ridge, including the area within the Gobernadora Sub-basin, supports about 106 discrete locations of the many-stemmed dudleya totaling about 16,650 individuals (Figure 4.1.3-5).

Middle Chiquita Canyon supports about 35 mapped locations of southern tarplant ranging up to about 30,000 individuals in the largest mapped location (Figure 4.1.3-5). Five estimated discrete populations of 7,000, 7,500, 10,000, 20,000, and 30,000 individuals are located west of San Juan Creek. Locations east of the Creek are more disparate and smaller, with the largest numbering about 750 individuals. Lower Chiquita Canyon is a part of the Tesoro mitigation site which includes more than 11,000 individuals and another population numbering about 400 individuals.

Lower Chiquita Canyon, west of San Juan Creek supports two locations of Coulter's saltbush numbering 200 and 400 individuals, respectively (Figure 4.1.3-5). Middle Chiquita just above and below the Narrows supports numerous locations ranging from the 10s to 600 individuals. The location with 600 individuals is east and adjacent to the Creek about midway between the Narrows and Tesoro High School. Locations with 150, 150, and 200 individuals are west of the Creek. Middle Chiquita, just to the northwest of the SMWD wastewater treatment plant, supports five locations, of which four are west of the Creek. The locations west of San Juan Creek number 25, 50, 150, and 360 individuals, and the location east of the Creek has 100 individuals. Two small locations are located in a major side canyon southeast of the Narrows. These locations number 6 and 10 individuals, respectively.

Salt Spring checkerbloom (*Sidalcea neomexicana*) (CNPS List 2) occurs in two locations in the slope wetlands in lower Chiquita east of the Creek (Figure 4.1.3-5). These locations number 300 and 1,200 individuals, respectively.

***Cañada Gobernadora Sub-basin*.** The Cañada Gobernadora Sub-basin is divided into two main geographic areas: upper Cañada Gobernadora, which includes the Coto de Caza residential development; and lower Cañada Gobernadora, which is under Rancho Mission Viejo

ownership. In addition, as discussed above, the western portion of the sub-basin referred to as Chiquadora Ridge is physically and biologically associated with the Chiquita Sub-basin, and was discussed above in that context.

The valley floor of the Cañada Gobernadora Sub-basin supports agriculture and grazing activities and is characterized by deep alluvial sandy deposits with interbedded clay lenses. The Gobernadora Ecological Restoration Area (GERA) in the lower portion of San Juan Creek is dominated by southern willow scrub. The rolling terrain on the east side of the Creek supports a mixture of agriculture, coastal sage scrub, chaparral, and oak woodlands (Figure 4.1.3-3).

The Gobernadora Sub-basin, excluding Chiquadora Ridge west of San Juan Creek, supports approximately 1,242 acres of coastal sage scrub and 74 mapped locations of the California gnatcatcher. The slopes east of the creek support a smaller population of the California gnatcatcher compared to the population west of the creek, probably due to the higher percentage of chaparral. As previously depicted on Figure 4.1.3-2 and as depicted on Figure 4.1.3-6, other upland wildlife species in the sub-basin include cactus wren, rufous-crowned sparrow, grasshopper sparrow, coast patch-nosed snake, northern red-diamond rattlesnake, western whiptail, San Diego horned lizard, western skink, and mule deer.

Southern willow scrub in GERA provides nesting habitat for approximately 12 to15 least Bell's vireo sites and 6 southwestern willow flycatcher sites, as well as yellow-breasted chat, Cooper's hawk, red-shouldered hawk, and barn owl (Figures 4.1.3-2 and 4.1.3-4). Other woodlands in the area provide nesting habitat for the white-tailed kite and long-eared owl. A large colony of tricolored blackbirds periodically occurs in lower Cañada Gobernadora around the boundary of the RMV Planning Area just south of the boundary with Coto de Caza. Wetlands in southern Coto de Caza support a breeding population of tricolored blackbirds and grasslands and agriculture on the RMV Planning Area provides foraging habitat for the birds. The sensitive arroyo chub is known from the mouth of the creek at the confluence with San Juan Creek.

Raptors using the grasslands and agriculture areas in the sub-basin for foraging include ferruginous hawk and merlin. Golden eagles whose territories are located in the Cleveland National Forest are known to occasionally forage in grasslands and agricultural areas of the sub-basin.

Lower Cañada Gobernadora, including Sulphur Canyon, provides an important east-west habitat linkage connecting Chiquita and Wagon Wheel Canyons with habitat to the east in Bell Canyon and Caspers Wilderness Park. The riparian spine along the mainstem Gobernadora Creek and the adjacent uplands along Chiquadora Ridge both provide north-south habitat linkages for mountain lions and other large mammals. The uplands along the Chiquadora Ridge also provide a habitat linkage for California gnatcatcher, cactus wren, and a variety of other birds, reptiles, and small mammals.

The Gobernadora Sub-basin, east of San Juan Creek supports about 54 scattered locations of the many-stemmed dudleya, totaling more than 5,400 individuals (Figure 4.1.3-5). Palmer's grapplinghook also occurs in association with the dudleya. The valley floor supports a large population of southern tarplant numbering 10,000+ individuals in GERA.

***Bell Canyon Sub-basin*.** The Bell Canyon Sub-basin lies west of the Cañada Gobernadora Sub-basin, includes the western portion of Caspers Wilderness Park, all of the Starr Ranch Audubon Sanctuary, and extends into the Cleveland National Forest (Figure 2-1). The Bell Canyon Sub-basin, including the Cleveland National Forest portion, supports approximately

4,752 acres of coastal sage scrub, 4,672 acres of chaparral, and 963 acres of grassland and oak woodlands. Approximately 700 acres in Bell Canyon are disturbed habitat or developed.

The uplands in the Bell Canyon Sub-basin provide habitat for a variety of sensitive species, including about 29 locations of the California gnatcatcher, 178 locations of the cactus wren, as well as golden eagle, San Diego banded gecko, western patch-nosed snake, coastal rosy boa coastal western whiptail, orange-throated whiptail, San Diego horned lizard, San Diego ringneck snake, mule deer, and mountain lion (Figure 4.1.3-3). The uplands also provide potential foraging and overwintering habitat for the arroyo toad.

The Bell Canyon Sub-basin includes approximately 2,000 acres of riparian, woodland, and forest habitats that support a variety of sensitive species, including arroyo toad (about 29 adults in 1998), western spadefoot toad, yellow warbler, yellow-breasted chat, long-eared owl, Cooper's hawk, white-tailed kite, barn owl, and red-shouldered hawk (Figures 4.1.2-1, 4.1.3-2, and 4.1.3-4). The threespine stickleback is known from upper Bell Canyon on Starr Ranch.

Bell Canyon is one of the key north-south habitat linkages in the SAMP Study Area. It is used by mule deer and mountain lion, as well as bobcat, coyote, and gray fox. It also provides linkage and dispersal habitat for other sensitive species such as the California gnatcatcher, cactus wren, arroyo toad, western spadefoot toad, and a variety of other wildlife species.

***Upper San Juan Creek*.** Although the upper San Juan Creek was not mapped as a discrete sub-basin in the SAMP, it is a prominent feature in the northeastern portion of the SAMP Study Area. It is defined as the segment of San Juan Creek above the confluence with Bell and Verdugo Canyons, excluding the Lucas Canyon Sub-basin (described below) (Figure 2-1). Within the SAMP Study Area, upper San Juan Creek is entirely in Caspers Wilderness Park. The dominant upland vegetation community along upper San Juan Creek within the SAMP Study Area is coastal sage scrub, with chaparral becoming more dominant within the Cleveland National Forest. Upper San Juan Creek supports southern sycamore riparian woodland, floodplain scrub, mule fat scrub, and intermittent river and stream vegetation. The side canyons support coast live oak woodland and canyon live oak ravine forest (Figures 4.1.2-1 and 4.1.3-1).

Upper San Juan Creek above Bell Canyon supports one of the two largest populations of the arroyo toad in the SAMP Study Area, with more than 400 calling males estimated in 1998 surveys. The coastal sage scrub supports only nine California gnatcatcher locations, but numerous cactus wren locations (Figure 4.1.3-3). Other sensitive species known from the area include loggerhead shrike, yellow-breasted chat, red-shouldered hawk, barn owl, western spadefoot toad, and glossy snake (Figure 4.1.3-2 and 4.1.3-3). The mainstem creek is a key regional habitat linkage and wildlife movement corridor for mountain lion, mule deer, bobcat, and coyote.

***Lucas Canyon Sub-basin*.** The Lucas Canyon Sub-basin is located both within Caspers Wilderness Park and the Cleveland National Forest (Figure 2-1). Including the Cleveland National Forest, it has approximately 1,054 acres coastal sage scrub, predominantly on south-facing slopes, and 1,562 acres of chaparral, predominantly on the north-facing slopes. There also approximately 141 acres of grassland and 110 acres of riparian and woodland habitats in the Lucas Canyon Sub-basin (Figures 4.1.2-1 and 4.1.3-1). The south-facing slopes support nine locations of the California gnatcatcher and 72 locations of the cactus wren (Figure 4.1.3-3). In addition, two yellow warbler and two red-tailed hawk nest sites are known to occur in the Lucas Canyon Sub-Basin (Figures 4.1.3-4 and 4.1.3-6). There are no other documented sensitive species occurrences in the NCCP database for Lucas Canyon. However, it is expected that wildlife species common to coastal sage scrub such as rufous-crowned sparrow and

orange-throated whiptail could occur in Lucas Canyon. Lucas Canyon may provide movement habitat along the canyon bottom for large- and medium-sized mammals such as mountain lion, mule deer, bobcat, coyote, and gray fox.

Central San Juan and Trampas Canyon Sub-basin. The Central San Juan and Trampas Canyon Sub-basin is divided into two main geographic areas: the Central San Juan sub-unit and the Trampas Canyon sub-unit. The Central San Juan sub-unit includes the reach of San Juan Creek extending from just south of the confluence with Bell Creek in the east to the confluence with Gobernadora Creek in the west. The Central San Juan sub-unit extends north from San Juan Creek for approximately 1.6 miles and encompasses a large north-south trending canyon through the center of the sub-unit. The Trampas Canyon sub-unit is south of San Juan Creek and is characterized by the silica sand mining operation that dominates the canyon and the rugged terrain between Cristianitos Canyon and San Juan Creek.

- ***Central San Juan Sub-Unit.*** The Central San Juan sub-unit supports coastal sage scrub, chaparral, oak woodlands, grassland, agriculture, and disturbed areas (Color Spot Nursery) (Figure 4.1.3-3). Approximately 13 or14 California gnatcatcher locations occur in the coastal sage scrub habitat north of Color Spot Nursery and they may use coastal sage scrub adjacent to San Juan Creek; this habitat probably is important for dispersal. Uplands adjacent to San Jan Creek provide foraging and estivation habitat for the arroyo toad. Other sensitive upland species in the uplands area of this sub-unit include cactus wren, rufous-crowned sparrow, grasshopper sparrow, San Diego desert woodrat, orange-throated whiptail, coastal western whiptail, northern red-diamond rattlesnake, San Diego ringneck snake, California glossy snake, and western skink (Figures 4.1.3-3 and 4.1.3-6). Sandy soils in and adjacent to San Juan Creek provide suitable habitat for the silvery legless lizard.

  Riparian and aquatic habitats within San Juan Creek provide breeding habitat for the arroyo toad and the least Bell's vireo (although both species occur in small numbers in this reach of the Creek), as well as yellow-breasted chat, yellow warbler, white-tailed kite, Cooper's hawk, red-shouldered hawk, great-horned owl, barn owl, red-tailed hawk, great blue heron, southwestern pond turtle, two-striped garter snake, western spadefoot toad, arroyo chub, and threespine stickleback (Figures 4.1.2-1 and 4.1.3-2). A breeding colony of tricolored blackbirds has been observed in previous years in San Juan Creek east of the intersection of Ortega Highway at Cristianitos Road.

  The San Juan Creek portion of this sub-unit is a key connection, especially for movement between the northern and southern portions of the subregion. It provides continuous upland habitat linkage connections, particularly along the southern side of the Creek for species such as the California gnatcatcher, cactus wren, rufous-crowned sparrow, and a variety of reptiles and small mammals. Large- and medium-sized mammals known or expected to use the riparian habitat as "live-in" habitat and for movement include mountain lion, mule deer, bobcat, coyote, and gray fox.

  North-south movement of large wildlife between San Juan Creek and Trampas Canyon and Cristianitos Canyon is constrained by Ortega Highway. High traffic volumes on Ortega Highway contribute to wildlife mortality. Wildlife have been documented to use two wildlife corridors that cross under the Highway: a corrugated steel pipe culvert near Radio Tower Road and a concrete box culvert west of Cristianitos Road connecting to Trampas Canyon (Dudek 1994).

The Central San Juan sub-unit supports about 20 locations of many-stemmed dudleya that generally are contiguous with the Gobernadora locations (i.e., they are part of the same complex) (Figure 4.1.3-5). These locations range up to about 2,000 individuals, but the median population size is much smaller at 50 individuals. There are 13 locations with 11 to 95 individuals and five locations with 100 to 345 individuals.

- ***Trampas Canyon Sub-unit*.** The Trampas Canyon sub-unit supports a mosaic of upland habitats, including coastal sage scrub, chaparral, grassland, and patches of oak woodland (Figure 4.1.3-3). The sub-unit supports approximately four California gnatcatcher locations and 20 cactus wren locations. Other sensitive wildlife species known from the sub-unit include orange-throated whiptail, red-diamond rattlesnake, and San Diego desert woodrat near the mouth of the Trampas Canyon. Raptors nesting in oak woodlands in the sub-unit include turkey vulture, white-tailed kite, Cooper's hawk, red-shouldered hawk, red-tailed hawk, and great horned owl (Figure 4.1.3-4). Although the riparian vegetation in the sub-unit does not provide high value breeding habitat for species such as the least Bell's vireo and other sensitive, non-raptor riparian birds, the ONIS mining lake provides resting and foraging habitat for common water fowl and other birds associated with open water and wetland vegetation such as pied-billed grebe, western grebe, mallard, ruddy duck, ring-necked duck, double-crested cormorant, herons, and American coot.

  Vernal pools along Radio Tower Road south of Ortega Highway (pools 7 and 8) appear to be associated with localized bedrock landslides from the San Onofre and Monterey formations. Vernal pool 7 supports both the Riverside fairy shrimp and San Diego fairy shrimp. The spadefoot toad also breeds in these vernal pools.

  Coastal sage scrub in the central portion of the Trampas Canyon subunit provides a nearly continuous north-south connection between San Juan Creek and the upper portion of the Cristianitos Sub-basin for bird species such as the California gnatcatcher and cactus wren (Figure 4.1.3-3). This portion of the subunit east of Trampas Creek, along with the Cristianitos Canyon Sub-basin, connects populations to the north in Chiquita Canyon with the MCB Camp Pendleton population south of the subregion.

  The central portion of the sub-unit east of the silica mine in Trampas Canyon and Cristianitos Road is also a habitat linkage between San Juan Creek and Cristianitos, Blind, La Paz, and Gabino Canyons used by mountain lion, mule deer, coyote, and bobcat. A concrete box culvert crossing of Ortega Highway just west of Cristianitos Road is a key crossing point for wildlife between San Juan Creek and Trampas Canyon.

  As previously address, north-south movement of large wildlife between San Juan Creek and Trampas Canyon and Cristianitos Canyon is constrained by Ortega Highway. The Trampas Canyon sub-unit supports one location of thread-leaved brodiaea with about 250 flowering stalks. There are about eight locations of many-stemmed dudleya with 20 to 700 individuals and five locations with 200 to700 individuals (Figure 4.1.3-5).

***Verdugo Canyon Sub-basin*.** Uplands within the Verdugo Canyon Sub-basin support coastal sage scrub, chaparral, grasslands, and small patches of oak woodland (Figure 4.1.3-3). Coastal sage scrub and chaparral are the predominant habitats, with the grasslands more prominent toward the canyon's confluence with San Juan Creek. The canyon floor supports sycamore riparian woodland and southern coast live oak riparian forest with small patches of mule fat scrub. Southern willow scrub also is present in tributaries to Verdugo Canyon (Figure 4.1.2-1).

There are relatively few sensitive species locations in the Verdugo Canyon Sub-Basin. One California gnatcatcher and approximately 16 cactus wren locations occur in the coastal sage scrub along the canyon (Figure 4.1.3-3). The yellow-breasted chat occurs in riparian habitat in the sub-basin; this habitat also supports nest sites for Cooper's hawk, red-shouldered hawk, red-tailed hawk, and barn owl (Figure 4.1.3-4). There is an historic record of a small breeding colony of the tricolored blackbird at the mouth of the canyon under the Ortega Highway bridge.

The Verdugo Canyon Sub-Basin provides a habitat connection for large- and medium-sized mammals. Mule deer are common in the canyon; it also provides habitat for mountain lion, coyote, bobcat, and gray fox.

Foothill/Trabuco Specific Plan Area. The Foothill/Trabuco Specific Plan area encompasses approximately 3,666 acres in the northern portion of the SAMP Study Area. The dominant vegetation communities in the Specific Plan area are coastal sage scrub (about 1,100 acres) and chaparral (1,070 acres) with lesser amounts of grassland and woodland. The minimum elevations in this area are about 984 feet above mean sea level and most of the Specific Plan area is above 1,198 feet. The coastal sage scrub and chaparral in this area is more typical of that found in the Cleveland National Forest than at the lower elevations in areas such as Chiquita Canyon.

Although California gnatcatchers are relatively sparse in the Foothill/Trabuco Specific Plan area, the NCCP database includes 17 scattered locations. Other sensitive wildlife species known in occupy the Specific Plan area include cactus wren, red-shouldered hawk, rufous-crowned sparrow, yellow warbler, yellow-breasted chat, orange-throated whiptail, coastal western whiptail, and Riverside fairy shrimp (vernal pools on the Saddleback Meadows site).

Sensitive plants in the area include small populations of Catalina mariposa lily located west of Live Oak Canyon Road and one location of chaparral beargrass east of the road.

Canyons and drainages within the Foothill/Trabuco Specific Plan area provide important movement corridors for mountain lions and other larger species between Arroyo Trabuco and the Cleveland National Forest.

Arroyo Trabuco. The Arroyo Trabuco area primarily encompasses O'Neill Regional Park extending from the Cleveland National Forest in the north to the City of San Juan Capistrano boundary in the south. The dominant vegetation communities are coastal sage scrub and grasslands that total more than 1,000 acres. The Arroyo Trabuco area also supports more than 700 acres of riparian and woodland habitats.

Sensitive species in the Arroyo Trabuco area include the California gnatcatcher, with about 40 locations scattered within and adjacent to the arroyo. Most of the locations are clustered in the southern portion of the Arroyo Trabuco. Up to 13 nesting territories of the least Bell's vireo have been documented in Arroyo Trabuco south of Crown Valley Parkway (Dudek 2000). Other nesting migrants in the arroyo are yellow warbler and yellow-breasted chat. The riparian and woodland habitats in Arroyo Trabuco also provide nesting habitat for several raptors, including Cooper's hawk, red-shouldered hawk, red-tailed hawk, white-tailed kite, great horned owl, and barn owl. Historic nesting sites are also known for the golden eagle, long-eared owl, and turkey vulture. Other sensitive species documented in the arroyo include cactus wren, rufous-crowned sparrow, coastal western whiptail, San Diego horned lizard, western skink, red-diamond rattlesnake, arroyo chub, and three-spined stickleback. The Arroyo Trabuco also is an important north-south movement corridor for large mammals such as mountain lion, mule deer, and coyote, although the southern portion of the arroyo at the boundary of the City of San Juan

Capistrano represents a dead-end for the mountain lion because of the urban development in the area.

City of Dana Point. The City of Dana Point portion of the SAMP Study Area is a mix of urban development and undeveloped land dominated by grassland (Figure 4.1.3-2). Scrub habitat also occurs in modest amounts in addition to other more limited native vegetation communities including watercourses, riparian, and chaparral. Sensitive species known from the portion of Dana Point in the Study Area are California gnatcatcher and cactus wren and two raptors; red-tailed hawk and red-shouldered hawk.

City of Laguna Hills. A small portion of the City of Laguna Hills is located within the SAMP Study Area; this area is largely developed (Figure 4.1-3-2). The only natural vegetation community in Laguna Hills in the SAMP Study Area is grassland. No sensitive species have been documented in the SAMP Study Area within Laguna Hills.

City of Laguna Niguel. The City of Laguna Niguel portion of the SAMP Study Area is largely urbanized (Figure 4.1.3-2). Undeveloped land in the SAMP Study Area within the City is dominated by grassland and smaller patches of coastal sage scrub. In addition, limited other native vegetation communities also occur including such aquatic resources as marsh, riparian, and watercourses. Other upland vegetation communities present include chaparral and woodland. Species that may occur in these vegetation communities are noted in the general description of each vegetation community.

City of Mission Viejo. The City of Mission Viejo portion of the SAMP Study Area is largely urban uses (Figure 4.1.3-2). Undeveloped land is dominated by grassland and smaller patches of coastal sage scrub. Lesser amounts of aquatic vegetation communities including riparian, marsh, and streams also occur in addition to other upland communities such as chaparral and woodland. At least two raptors are known from the western portion of Mission Viejo; red-tailed hawk and northern harrier.

City of Rancho Santa Margarita. Almost all of the City of Rancho Santa Margarita is located within the SAMP Study Area (Figure 4.1.3-2). Portions of the City within the SAMP Study Area are developed; however, natural vegetation communities are also present. A portion of the Arroyo Trabuco is within the City; biological resources within the Arroyo Trabuco are described above. In addition, Upper Chiquita Canyon is located within the City. Resources present in Upper Chiquita Canyon include coastal sage scrub, grassland, and woodland and small amounts of riparian. Sensitive species present include the California gnatcatcher, cactus wren, orange-throated whiptail, red-tail hawk, and grasshopper sparrow.

City of San Clemente. The portion of the City of San Clemente in the SAMP Study Area is within the Donna O'Neill Land Conservancy at Rancho Mission Viejo (Figure 4.1-3-2). Several natural vegetation communities occur in the Donna O'Neill Land Conservancy including grassland, chaparral, riparian, scrub, woodland, and forest. Documented sensitive species present in the portion of the Donna O'Neill Land Conservancy in the City of San Clemente include grasshopper sparrow, rufous-crowned sparrow, Cooper's hawk, many-stemmed dudleya, vernal barley, Catalina mariposa lily, intermediate mariposa lily, Palmer's grapplinghook, and small-flowered morning glory.

City of San Juan Capistrano. The City of San Juan Capistrano portion of the SAMP Study Area is a mix of urban development and undeveloped land dominated by grassland and smaller patches of coastal sage scrub (Figure 4.1.3-2). The coastal sage scrub supports more than 50 locations of the California gnatcatcher. Other upland species occurring in the coastal sage scrub

and grassland include cactus wren, rufous-crowned sparrow, grasshopper sparrow, loggerhead shrike, northern red-diamond rattlesnake, and western spadefoot toad. Nesting raptors in the area include Cooper's hawk, red-shouldered hawk and red-tailed hawk. Aquatic and wetland/riparian species occurring west of I-5 include arroyo chub, southwestern pond turtle, and western spadefoot toad.

San Mateo Creek Watershed

***Cristianitos Canyon Sub-basin*.** The Cristianitos Canyon Sub-basin (Figure 2-1) is dominated by grasslands; a large component is native grassland (approximately 330 acres) and coastal sage scrub (approximately 640 acres) (Figure 2-1). The grassland is predominant in upper Cristianitos and along the eastern side of the canyon, while coastal sage scrub and chaparral dominate the east-facing slopes on the western side of the canyon within the Donna O'Neill Land Conservancy (Figure 4.1.3-1). Riparian habitats in the sub-basin include coast live oak riparian woodland, southern willow scrub, and mule fat (Figure 4.1.2-1). Mule fat is a predominant component in the upper portion of the sub-basin. Tributaries to Cristianitos Creek from the Donna O'Neill Land Conservancy support coast live oak woodland and riparian woodland.

As depicted on Figure 4.1.3-7, the sub-basin supports approximately 12 California gnatcatcher locations and approximately 67 cactus wren locations. The sub-basin probably serves as a primary north-south dispersal area for the California gnatcatcher between the large populations in Chiquita Canyon and MCB Camp Pendleton. As previously depicted on Figure 4.1.3-7 and as depicted on Figure 4.1.3-8, other upland sensitive species in the sub-basin include grasshopper sparrow, rufous-crowned sparrow, California horned lark, San Diego horned lizard, coastal western whiptail, orange-throated whiptail, western patch-nosed snake, northern red-diamond rattlesnake, and San Diego desert woodrat. In 2001, five arroyo toads were observed in the reach of Cristianitos Creek from confluence with Gabino Canyon to about 3,000 feet north of the confluence (Figure 4.1.3-2). This area is marginal arroyo toad breeding habitat because of the fine sediments in the creek originating from the clay soils east of the creek. As previously shown on Figures 4.1.2-1 and 4.1.3-2and as shown on Figure 4.1.3-9, riparian and aquatic sensitive species in the sub-basin include white-tailed kite, Cooper's hawk, red-shouldered hawk, red-tailed hawk, great horned owl, barn owl, southwestern pond turtle, and western spadefoot toad. The grasslands provide foraging habitat for sensitive wintering raptors such as the ferruginous hawk and Swainson's hawk. Wintering burrowing owls also have been recorded in Cristianitos Canyon. In combination with Talega, Gabino, and La Paz Canyons, the Cristianitos Canyon Sub-basin provides a habitat connection for the mountain lion, mule deer, bobcat, coyote, and gray fox to adjoining sub-basins.

The Cristianitos Canyon Sub-Basin contains clay soils that support several sensitive plants including the thread-leaved brodiaea, many-stemmed dudleya, Palmer's grapplinghook, and western dichondra (Figure 4.1.3-10). The many-stemmed dudleya population is among the largest in the subregion. About 13 small, scattered locations of thread-leaved brodiaea occur in the Cristianitos Sub-basin, ranging from one to 120 individuals. A population complex of about 6,100 flowering stalks of thread-leaved brodiaea individuals occurs on the hill outcrop adjacent to the mine pits in the southern portion of Cristianitos Canyon on the boundary between the Cristianitos, Gabino, and Blind Canyons Sub-basins. The three largest populations in this complex number 2,000, 2,000 and 1,500 individuals each, with the other small locations each numbering 440, 150, and 18 individuals.

Many-stemmed dudleya in the Cristianitos Sub-basin comprises the largest concentrated populations of this species in the SAMP Study Area with more than 100 mapped locations

totaling more than 26,000 individuals. Within the Donna O'Neill Land Conservancy, there are about 45 locations of dudleya totaling about 9,000 individuals. Cristianitos Canyon outside the Donna O'Neill Land Conservancy supports about 62 locations totaling about 17,000 individuals.

Upper Cristianitos Creek supports two small locations of Coulter's saltbush numbering 3 and 12 individuals, respectively.

***Gabino and Blind Canyons Sub-basin*.** The Gabino and Blind Canyons Sub-basin in divided into three main planning sub-units: the upper Gabino Canyon sub-unit, the middle Gabino Canyon sub-unit, and the lower Gabino Canyon sub-unit, the later which includes Blind Canyon (Figure 2-1). The upper Gabino Canyon sub-unit encompasses the open grasslands at the headwaters of Gabino Creek. The middle Gabino Canyon sub-unit is defined by the narrow, steep-sided canyon between upper Gabino Canyon and the confluence of Gabino and La Paz Creeks. The lower Gabino Canyon sub-unit includes the portion of Gabino Canyon below its confluence with La Paz Creek and its confluence with Cristianitos Creek, and Blind Canyon.

- ***Upper Gabino Sub-unit*.** The open "bowl-shaped" portion of the Upper Gabino sub-unit adjacent to upper Gabino Creek is characterized by predominantly native grasslands (approximately 275 acres) on the gentle slopes leading away from the creek, with coastal sage scrub and chaparral dominating the surrounding rugged canyons and hills (Figure 4.1.3-7). The riparian habitat in the sub-unit includes relatively open coast live oak riparian woodland, sycamore riparian woodland, and mule fat (Figures 4.1.2-1 and 4.1.3-2).

  Numerous cactus wren locations are present in the sub-unit, but the population is not as dense as other areas within the SAMP Study Area (Figure 4.1.3-7). There are no documented California gnatcatcher locations in the upper Gabino Canyon sub-unit. The grasslands in the sub-unit provide high quality raptor foraging habitat and also provides habitat for the badger, burrowing owl, spadefoot toad, and horned lark. The riparian habitat in the sub-unit supports a few raptor nest sites for white-tailed kite, red-shouldered hawk, and red-tailed hawk, but not at the density of the downstream riparian habitats in middle Gabino Canyon where the canyon is narrow and closely bound by rugged terrain (Figure 4.1.3-9). Aquatic habitat (Jerome's Lake) in the sub-unit supports the southwestern pond turtle and two-striped garter snake (Figures 4.1.2-1 and 4.1.3-2). As part of the Gabino and Blind Canyons Sub-basin, upper Gabino Canyon also is an important habitat connection for movement and dispersal by the mountain lion, bobcat, coyote, and mule deer.

  As depicted on Figure 4.1.3-10, the sub-unit supports many-stemmed dudleya, Coulter's saltbush, and western dichondra. The boundary between the upper and middle Gabino sub-units supports several locations of many-stemmed dudleya ranging from about five individuals to about 700 individuals. One population just south boundary between middle and upper Gabino numbers about 1,500 individuals. Two locations near the county boundary with Riverside number about 500 and 700 individuals each, the latter of which overlaps the boundary with the La Paz Canyon Sub-basin. Coulter's saltbush occurs in the sub-unit in a small population of about 100 individuals west of and adjacent to the creek.

- ***Middle Gabino Sub-unit*.** The north two-thirds of the middle Gabino Canyon sub-unit is characterized by the narrow canyon bounded by steep, rugged slopes dominated by chaparral and smaller patches of coastal sage scrub (Figure 4.1.3-7). The lower one-third of the sub-unit broadens somewhat with flat benches supporting small patches of

grassland. The riparian habitat in the sub-unit includes coast live oak riparian woodland, sycamore riparian woodlands, and smaller areas of coast live oak woodland and mule fat scrub (Figure 4.1.2-1). Some portions of the canyon also support floodplain (alluvial) scrub.

There are three locations of the California gnatcatcher distributed along a north-south trending canyon in the lower portion of the middle Gabino Canyon sub-unit (Figure 4.1.3-7). As with the upper Gabino Canyon sub-unit, the western portion of the sub-unit includes numerous cactus wren locations. However, the population is not as dense as other areas of the SAMP Study Area. Other sensitive upland wildlife species in the sub-unit include rufous-crowned sparrow and orange-throated whiptail.

Breeding sites for a small population of the arroyo toad (e.g., two toads in 1998) extend approximately 3,000 feet above the confluence with La Paz Creek (Figures 4.1.2-1 and 4.1.3-2). The riparian habitat in the sub-unit also supports several nest sites for raptors, including white-tailed kite, Cooper's hawk, long-eared owl, great horned owl, barn owl, and red-tailed hawk (Figure 4.1.3-9).

As part of the Gabino and Blind Canyons Sub-basin, middle Gabino Canyon also is an important habitat connection for movement and dispersal by the mountain lion, bobcat, coyote, and mule deer.

One population of thread-leaved brodiaea (about 183 flowering stalks) is located in the northwest portion of the middle Gabino Canyon sub-unit. Many-stemmed dudleya is found in about five locations in the sub-unit, with the largest population of about 1,500 individuals located west of the creek near the boundary with the upper sub-unit (Figure 4.1.3-10). A 25-acre area mapped as western dichondra overlaps with this dudleya population. Many-stemmed dudleya also is known from two locations of 100 and 200 individuals each in the upper portion of Airplane Canyon and two small locations of about five individuals each at the confluence of Gabino and Airplane Canyons.

- ***Lower Gabino and Blind Sub-unit*.** The lower Gabino and Blind Canyons sub-unit is dominated by native and annual grasslands, with smaller patches of coastal sage scrub and substantial oak woodlands (Figure 4.1.3-7). The riparian habitat in the sub-unit consists of southern sycamore riparian woodland, coast live oak riparian forest and woodlands, mule fat scrub, and smaller areas of southern arroyo willow forest, coast live oak forest, and coast live oak woodland (Figures 4.1.2-1).

  The sub-unit supports approximately five California gnatcatcher locations and numerous cactus wren locations, although at densities much lower than in other areas of the SAMP Study Area (Figure 4.1.3-7). Other sensitive wildlife species occurring in upland habitats in the sub-unit include grasshopper sparrow, rufous-crowned sparrow, San Diego horned lizard, orange-throated whiptail, and red-diamond rattlesnake (Figures 4.1.3-7 and 4.1.3-8).

  Lower Gabino Canyon supports a moderate size arroyo toad breeding population (approximately 40 adults in 1998) between Cristianitos and La Paz Creeks (Figure 4.1.3-2). The grasslands adjacent to lower Gabino Canyon provide potential upland foraging and estivation habitat for the arroyo toad. Riparian habitat provides nesting sites for several raptors, including white-tailed kite, Cooper's hawk, red-tailed hawk, and great horned owl, as well as the yellow-breasted chat (Figures 4.1.3-2 and 4.1.3-9).

As described above for the lower portion of the Cristianitos Sub-basin, a population complex of about 6,100 flowering stalks of thread-leaved brodiaea is located on the hill outcrop adjacent to the mine pits in the southern portion of Cristianitos Canyon on the boundary between the Cristianitos, Gabino, Blind Canyons Sub-basins (Figure 4.1.3-10). There are several small locations of many-stemmed dudleya in the sub-unit, with one population numbering about 400 individuals. Intermediate mariposa lily occurs in two locations of about 12 and 305 individuals, respectively, at the border with the Cristianitos Canyon Sub-basin.

***La Paz Canyon Sub-basin*.** The predominant vegetation communities in the La Paz Canyon Sub-basin are coastal sage scrub (568 acres) and chaparral (674 acres) (Figure 4.1.3-7). Riparian habitats in the canyon include southern sycamore riparian woodland, coast live oak woodland, and mule fat scrub. The canyon bottom also supports alluvial fan (floodplain) scrub (Figures 4.1.2-1 and 4.1.3-2).

Sensitive wildlife species in the sub-basin include 1 location for the California gnatcatcher, 13 locations for the cactus wren, and records sitings for the San Diego horned lizard, grasshopper sparrow, rufous-crowned sparrow, and yellow-breasted chat (Figures 4.1.3-2, 4.1.3-7, and 4.1.3-8). Riparian habitat in the sub-basin supports nest sites for the long-eared owl, white-tailed kite, Cooper's hawk, red-tailed hawk, and red-shouldered hawk (Figure 4.1.3-9).

La Paz Canyon provides movement opportunities for wildlife including mountain lion, bobcat, coyote and mule deer among the Talega and Gabino and Blind Canyon subunits and Camp Pendleton.

Two locations of many-stemmed dudleya are in the upper portion of La Paz Canyon, in addition to the location with 700 individuals that overlaps with the Gabino Canyon Sub-basin (Figure 4.1.3-10). One of the populations has about 500 individuals and the other has one counted individual.

***Talega Canyon Sub-basin*.** Upland habitats in the Talega Canyon Sub-basin include coastal sage scrub, chaparral, and grassland, with a mixture of sage scrub and chaparral in the upper portion of the canyon, and grassland and sage scrub in the lower part of the canyon south of the Northrop Grumman facility (Figure 4.1.3-7). Riparian habitat in Talega Creek includes sycamore riparian woodland and coast live oak riparian woodland (Figures 4.1.2-1 and 4.1.3-2).

The sub-basin has 7 California gnatcatchers locations with 22 cactus wren locations scattered in the sage scrub on the south-facing slopes of the canyon (Figure 4.1.3-7). Other sensitive upland wildlife species in the sub-basin include rufous-crowned sparrow, grasshopper sparrow, coastal western whiptail, orange-throated whiptail, San Diego horned lizard, northern red-diamond rattlesnake, and San Diego ringneck snake.

Talega Canyon supports one of the major breeding populations of the arroyo toad in the subregion, in combination with breeding population in lower Gabino and Cristianitos Creeks (Figure 4.1.3-2). The uplands adjacent to Talega Creek provide foraging and estivation habitat for the arroyo toad.

Raptors nesting in Talega Canyon include white-tailed kite, long-eared owl, Cooper's hawk, red-shouldered hawk, red-tailed hawk, great horned owl, and barn owl (Figure 4.1.3-9). Talega Canyon also supports the two-striped garter snake.

Talega Canyon is a habitat connection for large- and medium-sized mammals such as mountain lion, mule deer, bobcat, coyote, and gray fox in the San Mateo Watershed.

Thread-leaved brodiaea occurs in four locations of the Talega Sub-basin on the mesa east of the Northrop Grumman site near the boundary with the Gabino and Blind Canyons Sub-basins and in one location just southeast of the site (Figure 4.1.3-10). One of the populations supports about 225 flowering stalks and the other three are estimated to be much smaller, with counts of about 21 individuals each.[2] Approximately 17 locations of many-stemmed dudleya totaling more than 300 individuals occur in the Talega Canyon Sub-basin. Chaparral beargrass occurs at five locations on the steep, south-facing slopes in the east portion of the sub-basin and one in coastal sage scrub in the north-central part of the sub-basin (Figure 4.1.3-10). These beargrass locations are among the few known from the subregion with the other two recorded sites found in an isolated canyon in the City of Mission Viejo and in the Live Oak Canyon area north of Arroyo Trabuco**.**

Other Planning Area

A small area comprising approximately 290 acres is located in the western portion of the San Mateo Creek Watershed on the RMV Planning Area south of the Cristianitos Sub-basin, southeast of the Donna O'Neill Land Conservancy and west of the Lower Gabino and Blind Canyons Sub-basin and the Talega Sub-basin (Figure 4.1.3-7). Although this area is outside the identified sub-basins, it has important biological resources and reserve design considerations. The dominant landscape feature of the area is lower Cristianitos Creek south of the confluence with Gabino Creek where it exits the RMV Planning Area (Figure 4.1.3-7).

Upland habitats in the area are dominated by annual grassland and small patches of coastal sage scrub and southern cactus scrub (Figure 4.1.3-7). A small patch of native grassland is present on the northeast corner of the area that overlaps with native grasslands in the Gabino and Blind Canyons Sub-basin. Riparian habitats in lower Cristianitos Creek include southern coast live oak forest and woodland, southern sycamore riparian woodland, southern willow scrub, arroyo willow riparian forest, and mule fat scrub. Recent studies have identified substantial invasive plant species in this area (Figure 4.1.2-1).

The small, scattered patches of coastal sage scrub support only one gnatcatcher location (Figure 4.1.3-7). Other sensitive wildlife species include about 6 cactus wren locations in scattered southern cactus scrub, about 16 locations for grasshopper sparrow in grasslands, and scattered locations of rufous-crowned sparrow, San Diego desert woodrat, orange-throated whiptail, and western whiptail (Figure 4.1.3-7). The grasslands adjacent to Cristianitos Creek also provide foraging habitat for both breeding resident and wintering raptors such as ferruginous hawk and Swainson's hawk.

The reach of Cristianitos Creek between the confluence with Gabino Creek and the planning boundary supports the arroyo toad (Figure 4.1.3-2). Toad counts for this reach have ranged from 11 individuals in 1998 to 37 in pre-1997 surveys, and toads have been found in the area in all surveys conducted.

The riparian habitat supports breeding habitat for the least Bell's vireo, yellow-breasted chat, and yellow warbler (Figures 4.1.2-1 and 4.1.3-2). A variety of raptors historically have nested in

[2] Only one of the three small populations originally mapped in 1994 was found in 2003. This location supported 21 individuals and therefore the estimate of 21 individuals also assigned to the other two unlocated populations.

the riparian habitat, including long-eared owl, Cooper's hawk, red-tailed hawk, red-shouldered hawk, great horned owl, and barn owl (Figure 4.1.3-9).

The only known sensitive plant from the area is many-stemmed dudleya, with approximately four discrete locations (Figure 4.1.3-10). Two of the locations have population counts of 20 and 33 individuals.

This area, in conjunction with the Cristianitos Sub-basin, probably serves as a primary north-south dispersal area for the California gnatcatcher between large populations in Chiquita Canyon and MCB Camp Pendleton. Also, in combination with the Talega, Gabino, La Paz, and Cristianitos Canyons above the confluence with Gabino Creek, this area provides a habitat connection for the mountain lion, mule deer, bobcat, coyote, and gray fox to adjoining sub-basins and MCB Camp Pendleton.

4.1.3.4 Wildlife Habitat Linkages and Corridors

A fundamental concept and central tenet of conservation biology theory is that habitat fragmentation and isolation leads to extinction of local populations as a result of two processes: (1) reduction in total habitat area which reduces effective population sizes, and (2) insularization of local populations which affects dispersal and immigration rates (Wilcox and Murphy 1985; Wilcove et al.1986). Wilcox and Murphy note that immigration may be impeded by conversion of natural habitat between occupied or potential habitat patches thereby increasing the probability of extinction. It is this latter point that is the core of the habitat linkage issue. That is, isolation of habitat patches accompanied by intervening inhospitable land cover (e.g., urban development, roadways) is thought to increase the probability of permanent extinction of local populations. Because of complex community-level interactions (e.g., mutualistic species, habitat guilds, keystone species), the loss of one or a few species from a habitat patch as a direct result of habitat fragmentation (primary extinctions) also may result in multiple "secondary" extinctions within the habitat patch (Wilcox and Murphy 1986).

The SAMP Study Area is partially urbanized and partially open space. In urbanized areas, there are varying opportunities for wildlife movement, ranging from highly constrained settings such as in the City of Mission Viejo where wildlife movement may be restricted to a man-made culvert, to more expansive areas, such as the Arroyo Trabuco, that provide live-in "habitat" for some species while conveying movement between surrounding development for a broader suite of species. Areas presently in open space generally facilitate wildlife movement in multiple directions and provide "live-in habitat" for many species, but can show constrained movement (e.g., along narrow vectors) where the open space is contiguous with already urbanized areas. The identification of the most important movement wildlife corridors and habitat linkages (as defined below) which would continue to support effective movement in the future environment with increased development must consider animal behavior, habitat affinities, and local topography.

For broad wildlife movement areas that presently allow for unconstrained movement, future development scenarios would restrict movement patterns to some extent. To weigh the merits of alternative development configurations/reserve designs, there is a need to preliminarily identify wildlife movement opportunities that are likely important to retain for ecosystem function. Identification of the areas most important for retaining effective wildlife movement in the future environment with development requires consideration of available wildlife movement data, existing species distributions, habitat affinities, animal behavior, and local geography. To provide guidance for the planning process, these factors were considered to identify areas that are considered important for maintaining wildlife movement functions under any alternative.

Important areas for maintaining wildlife movement functions are described in this subchapter. Furthermore, a distinction is drawn between habitat linkages and wildlife corridors:

- ***Habitat Linkages.*** Following Soule and Terborgh's (1999) use of the term "landscape linkage," habitat linkages are areas of natural habitat that function to join two larger blocks of habitat. They serve as connections between habitat blocks and help reduce the adverse effects of habitat fragmentation by providing a potential route for gene flow and long-term dispersal. Habitat linkages may serve both as "live-in" habitat and avenues of gene flow for small animals such as reptiles, amphibians, and rodents. Habitat linkages also provide for the transit of larger species, but as contrasted with wildlife corridors, as defined below, also may be "live-in" habitat for larger species (i.e., support breeding sites, frequent use areas, etc.). Habitat linkages also may be represented by continuous habitat or by closely spaced habitat "islands" that function as stepping stones for dispersal and movement (especially for birds and flying insects).

- ***Wildlife Corridors.*** As defined herein, wildlife corridors tend to be linear features that connect large blocks of habitat and provide avenues for frequent movement, dispersal, or migration of larger animals. Because of their narrower configuration, wildlife corridors generally serve a more limited function than habitat linkages and primarily are used for transit of larger species rather than as live-in habitat for a broader suite of species. Wildlife corridors may also contain "choke-points" (e.g., hourglass or funnel shapes) or man-made structures such as culverts and flood control channels that wildlife quickly move through.

Habitat linkages and wildlife corridors facilitate the dispersal by smaller, less mobile species and frequent movement (e.g., daily, weekly, etc.) by large mammal species such as mountain lion, mule deer, coyote, and bobcat. The species identified below are representative of a much broader suite of species served by the habitat linkages and corridors. Accordingly, the species identified should not be interpreted as the only species that benefit from the linkages and corridors. It can be reasonably assumed that habitat linkages and corridors that function for large mammals (except coyote) also function for many other species.

Except where only habitat linkages or corridors currently exist, the following discussion identifies habitat linkage and corridor functions within the general wildlife movement areas that appear to be important to be retained in the subregion. Identification of these linkage and corridor functions are based on field studies of wildlife movement in the SAMP Study Area (e.g., Beier and Barrett 1993, Dudek 1995; Michael Brandman Associates 1996; Padley 1992), input from the Science Advisors and the wildlife agencies, and the EIS team's review and analysis of the species, vegetation, and physiographic information for the subregion. Habitat linkages and wildlife corridors in the SAMP Study Area are shown in Figure 4.1.3-11 and include:

- The Arroyo Trabuco between about Avery Parkway and the Cleveland National Forest provides a habitat linkage for movement and dispersal of large species, as well as for numerous smaller, less mobile species (e.g., Beier and Barrett 1993; Dudek 1995; Padley 1992; Science Advisors 1997).

- The area between the Las Flores and Ladera Ranch developments connecting Arroyo Trabuco and Chiquita Ridge provides an existing habitat linkage for species such as the California gnatcatcher and a wildlife corridor for large mammals (e.g., Beier and Barrett 1993).

- The combined Chiquita Ridge and Creek area provides a north-south wildlife habitat linkage from San Juan Creek to the "horseshoe" of habitat surrounding the northern end of Coto de Caza. This linkage is important for species such as California gnatcatcher and cactus wren and also for movement and dispersal of large mammals (e.g., Beier and Barrett 1993; Dudek 1995; Michael Brandman Associates 1996; Padley 1992; Science Advisors 1997).

- The "Narrows" area separating middle and lower Chiquita Canyon consists of oak/riparian and coastal sage scrub habitats, and relatively little dry land farming. This area provides an east-west habitat linkage between Chiquita Ridge and Chiquadora Ridge and Sulphur Canyon for large mammals and small, mobile species such as the California gnatcatcher (e.g., Beier and Barrett 1993; Michael Brandman Associates 1996; Padley 1992).

- A mosaic of coastal sage scrub and grassland in lower Chiquita Canyon, such as the area adjacent to the SMWD wastewater treatment plant, provides an east-west movement corridor for California gnatcatcher dispersal, as well as for dispersal and movement of large mammals.

- The "horseshoe" connection north of Coto de Caza provides a "stepping-stone" habitat linkage for the California gnatcatcher and cactus wren. It probably has limited existing function as a wildlife corridor for large species, although coyotes likely move through the area and bobcat and mule deer may occasionally use the corridor.

- Chiquadora Ridge and adjacent Gobernadora Creek provide a north-south habitat linkage for California gnatcatcher and cactus wren to San Juan Creek, as well for movement and dispersal by large mammals (e.g., Beier and Barrett 1993; Michael Brandman Associates 1996; Padley 1992; Science Advisors 1997).

- Sulphur Canyon provides a north-south and east-west habitat linkage for large mammals between Chiquita Canyon and Wagon Wheel Canyon and Cañada Gobernadora that allows wildlife to move east to Bell Canyon and Caspers Wilderness Park. It also provides a north-south connection for smaller species such as California gnatcatcher and cactus wren (e.g., Beier and Barrett 1993; Michael Brandman Associates 1996; Padley 1992; Science Advisors 1997).

- Cañada Gobernadora between Coto de Caza and the mouth of Sulphur Canyon provides an east-west habitat linkage for large mammals between Chiquita Canyon and Wagon Wheel Canyon to the west and Bell Canyon and Caspers Wilderness Park to the east (e.g., Beier and Barrett 1993; Michael Brandman Associates 1996).

- San Juan Creek functions as a central nexus for north-south and east-west wildlife movement in the central part of the SAMP Study Area. It connects Chiquita Ridge and Chiquita Canyon with the Central San Juan Creek and Trampas Canyon Sub-basin to allow dispersal and movement to the south via Cristianitos Canyon. It also serves east-west wildlife movement and dispersal from Chiquita Canyon upstream to the Cleveland National Forest and major tributaries such as Cañada Gobernadora, Bell Canyon, and Verdugo Canyon (e.g., Beier and Barrett 1993; Dudek 1995; Padley 1992; Science Advisors 1997). It should be noted that under existing conditions, large wildlife species (coyote, mule deer, bobcat, and possibly mountain lion) moving between San Juan Creek and Trampas Canyon and the Radio Tower Road area either use existing

corrugated steel and concrete box culverts under Ortega Highway (Dudek 1995) or must cross the highway directly.

- Habitat west of the silica mine in Trampas Canyon currently provides dispersal opportunities for California gnatcatchers and other species between Chiquita Ridge and gnatcatcher populations in the cities of San Juan Capistrano and San Clemente, as well as eastward dispersal between Trampas Canyon and the Talega development to the Donna O'Neill Land Conservancy, Cristianitos Canyon, and MCB Camp Pendleton.

- Verdugo Canyon provides an east-west habitat linkage for large mammals between San Juan Creek and the Cleveland National Forest (Beier and Barrett 1993; Padley 1992).

- Upland coastal sage scrub and chaparral habitats adjacent to Verdugo Canyon may provide north-south movement opportunities for the cactus wren and other species, although it is likely that these species also disperse along San Juan Creek.

- Local gnatcatcher populations in the San Mateo Watershed are relatively small, compared with the remainder of the SAMP Study Area, and are concentrated along the Cristianitos Creek corridor and overlooking lower Talega Creek. Although there is the potential for gnatcatcher dispersal through coastal sage scrub patches throughout the San Mateo Watershed, an important habitat linkage for gnatcatchers within this watershed appears to be Cristianitos Canyon, which links San Juan Creek with local populations in lower Gabino Creek and MCB Camp Pendleton along lower Cristianitos Creek/San Mateo Creek.

- Gabino Canyon provides a north-south habitat linkage between the SAMP Study Area and the Cleveland National Forest for large mammals (Beier and Barrett 1993; Michael Brandman Associates 1996; Padley 1992; Science Advisors 1997) and may support dispersal by the cactus wren and other species.

- La Paz Canyon provides a north-south habitat linkage between the SAMP Study Area and the Cleveland National Forest for large mammals (Beier and Barrett 1993; Padley 1992) and possibly a habitat linkage for dispersal by the cactus wren and other species.

- Talega Canyon provides for east-west and north-south movement between the SAMP Study Area and MCB Camp Pendleton for large mammals (Beier and Barrett 1993; Padley 1992), cactus wren, and other species.

- The Saddleback Meadows area provides a lower elevation habitat linkage between the Southern Subregion SAMP Study Area and the Central Subarea component of the Central and Coastal NCCP/HCP Habitat Reserve. This area also provides a very limited wildlife corridor between the Central and Southern subregions via two 300-foot-long corrugated steel pipes that cross under El Toro Road (Dudek 1995). This crossing may be used by smaller animals such as coyote, gray fox, and raccoons, but likely is not used by bobcat, mule deer, or mountain lion because the pipes are long and confining, and preclude visual contact between the two ends because they have a slight bend.

- The area north of Oso Reservoir, including O'Neill Regional Park and Color Spot Nursery provides a lower elevation "stepping stone" habitat linkage between the Southern Subregion SAMP Study Area and the Central Subarea component of the Central and Coastal NCCP/HCP Habitat Reserve. With habitat restoration, this linkage likely would be suitable for the California gnatcatcher.

- The Foothill/Trabuco Specific Plan (1985) identified the locations of several habitat linkages and wildlife corridors within the upper Arroyo Trabuco area. The precise locations of extant linkages and corridors needs to be refined and based on information developed through the review of existing developments and recently submitted specific project plans.

4.1.4 LAND USE

4.1.4.1 SAMP Study Area Existing Conditions

The SAMP Study Area is located in southeastern Orange County. Within the northerly part of the SAMP Study Area are the City of Rancho Santa Margarita and the unincorporated planned communities of Robinson Ranch, Dove Canyon, Las Flores, Coto de Caza, and Ladera Ranch. Regional parks within the SAMP Study Area include Thomas F. Riley Wilderness Park, O'Neill Regional Park, Caspers Regional Park, and other permanent open space in unincorporated Orange County. The City of Dana Point and MCB Camp Pendleton in the County of San Diego bounds the SAMP Study Area on the south. The Cleveland National Forest in Orange County is within the SAMP Study Area. To the west in the SAMP Study Area are the cities of San Juan Capistrano, Laguna Hills, Laguna Niguel, San Clemente, and Mission Viejo, as well as land within unincorporated Orange County.

County of Orange

The estimated population, as of January 1, 2005 for Orange County, inclusive of incorporated areas, is 3,056,865 persons.[1] The Orange County General Plan (April 2004, as amended) sets forth assumptions based on Orange County demographic projects. These assumptions include the following:

Use of Land

- There will be a steady but declining amount of land available for development. As agricultural preserve contracts are noticed for non-renewal, military bases (MCAS Tustin and MCAS El Toro) are closed and converted to civilian uses, and as oil lands end production, new areas will become available for development.

- Future development may be allocated to these areas prior to the approval of general plan amendments and development policies without presupposing necessary development approvals.

- The Countywide projections do not exceed that which would be allowable under the cities' and County's general plans, their elements, and related identified city and County land use and development policies.

- The final portions of the available land in the County will achieve first generation buildout sometime after the year 2025.

- While a significant level of new housing will be constructed in the south and eastern portions of the County, there will be continued infill and redevelopment in the northern and central regions.

- Significant commercial and industrial development will occur along major transportation arteries throughout the period of these projections.

- A noticeable and continuing trend toward higher density housing has been observed, and is expected to continue into the future.

[1] California Department of Finance, Table 2: E-4 Population Estimates for Cities, Counties and State, 2001-2005 with 2000 DRU Benchmark

Demographics

- The population of California will continue to grow to approximately 40 million by the year 2005, while the seven-county SCAG region will reach 22.6 million by 2005.

- The fertility rate will decline over the projection period and will reach mid-1980 levels by 2020.

- The death rate will increase throughout the period of these projections as the population ages while survival rates will increase slightly.

- International migration will account for a major portion of net migration, including undocumented immigration to the extent that it continues.

Table 4.1.4-1 provides a summary of acreage for each County of Orange General Plan land use category for all of unincorporated Orange County.

TABLE 4.1.4-1
AGGREGATE LAND USE CATEGORIES
FOR UNINCORPORATED ORANGE COUNTY

Land Use Category	Acres	% of Total
Rural Residential (1A)	13,454	7.0
Suburban Residential (1B)	26,210	13.6
Urban Residential (1C)	211	0.1
Community Commercial (2A)	106	0.1
Regional Commercial (2B)	0	0.1
Employment (3)	305	0.2
Public Facilities (4)	2,632	1.4
Landfill Site (LS)	2,052	1.1
Open Space (5A)	143,313	74.3
Educational/Park Compatible (EPC)	724	0.4
Nature Preserve (NP)	1,024	0.5
Open Space Reserve (OSR)	2,575	1.3
Urban Activity Center (6)	152	0.1
Total	**192,758**	**100.0**
Note: Does not include Cleveland National Forest. Source: Orange County General Plan Land Use Element Table III-2.		

The General Plan land use designations for that portion of unincorporated Orange County located within the SAMP Study Area are depicted on Figure 4.1.4-1. Approximately 60,604 acres of unincorporated Orange County are within the SAMP Study Area.

City of Dana Point

The 6.8-square-mile (4,352 acres) City of Dana Point incorporated in January 1989. Approximately 1,220 acres of the City are within the SAMP Study Area. The City is generally bound by the City of Laguna Niguel to the north, the Pacific Ocean to the south, City of San Juan Capistrano to the east, and the City of Laguna Beach to the west. The City of Dana Point

has an estimated population, as of January 1, 2005 of 36,765 persons.[2] The projected population by 2030 is 40,437 persons, an increase of 3,905 persons, or almost 10 percent.

The City of Dana Point is a predominantly residential community and contains limited undeveloped land. The General Plan land use designations for the City of Dana Point within the SAMP Study Area are depicted on Figure 4.1.4-2. The City of Dana Point General Plan (July 9, 1991) notes that the City's interface between the Pacific Ocean and land is characterized by rugged coastal bluffs separated by two major freshwater drainages, San Juan Creek and Salt Creek, which drain into the ocean. The physical landform of the City is characterized by nearly seven miles of Pacific Ocean coastline.

The County of Orange owns and maintains several regional recreational facilities in the City of Dana Point. County parks and recreational areas in the City include two beach areas, Salt Creek Beach Park and Capistrano Beach County Park. Dana Point Harbor, created in the late 1960s/early 1970s, is also managed by the County, as are the 9-acre Bluff Top Park, near the Ritz-Carlton Resort, and the 16-acre Lantern Bay Park overlooking Dana Point Harbor. Doheny Beach State Park (62 acres) extends along the beach from Del Obispo Street southeast to Capistrano Beach County Park. The City of Dana Point includes other public recreational facilities. These include the Marine Studies Institute, the Dana Hills Tennis Center; and the Links at Monarch Beach, an 18-hole golf course.

City of Laguna Hills

The City of Laguna Hills is a predominately residential community that was incorporated on December 20, 1991. The 6.6 square-mile (4,224 acres) City is generally bound by the cities of Laguna Niguel and Aliso Viejo to the west, the City of Mission Viejo to the east, the City of Lake Forest to the north, and the City of San Juan Capistrano to the south. The population of the City of Laguna Hills is currently 32,546 (2005). A small portion of the City (711 acres) would be within the SAMP Study Area.

On November 14, 1995, the City Council approved annexation of the North Laguna Hills area, which became part of the incorporated City on July 1, 1996, and on September 18, 2000, the "Westside" Annexation Area officially became part of the incorporated City. The annexation added 149 acres of residential land, which includes the Aliso Viejo Community Association's Sheep Hills Park. The General Plan land use designations for the City of Laguna Hills are depicted on Figure 4.1.4-3.

City of Laguna Niguel

The City of Laguna Niguel is 14.72 square miles (9,421 acres) generally bound by the cites of Aliso Viejo and Laguna Hills to the north, the City of Dana Point to the south, the cities of Mission Viejo and San Juan Capistrano to the east, and the City of Aliso Viejo to the west. Approximately 766 acres of the City are within the boundaries of the SAMP Study Area. The estimated population, as of January 1, 2005 for the City of Laguna Niguel is 66,126 persons.[3] The projected population by 2030 is 73,067 persons,[4] an increase of 6,941 persons, or 9.5 percent.

The City is a predominately residential community with limited undeveloped land. The General Plan land use designations for the City of Laguna Niguel within the SAMP Study Area are

[2] Ibid.
[3] Ibid.
[4] Center for Demographic Research at California State University, Fullerton, OCP 2004.

depicted on Figure 4.1.4-4. Existing and planned use of Laguna Niguel's 9,456 acres includes 3,549 acres residential, 276 acres commercial, 223 acres mixed uses, 222 acres public/institutional facilities, and 3,650 acres designated to parks and open space. Over one-third of Laguna Niguel is designated as open space. The City has 2 community parks, 23 neighborhood parks, 3 mini-parks, 1 dog park, 2 county regional parks (Aliso Creek Corridor and the Salt Creek Regional Park), 2 small county parks, and one skate and soccer park. The General Plan identifies four blue-line streams containing riparian habitat in the City: Salt Creek, Aliso Creek, Oso Creek and an unnamed drainage at the western boundary of the City south of Aliso Creek.

City of Mission Viejo

The City of Mission Viejo is generally bound by the City of Lake Forest to the north, the City of San Juan Capistrano to the south, the City of Rancho Santa Margarita, and unincorporated Orange County to the east, and the cities of Lake Forest, Laguna Hills, and Laguna Niguel to the west. When the City incorporated in 1988, the area within its jurisdictional boundaries was almost built out. The 17.4-square-mile (11,136 acres) city has a population of 98,197.[5] Approximately 9,297 acres of the City are within the boundaries of the SAMP Study Area. The projected population by 2030 is 104,706 persons,[6] an increase of 6,509 persons, or 6 percent. The City has 33,714 housing units[7] with a projected 34,602 units[8] by 2030. The General Plan land use designations for the City of Mission Viejo within the SAMP Study Area are depicted on Figure 4.1.4-5.

The City of Mission Viejo General Plan Conservation/Open Space Element (December 6, 1999) notes that most of the natural open space and biological habitat in the City has been replaced with urban development. Undeveloped areas in the eastern portion of the City contain natural resources, such as steep slopes, canyons, and drainage courses. Natural habitat in the Arroyo Trabuco runs in a southerly direction between the cities of Mission Viejo and Rancho Santa Margarita. Steep slopes along the City's eastern boundary form an edge between the City and the Arroyo Trabuco. As also noted in the General Plan Conservation/Open Space Element, the City contains three riparian corridors: (1) Aliso Creek, north of the Upper Oso Reservoir; (2) along portions of Oso Creek; and (3) along Trabuco Creek which runs through the southeast edge of the City.

City of Rancho Santa Margarita

The City of Rancho Santa Margarita incorporated in 2000. The 13.1-square-mile (8,384 acres) city is generally bound by unincorporated Orange County and the Cleveland National Forest to the north, unincorporated County including the community of Las Flores to the south, unincorporated County, including Coto de Caza, and the Cleveland National Forest to the east, and the City of Mission Viejo to the west. Almost all (8,270 acres) of the city is within the boundaries of the SAMP Study Area.

The estimated population, as of January 1, 2005 for the City of Rancho Santa Margarita is 49,249 persons.[9] The projected population by 2030 is 54,175 persons,[10] an increase of 4,926 persons, or 9 percent.

5 Ibid.
6 Center for Demographic Research at California State University, Fullerton, OCP 2004.
7 California Department of Finance, January 2004 revised estimate.
8 Center for Demographic Research at California State University, Fullerton, OCP 2004.
9 Ibid.

The majority of the land in the City is parkland, open space, and regional open space (O'Neill Regional Park). The General Plan land use designations for the City of Rancho Santa Margarita within the SAMP Study Area are depicted on Figure 4.1.4-6. Because the majority of the available land for development has been developed, the majority of new growth would occur in the Northeast Future Planned Community. The 327-acre Northeast Future Planned Community consists of nursery properties and Porter Ranch located northeast of the City of Rancho Santa Margarita. The General Plan Land Use Element notes that this area should not exceed 612 dwelling units (Low and Medium Density Residential), and should retain 20 percent for school and park facilities, and 35 percent for open space.

Approximately 66 percent of the City is designated for passive open space or park use. Native vegetation is found in the O'Neill Regional Park, on both sides of SR-241 in the southern portion of the City, and open space located east/northeast of Dove Canyon and northeast of Robinson Ranch.

City of San Clemente

The City of San Clemente incorporated in 1928. The approximately 17.8-square mile (11,392 acres) city is generally bound by the City of San Juan Capistrano and unincorporated County of Orange land to the north, the Pacific Ocean to the south, unincorporated County of Orange land and san Onofre State Beach in the County of san Diego to the east, and the cities of San Juan Capistrano and Dana Point to the west. Approximately 528 acres of the City are within the SAMP Study Area. The estimated population, as of January 1, 2005 for the City of San Clemente is 65,338 persons.[11] The projected population by 2030 is 68,454 persons,[12] an increase of 3,116 persons, or less than 5 percent.

General Plan policy provides for the evolution of the City's existing fragmented pattern of development into a cohesive, integrated urban form consisting of unique, yet inter-related activity centers and corridors with a "background" pattern of residential and open space uses. These changes would occur through the establishment of common functional land use and physical and perceived connections in what would be considered as a more traditional concept of design. General Plan land uses are depicted on Figure 4.1.4-7.

City of San Juan Capistrano

The City of San Juan Capistrano incorporated in 1961. The approximately 14-square-mile (8,960 acres) city is generally bound by unincorporated County of Orange land and the City of Mission Viejo to the north, the cities of Dana Point and San Clemente to the south, unincorporated County land to the east, and the City of Laguna Niguel to the west. Interstate 5 and Ortega Highway (SR-74) traverse the City of San Juan in a generally north-south and a southwest-northeast direction, respectively. Approximately 8,340 acres of the City are within the SAMP Study Area.

The City has grown from a small community of approximately 10,000 persons in 1974 to a developed city of 36,078 in 2005.[13] Approximately 40 percent of the City is in open space and park land. Only about 10 percent of land suitable for development remains vacant. The General Plan land use designations for the City of San Juan Capistrano within the SAMP Study Area are depicted on Figure 4.1.4-8. The City General Plan Land Use Element identifies the land uses for

[10] Ibid.
[11] Ibid.
[12] Ibid.
[13] Ibid.

these remaining vacant parcels which will create a land use composition that provides a balance between the generation of public revenues and the cost of providing public facilities and services. Implementation of the General Plan Land Use Element's Land Use Plan will assist the City of San Juan Capistrano in creating a balance between jobs and housing units within the City. The City has identified vacant or underutilized parcels that are appropriately located for employment-generating uses. The City notes that it will implement the Land Use Plan to assure that a balance of land uses occurs in order to maintain fiscal stability and an improved jobs/housing balance.

4.1.4.2 RMV Planning Area Existing Conditions

The 22,815-acre RMV Planning Area is the remaining undeveloped portion of the Rancho Mission Viejo's land holdings. Historically, land uses have included both ranching and agricultural uses. In the more recent past, portions of the RMV Planning Area have been leased for various uses including commercial nursery operations, natural resources extraction, research and development uses, communications facilities, and storage and maintenance yards. Current lease information is discussed below, with the location of the various on-site land uses depicted in Figure 4.1.4-9. Additional on-site land uses managed by Rancho Mission Viejo include citrus and avocado groves, grazing lands, related agricultural uses, and a limited number of private residences. For purposes of describing land uses in the RMV Planning Area, the sub-basins are used as a general reference point.

Lower San Juan Sub-Basin (including Narrow Canyon)

The Lower San Juan and Narrow Canyon Sub-basin is located east of the City of San Juan Capistrano in the vicinity of Antonio Parkway and Ortega Highway and adjacent to the Ladera Ranch Planned Community (Figure 4.1.4-9). Antonio Parkway parallels this sub-basin in a generally north-south direction. Ortega Highway traverses the sub-basin in a southwest to northeast direction. Much of the sub-basin is currently used for citrus and other agricultural operations. The sub-basin contains commercial, industrial, and agricultural businesses; the Rancho Mission Viejo headquarters; limited residences; open fields, and portions of San Juan Creek (Figure 4.1.4-9). San Juan Creek bisects the sub-basin in an east-west direction. Specific land uses include the following:

- The Ladera Ranch construction yard (No. 9[14]) formerly the Les Thompson lease area, located at 28811-A Ortega Highway, is an approximately one-acre area located in the northern portion of the planning area. This area includes a large wooden structure and several trailers.

- The Blenheim Oaks Rancho Mission Viejo Riding Park (No. 10[12]), 29500 Ortega Highway, is located on the southwest corner of La Pata Avenue at Ortega Highway. The riding park is an approximately 60-acre site, containing fenced pastures and an equestrian exhibition area.

- Oaks Corrals (No. 11[12]), 28650 Ortega Highway, occupies approximately 1.5 acres in the southern portion of the sub-basin. The area is used for horse corrals.

- DM Color Express Nurseries (No. 13[12]) (29001 and 29813 Ortega Highway) is located on two sites at the corner of Antonio Parkway at Ortega Highway. The site is occupied by a wholesale nursery and seed ranch, and includes an office, maintenance shop,

[14] The numbers are identified on Figure 4.1.4-9.

storage buildings, greenhouses, various sheds, and trailers. The site also contains a pond and a water filtration/blending station.

- Tru-Green Nurseries (No. 14[12]), 29813 Ortega Highway, occupies approximately 22 acres in the southwestern portion of the sub-basin. The wholesale nursery has an office, storage building, greenhouses, shade houses, various sheds, and trailers.

- Tierra Verde Industries, also known as La Pata Greenwaste (No. 15[12]) is a commercial biodegradation-composting site. This use is located on 7.5 acres east of La Pata Avenue.

- Residential units (No. 16[12]), 28652 and 28632 Ortega Highway, are located in the southern portion of Planning Area 1.

- Two cellular antenna sites (Nos. 21 and 23[12]) are in the sub-basin. Site No. 21 is located in the citrus (lemon) groves west of the Rancho Mission Viejo Headquarters. Site No. 23 is located at the southeastern corner of sub-basin.

- The Rancho Mission Viejo Headquarters (No. 25[12]), 28811 Ortega Highway, is located in the central portion of Planning Area 1. The approximately 15-acre headquarters includes a one-story office building, two-story recreation/conference complex, and one residence (28881 Ortega Highway).

- An approximately 50-acre field (No. 27[12]) cultivated with a variety of market crops is located on the northwest corner of Ortega Highway and Antonio Parkway. This is the previous site of the Joan Irvine-Smith pasture. The site includes a small wooden shed, fenced grazing pasture, and an aboveground diesel tank.

- SMWD San Juan Creek Lift Station (No. 28[12]).

- Citrus groves are located in the western and central portions of the sub-basin and along San Juan Creek, south of Ortega Highway. A small supply shed and three small-unlabeled aboveground tanks are located in the western portion of the citrus groves; several electric windmills are located in citrus groves along San Juan Creek.

Cañada Chiquita Sub-Basin

The Cañada Chiquita Sub-basin is the northwesternmost sub-basin in the SAMP Study Area (Figure 4.1.4-9). The lower portion of the sub-basin is bound by the Lower San Juan and Narrow Canyon Sub-basin to the west; the Cañada Gobernadora Sub-basin is to the east. The majority of the sub-basin is open space. The sub-basin includes approximately 68 acres of lemon orchards, 10 acres of avocado orchards, and barley fields. Uses include the following:

- The 10.5-acre Chiquita Canyon Mitigation Site.

- The SMWD Chiquita Water Reclamation Plant is located in the center of the sub-basin, but is not a part of the SAMP Study Area.

Cañada Gobernadora Sub-Basin

The Cañada Gobernadora Sub-basin is located north of San Juan Creek, south and west of Caspers Wilderness Park and south of Coto de Caza (Figure 4.1.4-9). The 11.10-square-mile

sub-basin is an elongated valley that is aligned north to south. At 9.7 miles, it is the longest sub-basin in the San Juan Creek Watershed. The Gobernadora Ecological Restoration Area (GERA) is located within the Cañada Gobernadora Sub-basin. With the exception of GERA and two antenna sites (No. 22[12]), the remainder of the sub-basin within the RMV Planning Area is used for cattle grazing.

Central San Juan and Trampas Sub-Basin

Natural vegetation covers the northern portions of the Central San Juan and Trampas Sub-basin. The lower reaches (southern portion) of the sub-basin are currently used for commercial, industrial, and agricultural businesses, as well as residences for agricultural workers (Figure 4.1.4-9). The area historically known as "Cow Camp" is located in this sub-basin along San Juan Creek. Existing uses in Cow Camp (No. 18[12]) include the agricultural worker residences, horse riding arena maintenance facilities, and restroom facilities. Existing uses in the sub-basin include the following:

- California Portland Cement/Catalina Pacific Concrete South (No. 1[12]), 31511 Ortega Highway, is a 16-acre site occupied by a concrete batch plant which includes a truck fueling facility, truck washout area, office building, scale house, maintenance shop, storage buildings, several storage units, and three sub-lessee spaces: Saddleback Materials (materials storage), Chuck Royce Trucking (equipment storage), and Laguna Asphalt Paving, (equipment storage).

- Ewles Materials (No. 3[12]), 32501 Ortega Highway, is located on a 2.5-acre site also in the sub-basin. The site is occupied by an asphalt recycling and processing plant that includes an office trailer, employee trailer, storage unit, fuel compound, and wash station.

- CR&R/Solag Disposal Company (No. 4[12]), 31641 Ortega Highway, is located on six acres in the sub-basin. The waste management facility site includes an office building, maintenance shop, fueling station, waste-processing unit, and storage units and yard use for refuse collection.

- Oglebay Norton Industrial Sands (ONIS) occupies much of the sub-basin. ONIS is a sand mining and processing facility. Approximately 500,000 tons of silica sand is processed annually for building materials such as stucco, grouts, and mortars, as well as for use in golf courses, playing fields, and playgrounds (source: www.oglebaynorton.com, accessed on July 1, 2005). Exploration and mining of feldspar, clay, and ancillary minerals and substances also occurs at this location. The facility includes an open pit mine, a large earthen dam and associated reservoir, a processing plant, office complex, scale house, fueling facility, maintenance shop, several storage buildings, sheds and trailers, and open vehicle/equipment storage areas.

- Tree of Life Nursery (No. 6[12]), 33201 Ortega Highway, is a 35-acre wholesale nursery has cultivation areas and several structures, including an office building, several green houses, barn, and trailers.

- Transit Mixed Concrete Company/Cemex Concrete (No. 7[12]), 31601 Ortega Highway, is located on four acres. The site is occupied by a cement/concrete batch plant, which includes an office trailer, maintenance trailer, fueling island, truck washout area, and storage shed.

- Color Spot Nursery (No. 8[12]), 31101 Ortega Highway, is located on 243.7 acres in the central portion of the sub-basin. The site is a wholesale nursery with a maintenance shop, storage buildings, greenhouses, lined ponds, an irrigation recovery system, and a water filtration/blending station.

- Olsen Pavingstone (No. 12[12]), 31511 Ortega Highway, is located on a six-acre site in the sub-basin. The site is used as a paving stone manufacturing plant, which includes several office trailers, a residential unit, the manufacturing plant, and several storage units.

- Rancho Mission Viejo Maintenance Shop: Cow Camp (No. 17[12])

- RJO Horse Ranch (No. 19[12]), 33101 Ortega Highway, is a 24-acre site located south of the Tree of Life Nursery. The horse ranch has a barn, grazing land, and two residences.

- St. Augustine Training Center (No. 20[12]), 31151 Ortega Highway, is an approximate 0.5-acre site used as a horse training facility with several stables, portable storage trailers, and two residential trailers.

- O'Connell Landscaping Yard (No. 24[12]), 31821 Ortega Highway, is a 1.5-acre storage yard that includes several portable storage units.

- The field south of the RJO Horse Ranch and east of Ortega Highway, the "South Forty" (No. 27[12]) is used for barley cultivation.

- Campo Vaquero, 31471 Ortega Highway, is located on 50 acres in the southern portion of the sub-basin. The site includes older ranch housing, pasture fields, a maintenance facility, and horse corrals. This site is in Cow Camp.

- Lemon groves and a field are located on approximately 166 acres north of Ewles Materials.

- Ten residences at 31121, 31151, 31181, 31221, 31241, 31261, 31263, 31265, 31381, and 31825 Ortega Highway are located along the ridge north of Campo Vaquero, in the southwestern Campo Vaquero in the southwestern portion of San Juan Creek, and adjacent to the O'Connell Landscaping storage yard.

- A Cellular on Wheels site is located near Color Spot Nursery, 31101 Ortega Highway, on an approximate one-acre property in the central portion of the sub-basin. The site contains two temporary mobile telecommunications tower and a small concrete structure, the latter used for equipment storage for the telecommunications towers.

- A pump station for the Nichols Institute is located in the eastern portion of the sub-basin. SMWD maintains the pump station.

- Amantes Camp (a private picnic facility) and the Last Roundup (a private cemetery) are also located in this sub-basin.

Cristianitos Sub-Basin

Much of the Cristianitos Sub-basin is devoted to grazing lands (Figure 4.1.4-9). Non-active clay mines are located in the northern portions of the sub-basin. The eastern half of the Cristianitos

Sub-basin was most recently occupied by Philco-Ford Aeronutronics, which operated a weapons research and testing facility from 1969 to 1993. Cattle corrals are also located in this sub-basin.

Talega Sub-Basin

The Talega Sub-basin is located south of the Cristianitos Sub-basin (Figure 4.1.4-9). Uses in this sub-basin include grazing and the Northrop Grumman Space Technology Capistrano Test Site (No. 2^{12}). A portion of the sub-basin has been leased to Northrop Grumman Space Technology for the Capistrano Test Site since 1963. The Capistrano Test Site is used to develop and test directed energy systems, and spacecraft and rocket propulsion systems and antennas. Prior site uses have also included the development and testing of "clean coal" technology. Facilities at the property include office and research facilities, chemical laboratory (Chem Lab), a fossil energy test site, testing and monitoring facilities including the high energy propulsion test site, vertical engine test site, and high altitude test stand, and various maintenance and support structures.

La Paz, Blind, and Gabino Sub-Basins

These sub-basins are primarily used for grazing lands and lemon and avocado orchards in a portion of the Gabino Sub-basin. The only improved use in this area is the Campo Portola located in Gabino Sub-basin (Figure 4.1.4-9). Cattle corrals are also located in the Gabino Sub-basin.

4.1.5 TRANSPORTATION AND CIRCULATION

The following section discuss the traffic study area, existing circulation systems, and traffic conditions, the traffic forecasting methodology, the performance criteria used in identifying impacts and evaluating alternatives, and the basic assumptions applied in the analysis.

4.1.5.1 Traffic Study Area

The proposed SAMP permitting procedures would not have direct traffic impacts. However, the implementation of projects that would be subject to permitting procedures may generate traffic and may have traffic impacts. Because the RMV Proposed Project and the SMWD Proposed Project are the only two specific projects under consideration in this SAMP EIS for long-term Individual Permits/Letters of Permission (LOP), the traffic study area focuses on the circulation system components that may be affected by implementation of the RMV Proposed Project and the SMWD Proposed Project. With the exception of one proposed domestic water reservoir site located outside the boundaries of the RMV Planning Area, the remaining potential reservoir sites (one domestic reservoir and two non-domestic reservoirs) are proposed within the RMV Planning Area, specifically within areas that would be disturbed through implementation of the RMV Planning Area project.[1] These reservoirs are intended to serve planned development and would not independently generate significant traffic volumes. As such, the traffic baseline for the SAMP EIS is the same as the traffic analysis prepared for GPA/ZC EIR 589.

The traffic study area is depicted on Figure 4.1.5-1. The traffic study area includes all or portions of the cities of Dana Point, Mission Viejo, San Juan Capistrano, and San Clemente, Rancho Santa Margarita, Laguna Hills, and Laguna Niguel. It also includes portions of unincorporated Orange County extending from Rancho Santa Margarita to San Clemente, including the communities of Las Flores, Ladera Ranch, Coto de Caza, and Talega, as well as the RMV Planning Area. The following specific criteria were used in defining this traffic study area.

- For arterial roads, the traffic study area includes all facilities where peak hour intersection volume/capacity ratios would increase by one percent or more as a result of the project. This is the impact threshold designated in the *Orange County General Plan Growth Management Element*.

- For freeways, the traffic study area includes all facilities where peak hour volumes would increase by more than three percent as a result of the project. This is the impact threshold designated in the *Orange County Congestion Management Program*.

The following provides a brief discussion of the circulation plans and systems for those jurisdictions in the SAMP Study Area.

County of Orange

The County of Orange General Plan Circulation Element sets forth a comprehensive strategy for planning, developing, and maintaining a surface transportation system to serve existing and planned land uses in the unincorporated areas of Orange County. The Circulation Plan Component of the Transportation Element establishes a system of surface roadways within the unincorporated areas of the County. The County's goal is to coordinate with the cities and Orange County Transportation Authority, the regional transportation planning agency, to

[1] The Upper Chiquita domestic water reservoir site is outside the RMV Planning Area and is proposed for north of Oso Parkway and west of SR-241.

develop a consistent intra-community arterial highway system that will effectively serve existing and future land uses within its jurisdiction.

City of Dana Point

The major traffic problem within the City of Dana Point exists primarily on the section of Pacific Coast Highway where State Route 1 ends and becomes Pacific Coast Highway. The intersection of Del Obispo Street and Pacific Coast Highway is of particular concern. The future roadway system in the City of Dana Point has been defined using a classification system which describes a hierarchy of facility types. The categories of roadways included in this classification system differentiate the size, function and capacity of the roadway links for each type of roadway. The City's roadway network focuses on a number of major improvements with regard to the roadway system in the City. All roadway improvements are included in the County of Orange Master Plan of Arterial Highways (MPAH) with the exception of those to Camino Capistrano and Doheny Park Road. Both are designated as primary facilities on the MPAH and are forecast to carry traffic volumes significantly in excess of their intended capacities. Both facilities will be upgraded to "augmented primary" designations on the City's Circulation Element (or "modified majors"), as denoted in the MPAH.

City of Laguna Hills

The City of Laguna Hills has a well defined vehicular circulation system based on a hierarchy of arterial function as conceived in the County of Orange MPAH. With the exception of individual intersection turn lanes, the circulation system is completed with full arterial lane complements. I-5 is the major north-south regional transportation facility that defines the northern and eastern boundary of the City of Laguna Hills. Significant north-south arterial routes through Laguna Hills include Moulton Parkway, Paseo de Valencia, Cabot Road, and Avenida de la Carlota. East-west travel is accommodated on Oso Parkway, La Paz Road, Alicia Parkway, Los Alisos Boulevard, El Toro Road, Ridge Route, and Lake Forest Drive. Currently, the arterial segments within the City and its Sphere of Influence operate within the County's standard daily highway capacities. However, three key intersections (Paseo de Valencia/Los Alisos Boulevard, Paseo de Valencia/Alicia Parkway, and Moulton Parkway/Lake Forest Drive) experience unsatisfactory levels of service during one or both a.m. or p.m. peak hours. Daily and peak hour traffic volumes will continue to increase within the City of Laguna Hills resulting in congestion along roadways and intersections. Based on traffic forecasts prepared for the preferred General Plan land use alternative, Cabot Road will exceed the capacity of a four-lane undivided Secondary arterial. In addition, Paseo de Valencia adjacent to the Laguna Hills Mall is forecast to operated unsatisfactorily, at a LOS E condition. Forecast deficiencies are caused by many factors, particularly anticipated new development as the City is virtually built out. The majority of growth in traffic forecast for roadways within the City is attributable to traffic generated in adjacent communities destined for the major employment and commercial centers in north and central Orange County. The General Plan identifies significant regional circulation improvements that are planned for the Laguna Hills area.

City of Laguna Niguel

The City of Laguna Niguel's circulation network includes one freeway (I-5), one toll road (San Joaquin Hills Transportation Corridor), and local arterial roads and local and collector streets. The City of Laguna Niguel General Plan Circulation Element (August 4, 1992) notes that the planned circulation plan for the City is primarily established, with little ability to be modified. The General Plan Circulation Element identifies roadways that are anticipated to operate beyond capacity based on implementation of General Plan land uses. Based on post-2010 average

daily traffic volumes and the Master Plan of Arterial Highways, the General Plan identifies anticipated capacity deficiencies on portions of Street of the Golden Lantern, Crown Valley Parkway, and Greenfield Drive. The General Plan identifies improvements to maintain acceptable levels of service.

City of Mission Viejo

The City of Mission Viejo is served by one regional highway, I-5. Access is provided by interchanges at El Toro Road, Alicia Parkway, La Paz Road, Oso Parkway, Crown Valley Parkway, and Avery Parkway. Planned arterial street improvements will help accommodate regional traffic outside and within the City. The City of Mission Viejo General Plan Circulation Element (October 8, 1990) notes that the Orange County Master Plan of Arterial Highways provides the framework for the future arterial street system.

City of Rancho Santa Margarita

The City of Rancho Santa Margarita's circulation network includes a toll road (SR-241), arterial roadways, and local roadways. SR-241 bisects the City with interchanges at Antonio Parkway, Santa Margarita Parkway, and Los Alisos Boulevard, which are the primary east-west arterials. Non-motorized transportation routes in the City include bicycle and pedestrian facilities. Public transportation consists of fixed-route bus service provided by the Orange County Transportation Authority.

The City of Rancho Santa Margarita General Plan Program EIR's traffic analysis evaluated existing and future conditions on roadway segments within the City. The General Plan Program EIR did not identify any deficiencies on the analyzed roadway segments. Implementation of the City's proposed Arterial Highway Plan is designed to accommodate current and anticipated regional traffic levels, as well as traffic from the City and its Sphere of Influence.

City of San Clemente

The City of San Clemente is generally divided by I-5. The General Plan Circulation Element notes that since north-south local circulation in the City is inadequate, I-5 is frequently used for intercity trips, which increases freeway ramp congestion. The General Plan also notes that construction of SR-241 South would relieve freeway ramp congestion on I-5. The General Plan also notes that buildout projections for the City indicate that there will be significant increases in traffic with the City and the surrounding area. A planned system of roadways is needed to serve currently undeveloped areas which are developing both within the city and in outlying regions. The San Clemente Regional Circulation Financing and Phasing Program (RCFPP) is a transportation improvement funding mechanism that assists in implementing the Circulation Element. Adopted in 1989, it establishes cost allocations for major circulation improvements in the northern portion of the City and the specific plan areas of the inland ranches.

City of San Juan Capistrano

San Juan Capistrano's circulation system includes vehicular, public transit, bicycle, pedestrian, and equestrian components. Regional vehicular access is provided via I-5. The Southern California Regional Rail Authority railroad extends through the City and is served by a station located in the Historic Town Center. Public transit service includes buses and the Metrolink. Hiking, bicycling, and equestrian trails are located throughout the City. The San Juan Capistrano Circulation Element Arterial Highway Plan identifies anticipated traffic levels and the roadway system needed to avoid community impacts. The City of San Juan Capistrano

Reimbursement Agreement and Nexus Fee Program is a transportation improvement funding program that assists in implementing transportation improvements in the City.

Traffic Forecasting Methodology

Traffic forecast data for the analysis was prepared using the South (Orange) County Sub-Area Model (SCSAM). This traffic forecasting model is a focused sub-area model derived from the Orange County Transportation Analysis Model (OCTAM) and was specifically designed to provide detailed forecasting capability in the traffic study area. The SCSAM is based on OCTAM Version 3.1 (OCTAM 3.1) which was adopted by the Orange County Transportation Authority (OCTA) in June 2001, together with a set of sub-area model consistency guidelines that are outlined in the *Orange County Subarea Modeling Guidelines Manual* (Orange County Transportation Authority, June 2001). The SCSAM has been certified by the OCTA as complying with these guidelines. For a complete description of the SCSAM, refer to the *SCSAM Traffic Model Description and Validation Report*.

The traffic forecast data produced by the SCSAM includes average daily traffic (ADT) volumes for arterial roadway and freeway mainline segments; and a.m. and p.m. peak hour volumes for intersection locations on the arterial and freeway circulation network, freeway ramps, and freeway mainline segments.

4.1.5.2 SAMP Study Area Vehicular Traffic Performance Criteria

As noted above, the traffic study area includes portions of unincorporated Orange County and portions of the cities of Dana Point, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, San Clemente, and San Juan Capistrano, all of which have traffic performance criteria. Traffic performance criteria are based on two primary measures. The first is “capacity” which establishes the vehicle carrying ability of a road segment and the second is “volume.” The volume measure may be a traffic count (in the case of existing volumes) or traffic forecast for a future point in time. The ratio between the volume and the capacity gives a volume/capacity (V/C) ratio. Based on the V/C ratio, a corresponding “level of service” (LOS) is defined. Level of Service is a qualitative measure of a facility’s operating performance. Level of Service is described with a letter designation from A to F, with LOS A representing the best operating conditions and LOS F the worst.

Table 4.1.5- 1 identifies the V/C ranges that correspond to LOS A through F for arterial roads and freeway segments. The V/C ranges for arterial roads are designated in the County of Orange Congestion Management Program and are used by the County of Orange and by the local jurisdictions in the SAMP Study Area. The V/C ranges for freeway segments are based on the V/C and LOS relationships specified in the *Highway Capacity Manual 2000* (HCM, 2000) for basic freeway sections with free-flow speeds of 65 miles per hour.

Arterial Roads Performance Criteria

For the arterial roadway system, the peak hour is the time period used for performance evaluation. Various techniques are available to establish V/C ratios and to define the corresponding LOS. These definitions and procedures are established by local jurisdictions or by regional programs such as the County Congestion Management Program and the countywide Growth Management Plan. The analysis of the arterial road system is typically based on intersection capacity because this is the defining capacity limitation on an arterial highway system. Levels of service for arterial road intersections are determined based on operating conditions during the a.m. and p.m. peak hours. The intersection capacity utilization

(ICU) methodology is applied based on peak hour volumes and an intersection's geometric configuration. This methodology adds the V/C ratios for the critical movements of an intersection and is generally compatible with the intersection capacity analysis methodology in the *HCM 2000*. The ICU ranges that correspond to LOS A through LOS F are the same as the V/C ranges (Table 4.1.5-1) for arterial roads and intersections.

TABLE 4.1.5-1
LEVEL OF SERVICE RANGES AND VOLUME/CAPACITY RATIO

Level of Service (LOS)	Volume/Capacity (V/C) Ratio Range	
	Arterial Roads and Intersections	Freeway Segments
A	0.00 – 0.60	0.00 – 0.30
B	0.61 – 0.70	0.31 – 0.50
C	0.71 – 0.80	0.51 – 0.71
D	0.81 – 0.90	0.72 – 0.89
E	0.91 – 1.00	0.90 – 1.00
F	Above 1.00	Above 1.00

Sources:
Arterial road and intersection V/C ranges: *2003 Orange County Congestion Management Program*, Orange County Transportation Authority.

Freeway segment V/C ranges: *Highway Capacity Manual 2000 (HCM 2000)*, Transportation Research Board, National Research Council.

Jurisdictions located in the traffic study area have established arterial intersection LOS standards that serve as a guideline for evaluating observed traffic conditions and as a target or goal when evaluating future development plans and circulation system modifications. These jurisdictions have also adopted various parameters for calculating ICU values and thresholds for identifying the effects of proposed projects. The ICU calculation methodology and performance criteria for each jurisdiction in the traffic study area are summarized in Table 4.1.5-2. Most of these jurisdictions use LOS D (ICU not to exceed 0.90) as the accepted standard, and exceptions are noted in the summary table for local jurisdictions that accept a different level of service standard for a certain section of road or for Congestion Management Program locations that have a different level of service standard. The table also summarizes the impact criteria used for identifying project impacts. They are based on the intersection performance criteria and establish the "threshold of significance" required for impact identification.

Freeway Ramps Performance Criteria

The peak hour is the time period typically used by Caltrans for freeway interchange ramp performance analyses. For the traffic study area, levels of service for freeway ramps are based on a.m. and p.m. peak hour V/C ratios. Carrying capacities for the various ramp configurations that either exist or are anticipated on the freeway system are based on information in the *Highway Design Manual* (Caltrans, July 1995) and the *Ramp Meter Design Manual* (Caltrans, January 2000) and have been used for other studies in Orange County. The capacities for calculating ramp V/C ratios and the performance criteria are summarized in Table 4.1.5-3.

TABLE 4.1.5-2
ARTERIAL INTERSECTION PERFORMANCE CRITERIA

V/C Calculation Methodology
Level of service (LOS) to be based on peak hour intersection capacity utilization (ICU) values calculated using the following assumptions: Saturation Flow Rate: 1,600 vehicles/hour/lane for City of San Clemente intersections, 1,700 vehicles/hour/lane for all other jurisdictions in the study area. Clearance Interval: 0.00 for City of San Clemente intersections, 0.05 for all other jurisdictions in the study area.
Performance Standard
LOS D (peak hour ICU less than or equal to 0.90) for locations other than Congestion Management Program (CMP) intersections and Crown Valley Parkway intersections between I-5 and Marguerite Parkway.
LOS E (peak hour ICU less than or equal to 1.00) for CMP intersections (i.e., the I-5 ramp intersections at Crown Valley Parkway and at Ortega Highway, and the intersection of Moulton Parkway and Crown Valley Parkway) and Crown Valley Parkway intersections between I-5 and Marguerite Parkway.
Impact Thresholds
A freeway ramp is considered to be adversely impacted if: 1. The intersection is forecast to operate deficiently with the project (i.e., worse than the performance standard). 2. Compared to the ICU in the "without project" alternative, the ICU in a "with project" alternative increases as follows: • 0.01 or greater at County of Orange, City of Mission Viejo, City of Rancho Santa Margarita and City of San Juan Capistrano intersections (the impact threshold specified in the Growth Management Plan (GMP) and adopted by the Cities of Mission Viejo, Rancho Santa Margarita and San Juan Capistrano). • Greater than 0.01 at City of Laguna Hills, City of Laguna Niguel and City of San Clemente intersections (the impact threshold adopted by those Cities). • Greater than 0.03 at CMP intersections (the impact threshold specified in the CMP).
Source: The Ranch Plan EIR 589

Freeway Mainline Performance Criteria

The freeway mainline segment performance criteria are based on peak hour volumes by direction. When a peak hour V/C ratio for a freeway segment exceeds the theoretical (and practical) maximum V/C of 1.0, the actual value is reported, although it is recognized that this demand typically cannot be accommodated during the peak hour. In such cases, the excess peak hour demand will result in a peak period that exceeds one because vehicles will queue back from the bottleneck area. When this traffic condition occurs on a regular basis, many motorists will try to avoid the peak hours by traveling before or after the peak hours or may choose alternative arterial routes. The degree to which spreading into the peak period occurs is considered in the traffic forecasting process but is not used in the actual performance calculation.

Capacities for calculating peak hour V/C ratios for freeway mainline segments are based on information contained in the *Highway Design Manual* (Caltrans, July 1995) and have been verified by Caltrans staff in previous Orange County studies. A capacity of 2,000 vehicles per hour per lane (vphpl) is used for mixed-flow (general purpose) mainline freeway lanes, a capacity that corresponds to LOS E. Consistent with Caltrans' guidelines for high occupancy vehicle (HOV) facilities, a desirable operating capacity of 1,600 vphpl is applied for a one-lane buffer-separated HOV facility and a desirable operating capacity of 1,750 vphpl is applied for a two-lane buffer-separated HOV facility in which passing is allowed. These HOV capacities,

which are lower than the capacity for a mixed-flow freeway lane, reflect Caltrans' objective for HOV facilities to operate better than LOS E.

TABLE 4.1.5-3
FREEWAY RAMP PERFORMANCE CRITERIA

V/C Calculation Methodology
Level of service (LOS) to be based on peak hour volume/capacity (V/C) ratios calculated using the following ramp capacities: Metered On-Ramps A maximum capacity of 900 vehicles per hour (vph) for a one-lane metered on-ramp with only one -flow lane at the meter. A maximum capacity of 1,080 (20 percent greater than 900) vph for a one-lane metered on-ramp with one -flow lane at the meter plus one high occupancy vehicle (HOV) preferential lane at the meter. A maximum capacity of 1,500 vph for a one-lane metered on-ramp with two -flow lanes at the meter. A maximum capacity of 1,800 vph for a two-lane metered on-ramp with two -flow lanes at the meter. Non-Metered On-Ramps and Off-Ramps A maximum capacity of 1,500 vph for a one-lane ramp. A maximum capacity of 2,250 (50 percent greater than 1,500) vph for a two-lane on-ramp that tapers to one merge lane at or beyond the freeway mainline gore point and for a two-lane off-ramp with one auxiliary lane. A maximum capacity of 3,000 vph for a two-lane on-ramp that does not taper to one merge lane and for a two-lane off-ramp with two auxiliary lanes.
Performance Standard
LOS E (peak hour V/C less than or equal to 1.00).
Impact Thresholds
A freeway ramp is considered to be adversely impacted if: 1. The ramp is forecast to operate deficiently with the project (i.e., worse than the performance standard). 2. Compared to the V/C in the "without project" alternative, the V/C in a "with project" alternative increases as follows: • 0.01 or greater for ramps at County of Orange, City of Mission Viejo, City of Rancho Santa Margarita, and City of San Juan Capistrano intersections (the impact threshold specified in the GMP and adopted by the Cities of Mission Viejo, Rancho Santa Margarita, and San Juan Capistrano). • Greater than 0.01 for ramps at City of Laguna Hills, City of Laguna Niguel and City of San Clemente intersections (the impact threshold adopted by those cities).
Source: The Ranch Plan EIR 589

The capacity of a freeway auxiliary lane is generally different from that of a mainline lane because auxiliary lanes are typically implemented to preserve standard freeway capacities at locations where the geometric design is below standard (for example, between interchanges that are spaced less than one mile apart or where heavy on-/off-ramp volumes occur between interchanges. While an auxiliary lane can increase the overall capacity of a mainline freeway segment, the practical increase depends factors such as the length of the auxiliary lane and the on/off ramp volumes at the beginning and end of the auxiliary lane. The capacity assumptions for freeway mixed-flow, HOV, and auxiliary lanes and performance criteria are identified in Table 4.1.5-4.

TABLE 4.1.5-4
FREEWAY MAINLINE PERFORMANCE CRITERIA

V/C Calculation Methodology
Level of service (LOS) to be based on peak hour volume/capacity (V/C) ratios calculated using the following capacities: 2,000 vehicles per hour per lane (vphpl) for -flow (general purpose) lanes. 1,600 vphpl for a one-lane buffer-separated high occupancy vehicle (HOV) facility. 1,750 vphpl for a two-lane buffer-separated HOV facility. 0 vehicles per hour (vph) added capacity for an auxiliary lane that is 0.5 mile or less in length, an auxiliary lane that is between 0.5 mile and 1.0 mile in length carrying less than 1,000 vph of total on/off ramp volume at the beginning and end of the lane, or an auxiliary lane that acts as a climbing lane. 500 vph added capacity for an auxiliary lane that is between 0.5 mile and 1.0 mile in length carrying between 1,000 and 2,000 vph of total on/off ramp volume at the beginning and end of the lane. 1,000 vph added capacity for an auxiliary lane that is between 0.5 mile and 1.0 mile in length carrying more than 2,000 vph of total on/off ramp volume at the beginning and end of the lane. 2,000 vph added capacity for an auxiliary lane that is more than 1.0 mile in length.
Performance Standard
LOS E (peak hour V/C less than or equal to 1.00).
Impact Threshold
A freeway mainline segment is considered to be adversely impacted if: 1. The segment is forecast to operate deficiently (i.e., worse than the performance standard). 2. The V/C in a project alternative increases by greater than 0.03 (the impact threshold specified in the CMP) compared to the V/C in the "without project" alternative.
Source: The Ranch Plan EIR 589

When evaluating existing freeway conditions (i.e., based on traffic count data), the V/C and LOS criteria are applicable only in situations where the observed traffic volume occurs in stable flow. Freeway capacities can be substantially reduced under unstable congested conditions in which less traffic is accommodated than under ideal freeway operating conditions. LOS E has been established by Caltrans as the operating standard for freeway mainline segments and is consistent with the level of service standard specified in the County Congestion Management Program for Congestion Management Program facilities.

4.1.5.3 Traffic Analysis Scenarios

The overall approach to the impact analysis was noted earlier, and some elaboration of the various settings in the overall analysis follows.

Existing Conditions. This is the environmental baseline and is based on observed traffic conditions on the study area circulation system for preparation of the GPA/ZC EIR 589 traffic study. Average daily traffic (ADT) data was collected for the traffic study area as a part of GPA/ZC EIR 589. In addition, peak hour intersection counts were taken at 75 intersections in the traffic study area. Existing freeway traffic ramp data was also collected.

Long-Range (Year 2025) assumes cumulative growth in the traffic study area through year 2025, including buildout of the RMV Planning Area. The primary sources of information used in the GPA/ZC EIR 589 traffic study for areas outside of the RMV Planning Area were OCP-2000 Modified demographic data, which was adopted by the Orange County Board of Supervisors in 2000 and the General Plans for jurisdictions within the study area. The traffic study area circulation system assumes transportation improvements that have committed funding by 2010. The mitigation program for the RMV Planning Area is based on this assumption.

Three circulation system scenarios are used for the *Year 2025* analysis:

- Committed circulation system.[2]
- Committed circulation system plus La Pata Avenue extension.
- Committed circulation system plus La Pata Avenue extension and the southerly extension of SR-241.

4.1.5.4 Existing Conditions

Average Daily Traffic Volumes

Average daily traffic (ADT) data was collected for the traffic study area. In addition, peak hour intersection counts were taken at 75 intersections in the traffic study area. Figure 4.1.5-2 depicts existing ADT volumes on the traffic study area circulation system. Volumes on arterial roadways in the study area are based on weekday 24-hour traffic count data collected in 2003. Freeway counts on I-5 are from 2002 Caltrans annual ADT counts that have been converted to weekday ADT based on conversion factors provided by Caltrans. Existing ADT volumes shown on the SR-73 and SR-241 tollways are taken from 2002 count data supplied by the Transportation Corridor Agencies.

Intersection Levels of Service

As assessed in the GPA/ZC EIR 589, the following four intersections were found to be currently operating at deficient levels of service.

City of Laguna Niguel

20. Street of the Golden Lantern at Paseo de Colinas

City of Mission Viejo

3. Marguerite Parkway at Oso Parkway–a.m. peak and p.m. peak

11. Marguerite Parkway at Crown Valley Parkway–p.m. peak

Unincorporated Orange County

29. Antonio Parkway/La Pata Avenue at Ortega Highway–a.m. peak

Freeway Ramp Levels of Service

Under existing conditions, GPA/ZC EIR 589 found that the following three freeway ramps were operating at deficient levels of service:

- I-5 at Oso Parkway southbound off-ramp–p.m. peak

[2] Committed improvements include those in a capital improvement program of a local jurisdiction within the traffic study area, or projects that are currently funded by Caltrans through year 2010. Also included are improvements that have a specific funding source, such as the City of San Juan Capistrano's Reimbursement Agreement and Nexus Fee Program and the City of San Clemente's Regional Circulation Financing and Phasing Program (RCFPP). In addition, improvements that are part of conditions of approval for development that is included in the demographic data forecasts (i.e., OCP-2000 Modified projections) are also assumed to be committed.

- I-5 at Crown Valley Parkway southbound off-ramp–p.m. peak
- I-5 at Ortega Highway northbound on-ramp–a.m. peak

Freeway Mainline Levels of Service

Under existing conditions, the GPA/ZC EIR 589 found that the following freeway mainline segments were operating at deficient levels of service:

- Northbound I-5 north of Oso Parkway
- Southbound I-5 north of Oso Parkway
- Northbound I-5 north of Crown Valley Parkway
- Southbound I-5 north of Crown Valley Parkway
- Northbound I-5 north of Avery Parkway
- Southbound I-5 north of Avery Parkway
- Northbound I-5 north of Camino Capistrano

When the peak hour V/C ratio on a freeway mainline segment nears 1.0, unstable conditions can occur which may result in a breakdown in flow. This breakdown in flow causes a reduction in capacity (vehicle speeds drop below the speed at which maximum capacity is available), and the V/C increases, causing a further reduction in speed. The result is stop-and-go conditions. At the same time, the reduction in capacity and increase in V/C causes queue build-up and the stop-and-go conditions can extend for a considerable distance upstream of the problem section. This occurrence and its severity (i.e., length of queue) can vary on a daily basis from day to day, even when day-to-day fluctuations in traffic volumes are relatively small.

Speed and travel time measurements taken by Caltrans for the freeway system give an indication of when and where such conditions occur (i.e., for the day or days on which such measurements are taken). Specific level of service values are assigned based on the measured speeds; the level of service is determined by comparing the measured speed with a minimum desirable operating speed (typically 35 miles per hour [mph]). Travel time studies also reveal deficient freeway sections that are not in themselves a capacity problem, but which are adversely affected by queue build-up from a deficient section downstream. Therefore, LOS values as determined from speed measurements may not equate to the V/C because a queue can extend back from a deficient section to a section with a relatively low V/C.

For these reasons, the V/C based LOS is not always a true indication of the actual operating level of service on a freeway segment, particularly when a high V/C ratio on a given section adversely affects upstream sections because of queue build-up. The upstream section may have a relatively low V/C and suggest satisfactory operating conditions. However, stop-and-go conditions extending back to this section would cause it to be operating under congested conditions.

The Caltrans field measurements indicate that I-5 currently operates at a deficient LOS in the a.m. peak in the northbound direction from Camino Capistrano to Ortega Highway and from

Avery Parkway to north of Oso Parkway, and in the p.m. peak in the southbound direction from north of Oso Parkway to Avery Parkway.

4.1.5.5 Future Transportation System Improvements

Several transportation planning programs exist to provide direction for planning, developing, operating, and maintaining the highway circulation system in southern California. The Southern California Association of Governments (SCAG) is designated as the agency responsible for regional transportation planning in the SCAG region by both the state and federal governments. Orange County is included in the SCAG region together with Los Angeles, San Bernardino, Riverside, Ventura, and Imperial counties. The Regional Transportation Plan (RTP) is prepared by SCAG pursuant to the federal Transportation Equity Act for the 21st Century (TEA-21) and the state and federal Clean Air Acts. The RTP outlines the region's 25-year policy plan for meeting mobility goals, and identifies the master funding list for all transportation improvements needed to meet those goals. The RTP provides a long-range circulation plan for the regional circulation system. The RTP focuses on regional transportation improvements such as freeway widenings, HOV system enhancements, and freeway interchange improvements. By law, regionally significant projects must be included in the RTP to be eligible for federal or state funding and/or approvals. The Regional Transportation Improvement Program (RTIP) is the SCAG region's four-year capital improvement program for state and local highways. The RTIP represents the near-term implementation phase of the long-range RTP required under transportation legislation. The State Transportation Improvement Program (STIP) is a similar program overseen by the California Transportation Commission (CTC) to fund state highway projects. Both the STIP and the RTIP are used to program specific dollar amounts for transportation projects in each county.

The long-range circulation plan for the arterial system in Orange County is defined by the Orange County Master Plan of Arterial Highways (MPAH). The MPAH represents the arterial highway system in the Circulation Element of the County General Plan and the arterial street components included in the General Plan Circulation Elements of the local jurisdictions in Orange County. The MPAH also identifies the existing and proposed freeway and toll road components of the circulation system. The long-range (year 2025) analysis of cumulative project impacts assumes the existing study area circulation system plus implementation of only those MPAH and RTP improvements that are currently funded and/or committed.

Any freeway improvement project in Orange County that is included in the STIP and RTIP must also be included in the Capital Improvement Program (CIP) of the Orange County Congestion Management Program. Each county in California is required to prepare a Congestion Management Program to continue receiving gas tax funds made available through Proposition 111, which passed in June 1990. The OCTA is the lead agency for the Orange County Congestion Management Program, and is responsible for preparing and biennially updating the Congestion Management Program and for monitoring the implementation of the Congestion Management Program. With respect to freeway improvements included in the Congestion Management Program CIP, this involves monitoring the funding of such improvements through the STIP and RTIP and other available local and regional funding programs.

Committed Circulation System

Committed improvements include those in a capital improvement program of a local jurisdiction within the study area, or projects that are currently funded by Caltrans. Also included are improvements that have a specific funding source, such as the City of San Juan Capistrano's Reimbursement Agreement and Nexus Fee Program. In addition, improvements that are part of

conditions of approval for development that is included in the demographic data forecasts are also assumed to be committed.

Figure 4.1.5-3 depicts the committed circulation system in the traffic study area (funded improvements through year 2010). A list of the improvements contained in the committed circulation system and the source of funding or source of commitment as of the time of certification of GPA/ZC EIR 589 is provided in Table 4.1.5-5. The major study area roadway improvements that are committed include widening of Crown Valley Parkway to eight lanes and selected intersection improvements.

It is noted that the traffic improvements which were included in the mitigation program for GPA/ZC EIR 589, which was adopted by the County of Orange Board of Supervisors in conjunction with its approval of the GPA/ZC project, could be considered as "committed improvements." However, in order to be consistent with the approach for the Coordinated Planning Process for the GPA/ZC, SAMP, and NCCP/MSAA/HCP, and their associated environmental analysis documents, these traffic improvements are presented here as a part of the County of Orange's mitigation program.

MPAH Buildout Circulation System

Figure 4.1.5-4 depicts the future circulation system in the study area based on full buildout of the General Plan Circulation Elements for the cities in the traffic study area, as well as the Orange County MPAH. Table 4.1.5-6 lists the non-committed improvements (no committed funding sources) associated with buildout of the study area circulation system as of the time of certification of GPA/ZC EIR 589.

TABLE 4.1.5-5
COMMITTED CIRCULATION SYSTEM IMPROVEMENTS (YEAR 2010) IN THE TRAFFIC STUDY AREA

Facility	Jurisdiction	Improvement	Source[a.]
Antonio Parkway (Oso Parkway to Crown Valley Parkway)	County of Orange	Widen to six lanes.	1
Avenida La Pata (Avenida Pico to Avenida Vista Hermosa)	San Clemente	Construct as a six-lane major arterial.	2
Avenida Talega (east of Avenida Vista Hermosa)	San Clemente	Extend as secondary arterial.	3
Avenida Vista Hermosa (Camino Vera Cruz to north of Avenida La Pata)	San Clemente	Construct as a four-lane primary arterial.	2
Camino Capistrano (south of Oso Road to Junipero Serra Road)	San Juan Capistrano	Widen to four lanes.	4
Camino Capistrano (south of San Juan Creek Road)	San Juan Capistrano	Widen to three lanes (two southbound and one northbound).	4
Crown Valley Parkway (I-5 to east of Trabuco Creek bridge)	County/Mission Viejo	Widen to eight lanes.	1
Rancho Viejo Road (south of Junipero Serra Road)	San Juan Capistrano	Widen to four lanes.	4
Ortega Highway (north of I-5)	TCA/Caltrans	Widen to provide four general-purpose lanes in each direction.	5
SR-241 (Oso Parkway to Santa Margarita Parkway)	TCA/Caltrans	Widen to provide three general-purpose lanes in each direction.	5

Sources:
1 Conditioned for implementation with development of Ladera Ranch.
2 Implemented through the City of San Clemente Regional Circulation Financing and Phasing Program (RCFPP).
3 Conditioned for implementation with development of Talega.
4 Implemented through the City of San Juan Capistrano Reimbursement Agreement and Nexus Fee Program.
5 Implemented through the Foothill/Eastern Transportation Corridor Agency (TCA) Capital Improvement Plan (CIP).

Source: The Ranch Plan EIR 589

TABLE 4.1.5-6
NON-COMMITTED CIRCULATION SYSTEM IMPROVEMENTS IN THE TRAFFIC STUDY AREA

Facility	Jurisdiction	Improvement	Source[a.]
Alipaz Street (north of Del Obispo Street to Oso Road)	San Juan Capistrano	Construct as four-lane secondary arterial.	MPAH
Antonio Parkway (south of Ladera Ranch to Ortega Highway/SR-74)	County	Widen to six lanes.	MPAH
La Pata Avenue (south of Ortega Highway/SR-74)	County	Widen to four lanes.	MPAH
La Pata Avenue (south of Ortega Highway/SR-74 to San Clemente city limits)	County	Construct as a four-lane primary arterial.	MPAH
Avenida La Pata (San Clemente city limits to Avenida Vista Hermosa)	San Clemente	Construct as a six-lane major arterial.	MPAH
Camino Capistrano (south of San Juan Creek Road)	San Juan Capistrano	Widen to four lanes.	MPAH
Camino Capistrano (Junipero Serra Road to San Juan Capistrano city limits)	San Juan Capistrano	Widen to four lanes.	MPAH
Camino De Los Mares (east of Camino Del Rio to Camino Las Ramblas)	San Clemente	Construct as four-lane secondary arterial.	MPAH
Camino Del Rancho (I-5 to Avenida Pico)	San Clemente	Construct as a four-lane primary arterial.	MPAH
Camino Del Rio (current termination east to Avenida La Pata)	San Clemente	Construct as four-lane secondary arterial.	MPAH
Camino Las Ramblas (current termination east to Avenida La Pata)	San Juan Capistrano/ San Clemente	Construct as four-lane secondary arterial.	MPAH
Camino Los Padres (east of Street of the Golden Lantern to Camino Capistrano)	San Juan Capistrano	Construct as four-lane primary arterial.	MPAH
Crown Valley Parkway (Antonio Parkway to SR-241)	County	Construct as six-lane major arterial.	MPAH
Crown Valley Parkway (SR-241 to Oso Parkway)	County	Construct as four-lane primary arterial.	MPAH
I-5 (Oso Parkway to Crown Valley Parkway)	Caltrans	Add southbound auxiliary lane.	CT-RCR
I-5 (Pacific Coast Highway/SR-1 to Avenida Pico)	Caltrans	Add northbound and southbound high occupancy vehicle (HOV) lanes.	SCAG RTP
Junipero Serra Road (Camino Capistrano to Rancho Viejo Road)	San Juan Capistrano	Widen to four lanes.	MPAH
La Novia Avenue (north of San Juan Creek Road)	San Juan Capistrano	Widen to four lanes.	MPAH
Olympiad Road (Alicia Parkway to La Paz Road)	Mission Viejo	Widen to four lanes.	MPAH
Ortega Highway (Via Cordova to San Juan Capistrano city limits)	San Juan Capistrano	Widen to four lanes.	MPAH

TABLE 4.1.5-6
NON-COMMITTED CIRCULATION SYSTEM IMPROVEMENTS IN THE TRAFFIC STUDY AREA

Facility	Jurisdiction	Improvement	Source[a.]
Ortega Highway (San Juan Capistrano city limits to Orange County/Riverside County border)	County	Widen to four lanes.	MPAH
Oso Road (Alipaz Street to Camino Capistrano)	San Juan Capistrano	Widen to four lanes.	MPAH
San Juan Creek Road (Camino Capistrano to San Juan Capistrano city limits)	San Juan Capistrano	Widen to four lanes.	MPAH
San Juan Creek Road (San Juan Capistrano city limits to Avenida La Pata)	San Juan Capistrano	Construct as four-lane secondary arterial.	MPAH
SR-73 (north of I-5)	TCA/Caltrans	Add one northbound and southbound lane.	OCTA
SR-241 (Oso Parkway to Santa Margarita Parkway)	TCA/Caltrans	Add one northbound and southbound lane.	OCTA
SR-241 (Oso Parkway to I-5)	TCA/Caltrans	Construct and provide four lanes in each direction.	MPAH
Trabuco Canyon Road (extension to Avery Parkway)	Mission Viejo	Construct as two-lane collector road.	MPAH

Source:
CT-RCR: *Caltrans I-5 Route Concept Report* (May 2000)
MPAH: Orange County Master Plan of Arterial Highways
OCTA: Orange County Transportation Authority (consistent with the number of lanes on the SR-73 and SR-241 toll roads in the 2025 buildout version of OCTA's Orange County Transportation Analysis Model – OCTAM 3.1)
RTP: Regional Transportation Plan
SANDAG: San Diego Association of Governments
SCAG: Southern California Association of Governments

Source: The Ranch Plan EIR 589

4.1.6 AGRICULTURAL AND AGGREGATE RESOURCES

Portions of the following section have been summarized from the GPA/ZC 589 prepared for the County of Orange Planning and Development Services Division (County of Orange, 2004); therefore, GPA/ZC EIR 589 is incorporated by reference herein.

4.1.6.1 Agricultural Resources

To provide a context for the agricultural discussion, according to the California Farm Bureau Federation, in 2003 Orange County was ranked 24th in the state for value of agricultural production. This is a decrease from 2002 when Orange County was ranked 19th in the state. The top five crops by value in 2003 were nursery stock and cut flowers ($214.2 million), strawberries ($58.4 million), avocados ($19.5 million) peppers ($7.4 million) and green beans ($4.5 million). When all economic factors are considered, including payroll, purchase of goods and transportation, agriculture has a total value to the local Orange County economy of $1 billion.

The Orange County Agricultural Commission (http://www.ocagcomm.com) provides an historical perspective on the number of acres and overall value of agricultural production in Orange County over the past 20 years. Tables 4.1.6-1 and 4.1.6-2 show the number of acres and production levels in Orange County in 1984, 1994, and 2004.

TABLE 4.1.6-1
ACRES OF AGRICULTURE PRODUCTION IN ORANGE COUNTY

Crop	1984	1994	2004
Field	8,912	38,843	22,955
Tree Fruit and Berry Crops	10,438	4,521	3,962
Vegetables	11,358	6,917	2,011
Total	30,708	50,281	28,928
Source: http://www.ocagcomm.com/ser_crop2004_acreage.asp			

TABLE 4.1.6-2
GROSS VALUE OF AGRICULTURAL PRODUCTION IN ORANGE COUNTY

Crop	1984	1994	2004
Animal Industry	$2,251,900	$1,828,600	$305,570
Apiculture	$344,700	$17,300	$95,595
Field	$1,260,900	$1,910,700	$1,116,608
Nursery	$124,145,500	$127,988,400	$211,438,660
Tree Fruit and Berry Crops	$95,243,300	$40,539,700	$62,379,756
Vegetables	$46,568,200	$45,975,900	$18,226,782
Total	$269,814,500	$218,260,600	$293,562,971
Source: http://www.ocagcomm.com/ser_crop2004_acreage.asp			

County of Orange

The County of Orange General Plan Open Space (5) land use designation permits agriculture. The Land Use Element states, “The Open Space (5) category indicates the current and near-term use of the land, most of which is zoned agricultural. It is not necessarily an indication of

long-term commitment to open space use." Within both the SAMP Study Area and unincorporated Orange County, the majority of land designated Open Space (5) is located within the RMV Planning Area. Agricultural and grazing activities within the RMV Planning Area are addressed later in this chapter. Additionally, a portion of the Foothill/Trabuco Specific Plan Area and two locations with Caspers Regional Park are designated Open Space (5).

City of Dana Point

The City of Dana Point does not designate any land specifically for agricultural use. There is no land in Agricultural Preserves within the City.

City of Laguna Hills

The City of Laguna Hills does not designate any land specifically for agricultural use. There is an Open Space designation on the City General Plan. The primary purpose of this land designated Open Space is for the preservation of environmental resources, aesthetic attributes, and the protection of public health and safety. The General Plan does not identify any Agricultural Preserves within the City.

City of Laguna Niguel

The City of Laguna Niguel does not designate any land specifically for agricultural use. There is an Open Space designation on the City General Plan. This designation is primarily intended for passive recreation, visual enhancement, or resource conservation. There is no land in Agricultural Preserves within the City.

City of Mission Viejo

The City of Mission Viejo does not designate any land specifically for agricultural use. The City General Plan has a Recreation/Open Space designation; however, this designation is oriented toward providing for active and passive recreation and the protection of natural resources. There is no land in Agricultural Preserves within the City.

City of Rancho Santa Margarita

The City of Ranch Santa Margarita does not designate any land specifically for agricultural use. There is an Open Space designation on the City General Plan. This designation is primarily intended for recreation or resource conservation. Within the City's Sphere of Influence[1], there is an area designated on the General Plan for Future Planned Community. This area, located east of the Plano Trabuco Road/Trabuco Canyon Road intersection, is currently used for agriculture. This area is within the Foothill/Trabuco Specific Plan Area and is designated for residential development in the Foothill/Trabuco Specific Plan. A development proposal has been submitted to the County of Orange for approximately 90 acres of this area. There is no land in Agricultural Preserves within the City.

City of San Clemente

The City of San Clemente does not designate any land specifically for agricultural use. There are five Open Space designations on the City General Plan. The principal uses for these Open

[1] A sphere of influence designates a jurisdictions probably future physical boundary and service area. Therefore, the City General Plan designates an anticipated land use for an area that is not currently within the City's boundary. An annexation of the area would be required before it would become part of the City.

Space designations include parks, passive recreation, resource management, and golf courses. The General Plan does not identify land in Agricultural Preserves within the City.

City of San Juan Capistrano

The City of San Juan Capistrano General Plan Land Use Element (May 7, 2002) Industrial land uses designations include designation 4.2: Agri-Business. The Agri-Business designation allows for the production and sale of agricultural crops, including field and row crops, orchards and vineyards, nurseries, greenhouses, and hydroponic gardens, as well as animal breeding, boarding, raising, and training. The General Plan Land Use Element identifies 74 acres for Agri-Business land uses. None of this land is within an Agricultural Preserve.

RMV Planning Area

Portions of the RMV Planning Area are used for a variety of agricultural uses, including crops, orchards, nursery stock, and grazing. These resources are discussed further below.

Crops

Agricultural operations have been ongoing on the RMV Planning Area for over 120 years. The RMV Planning Area had the largest wheat and barley fields, as well as rows of black-eyed peas and sugar beets in Orange County during the late 1880s through the 1920s. Also, for some time after the 1960s, the agricultural land was used to produce grain crops.

Today, some parcels of the RMV Planning Area are being cultivated to produce lemons and avocados. There are currently 398 acres of lemon orchards and 32 acres of avocado orchards. Of these 430 acres used in production of lemons and avocados, a total of 354 acres are on lands designated as Important Farmland (see discussion of Important Farmland below). The locations of the existing orchards, as well as row crops, barley fields, and irrigated pastures, are depicted on Figure 4.1.6-1. The success of the lemon orchards has allowed Rancho Mission Viejo to become the largest producer of lemons in Orange County. In 2001, Rancho Mission Viejo's orchards produced an estimated 5,702 tons of lemons. This increased to 6,233 tons of lemons in 2002, 8,103 tons in 2003, 5,427 tons in 2004, and 8,550 tons in 2005. The increased number reflects an increased yield, as well as more acres in cultivation. In 2005, the avocado orchards produced 7,500 pounds of salable crop.

The lemon orchards were planted in three groups: 1979, 1992 to 1995, and 1998 to current. The avocado orchards were planted between 2001 and current. In general, lemon orchards are commercially viable for up to 28 years and are productive at the end of their second year. After this period of time production is not always sufficient to be economically viable. Avocados start bearing fruit in limited amounts after three years and are considered mature between six and seven years of age. Avocado trees are generally commercially viable for approximately 30 years.

Additionally, Rancho Mission Viejo usually plants between 800 and 1,000 acres of barley in several locations north of Ortega Highway. In 2003, 886 acres of barley were planted, and 950 acres of barley was planted in 2004. The 2005 crop has not been planted yet. The fields are not irrigated and levels of production are inconsistent dependent on weather conditions (i.e., amount of rainfall). This limited barley crop primarily serves as feed for Rancho Mission Viejo cattle. In years where the crop produces more than is needed for Rancho Mission Viejo cattle, the excess is sold to other local agricultural operations. The amount of revenue from the sale of excess is minimal; therefore, barley sales are not considered toward agricultural revenue.

In 2003, an approximately 52-acre parcel located at the northwest quadrant of the Ortega Highway and La Pata Avenue intersection was cultivated with green beans. This site is designated as Prime Farmland. This site was previously a pasture. It is anticipated that this field will continue to be planted with a variety of row crops until it is developed pursuant to the RMV Proposed Project.

Infrastructure used to serve the agricultural operation, namely citrus and avocado production and limited irrigated pasture (horse grazing), includes mainline water lines, irrigation systems, and ranch roads. With the exception of Cristianitos Road, all of the ranch roads are graded dirt roadways. Verdugo Road is a gravel surface road.

Nurseries

Rancho Mission Viejo leases land to commercial nurseries for landscape and greenhouse production. Table 4.1.6-3 lists the nurseries within the RMV Planning Area, the size of the operation, type of production, and the end date of the lease.

TABLE 4.1.6-3
NURSERY LEASES ON THE RMV PLANNING AREA

Leaseholder	Size of Lease	Type of Production	Lease Expiration
Tree of Life Nursery	35 acres	Wholesale nursery	Renewed yearly in July
Color Spot Nursery	243.7 acres	Wholesale nursery	December 31, 2006
DM Color Express Nurseries	29.4 acres	Wholesale nursery	monthly
Miramar Wholesale Nurseries	17 acres	Wholesale nursery	monthly
Source: Rancho Mission Viejo, 2003.			

Presently, there are approximately 325 acres used by commercial nurseries on the RMV Planning Area. The nursery stock is grown in containers rather than in the ground plantings. According to the Orange County Farm Bureau, nursery stock and cut flowers is the number one crop in Orange County by value. The estimated value for 2002 was $232.1 million. The estimated value of the container plants is between $50,000 and $100,000 per acre.

Ranching Operations

Historically, the RMV Planning Area supported several thousand head of cattle. In recent years, there has been an average of 500 head of cattle that graze on the approximately 19,100 acres of pasture located within the RMV Planning Area boundary. Within the RMV Planning Area, approximately 86 percent of the area is designated as Grazing Land as part of the California Department of Conservation Farmland Mapping and Monitoring Program. This acreage constitutes 52 percent of the lands designated for grazing in Orange County.

Historically, the RMV Planning Area had 22 designated pasture areas for grazing of cattle. Currently, only 11 pastures within the Planning Area are being used. These pastures are depicted in Figure 4.1.6-2. In addition, there are several irrigated pastures in the vicinity of San Juan Creek (Figure 4.1.6-1). The following provides a brief overview of the characteristics of each pasture.

- ***Chiquita and Lower Chiquita Pasture*.** These two areas are currently being grazed as one pasture. Other agricultural operations, in the form of citrus, avocados, and barley fields, are also carried out in this area. Cattle are excluded from the agricultural

production areas. Water is provided by cattle trough and via Chiquita Creek. The troughs are filled by pipeline.

- ***Vineyard Pasture*.** Located within the valley floor of the Gobernadora Sub-Basin, the pasture is enclosed by four-strand barbed wire fence. Barley is often grown in the alluvial valley of this pasture. Annual grasslands are also used for grazing. The internal fencing keeps the cattle out of GERA. Cattle troughs and Gobernadora Creek provide water to the pasture.

- ***River Pasture.*** This pasture straddles San Juan Creek. There are agricultural activities (barley) within this area. Water is provided via San Juan Creek and water troughs when the creek is dry.

- ***Bull Pasture*.** Located west of Gobernadora Creek, the pasture is enclosed by four strand barbed wire fence. Barley is often grown in the alluvial valley of this pasture. Annual grasslands are also used for grazing. A cattle trough provides water to the pasture.

- ***Lower Gobernadora*.** Located south of Bull Pasture, this area shares fencing with the adjacent pasture areas. Barley is often grown in alluvial valley of this pasture. Annual grasslands are also used for grazing. The internal fencing keeps the cattle out of GERA. Cattle troughs provide water to the pasture.

- ***South 40 Pasture*.** This pasture is located south of Ortega Highway. Barley is grown on the lower elevations in this area. Annual grasslands are also used for grazing. Water is provided via water troughs.

- ***Gabino.*** This pasture is located in the eastern portion of the SAMP Study Area. Water is provided via Jerome's Lake, water troughs, and Gabino Creek (when water is available).

- ***Cristianitos*.** Located south of Ortega Highway and east of Cristianitos Road, this pasture does have limited agricultural areas. Lemons and avocados are grown in the southeastern portion of this pasture. Fencing is used to keep the cattle from the adjacent pastures and out of the citrus areas. Water is provided via three defunct mining mining ponds and water troughs.

- ***Rinconada*.** This pasture is located south of Ortega Highway and east of the Sierra Pasture. Fencing keeps the cattle from the roadway, the adjacent landfill, and the Donna O'Neill Land Conservancy to the south. This area is disturbed from the Oglebay Norton Industrial Sands (ONIS) operation. No agricultural activities are located in this area. Water is provided via troughs and the mining pond associated with ONIS.

- ***Sierra.*** Sierra is located south of Ortega Highway and east of La Pata Avenue. Fencing separates this pasture from the roadways and the Prima Deshecha Landfill. Cattle are also excluded from the Ranch House area. Water is provided via water troughs.

Cattle are rotated between the pastures taking into account available water, forage productivity, and a desire to maintain an average of 25 percent residual dry matter for natural pastures. Generally, the cattle are grazed in the natural southern pastures (South 40, Sierra, Rinconada, Cristianitos, Gabino, and Talega) from October to May. In late May or early June, the cattle are moved to the northern pastures. This allows the pastures a fallow period and the cattle are able to benefit from the areas planted with barley.

Farmland Classification

The California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status. The best quality land is called Prime Farmland. The maps are updated every two years with the use of aerial photographs, a computer mapping system, public review, and field reconnaissance. The goal of the FMMP is to provide consistent and impartial data to decision makers for use in assessing present status, reviewing trends, and planning for the future of California's agricultural land resources.

For Prime Farmland or Farmland of Statewide Importance, the soil must meet the physical and chemical criteria as determined by the United States Department of Agriculture Natural Resources Conservation Service (NRCS). NRCS compiles lists of which soils in each survey area meet the quality criteria. Factors considered in qualification of a soil by NRCS include:

- Water moisture regimes, available water capacity, and developed irrigation water supply
- Soil temperature range
- Acid-alkali balance
- Water table
- Soil sodium content
- Flooding (uncontrolled runoff from natural precipitation)
- Erodibility
- Permeability rate
- Rock fragment content
- Soil rooting depth

Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are collectively defined as "Important Farmland." Grazing lands are also considered farmland, though are not included as Important Farmland. The use of the grazing lands for ranching activities is discussed below. The following identification of the farmland classifications is excerpted from the California Department of Conservation Office of Land Conservation, "A Guide to the Farmland Mapping and Monitoring Program."

- ***Prime Farmland (P)*.** Prime Farmland is land, which has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

- ***Farmland of Statewide Importance (S)*.** Farmland of Statewide Importance is land other than Prime Farmland, which has a good combination of physical and chemical characteristics for the production of crops. It must have been used for the production of irrigated crops within the last three years. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

- ***Unique Farmland (U)*.** Unique Farmland is land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance. It must be currently used for the production of specific high economic value crops (as listed in the last three years of California Agriculture produced by the California Department of Food and Agriculture). It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. Examples of such crops may include oranges, olives, avocados, rice, grapes, and cut flowers. It does not include publicly owned lands for which there is an adopted policy preventing agriculture use.

- ***Farmland of Local Importance (L)*.** Farmland of Local Importance is either currently producing crops, or has the capability of production. Farmland of Local Importance is land other than Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. This land may be important to the local economy due to its productivity.

- ***Grazing Land (G)*.** Grazing Land is land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock. The minimum mapping unit for Grazing Land is 40 acres. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities.

- ***Urban and Built-up Land (D)*.** Urban and Built-Up Land is used for residential, industrial, commercial, construction, institutional, public administrative process, railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other development purposes. Highways, railroads, and other transportation facilities are mapped as a part of Urban and Built-up Land, even though they are associated with agriculture.

- ***Land (X)*.** Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Land.

Based on a review of the 2004 Orange County Important Farmland map, prepared by the California Department of Conservation, the SAMP Study Area contains approximately 1,502 acres of Important Farmland. Table 4.1.6-4 provides a breakdown of the number of acres of classified farmland types within the SAMP Study Area, RMV Planning Area, Orange County, and Statewide. As shown in the table, the SAMP Study Area contains approximately nine percent of the Important Farmland in Orange County and approximately two one-hundredths of a percent of the Important Farmland statewide. Figure 4.1.6-3 depicts the locations of Important Farmland within the SAMP Study Area.

TABLE 4.1.6-4
SAMP STUDY AREA FARMLAND BY CLASSIFICATION

Farmland Classification	Acres within SAMP Study Area[a]	Acres within the RMV Planning Area	Acres within Orange County	Acres Statewide
Prime Farmland	478	319	10,127	4,784,390
Farmland of Statewide Importance	57	61	763	2,383,024
Unique Farmland	967	576	6,063	1,224,328
Farmland of Local Importance[b]	0	0	0	3,036,514
Grazing	27,368	20,016	37,964	13,553,757

a. These figures represent the farmland designations in Orange County. Within the SAMP Study Area there are 12,308 acres within Riverside County that are designated Other. This area represents the Cleveland National Forest area.
b. Orange County has not designated any farmland as being locally important.

Williamson Act

In 1965, the state enacted the California Land Conservation Act, more commonly known as the Williamson Act (Government Code Section 51230 et seq.). The Williamson Act was adopted as a means of encouraging the preservation of the state's agricultural lands. As a means to implement the act, a land contract is established, whereby the County Board of Supervisors or City Council stabilizes the taxes on qualifying lands in return for an owner's guarantee to keep the land in agricultural preserve status for a 10-year length of time. Each year, on the anniversary date of the contract, the contract is automatically renewed unless a notice of nonrenewal is filed.

In 1969, an agricultural preserve boundary for the RMV Planning Area was established that encompassed 36,619 acres. Since the date of execution of the original Williamson Act contract agreement, approximately 26,779 acres have been removed from the agricultural preserve because they were subsequently identified as exceptions to the land conservation agreement, were added to O'Neill Regional Park, or expired (i.e., notices of non-renewal were filed and the contract was allowed to expire). Currently, 9,840 acres remain within the Williamson Act contract and notices of non-renewal have been filed for all of those acres. Regardless of the RMV Proposed Project, the contract is set to expire on 289 acres on December 31, 2005, 1,733 acres on December 31, 2006, and 7,818 acres on December 31, 2008. Figure 4.1.6-4 depicts the lands within the RMV Planning Area within the agricultural preserve and when the contract obligations for the individual areas are set to expire.

Figure 4.1.6-5 depicts the boundaries of the Agricultural Preserve overlaid on the Important Farmland data for the RMV Planning Area. Within the Agricultural Preserve areas, there are 121 acres of Prime Farmland, 21 acres of Farmland of Statewide Importance, and 12 acres of Unique Farmland.

4.1.6.2 Aggregate Resources

Orange County has limited amounts of mineral resources of sufficient quality and quantity that can be mined commercially. Of particular importance are those mineral resources necessary to meet the County's existing and future development needs, such as construction aggregate. Neither, the local General Plans nor the California Geological Survey identifies other mineral resources in Orange County; therefore, the analysis is limited to aggregate resources.

There are four primary areas within opportunities for mineral resource recovery operations within the SAMP Study Area. These are the Arroyo Trabuco, San Juan Creek, the Oglebay Norton Industrial Sands (ONIS), and Ortega Rock. The San Juan Creek and ONIS facilities are located within the RMV Planning Area. Operations in the San Juan Creek are no longer active. ONIS is an ongoing operation south of Ortega Highway and east of the Prima Deshecha Landfill. The Arroyo Trabuco area is located to the west of the RMV Planning Area. Activities ceased in 1997. The Ortega Rock facility is located in Lucas Canyon northeast of the RMV Planning Area. This facility has also produced aggregate resources under a Sand and Gravel Site Permit issued by the County of Orange. Current production has been deferred pending site maintenance and production studies, but the facility is capable of resuming and increasing as development within the RMV Planning Area occurs.

In 1994, the California Department of Conservation, California Geological Survey, published an updated report identifying significant sand and gravel resources for the Orange County region. These resource areas are located in portions of the Santa Ana River, Santiago Creek, San Juan Creek, the Arroyo Trabuco and other areas. The specific mineral areas classified and designated are indicated as "resource sectors." A resource sector is an area judged to contain a significant deposit of construction-quality aggregate that is available, from a general land use perspective, to meet the future needs of the Production-Consumption region. The boundaries of each resource sector generally encompass fairly uniform deposits. For example, sector boundaries would be established between that part of a natural deposit formed on an alluvial fan and that part with the confines of an adjacent modern stream channel and its floodplain. The use of these resource sectors provides a reliable method of estimating the tonnage of material available in each mineral deposit. Table 4.1.6-5 lists the resource areas that have been identified in Orange County.

TABLE 4.1.6-5
AGGREGATE RESOURCES OF THE ORANGE COUNTY REGION

Resource Area	Million Short Tons[a.]
Santa Ana River[b.]	42
Lower Santiago Creek [b.]	187
Upper Santiago Creek [b.]	26
San Juan Creek	120
Arroyo Trabuco	78
Total	**453**

a. Includes reserves as well as all potential usable aggregate materials that may be mined in the future.
b. Outside of SAMP Study Area

Source: California Geological Survey Updated Special Report 143, 1994.

Of the sites identified by California Geological Survey, the Arroyo Trabuco and San Juan Creek site are located within the SAMP study area boundaries. Although resources exist, mining activities ceased in 1997 for both the Arroyo Trabuco and San Juan Creek. Reclamation of the mining areas has been accomplished.

Although not designated by the state as a mineral recovery zone, since 1984, the ONIS site has been a silica sand mining and processing facility located within the boundaries of the RMV Planning Area. Approximately 500,000 tons of silica sand is processed annually for building materials such as stucco, grouts, and mortars, as well as for use in golf courses, playing fields, and playgrounds (source: www.oglebaynorton.com). Exploration and mining of feldspar, clay,

and ancillary minerals and substances also occurs at this location. The facility includes an open pit mine, a large earthen dam and associated reservoirs, a processing plant, office complex, scale house, fueling facility, maintenance shop, several storage buildings, sheds and trailers, and open vehicle/equipment storage areas. This site has a County of Orange Zoning designation of PC, Planned Community and is not identified on the County General Plan as an important mineral resource area.

Ortega Rock is an existing aggregate resource production facility. The County Sand and Gravel Site Permit for this facility covers approximately 126 acres of the 343 acres zoned for sand and gravel extraction. While current production has been deferred pending site maintenance and production studies, the operational lifespan of the quarry is anticipated to extend from 35 to 75 years based on the volume of available material and the estimated rate of extraction (between 400,000 to 1,000,000 tons annually). Ortega Rock is subject to the State Mining and Reclamation Act (SMARA) and the Reclamation Plan for the facility includes a revegetation program that outlines the measures and monitoring strategy to be employed to return the site to a more natural appearance following extraction activities. The ultimate disposition of the site has been predetermined in accordance with the adoption of the Rancho Santa Margarita Planned Community in 1982. The 343 acres that are zoned for sand and gravel extraction are to become a part of Caspers Wilderness Park upon depletion of the mined resource, cessation of mining operations, and implementation of the Reclamation Plan per SMARA. An irrevocable offer of dedication was tendered and agreed to by the County of Orange Board of Supervisors in 1982 for this purpose.

The Ortega Rock site is recognized as one of the most significant permitted mineral resource production sites in the County. Now operating under County Sand and Gravel Site permit number SP 91-072, the site was originally developed in 1962 to provide materials for the construction of Dana Point Harbor. Today, this hard rock quarry is prized for its mineral resource of extremely hard and durable rock that is uses for a variety of materials, including subdrain and filter rock, and crushed stone for construction aggregates used in Portland cement concrete and asphaltic concrete. It is the only available quarry in the County to provide large sized hard rock used for rip rap and jetties. It is estimated that the quarry reserves could support production for over 50 years at its approved extraction rates.

There are no other active sand and gravel recovery activities within the SAMP Study Area nor do the cities' General Plans identify significant resources.

4.1.7 AIR QUALITY

4.1.7.1 Regional Study Area

The California Air Resources Board (ARB) divides the state into air basins that share similar meteorological and topographical features. Orange County is in the South Coast Air Basin (SCAB), a 6,600-square-mile area comprised of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The SCAB's climate and topography are highly conducive to the formation and transport of air pollution. Peak ozone concentrations in the SCAB over the last two decades have occurred at the base of the mountains around Azusa and Glendora in Los Angeles County and at Crestline in the mountains above the City of San Bernardino.

4.1.7.2 Criteria Air Pollutants

The quality of the ambient air is affected by pollutants emitted into the air from stationary and mobile sources. Stationary sources can be divided into two major subcategories: point sources and area sources. Point sources consist of one or more emission sources at a facility with an identified location and are usually associated with manufacturing and industrial processing plants. Area sources are widely distributed, such as residential water heaters, and produce many small emissions.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources include automobiles, trucks, and buses. Indirect sources are sources that, by themselves, may not emit air contaminants, but which indirectly cause the generation of air pollutants by attracting vehicle trips or consuming energy. Examples of indirect sources include office complexes that generate commuter trips and commercial centers that consume energy resources through the use of natural gas for space heating. Indirect sources also include actions proposed by local governments, such as redevelopment districts, and private projects involving the development of either large buildings or tracts. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment.

There are many potentially dangerous substances present in the ambient air, but only a very few are present in sufficient quantities to be of immediate concern. Pollutants considered to be sufficiently hazardous to health to warrant the establishment of air quality standards by the federal or state government are called "criteria air pollutants." Criteria air pollutants are divided into primary and secondary pollutants. Primary criteria air pollutants are those that are emitted directly from sources, including carbon monoxide (CO), sulfur dioxide (SO_2), and most fine particulate matter (PM_{10}, $PM_{2.5}$), including lead (Pb) and fugitive dust. Primary criteria air pollutants that do not have federal standards but are regulated at the state-level for their contribution to the formation of secondary criteria air pollutants include reactive organic gases (ROGs), oxides of nitrogen (NO_X), and volatile organic compounds (VOCs).

Secondary criteria air pollutants are those pollutants formed by chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants.

The following paragraphs describe these primary and secondary criteria air pollutants and their known health effects.

Primary Criteria Air Pollutants

Carbon Monoxide (CO). Carbon monoxide (CO) is a colorless, odorless, toxic gas produced by the incomplete combustion of carbon substances (e.g., gasoline or diesel fuel). Over 80 percent of the CO emitted in urban areas is contributed by motor vehicles. High levels of CO commonly occur near freeways and busy roadways. The primary adverse health effect associated with CO is the interference of normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.

Sulfur Dioxide (SO_2). Sulfur dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. Fuel combustion is the primary source of SO_2. Fuels such as natural gas contain very little sulfur and, consequently, have very low SO_2 emissions when combusted. By contrast, fuels high in sulfur content, such as coal or heavy fuel oils, can emit large amounts of SO_2 when combusted. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue.

Particulate Matter (PM). Particulate matter (PM) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulate are now recognized. Coarse particulate, or PM_{10}, includes that portion of the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 one-millionths of a meter or 0.0004 inch) or less. Fine particulate, or $PM_{2.5}$, has an aerodynamic diameter of 2.5 microns (i.e., 2.5 one-millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind action on the arid landscape also contributes substantially to the local particulate loading. Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in individuals who are naturally sensitive or susceptible to breathing problems.

Fugitive dust has primarily two public health and safety concerns. The first concern is that of respiratory problems attributable to the suspended particulates in the air. The size of the particles allows them to easily enter the air sacs in the lungs where they may be deposited, resulting in adverse health effects. The second concern is that of motor vehicle accidents caused by reduced visibility during severe wind conditions. Fugitive dust may also cause significant property damage during strong windstorms by acting as an abrasive material agent (much like sandblasting activities). Finally, fugitive dust can result in a nuisance factor due to the soiling of proximate structures and vehicles.

Lead (Pb). In the past, automotive sources were the major contributor of lead emissions to the atmosphere. As a result of EPA's regulatory efforts to reduce the content of lead in gasoline, the contribution of air emissions of lead from the transportation sector, and particularly the automotive sector, has greatly declined over the past two decades. Lead concentrations in southern California once exceeded the state and federal air quality standards by a wide margin, but have not exceeded these air quality standards at any regular monitoring station since 1982. Consequently, the area is designated as an attainment area for lead by both the EPA and ARB. Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs.

Reactive Organic Gases (ROGs). Reactive organic gases (ROGs) are composed of non-methane hydrocarbons which may contribute to the formation of smog. They are sometimes referred to as Non-Methane Organic Gases (NMOGs). Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROG include the

evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROG, but by reactions of ROG to form secondary pollutants.

Oxides of Nitrogen (NO_X). Oxides of nitrogen (NO_X) are colorless, odorless gases formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure (i.e., internal combustion engine emissions). NO_X serves as an integral participant in the process of photochemical smog production. NO_X is a respiratory irritant; however, its health effects are more acute when it forms secondary pollutants such as nitrogen dioxide (NO_2) or ozone (O_3).

Volatile Organic Compounds (VOCs). Volatile organic compounds (VOCs) exist in the ambient air, often as odorous gases produced by the evaporation of hydrocarbon compounds, including gasoline, alcohol, and solvents used in paints. VOCs contribute to the formation of smog and/or may be toxic themselves.

It should be noted that there are no state or federal ambient air quality standards for VOCs because they are not classified as criteria pollutants. VOCs are regulated; however, because a reduction in VOC emissions reduces certain chemical reactions which contribute to the formation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, contributing to higher PM_{10} and lower visibility levels.

Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOC because of interference with oxygen uptake. In general, ambient VOC concentrations in the atmosphere are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis, even at low concentrations. Some hydrocarbon components classified as VOC emissions are thought or known to be hazardous. Benzene, for example, is a hydrocarbon component of VOC emissions that is known to be a human carcinogen.

Secondary Criteria Air Pollutants

Ozone (O_3). Ozone (O_3) is a secondary pollutant that is not directly emitted from a particular source. It is one of a number of substances called photochemical oxidants that are formed primarily when reactive organic compounds (ROCs) and NO_X (both byproducts of the internal combustion engine) react with sunlight. O_3 is present in relatively high concentrations in the SCAB, and the damaging effects of photochemical smog are generally related to the concentrations of O_3. O_3 may pose a health threat to those who already suffer from respiratory diseases, as well as healthy people. Additionally, O_3 has been tied to crop damage, typically in the form of stunted plant growth and pre-mature death. O_3 can also act as a corrosive agent resulting in property damage, such as the embrittlement of rubber products.

Nitrogen Dioxide (NO_2). Nitrogen Dioxide (NO_2) is a byproduct of fuel combustion. The principal form of NO_2 produced by combustion is NO. NO reacts with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. An increase in the incidence of bronchitis in children two and three years of age has also been observed at concentrations below 0.3 part per million (ppm). NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. The highest concentrations generally occur during the fall when atmospheric conditions trap ground-level

releases of NO_2 and there is insufficient radiation intensity (sunlight) to oxidize it. NO_2 also contributes to the formation of PM_{10}.

4.1.7.3 Regulatory and Planning Requirements for the South Coast Air Basin

Regulatory Setting

Federal

The federal Clean Air Act (CAA), enacted in 1970 and last amended in 1990, represents the cornerstone of the national air pollution control effort. Basic elements of the CAA include federal ambient air quality standards for major air pollutants, hazardous air pollutants standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The U.S. Environmental Protection Agency (EPA) has set national ambient air quality standards (NAAQS) for O_3, NO_2, CO, PM_{10}, and airborne lead. An area where the NAAQS for a pollutant is exceeded more than three times in three years can be considered a nonattainment area subject to planning pollution control requirements that are more stringent than normal requirements. The Clean Air Act Amendments of 1990 set out a classification system for nonattainment areas that established attainment dates based on the design value for the area. Under this system, areas with higher baseline readings, or design values, were given more time to achieve compliance with the federal standards.

Nonattainment classifications and compliance dates vary by pollutant. Ozone nonattainment areas were designated as marginal, moderate, serious, severe, or extreme. Following the 1990 amendment, Marginal Ozone nonattainment areas were given 3 years to come into attainment with the standards, moderate areas were given 6 years, and serious areas were given 9 years. Furthermore, following the 1990 amendment, Severe-15 areas were required to develop plans that would bring the areas into attainment within 15 years, and severe-17 areas were given 17 years. Up to 20 years was provided for areas classified as extreme.

Carbon monoxide and PM_{10} nonattainment areas were designated as either moderate or serious. Moderate CO areas were required to demonstrate attainment by December 31, 1995, and serious CO areas were given an additional 5 years past that date. Moderate PM_{10} areas were required to demonstrate attainment by December 31, 1994, and serious PM_{10} areas were required to demonstrate attainment by the end of 2001.

State

In addition to federal requirements, each air basin must meet California Clean Air Act (CCAA) requirements. According to the CCAA, air pollution control districts must design their air quality attainment plans to achieve a reduction in basin-wide emissions of 5 percent or more per year (or 15 percent or more in a three-year period) for all non-attainment pollutants and their precursors. For emission reduction accounting purposes, the ARB established a seven-year initial reporting period (1988 to 1994) with reporting intervals every three years thereafter. New Air Quality Management Plans (AQMPs) were adopted by the air districts in 1989 to meet federal standards and in 1991 to meet California standards. These AQMPs were revised in 1994 and 1997, and the EPA approved the 1994 AQMP in 1996 as part of the State Implementation Plan.

Under federal conformity regulations, all federal or federally funded transportation projects must conform to the State Implementation Plan and must not impede progress toward attainment of the federal standards. To establish conformity, emissions from future projects must be accounted for in the future baseline emissions inventories, such that the attainment demonstrations include these future emissions. For transportation projects, planning is now underway to year 2030.

The ARB has established state ambient air quality standards to protect public health and welfare. Standards have been set for O_3, CO, NO_2, SO_2, $PM_{10,}$ sulfates, airborne lead, hydrogen sulfide, and vinyl chloride, at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases. The ARB carries out control program oversight activities, while local air pollution control districts, such as the South Coast Air Quality Management District (SCAQMD), have primary responsibility for air quality planning and enforcement. The ARB designates the attainment status of areas with respect to the state air quality standards, based on criteria adopted by the ARB and contained in Title 17 of the California Code of Regulations.

State and national air quality standards alike consist of two parts: an allowable concentration of a pollutant and an averaging time over which the concentration is to be measured. The allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops, and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (e.g., one hour), or to a relatively lower average concentration over a longer period (e.g., 8 hours, 24 hours, or 1 month). For some pollutants, there is more than one air quality standard, reflecting both its short-term and long-term effects.

Regional

The SCAQMD is the air pollution control agency for the SCAB. In addition to federal requirements, the SCAB and other air basins throughout the state must meet CCAA requirements. According to the CCAA, air pollution control districts must design their air quality attainment plans to achieve a reduction in basin-wide emissions of 5 percent or more per year (or 15 percent or more in a three-year period) for all non-attainment pollutants and their precursors. For emission reduction accounting purposes, the ARB established a seven-year initial reporting period (1988 to 1994) with reporting intervals every three years thereafter.

The SCAQMD and the Southern California Association of Governments (SCAG) jointly prepare the AQMP for the SCAB. The AQMP contains measures to meet state and federal requirements. When approved by the ARB and the EPA, the AQMP becomes part of the State Implementation Plan. New AQMPs were adopted by the air districts in 1989 to meet federal standards and in 1991 to meet California standards. These AQMPs were revised in 1994 and 1997, and the EPA approved the 1994 AQMP in 1996 as part of the State Implementation Plan.

After the EPA announced that it had concerns about the ozone control strategies in the 1997 AQMP, the SCAQMD revised its AQMP in 1999 to address the EPA issues. The revised plan, known as the 1997/1999 AQMP, was approved by the EPA on May 10, 2000 and replaced the 1994 AQMP as the federally enforceable State Implementation Plan for the SCAB. The most recent AQMP was prepared by the SCAQMD and SCAG in 2003, and the SCAQMD adopted the revised plan as the 2003 AQMP on August 1, 2003. ARB approved the 2003 AQMP in October 2003 and forwarded it to the EPA for review and approval. The 2003 AQMP was adopted by the EPA on April 9, 2004.

Attainment Status

Carbon Monoxide (CO). The 8-hour CO levels in the SCAB are roughly two times the state and federal standards. The 8-hour averages are trending slightly downward and the 1-hour average has generally trended downward in the past five years; however, the SCAB is classified as a serious nonattainment area for CO. The EPA deadline for attainment was to be December 31, 2000, however, the SCAB was granted an extension. The SCAB has not had more than one violation of the federal CO standard in the past two years. Therefore, the SCAB has met the criteria for CO attainment. However, the SCAB is still formally designated as a non-attainment area for CO until EPA designates it otherwise.

Sulfur Dioxide (SO_2). Federal and state SO_2 standards have not been exceeded in the SCAB for the past five years. The SCAB is considered to be in attainment by the EPA and ARB.

Particulate Matter (PM). In July 1997, the EPA promulgated a new 8-hour standard for fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). In 1999, a federal court ruling (*American Trucking Associations, Inc., et al.*, v. *United States Environmental Protection Agency*) blocked implementation of these standards. In February 2001, the United States Supreme Court upheld the standards but remanded some issues back to the Circuit Court. In March 2002, the Circuit Court upheld the standards. EPA announced its final air quality designations for the new $PM_{2.5}$ standard on December 17, 2004, designating the SCAB as a non-attainment area. EPA will issue implementation guidance for $PM_{2.5}$ plans before the end of 2005. The SCAQMD will have three years to submit a plan showing measures to meet the $PM_{2.5}$ standards. EPA is also developing guidance on how the new $PM_{2.5}$ standard will be implemented. Both the PM_{10} and $PM_{2.5}$ standards will apply once the new standards are fully implemented.

On June 20, 2002, the ARB revised the state's PM_{10} annual average standard to 20 micrograms per cubic meter (µg/m3) and established an annual average standard for $PM_{2.5}$ of 12 $\mu g/m^3$. These standards were approved by the Office of Administrative Law in June 2003 and are now effective. However, adequate technology to assess $PM_{2.5}$ impacts has not yet been developed, and PM_{10} emissions must be used as an indicator of potential $PM_{2.5}$ impacts. SCAQMD has not yet altered the recommended significance thresholds or analysis techniques based on these revised standards.

PM_{10} levels in the SCAB are currently four to ten times the state standard and the SCAB is currently in serious non-attainment for this pollutant. Attainment of all federal PM_{10} health standards is to be achieved by December 31, 2006.

Lead (Pb). Federal and state lead emissions have not been exceeded in the SCAB since 1982. The SCAB is considered to be in attainment for lead emissions.

Ozone (O_3). On April 15, 2004, the EPA released its list of 8-hour ozone non-attainment areas and identified a deadline for each non-attainment area to attain the standard. Areas with the highest 8-hour concentrations and the greatest number of days exceeding the new standard were given the longest time to reach attainment. The SCAB was designated by EPA as severe non-attainment for the new 8-hour ozone standard. Additionally, the EPA designated the SCAB as extreme non-attainment for 1-hour ozone. Attainment of all federal O_3 standards are to be achieved by November 15, 2010.

The SCAQMD now has until 2007 to submit a plan showing measures that would reduce ozone levels to below the federal 8-hour standard by June 15, 2021. As a part of the designation, the EPA announced that the 1-hour ozone standard would be revoked in June 2005. Thus, the

8-hour ozone standard attainment deadline of 2021 will supersede and replace the current 1-hour ozone standard attainment deadline of 2010.

Nitrogen Dioxide (NO_2). The national nitrogen dioxide (NO_2) standard was regularly exceeded in Los Angeles County until 1992, and the SCAB was the only NO_2 non-attainment area in the nation in 1998. NO_2.has steadily declined in maximum one-hour readings, number of violations, and maximum annual average concentrations over the last several years in the SCAB. The SCAB is a nonattainment area for NO_2 for purposes of state and federal air quality planning. Although the federal NO_2 standard has not been exceeded for four years, EPA has not formally changed the area's designation.

Ambient Air Quality Standards

Air quality impacts of a project, combined with existing background air quality levels, must be compared to the applicable ambient air quality standards (AAQS) to gauge their significance. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. The standards are designed to protect sensitive persons most susceptible to further respiratory distress, such as persons with respiratory illnesses or impaired lung function caused by other illness, the elderly, and young children.

Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. The SCAQMD's CEQA Air Quality Handbook defines land uses considered to be sensitive receptors as long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, child care centers, and athletic facilities. California standards are generally stricter than national standards, but have no penalty for non-attainment. California and national ambient air standards are shown on Table 4.1.7-1.

4.1.7.4 SAMP Study Area Existing Conditions

The SCAQMD is responsible for monitoring air quality in the SCAB and for adopting controls, in conjunction with ARB, to improve air quality. The SCAQMD has established 38 "source-receptor" areas (SRAs) for monitoring air pollution, based on topographical and meteorological barriers. The SAMP Study Area is located in SRA 21, Capistrano Valley, which is in the southernmost portion of Orange County and extends from the mountains to the coast. The SCAQMD does not maintain a monitoring station in this SRA. The SCAQMD monitoring station for this forecast area, known as Inland Orange County, is in SRA 19 (i.e., the Saddleback Valley).

Overall, air quality improved considerably throughout the SCAB in the 1990s. In 1990, the peak ozone concentration in SRA 19 was 0.19 parts per million (ppm) and the state ozone standard was exceeded 32 times. In 2002, the peak reading at that same station was 0.136 ppm and the State standard was exceeded only nine times. These improvements have occurred despite extensive population growth in Orange County during the past 12 years.

TABLE 4.1.7-1
AMBIENT AIR QUALITY STANDARDS

Air Pollutant	State Standard	Federal Standard	
		Primary	Secondary
Ozone (O_3)	0.09 ppm, 1-hr avg.	0.12 ppm, 1-hr avg. 0.08 ppm, 8-hr avg.	0.12 ppm, 1-hr avg. 0.08 ppm, 8-hr avg.
Respirable Particulate Matter (PM_{10})	50 $\mu g/m^3$, 24-hr avg. 20 $\mu g/m^3$ AGM	150 $\mu g/m^3$, 24-hr avg. 50 $\mu g/m^3$ AAM	150 $\mu g/m^3$, 24-hr avg. 50 $\mu g/m^3$ AAM
Fine Particulate Matter ($PM_{2.5}$)	No 24-hr., State std. 12 $\mu g/m^3$ AGM	65 $\mu g/m^3$, 24-hr avg. 15 $\mu g/m^3$ AAM	65 $\mu g/m^3$, 24-hr avg. 15 $\mu g/m^3$ AAM
Carbon Monoxide (CO)	9.0 ppm, 8-hr avg. 20 ppm, 1-hr avg.	9 ppm, 8-hr avg. 35 ppm, 1-hr avg.	None
Nitrogen Dioxide (NO_2)	0.24 ppm, 1-hr avg.	0.053 ppm, annual avg.	0.053 ppm, annual avg.
Sulfur Dioxide (SO_2)	0.25 ppm, 1-hr 0.04 ppm, 24-hr avg.	0.03 ppm, annual avg. 0.14 ppm, 24-hr avg.	0.5 ppm, 3-hr avg.
Lead (Pb)	1.5 $\mu g/m^3$, monthly avg.	1.5 $\mu g/m^3$, calendar quarter	1.5 $\mu g/m^3$
Visibility-Reducing Particles	Extinction coefficient of 0.23 per km, visibility of 10 miles at relative humidity less than 70%, 1 observation	—	—
Sulfates (SO_4)	25 $\mu g/m^3$, 24-hr avg.	—	—
Hydrogen Sulfide (H_2S)	0.03 ppm, 1-hr avg.	—	—
Vinyl Chloride	0.010 ppm, 24-hr avg.	—	—

ppm = parts per million by volume
$\mu g/m^3$ = micrograms per cubic meter
AAM = annual arithmetic mean
AGM = annual geometric mean

Source: California Air Resources Board 2004

Pending EPA designation of $PM_{2.5}$ non-attainment areas, the SCAQMD is monitoring levels of concentrations of $PM_{2.5}$ in the SCAB. Where readings are available, the $PM_{2.5}$ concentrations are shown in Table 4.1.7-2 for informational purposes. Readings for SRA 19 for five years, together with the applicable state and national standards, are also presented in this table.

Pollutant concentrations, particularly those of particulates, vary somewhat from year to year, depending on meteorological conditions. Although readings in SRA 19 for 1998 to 2002 (the most recent published data) are basically unchanged for ozone and carbon monoxide, concentrations of the two pollutants have declined since 1998. For all other pollutants, the observed concentration levels are basically unchanged over the past five-year period. The area experiences relatively low ozone pollution compared to elsewhere in the SCAB. Notwithstanding, concentrations of ozone are the highest in Orange County; state and national standards are regularly exceeded. As is the case throughout Orange County, carbon monoxide levels have not exceeded state and national standards in the period. Particulate readings are relatively constant and well below national PM_{10} standards, although they exceed state standards. The new national $PM_{2.5}$ standard would have been exceeded occasionally in SRA 19.

TABLE 4.1.7-2
SADDLEBACK VALLEY (INLAND ORANGE COUNTY) SRA 19
AIR QUALITY DATA SUMMARY

Pollutant Standards	1998	1999	2000	2001	2002
Ozone (O3)					
State standard (1-hr avg. 0.09 ppm)					
National standard (1-hr avg. 0.12 ppm)					
National standard (8-hr avg. 0.08 ppm)					
Maximum 1-hr concentration (in ppm)	0.16	0.01	0.13	0.125	0.136
Maximum 8-hr concentration (in ppm)	0.11	0.08	0.11	0.098	0.095
Number of days state standard exceeded	15	2	3	10	9
Number of days national 1-hr standard exceeded	1	0	1	1	2
Number of days national 8-hr standard exceeded	3	0	2	2	2
Carbon Monoxide (CO)					
State standard (1-hr avg. 20 ppm)					
National standard (1-hr avg. 35 ppm)					
State standard (8-hr avg. 9.0 ppm)					
National standard (8-hr avg. 9.0 ppm					
Maximum concentration 1-hr period (in ppm)	6.0	4.0	5.0	3.0	3.0
Maximum concentration 8-hr period (in ppm)	3.1	2.5	3.3	2.38	3.6
Number of days state/national 1-hr standard exceeded	0	0	0	0	0
Number of days state/national 8-hr standard exceeded	0	0	0	0	0
Nitrogen Dioxide (NO_2)[a.]					
State standard (1-hr avg. 0.25 ppm)					
National standard (0.0534 AAM in ppm)					
Annual arithmetic mean (in ppm)	0.0200	0.020	0.0205	0.0182	0.0187
Percent national standard exceeded	0	9	0	0	0
Maximum 1-hr concentration	0.12	0	0.11	0.08	0.11
Number of days state 1-hr standard exceeded	0	0.12 0	0	0	0
Suspended Particulates (PM_{10})					
State standard (24-hr avg. 50 µg/m3)					
National standard (24-hr avg. 150 µg/m3)					
Maximum 24-hr concentration	70	111	98[b.]	60	80
Percent samples exceeding state standard	10.2	10	3	5	8.3
Percent samples exceeding national standard	0	0	0	0	0
Suspended Particulates ($PM_{2.5}$)					
National standard (24-hr avg. 65 µg/m3)					
Maximum 24-hr concentration		56.6	94.7[2]	53.4	58.5
Percent samples exceeding national standard	NM	0	0	0	0

Note: 2002 data is the most current data available from the SCAQMD.
ppm = parts per million
µg/m3 = micrograms per cubic meter
NM = Mot Monitored. PM2.5 monitoring began in 1999.
a. Readings are from SRA 18 (North Orange County; NO_2 not monitored in SRA 19)
b. Year 2000 PM_{10} and $PM_{2.5}$ readings are from special monitoring station set up on temporary basis in SRA 19 and were only PM2.5 readings that year in SRA 19. PM_{10} readings were from some monitoring station for comparison purposes.

Source: SCAQMD Air Quality Data–1998 through 2002.

4.1.8 NOISE CONDITIONS

The USACE does not have adopted noise standards and therefore uses local jurisdictional standards. As such, this noise analysis is based on information from the Ranch Plan Final EIR 589 prepared for the County of Orange Planning and Development Services Division (County of Orange, 2004) hereby incorporated by reference, and the noise ordinances and/or General Plan Noise Elements of the cities of Dana Point, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, San Clemente, and San Juan Capistrano.

4.1.8.1 Background

Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dB higher than another is judged to be twice as loud; and 20 dB higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud).

Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. Community noise levels are measured in terms of the "A-weighted decibel," abbreviated dBA. Figure 4.1.8-1 provides examples of various noises and their typical A-weighted noise level.

Sound levels decrease as a function of distance from the source as a result of wave divergence, atmospheric absorption, and ground attenuation. As the sound wave form travels away from the source, the sound energy is dispersed over a greater area, thereby dispersing the sound power of the wave. Atmospheric absorption also influences the levels that are received by the observer. A greater distance traveled results in a greater influence and resultant fluctuations of the sound wave. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. Turbulence and gradients of wind, temperature, and humidity also play a significant role in determining the degree of attenuation. Intervening topography can also have a substantial effect on the perceived noise levels.

Noise has been defined as unwanted sound, and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. These criteria are based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses, and annoyance. Each of these potential noise effects on people is briefly discussed in the following narratives.

Hearing loss is not a concern in community noise situations such as residential developments. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Typical neighborhood noise levels, including very noisy airport environs, are not sufficiently loud to cause hearing loss.

Speech interference is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level.

Sleep interference is a major noise concern for traffic noise. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Sleep disturbance does not necessarily mean awakening from sleep, but can refer to altering the pattern and stages of sleep.

Physiological responses are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent to which these physiological responses cause harm or are a sign of harm is not known.

Annoyance is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability.

4.1.8.2 Noise Assessment Metrics

The description, analysis, and reporting of community noise levels around communities is made difficult by the complexity of human response to noise and the myriad of noise metrics that have been developed for describing noise impacts. Each of these metrics attempts to quantify noise levels with respect to community response. Most of the metrics use the A-Weighted noise level to quantify noise impacts on humans. As previously identified, A-Weighting is a frequency weighting that accounts for human sensitivity to different frequencies.

Noise metrics can be divided into two categories: single event and cumulative. Single-event metrics describe the noise levels from an individual event such as an aircraft fly over or perhaps a heavy equipment pass-by. Cumulative metrics average the total noise over a specific time period, which is typically 1 hour or 24 hours for community noise problems.

Several rating scales have been developed for measurement of community noise. These account for (1) the parameters of noise that have been shown to contribute to the effects of noise on man, (2) the variety of noises found in the environment, (3) the variations in noise levels that occur as a person moves through the environment, and (4) noise variations associated with the time of day. The rating scales are designed to account for the known health effects of noise on people described previously. Based on these effects, the observation has been made that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been developed to account for this observation. Two of the dominate noise scales are the Equivalent Noise Level (LEQ) and the Community Noise Equivalent Level (CNEL).

LEQ is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. LEQ is the "energy" average noise level during the time period of the sample. LEQ can be measured for any time period, but is typically measured for 1 hour. This 1-hour noise level can also be referred to as the Hourly Noise Level (HNL). It is the energy sum of all the events and background noise levels that occur during that time period.

CNEL (Community Noise Equivalent Level) is the predominant rating scale now in use in California for land use compatibility assessment. The CNEL scale represents a time weighted 24-hour average noise level based on the A-weighted decibel. Time weighted refers to the fact that noise which occurs during certain sensitive time periods is penalized for occurring at these times. The evening time period (7 p.m. to 10 p.m.) penalizes noises by 5 dBA, while nighttime (10 p.m. to 7 a.m.) noises are penalized by 10 dBA. These time periods and penalties were

selected to reflect people's increased sensitivity to noise during these time periods. A CNEL noise level may be reported as a "CNEL of 60 dBA," "60 dBA CNEL," or simply "60 CNEL." Typical noise levels in terms of the CNEL scale for different types of communities are presented in Figure 4.1.8-2.

Ldn, the day-night scale is similar to the CNEL scale except that evening noises are not penalized. It is a measure of the overall noise experienced during an entire day. In the Ldn scale, those noise levels that occur during the night (10 p.m. to 7 a.m.) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, when sleep is the most probable activity.

L(%) is a statistical method of describing noise which accounts for variance in noise levels throughout a given measurement period. L(%) is a way of expressing the noise level exceeded for a percentage of time in a given measurement period. For example since 5 minutes is 25 percent of 20 minutes, L(25) is the noise level that is equal to or exceeded for 5 minutes in a 20-minute measurement period. It is L(%) that is used for most noise ordinance standards. For example, most daytime city, state, and county noise ordinances use a standard of 55 dBA for 30 minutes per hour or an L(50) level of 55 dBA. In other words, the noise ordinance states that no noise level should exceed 55 dBA for more that 50 percent of a given period.

4.1.8.3 SAMP Study Area Noise Standards

The County of Orange Noise Ordinance and General Plan Noise Element contain the County's policies on noise. The County Noise Ordinance applies to noise generated on one property impacting a neighboring property. Specifically, the Noise Ordinance establishes maximum noise levels that may be experienced on a neighboring property as a result of noise generated on/from another property. The Noise Ordinance is part of the County of County Municipal Code (Division 6, Section 4.6.1) and is enforceable throughout all unincorporated portions of the County. The Noise Ordinance requirements cannot be applied to noise generated by vehicles traveling on public roadways, railroads, or aircraft. Federal and state laws preempt control of mobile noise sources on public roads. However, the County's Noise Ordinance can be applied to vehicles traveling on private property (e.g., parking lots or loading docks).

The County of Orange General Plan Noise Element identifies limits on noise levels from transportation noise sources, vehicles on public roadways, railroads, and aircraft. These limits are imposed on all new developments (i.e., new developments must incorporate the measures to ensure that the limits are not exceeded). The County Noise Element specifies outdoor and indoor noise limits for various land uses impacted by transportation noise sources. The noise limits specified in the County's Noise Element are in terms of the Community Noise Equivalent Level (CNEL) for residential uses and LEQ(h) for commercial uses, where (h) is the duration of the specific use in hours. Assuming the standard day-evening-night traffic distribution, CNEL levels are 1.4 dB higher than average daytime LEQ(h).

The County has established exterior noise standards for residential uses, schools, hospitals, and places of worship. For residential uses, the standard is 65 CNEL. For schools, hospitals, and places of worship, the standard is 65 LEQ(h), which is equivalent to 66 CNEL. These standards are applicable only at "outdoor living areas." The County defines "outdoor living areas" to be spaces that are typically used for passive recreational activities or other noise sensitive uses. Such spaces include patio areas, barbecue areas, and spa areas for residential uses. Outdoor areas that are usually not included in the definition for residential areas include front yard areas, driveways, greenbelts, maintenance areas, and storage areas. For hospital uses, "outdoor living areas" include outdoor patient recovery or resting areas. Outdoor areas at

hospitals that are not used for patient activities are not included in this category. For places of worship, areas that have a significant role in services or other noise sensitive activities are considered "outdoor living areas," while areas principally used for short-term social gatherings are not. For schools, areas routinely used for educational purposes that may be adversely impacted by noise are considered "outdoor living areas," while other areas not used for education uses such as play yard areas are not considered "outdoor living areas."

Table 4.1.8-1 identifies the interior noise standards established by the County. These interior standards are applicable to "habitable rooms," as defined by the County. Closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms, and similar spaces are not considered "habitable rooms."

TABLE 4.1.8-1
COUNTY OF ORANGE COUNTY INTERIOR NOISE STANDARDS

Use	Standard
Residential	
All	45 CNEL
Commercial	
Hotel, Motel	45 CNEL
Hospital	45 CNEL
Private Office, Church Sanctuary, College, Preschool, Schools (Grade K-12), Board Room, Conference Room, etc.	45 LEQ(h)[a.] (46 CNEL)[b.]
General Office, Reception Clerical, etc.	50 LEQ(h)[a.] (51 CNEL)[b.]
Other Schools and Colleges	52 LEQ(h)[a.] (53 CNEL)[b.]
Bank Lobby, Retail Store, Restaurant, Typing Pool, etc.	55 LEQ(h)[a.] (56 CNEL[b.])
Manufacturing, Kitchen, Warehousing, etc.	65 LEQ(h)[a.] (66 CNEL)[b.]

a. H=time duration of usage in hours
b. Standard is in terms of LEQ(h). CNEL limit given assumes standard day-evening-night traffic distribution which results in CNEL level being 1.4 dB higher than daytime LEQ(h).

The County Noise Ordinance prescribes exterior and interior noise standards for the protection of residential zoned areas. Table 4.1.8-2 identifies the County's Noise Ordinance standards. The Noise Ordinance is designed to control unnecessary, excessive, and annoying sounds from sources on private property by setting limits that cannot be exceeded at adjacent properties. The Noise Ordinance requirements cannot be applied to mobile noise sources such as heavy trucks when traveling on public roadways. As previously discussed, the control of the mobile noise sources on public roads is preempted by federal and state laws, but does apply to vehicles on private property.

TABLE 4.1.8-2
ORANGE COUNTY NOISE ORDINANCE STANDARDS

Maximum Time of Exposure	Noise Metric	Noise Levels Not To Be Exceeded In Residential Zone	
		7 a.m. to 10 p.m. (daytime)	10 p.m. to 7 a.m. (nighttime)
Exterior Noise Standards			
30 Minutes/Hour	L(50)	55 dBA	50 dBA
15 Minutes/Hour	L(25)	60 dBA	55 dBA
5 Minutes/Hour	L(8.3)	65 dBA	60 dBA
1 Minute/Hour	L(1.7)	70 dBA	65 dBA
Any period of time	L(max)	75 dBA	70 dBA
Interior Noise Standards			
5 Minutes/Hour	L(8.3)	55 dBA	45 dBA
1 Minute/Hour	L(1.7)	60 dBA	50 dBA
Any period of time	L(max)	65 dBA	55 dBA
Source: County of Orange Municipal Code Division 6, Section 4.6.1.			

The County Noise Ordinance specifies dBA noise levels that cannot be exceeded at residential areas for a specified period of time. The time limits are listed in the first column of the table. Column 2 lists the equivalent noise metric in terms of "percent noise level" or L%. The percent noise level describes the noise level that is exceeded during a certain percentage of the measurement period. For example, the L(50) noise level is the level exceeded 50 percent of the measurement period or 30 minutes in an hour. Columns 3 and 4 list the daytime and nighttime noise levels, for the specified metric, that cannot be exceeded under the Noise Ordinance. Greater noise levels are permitted during the day (7 a.m. to 10 p.m.) as compared to nighttime (10 p.m. to 7 a.m.).

The Noise Ordinance states that the daytime noise level for a noise source measured at an outdoor area of a residential property cannot ever exceed 75 dBA; 70 dBA for more than 1 minute of any hour; 65 dBA for more than 5 minutes of any hour; 60 dBA for more than 15 minutes of any hour; or 55 dBA for more than 30 minutes of any hour. Nighttime noise level limits are reduced by 5 dB to reflect the increased sensitivity to noise occurring during this time period. The Noise Ordinance also states that the noise level for a source measured at an indoor area of a residential property cannot ever exceed 65 dBA; 60 dBA for more than 1 minute of any hour; and 55 dBA for more than 5 minutes of any hour. The nighttime interior noise level limits are reduced by 10 dB. The Noise Ordinance contains a clause that, in the event that the ambient noise level exceeds any of the noise limit categories, the cumulative period applicable to that category shall be increased to reflect the ambient noise level. Additionally, the noise level limits are reduced by 5 dB for noise consisting of a pure tone or primarily speech or music to account for increased sensitivity to these sources.

For daytime noise, the County's outdoor standard is more stringent than the interior standard because a typical residence can achieve a 12 dB noise reduction with windows open (i.e., interior noise levels will be at least 12 dB lower than the exterior noise levels with open windows). The Noise Ordinance requires the levels to be 10 dB lower. However, for nighttime noise levels, depending on the characteristics of the noise source, the interior or exterior noise standards may be the most stringent. Additional, the Noise Ordinance exempts noise generated by construction from the ordinance standards during the hours between 7 a.m. and 8 p.m. on weekdays and Saturdays; this exemption does not include Sundays or holidays.

City of Dana Point

The City of Dana Point General Plan Noise Element (July 9, 1991) notes that the major sources of noise include freeways, railroads, major and minor arterial roadways, and significant noise-generating stationary sources, generally grouped as transportation sources (primarily traffic) and non-transportation sources. The most significant and common source of noise is transportation-related noise.

Table 4.1.8-3 identifies the noise standards for various land uses in the City. The most effective method of controlling construction noise is through local control of construction hours. The City of Dana Point Noise Ordinance identifies that grading and equipment operations within one-half mile of a structure for human occupancy shall not be conducted between the hours of 5:00 p.m. and 7:00 a.m. nor on Saturdays, Sundays, and City of Dana Point recognized holidays. However, construction activities occurring at other times are exempt from the noise ordinance threshold in accordance with Chapter 11.10.014 of the Dana Point Municipal Code. Compliance with the noise ordinance is required as a condition of issuance of grading permits. Municipal Code Sections 11.10.010 and 11.10.012 identify the City's exterior and interior noise standards, respectively. The following exterior noise standards apply to any noise that is received on a residential property: between 7 a.m. and 10 p.m., exterior noise levels may not exceed 55 dB(A) and between 10 p.m. and 7 a.m., exterior noise levels cannot exceed 50 db(A). The following interior noise standards are identified in the Municipal Code: between 7 a.m. and 10 p.m., noise levels shall not exceed 55 dB(A) and between 10 p.m. and 7 a.m., they shall not exceed 45 db(A).

TABLE 4.1.8-3
CITY OF DANA POINT NOISE STANDARDS

Land Use Categories		CNEL	
Designations	**Uses**	**Interior[a.]**	**Exterior[b.]**
Residential (All)	Single-Family Duplex, Multiple Family, Mobile Home	45[c.]	65
Neighborhood Commercial, Community Commercial, Visitor/Recreation Commercial/Residential, Professional/Administrative, Industrial/Business Park, Recreation/Open Space, Harbor Marine Land	Hotel, Motel, Transient Lodging	45	–
	Commercial Retail, Bank, Restaurant	55	–
	Office Building, Research and Development, Professional Offices, City Office Building	50	–
	Amphitheater, Concert Hall, Auditorium, Meeting Hall	45	–
	Gymnasium (Multipurpose)	50	–
	Sports Club	55	–
	Manufacturing, Warehousing, Wholesale, Utilities	65	–
	Movie Theaters	45	–
Community Facility	Hospital, Schools' classroom	50	65
	Church, Library	45	–
Recreation/Open Space	Parks	–	65

a. Indoor environment excluding: bathrooms, toilets, closets, corridors
b. Outdoor environment limited to: private yard of single-family; multi-family private patio or balcony which is served by a means of exit from inside the dwelling; balconies 6 feet deep or less are exempt; mobile home park; park's picnic area; school's playground.
c. Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UBC.
d. Exterior noise levels should be such that interior noise levels will not exceed 45 CNEL.

Source: City Dana Point Noise Element, July 9, 1991.

City of Laguna Hills

The City of Laguna Hills General Plan notes that existing noise levels for some residential areas within the General Plan study area near I-5 and along major arterials already exceed the City's 65 dBA CNEL1 exterior noise standard, and are expected to remain above the standard in the future. The majority of future noise increases in the City would occur as a result of traffic increases due to growth in surrounding areas. Although the City of Laguna Hills cannot regulate development outside of its corporate boundaries, the City can work with surrounding jurisdictions to minimize future roadway noise resulting from increases in traffic volumes, and can consider noise impacts in the review of development applications within the City of Laguna Hills. Table 4.1.8-4 identifies the noise standards for various land uses within the City of Laguna Hills.

TABLE 4.1.8-4
CITY OF LAGUNA HILLS NOISE STANDARDS

Land Use	Maximum Exterior	Maximum Interior
Rural, Single Family, and Multi-Family Residential	65 dBA CNEL[a.]	45 dBA CNEL[a.]
Schools: Classrooms Playgrounds	 70 dBA L_{eq}	 45 dBA L_{eq}[a.]
Libraries	–	45 dBA L_{eq}
Hospitals/Convalescent Facilities: Sleeping Areas Living Areas Reception, General Office, Clerical	 – 65 dBA CNEL –	 45 dBA CNEL 50 dBA CNEL 50 dBA L_{eq}
Hotels/Motels: Sleeping Areas Reception, General Office, Clerical	 – –	 45 dBA CNEL 50 dBA L_{eq}
Places of Worship	65 dBA L_{eq}	45 dBA L_{eq}
Open Space/Recreation: Wildlife Habitat Quiet, Passive Areas Active Recreation Areas	 60 dBA CNEL 65 dBA L_{eq} 70 dBA L_{eq}	 – – –
Commercial and Business Park Private Office General Office Restaurant, Retail Store, etc. Warehousing	— — — —	45 dBA L_{eq} 50 dBA L_{eq} 55 dBA L_{eq} 65 dBA L_{eq}
a. CNEL and L_{eq} noise rating scales are described in the Laguna Hills General Plan Master EIR Source: LSA Associates, 1993		

City of Laguna Niguel

The City of Laguna Niguel General Plan Noise Element contains the City's noise policies. The Noise Element of the General Plan presents limits on noise levels from transportation noise sources, vehicles on public roadways, railroads, and aircraft. These limits are imposed on new developments. The new developments must incorporate the measures to ensure that the limits are not exceeded. The City's noise standards for land use compatibility are provided in Table 4.1.8- 5.

TABLE 4.1.8-5
CITY OF LAGUNA NIGUEL NOISE STANDARDS

Land Use	Interior Standard	Exterior Standard
Residential Detached Residential Attached	45	65
Neighborhood Commercial Community Commercial	–	70
Professional Office	50	70
Community Commercial/Professional Office	–	70
Industrial/Business Park	55[a.]	75
Professional Office/Industrial/Business Park Industrial/Business Park/Professional Office/Community Commercial	–	75
Public/Institutional Public Institutional/Professional Office	50	70
Schools	50[b.]	65[b.]
Parks and Recreation	–	70

a. Where quiet is a basis for use.
b. In interior or exterior Classroom Areas during school operating hours.

Source: City Laguna Niguel Noise Element, August 4, 1992.

City of Mission Viejo

The City of Mission Viejo General Plan Noise Element (October 8, 1990) includes interior and exterior noise standards that relate to land use and acceptable noise levels. These standards are provided in Table 4.1.8-6.

TABLE 4.1.8-6
CITY OF MISSION VIEJO NOISE STANDARDS

Land Use Categories		Energy Average CNEL	
Categories	**Uses**	**Interior[a.]**	**Exterior[b.]**
Residential	Single-Family, Duplex, Multiple Family	45[c.]	65
	Mobile Home	–	65[d.]
Commercial Industrial	Hotel, Motel, Transient Lodging	45	65[e.]
Institutional	Hospital, Schools' classroom	45	65
	Church, Library	45	–
Open Space	Parks	–	65

a. Indoor environment excluding: bathrooms, toilets, closets, corridors
b. Outdoor environment limited to: private yard of single-family; multi-family private patio or balcony which is served by a means of exit from inside; mobile home park; hospital patio; park's picnic area; school's playground; hotel and motel recreation area.
c. Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UBC.
d. Exterior noise levels should be such that interior noise levels will not exceed 45 CNEL.
e. Except those areas affected by aircraft noise.

Source: City Mission Viejo Noise Element, October 8, 1990.

Municipal Code Sections 6.35.040 and 6.35.050 identify the City's exterior and interior noise standards, respectively. The following exterior noise standards apply to any noise that is received on a residential property: between 7 a.m. and 10 p.m., exterior noise levels may not exceed 55 dB(A) and between 10 p.m. and 7 a.m., exterior noise levels cannot exceed 50 db(A). The following interior noise standards are identified in the Municipal Code: between 7 a.m. and 10 p.m., noise levels shall not exceed 55 dB(A) and between 10 p.m. and 7 a.m., they shall not exceed 45 db(A).

City of Rancho Santa Margarita

The City of Rancho Santa Margarita General Plan Noise Element (December 2002) notes that the City has adopted the County of Orange Noise Control Ordinance and noise/land use compatibility requirements. Therefore, the reader should reference the prior description provided for the County of Orange.

City of San Clemente

The City of San Clemente Municipal Code Chapter 8.48, Noise Control, identifies interior and exterior noise standards. With respect to interior noise, the Municipal Code states:

> *It shall be unlawful for any person at any location within the incorporated area of the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level when measured within any other dwelling unit on any residential property, either incorporated or unincorporated, to exceed:*
>
> *A. The interior ambient noise level plus five (5) dB (A) for a cumulative period of more than five (5) minutes in any hour; or*
>
> *B. The interior ambient noise level plus ten (10) dB (A) for a cumulative period of more than one (1) minute in any hour; or*
>
> *C. The interior ambient noise level plus fifteen (15) dB (A) for any period of time.*
>
> *In the event the alleged offensive noise consists of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A). (Prior code § 16-22.4)*

With respect to exterior noise, the Municipal Code states:

> *It shall be unlawful for any person at any location within the incorporated area of the City to create an noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured by a sound level meter on any other property, to exceed the permitted ambient noise level more than ten (10) minutes per hour. (Prior code § 16-22.3)*

The City's noise standards are identified on Table 4.1.8-7. The maximum permissible ambient *noise* level shall be no greater than the noise levels identified in the table for each of the indicated zones:

TABLE 4.1.8-7
CITY OF SAN CLEMENTE NOISE STANDARDS

	7:00 a.m. - 10:00 p.m.	10:00 p.m. - 7:00 a.m.
Residential		
Exterior	55 dB (A)	50 dB (A)
Interior	50 dB (A)	40 dB (A)
Commercial	65 dB (A)	60 dB (A)
Industrial	70 dB (A)	70 dB (A)

City of San Juan Capistrano

The City of San Juan Capistrano Noise Ordinance identifies exterior and interior noise standards for residential and non-residential land uses. The following exterior noise standards are applicable for residential and institutional districts: between 7 a.m. and 7 p.m., 65 dB(A); between 7 p.m. and 10 p.m., 55 dB(A), and between 10 p.m. and 7 a.m., 45 dB(A). The exterior noise standard for commercial districts is 65 dB(A) at any time during the day. The City's Noise Ordinance further notes that no person at any location within the City, including the industrial and open space districts, shall create any noise, or permit the creation of any noise, which causes the noise level within a residential, public and institutional or commercial district to exceed noise standards noted above for the period of time identified in Table 4.1.8-8.

TABLE 4.1.8-8
CITY OF SAN JUAN CAPISTRANO MAXIMUM NOISE LEVELS NOT TO BE EXCEEDED

Maximum Noise Level Not to be Exceeded During Period of Time	Period of Time
Exterior noise standard plus 20 dB(A)	Any period of time
Exterior noise standard plus 15 dB(A)	Cumulative period of more than 1 minute in any hour
Exterior noise standard plus 10 dB(A)	Cumulative period of more than 5 minutes
Exterior noise standard plus 5 dB(A)	Cumulative period of more than 15 minutes in any hour
Exterior noise standard	Cumulative period of more than 30 minutes in any hour
Source: City of San Juan Capistrano Municipal Code Sec. 93.531.	

4.1.8.4 Noise Measurement Methodology

The noise measurements were taken to determine existing noise levels using a Brüel & Kjær 2236 automated digital noise data acquisition system for short-term (15 minutes) readings. This instrument automatically calculates both the Equivalent Noise Level (LEQ) and Percent Noise Level (L%) for any specific time period. The noise monitor was equipped with a Brüel & Kjær 1/2-inch electric microphone and was calibrated with a Brüel & Kjær calibrator with calibrations traceable to the National Bureau of Standards. Calibration for the instruments is performed annually and is certified through the duration of the measurements. This measurement system satisfies the ANSI (American National Standards Institute) Standards 1.4 for Type 1 precision noise measurement instrumentation.

Existing roadway noise levels, in terms of CNEL, for the roadways anticipated to be affected by RMV Planning Area project-related traffic were calculated for the GPA/ZC EIR 589 using a computation of highway noise. In preparing these computations, the Highway Noise Model published by the Federal Highway Administration (*FHWA Highway Traffic Noise Prediction*

Model, FHWA-RD-77-108, December, 1978) was used. The CALVINO noise emission curves developed by Caltrans were used with the FHWA model because these curves better model the California vehicle mix. The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the "equivalent noise level." A computer code has been written which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these noise levels and adding them together results in the CNEL for the traffic projections used.

4.1.8.5 Existing RMV Planning Area Noise Sources

Ambient noise measurements were taken at five locations: on January 28, 2004 at one location (Site 5) and on March 29, 2004 at four locations (Sites 1 through 4). The locations of the noise measurement sites are depicted in Figure 4.1.8-3. Noise levels were measured for 15 minutes at each location with the exception of Site 5 where a 30-minute measurement was performed. The measurement results are presented in Table 4.1.8-9 in terms of equivalent noise levels (LEQ), maximum noise levels, minimum noise levels, and percentile noise levels (L%). The L(50) percentile level, for example, represents the noise levels exceeded 50 percent of the time, and represents the median ambient noise level. The L(90) noise levels represent the background noise levels that are exceeded 90 percent of the time.

TABLE 4.1.8-9
RMV PLANNING AREA EXISTING NOISE MEASUREMENTS

Site	Start Time	Sound Level (in dBA)					
		LEQ	Lmax	L(10)	L(50)	L(90)	L(min)
1	12:13 p.m.	51	72	44	38	33	29
1[a.]	12.13 p.m.	39	49	43	38	32	29
2	1:08 p.m.	45	54	47	44	41	37
3	1:50 p.m.	42	53	45	41	39	37
4	2:34 p.m.	41	53	44	34	31	30
5	8:16 p.m.	44	56	47	42	38	35

a. Effects of vehicles entering the Northrop Grumman TRW Capistrano Test Site removed.

Source: The Ranch Plan EIR 589.

The noise measurement sites were near the western perimeter of the RMV Planning Area. The measured noise levels show that even at the perimeter of this primarily undeveloped area, noise levels are relatively low. Noise levels further inside and along the eastern perimeter of the RMV Planning Area are likely slightly lower because they are removed from areas of activity. In general, the sources of noise affecting the site consisted of birds, wind blowing through vegetation, and distant traffic, in addition to local sources of noise described below.

Site 1 is located near the current terminus of Avenida Pico off of the entry road to the Northrop Grumman TRW Capistrano Test Site. The primary source of noise affecting the recorded noise levels was six vehicles entering the TRW site. Background noise included bird calls and distant traffic. Table 4.1.8-10 presents the recorded noise levels during the entire measurement period along with an edited version of the measurement that removed the periods when vehicles passed by the site entering the TRW site. The results of the measurements show very low noise levels when the effect of the vehicles is removed. Background sources of noise included bird and distant traffic noise. The average noise level would not be expected to drop much below the

40 dBA level during the daytime. Nighttime noise levels would be lower as wildlife activity ceased along with levels of traffic on roadways in the vicinity of Site 1.

TABLE 4.1.8-10
RMV PLANNING AREA EXISTING ROADWAY TRAFFIC NOISE LEVELS[a.]

Roadway Segment	CNEL at 100 ft.	Distance to CNEL Contour[b.] (feet)		
		70 CNEL	65 CNEL	60 CNEL
I-5				
Avery Parkway to Junipero Serra	80.5	499	1,075	2,315
Junipero Serra to Ortega Highway	80.4	490	1,056	2,275
Ortega Highway to San Juan Creek	80.0	465	1,003	2,160
San Juan Creek to Stonehill	80.0	462	996	2,147
Stonehill to Camino Las Ramblas	79.7	445	958	2,063
Camino Las Ramblas to Camino de Los Mares	80.0	465	1,003	2,160
Camino de Los Mares to Avenida Vista Hermosa	79.8	454	977	2,105
Avenida Vista Hermosa to Avenida Pico	79.5	432	931	2,007
SR-73				
Oso Parkway to Crown Valley Parkway	72.5	147	317	684
Crown Valley Parkway to I-5	72.4	145	313	673
SR-241				
North of Antonio Parkway	69.6	94	204	438
Antonio Parkway to Oso Parkway	66.1	55	119	255
Oso Parkway				
East of I-5	70.7	111	240	517
West of Marguerite Parkway	69.1	88	189	406
Marguerite Parkway to Felipe Road	69.1	88	189	406
Felipe Road to Antonio Parkway	69.1	88	189	406
East of Antonio Parkway	67.8	72	155	333
West of SR-241	67.4	67	144	310
East of SR-241	66.2	56	121	260
Crown Valley Parkway				
West of Marguerite Parkway	69.1	88	189	406
East of Marguerite Parkway	68.9	84	182	392
West of Antonio Parkway	67.0	63	136	294
Junipero Serra				
West of I-5	63.5	RW	80	171
Ortega Highway				
I-5 to Rancho Viejo	72.8	154	332	715
West of La Novia	71.6	128	275	593
East of La Novia	70.7	112	242	521
West of La Pata	69.9	98	212	457
East of New Ortega Highway	65.5	50	108	233
San Juan Creek Road				
West of La Novia	62.0	RW	64	137
East of La Novia	61.1	RW	55	118
Avenida Vista Hermosa				
East of I-5	66.2	56	121	260

TABLE 4.1.8-10 (Continued)
RMV PLANNING AREA EXISTING ROADWAY TRAFFIC NOISE LEVELS[a.]

Roadway Segment	CNEL at 100 ft.	Distance to CNEL Contour[b.] (feet)		
		70 CNEL	65 CNEL	60 CNEL
Avenida Pico				
East of I-5	69.0	86	185	399
West of La Pata	66.8	62	133	286
La Pata to Avenida Vista Hermosa	63.6	RW	81	175
East of Avenida Vista Hermosa	61.0	RW	54	117
Camino Capistrano				
South of Paseo de Colinas	59.0	RW	40	86
North of Junipero Serra	59.0	RW	40	86
Junipero Serra to Roso	62.5	RW	68	146
Antonio Parkway				
North of SR-241	67.8	72	155	333
Empresa to SR-241	67.2	65	140	302
Empresa to Banderas	67.4	67	144	310
Oso Parkway to Crown Valley Parkway	67.8	72	155	333
South of Crown Valley Parkway	65.3	48	104	224
North of New Ortega Highway	64.0	RW	86	185
North of Ortega Highway	64.0	RW	86	185
Avenida La Pata				
South of Ortega Highway	58.0	RW	RW	73
South of Avenida Pico	60.2	RW	48	103
Camino Vera Cruz				
Camino de Los Mares to Vista Hermosa	61.6	RW	59	128
Avenida Talega				
East of Avenida Vista Hermosa	52.0	RW	RW	RW

a. Modeled
b. From roadway centerline
RW: Contour does not extend beyond roadway right-of-way

Source: The Ranch Plan EIR 589

Site 2 is located just beyond the end of San Juan Creek Road. The primary sources of noise at Site 2 were distant traffic and noise generated by activities in the nearby residential areas. The noise environment around Site 2 would be characterized as quiet, with an average noise level of 45 dBA.

Site 3 is located approximately 1,000 feet north of Ortega Highway in the existing agricultural operations. The primary source of noise at Site 3 was truck traffic associated with the agricultural operations. Background noise sources included birds, distant traffic, and distant agricultural operation activities.

Site 4 is located near the SMWD Chiquita Water Reclamation Plant. Noise sources affecting Site 4 included overhead aircraft, birds, and wind through vegetation. No discernable noise from the Water Reclamation Plant was detected. No discernable noise from the Water Reclamation Plant was detected which is reflective of ongoing conditions at the plant. These types of facilities do not generate significant noise levels.

Site 5 is located near the south end of Tesoro High School. Noise experienced at Site 5 included activities at the high school, traffic on Oso Parkway, birds, and distant traffic.

Existing Roadway Noise Levels

The distances to the existing 60, 65, and 70 CNEL contours for selected roadways in the vicinity of the RMV Planning Area are identified in Table 4.1.8-10. The CNEL at 100 feet from the roadway centerline is also presented. These represent the distance from the centerline of the road to the contour value shown. The values represent existing noise levels and do not take into account the effect of any existing noise barriers or topography that may affect ambient noise levels. Where the line of sight between an observer and a roadway is blocked by a substantial object (e.g., a berm, block wall, or building), the traffic noise levels are reduced by a minimum of approximately 5 dB.

The roadway segments presented in the table are those that are projected to experience a 0.5 dB or greater traffic noise CNEL increase due to the development of the RMV Planning Area, or are projected to experience a 1.5 dB or greater traffic noise CNEL increase over existing conditions in the future with development of the RMV Planning Area.

The table shows that high traffic noise levels are generated along I-5 and SR-73 (i.e., 72.4 to 80.5 dB CNEL. Considerable noise levels are generated along SR-241, Oso Parkway, Crown Valley Parkway, Ortega Highway, Avenida Pico, and Antonio Parkway (i.e., 61.0 to 72.8 dB CNEL). Moderate noise levels are experienced along Junipero Serra, San Juan Creek, Avenida Vista Hermosa, Camino Capistrano, and Camino Vera Cruz (i.e., 59.0 to 66.2 dB CNEL). Noise levels along Avenida La Pata and Avenida Talega are minor (i.e., 52.0 to 60.2 dB CNEL).

Existing Aircraft Noise Levels

Airport Operations

The RMV Planning Area is not located in the immediate vicinity of any airfield and is not directly impacted by noise generated by any airport operations. Enroute aircraft overfly the RMV Planning Area and are audible at times. However, because of the relatively low aircraft noise levels experienced on the site and the limited time that this occurs, aircraft do not generate noise levels that approach the local cities' and County's noise standards.

On-Site Heliport

A private heliport is located at the Rancho Mission Viejo headquarters within the RMV Planning Area. This heliport is used infrequently, approximately four times a year, for aerial tours of the site or for other Rancho Mission Viejo business. Areas around the heliport are exposed to substantial noise levels as helicopters arrive and depart the heliport. However, because of the infrequency of operations, noise levels in the vicinity of the heliport do not approach the County's noise standards.

U.S. Marine Corps Base at Camp Pendleton (MCB Camp Pendleton)

MCB Camp Pendleton is located along the southern and eastern boundaries of the SAMP Study Area at the southeast corner. MCB Camp Pendleton is one of the busiest Department of Defense installations in the United States. Approximately 40,000 to 45,000 training events are scheduled at the base each year. These events range from small unit training to larger Regimental and Marine Expeditionary Brigade exercises. Nearly 60,000 service members train

at the base each year. Training activities include amphibious landings, use of tracked vehicles, infantry and vehicle maneuvers, artillery and small arms firing, aerial weapons delivery, engineer support operations, logistics support, field combat service support, communications, airlift support for troops and weapons, equipment maintenance, and field medical treatment. In terms of noise generation, the most significant activities are artillery training and aircraft operations.

MCB Camp Pendleton has an airfield where approximately 180 helicopters are based. Its airfield is located near the southern end of the base approximately 16 miles south of the SAMP Study Area. There are no fixed wing aircraft based at MCB Camp Pendleton. However, turbo prop and jet aircraft from MCAS Miramar and other local military facilities use the facility for aerial weapons delivery training and other training. There is a Helicopter Outlying Landing Field located approximately 1.2 miles from the SAMP Study Area boundary that is used for night vision goggle training. Both fixed wing aircraft and helicopters operate throughout the entirety of the base, including the boundaries of the base.

MCB Camp Pendleton has three types of Special Use Airspace that have been authorized and approved by the Federal Aviation Administration for purposes of supporting the military training operations at the Base. The three types are: (1) Restricted Areas, (2) Military Operations Areas, and (3) Controlled Firing Areas. Each has been established and is used for different purposes, but are individually authorized by the Federal Aviation Administration and all are charted on aviation maps used by military and civilian aviators so that there is an awareness of their existence, their dimensions, and their hours of operation by both military and civilian pilots who fly within this area of southern California. The Special Use Airspace provide a safety buffer to civilian aircraft by alerting them of the presence of hazardous military training operations that are occurring on the ground (or water) areas below this airspace. The most restrictive of these three different kinds of Special Use Airspace at MCB Pendleton is the Restricted Area. Restricted Airspace is used to support hazardous training activities in which "live-fire" training activities are occurring (artillery, mortars, air-to-ground delivery of live bombs, rockets, lasers, etc.; all activities that would be hazardous to non-participating civil aircraft). Thus, when activated, Restricted Airspace prevents civil aircraft from entering these airspace areas and over flying these hazardous training activities when such live-fire training operations are ongoing (pers. comm., L. Rannals, August 6, 2004).

Restricted Airspace area R-2503B overlies a portion of Planning Area 8 and extends from the ground surface to an altitude of 15,000 feet above mean sea level. While the area is designated as a Restricted Airspace to support hazardous military training operations, no hazardous training operations occur over Planning Area 8. The designation provides sufficient clearance for aircraft maneuverability and safety buffer for aircraft not involved in the training exercises.

Much of the central portion of MCB Camp Pendleton consists of two Impact Areas that receive live fire from aircraft and ground troops. There are Artillery Firing Areas situated throughout the base from where ordnance is fired into the Impact Areas. There are no Artillery Firing Areas located within 0.5 mile of the SAMP Study Area. Several Arterial Firing Areas are located between 0.5 and 1.0 mile from the RMV Planning Area boundary; many more are located further than 1.0 mile.

A Range Compatible Use Zone (RCUZ) study was prepared for the MCB Camp Pendleton in the early 1990s and approved in 1993. The RCUZ assesses potential impacts, including noise, from the operations at Camp Pendleton MCB. However, Mr. Larry Rannals (Community Plans & Liaison Officer MCB Camp Pendleton) indicated that the 1993 RCUZ referenced operations had changed substantially since the document's preparation. MCB Camp Pendleton is commencing

the update the RCUZ with completion planned for late 2005. Due to current military activities in Iraq, operations at MCB Camp Pendleton are substantially lower than normal. Any noise monitoring performed at this time would not be representative of typical operations (Rannals, personal communication, August 2005).

MCB Camp Pendleton-related noise affecting the SAMP Study Area would be primarily from aircraft and large artillery firings. Generally, these activities do not occur constantly but periodically. However, during larger training exercises, almost constant activity and noise occurs 24 hours per day. These busy periods, lasting from a few days to a couple of weeks, occur several times a year. Noise levels within the SAMP Study Area (e.g., RMV Planning Area) would be dependant on the specific activities conducted and the locations of the activities. Based on historic activities at MCB Camp Pendleton and the base's relation to the RMV Planning Area, noise levels generated by these activities are not expected to exceed the County's CNEL noise criteria for the RMV Planning Area.

Some training activities would generate readily audible noise levels at the southern portion of SAMP Study Area. However, the relative infrequency with which these activities are expected to occur should not result in the exceedance of the applicable CNEL criteria. Note that CNEL is strictly defined as an annual average noise level with the evening and nighttime weightings. It is possible that CNEL levels could approach or even possibly exceed the 65 CNEL residential outdoor noise standard on a daily basis during periods of heavy activity at MCB Camp Pendleton. However, including periods with little or no noise being generated by the base, the CNEL level calculation should result in the CNEL level being below 65 CNEL.

4.1.9 VISUAL RESOURCES

4.1.9.1 SAMP Study Area Existing Conditions

The SAMP Study Area is located in southeastern Orange County. Within the northerly part of the SAMP Study Area are the City of Rancho Santa Margarita and the unincorporated planned communities of Robinson Ranch, Dove Canyon, Las Flores, Coto de Caza, and Ladera Ranch. Regional parks within the SAMP Study Area include Thomas F. Riley Wilderness Park, O'Neill Regional Park, Caspers Regional Park, and other permanent open space in unincorporated Orange County. MCB Camp Pendleton in the County of San Diego bounds the SAMP Study Area on the east and southeast. The Cleveland National Forest in Orange County is within the SAMP Study Area. The City of Dana Point is within the SAMP Study Area to the south. To the west in the SAMP Study Area are the cities of Laguna Niguel, San Juan Capistrano, San Clemente, and Mission Viejo, as well as land within unincorporated Orange County.

County of Orange

The natural setting of Orange County provides a diversity of mountains, hills, flatlands, and shoreline. These landforms and associated major canyons, ridgelines, and coastal areas, contribute to the diversity of Orange County's environment. The County is a somewhat rectangular land mass trending approximately 40 miles along the coast of the Pacific Ocean and extending inland approximately 20 miles and covering 798 square miles. It is predominantly an alluvial plain, generally less than 300 feet in elevation in the west and central sections. Several low-lying mesas interrupt the plain along the northern coast. The plain is semi-enclosed by the Santiago Foothills and the Santa Ana Mountains which rise to 5,600 feet on the east, the Puente and Chino Hills in the north, and the San Joaquin Hills to the south. "Saddleback," the twin-peaked heights of the Santa Ana Mountains, serves as a topographical landmark in the county. In addition to the dominant ridgeline of the Santa Ana Mountains, major ridgelines occur in the Lomas de Santiago and the San Joaquin Hills. There are numerous canyons and valleys, including the Santa Ana Canyon, Capistrano Valley, Laguna, Aliso, Wood, Moro, San Juan, Trabuco Santiago, Modjeska, Silverado, Limestone, and Black Star Canyons. Orange County currently provides over 27,216 acres of regional open space. Regional recreation facilities are classified as urban regional parks, natural regional parks, coastal regional facilities, nature preserves, and historical sites.

Resources in the SAMP Study Area also include an urban national forest, the Cleveland National Forest. The County General Plan notes that a substantial open space buffer is needed along the Cleveland National Forest Boundary to minimize inherent conflicts between urbanization and forest wildlife resources and to reduce the potential impacts on urbanization that can arise from wildfires, flooding, landslide, erosion, and siltation. The foothills abutting the Cleveland National Forest boundary have outstanding scenic qualities and significant watershed and wildlife habitat.

City of Dana Point

The City of Dana Point represents the unification of three distinct pre-incorporation communities: Dana Point, Monarch Beach, and Capistrano Beach. The city's maritime identity is derived from its coastal location. Distinct landform features include the "Headland" and coastal bluffs. They are visible from the region's coastline and coastal hillsides. Public views and pedestrian access to the bluffs are significant urban design and public resources of the city. The city's coastline includes a diversity in its beaches, including Capistrano Beach, Doheny State

Beach, Dana Strand Beach, and Salt Creek Beach; each have a distinct character formed by surf conditions, orientation, views, landform background, and access.

Through their creek basins and intervening ridgelines, San Juan Creek and Salt Creek generally divide the City of Dana Point into three areas: Capistrano Beach, Dana Point, and Monarch Beach. The creek basins form visual corridors to/from inland hillsides and ridges.

City of Laguna Hills

The City of Laguna Hills is characterized by steep natural hillsides and natural canyons and watershed areas. Prior to the City's incorporation, Orange County designated several arterial streets as scenic highways as part of the MAPH. Designated corridors exist along five arterial streets in the southern portion of the area and include El Toro Road, Alicia Parkway from Paseo de Valencia south to the City limits; La Paz Road from Paseo de Valencia south to the City limits; Oso Parkways throughout the City; and Moulton Parkway where it traverses through the City and its Sphere of Influence. The development of these roadways included standards for increased landscape and view easements that could accommodate highway beautification areas, paved pedestrian or bike trails, or equestrian trails.

City of Laguna Niguel

The City of Laguna Niguel is characterized by its hilly terrain. The city is a predominately detached single-family residential community with expansive open space resources. Approximately 88 percent of the city's potential development areas have been developed. Approximately one-third (3,677 acres) of the city is in open space and recreational areas. This includes natural open space corridors, hillsides, parks, and greenbelts. Inclusive of adjacent County of Orange open space resources (e.g., Aliso and Wood Canyons Regional Park and Salt Creek Regional Park, Aliso Creek Greenbelt), the city has access to over 5,000 acres of open space. The open space character of the city is emphasized by its hillsides/ridgelines and canyon areas.

City of Mission Viejo

The City of Mission Viejo is a predominately built out jurisdiction; over 94 percent of the city has been developed. The City General Plan notes that most of its open space and biological habitat has been replaced by development. The eastern portion of the city contains natural resources, including steep slopes, canyons, and drainage courses. Steep slopes along the city's eastern boundary form an edge between the city and Arroyo Trabuco Creek. Hillsides along the west side of Trabuco Creek contain slopes of over 30 percent and are considered a scenic resource. However, the majority of the city is relatively flat.

City of Rancho Santa Margarita

The City of Rancho Santa Margarita has been developed as a series of planned communities. Development within each planned community is predominately residential. Low-scale commercial development is concentrated east of SR-241 and Santa Margarita Parkway; business park uses are west of SR-241. Open space surrounds the developed portions of the City to maintain the natural landscape. Approximately 66 percent of the city is designated for passive open space or active park use. Ridgelines and vista points in the city include Trabuco Canyon, Live Oak Canyon, Plano Trabuco, Ashbury Canyon, Cochise Canyon, and Bell Canyon. Water resources include Lake Santa Margarita, the Upper Oso Reservoir, Tijeras Canyon Creek, and Trabuco Creek. Several small tributaries are also located within open space

areas. Viewscape corridors in the city are: Santa Margarita Parkway (west of the city boundary between the city boundary and Avenida Empresa), Plano Trabuco Road (south of Santa Margarita Parkway and north of Robinson Ranch Road), Trabuco Canyon Road (between Live Oak Canyon Road and Plano Trabuco Road), Live Oak Canyon Road (El Toro Road and Trabuco Canyon Road), and El Toro Road. Goals of the city's General Plan include the maintenance of community character through the protection of scenic resources and vistas.

City of San Juan Capistrano

The City of San Juan Capistrano is visually characterized as a valley traversed by three creeks and surrounded by natural hillsides. The objectives of the City, with respect to visual character include (1) the preservation and promotion of those characteristics of the community which create a sense of place, (2) preservation of the historical character of the city, and (3) preservation and enhancement of the natural features which contribute to the visual character of the city. Because 40 percent of the city would be preserved for permanent open space, open space areas form a large part of the visual character of the community. The design criteria contained in the General Plan Community Design Element imposes design constraints on development to address the protection of the natural hillsides and various views created by the hillsides; the protection and enhancement of other natural features (e.g., major creeks and floodplains); the preservation and enhancement of the historical character of the community; the harmonious incorporation of new development into existing public and private development; and the maintenance of the community's "small-village, rural atmosphere."

City of San Clemente

The City of San Clemente is characterized as a largely beachfront community as a result of its location along the coastal hillside adjacent to the Pacific Ocean. The City also has a network of trails that span the City from the beach, up the canyons, and along its ridgelines. These trails have been designed to provide a safe walking, hiking, and riding experience while maintaining San Clemente's coastal rural environment. The ridgeline trails provide views of the coast and coastal canyons in adjacent wildlife reserves. San Clemente is bordered on two sides by protected wildlands; the City is bound geographically by the foothills of the Santa Ana Mountains to the northwest, San Mateo Creek to the east, the Pacific Ocean to the southwest, and the San Juan Creek to the northwest. As stated in the City of San Clemente's General Plan, Scenic Highways Element, it is the goal of the City to maintain the visual quality and scenic views along designed corridors where they contribute and become an essential part of the community's urban fabric, and to enhance existing view corridors along scenic corridors and to identify opportunities for the designation of new corridors.

4.1.9.2 RMV Planning Area Existing Conditions

The RMV Planning Area has a variety of visual characteristics. Visually prominent on-site features include the undeveloped natural character of portions of the RMV Planning Area with grasslands, woodlands, and streambeds. The natural terrain contains plains, hillsides, and ridgelines, ranging from gently sloping to steep, with elevations of approximately 60 feet to a maximum of 1,326 feet above msl.

As addressed in Chapter 4.1.4, Land Use, the RMV Planning Area contains many man-made improvements and ongoing operations visible from on and off the site, including but not limited to nurseries, roadways, wireless facilities, communications towers, research and aerospace testing facilities, concrete processing, and mining operations.

Ridgelines

As shown on Figure 4.1.9-1, there are approximately 217,804 lineal feet of ridgelines within the RMV Planning Area. The RMV Planning Area is visually defined by higher elevation ridgelines surrounding the site located along several of its boundaries. These ridgelines include, from Ortega Highway at the western project entry clock-wise around the RMV Planning Area:

- A portion of an Unnamed Ridge is located just within the northwest RMV Planning Area boundary. This ridge visually separates this portion of the RMV Planning Area (proposed Planning Area 1) from existing residential neighborhoods in the City of San Juan Capistrano north of Ortega Highway.

- West Chiquita Ridge runs north-south along the westerly RMV Planning Area boundary. This ridge separates Ladera Ranch from this portion of the RMV Planning Area.

- Chiquadora Ridge runs northeast-southwest separating the northern portion of the RMV Planning Area (proposed Planning Area 2) from Coto de Caza and Riley Wilderness Park.

- Gobernadora Ridge runs north-south along a portion of the northeastern RMV Planning Area (proposed Planning Area 3). The ridge separates this portion of the RMV Planning Area from Caspers Regional Park.

- North Verdugo Canyon Ridge runs southwest-northeast and separates the northern RMV Planning Area boundary from Caspers Regional Park and the Cleveland National Forest.

- East Gabino Canyon Ridge runs southwest-northeast and separates proposed open space within the RMV Planning Area from the Cleveland National Forest.

- South Talega Ridge is just south of the RMV Planning Area. Running in a southwest to northeast direction, the ridge visually separates the southern portion of the RMV Planning Area from MCB Camp Pendleton.

- Radio Tower Ridge, located along the southwest RMV Planning Area boundary, separates this portion of the RMV Planning Area from existing land uses in the cities of San Juan Capistrano and San Clemente and from the Prima Deshecha Sanitary Landfill. With the exception of Radio Tower Ridge, these ridgelines are a part of larger ridgeline system that extends off the RMV Planning Area. The majority of backdrop ridgelines or ridgelines that silhouette the skyline to the northeast, east, and southeast of the RMV Planning Area are off-site ridgelines. Many of the ridgelines that bound the RMV Planning Area visually shield much of the site from surrounding areas.

Recreational Areas

Three public regional recreational areas are located to the north and east of the RMV Planning Area (Exhibit 4.1.9-1):

- Thomas F. Riley Wilderness Park, a 523-acre County of Orange Regional Park

- Caspers Wilderness Park, an 8,500-acre County of Orange Regional Park

- Cleveland National Forest, a 460,000-acre national facility

Existing views of the RMV Planning Area from these recreational areas (primarily from campgrounds) are limited by native vegetation and natural landforms. Pedestrian riding and hiking trails that extend to higher points in these parks have views into the RMV Planning Area.

Light and Glare

Light from the RVM Planning Area is currently limited to scattered residences and businesses located throughout the RMV Planning Area and from traffic along Ortega Highway and Antonio Parkway. Off-site uses in the surrounding communities to the north, west, and south (i.e., Coto de Caza, Ladera Ranch, San Juan Capistrano, San Clemente, and MCB Camp Pendleton) generate light from street and other outdoor lighting. Glare is limited because most on- and off-site uses in the area are constructed of non-reflective materials.

4.1.10 CULTURAL RESOURCES

4.1.10.1 Federal Regulatory Requirements

The federal government has developed laws and regulations designed to protect cultural resources that may be affected by actions undertaken, regulated, or funded by federal agencies. The National Historic Preservation Act (NHPA) of 1966 established the Advisory Council on Historic Preservation and State Historic Preservation Officers (SHPO) to assist federal and state officials regarding matters related to historic preservation. Section 106 of the Act requires federal agencies to consider the effects of an action on cultural resources in or eligible for listing in the National Register of Historic Places (NRHP). The administering agency, the Advisory Council on Historic Preservation, has authored regulations implementing Section 106 located in 36 Code of Federal Regulations (CFR) Part 800, *Protection of Historic Properties* (revised January 11, 2001).

The proposed action is considered an undertaking, and therefore must comply with the NHPA. The NHPA regulations (36 CFR Part 800) provide detailed procedures called the Section 106 process by which the assessment of impacts on archaeological and historical resources, as required by the Act, is implemented. NEPA addresses compliance with the NHPA; the required environmental documentation (whether it be an environmental assessment or on environmental impact statement) must discuss cultural resources. It is important to recognize that project compliance with NEPA does not mean the project is in compliance with the NHPA.

In accordance with the NHPA (36 CFR Part 800), three steps are required for compliance: (1) identification of significant resources that may be affected by an undertaking, (2) assessment of project impacts on those resources, and (3) development and implementation of mitigation measures to offset or eliminate adverse impacts. All three steps require consultation with interested Native American Indian tribes, local governments, and other interested parties.

Identification and Evaluation of Significance

The consultation process is discussed in 36 CFR Part 800.3. Section 800.4 sets out the steps the lead agency must follow to identify historic properties. The NRHP eligibility determinations are discussed in 36 CFR Part 800.4(c)(1).

The Historic Sites, Buildings, and Antiquities Act of 1935 requires the survey, documentation, and maintenance of historic and archaeological sites in an effort to determine which resources commemorate and illustrate the history and prehistory of the United States. The NHPA expanded on the NRHP and assigned the responsibility for carrying out this policy to the U.S. Department of the Interior, National Park Service. Per National Park Service regulations 36 CFR Part 60.4 and guidance published by the National Park Service, *National Register Bulletin, Number 15, How to Apply the National Register Criteria for Evaluation*, different types of values embodied in districts, sites, buildings, structures, and objects are recognized. These values fall into the following categories:

***Associative Value (Criteria a and b)*:** Properties significant for their association or linkage to events (Criterion a) or persons (Criterion b) important in the past.

***Design or Construction Value (Criterion c)*:** Properties significant as representatives of the manmade expression of culture or technology.

***Information Value (Criterion d)*:** Properties significant for their ability to yield important information about prehistory or history.

Cultural resources that are determined eligible for listing in the NRHP, along with SHPO concurrence, are termed "historic properties" under Section 106 and are afforded the same protection as sites listed in the NRHP.

Results of Identification and Evaluation

Results of literature searches, field surveys, and tribal consultation are coordinated with the SHPO staff. Regulations stipulate when the lead agency finds that either there are no historic properties present or there are historic properties present but the undertaking would have no effect upon them, then the lead agency will make a "no historic properties affected" determination (36 CFR Part 800.4(d)). If the lead agency finds that there are historic properties which may be affected by the undertaking, the lead agency will make a "historic properties affected" determination.

Assessment of Adverse Effects

In accordance with 36 CFR Part 800.5 of the Advisory Council on Historic Preservation's implementing regulations (criteria of adverse effects) impacts on cultural resources are considered significant if one or more of the following conditions would result from implementation of the proposed action:

(a) An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the NRHP. For the purpose of determining the type of effect, alteration to features of a property's location, setting, or use may be relevant depending on a property's significant characteristics and should be considered.

(b) An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:

1. Physical destruction, damage, or alteration of all or part of the property;

2. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the NRHP;

3. Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;

4. Neglect of a property resulting in its deterioration or destruction;

5. Transfer, lease, or sale of the property.

Resolution of Adverse Effects

Provisions relating to Memoranda of Agreement are detailed in 36 CFR Part 800.6. The negotiation of such a document evidences an agency's compliance with Section 106 of the NHPA and is obligated to follow its terms. An agreement document is prepared in consultation with the SHPO. The Advisory Council on Historic Preservation is notified regarding the project

and may participate. Interested (federally recognized) Native American tribes, local governments, and other parties are provided the draft materials and are invited to be concurring or consulting parties to the agreement document. Mitigation measures defined in an agreement document may include data recovery excavations involving prehistoric sites, or photographic documentation and archival research for historic resources (standing buildings and structures).

4.1.10.2 SAMP Study Area Existing Conditions

Cultural resources are the tangible remains of human activities and events that took place over 50 years before present (BP). Cultural resources include prehistoric and historic archaeological sites, historic structures and districts, or any other physical evidence of human activity in the past. These resources are considered important for scientific, traditional, religious, and other reasons. Prehistoric archaeological sites encompass thousands of years of human activity, dating from the early Holocene (10,000 to 7,000 years ago) to European contact (1542). Physical evidence of prehistoric sites might include lithic debitage, food waste (shell or animal bone debris), soil discoloration (a result of decaying organic matter), hearths, stone alignments, grinding slicks, bedrock mortars, or human skeletal remains.

Historic archaeological sites range in age from 50 to 200 years old. Remnants of historic settlements might include structures, structural foundations, farm machinery, domesticated animal bones, or potable artifacts manufactured from metal, ceramic, glass, or leather.

Historic architectural resources are classified as a building, a structure, or a district. Buildings, such as houses, barns, churches, hotels, or similar construction, are created principally to shelter any form of human activity. “Structure” distinguishes buildings from functional structures constructed for purposes other than human shelter. A “district” refers to a significant concentration or grouping of sites, buildings structures, or objects that historically contemporary.

Data Sources

The following existing conditions data applies to the San Juan and San Mateo Watersheds. It is based on a review of a series of cultural resources technical reports prepared for the RMV Planning Area and a literature review for the remainder of areas within the SAMP Study Area that have been identified for future development and would be subject to SAMP. The chronology of the RMV Planning Area also applies to the larger SAMP Study Area. While cultural resource data is available for the developed portions of the SAMP Study Area, specific information on the potentially developable portions (e.g., Foothill/Trabuco Specific Plan Area) of the SAMP Study Area is limited. Therefore, at the time future participants in the SAMP propose the development of projects within the boundaries of the SAMP Study Area but outside the RMV Planning Area, additional literature and archival reviews, Native American coordination and field studies would be required. All proposed impact areas would be the subject of identification and evaluation studies, in consultation with the California State Historic Preservation Officer and interested tribes. If resources listed in or eligible for the NRHP would be adversely affected, approved treatment must be completed prior to construction.

Cultural Resources

Cultural resources include buried sites of prehistoric or historic materials, standing buildings, structures, and objects (e.g., bridges and railroad trestles) and can be found wherever human activity has left physical evidence. To be classified as a cultural or historic resource, the evidence must typically be older than 50 years. Under the federal guidelines, cultural resources

are considered significant until proven otherwise. For federal projects, impacts to significant cultural resources are considered adverse effects that cannot be mitigated.

Portions of the SAMP Study Area have been previously developed. As a part of development of these areas, the applicable lead agency would have assessed the cultural resources and required mitigation, if appropriate. As a result of previous development, these areas are expected to have a low sensitivity for cultural resources because of site disturbance; however, that does not mean that there is no potential for cultural resources. For example, any building, structure, or object older than 50 years is considered a cultural resource under both the federal and state guidelines, and many of the buildings or infrastructure improvements within these low sensitivity areas may qualify as historic resources under this broad classification. Undisturbed areas within the SAMP Study Area have the potential for producing buried cultural resources and should be considered sensitive for subsurface deposits.

Prehistory

The prehistoric chronology for the southern California region is summarized in a cultural resources technical report prepared for Rancho Mission Viejo (Demcak and Van Wormer (2003). The following is a brief discussion of the prehistory of this region.

The presence of pre-Native American hominid (human or human-like) occupation in the California desert to the east of the project area at the Calico Hills site near Barstow, possibly dating to the period between 200,000 to 500,000 years before present, is controversial. There is still no firm archaeological evidence to support claims of a Middle Pleistocene hominid presence in the Americas. However, some have argued that a few strands of possible evidence exists in the form of chopper/chopping tools, scrapers, blade cores, and blades/bladelets found at the Calico Hills site (Leakey et al. 1972; Schuiling 1972, 1979). Other researchers (Carter 1957; Moriarty and Minshell) have argued for a “pre-projectile point” phase of human occupation about 40,000 years ago in the San Diego area. The assemblages found at these “sites” are comprised of “core” or “cobble” tools. Many researchers have questioned the cultural origin of such “artifacts.” Most researchers believe that firm evidence for human settlement in the southern California coastal region began sometime after the end of the last Ice Age (Pleistocene) about 10,000 years ago.

The following prehistoric chronologies for the project area are based primarily on the syntheses developed by Wallace (1955) and Warren (1968). These two chronological schemes continue to be used by researchers in the area. Both researchers have concluded that the native populations in this region practiced a hunter-gatherer lifestyle until the time of Spanish contact.

The earliest confirmed human occupation in southern California belongs to the Early Holocene (the period following the last Ice Age around 10,000 years ago) San Dieguito Tradition (Warren 1968), a coastal variant of the Western Pluvial Lakes Tradition (Moratto 1984) where more interior (desert) dwellers were thought to have been focused on resources associated with remnant Ice Age lakes. The type site for this cultural tradition is the C.W. Harris Site (CA-SDI-149) located in San Diego County. The assemblage of artifacts typically found in a site from this period can include stone scrapers; scraper planes, choppers; crescents; large leaf-shaped knives (bifaces), and projectile points. It is thought that San Dieguito was largely a hunting-based economy given the lack of milling (hard seed grinding equipment) equipment in these sites. However, more recent research by Gallegos (1991) suggests the San Dieguito tradition may have been more diversified than previously thought and the “type” sites used to define the tradition may have been special purpose sites leading researchers to erroneous conclusions about the exact nature of the San Dieguito Tradition. Gallegos (1991) suggests there may be

closer cultural linkages to subsequent cultural periods. Sites from this period are typically located on elevated terraces above permanent water sources and with little or no cultural deposit subsurface. The San Dieguito Tradition has rarely, if ever, been documented in Orange County.

According to Demcak and Van Wormer (2003), the Milling Stone Horizon, or Encinitas Tradition, is the earliest occupation that has been properly documented for Orange County. The archaeological assemblages studied from this period suggest that groups were organized in highly mobile populations that were adapted to a coastal environment. These small groups exploited a wide range of available resources by gathering plant foods, including seeds, tubers, and berries, collecting shellfish, and hunting small and large game. The presence of milling stones (metates and manos) indicates they were used to grind seeds. Tools associated with hunting activity included wide, thick, and heavy projectile points. Their size and weight suggests they were used as spear points and thrown by atlatls or wooden spear-throwers. Artifacts that are considered time-markers for this period in Orange County include wheel-shaped and disc-shaped ceremonial stones known as cogstones and discoidals and red argillite beads.

During the subsequent Intermediate Horizon, or Campbell Tradition, a transitional period between 1000 B.C. through 500 A.D., tool assemblages suggest that prehistoric populations expanded their resource base to include more hunting and fishing. At this time, the mortar and pestle (tools typically associated with acorn processing and similar plant foods) were introduced into the area.

During the final phase of prehistoric occupation (the Late Horizon Cultures [Shoshonean and Hokan speakers])), a material culture pattern resembling that of historic Native Americans is reflected in the archaeological assemblage. An increase in the number and types of tools in the archaeological assemblages suggests population growth and task specialization during this period. Artifacts not associated with resource acquisition or processing such as beads and ornaments are also on the increase in the Late Horizon compared to earlier occupations. The evidence for increased trade between groups is supported by the presence of non-local lithic sources and the presence of pottery derived from more southerly groups.

Ethnography

The SAMP Study Area is largely located within the tribal territory of the Juaneño although these boundaries were somewhat fluid. According to Evans (2000), the Juaneño territory extended south to between San Onofre and Las Pulgas Creeks, east to the crest of the Santa Ana Mountains, and north to Los Alisos Creek. To the south, the Juaneño shared the area with their close cultural relatives, the Luiseño. To the north, the Juaneño territory was bound by the Gabrielino and to the east at the crest of the Santa Ana Mountains with the Cahuilla and Gabrielino. According to several scholars, these Takic speakers shared a common tradition that involved intermarriage, ritual, trade, and war. Living in the similar geographic areas, these groups responded to their environments in much the same ways and shared many life ways (Bean and Smith 1978a, 1978b and 1978c; Bean and Shipek 1978).

As noted in Evans (2000) and Demcak and Van Wormer (2003), the Juaneño were hunters and gatherers that were able to exploit a diverse array of microenvironments from the coast to upland areas. This life way provided them large and small game, fish, shellfish, acorns, and other wild flora. Their villages, containing conical shelters with thatched roofs sided with tule, bark, or brush and other structures were typically situated near a water source. The Juaneño created coiled and twined baskets, stone and wood tools, bows, and ceremonial items, such as tubular soapstone pipes. The Juaneño were organized by clan tribelets related through the male

line with control of the surrounding area. Each of these areas was politically and economically autonomous.

The arrival of the Spanish in 1769 posed a major disruption to the life way and physical well-being of the Juaneño. Large numbers of Juaneño were brought under the control of the mission system–a radical departure from their traditional culture. Contact with European also introduced diseases for which they had no natural resistance. The population of the Juaneño plummeted.

As noted by Demcak and Van Wormer (2003), the Juaneño Band, also referred to as the Acjachemen Nation, works to retain its cultural identity and keep its language from disappearing. The Juaneño Band was formally recognized by the California State Legislature in 1993 as the original native tribe of Orange County and continues to seek formal federal recognition.

History

The following historical background information has been excerpted and summarized from Demcak and Van Wormer (2003). The arrival of the Portola Expedition in the SAMP Study Area in 1769 marked the beginning of Spanish colonization of what was then known as Alta California. When Spain claimed California for its own, the Spaniards began establishing a series of missions. The Portola Expedition stopped at seven campsites in what became Orange County. Construction of Mission San Juan Capistrano commenced in 1775. In a process that some have characterized as coercive, many of the local Native American inhabitants were brought under the control of Mission San Juan Capistrano resulting in radical change from traditional cultural life ways practiced up to that time.

The Mission Period lasted until 1832, when Mexico, having taken over California from Spain ten years earlier, secularized the missions and began distributing the mission holdings to political favorites, wealthy people, and friends of the governors of California. Mission San Juan Capistrano was the first mission to be secularized in 1833 and organized into a pueblo. The ensuing period was one of political instability with a series Mexican administrators selling its lands and leaving the Juaneño even more marginalized. One of the landholders was Don Juan Forster, the brother-in-law of Governor Pico. Forster acquired Rancho La Paz (later Rancho Mission Viejo) in 1845 and later other ranchos including Rancho Trabuco. Forster resided at Mission San Juan Capistrano and later moved his residence to the Mission Viejo Adobe. It was the Juaneño Indians who supplied the labor for this and other ranchos. In 1846, California was drawn into the Mexican-American War with the result that California was eventually brought into the Union.

By the 1860s, large landholders had been subject to environmental and economic depredations. With the advent of the transcontinental railroad in 1869, land speculators, developers, and colonists came to southern California. Sheep ranching and the citrus industry became successful enterprises in the later part of the 19th century and into the 20th century. The post-World War II period was characterized by rapid urbanization and industrialization. In 1882, the heirs of Don Juan Forster sold his Rancho Santa Margarita y Las Flores. A portion of this landholding went through a succession of owners and was eventually developed as the Mission Viejo Planned Community. The Mission Viejo Planned Community represents the end of a continuum of ownership that began with Forster's acquisition of the land in the 1840s and ended with development by the Philip Morris Company.

As shown in Table 4.1.10-1, potential cultural resources, as mentioned above, would fall under the following categories:

TABLE 4.1.10-1
CLASSIFICATION CATEGORIES

Prehistoric Resources	Historic Resources
Lithic/Ceramic Scatters	Trash Scatters and Dumps
Milling Sites	Building
Long Term Occupation Sites	Structure
Quarry Sites	Other Sites
Other Sites	Undetermined
Undetermined	Isolated feature or artifact
Isolated feature or artifact	–

Within the SAMP Study Area, natural areas of physical relief are considered to have the highest sensitivity because many of these areas have not been developed and these areas typically have had moderate impacts by modern humans. Native Americans, including Juaneño, have occupied the San Juan Watershed and extensively used stream courses, point-specific water sources, areas that could support rich food resources (e.g. oaks), bedrock outcroppings, and areas with a commanding view. Such areas are considered highly sensitive where they have not been substantially altered by development or natural or hydrologic patterns. The following provides details on the recorded prehistoric and historic sites of the RMV Planning Area portion of the San Juan Watershed and San Mateo Watershed, broken down by sub-basin. Future participants in the SAMP who identify potential projects in the larger SAMP Study Area in the future will need to perform the necessary surveys and coordination with SHPO. Until such time as this work occurs, the entire SAMP Study Area is considered to be sensitive for cultural resources in undisturbed sediments.

San Juan Watershed

Verdugo Canyon

Less than five percent of the Verdugo Canyon Sub-basin (extreme western portions) has been subject to prior review. Because of limited investigation of Verdugo Canyon and known resources in the area, this sub-basin is considered sensitive for significant cultural resources.

Central San Juan and Trampas Canyon

Based on the density and range of sites present, this Sub-basin is considered to have a high sensitivity for significant cultural resources. Demcak (2000) recorded the following sites, some of which were subsequently subjected to archaeological testing programs to ascertain significance (Demcak 2002).

Prehistoric

CA-ORA-653. The site was first recorded in 1973 as a scatter of indeterminate area located south of Ortega Highway and east of a sand and gravel operation. The site was heavily damaged by bulldozing. During the 2000 survey, it was confirmed that the site had been bulldozed (Demcak 2000). In 2002, Phase II testing did not reveal any artifacts. The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-654. The site was first recorded in 1973 as a small scatter of core tools, manos, and flakes on a ridge overlooking Trampas Canyon. Some midden was present and was identified as a probable occasional use site. During the 2000 survey, no artifacts were found (Demcak 2000). In 2002, subsurface Phase II testing revealed one mano broken into two halves. The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-655. The site was first recorded in 1973 as a small open site interpreted as a probable occasional use site. During the 2000 survey, no artifacts were found (Demcak 2000). In 2002, Phase II testing did not reveal any artifacts. The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-656. The site was first recorded in 1973 as a large, deep shell midden. Flakes, cores, and core tools were observed on the surface. The site was tested in 1986 revealing a large, multi-component site that was found to be stratigraphically distinct. The assemblage from the upper component suggests a temporary or seasonal camp for hunting or plant processing. The lower component indicated a more intensive occupation as evidenced by greater frequencies of artifacts and ecofacts, the presence of a well-developed midden soil, and greater frequencies of fire-affected rocks. A radiocarbon date of ca. 900 B.P. suggests an Intermediate Period occupation. The site was determined to be NRHP eligible in a formal review process under Criterion D.

CA-ORA-657. The site was first recorded in 1973 as a small scatter of one core tool and one flake and interpreted as a probable occasional use site. The 2000 survey failed to discover any artifacts (Demcak 2000). In 2002, Phase II testing did not reveal any artifacts. The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-658. The site was first recorded in 1973 noting the presence of one core tool; there was no evidence of a midden. The site was interpreted as a campsite. No artifacts were found during the 2000 survey or Phase II testing in 2002. The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1102. The site was first recorded in 1986 as a scatter consisting of ground stone artifacts (manos and metates), flakes, and core tools. Testing revealed a cultural deposit no deeper than 70 centimeters. The site was not considered NRHP eligible. No artifacts were found during the 2000 survey (Demcak 2000).

CA-ORA-1103. The site was first recorded in 1986 as a sparse scatter of manos, metates, flakes, pottery, core tools, and an arrow point, along with a few fragments of bone and shell. Site testing revealed a cultural deposit from 20 to 40 centimeters in depth. The site was not considered NRHP eligible. No artifacts were revealed during the 2000 survey (Demcak 2000).

CA-ORA-1111. The site was first recorded in 1986 as a light scatter of flakes and core fragments in a graded road; the area of the site could not be determined. No artifacts were revealed during the 2000 survey (Demcak 2000). In 2003, Phase II testing revealed 18 chipped stone and 1 ground stone artifacts. The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1121. The site was first recorded in 1988 as a midden deposit encompassing 5,600 square meters. It was noted that the midden might be in excess of one meter in depth. The site contained debitage, flake and core tools, metate fragments, and manos. In 1989 and

1995, the site was tested and salvaged. An intact and well developed midden soil; a diverse assemblage of ground stone and chipped stone tools; and other evidence of a prehistoric base camp that was occupied into the historic period were discovered. The site was determined to be NRHP eligible in a formal review process. Monitoring during construction of the South County Pipeline in 1993 resulted in the recovery of a very late Sonoran-style artifact. During the 2000 survey, a whole pestle was collected at the site.

CA-ORA-1122. The site was first recorded in 1988 as a scatter of flakes and cores. A field check in 1989 did not reveal any cultural items. The survey in 2000 found no cultural items (Demcak 2000).

CA-ORA-1123. The site was first recorded in 1988 as a light scatter of chipping waste, cores, mano, and metate fragments. The site was tested in 1989 and a surface collection was conducted. The site was interpreted as a satellite camp of one of the larger habitation sites along San Juan Creek. A flake scraper was recovered from the site during 1993 construction monitoring. The site was determined at that time to be ineligible for the NRHP.

Historic

CA-ORA-29. CA-ORA-29, La Casa de la Misión Vieja was first recorded in 1935 and officially recorded in 1949. During the 20th century, many assumed that CA-ORA-29 was the site of the Old San Juan Mission. In 1967, Reverend Geiger and historian Don Meadows provided substantial evidence that the original mission site had been on the southern side of San Juan Creek and more than one mile downstream from CA-ORA-29. The early history of CA-ORA-29 (known as La Casa de la Mission Vieja site) is obscure. Originally a rancho of Mission San Juan Capistrano, buildings may have existed in the vicinity as early as 1800. Following mission secularization in the mid-1830s, the area became a privately owned rancho. By the early 1840s, it had been granted to Augustin Olvera who probably built a house on the site. In 1845, Olvera sold Mission Vieja (the ranch) to Juan Forster who built a large adobe house at the location of the present ruins. The building was used by ranch employees and Basque and French sheep herders until the end of the 19th century when it fell into ruin. On various visits to the site and during the 2000 survey, roof tile fragments, brick fragments, glass, and historic ceramics were located. During the 2000 field check, the site was capped with fill dirt except for the elevated area closest to the creek. Phase II testing in September 2001 consisted of 20 trenches and 11 hand excavated units. The majority of the artifacts appear to represent Basque sheep herders who occupied the adobe in the late 1870s and early 1880s. Remains of two separate and distinct adobe structures were identified. The site has determined by the SHPO to be eligible for the NRHP under Criteria B and D. (Source: Office of Historic Preservation letter dated January 27, 2004)

Cañada Gobernadora (including Wagon Wheel and Sulfur Canyons)

Approximately 40 percent of the Cañada Gobernadora (including Wagon Wheel and Sulfur Canyons) Sub-basin has been previously surveyed. Based on the density and range of sites present this sub-basin is considered to have a high sensitivity for significant cultural resources. Demcak (2000) recorded the following sites, some of which were subsequently subjected to archaeological testing programs to ascertain significance (Demcak 2002; Demcak and Van Wormer 2003).

Prehistoric

CA-ORA-984. This site was first recorded in 1981 and consisted of a light scatter. A subsequent field check and site update in 1992 recorded mano fragments, a hammerstone, chopper, and flakes. During the 2000 survey, a mano fragment, core tool, core fragment, and flake were observed (Demcak 2000). The site was not tested during Phase II or evaluated for eligibility for NRHP. However, it should be noted that this site is outside the boundaries of the development areas associated with the RMV Planning Area.

CA-ORA-1446. The site was first recorded in 1988 as a light scatter of ground and chipped stone tools. During the 2000 survey, no artifacts were observed (Demcak 2000). In 2002, Phase II testing of the site revealed six chipped stone and three ground stone artifacts. The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1564. The site was first recorded in 2000 as a light scatter of ground and chipped stone tools (a probable plant processing station) on the east side of Gobernadora Canyon (Demcak 2000). In 2002, Phase II testing revealed 12 chipped stone and 1 ground stone artifacts. The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1565. The site was first recorded in 2000 as a light scatter of ground and chipped stone tools (probable plant processing station) on the east side of Gobernadora Canyon (Demcak 2000). In 2002, Phase II testing revealed 30 chipped stone and 3 ground stone artifacts. The site was determined by the SHPO to be NRHP eligible under Criterion D. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1566. The site was first recorded in 2000 as a probable plant processing station with a light scatter of ground and chipped stone artifacts including six manos/fragments, one metate fragment, one flake tool, and one hammer-abrader. In 2000, Phase II testing revealed five chipped stone and nine ground stone artifacts (Demcak 2000). The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

Historic

30-176632. The site was first recorded in 2000 as a moderate scatter of historic items in two concentrations: (1) bricks, lumber, metal, and a fence post; and (2) three fragments of farm equipment. In 2002, Phase II testing revealed a historic scatter consisting of brick, glass, metal objects, wood, and charcoal. The site has been determined ineligible by the SHPO for NRHP listing. (Source: Office of Historic Preservation letter dated January 27, 2004)

Cañada Chiquita and Narrow Canyon

Approximately 60 percent of the Cañada Chiquita and Narrow Canyon Sub-basin has been previously investigated. Based on the density and range of sites present this sub-basin, it is considered to have a high sensitivity for significant cultural resources. Demcak (2000) recorded the following sites:

Prehistoric

CA-ORA-26. This site was formally recorded in 1949, re-recorded in the early 1980s, and excavated in the mid-1980s and 1997. The site was described as a seasonal village or processing location. During the 2000 survey, no cultural items were found. Demcak (2000) stated that researchers at the site have concluded that the site possesses little data potential and would not be considered NRHP eligible.

CA-ORA-27. This site was formally recorded in 1949, re-recorded in the early 1980s, and excavated in 1985 and 1987. The site was described as being part of CA-ORA-26. It is a complex site yielding numerous stone tools including hammerstones, cores, manos, metates, flakes, flake tools, and other debitage. Demcak (2000) stated that as a result of the multiple investigations the research potential of the site has been exhausted and not NRHP eligible.

CA-ORA-28. The site was first recorded in 1935 and officially recorded in 1949 as a large site with plenty of water and other resources. The site record was updated in 1977. Surveyors were unable to inspect the site because of the construction of a private residence at the location. The survey team concluded that the construction of the house and roads had destroyed the site. A subsequent field check confirmed that the site had been completely destroyed by the house's construction. Therefore, the site lacks research potential and integrity, and does not qualify for the NRHP. The 2000 survey did not uncover any artifacts.

CA-ORA-880. The site was first recorded in 1980 as a thin scatter of chipped stone artifacts. In 1996, testing of the site did not reveal any artifacts and because of the limited presence of resources, it was determined at that time that the site lacked research potential and was not eligible for NRHP listing (Demcak 2000).

CA-ORA-881. The site was first recorded in 1980 as a scatter of millingstone assemblage artifacts. In 1996, a subsequent test revealed surficial chipped and ground stone artifacts with no subsurface component. The site was determined at that time to not be eligible for the NRHP (Demcak 2000).

CA-ORA-882. The site was first recorded in 1980 as a flake scatter with one flake and two utilized flakes. Partially surface collected and excavated in 1987, the site has yielded tools, shellfish, faunal remains, and two projectile from the Late Period and multiple radiocarbon dates from the Late Period. It is considered NRHP eligible.

CA-ORA-887. The site was originally recorded in the late 1980s and described as a small millingstone site. Artifacts observed included a light scatter of ground and chipped stone. The site was recommended for testing (Demcak 2000), but was not referenced in the subsequent testing reports (Demcak 2002; Demcak and Van Wormer 2003).

CA-ORA-902. The site was first recorded in 1980 as a small lithic scatter of chipped stone and ground stone tools with a possible midden. The site was tested in 1996 and produced debitage, waste flakes and cores, and no subsurface deposit. The site was determined to lack research potential and does not qualify for the NRHP. The 2000 survey revealed no artifacts at this location.

CA-ORA-997. The site was originally recorded in 1980 and described as a flake scatter.. The site was subsequently tested and salvage in 1987 and described as a small Late Period base camp. The site has been formally determined eligible to the NRHP.

CA-ORA-1042. The site was first recorded in 1984 as a small lithic scatter, described as a collecting and processing camp associated with the adjacent freshwater marsh (Chiquita Creek). Testing and salvaging programs in 1987, 1993, and 1997 resulted in surface artifacts collected and no subsurface artifacts recovered. The site was determined in 1997 to have limited data potential and not eligible for the NRHP. During the 2000 field survey, no artifacts were discovered (Demcak 2000).

CA-ORA-1043. This site was first recorded in 1984 as a small, habitation site with a well developed midden containing shellfish and chipped and ground stone tools. Testing and data recovery in 1986, 1989, and 1995 uncovered a deep midden. The site, interpreted as a Late Period semi-permanent or permanent village, was determined to be NRHP in a formal review process. Human remains encountered during construction of the South Orange County Pipeline were reburied following a Native American ceremony.

CA-ORA-1048. The site was first recorded in 1984 as a milling stone scatter consisting of scraper planes, flakes, core, manos, a large metate fragment, and fire-affected rock. The site was subsequently tested and salvaged in 1989 for the South County Pipeline. The site was determined to be NRHP eligible in a formal review process. During the 2000 survey, the ground was disced and multiple artifacts were noted (Demcak 2000).

CA-ORA-1049/1050. The sites were originally recorded as three sites in 1984 as a lithic scatter. During the 2000 survey, no artifacts at the recorded locations for two of sites were identified and none were noted when CA-ORA-1048 was tested and salvaged in 1989 and 1995. At that time, it was determined that the sites do not qualify for the NRHP.

CA-ORA-1104. The site was first recorded in 1986 as a small lithic scatter that consisted of chipped and ground stone artifacts. The 2000 survey (Demcak 2000) did not disclose any artifacts at this site.

CA-ORA-1105. The site was first recorded in 1986 as a small lithic scatter consisting of two core scrapers, one small mano fragment, one ground stone fragment, and one fire-affected rock. No artifacts were found during the 2000 survey (Demcak 2000). The site has been determined ineligible by the SHPO for listing on the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1106. The site was first recorded in 1986 as a large lithic scatter of chipped and ground stone artifacts. The site was tested in 1997 and the site boundaries were expanded to 20 x 230 meters. The site was determined to have very limited research potential that was exhausted with the test phase. At that time, the site was determined ineligible for NRHP listing. During the 2000 survey, the freshly disced site revealed a moderate scatter of chipped and ground stone tools.

CA-ORA-1447. This site was first recorded in 1988 as a ground stone scatter. The site was subsequently tested in 1997 and was determined ineligible for the NRHP in a formal review process. During the 2000 survey, one core tool and one ground stone fragment were revealed (Demcak 2000).

CA-ORA-1559. This site was first recorded during the 2000 survey and was described as a moderate scatter of ground stone and chipped stone tools (Demcak 2000). In 2002, Phase II testing produced 40 chipped stone artifacts and 10 ground stone artifacts. The site has been determined to be NRHP eligible under Criterion D by the SHPO. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1560. This site was first recorded during the 2000 survey and was described as a moderate scatter of ground and chipped stone tools (Demcak 2000). It was determined to be an early base camp site with no later period indicators. In 2002, Phase II testing produced 12 chipped stone and 25 ground stone artifacts. The site has been determined by the SHPO to be NRHP eligible under Criterion D. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1561. This site was first recorded during the 2000 survey and described as a sparse lithic scatter (Demcak 2000). The site appears to be a special purpose camp associated with CA-ORA-1559 and CA-ORA-1560. In 2002, Phase II testing produced one chipped stone artifact and two ground stone artifacts. The site has been determined ineligible by the SHPO for NRHP listing. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1562. This site was first recorded during the 2000 survey (Demcak 2000). It was described as a moderate scatter of ground and chipped stone tools and debitage located on the east side of Chiquita Canyon. The site is interpreted as a small base camp dating to the pre-late to late period in prehistory. In 2002, Phase II testing revealed two chipped stone and five ground stone artifacts. The site has been determined ineligible by the SHPO for listing on the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1563. The site was first recorded during the 2000 survey and was described as a sparse lithic scatter (Demcak 2000). In 2002, Phase II testing revealed a scatter of 12 ground stone and 4 chipped stone artifacts. The site has been determined ineligible by the SHPO for listing on the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1567. The site was first recorded in 2000 as a light scatter of ground and chipped stone tools and debitage. Artifacts at CA-ORA-1567 consist of three core tools, one whole mano, one mano fragment, and one flake. NRHP eligibility has not been determined.

Historic

30-176631. The site was first recorded in 2000 as an historic site located adjacent to Ortega Highway. The telephone switching station dates to World War II. The station, built during wartime, is camouflaged as a house of Modified Colonial style. The house has a facade of apparent colored concrete blocks with a brick interior. The 1½-story structure has false windows, ground floor vents, and wooden shutters with no hinges. A wooden outhouse, missing its door, adjoins the structure to the west. The structure is operated by Pacific Bell and is surrounded by a chain link fence. The site has not been evaluated for eligibility for NRHP listing.

San Mateo Watershed

La Paz Canyon

Approximately 40 percent of the La Paz Canyon Sub-basin (southern end of the Sub-basin) has been the subject of prior investigation. Based on the density and range of sites located within this sub-basin, the area is considered to have a high sensitivity for significant cultural resources. Demcak (2000) identified the following sites in the La Paz Canyon Sub-basin of the San Mateo Watershed.

Prehistoric

CA-ORA-1141. The site was first recorded in 1988 as a small scatter of chipped stone tools and debitage. One flake, one core, and two utilized flakes were noted during the 2000 survey (Demcak 2000). NRHP eligibility has not been determined. It should be noted that this site is outside of the development areas proposed as a part of RMV Planning Area project and would therefore not be disturbed.

CA-ORA-1142. The site was first recorded in 1988 as a small scatter of chipped stone tools and debitage. One flake was noted during the 2000 survey (Demcak 2000). NRHP eligibility has not been determined. It should be noted that this site is outside of the development areas proposed as a part of the RMV Planning Area development and would therefore not be disturbed.

CA-ORA-1558. The site was first recorded in 2000 as a light scatter. The site is a probable plant processing station. NRHP eligibility has not been determined. It should be noted that this site is outside of the development areas proposed as a part of the RMV Planning Area project and would therefore not be disturbed.

Historic

No historic sites or resources were identified.

Gabino Canyon (including Airplane Canyon)

The majority (approximately 90 percent) of Gabino Canyon, including Airplane Canyon, has been subject to prior investigation. Based on the density and range of sites in this sub-basin, it is considered to have a high sensitivity for significant cultural resources. Demcak (2000) reports the following sites:

Prehistoric

CA-ORA-535. The site was first recorded in 1976 as a small (50 square meter) scatter of flakes and cores along both sides of Ortega Highway near Caspers Regional Park. The site had been largely destroyed. NRHP eligibility has not been determined.

CA-ORA-1132. The site was first recorded in 1988 as a light scatter of chipped stone consisting of cores, flakes, and flake and core tools. The 2000 survey revealed several flakes and cores (Demcak 2000). NRHP eligibility has not been determined. It should be noted that this site is outside of the development areas proposed as a part of the RMV Planning Area project and would therefore not be disturbed.

CA-ORA-1133. The site was first recorded in 1988 as a dense scatter of ground and chipped stone artifacts. Many flakes and cores were found during the 2000 survey (Demcak 2000). The site has not been determined for NRHP eligibility.

CA-ORA-1134. The site was first recorded in 1988 as a dense scatter of chipped and ground stone tools. During the 2000 survey, an extensive scatter of ground and chipped stone tools, cores, and flakes was noted (Demcak 2000). The site was not been evaluated for eligibility for NRHP listing.

CA-ORA-1135. The site was first recorded in 1988 as a possible seed processing camp containing a light scatter of chipped and ground stone tools. During the 2000 survey, a metate

and a few flakes were found (Demcak 2000). In 2003, Phase II testing revealed one core, three plano-convex tools, one ecrude biface, one mano fragment, and one metate fragment. The site has been determined ineligible by the SHPO for listing on the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1136. The site was first recorded in 1988 as a light scatter of chipped and ground stone artifacts. During the 2000 survey, no evidence of a site was found (Demcak 2000). NRHP eligibility has not been determined.

CA-ORA-1137. The site was first recorded in 1988 as a small scatter of chipped stone; depth was not determined. A few flakes were noted during the 2000 survey (Demcak 2000). NRHP eligibility has not been determined.

CA-ORA-1138. The site was first recorded in 1988 as a small scatter of chipped stone tools, flakes, and cores. A few flakes and cores were identified during the 2000 survey (Demcak 2000). NRHP eligibility has not been determined.

CA-ORA-1139. The site was first recorded in 1988 as a small scatter of chipped and ground stone tools and debitage. A few flakes and a flake tool were noted during the 2000 survey (Demcak 2000). NRHP eligibility has not been determined. It should be noted that this site is outside of the development areas proposed as a part of the RMV Planning Area project and would therefore not be disturbed.

CA-ORA-1140. The site was first recorded in 1988 as a small scatter of chipped stone tools and debitage; depth was estimated at 20 to 30 centimeters. A few flakes and one core were noted during the 2000 survey (Demcak 2000). NRHP eligibility has not been determined. It should be noted that this site is outside of the development areas proposed as a part of the RMV Planning Area project and would therefore not be disturbed.

CA-ORA-1143. The site was first recorded in 1988 as a small scatter of flakes and cores; depth was not determined. Two flakes were noted during the 2000 survey (Demcak 2000). NRHP eligibility has not been determined. It should be noted that this site is outside of the development areas proposed as a part of the RMV Planning Area project and would therefore not be disturbed.

CA-ORA-1144. The site was first recorded in 1988 as a large scatter in/around a Rancho Mission Viejo metal corral. The site was tested in 1997; 23 test pits and 5 test units were excavated. The area inside the corral was surface collected, but not excavated because of concern for possible injuries to cattle. Recovery outside the corral concluded that the site lacked the research potential for inclusion in the NRHP. During the 2000 survey (Demcak 2000), over 80 flakes, 3 cores, 1 mano, 2 metate fragments, and 1 hammerstone were observed in the internal corral area.

CA-ORA-1448. The site was first recorded in 1988 as a light to moderate scatter of ground stone tools and debitage. Several flakes and cores were found at the site in 2000 (Demcak 2000). The site has not been evaluated for eligibility for NRHP listing. It should be noted that this site is outside of the development areas proposed as a part of the RMV Planning Area project and would therefore not be disturbed.

CA-ORA-1551. The site was first recorded in 2000 as a moderate scatter of ground stone tools, chipped stone tools, and debitage (Demcak 200). The flake and core tools are unusually large for this region; the site is a probable plant processing station. In 2003, Phase II testing revealed

213 chipped stone and 14 ground stone artifacts (Demcak and Van Wormer 2003). The site has been determined by the SHPO to be NRHP eligible under Criterion D. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1552. The site was first recorded in 2000 as an extensive scatter of ground stone tools, chipped stone tools, and debitage (Demcak 2000). A modern pond, 1930s water trough, and metal water tank are proximate to the site. This appears to be a base camp or village where stone tool production was a major activity. NRHP eligibility has not been determined.

CA-ORA-1553. The site was first recorded in 2000 as a light scatter of ground stone tools, chipped stone tools, and debitage (Demcak 2000). This is a probable plant processing station associated with CA-ORA-1552. In 2003, Phase II testing revealed 48 chipped stone and 18ground stone artifacts (Demcak and Van Wormer 2003). The site has been determined ineligible by the SHPO for listing on the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1557. The site was first recorded in 2000 as a light scatter of ground stone tools, chipped stone tools, and debitage (Demcak 2000). This appears to be a plant processing station. In 2003, Phase II testing was conducted (Demcak and Van Wormer 2003). The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

Historic

Site 30-176633. The site was first recorded in 2000 as an historic scatter consisting of a wood and metal wagon, possible derrick segment, and assorted pieces of lumber on a knoll south of and adjacent to Gabino Canyon Creek (Demcak 2000). A large clay pit is located immediately down slope and is presently filled with water, forming a freshwater marsh habitat. The wagon, fabricated from old wagon parts and 1900s to 1930s auto and truck parts (Stephen Van Wormer, pers. comm.), is held fast by a toyon bush. The site has not been evaluated for eligibility for NRHP listing.

Cristianitos Canyon (including Blind Canyon)

Based on the density and range of sites previously investigated in this sub-basin, the area is considered to have a high sensitivity for significant cultural resources.

Prehistoric

CA-ORA-362. The site was recorded in 1972, field checked in 1980, and re-surveyed in 1988. A boundary test was conducted in 1997 and the site described as a scatter of ground stone, flake tools, and debitage. The site has not been evaluated for eligibility for NRHP listing. However, it should be noted that this site is outside the proposed development areas associated with the proposed RMV Planning Area project and would therefore not be impacted.

CA-ORA-363. The site was first recorded in 1972 based on the presence of two scraper-planes and one core hammer that were collected in the field. The site was described as a limited and special use area. The site was field checked in 1980 and 1988. Considerable disturbance was noted. The 2000 survey noted that the site has been mostly graded.

CA-ORA-753. The site was first recorded in 1978 as a small lithic scatter. During the 2000 survey, crews failed to relocate the site (Demcak 2000). The site has not been evaluated for eligibility for NRHP listing.

CA-ORA-754. The site was first recorded in 1978 as small lithic scatter with an unknown depth. During the 2000 survey (Demcak 2000), a few flakes were found at this location. The site has not been evaluated for eligibility for NRHP listing.

CA-ORA-913. The site was first recorded in 1980 as a light scatter of flakes, cores, and core tools; its depth was indeterminate. An update in 1988 noted three flake tools and one flake. The 2000 survey found one flake (Demcak 2000). The site has not been evaluated for eligibility for NRHP listing. It should be noted that this site is outside of the development areas proposed as a part of the RMV Planning Area project and would therefore not be disturbed.

CA-ORA-916. The site was first recorded in 1980 and tested in the 1989and 1997. The site was described as a lithic scatter. The test excavations produced ground stone, flakes, flake tools, and limited faunal and shellfish remains. The site was determined to be NRHP ineligible in a formal review process. The 2000 survey (Demcak 2000) revealed that approximately 70 percent of the site had been graded. At that time, the site was confirmed to be ineligible for the NRHP.

CA-ORA-921/1127. These sites were first recorded in 1980 and have been the subject of a series of test excavations in 1988, 1991, and 1997. Radiocarbon dates indicates the site may have been occupied beginning 1000 years ago. In addition to ground stone, pottery, and buried hearths, a human cranium fragment and distal end of a radius were revealed. The human remains and overlying cairn were reburied after a Native American ceremony. Depending on the selected alignment of the SR-241 extension, the remains would be left undisturbed or relocated. The site was determined to be NRHP eligible in a formal review process. No artifacts were observed during the 2000 survey (Demcak 2000).

CA-ORA-1021. Recorded in the early 1980s, the site is described as a small specialized campsite. The site was recommended for testing (Demcak 2000), but is not referenced in the subsequent testing results reports (Demcak 2002; Demcak and Van Wormer 2003). The site was first recorded in 1983 as a small specialized campsite consisting of 15 to 20 flakes and 1 scraper-plane. The site was field checked in 1988 and relocated during the 2000 survey. The site has been severely disturbed by the cutting of an erosion control ditch and by flooding. The site has not been evaluated for eligibility for NRHP listing. It should be noted that this site is outside of the development areas proposed as a part of the RMV Planning Area project and would therefore not be disturbed.

CA-ORA-1023/1024. The sites were first recorded in 1983 as small lithic scatters. During the 1988 field check, the sites were combined as a continuous scatter. During the 2000 survey, a few flakes were identified (Demcak 2000). The site has not been evaluated for eligibility for NRHP listing. It should be noted that this site is outside of the development areas proposed as a part of the RMV Planning Area project and would therefore not be disturbed.

CA-ORA-1124. The site was first recorded in 1988 as an apparent quarry. The 2000 survey located a few flakes and cores (Demcak 2000). Phase II testing in 2002 (Demcak 2002) recovered one felsite flake from the subsurface. The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1125. The site was first recorded in 1988 as a scatter of flakes, cores, a metate, and flake tools with a subsurface deposit. A test/data recovery program was performed in 1989. The

site was further evaluated in 1997. The site's research potential was determined to be high and testing for NRHP significance was recommended. During the 2000 survey, a few flakes were identified. In 2003, Phase II testing revealed 58 chipped stone and 9 ground stone artifacts (Demcak 2003). The site has been determined to be eligible by the SHPO for the NRHP under Criterion D. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1126/1452. The site recorded in 1988 and described as a temporary or seasonal camp. The site was determined to be NRHP ineligible in a formal review process. No artifacts were found during the 2000 survey.

CA-ORA-1184. The site was recorded in 1988 as a sparse lithic scatter (two manos). The 2000 survey did not reveal any artifacts, and subsequent Phase II-A testing did not produce any artifacts or subsurface deposit at this site. The site has been determined to be ineligible by SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1185. Recorded in the late 1980s, the site was described as a relatively extensive scatter of ground and chipped stone. The site was recommended for testing (Demcak 2000), but is not referenced in the subsequent testing results reports (Demcak 2002; Demcak and Van Wormer 2003). The site was first recorded in 1988 as an extensive scatter of ground and chipped stone items; depth could not be determined. Artifacts included a metate, mano/ hammerstone, fire-affected rock, seven cores/tools, and a flake. During the 2000 survey (Demcak 2000), a few flakes were observed. The site has not been evaluated for eligibility for NRHP listing.

CA-ORA-1222. The site was first recorded in 1989 as a small scatter of flakes, scrapers, and a drill. A field check and test in 1997 revealed a much more extensive deposit. The site was interpreted as a short-term camp used for lithic production and seed processing. The site was determined to be NRHP eligible in a formal review process. During the 2000 survey, one mano was found on the site; four additional sites were recorded (CA-ORA-1550, -1554, -1555, and -1556) in the vicinity of CA-ORA-1222 and are likely associated with the original site.

CA-ORA-1449. The site was first recorded in 1988 as a light scatter of debitage and tools and interpreted as a possible hunting camp. In 2003, Phase II testing revealed 160 chipped stone and five ground stone artifacts (Demcak 2003). The site has been determined by the SHPO to be NRHP eligible under Criterion D. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1450. The site was first recorded in 1988 during a survey for the SR-241 extension and identified as a lithic scatter; depth was unknown. No artifacts were found at this location during the 2000 survey. The site has been determined ineligible by the SHPO for NRHP listing. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1550. The site was first recorded in 2000 as a light scatter; its depth could not be determined. A seep (spring) and unnamed drainage are present proximate to the site. The site appears to be a limited use area (possibly ceremonial) associated with CA-ORA-1222. In 2002 (Demcak 2002), Phase II testing revealed one chipped stone and three ground stone artifacts. The site has been determined ineligible for NRHP listing by the SHPO. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1554. The site was first recorded in 2000 as a light scatter of ground stone tools, and chipped stone tools, and debitage; depth could not be determined. In 2002, Phase II testing revealed 33 chipped stone and 11 ground stone artifacts (Demcak 2002). The site was

determined to be eligible by the SHPO for the NRHP under Criterion D. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1555. The site was first recorded in 2000 as a light to moderate scatter with an unknown depth. The site is a probable base camp associated with CA-ORA-1222. In 2002, Phase II testing revealed 80 chipped stone and 12 ground stone artifacts (Demcak 2002). The site was determined to be NRHP eligible under Criterion D by the SHPO. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1556. The site was first recorded in 2000 as a light to moderate scatter; its depth could not be determined. The site is a possible satellite camp associated with CA-ORA-1222. In 2002, Phase II testing revealed 92 chipped stone and 9 ground stone artifacts (Demcak 2002). The site was determined to be NRHP eligible under Criterion D by the SHPO. (Source: Office of Historic Preservation letter dated January 27, 2004)

CA-ORA-1573. The site was first recorded in 2000 as a light scatter; depth could not be determined. The site is a probable plant processing station. In 2003, Phase II testing revealed a small lithic scatter including six flakes, two felsite artifacts, and four site artifacts. The site has been determined ineligible by the SHPO for the NRHP. (Source: Office of Historic Preservation letter dated January 27, 2004)

Historic

No historic sites or resources have been identified.

Talega Canyon

The southern 50 percent of the Talega Canyon Sub-basin has been subject to prior investigation. Based on the density and range of sites present in this sub-basin, the area is considered to have a high sensitivity for significant cultural resources. Known resources in the Talega Canyon Sub-basin are as follows:

Prehistoric

CA-SDI-5925. The site was recorded in 1978 as a medium intensity scatter of about 25 flakes; a few bone fragments were also sighted. No artifacts were noted at this location during the 2000 field check (Demcak 2000).

CA-SDI-5926. The site was first recorded in 1978 as a moderately intense lithic scatter with an unknown depth. Some erosion of the site was noted. In 1997, only four flake fragments were found at this location in a field check. No artifacts were found during the 2000 survey (Demcak 2000). The site may have been washed away.

CA-SDI-9571. The site was first recorded in 1981 as a lithic scatter consisting of seven flakes. Neither the area nor the depth of the site could be determined. No artifacts were found at this location during the 2000 survey (Demcak 2000).

RMV-15. The site was recorded during the 2000 survey (Demcak 2000). The site is described as a light scatter of chipped stone tools and debitage. The site was recommended for testing (Demcak 2000), but is not referenced in the subsequent testing results reports (Demcak 2002; Demcak and Van Wormer 2003).

Historic

RMV-13H (30-176634). The site was first recorded in 2000 as a military bunker associated with MCB Camp Pendleton, whose northern boundary is located 450 meters to the south of this structure. The structure is found on a small knoll north and east of the confluence of Talega Creek and Cristianitos Creek and on leased land occupied by the TRW Capistrano Test Site. The concrete building has wooden roof and wall supports. The concrete blocks have been poured and roughly finished. The site has been evaluated for eligibility for NRHP listing; a final determination has not been made by the SHPO. (Source: Office of Historic Preservation letter dated January 27, 2004). The site was previously determined to be eligible for NRHP listing by the USACE.

RMV-14H (30-176635). The site was first recorded in 2000 as a military bunker associated with MCB Camp Pendleton. It is on a small knoll on the leased land occupied by the TRW Capistrano Test Site. The building is constructed of concrete blocks, poured, and roughly finished. Graffiti dates to the 1940s. The structure measures 2.3 meters high, 5.05 meters long, and 1.95 meters wide, with walls 22 centimeters thick. The site has been evaluated for eligibility for NRHP listing; a final determination has not been made by the SHPO. (Source: Office of Historic Preservation letter dated January 27, 2004) The site was previously determined to be eligible for NRHP listing by the USACE.

4.1.10.3 Summary of Site Eligibility

In accordance with 36 CRF Part 800, regulations implementing Section 106 of the National Historic Preservation Act, the USACE consulted with the SHPO to request concurrence on the following determinations of eligibility.

- Nine prehistoric sites, CA-ORA-1449, -1554, -1555, -1556, -1559, -1560, -1565, -1125, and -1551 are eligible under Criterion D for listing under on the National Register of Historic Places (National Register)

- Historic Site, CA-ORA-29, La Casa de la Mission Vieja is eligible under Criterion B and D for listing under on the National Register;

- Military Bunkers (sites 30-176634 and 30-176635) are potentially eligible under Criterion A for listing under on the National Register; and,

- Lacking integrity, sufficient data and/or research potential, the following sites are not eligible for listing on the National Register under any of the criteria: CA-ORA-653, -654, −655, -657, -658, -1105, -1124, -1184, -1446, -1450, -1550, -1561, -1562, -1563, −1564, -1566, -1111, -1135, -1553, -1557, -1573, and historic site 30-176632.

On January 27, 2004, the SHPO concurred with the USACE request regarding all sites within the exception of two. The SHPO was unable to concur with the USACE recommendation for Military Bunkers (sites 30-176634 and 30-176635) as being eligible under Criterion A.

A summary of the status of eligibility for all identified resources is provided on Table 4.1.10-2.

TABLE 4.1.10-2
ARCHAEOLOGICAL AND HISTORIC RESOURCES SIGNIFICANCE

Watershed	Site Number	NRHP Eligible (Criteria)
San Juan Watershed: Central San Juan and Trampas Canyon	**Archaeological Resources**	
	CA-ORA-653	Ineligible[b.]
	CA-ORA-654	Ineligible[b.]
	CA-ORA-655	Ineligible[b.]
	CA-ORA-656	Yes (Criterion D)
	CA-ORA-657	Ineligible[b.]
	CA-ORA-658	Ineligible[b.]
	CA-ORA-1102	Not considered eligible[a.]
	CA-ORA-1103	Not considered eligible[a.]
	CA-ORA-1111	Ineligible[b.]
	CA-ORA-1121	Yes (Criterion D)[b.]
	CA-ORA-1122	Not considered eligible[a.]
	CA-ORA-1123	Not considered eligible[a.]
	Historic Resources	
	CA-ORA-29	Yes (Criteria B and D)[b.]
San Juan Watershed: Cañada Gobernadora (including Wagon Wheel and Sulfur Canyons)	**Archaeological Resources**	
	CA-ORA-984	Not considered eligible[a]
	CA-ORA-1446	Ineligible[b.]
	CA-ORA-1564	Ineligible[b.]
	CA-ORA-1565	Yes (Criterion D)[b.]
	CA-ORA-1566	Ineligible[b.]
	Historic Resources	
	30-176632	Ineligible[b.]
San Juan Watershed: Cañada Chiquita and Narrow Canyon	**Archaeological Resources**	
	CA-ORA-26	Not considered eligible[a]
	CA-ORA-27	Not considered eligible[a]
	CA-ORA-28	Ineligible
	CA-ORA-880	Not considered eligible[a]
	CA-ORA-881	Not considered eligible[a]
	CA-ORA-882	Yes (Criterion D)
	CA-ORA-887	Not considered eligible[a]
	CA-ORA-902	Ineligible
	CA-ORA-997	Yes (Criterion D)
	CA-ORA-1042	Not considered eligible[a.]
	CA-ORA-1043	Yes (Criterion D)
	CA-ORA-1048	Yes (Criterion D)
	CA-ORA-1049/1050	Not considered eligible[a.]
	CA-ORA-1104	Not considered eligible[a.]
	CA-ORA-1105	Ineligible[b.]
	CA-ORA-1106	Ineligible
	CA-ORA-1447	Not considered eligible[a.]
	CA-ORA-1559	Yes (Criterion D)[b.]
	CA-ORA-1560	Yes (Criterion D)[b.]

TABLE 4.1.10-2 (Continued)
ARCHAEOLOGICAL AND HISTORIC RESOURCES SIGNIFICANCE

Watershed	Site Number	NRHP Eligible (Criteria)
	CA-ORA-1561	Ineligible[b.]
	CA-ORA-1562	Ineligible[b.]
	CA-ORA-1563	Ineligible[b.]
	CA-ORA-1567	Undetermined
	Historic Resources	
	30-176631	Undetermined[c.]
	Archaeological Resources	
	CA-ORA-1141	Not determined
	CA-ORA-1142	Not determined
	CA-ORA-1558	Not determined
San Mateo Watershed: Gabino Canyon (including Airplane Canyon)	**Archeological Resources**	
	CA-ORA-535	Not determined
	CA-ORA-1132	Not determined
	CA-ORA-1133	Not determined
	CA-ORA-1134	Not determined
	CA-ORA-1135	Ineligible[b.]
	CA-ORA-1136	Not determined
	CA-ORA-1137	Not determined
	CA-ORA-1138	Not determined
	CA-ORA-1140	Not determined
	CA-ORA-1143	Not determined
	CA-ORA-1144	Not determined
	CA-ORA-1448	Not determined
	CA-ORA-1551	Yes (Criterion D)[b.]
	CA-ORA-1552	Not determined
	CA-ORA-1553	Ineligible[b.]
	CA-ORA-1557	Ineligible[b.]
	Historic Resources	
	30-176633	Not determined
San Mateo Watershed: Cristianitos Canyon (including Blind Canyon)	**Archaeological Resources**	
	CA-ORA-362	Not determined
	CA-ORA-362	Not determined
	CA-ORA-753	Not determined
	CA-ORA-754	Not determined
	CA-ORA-913	Not determined
	CA-ORA-916	Not considered eligible[a.]
	CA-ORA-921/-1127	Ineligible
	CA-ORA-1021	Not determined
	CA-ORA-1023/-1024	Not determined

TABLE 4.1.10-2 (Continued)
ARCHAEOLOGICAL AND HISTORIC RESOURCES SIGNIFICANCE

Watershed	Site Number	NRHP Eligible (Criteria)
	CA-ORA-1124	Ineligible[b.]
	CA-ORA-1125	Yes (Criterion D)[b.]
	CA-ORA-1126/-1452	Ineligible
	CA-ORA-1184	Ineligible[b.]
	Ca-ORA-1185	Not determined
	CA-ORA-1222	Yes (Criterion D)
	CA-ORA-1449	Yes (Criterion D)[b.]
	CA-ORA-1450	Ineligible[b.]
	CA-ORA-1550	Ineligible[b.]
	CA-ORA-1554	Yes (Criterion D)[b.]
	CA-ORA-1555	Yes (Criterion D)[b.]
	CA-ORA-1556	Yes (Criterion D)[b.]
	CA-ORA-1573	Ineligible
San Mateo Watershed: Talega Canyon	**Archaeological Resources**	
	CA-SDI-5925	Not determined
	CA-SDI-5926	Not determined
	CA-SDI-9571	Not determined
	RMV-15	Not considered eligible
	Historic Resources	
	30-176634	Yes (Criterion D)[d]
	30-176635	Yes (Criterion D)[d.]

a. Source: Demcak, 2000.
b. Source: Office of Historic Preservation letter dated January 27, 2004.
c. Eligibility of the site has not yet been determined by SHPO for listing on the NRHP.
d. Eligibility of the site was determined by the USACE for listing on the NRHP.

Source: Archaeological Resource Management Corporation 2003.

4.1.11 POPULATION, HOUSING, AND EMPLOYMENT

According to the County of Orange General Plan (adopted, April 20, 2004), Orange County's economy was based largely on agriculture until the 1940s. With the rapid southward expansion of Los Angeles' population and industrial development, Orange County's economy began to change rapidly, particularly in the northern portions of the County. In 1940, twice as many workers were employed in agriculture as in manufacturing. The largest increase in Orange County's population began with the onset of the military build-up for World War II and continued with the post-war expansion of California. Between 1940 and 1960, Orange County's population grew from 130,000 to more than 700,000, transforming the County into a major suburb of Los Angeles County.

During the past 20 years, the focal point of Orange County's growth has shifted gradually southward. In the 1950s and 1960s, the majority of new development occurred in the northern areas of the County such as Anaheim, Fullerton, Garden Grove, Huntington Beach, Orange, Westminster, and Fountain Valley. As vacant land became scarcer during the 1970s, the center of growth shifted to the south with the rise of new communities in the areas of Irvine, Mission Viejo, and Laguna Niguel. During the 1980s and 1990s, the growth in southern Orange County continued in new planned communities such as Aliso Viejo, Foothill Ranch, Portola Hills, and Rancho Santa Margarita.

Despite the loss of unincorporated areas of the County with the incorporation of the cities in the late 1980s and 1990s (i.e., Dana Point, Lake Forest, Laguna Hills, Laguna Niguel, Laguna Woods, and Mission Viejo), the County of Orange anticipates that development within unincorporated areas of Orange County will be a significant contributor to future population, housing, and employment trends for the County.

4.1.11.1 Methodology

Information in this section is generally based on data from the County of Orange General Plan (2004); the Southern California Association of Governments (SCAG), including their Regional Housing Needs Assessment (2000); and the Center for Demographic Research (CDR) at California State University, Fullerton (CSUF).

SCAG is a Joint Powers Agency established under California Government Code §6502 *et seq*. SCAG is designated as Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO) for the six-county region of Orange, Los Angeles, Ventura, San Bernardino, Riverside, and Imperial counties. The region encompasses a population exceeding 16.4 million persons in an area of more than 38,000 square miles.

The Orange County MPO obtains its census data and projections from the CDR. The CDR is governed and supported by the following sponsor agencies: County of Orange, League of Cities, Orange County Sanitation District, Orange County Transportation Authority, Transportation Corridors Agencies, Municipal Water District of Orange County, Orange County Water District, and California State University, Fullerton. The goal of the CDR is to provide accurate and timely information regarding population, housing, and employment characteristics in an efficient and cost-effective manner. This data is used for that can be used for long-range planning purposes to ensure consistency in assumptions by the various local and regional jurisdictions.

Existing and projected population, housing, and employment data for the study area is based on Orange County Projections–2004. OCP–2004 was developed by the CDR for incorporation into the SCAG'S growth forecast for the 2004 Regional Transportation Plan (RTP) and the South Coast Air Quality Management District's (SCAQMD) Air Quality Management Plan (AQMP). These projections are recognized by the agencies that sponsor the CDR as the uniform data set for use in local planning applications. These projections were developed by using a multistage process that combined several procedures and methodologies into a "top down" and "bottom up" process. Generally, total population, housing, and employment were projected and then allocated to smaller geographic areas based on an analysis of local policy, land use capacity, demographic changes, and assumed market focus. Small area projections were developed and these were reviewed by local jurisdictions; adjustments were then made based on local jurisdictions' input where warranted.

It should be noted that OCP 2004 data set, which was adopted by the Orange County Board of Supervisors in 2003 and SCAG in April 2004, does not reflect the density approved for the RMV Proposed Projects. The number of housing units approved by the Board of Supervisors in November 2004 is approximately 32 percent lower than what was assumed in the adopted projections. Additionally, 6,000 of these units are senior units, which would have a lower population generation rate than conventional housing.

4.1.11.2 SAMP Study Area

As depicted in Figure 4.1.11-1, for the purpose of statistical research and analysis, the County of Orange is divided into ten Regional Statistical Areas (RSA), which are combinations of census tracts designated by SCAG for planning purposes. Each RSA is divided into Community Analysis Areas (CAAs), which are planning areas used in Orange County to approximate cities, areas within a city (e.g., Anaheim Hills), unincorporated communities, or special use areas (e.g., MCAS El Toro). The CAAs provide a level of geography larger than census tracts but smaller than RSAs. The SAMP Study area is located within RSAs 43 and 40, though it does not encompass all of RSA 40. These two RSAs comprise the southern-central portion of Orange County and include portions or all of the cities of Lake Forest, Mission Viejo, Rancho Santa Margarita, San Juan Capistrano, San Clemente, Dana Point, Laguna Niguel, Laguna Beach as well the unincorporated communities of Ladera Ranch, Las Flores, and Coto de Caza.

Existing and Projected Population

According to the Center for Demographic Research at California State University, Fullerton, RSA 43 and 40 had a 2000 population of 539,410 persons, equating to approximately 19 percent of Orange County's total 2000 population. By 2030, the population for this area is expected to increase by 34 percent over 2000 levels. This is substantially greater than the overall countywide average projected growth rate of 24 percent. Table 4.1.11-1 provides existing and projected population projections for the two RSAs that comprise the SAMP Study Area.

TABLE 4.1.11-1
EXISTING AND PROJECTED POPULATION

Area		2000	2005	2010	2015	2020	2025	2030
RSA 40		290,163	318,298	336,256	342,902	347,133	349,212	351,254
	% Change[a.]		*9.7%*	*5.6%*	*2.0%*	*1.2%*	*0.6%*	*0.6%*
RSA 43		249,247	278,835	312,275	333,297	353,052	371,006	372,086
	% Change[a.]		*11.9%*	*12.0%*	*6.7%*	*5.9%*	*5.1%*	*0.3%*
Total		**539,410**	**597,133**	**648,531**	**676,199**	**700,185**	**720,218**	**723,340**
	% Change[a]		*10.7%*	*8.6%*	*4.3%*	*3.5%*	*2.9%*	*0.4%*

a. Percentages shown in italics represent the percentage change in population for the RSA from the previous time period shown.

Source: Orange County Projections 2004, Center for Demographic Research 2004.

Housing

As identified in Table 4.1.11-2, there were 211,377 housing units within the two RSAs that comprise the SAMP Study Area in 2000; this accounts for approximately 22 percent of Orange County's entire housing stock. This figure is expected to increase to 258,564 by the year 2030. This represents a 23 increase between 2000 and 2030. When compared to the overall growth for the entire County during this period (15 percent), this percentage increase in housing units is substantial. The majority of this growth in housing units is attributed to growth associated development of major projects on vacant land.

TABLE 4.1.11-2
EXISTING AND PROJECTED HOUSING

Area		2000	2005	2010	2015	2020	2025	2030
RSA 40		124,573	132,217	134,934	135,437	135,634	135,785	136,662
	% Change[a]		*6.1%*	*2.1%*	*0.4%*	*0.1%*	*0.1%*	*0.6%*
RSA 43		86,804	96,479	106,341	111,624	116,574	121,526	121,902
	% Change		*11.1%*	*10.2%*	*5.0%*	*4.4%*	*4.2%*	*0.3%*
Total		**211,377**	**228,696**	**241,275**	**247,061**	**252,208**	**257,311**	**258,564**
	% Change		*8.2%*	*5.5%*	*2.4%*	*2.1%*	*2.0%*	*0.5%*

a. Percentages shown in italics represent the percentage change in population for the RSA from the previous time period shown.

Source: Orange County Projections 2004, Center for Demographic Research 2004.

Regional Housing Needs Assessment

State law requires all regional councils of government, which includes SCAG, to determine the existing and future housing needs for its region (Government Code Section 65580 et. seq.). SCAG is also required to determine the share of need allocated to each city and county within the SCAG region. This is called the Regional Housing Needs Assessment (RHNA). The RHNA identifies the housing needs for the upcoming five-year period. The State Department of Housing and Community Development (HCD) and federal Department of Housing and Urban Development (HUD), in cooperation with SCAG, approved the final RHNA allocation for Orange County from 1998 to 2005 in November 2000.

For RHNA purposes, HCD, HUD, and SCAG have defined "future needs" as the number of additional housing units by income level that will have to be added to stock, or the share of the

region's housing needs that have been allocated to a community. SCAG calculates future housing needs based upon their household growth forecast, plus a certain amount of units needed to account for a normal and appropriate level of vacancies and the replacement of units that are normally lost to conversion or demolition.

SCAG's housing allocation for Orange County unincorporated areas and cities are divided into four affordability categories, which were developed by the State of California. These categories are consistent with federal and state housing programs (e.g., Section 8 and State Density Bonus Law). These income categories must be considered in calculating future housing needs:

- Very Low–Less than 50 percent of the Orange County median family income.
- Low–51 to 80 percent of the Orange County median family income.
- Moderate–81 to 120 percent of the Orange County median family income.
- Upper–More than 120 percent of the Orange County median family income.

The affordability distribution of new units is derived from the household income distribution of households in Orange County in 1990, plus a fair share adjustment determined by SCAG. Table 4.1.11-3 summarizes the share of the region's future housing for the cities of Dana Point, Laguna Niguel, Mission Viejo, San Juan Capistrano, and San Clemente, and all of the unincorporated areas of Orange County, and provides the relative breakdown by affordability level. Approximately 31 percent of the RHNA must be affordable to lower income (i.e., low and very low income) households.

TABLE 4.1.11-3
RHNA ALLOCATION OF HOUSING UNITS: 1998 TO 2005

Income Group	Income Threshold	RHNA Allocation/Percentage to Total					
		Unincorporated Orange County	City of Dana Point	City of Laguna Niguel	City of Mission Viejo	City of San Juan Capistrano	City of San Clemente
Very Low	<$34,250	4,084	85	202	181	164	545
	percentage of allocation	18%	19%	16%	16%	20%	20%
Low	<$50,200	2,950	50	138	122	116	308
	percentage of allocation	13%	11%	11%	11%	14%	11%
Moderate	<$82,200	4,992	86	107	209	167	550
	percentage of allocation	22%	19%	7%	19%	20%	20%
Upper	Above $82,200	10,661	229	789	597	393	1,317
	percentage of allocation	47%	51%	64%	54%	47%	48%
Total		**22,687 100%**	**450 100%**	**1,236 100%**	**1,110 100%**	**839 100%**	**2,719 100%**
Source: SCAG, Regional Housing Needs Assessment, Adopted RHNA Construction Need, 2001							

Housing overpayment occurs when renters or homeowners pay more than 30 percent of their gross incomes for rent or mortgage payments. As in other communities in California, housing overpayment is not uncommon in southern Orange County. A high cost of housing can result in those on fixed-income, the elderly, and lower income families using a disproportionate percentage of their income for housing. In contrast, housing overpayment can also occur among the upper income owner-occupied households; this situation occurs because some families intentionally choose to pay more for housing when moving up into larger homes. Because of their relatively higher income, these families still have more disposable income despite higher cost burdens.

Employment

According to the monthly labor force data for California counties from the California Employment Development Department (EDD), the 2004 average, not seasonally adjusted unemployment rate for Orange County for was 4.3 percent. This compares to an unemployment rate for California of 6.2 percent for the same period. Orange County was tied with Placer County as having the lowest unemployment rate in the state.

Existing and projected employment data for the RSAs in the SAMP Study Area are listed in Table 4.1.11-4. As identified in the table, the Center for Demographic Research at California State University, Fullerton states that there were 191,567 employed persons within the subject RSAs in 2000; this accounts for almost 13 percent of Orange County's entire work force.

TABLE 4.1.11-4
EXISTING AND PROJECTED EMPLOYMENT

Area	Employment	2000	2005	2010	2015	2020	2025	2030
RSA 40	Total *% Change*[a]	122,211	126,192 *3.3%*	139,950 *10.9%*	147,198 *5.2%*	150,563 2.3%	153,002 *1.6%*	155,691 *1.8%*
RSA 43	Total *% Change*	69,356	75,683 *9.1%*	110,472 *46.0%*	119,996 *8.6%*	126,248 *5.2%*	132,007 *4.6%*	132,750 0.6%
SAMP Study Area	**Total** *% Change*	**191,567**	**201,875** *5.4%*	**250,422** *24.0%*	**267,194** *6.7%*	**276,811** *3.6%*	**285,009** *3.0%*	**288,441** *1.2%*

a. Percentages shown in italics represent the percentage change in housing for the RSA from the previous time period shown.

Source: Orange County Projections 2004, Center for Demographic Research 2004.

The SAMP Study Area is located in the Orange County SCAG subregion. With regard to the jobs/housing relationship, the subregion is not considered to be balanced, although projections indicate balance in the southwestern portion of Orange County in the year 2025. SCAG determined in its *2001 The New Economy and Jobs/Housing Balance in Southern California* that northern Orange County had high jobs/housing ratios and eastern and southern Orange County had low jobs/housing ratios. SCAG determined in the 1994 Growth Management Plan that the Orange County Subregion had a job/housing ratio of 1.52 in 1997 and a projected ratio of 1.91 in the year 2025.

4.1.12 RECREATION

There are numerous recreational facilities within the SAMP Study Area. They include federal, state, county, and city facilities, as well as private recreational venues. Local and neighborhood parks exist within developed areas. Existing local and neighborhood facilities would not be affected by the SAMP because they are generally located in disturbed areas and would not be subject to the SAMP (not requiring USACE approvals) and because state and local park codes provide for provision of parkland in conjunction with new development. Therefore, this analysis focuses on larger recreational facilities; facilities that have the potential to affect aquatic resources, and those facilities in areas proposed for development. Figure 4.1.12-1 depicts the location of the larger facilities, including facilities in surrounding areas.

4.1.12.1 Federal Recreational Facilities

Cleveland National Forest

The Cleveland National Forest is 460,000 acres, of which 40,000 acres are within the SAMP Study Area. The Cleveland National Forest encompasses three mountain ranges: the Santa Ana, Palomar, and Laguna Mountains. Only a portion of the Santa Ana Mountains, within the Trabuco Ranger District, is within the SAMP Study Area. Recreational opportunities in the SAMP Study Area include numerous trails for riding, hiking, and bicycles; picnicking; and camping. Within the SAMP Study Area, the Blue Jay Campground provides year-round camping opportunities.

4.1.12.2 State Recreational Facilities

Doheny State Beach

Doheny State Beach is an 86-acre facility located in the City of Dana Point. It is generally bound by Pacific Coast Highway and Coast Highway on the northeast and the Pacific Ocean on the southwest; Dana Point Harbor is located on the northwest and Capistrano Beach County Park on the southeast. San Juan Creek flows through Capistrano Beach County Park to a small estuary and empties into the ocean. The park provides over a mile of beachfront. Activities at the park include surfing, volleyball, swimming, sunbathing, fishing, biking, picnicking, camping, and campfires.

Doheny State Beach is divided into three use areas. The area northwest of San Juan Creek is designated as a day use picnic area. Parking is provided in this area for approximately 700 vehicles. Other features include a large turf area, picnic tables, restrooms, showers, and the beach. A lifeguard tower and Visitors Center is located in this area. The Visitor Center includes aquariums and a simulated tide pool, administrative offices, and maintenance area. The second area is the campground area. Located southeast of San Juan Creek, this area provides 120 spaces for tent or recreational vehicle camping. The third area, a day use beach area, is located south of the campgrounds. This area has approximately 567 parking spaces, restroom buildings with chemical toilets, showers, fire rings, and seasonal lifeguard towers. (Doheny State Beach Preliminary General Plan and Draft EIR, December 2003)

4.1.12.3 Regional Parks

The countywide system of regional parks provides about 16,000 acres of land dedicated to park and recreation uses in Orange County. Three regional parks, General Thomas F. Riley Wilderness Park, Caspers Wilderness Park, and O'Neill Regional Park, are located within the SAMP Study Area. Each of these parks is part of the County's overall park system and provides

large expanses for active and passive recreational uses. Although facilities are planned as part of the County of Orange Master Plan of Riding and Hiking Trails, there are no existing trails that link these regional parks. These parks are discussed below.

General Thomas F. Riley Wilderness Park

The General Thomas F. Riley Wilderness Park is located in unincorporated Orange County south and west of the community of Coto de Caza and east of the communities of Rancho Santa Margarita, Las Flores, and Wagon Wheel Canyon. The entrance of the Riley Wilderness Park is located at the corner of Oso Parkway and Coto de Caza Drive. The park is contiguous to the RMV Planning Area.

In January 1983, 524 acres for the park were irrevocably offered by the Coto de Caza Development Corporation to the County of Orange and accepted the same day. The property was offered for public park and recreational purposes and was named Wagon Wheel Canyon Wilderness Park. This park is a regional wilderness park that is defined in the Recreation Element of the Orange County General Plan as:

> *"A regional park in which the land retains its primeval character with minimal improvements and which is managed and protected to preserve natural processes. The park (1) generally appears to have been affected primarily by forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude of a primitive and unconfined type of recreation; (3) is sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic or historical value."* (Section VII)

Wagon Wheel Canyon Wilderness Park, which was renamed the General Thomas F. Riley Wilderness Park, was formally opened to the public and dedicated to Supervisor Riley on December 10, 1994. The park covers an area of mostly rolling hills and major oak groves. There is no General Development Plan for the park; however, the Orange County Board of Supervisors approved an interim operations plan on September 27, 1994. This interim operations plan currently remains in place (personal communication, H. Huggins). As part of the interim phase, the park offers low impact recreational activities including hiking, mountain biking, and horseback riding. There are also two vista points within the park. The County also offers a variety of programs to the public including, but not limited to, junior ranger, college internships, programs for school classes, nature/educational hikes, and stargazing. The park is used by the Boy Scouts for completing work associated with earning their badges. Informal picnicking is available.

The natural setting of the park is an important component of this resource. Plant communities known to occur at this park include scrub, grassland, riparian, and woodland. The plant communities present provide suitable habitat for a variety of plant and wildlife species, some of which are considered sensitive by state and federal resource agencies. Sensitive species known to occur within the General Thomas F. Riley Wilderness Park include the orange-throated whiptail, San Diego horned lizard, red diamond rattlesnake, coastal California gnatcatcher, and southern California rufous-crowned sparrow.

The General Thomas F. Riley Wilderness Park is of sufficient size to make practicable its preservation and use in an unimpaired condition; however, it should be noted that urban views and noise are experienced along portions of the trails and vista points. In an effort to preserve natural resources as this park, the County has imposed access restrictions to certain areas of

the park that have high quality coastal sage scrub supporting California gnatcatchers (primarily in the north/northwestern portion of the park).

Ronald W. Caspers Wilderness Park

The Ronald W. Caspers Wilderness Park encompasses approximately 8,500 acres. It is immediately adjacent to the RMV Proposed Project's Planning Area 3. Existing facilities at the park include various multi-use, pedestrian, and equestrian trails; an equestrian day use area; Starr Mesa Equestrian Campground; Live Oak Flats Campground; and a Visitors Center. Existing development at Caspers Wilderness Park is primarily west of Ortega Highway, which bisects the park. Access is provided via Ortega Highway.

In 1973, the Starr Foundation deeded the northern 3,779 acres of the Starr Ranch to the National Audubon Society for use as a wildlife sanctuary. In late 1973 and early 1974, the Orange County Board of Supervisors, under the direction of Chairman Ronald W. Caspers voted to purchase the southern 5,500 acres of Starr Ranch for use as a public recreation facility. On April 12, 1974, Starr Viejo Regional Park was opened as a primitive, wilderness day use and camping facility. On August 20, 1974, the Orange County Board of Supervisors changed the name of the park to Ronald W. Caspers Wilderness Park in honor and recognition of his foresight in acquiring and preserving this area of quality wilderness. In 1984, an additional 2,100 acres was dedicated by Rancho Mission Viejo bringing the park's total acreage to 8,500. Not all the park is currently accessible to the public.

Caspers Wilderness Park provides recreational uses such as camping, picnicking, hiking, horseback riding, mountain biking, photography, nature study, and astronomy. The park has campgrounds, restrooms with showers, picnic areas, an equestrian campground, and hiking and equestrian trails. Activities include guided nature walks, naturalist programs, and telescope observations.

O'Neill Regional Park

O'Neill Regional Park encompasses over 3,358 acres of oak/sycamore woodlands, grassy meadows, riparian, chaparral, and coastal sage scrub habitats. Located in the foothills of the Santa Ana Mountains, O'Neill Park offers picnic facilities, and overnight camping. At its closest point the park is located approximately one mile west of Planning Area 2 within the RMV Planning Area.

In 1948, the O'Neill family donated the initial 278 acres of Trabuco Canyon to the County of Orange for use as a regional park. Throughout the years, the O'Neill family donated additional acreage. Other neighboring owners, such as the Ramakrishna Monastery, wishing to preserve native habitat, donated property to the park. In 1982, Rancho Mission Viejo dedicated an additional 935 acres in the Arroyo Trabuco. An additional 735 acres in Tijeras Canyon was dedicated in 1996, and 258 acres were dedicated as mitigation for the Arroyo Trabuco Golf Course. O'Neill Regional Park is currently over 3,358 acres.

Recreation opportunities at the park include wildlife observation, bird watching, hiking, and mountain biking and horseback riding on park trails. The park is heavily wooded with coast live oak and sycamore trees. The hillsides surrounding the park are filled with cactus, wild buckwheat, sagebrush and chaparral of scrub oak, buckthorn and mountain mahogany.

O'Neill Park offers both day use and overnight camping facilities. The Oak Grove offers a shaded area, a turf area, and a playground for children. The Featherly area stretches along

Trabuco Creek, a seasonal waterway that flows from the Trabuco Peak to the Pacific Ocean. The mile long Mesa area includes viewpoints of Trabuco Canyon. The West area presents scenic trails. In each area, facilities include picnic tables, barbecues, water, and restrooms. Individual tent and recreational vehicle camping is available year round along Trabuco Creek in the main campground. Interpretive programs are frequently conducted Saturdays and Sundays. Ranger led nature hikes present local history and instruction on native wildlife. Campfires programs are hosted at the amphitheater after sunset throughout the year.

4.1.12.4 Trails and Bikeways

Riding and Hiking Trails

The County's regional riding and hiking trails link the harbors, beaches, parks, open space, and recreational areas. The Countywide regional trail network includes 348 miles of existing and proposed trails, including areas regulated by governmental agencies other than the County of Orange. The General Plans for the cities within the SAMP Study Area do not have separate riding and hiking trail plans. This system is designed to service the area within the SAMP boundary. These riding and hiking trails include equestrian, pedestrian, and mountain biking use. Many of the trails are developed and dedicated in conjunction with the surrounding development. In an effort to minimize impacts, ranch roads and fire roads have often been used to accommodate the trails with minimal additional impacts. Figure 4.1.12-2 illustrates the trails within the SAMP Study Area that are on the Regional Riding and Hiking Trails Map. It should be noted that the alignments are conceptual. Precise alignments are determined when the trail is actually developed and factors such as public safety, environmental impacts, and development cost are considered.

Staging areas are also shown on the figure. Staging areas typically provide parking and amenities such as watering troughs, drinking fountains, horse tie-ups, benches, and shade trees. The intent is that each staging area be studied for trail route implementation once planning is accomplished and adjacent land is developed.

Bikeways

The Orange County Transportation Authority adopted the Commuter Bikeway Strategic Plan in August 2001. The Commuter Bikeway Strategic Plan is a regional planning document that identifies existing and proposed bikeways in Orange County. Developed through the cooperation of the cities and the County, the Commuter Bikeway Strategic Plan provides a comprehensive network of bikeways to serve the County's needs.

The Commuter Bikeway Strategic Plan identifies three types of bikeways. A Class I bicycle trail is a paved facility, which is physically separated from a roadway and designated primarily for the use of bicycles. Crossflows by pedestrians and motorists are to be minimized. A Class II Bicycle lane is a facility featuring a striped lane on the paved area of a road for preferential use by bicycles. It is located along the edge of the paved area outside the motor vehicle travel lanes. Parking is restricted within a Class II bike lane. Where sufficient pavement width exists, it may be located between a parking lane and the outside motor vehicle travel lane. A Class III bicycle route is a facility typically identified by green and white (Type "G93") "Bike Route" guide signing only. There are usually no special lane designations, and parking may be permitted. Bicycle traffic may share either the roadway with motor vehicles or a sidewalk with pedestrians and, in either case, bicycle usage is considered secondary. Bike routes are a means to connect otherwise discontinuous segments of Class I or Class II bikeways. The Commuter Bikeway Strategic Plan bikeways in the SAMP Study Area are depicted on Figure 4.1.12-3. These

bikeways also are included on the County of Orange Master Plan of Bikeways. The Master Plan of Bikeways is a component of the Recreation Element of the General Plan.

4.2 SUB-BASINS WITHIN THE SAN JUAN AND WESTERN SAN MATEO CREEK WATERSHEDS

4.2.1 PHYSICAL PROCESS AND CONDITIONS OF SUB-BASINS

Although the sub-basins in the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed are hydrologically and biologically connected, each major sub-basin has somewhat unique or distinctive attributes.

In the San Juan Watershed, the areas that are available for consideration for future land use changes include portions of Chiquita, Gobernadora (including Wagon Wheel), Verdugo, and Central San Juan Creek (including Trampas Canyon). In the San Mateo Watershed, available areas include portions of Gabino (including Blind Canyon), La Paz, Upper Cristianitos, and Talega. Sub-basins of the two watersheds are shown in Figure 2-1. The subsections below summarize the major characteristics of these sub-basins using the USACE Engineer Research and Development Center (ERDC) Functional Assessment and the Watershed Planning Principles. The ERDC Functional Assessment is provided as Appendix E2 to this EIS. The Watershed Planning Principles are provided in Appendix B2.

Sub-basins not specifically discussed (e.g., Lucas, Bell, Oso, and lower Arroyo Trabuco Sub-basins) are unlikely to undergo future land use changes, as they are already conserved, developed, or currently undergoing development. Therefore, these sub-basins are not discussed in the following subchapters.

4.2.2 USACE ENGINEER RESEARCH AND DEVELOPMENT CENTER

The USACE Engineer Research and Development Center characterized aquatic resources within the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed in terms of their areal extent and their functional integrity through their planning-level delineation and landscape level functional assessment. Previous subchapters described the acreage of aquatic resource habitats for the entire SAMP Study Area. This subchapter summarizes the aquatic resources of the SAMP Study Area by sub-basin, providing a better characterization of local conditions for smaller geographic units.

Table 4.2-1 summarizes the planning-level delineation by sub-basin. The acreage data in the table was determined using the planning level delineation (USACE Engineer Research and Development Center, 2000a). The planning level delineation is an estimate of the amount of wetland, riparian, and aquatic resources using primarily aerial photographs with site visits chosen through stratified sampling. Consequently, these data are approximations of the amount of aquatic features present within the SAMP Study Area. The planning-level delineation is different from a site-specific jurisdictional determination, which uses exclusively measurements on the ground to determine the extent of wetland vegetation, limits of stream or wetland hydrology, and occurrence of hydric soils. Because of the differences in the methodologies for performing a planning-level delineation compared to a site-specific delineation, there are differences in results due to the use of distinct methodologies for different purposes.

TABLE 4.2-1
AQUATIC RESOURCES FOR EACH SUB-BASIN WITHIN THE SAN JUAN CREEK AND WESTERN SAN MATEO CREEK WATERSHEDS

Sub-Basin	Total Aquatic Resources (acres)	Aquatic Resource[a] Types Common to the Sub-Basin (acres)
Trabuco	2,229	Southern Coast Live Oak Riparian Forest (575), Bigcone Spruce-Canyon Live Oak Forest (319), White Alder Riparian Forest (237), Coast Live Oak Woodland (189), Southern Willow Scrub (182), Mulefat Scrub (139), Canyon Live Oak Forest (122), Southern Sycamore Riparian Woodland (120), Canyon Live Oak Ravine Forest (119), Intermittent Rivers and Streams (106), Perennial Rivers and Streams (30), and Floodplain Sage Scrub (18)
Bell Canyon	1,549	Southern Coast Live Oak Riparian Forest (669), Coast Live Oak Woodland (257), Southern Sycamore Riparian Woodland (125), Bigcone Spruce-Canyon Live Oak Forest (88), Canyon Live Oak Ravine Forest (79), White Alder Riparian Forest (78), Canyon Live Oak Forest (69), Intermittent Rivers and Streams (53), Mulefat Scrub (34), Ephemeral Streams (25), Southern Willow Scrub (24), and Open Water (23)
Upper San Juan	1,009	Southern Coast Live Oak Riparian Forest (497), Southern Willow Scrub (165), Southern Sycamore Riparian Woodland (162), Bigcone Spruce-Canyon Live Oak Forest (71), Ephemeral Streams (39), Coast Live Oak Woodland (27), and White Alder Riparian Forest (25)
Central San Juan	618	Southern Coast Live Oak Riparian Forest (201), Mulefat Scrub (118), Southern Arroyo Willow Forest (76), Coast Live Oak Forest (59), Coastal Freshwater Marsh (48), Open Water (43), Intermittent Rivers and Streams (24), and Coast Live Oak Woodland (20)
Gobernadora	548	Southern Coast Live Oak Riparian Forest (130), Coast Live Oak Woodland (124), Southern Arroyo Willow Forest (81), Southern Willow Scrub (58), Mulefat Scrub (47), Coastal Freshwater Marsh (36), and Open Water (33)
Gabino	504	Southern Coast Live Oak Riparian Forest (279), Mulefat Scrub (121), Southern Sycamore Riparian Woodland (51), and Coast Live Oak Woodland (20)
Oso	431	Open Water (200), Southern Willow Scrub (55), Southern Arroyo Willow Forest (46), Mulefat Scrub (32), Flood Control Channels (27), Spreading Grounds and Detention Basins (20), and Coast Live Oak Woodland (19)
Middle San Juan	431	Floodplain Sage Scrub (164), Coast Live Oak Woodland (114), Intermittent Rivers and Streams (39), Canyon Live Oak Ravine Forest (32), Southern Sycamore Riparian Woodland (31), and Mulefat Scrub (26)
Cristianitos	403	Southern Coast Live Oak Riparian Forest (218), Coast Live Oak Forest (96), and Mulefat Scrub (56)
Chiquita	342	Intermittent Rivers and Streams (62), Mulefat Scrub (51), Southern Arroyo Willow Forest (47), Southern Willow Scrub (44), Southern Coast Live Oak Riparian Forest (37), Coastal Freshwater Marsh (26), Southern Sycamore Riparian Woodland (19), and Coast Live Oak Woodland (15)
Lower San Juan	258	Perennial Rivers and Streams (72), Southern Willow Scrub (59), Mulefat Scrub (32), Southern Coast Live Oak Riparian Forest (27), Coastal Freshwater Marsh (19), Southern Arroyo Willow Forest (19), and Intermittent Rivers and Streams (19)
Verdugo	233	Southern Coast Live Oak Riparian Forest (129), Southern Willow Scrub (36), Mulefat Scrub (28), and Floodplain Sage Scrub (21)
La Paz	184	Mulefat Scrub (60), Southern Sycamore Riparian Woodland (37), Southern Coast Live Oak Riparian Forest (31), Coast Live Oak Woodland (28), and Floodplain Sage Scrub (17)
Lucas Canyon	155	Floodplain Sage Scrub (44), Southern Coast Live Oak Riparian Forest (38), Southern Willow Scrub (31), and Mulefat Scrub (21)
Wagon Wheel	141	Southern Coast Live Oak Riparian Forest (82), Southern Willow Scrub (33), and Coast Live Oak Woodland (9)
Tijeras Creek	121	Southern Coast Live Oak Riparian Forest (37), Southern Sycamore Riparian Woodland (34), and Open Water (18)
Blind	102	Southern Coast Live Oak Riparian Forest (46), Coast Live Oak Forest (46), and Southern Sycamore Riparian Woodland (6)
Horno	29	Southern Willow Scrub (14), Southern Coast Live Oak Riparian Forest (5), and Open Water (4)
Talega[b.]	1	Mulefat Scrub (1)
Total	**9,288**[c.]	

a. Habitat types represent natural and non-native types comprising at least 15 acres within a sub-basin, or the predominant three habitats within the sub-basin.
b. Not all of Talega Canyon in the SAMP Study Area was surveyed as part of the SAMP.
c. Numbers do not add up due to rounding.

In practice, the planning-level delineation does not substitute for site-specific jurisdictional delineations. Whenever a site-specific delineation is available, the site-specific data should be used for determining project level impacts for environmental evaluation, geographical limits for avoidance, and compensatory mitigation ratios. The planning level delineation is valuable for planning purposes and for understanding broad landscape issues. The planning-level delineation can best be used to understand the extent of aquatic resources such as wetlands, streams, and riparian areas within the larger geographic area, something that cannot be accomplished solely from site-specific delineations.

The sub-basins represent smaller geographical regions within the SAMP Study Area. Given the size of the overall SAMP Study Area, the areal extent and condition of aquatic resources including riparian areas are not homogenous throughout the watershed. Aquatic resources are more prevalent in specific sub-basins compared to others. In addition, the functional integrity of riparian areas differs from sub-basin to sub-basin. Consideration of the areal extent of aquatic resources and the functional integrity of riparian resources at the sub-basin level allows for more detailed discrimination of the aquatic resources within the SAMP Study Area, allowing for development of better regulatory policies.

The total SAMP Study Area contains approximately 9,288 acres of mapped habitat within aquatic resource areas consisting of wetlands, riparian habitat, and streambeds among the various sub-basins (Table 4.2-1). The sub-basins include those for Oso Creek, Trabuco Creek, Tijeras Creek, Horno Creek, Chiquita Creek, Wagon Wheel Creek, Gobernadora Creek, Talega Creek, Blind Creek, Bell Creek, Gabino Creek, Verdugo Creek, Lucas Creek, and Lower, Central, Middle, and Upper San Juan Creeks. Of the 9,288 acres of aquatic resource area, over half of the acreage is within the Trabuco Creek, Bell Canyon, and upper San Juan Creek Sub-basin. In general, the more natural habitats are located in the northeastern portion of the SAMP Study Area.

A particular subset of the mapped aquatic resources is riparian habitat. Riparian habitat was mapped to allow the implementation of the landscape level functional assessment, an assessment methodology developed explicitly for riparian areas. The landscape-level functional assessment was used to evaluate the functional integrity of these aquatic resources in terms of their hydrologic, water quality, and habitat integrity using historical conditions as a baseline. Functional integrity can be thought of as the quality of the riparian habitat, with higher integrity riparian areas possessing higher overall quality with respect to hydrologic, water quality, and habitat functions.

As identified in Table 4.2-2, approximately 3,021 acres of riparian habitat were mapped within the SAMP Study Area by the USACE Engineer Research and Development Center. For each sub-basin within the SAMP Study Area, the amount of riparian habitat was quantified with respect to the three functional integrity index scores assessing hydrology, water quality, and habitat integrity. Riparian habitat achieving at least 70 percent of the maximum score for all of the three integrity indices was considered to have very high integrity. Riparian habitat achieving at least 70 percent of the maximum score for one or two of the three integrity indices (but not all three) were considered to have high integrity. Riparian habitat achieving at least 40 percent of the maximum score for at least one of the three indices but less than 70 percent for all three were considered to have medium integrity.

Table 4.2-2 quantifies the amount of acreage of riparian habitat within each sub-basin with very high integrity, with high to very high integrity, and with medium to very high integrity in order to characterize the relative quality and condition of riparian habitat within each sub-basin. Some sub-basins such as that for Oso Creek exhibit low functional integrity, showing that the riparian

habitat in that sub-basin in general is of poorer condition. Other watershed such as that for middle and upper San Juan Creek exhibit very high functional integrity, showing that the riparian habitat in those sub-basin areas in general are of better condition. The condition of the riparian habitat in each sub-basin listed in the table is described in more detail in this chapter.

TABLE 4.2-2
RIPARIAN HABITAT RESOURCES WITHIN THE SAN JUAN CREEK AND WESTERN SAN MATEO CREEK WATERSHEDS BY SUB-BASIN

Sub-Basin	Total Acres	Very High Integrity[a.]		High to Very High Integrity[b.]		Medium to Very High Integrity[c.]	
		Acres	%[d.]	Acres	%[d.]	Acres	%[d.]
Trabuco	639	188	29%	503	79%	609	95%
Central San Juan	296	225	76%	282	95%	296	100%
Middle San Juan	292	292	100%	292	100%	292	100%
Chiquita	283	168	59%	279	98%	283	100%
Gobernadora	241	13	5%	87	36%	164	68%
Bell Canyon	218	193	89%	213	98%	217	100%
Lower San Juan	176	6	3%	30	17%	104	59%
Upper San Juan	176	176	100%	176	100%	176	100%
Oso	161	1	1%	31	19%	49	31%
Cristianitos	133	31	23%	133	100%	133	100%
Gabino	106	94	89%	106	100%	106	100%
Lucas	83	83	100%	83	100%	83	100%
La Paz	76	73	95%	76	100%	76	100%
Verdugo	64	64	100%	64	100%	64	100%
Tijeras	48	0	0%	0	0%	45	94%
Wagon Wheel	11	2	14%	8	66%	11	100%
Horno	10	0	0%	0	1%	<1	1%
Blind	8	8	100%	8	100%	8	100%
Totals	**3,021**	**1616**	**53%**	**2,370**	**78%**	**2,717**	**90%**

a. Very high integrity riparian areas are those that have attained at least 70% of the maximum integrity scores for the hydrology, water quality, and habitat integrity indices.
b. High to very high integrity riparian areas are those that have attained at least 70% of the maximum integrity scores for one or two of the hydrology, water quality, or habitat integrity indices.
c. Medium to very high integrity riparian areas are those that have not attained at least 40% of the maximum integrity scores for the hydrology, water quality, or habitat integrity indices.
d. % of the total existing riparian habitat (e.g., 639 acres for Trabuco and 296 acres for Central San Juan)

4.2.3 SAN JUAN CREEK WATERSHED SUB-BASINS

4.2.3.1 Overview of Verdugo Canyon Sub-basin

Terrain

The 4.80-square mile Verdugo Canyon Watershed has roughly an east-west orientation with several tributary channels entering the main valley stream from the north and south. The Verdugo Canyon Sub-basin is underlain by bedrock of the Williams, Ladd, and Trabuco

formations and the Santiago Peak Volcanics. Approximately one-half to two-thirds of the Verdugo Canyon drainage basin lies within the SAMP Study Area boundary. Within the boundaries of the SAMP Study Area, the underlying bedrock consists of the Schulz Ranch and Starr members of the Williams formation, the Holz Shale and Baker Canyon members of the Ladd Formation, and the Trabuco formation. Surficial geologic units within the SAMP Study Area consist of alluvium, colluvium, nonmarine terrace deposits, and a few landslides. The landslides located within the SAMP Study Area are shallow and of relatively limited areal extent.

Hydrology

Drainage density for the Verdugo Canyon Sub-basin varies spatially, with an average density of 13 linear miles per square mile (mi/mi.^{2}). The eastern headwaters of Verdugo Canyon have a lower drainage density, while the area north of Verdugo Creek in the central canyon area has a higher drainage density. This increased drainage density likely reflects the geologic substrate beneath the central Lucas and Verdugo basins. Overall, 562 first order drainages are delineated in the Verdugo Canyon Sub-basin. Similar to Lucas Canyon, these first order reaches comprise about 51 percent of the total stream length in the basin. Verdugo Canyon is a fifth order stream system at its confluence with the main San Juan channel, immediately downstream of Bell Canyon.

The hydrographs for Verdugo Creek show two distinct peaks with a smaller yet distinct peak, occurring prior to the main peak of the hydrograph. This shape is characteristic of the hydrographs for Lucas Canyon, Verdugo Canyon, and the Central San Juan catchments, and likely results from the shape of the precipitation hyetograph modeled for this portion of the watershed. Peak flows from Verdugo Creek arrive at San Juan Creek approximately 2.4 hours, 2.8 hours, and 4.8 hours before the flow in San Juan Creek for the 2-year, 10-year, and 100-year peak flows, respectively. Therefore, peak flows from Verdugo Canyon do not significantly increase peak flows in San Juan Creek at the confluence or downstream. Runoff volumes and peak flows from Verdugo Canyon are relatively small, as is expected given the high infiltration rates in the sub-basin. Verdugo Canyon contributes less than 4 percent of the runoff volume to San Juan Creek at its confluence with Verdugo Canyon, while it occupies approximately 6.2 percent of the watershed area at that point. Peak flows from Verdugo Canyon are also less than 4 percent of the total peak flows in San Juan Creek at the confluence. Verdugo Canyon produced less runoff on a per-acre basis than four out of the five other San Juan sub-basins analyzed. Only the central San Juan catchments had lower runoff per-area values.

Sediment Processes

Verdugo Canyon, along with Lucas and Bell Canyons, constitute the more silty portions of the San Juan Creek Watershed, with upper portions of the sub-basins containing crystalline terrains. These areas are characterized by coarser substrates, shallower soils, and steeper slopes than Chiquita or Gobernadora. The combination of substrate type and slope results in Verdugo Canyon having the highest sediment transport rate per unit area of any of the sub-basins in San Juan Creek Watershed. Sediment yield for Verdugo is second behind Bell Canyon. Like many of the steep silty and crystalline areas of the SAMP Study Area, much of the sediment in Verdugo is mobilized during episodic events and, when mobilized, has the potential to have substantial effect on sediment delivery and on the geomorphology of the downstream areas.

Water Quality

The large quantities of highly erodible soils in the Verdugo Sub-basin can be expected to provide a source of phosphorus loading to San Juan Creek. Nitrogen loading from the sub-basin is expected to be low. Because only six percent of the watershed is covered with grasslands, there are limited anthropogenic sources and little channel incision. The terrain and steep slope of Verdugo Canyon likely result in direct nutrient and pollutant pathways to surface waters. The existence of an intact riparian corridor implies that there is potential for sequestration of constituents of concern within floodplain terraces with increased amounts of organic carbon available to augment nitrogen cycling. Speciation is expected to favor the transport of metals and pesticides (were any to be present) in an adsorbed form.

Groundwater

Verdugo Canyon had one of the highest predicted infiltration rates of any of the sub-basins studies in the San Juan Watershed. This results from the undeveloped condition of the sub-basin, the relatively high proportion of Type A (8.3 percent) soils (compared to other sub-basins), and relatively low proportion of Type D soils (28.6 percent) compared to other sub-basins in the watershed.

Biological Resources

The streams are predominantly coarse substrate with southern coast live oak riparian woodland, surrounded by sage scrub and chaparral. These areas are more similar to habitats found in the upper San Mateo Watershed than to those found in Chiquita and Gobernadora. Because groundwater is less prevalent than in Chiquita or Gobernadora, the habitats are more mesic than the willow riparian habitats found in those sub-basins. The narrowness of the canyon results in high biological interaction between the habitats of the floodplain and the adjacent uplands. Please refer to subchapter 4.1.3 for a detailed discussion of biological resources.

Summary of USACE Engineer Research and Development Center (ERDC) Functional Assessment

The USACE Engineer Research and Development Center Functional Assessment concludes the following about the Verdugo Canyon Sub-basin:

The Verdugo Canyon Sub-basin originates from the Cleveland National Forest in Riverside County and drains southwesterly to San Juan Creek in Orange County. The sub-basin is mostly undeveloped with the land uses associated with the Cleveland National Forest and some light ranching operations. USACE Engineer Research and Development Center mapped 176 acres of riparian habitat within this sub-basin. Notable aquatic habitat types include southern coast live oak riparian forest, southern willow scrub, and mulefat scrub. The sub-basin has experienced little degradation to riparian habitat due to the low amount of impacts associated with the ranching and national forest operations. The entire riparian habitat is categorized as having very high integrity.

Planning Considerations from Watershed Planning Principles

Planning considerations for the Verdugo Canyon Sub-basin from the Watershed Planning Principles are as follows:

- Verdugo Canyon has one of the highest soil infiltration rates of any of the sub-basins studied in the San Juan Watershed.

- Substrate types and slope result in Verdugo Canyon having the highest sediment transport rate per unit area of any San Juan Creek Watershed Sub-basin, with sediment yield second behind Bell Canyon. Much of the sediment in Verdugo is mobilized during episodic events and, when mobilized, has the potential to have substantial effects on sediment delivery and on the geomorphology of downstream areas.

- The large quantities of highly erodible soils in the Verdugo Sub-basin are expected to provide a source of phosphorus loading to San Juan Creek.

- The upper portion of the Verdugo Sub-basin is underlain by the Trabuco and Ladd formations, which lack shallow groundwater and yield little baseflow. Due to the relative absence of groundwater and the presence of the steep slopes, both upland and riparian habitats reflect drier conditions than in other sub-basins.

- The stream course has a predominantly coarse substrate and is strongly influenced by the narrowness of the canyon.

4.2.3.2 Overview of Central San Juan and Trampas Canyon Sub-basin

Terrains

In the central portion of the San Juan Watershed, about 10 to 12 miles upstream from the coast, there is a 7.4-square mile area (between the mouths of Cañada Gobernadora and Bell Canyon upstream) that contains several small tributary drainages which feed directly into the main stem of San Juan Creek. The area surrounding the Color Spot Nursery drains directly southward into the main San Juan system and, as such, is not part of either the Gobernadora or Bell Canyon Sub-basins. This triangular area is drained by two third order creeks and one fourth order stream. On the south side of San Juan Creek, Trampas Canyon, and two unnamed fourth order streams drain steep terrain directly to San Juan Creek. The central portion of the main stem of San Juan Creek, downstream of Bell, Lucas, and Verdugo Canyons, consists of a meandering river with several floodplain terraces in a wide valley bottom.

The Central San Juan and Trampas Canyon drainage basin is underlain by bedrock of the Santiago, Silverado, and Williams formations. Bedding within the bedrock of the Santiago, Silverado, and Williams formations is near horizontal to gently dipping. Surficial geologic units within the SAMP Study Area consist of alluvium, colluvium, nonmarine terrace deposits, and a few landslides. There are two large landslide complexes located south of San Juan Creek along the western boundary of the drainage basin. In addition, two Late Quaternary fault systems−the Cristianitos and the Mission Viejo faults−trend through this drainage basin. The Cristianitos fault trends approximately northwest–southeast along the western boundary of the drainage basin south of San Juan Creek. Two branches of the Mission Viejo fault trend approximately north-south through the eastern portion of the drainage basin. Review of available geologic literature indicates these fault systems are not considered active pursuant to the guidelines of the Alquist-Priolo Earthquake Fault Zone Map.

The majority of the Central San Juan Sub-basin area is underlain by soils of hydrologic groups C (52.6 percent) and D (29.2 percent). Of the six sub-basins studied in the watershed, the Central San Juan catchments had nearly the highest maximum loss rate, second only to Lucas

Canyon. This is likely reflective of the shallow slope and broad floodplain valley that facilitates infiltration.

Hydrology

This sub-basin differs from the other studied sub-basins in that the other sub-basins typically consist of a single canyon whose discharge joins San Juan Creek at a single confluence. The effects of these discharges on San Juan Creek occur primarily at the confluence point. By contrast, within the Central San Juan catchments sub-basin, effects of the surface runoff are distributed in numerous locations along the reach of the main San Juan Creek channel.

In the Central San Juan catchments, peak flows from the tributaries occur approximately 4.4 hours, 2.4 hours, and 2.0 hours before the San Juan Creek peak flows through this area for the 2-year, 10-year, and 100-year events, respectively. Partially due to this difference in peak timing and also due to the moderate rates and volumes or runoff from this sub-basin, peak flows from the Central San Juan catchments do not have a significant impact on peak flows in San Juan Creek at the confluence and downstream. In absolute terms, runoff volumes and peak flows from the Central San Juan catchments are among the lowest of the six San Juan Sub-basins studied. For all three events, the Central San Juan catchments contribute between 2 percent and 5.5 percent of the runoff volume to San Juan Creek at their confluence, while they occupy approximately 8.8 percent of the watershed area at that point. Peak flows from the Central San Juan catchments are between approximately 3.5 percent and 5.5 percent of peak flows in San Juan Creek at the confluence. For the three events modeled, the Central San Juan catchments produced between 24 percent and 69 percent as much runoff on a per-acre basis as the average for the San Juan Creek Watershed as a whole, and peak discharge per unit area was among the lowest of the San Juan Sub-basins. These low runoff values are likely due to the large proportion of undeveloped areas in the sub-basin, particularly along the central San Juan Creek floodplain, and the small size of the sub-basin in comparison to the other reported sub-basins. Low sub-basin slopes and a broader sub-basin shape may also reduce runoff by increasing infiltration.

Sediment Processes

The central portion of San Juan Creek is most important as a sediment transport reach. All the catchments that drain into this portion of San Juan Creek together produce a comparable amount of sediment as the Chiquita Canyon Sub-basin. In addition, due to its size, there is a substantial amount of bedload transport that occurs along the central portion of San Juan Creek. However, the yield per unit area for the central catchments is the lowest of any area studied in the San Juan Watershed. Like Cristianitos Creek, the central portion of San Juan functions as a sediment conduit between the major sediment-producing sub-basins and downstream areas.

Water Quality

The nature of the soils in the central San Juan tributaries favors the relatively rapid mobilization of constituents into surface water flows and ready transport of pollutants out of the central sub-basins (e.g., Trampas Canyon) and into the main stem of San Juan Creek. The combination of predominant grasslands, erodible soils, and anthropogenic sources means that the sub-basins can be expected to generate relatively large nitrogen and phosphorus loadings for their size and may be a contributor to the increases in nutrient concentrations between Caspers Regional Park and La Novia that is evident in the Orange County Public Facilities and Resources Department (PFRD) monitoring program. However, some of the constituents may be sequestered (at least

seasonally) within the permeable alluvial aquifers of San Juan Creek. High loads of fine sediment and particulates should favor the adsorbed phases of heavy metals and pesticides.

Groundwater

The central portion of San Juan Creek has intermittent to near-perennial flow that is supported by alluvial groundwater that is near the surface, at least seasonally. The riparian habitats and pool and ponds depend on sufficient duration of shallow groundwater. This groundwater is recharged from sub-basins higher in the watershed and is conveyed in the alluvium through the central portion of San Juan Creek.

Biological Resources

Agricultural and developed lands cover approximately 12 percent of the land in this sub-basin; nurseries are a prominent land use. On the north side of San Juan Creek, above the Color Spot Nursery, there are two major tributaries. The first bisects the sub-basin beginning as a moderate- to high-gradient, scrub-oak-dominated riparian zone in a chaparral matrix. As the gradient decreases, the sinuosity increases, and the stream corridor supports mature oak woodland. The lowest portion of the stream transitions into a 3-foot-deep-by-5-foot-wide incised channel, characterized by mule fat scrub habitat. The substrate of the stream is dominated by rock and boulders indicating a high energy system where the stream condition is controlled by episodic high velocity flows that convey a lot of debris from the upper watershed. The second drainage feature on the north side of the creek flows out of a canyon to into a manmade impoundment. The upper portion of the stream consists of high gradient, scrub-oak-dominated riparian habitat in a chaparral matrix, similar to the main canyon. As this stream flows toward the impoundment, the slope flattens and the vegetation community transitions into southern-willow riparian habitat with an understory dominated by *Scirpus* spp. (bulrush) and *Baccharis salicifolia* (mule fat). Although not currently occupied, the structure and composition of the lower portion of the drainage appears to be suitable for occupation by least Bell's vireo or southwestern willow flycatcher. The pond at the terminus of this drainage is impounded by a road fill and lacks any substantive fringing wetland vegetation.

The area along Radio Tower Road, on the south side of San Juan Creek, contains representatives of all the major wetland types in the SAMP Study Area: riverine, alkali marsh, slope wetlands, vernal pool, and lacustrine fringe wetlands. The riverine areas on the site are generally high-gradient, low-order streams characterized as steep canyons dominated by sycamore or willow riparian forest. Portions of the drainages appear to have perennial flow, probably associated with groundwater discharge and areas of heavy soils (i.e., relatively high clay content).

Two portions were found to contain slope wetlands associated with localized slumps that result in groundwater discharge. The first area has formed in a small slump adjacent to the main dirt road traversing the area, while the second area is above a corral and contains two slope wetlands. A natural spring has been altered to create a stock pond; a 240-foot-long-by-45-foot-wide slope wetland has formed in association with the spring and pond. A second slope wetland is located approximately 200 feet west of the spring, in association with a cut in the slope. Both slope wetlands are saturated at or near the surface for the majority of the year. The area contains three distinct areas that support vernal pools. All the pools have recently been documented to support the federally listed endangered San Diego and the Riverside fairy shrimp. Several manmade stock ponds in this area support fringing lacustrine wetlands. These stock ponds provide year-round habitat for amphibians (including bullfrogs) and waterfowl. All upland areas have been heavily grazed and are dominated by non-native grasslands.

Sand, hard rock, and minerals have been mined from Trampas Canyon over the last 50 years. A lake in the quarry pit dominates this sub-basin. The lake is steep-sided, relatively deep, and does not support any aquatic resources of note. The surrounding uplands are dominated by ruderal vegetation and contain minimal habitat value. Consequently, there are minimal sensitive resources associated with this artificial lake area.

The middle reach of the main stem of San Juan Creek is a broad, meandering stream with several floodplain terraces. The middle reach of San Juan Creek supports a mosaic of southern willow riparian woodland, mule fat scrub, open water, and sand bars. The adjacent terraces support coast live oak woodland and southern sycamore riparian woodland. The creek has relatively coarse substrate and high topographic complexity, with a variety of secondary channels, pits, ponds, and bars. An abandoned aggregate mining pit has been filling in on its own from upstream sources over the last several years and supports an open water and emergent marsh community. The southwestern arroyo toad is known to occur in the middle reaches of San Juan Creek, but the bullfrog population associated with the old mining pit may affect the population size.

Summary of USACE Engineer Research and Development Center (ERDC) Functional Assessment

The USACE Engineer Research and Development Center Functional Assessment concludes the following about the Central San Juan and Trampas Canyon Sub-basin:

The central San Juan Creek Sub-basin bounds the area draining into San Juan Creek starting from just downstream of San Juan Creek's confluence with Verdugo Canyon down to just upstream of San Juan Creek's confluence with Gobernadora Creek. The most notable tributary draining into central San Juan Creek is Trampas Canyon. This sub-basin has some human activities related to ranching, crop agriculture, nursery operations, and mining along San Juan Creek and within the Trampas Canyon. USACE Engineer Research and Development Center mapped 218 acres of riparian habitat within this sub-basin. Notable aquatic resource habitat types include southern coast live oak riparian forest, mulefat scrub, southern arroyo willow forest, and coastal freshwater marsh, intermittent rivers, and streams. This sub-basin has experienced moderate degradation to riparian habitat due to the presence of various human activities. However, due to the localized nature of a lot of these activities, the riparian habitat is still in good condition. About 76 percent of the riparian habitat is categorized as having very high integrity; 95 percent of the riparian habitat is categorized as high to very high integrity; and 100 percent of the riparian habitat is categorized as medium to very high integrity.

Planning Considerations from Watershed Planning Principles

Planning considerations for the Central San Juan and Trampas Canyon Sub-basin from the Watershed Planning Principles are as follows:

- Clayey silts and sands that underlie smaller areas east of the Mission Viejo fault have a high propensity for shallow mudflows following periods of extended rainfall.

- The area along Radio Tower Road contains representative wetland types including riverine, alkali marsh, slope wetlands, vernal pool, and lacustrine fringe wetlands. The slope wetlands appear to be associated with localized bedrock landslides from the San Onofre and Monterey formations that store groundwater discharge over a prolonged period. The vernal pools are also associated with landslides and support both the federally listed endangered San Diego and the Riverside fairy shrimp. Manmade stock

ponds support fringing lacustrine wetlands. Riverine reaches within this area are generally high-gradient, low-order streams characterized as steep canyons dominated by sycamore or willow riparian forest. Some areas appear to have perennial or near-perennial flow.

- Trampas Canyon is disturbed and has adjacent areas with low to moderate hydrologic, water quality and habitat integrity function and value.

- Sand, hard rock, and minerals have been mined from Trampas Canyon over the last 50 years. An artificial lake dominates this sub-basin. The lake is steep-sided, relatively deep and the uplands surrounding the artificial lake are dominated by ruderal vegetation.

- Runoff and baseflow from Trampas Creek may contribute to supporting a small arroyo toad population near its confluence with San Juan Creek.

4.2.3.3 Overview of Cañada Gobernadora Sub-basin (including Wagon Wheel and Sulfur Canyons)

Terrains

The 11.10-square-mile Cañada Gobernadora Sub-basin is an elongated valley that is aligned north to south. At 9.7 miles, it is the longest sub-basin in the San Juan Creek Watershed and represents about 11.6 percent of the total watershed area upstream of the Cañada Gobernadora and San Juan Creek confluence.

The geology, soils, and resultant terrains in Cañada Gobernadora are extremely complex. The Cañada Gobernadora Sub-basin has the lowest percentage of Class D (low infiltrating) soils of any of the sub-basins analyzed and is underlain by geologic formations associated with shallow aquifers. The upper portion of the sub-basin (mainly beyond the RMV Planning Area) is underlain by the Sespe Formation, while the lower portion of the sub-basin (within the RMV Planning Area) is underlain by the Santiago Formation. Surficial geologic units within the SAMP Study Area consist of alluvium, colluvium, nonmarine terrace deposits, and a few landslides.[1] Consequently, the Cañada Gobernadora Sub-basin contains some of the highest potential infiltration areas in the SAMP Study Area. This condition is especially true in the valley floor, which is characterized by deep alluvial deposits with interbedded clay lenses that support seasonally shallow groundwater. However, the sandy and silty substrates on many of the hill slopes and ridges in the sub-basin are overlain by several feet of exhumed hardpan or contain exposed rock outcrops. These areas presently exhibit rapid runoff comparable to Class D soils.

Hydrology

Runoff patterns in the Cañada Gobernadora Sub-basin are influenced by the shape of the watershed, the underlying soils and geology, and upstream development in Coto de Caza. In the northern portion of the sub-basin, upstream of the Wagon Wheel confluence, the main valley is drained by a fifth order channel for most of its length. Downstream of the confluence with Wagon Wheel, Gobernadora becomes a sixth order system until it joins San Juan Creek further downstream. More than 30 third order channels and 6 fourth order stream courses converge on the main Cañada Gobernadora channel from the western and eastern side slopes. The overall drainage density is approximately 9 mi/mi.^{2} for the combined basins, which share 500 first order

[1] Review of aerial photographs and available geologic maps indicates that the landslides located within the SAMP Study Area are shallow and of relatively limited aerial extent.

channels. First order drainages represent about 45 percent of the total stream length, whereas fifth and sixth order drainages comprise 8.6 percent of total channel length. Due to the elongated configuration of this basin, first order streams are proportionally less of the total stream length than in some of the other sub-basins like Verdugo, Lucas, or Bell Canyons. In addition, many of the tributaries are channel-less swales. These areas represent high infiltration zones that likely convey stream runoff to the main-stem of Cañada Gobernadora and only exhibit surface connection following extreme runoff events. These infiltration zones may also contribute to baseflow and the perennial nature of Cañada Gobernadora.

Runoff volumes and peak flows from Cañada Gobernadora are relatively high in comparison to the other San Juan Sub-basins. Cañada Gobernadora contributes about 8 percent of the runoff volume to San Juan Creek at their confluence while it occupies approximately 11.6 percent of the watershed area at that point. For the three events modeled, Cañada Gobernadora produced approximately 62 to 75 percent as much runoff on a per-acre basis as the average for the San Juan Creek Watershed as a whole. However, runoff response is rapid. This results from the long, thin shape of the sub-basin; the impervious hardpan and bedrock outcrops; and the relatively greater proportion of developed areas in this sub-basin (particularly in the northern basin). Peak flows from Cañada Gobernadora arrive at San Juan Creek approximately 4.4 hours, 2.4 hours, and 1.6 hours prior to the passing of peak flows along San Juan for the 2-year, 10-year, and 100-year events, respectively. Although this represents a substantial time separation, peak flows from Cañada Gobernadora do have a recognizable impact on peak flows in San Juan Creek at the confluence and downstream due to the relatively large size of the peak flow from the canyon.

Sediment Processes

The Cañada Gobernadora Sub-basin is predominantly underlain by sands and silts and has the potential to generate relatively high amounts of sediment where the surface is disturbed and channelized. Currently, high sediment yields (mainly from the disturbed upper portion of the sub-basin outside the RMV Planning Area) result in a transport limited system with yields and transport rates (both absolute and per unit area) for Cañada Gobernadora that are the highest of any sand-dominated sub-basin. Sediment yield and transport rates are comparable to the Verdugo Sub-basin, which is a steeper and coarser substrate basin, and absolute sediment transport is second only to the larger Bell Canyon Sub-basin. In recent years, natural sediment sources have been augmented by sediment runoff from graded slopes in the developing areas of the upper sub-basin (outside the RMV Planning Area). Much of the sediment generated from the upstream development in Coto de Caza deposits in the lower portion of the canyon, typically within the riparian zone.

Water Quality

Pollutant transport within the Cañada Gobernadora Sub-basin is quite complicated with different pathways dominating by location and even season. Much of the watershed land in the middle and lower reaches are underlain by the permeable Santiago sandstone. Therefore, early in the winter it is reasonable to assume that most rainfall infiltrates and that groundwater pollutant pathways are predominant. The presence of sandy apron deposits at the mouth of side canyons can locally encourage infiltration. Where the channel is aggrading, there is a greater connectivity with the floodplain and more possibilities for the riparian corridor to play a role in assimilating constituents of concern. However, surface water pathways likely predominate in the lower reaches due to incision that has led to a loss of channel-floodplain connectivity and the presence of heavy clays that bring groundwater to the surface. This sub-basin is likely a significant source of nitrogen and phosphorus loadings from grasslands/agriculture, urbanization

in the upper reaches with minimal use of BMPs, and the presence of large nursery operations. Conditions favor the transport of metals and pesticides in particulate form.

Groundwater

Along with Chiquita, the Cañada Gobernadora Sub-basin is the only portion of the SAMP Study Area where shallow subsurface water plays an important role in the ecology of aquatic resources. The Santiago formation that dominates the lower portion of the sub-basin is associated with lateral groundwater flow along interfaces between thinly interbedded impermeable clay and permeable sand. This creates areas of shallow groundwater in the valley bottom and the lower portion of some of the lateral swales. The shallow groundwater (along with urban runoff from upstream development) contributes to the perennial nature of Cañada Gobernadora. In addition, several of the tributaries to Cañada Gobernadora, such as Wagon Wheel and Sulfur Canyons, support wetlands along faults or fracture zones that cut the sands of the Sespe formation, releasing water stored in the sandstone.

Biological Resources

The broad floodplain valley bottom and shallow groundwater found in Cañada Gobernadora allow the creek to support relatively dense riparian habitat. The lowest portion of the main creek (upstream from the confluence with San Juan Creek) has been restored and enhanced as mitigation for authorized impacts to riparian habitats in other areas of Orange County. This portion of San Juan Creek supports dense thickets of willow scrub, open water, and emergent marsh. An area adjacent to the middle portion of the creek has recently been used to create emergent wetlands as mitigation for impacts in other locations. Over time, this area is expected to develop to a matrix of willow scrub, emergent marsh, and woodland communities that will increase the overall width of the riparian zone in this location. Upstream of the confluence with Wagon Wheel Canyon, the stream contains a mix of southern willow riparian and sycamore-willow woodland to the boundary with the community of Coto de Caza. Several of the major tributaries to Cañada Gobernadora support mature oak woodland with coarser substrate streambeds.

Summary of USACE Engineer Research and Development Center (ERDC) Functional Assessment

The USACE Engineer Research and Development Center Functional Assessment concludes the following about Cañada Gobernadora Sub-basin and Central San Juan North of San Juan Creek:

The Gobernadora Creek Sub-basin originates in the community of Coto de Caza and drains southerly into San Juan Creek. The northern portion of the sub-basin consists of the Coto de Caza residential community, and the southern portion has undergone ranching operations. USACE Engineer Research and Development Center mapped 241 acres of riparian habitat within this sub-basin. Notable aquatic habitat types include southern coast live oak riparian forest, southern arroyo willow forest, southern willow scrub, mulefat scrub, and coastal freshwater marsh. This sub-basin has experienced considerable degradation due to the Coto de Caza development and the ranching activities. About 5 percent of the riparian habitat is categorized as having very high integrity; 36 percent of the riparian habitat is categorized as high to very high integrity; and 68 percent of the riparian habitat is categorized as medium to very high integrity.

The USACE Engineer Research and Development Center Functional Assessment concludes the following about the Wagon Wheel Sub-basin: The Wagon Wheel Canyon Sub-basin originates near the City of Rancho Santa Margarita and drains southeasterly. The sub-basin has residential development in the northern portion and the southern portion is within the Thomas F. Riley Wilderness Park. The USACE Engineer Research and Development Center mapped 11 acres of riparian habitat within this sub-basin. Notable aquatic habitat types include southern coast live oak riparian forest and southern willow scrub. The sub-basin has experienced moderate amounts of degradation due to the residential development, but the activities associated with the wilderness park minimize the amount of degradation that occurs. About 14 percent of the riparian habitat is categorized as having very high integrity, 66 percent of the riparian habitat is categorized as high to very high integrity, and 100 percent of the riparian habitat is categorized as medium to very high integrity.

Planning Considerations from Watershed Planning Principles

Planning considerations for the Cañada Gobernadora Sub-basin and Central San Juan north of San Juan Creek are as follows:

- Cañada Gobernadora contains some of the highest potential infiltration areas in the SAMP Study Area, particularly in the valley floor, which is characterized by deep alluvial deposits with interbedded clay lenses. However, high groundwater levels may affect the overall infiltration capacity of the sub-basin.

- Total runoff in Cañada Gobernadora is proportionately higher than other sub-basins, due to the size, elongated shape, and amount of existing development in the upper portion of the watershed.

- The hill slopes and ridges in the sub-basin exhibit areas of exhumed hardpan overlying sandy and silty substrates (the eroded remnants of claypans formed in the geologic past) or contain exposed rock outcrops or other areas of steep slopes. These areas presently exhibit rapid runoff comparable to Class D soils, although having less soil moisture storage they likely generate runoff with most storms.

- Due to the elongated configuration and the predominance of sandy terrains in the Gobernadora Sub-basin, first order streams are proportionally less of the total stream length than in several other sub-basins. Many of the tributaries consist of channel-less swales. These swales likely convey a combination of surface and subsurface flow to the main-stem creek and may exhibit surface connection following extreme runoff events.

- Historic photos indicate that the mainstem creek meandered freely across the valley floor over most of the length of the valley downstream from the mouth of Wagon Wheel Canyon.

- Groundwater derived from beneath the hill slopes and ridges is a major source of water contributing to the perennial nature of the creek system. Inferences have been drawn indicating that water levels in the alluvium below Cañada Gobernadora are at least in large part isolated from those in the sands and gravels beneath San Juan Creek, due to a sub-surface barrier to groundwater movement into San Juan Creek. The perennial nature of the creek in its upper reaches is likely influenced primarily by urban runoff from upstream development, while perennial flow in the lower portion of the creek is influenced by a combination of urban runoff, increased recharge from upstream areas, and lateral subsurface inflow to the valley floor.

- High sediment yields are currently generated from the already developed, disturbed upper portion of the sub-basin and have been deposited in the flats below Coto de Caza where flows from Wagon Wheel Canyon enter the sub-basin. In 2001, the creek moved out of its previous channel in this location, cut a new channel (i.e., avulsed) and resulted in downstream deposition of sediments.

- Emergent marsh habitat, including alkali wetlands, and willow habitats are present in the GERA wetlands restoration area with a mix of southern willow riparian and sycamore-willow woodland areas upstream to the boundary of Coto de Caza.

- The Central San Juan Sub-basin north of San Juan Creek has two major tributaries of note. One tributary is a major canyon that bisects the Gobernadora Planning Area, beginning as a moderate- to high-gradient, scrub-oak dominated riparian zone in a chaparral matrix, transitioning to a mature oak woodland as the gradient decreases, until it becomes a moderately incised channel characterized by mule fat scrub. The other tributary consists of high gradient scrub-oak in a chaparral matrix in its upper portion, transitioning to southern-willow riparian habitat as the slope flattens. This second drainage flows into a man-made impoundment with limited wetland fringe vegetation.

- Unlike other sub-basins and Cañada Gobernadora, whose discharges join San Juan Creek at a primary confluence point, stormwater runoff from the Central San Juan catchments is distributed in numerous locations along the adjoining reach of the main San Juan Creek channel.

- The reaches of the central portion of San Juan Creek in the vicinity of the Gobernadora Sub-basin are important as sediment storage and transport reaches, conveying, storing, and sorting coarse sediments from upstream terrains. Due to the size of this reach of San Juan Creek, there is a substantial amount of bedload sediment transport to downstream areas that occurs during major episodic events.

- The middle reach of the main stem of San Juan Creek is a broad, meandering stream with a coarse substrate and several floodplain terraces. San Juan Creek supports a mosaic of southern willow riparian woodland, mule fat scrub, open water, and sand bars, with the adjacent terraces supporting coast live oak woodland and southern sycamore riparian woodland.

- The high topographic complexity of San Juan Creek, which includes a variety of secondary channels, pits, ponds and bars, supports a small population of the federally listed arroyo toad. Several factors, such as the invasive species and the limited extent and duration of water sources may influence the arroyo toad populations in this area.

The Significant Terrains and Hydrologic Features identified as Planning Considerations for Wagon Wheel are included in the Gobernadora Sub-basin.

4.2.3.4 Overview of Cañada Chiquita and Narrow Canyon Sub-basin

Terrains

The Cañada Chiquita and Narrow Sub-basin is the northwesternmost sub-basin in the SAMP Study Area. With a catchment of 9.24 square miles, it is aligned north to south. Local relief (from ridge top to channel) gradually increases southward in this watershed, reaching a maximum of about 500 feet. Cañada Chiquita is the downstream-most major tributary before the confluence

of Trabuco Creek, near Mission San Juan Capistrano. Approximately 60 percent of the San Juan Watershed lies upstream of the confluence with Cañada Chiquita.

The Cañada Chiquita drainage basin is underlain by bedrock of the Monterey, San Onofre, Topanga, Sespe, and Santiago formations. The lower portion of the sub-basin is underlain primarily by the Santiago formation. The Cristianitos fault zone runs through the vertical extension of Chiquita Canyon. Faulting associated with the major portion of the Cristianitos fault zone results in highly variable bedding within the bedrock along the southern half of the east side of the canyon. The surficial geologic units within the SAMP Study Area boundaries consist of alluvium, colluvium, nonmarine terrace deposits, and landslide deposits. Several large bedrock landslide complexes occur along and adjacent to the Cristianitos fault system, especially west of the fault zone (Morton, 1974). These larger landslides are located within the southwestern one-third of the drainage basin and appear to have failed along weak, sheared bedrock associated with the Cristianitos fault system.[2] These large landslides are likely remnants of the glacial ages, when the climate was wetter and Cañada Chiquita was 50 to 100 feet deeper than the present-day valley floor.

Hydrology

Cañada Chiquita is a fifth order stream at its confluence with San Juan. There are 470 first order drainages within this sub-basin that represent about 47 percent of the total stream length within the sub-basin. The drainage density of this watershed is lower than comparably sized sub-basins in the region, and many of the lateral valleys are channel-less swales. The terrains of Cañada Chiquita are considered to be primarily sandy and, as such, the sub-basin generally has high infiltration capacity. This is especially true in the long channel-less swales, which contain deep sandy terrace deposits. This sub-watershed is primarily underlain by soils from three hydrologic groups: B (25.7 percent), C (36.7 percent), and D (36.0 percent). The dominant land use is agriculture (approximately 40 percent of the sub-basin), with developed lands accounting for less than 2 percent of the sub-basin.

The relatively high proportion of permeable soils and low percentage of developed area result in Cañada Chiquita having a moderate- to low-runoff response to precipitation events compared to the other sub-basins analyzed. The high infiltration rates also contribute to the perennial nature of Chiquita Creek. Peak flows from Cañada Chiquita do not have a significant impact on the magnitude of peak flows in San Juan Creek at the confluence and downstream. Relative runoff volumes for Chiquita Creek are also relatively low; the sub-basin contributes 4 percent and 6 percent of the runoff volume to San Juan Creek at their confluence, while occupying approximately 9 percent of the watershed area at that point. Peak flows from Cañada Chiquita are also approximately 4 percent to 6 percent of peak flows in San Juan Creek at the confluence. For the three events modeled, Cañada Chiquita had between 42 percent and 74 percent as much runoff on a per-acre basis as the average for the San Juan Creek Watershed as a whole. However, during extreme flow events (i.e., 50-year or 100-year storms), the infiltration capacity of the soils may be exceeded (partially due to shallow groundwater). During such major storm events, the soils may behave like poorly infiltrating Class C and D soils.

[2] Review of available geologic literature indicates this fault systems is not considered active, pursuant to the guidelines of the Alquist-Priolo Earthquake Fault Zone Map.

Sediment Processes

Below the "narrows" in middle Chiquita Canyon, soils are predominantly sands, silts, and clays. Above the narrows, the soils contain slightly more gravels and cobbles. The sandy substrates mean that the main creek is prone to incision under altered hydrologic regimes. Several active headcuts are present in Chiquita Creek, and the channel is presently incising in several locations. Continued channel incision will increase the sediment generation for the sub-basin by increasing in-channel sediment generation. The Chiquita Sub-basin provides some of the lowest sediment yields and transport rates of the sub-basins analyzed in the San Juan Watershed and produces substantially less sediment than Gobernadora Canyon. However, during episodic events, sediment stored in the lateral channel-less swales may be mobilized and transported to the main portion of Chiquita Creek and further downstream.

Water Quality

The underlying Monterey shale bedrock, prevalence of grassland valleys, and the presence of a relatively high proportion of clay terrain in the valley floor means that nitrogen and phosphorus loadings from this sub-basin are likely quite high, with limited capacity for assimilation within the watershed itself. This may be especially true for phosphorus loadings given the presence of the Monterey formation and evidence of channel incision. Both metals and any pesticides would tend to move in particulate forms.

Groundwater

Chiquita Creek is one of the few naturally perennial streams in the watershed. Water likely flows from the ridge tops toward the valley bottom along subsurface impermeable layers and comes to the surfaces at changes in topography or where substrates of differing transmissivities intersect (i.e., where terrace deposits intersect floodplain alluvial deposits). The valley bottom is characterized by shallow sub-surface water for long portions of the year. This shallow sub-surface water daylights at the toe of the valley wall in several locations, supporting a series of slope wetlands.

Biological Resources

The perennial nature and subsurface water movement in Chiquita Canyon support riparian habitats, freshwater and alkaline marsh, and slope wetlands. The majority of Chiquita Creek is southern willow riparian forest and willow scrub with pockets of alkaline marsh. The middle portions of Chiquita Creek (below Oso Parkway) support a mixture of southern willow scrub and coast live oak riparian woodland. The riparian canopy is mostly intact, but the soils and understory vegetation exhibit some effects from cattle grazing. In areas where Chiquita Creek has incised (up to 15 vertical feet), connection with the floodplain has been lost and over bank flow seldom occurs. Lateral canyons support primarily California live oak and scrub oak woodlands. The majority of the slope wetlands in the SAMP Study Area occur in the lower portion of Chiquita Canyon. These perennially moist wetlands occur in series along the toe of the slopes (primarily on the east side) and may provide refugia or act as stepping-stones for several taxa of animals. Chiquita Ridge contains several vernal pools including the largest pool in Orange County that supports the federally listed endangered Riverside fairy shrimp and San Diego fairy shrimp. The slopes and ridges adjacent to the main creek are dominated by coastal sage scrub that supports one of the largest populations of California gnatcatcher in the SAMP Study Area.

Summary of USACE Engineer Research and Development Center (ERDC) Functional Assessment

The USACE Engineer Research and Development Center Functional Assessment concludes the following about the Chiquita Sub-basin:

The Chiquita Creek Sub-basin originates in the foothills north of Oso Parkway and Tesoro High School and drains southerly into San Juan Creek. This sub-basin has numerous activities and impacts including regionally important roads (Oso Parkway and the SR-241), Tesoro High School, crop agriculture, and ranching activities. USACE Engineer Research and Development Center mapped 218 acres of riparian habitat within this sub-basin. Notable aquatic habitat types include intermittent rivers and stream, mulefat scrub, southern arroyo willow forest, southern willow scrub, southern coast live oak riparian forest, coastal freshwater marsh, and southern sycamore riparian woodland. Even without pervasive development, this sub-basin has experienced some disturbance, resulting in direct and indirect impacts to riparian habitat through road and school construction and indirect impacts from crop agriculture and grazing. About 59 percent of the riparian habitat is categorized as having very high integrity, 98 percent of the riparian habitat is categorized as high to very high integrity, and 100 percent of the riparian habitat is categorized as medium to very high integrity.

Planning Considerations from Watershed Planning Principles

Planning considerations for the Chiquita Canyon Sub-basin from the Watershed Planning Principles are as follows:

- Main canyon and side canyon terrains are primarily sandy or silty sand and the sub-basin generally has high infiltration capacity.

- Side canyons (particularly east of the creek) contain deep sandy deposits and serve important hydrologic functions through infiltrating low volume storms to groundwater and high volume storms to the main stream channel.

- Ridges on the east side of the valley are characterized by, rock outcroppings, and areas of hardpan which are eroded remnants of claypans formed in the geologic past that have eroded to form mesas and locally steep slopes. These areas have minimal infiltration and channel flows into the major side canyons.

- The sandy substrates beneath the tributary swales make them prone to incision under existing and altered hydrologic regimes.

- Based on comparisons with 1938 aerial photographs, the main creek channel has been relatively stable over the last 60 years. The deepening of the creek channel in portions of the mainstem of Chiquita Creek may be a result of long-term, gradual geologic processes, terrains, land use, or a combination of factors. The current channel bed elevation may be somewhat stabilized by pre-historic cohesive lake-bed or quiet-water sediments.

- Groundwater derived from beneath the hill slopes and ridges is a major source of water contributing to the perennial nature of the creek system. Inferences have been drawn indicating that water levels in the alluvium below Chiquita Creek are at least in large part isolated from those in the sands and gravels beneath San Juan Creek, by a sub-surface barrier to groundwater movement into San Juan Creek.

- The sub-basin provides some of the lowest predicted sediment yields and transport rates of the sub-basins analyzed in the San Juan Watershed, except during extraordinary episodic events, when large volumes of coarse sediment may be mobilized and transported to San Juan Creek.

- Relative to Gobernadora Creek and lower Gabino Creek, the area of floodplain connection is fairly limited. The hydrologic connections, both surface and subsurface, to the main side canyons appear to be more important in hydrologic terms than the floodplain connection.

- The combination of perennial flow in the Chiquita Creek and subsurface water movement in Chiquita Canyon support riparian habitats, freshwater and alkaline marsh, and slope wetlands.

- Many of the slope wetlands on the east side of the valley appear to be sustained by large volumes of stored groundwater within the Santiago (and to a lesser extent the Sespe) formations that move along low permeability silt beds and discharge at breaks in the slope. The slope wetlands on the west side of the valley are sustained by fairly localized recharge of San Onofre breccia and derivative landslide deposits.

4.2.4 WESTERN SAN MATEO CREEK WATERSHED SUB-BASINS

4.2.4.1 Overview of La Paz Canyon Sub-basin Characteristics

Terrain

La Paz Creek is the major tributary drainage to Gabino Creek, and the two sub-basins share many common characteristics. Approximately two-thirds of the 7.3-square-mile La Paz Sub-basin is within the RMV Planning Area. The La Paz Canyon drainage basin is underlain by bedrock of the Williams and Trabuco formations and the Santiago Peak Volcanics. Within the boundaries of the RMV Planning Area, the underlying bedrock consists of the Schulz Ranch Member of the Williams Formation and the Trabuco formation. Surficial geologic units within the SAMP Study Area consist of alluvium, colluvium, nonmarine terrace deposits, and a few landslides.

Hydrology

La Paz Creek is a lengthy, fifth order stream and has several fourth order parallel drainages joining it from the eastern hill slopes. Like most of the sub-basins in the upper San Mateo Watershed, the steep crystalline terrains produce high drainage density and multiple confluence points. The sub-basin includes 575 first order and 110 second order drainages and has a drainage density of 10 mi/mi.^{2} The longest watercourse is approximately 6.8 miles. First order drainages comprise 54 percent of the total stream course length in the basin. The narrow western strip of La Paz Canyon is characterized by short, second order streams which drain from the dividing ridge with Upper Gabino Canyon and feed into the main La Paz channel. The fourth order confluence points in the eastern tributaries are associated with dense stands of oak and sycamore woodland and may represent zones of relatively high geomorphic and habitat function.

Runoff and infiltration patterns are similar to those predicted for Gabino Canyon, but at a lower magnitude due to the smaller size of the sub-basin. Runoff per unit area is greater for La Paz Canyon than for Gabino Canyon. This difference results from the fact that the headwaters of La

Paz Canyon are approximately 800 feet higher than those of Gabino Canyon. The higher portions of the sub-basin receive greater rainfall due to orographic effects. In addition, the upper portions of La Paz Canyon have a high proportion of crystalline terrains and class D soils. Therefore, the portions of La Paz Canyon that receive the most rainfall have the highest expected runoff volumes, resulting in high runoff per unit area for the sub-basin as a whole. The calculated infiltration and loss rates fall in the middle of the calculated range for the reported San Mateo Watershed sub-basins. These mid-range rates reflect a balance between poor infiltrating soils in an undeveloped watershed. The majority of the sub-basin is underlain by soils of hydrologic groups C (43.8 percent) and D (47.8 percent) and the sub-basin is nearly entirely undeveloped (99.6 percent). Agricultural and developed lands (mostly roads) cover approximately 0.4 percent of the sub-basin. Therefore, only a very small fraction of the basin is impervious to infiltration. The timing of peak flows is identical to the peak time for upper Gabino Canyon at its confluence with La Paz Canyon; the Upper Gabino Canyon and La Paz Canyon drainages are very similar in size and shape. As a result, peak stream flow from La Paz Canyon directly contributes to increasing peak discharge at Gabino Canyon and further downstream. Runoff per unit area for La Paz Canyon is between 61 percent and 73 percent of the average for the entire San Mateo Watershed for the 2-year, 10-year, and 100-year events.

Sediment Processes

Predicted sediment yields and transport rates for La Paz Canyon are the lowest of any of the sub-basins analyzed in the San Mateo Watershed. Rates and yields are comparable to those of the upper Cristianitos Sub-basin, which is approximately half the size of La Paz Canyon. The low yields may be partially due to the relatively large proportion of very coarse substrates (i.e., large cobbles and boulders) produced from La Paz Canyon. These coarse substrates are expected to be mobilized very infrequently during large-scale episodic events, at which time they play a significant role in reshaping the geomorphology of the lower portions of the watershed. Groundwater is not a significant contributing factor to the ecology of the riparian systems in the La Paz Sub-basin.

Water Quality

Existing nitrogen loadings in the La Paz Sub-basin should be relatively low. The lack of well-developed floodplain structure likely limits the ability of the sub-basin to store phosphates and fairly significant quantities are probably mobilized and transported to the main stem of the San Mateo during high flow events. Background metal loadings are likely to be relatively low, with metal speciation favoring particulate forms.

Biological Resources

La Paz Creek supports dense stands of structurally diverse, mature coast live oak, and southern sycamore riparian woodlands. The riparian zones are confined by the geology of the valley, but contain high topographic complexity (including bars and ponds that are inundated late into the spring), an abundance of coarse and fine woody debris, leaf litter, and a mosaic of understory plant communities. In the upper reaches of the sub-basin, the streams are narrow and form tight mosaics with the chaparral and sage scrub of the adjacent uplands. The rock and cobble substrate type that dominates the streambed is reflective of the slope and geologic setting of the sub-basin. Portions of the streams that convey seasonal high velocity flows also retain water for extended periods of time in shallow depressions within the active channel. The seasonal depressions, combined with the open bars and variety of plant communities, likely provide many niches and support complex and inter-related communities.

Summary of USACE Engineer Research and Development Center (ERDC) Functional Assessment

The USACE Engineer Research and Development Center Functional Assessment concludes the following about the La Paz Canyon Sub-basin:

The La Paz Creek Sub-basin originates from the Cleveland National Forest in Riverside County and drains southwesterly into Gabino Creek. The sub-basin is undeveloped and experiences some light ranching activities. USACE Engineer Research and Development Center mapped 76 acres of riparian habitat within this sub-basin. Notable aquatic habitat types include mulefat scrub, southern sycamore riparian woodland, and southern coast live oak riparian forest. The sub-basin has experienced little degradation to riparian habitat. About 95 percent of the riparian habitat is categorized as having very high integrity, 100 percent of the riparian habitat is categorized as high to very high integrity, and 100 percent of the riparian habitat is categorized as medium to very high integrity.

Planning Considerations from Watershed Planning Principles

Planning considerations for the La Paz Canyon Sub-basin from the Watershed Planning Principles are as follows:

- The upper one-third of the La Paz Sub-basin, including all of its headwaters, is located outside the SAMP and NCCP/MSAA/HCP Study Areas.

- Runoff per unit area is higher for the La Paz Sub-basin than for Gabino and Talega due to the altitude and steepness of the headwaters, higher rainfall in the upper watershed due to orographic effects, and high proportion of crystalline terrains and Class D soils.

- The headwaters of the La Paz Sub-basin are in the Trabuco formation, which yields more water than other sub-basins in the western portion of the San Mateo Watershed (i.e., within the SAMP Study Area).

- Predicted sediment yields and transport rates for La Paz Canyon are the lowest of any of the sub-basins analyzed in the San Mateo Watershed. The low yields may be partially due to the relatively large proportion of very coarse substrates (i.e., large cobbles and boulders) produced from La Paz Canyon. These coarse substrates are likely mobilized very infrequently during large-scale episodic events, at which time they play a significant role in reshaping the geomorphology of the lower portions of the watershed.

- The riparian zones within the La Paz Sub-basin are confined by the geology of the valley, but contain high topographic complexity (including bars and ponds that are inundated late into the spring), an abundance of coarse and fine woody debris, leaf litter, and a mosaic of understory plant communities. Portions of the streams that convey seasonal high velocity flows also retain water for extended periods of time in shallow depressions within the active channel.

4.2.4.2 Overview of Gabino Canyon (including Blind Canyon) Sub-basin Characteristics

Terrain

Gabino Canyon is underlain primarily by bedrock of the Williams Formation (Pleasants sandstone and Schulz Ranch members), as well as the Santiago, Silverado, Ladd (Baker Canyon member), and Trabuco formations. Surficial geologic units within the SAMP Study Area consist of alluvium, colluvium, nonmarine terrace deposits, and a few landslides. The Mission Viejo fault trends north-south through the southwestern portion of the drainage basin. Although not considered active, this fault affects the terrains and subsurface water movement in the canyon.

The Gabino Sub-basin is underlain by clayey and crystalline terrains that generally produce higher runoff volumes per unit area than sandier areas. However, compared to other crystalline terrains in the SAMP Study Area, Gabino Canyon has the highest infiltration capacity of any of the analyzed sub-basins in the San Mateo Watershed.[3] Approximately 56 percent of the upper sub-basin is underlain by Type C soils, with 31 percent of the upper basin having the least permeable Type D soils. Infiltration capacity is somewhat lower in the lower portion of the sub-basin and Blind Canyon, with D-type soils being predominant.

Hydrology

Gabino Canyon is 8.3 square miles and approximately 10 miles long. Along with Talega Canyon, it is the largest sub-basin in the upper San Mateo Watershed. Its size, position high in the watershed, and steep terrain produce the highest absolute peak flows and runoff volumes in the upper San Mateo Watershed. The crystalline terrains and position in the watershed also result in relatively high drainage density. The 1,274 first order drainages within the Gabino Sub-basin account for approximately 51 percent of the stream miles in the sub-basin. At its confluence with La Paz, Gabino Creek is a sixth order stream until it joins Cristianitos Canyon further downstream. In absolute terms, peak flow rates and volumes at the mouth of Gabino Canyon are at least four times greater than flows entering from the neighboring upper Cristianitos Sub-basin, which is a considerably smaller watershed area. However, Gabino Canyon has lower runoff per unit area than either La Paz or Talega Canyons, reflecting the somewhat higher infiltration capacity than these other sub-basins.

Flows exiting Gabino Canyon peak about 1.2 hours, 0.8 hour, and 0.4 hour after peak flows have exited the upper Cristianitos sub-basin (upstream of the Gabino confluence) for the 2-year, 10-year, and 100-year events, respectively. For the 2-year and 10-year events, storm peaks are somewhat attenuated between the Upper Gabino/La Paz confluence upstream and the Gabino/Cristianitos confluence downstream. This is not the case for the 100-year event where the downstream location has higher peak flows. The proximity of timing of peak flows during more extreme events results in peak flows from Gabino Canyon that have the potential to directly add to peak flows in Cristianitos Canyon at the confluence.

Sediment Processes

Gabino Canyon was calculated to have the highest sediment yield and transport rate of any sub-basin analyzed in the San Mateo Watershed. These high yields are partially attributable to the size of the sub-basin; however, the transport rate per unit area is also high, second only to

[3] Runoff volumes in Gabino Canyon are higher than those for the sandier areas of the San Juan Watershed.

the Cristianitos Sub-basin. Cobbles and other larger particles comprise the majority of sediment produced in this sub-basin; however, unlike La Paz, sand comprises a substantial portion of the sediment produced. The relatively high proportion of underlying sandy substrates (compared to the rest of the crystalline areas in the SAMP Study Area) likely contributes to the high sediment yield predicted for Gabino Canyon. Incision of the channel in the reaches just upstream of the confluence with La Paz also is a likely source of sediment. However, a significant portion of the sediment production is probably associated with erosion caused by historic cattle grazing activities. Conversion of native habitat to non-native grassland, along with continued grazing, appears to have resulted in extensive gully formation adjacent to Gabino Creek and resultant increases in sediment delivery to downstream areas. A critical feature of the sediment transport characteristics of Gabino Canyon is that most of the sediment is mobilized during extreme episodic events when topography, unstable upland soils, and substrate types contribute to produce large quantities of sediment. This sediment is probably very important to downstream channel structure and provides habitat for sensitive species in the middle and lower watershed.

Water Quality

The high proportion of grasslands in the upper watershed represents a potential source of high nitrogen loadings. Similarly phosphate loadings are expected to be moderate, mainly associated with erosion in the upper watershed. Incision in the upper reaches of Gabino Canyon and the naturally confined floodplain in the lower reaches mean that assimilation of nitrate and phosphate loadings are expected to be low to moderate within the riparian floodplain. Baseline metal loadings should be relatively low under existing conditions with most metals transported in particulate form.

Groundwater

Groundwater is probably not a significant component of the aquatic ecosystems in the Gabino Sub-basin. The channel is typically dry by May or June, even in wet years. However, localized groundwater discharge was observed at several active headcuts in the upper watershed. Therefore, there may be localized areas (or sub-surface lenses) that provide localized shallow groundwater. Because the bedrock beneath Gabino Creek is comprised mainly of old, tightly consolidated sediments, any groundwater discharged would have above average specific conductance (i.e., higher salinity).

Biological Resources

The dominant habitat type in the upper portion of Gabino Canyon (above the confluence with La Paz Creek) is southern coast live oak riparian woodland. The adjacent uplands are primarily ruderal grasslands with sage scrub on the hill slopes. The upper watershed has been heavily grazed and is incised in places with vegetation that has been cropped or trampled. The riparian zone varies in width from relatively narrow to relatively wide and is well developed (depending on the intensity of grazing). Historically, the stream probably migrated through the floodplain, but now is confined by headcutting and incision processes. In some reaches, this incision is in excess of ten feet and appears to have intercepted subsurface flow. A manmade lake/stock pond in upper Gabino canyon, informally known as "Jerome's Pond," captures water from Gabino Creek and three unnamed tributaries. The pond can be characterized as a hemi-marsh mix of open water and bulrush (*S. californicus*). Where Gabino Creek flows into the stock pond, there is a delta dominated by mule fat scrub. The pond outlets into a tributary that supports willow riparian habitat and eventually joins the main flows of Gabino Creek. Above the pond, the tributaries are a mix of oak riparian and broad floodplain sycamore habitats. Portions of these tributaries exhibit slumping and erosion, probably resulting from grazing impacts (perhaps in

conjunction with fires). A major unnamed tributary flows into Gabino Creek just upstream of its confluence with La Paz Creek. The natural drainage pattern of this tributary has been substantially altered over time by mining activities, including the creation of a series of artificial ponds.

Lower Gabino Creek (below the confluence with La Paz Creek), middle Gabino Creek, and La Paz Creek support structurally diverse, mature oak and southern sycamore riparian woodland with dense chaparral on the adjacent slopes. The center of the stream has a rock cobble substrate overlain by areas of shallow alluvial deposits that support mule fat scrub. The floodplain and riparian zones in the lower sub-basin are confined by the geology of the valley, but contain high topographic complexity, an abundance of coarse and fine woody debris, leaf litter, and a mosaic of plant communities. In many years, Gabino Creek flows through the late spring and seasonal pools persist in some locations, but seldom through the summer.

Blind Canyon is a major tributary watershed to Gabino Creek and, as such, was analyzed as part of the lower Gabino system. Blind Canyon is a high gradient, coarse substrate stream, dominated by sycamore and oak riparian gallery forest with a mule fat-dominated understory. The stream contains good topographic complexity, leaf litter, and coarse and fine woody debris. There are numerous high gradient, low order tributaries to Blind Canyon on the site. Some contain scrub oak-dominated riparian forest; others are unvegetated swales. Several of the tributaries appear to pond seasonally at naturally occurring grade changes, but do not exhibit any features of slope wetlands.

Summary of USACE Engineer Research and Development Center (ERDC) Functional Assessment

The USACE Engineer Research and Development Center Functional Assessment concludes the following about the Gabino Canyon Sub-basin:

The Gabino Creek Sub-basin originates in the foothills below the Cleveland National Forest and drains southwesterly into Cristianitos Creek. The sub-basin is undeveloped and has some ranching activities. USACE Engineer Research and Development Center mapped 106 acres of riparian habitat within this sub-basin. Notable aquatic habitat types include southern coast live oak riparian forest, mulefat scrub, and southern sycamore riparian woodland. The sub-basin has experienced little degradation to riparian habitat due to the absence of any major activities. About 89 percent of the riparian habitat is categorized as having very high integrity, 100 percent of the riparian habitat is categorized as high to very high integrity, and 100 percent of the riparian habitat is categorized as medium to very high integrity.

The USACE Engineer Research and Development Center (ERDC) Functional Assessment concludes the following about the Blind Canyon Sub-basin:

The Blind Canyon Sub-basin is a small sub-basin located in the southeastern portion of Orange County. The sub-basin drains westerly into Gabino Canyon right before Gabino Canyon drains into Cristianitos Canyon. The sub-basin is undeveloped except for a few access roads. USACE Engineer Research and Development Center mapped 218 acres of riparian habitat within this sub-basin. Notable aquatic resource habitat types include southern coast live oak riparian forest and southern sycamore riparian woodland. Due to the small amount of direct and indirect disturbance to riparian habitat, the entire riparian habitat is categorized as having very high integrity.

Planning Considerations from Watershed Planning Principles

Planning considerations for the Gabino Canyon Sub-basin from the Watershed Planning Principles are as follows:

- Gabino and Talega Canyons are the largest sub-basins in the western portion of the San Mateo Watershed.

- Gabino Canyon has the highest predicted absolute peak flow and runoff volume of the sub-basins studied in the western portion of the San Mateo Watershed. This is due to its size, position high in the watershed, steep topography, and the narrow geologically confined nature of the middle and lower reaches of the sub-basin. Simulated hydrographs indicate a somewhat "flashy" runoff response in this sub-basin.

- Gabino Canyon has the highest predicted sediment yield and transport rate of any sub-basin analyzed in the western portion of the San Mateo Watershed.

- Fine sediment generation in the upper sub-basin may exceed natural conditions due to extensive gully formation in the headwater areas.

- Terrains in the middle reaches are very steep, with high drainage densities and have very limited stormwater infiltration capacity.

- Sediments produced from the middle portion of the sub-basin are primarily coarse sediments, including sands and cobbles, which are mobilized and transported during extreme episodic events. These sediments are probably very important to downstream channel structure and provide geomorphologic elements of habitats for sensitive species found in the middle and lower reaches of Gabino Creek and further downstream.

- In wet years, the creek flows through the late spring and seasonal pools persist in some locations (probably associated with bedrock outcrops). However, these pools seldom if ever persist through the summer.

- Groundwater does not appear to be a significant element of the Creek's hydrologic system, with the possible exception of the lower reaches (i.e., below the confluence with La Paz). It appears that the alluvium in this sub-basin is recharged during winter runoff events and once the limited aquifer storage has been seasonally depleted, little ongoing replenishment occurs until the next event.

- Along the lower reaches of the Creek, terrains to the north include clayey soils and a major unnamed side canyon that has been extensively modified by clay mining activities.

- The area south of Blind Canyon is comprised of a mesa top that has been grazed and is characterized by high gradient, coarse-bedded channel, and sycamore and oak riparian forest. The slopes of the canyon contain other significant habitat including coast live oak.

4.2.4.3 Overview of Cristianitos Canyon Sub-basin Characteristics

Terrain

The 3.7-square-mile Cristianitos Canyon drainage basin (upstream of the confluence with Gabino Creek) is underlain by bedrock of the Santiago and Silverado formations. Surficial

geologic units within the SAMP Study Area consist of alluvium, colluvium, nonmarine terrace deposits, and a few landslides.

The upper Cristianitos Canyon is a fifth order network with a calculated drainage density of 8 mi/mi.^{2} Compared with other sub-basins in the SAMP Study Area, the upper Cristianitos Watershed has a more rounded, or pear-shaped, configuration. Additionally, the headwater areas are not as steep as many of the other sub-basins. These conditions reflect the physiographic and geologic setting of the upper Cristianitos basin just south of the dividing ridge with the San Juan Watershed. As a result of this setting, third and fourth order tributary arms are distributed fairly evenly and have similar lengths. There are 187 first order drainages that account for almost one-half of the basin's total stream length.

Hydrology

The more gently sloping shape of the headwaters of this drainage, high infiltration rates, and a drainage network which dampens flow peaks results in a less "flashy" hydrograph than observed in other sub-basins of the upper San Mateo Watershed. The hydrograph for Cristianitos Canyon has a broader base with lower flow rates. In absolute terms, runoff volumes and peak flows from Cristianitos Canyon are the lowest of the studied San Mateo Sub-basins, primarily due to the smaller size of this sub-basin. In terms of peak discharge per unit area, upper Cristianitos had the highest rates for the 10-year and 100-year events of the studied San Mateo Sub-basins. This higher result for peak discharge per unit area may seem uncharacteristic since Cristianitos Canyon has more favorable soil and infiltration conditions than the other studied San Mateo Sub-basins. However, routing conditions in the Cristianitos Canyon Sub-basin, which is the least elongated of the San Mateo Sub-basins, appear to enhance flow concentration and generate larger peak flows per unit area. In terms of runoff per unit area, values from Cristianitos Canyon are lower than the other studied sub-basins (only between 43 and 67 percent of the average for the entire San Mateo Watershed).

Sediment Processes

The substrate type in Cristianitos Creek is primarily sands and silts, with a significant portion of clays. However, the lower portion of Cristianitos Creek appears to be actively incising. Review of aerial photographs shows that prior to the extreme flow event of 1938, the reach of Cristianitos Creek upstream from the confluence of Gabino Creek was little more than a swale and seems to have incised 8 to 15 feet since that time. This portion of Cristianitos Creek is likely susceptible to further incision and associated in-channel sediment generation during extreme flow events. Sediment transport rate per unit area for the Cristianitos Sub-basin is the highest of any San Mateo sub-basin studied. However, because of the small size of the Cristianitos Sub-basin, the gross sediment yield and transport rate is the lowest of the study's sub-basins. From a sediment processes perspective, Cristianitos Creek is probably most important as a transport reach, conveying material generated higher in the watershed to downstream areas. Continued incision would interfere with this function.

Water Quality

Pollutant transport and cycling likely occur predominately within surface waters. The large amount of grasslands in the sub-basin strongly suggests that nitrogen loading is currently high, while the high erosion potential indicates that the mobilization of phosphorus sources may be equally high. Metal loadings to the sub-basin are likely low at present and most metal transport can be expected in the particulate form.

Groundwater

The majority of the Cristianitos Sub-basin is underlain by poorly infiltrating soils of hydrologic groups C (43.9 percent) and D (42.7 percent). However, compared to other sub-basins of the San Mateo Watershed studied, the upper Cristianitos Canyon also contains a relatively large portion of the better infiltrating soil group B (12.9 percent). The relatively high proportion of Type B soils and the minimal development in the sub-basin produce relatively high infiltration rates relative to the other reported sub-basins within the San Mateo Watershed.[4]

Biological Resources

Aquatic resources in the Cristianitos Sub-basin consist of both riverine and lacustrine (associated with abandoned clay pit mines and stock ponds) systems. The upper portions of the sub-basin consist of a ridge or spine with canyons on both sides. These canyons are steep and narrow and contain well-developed, mature oak riparian woodland in a matrix of intact chaparral and coastal sage scrub. Although the total jurisdictional area associated with these drainages may be small, their structure, position in the landscape (in the headwaters), and juxtaposition with intact upland plant communities results in high functioning upland/wetland ecosystems. Cristianitos Creek, below an existing stock pond, is a meandering stream that contains alkali marsh communities mixed with willow and mule fat. However this reach is actively incising. Reaches just upstream of Gabino Creek have near-perennial flow, apparently supported by discrete loci of groundwater discharge. The persistent saturation has facilitated development of well-structured hydric soils, and as the gradient flattens, there is a moderate width floodplain associated with the stream. This area supports the highest diversity of wetland species of any of the San Mateo sub-basins studied.

There are several lacustrine wetlands in the sub-basin associated with abandoned clay pits or stock ponds. In general, these areas appear to be functioning as intact wetlands. They contain a mix of open water and emergent marsh vegetation. Most are surrounded by a mix of sage scrub and grasslands. One of the stock ponds on the lower end of Cristianitos Creek has a stream dominated by mule fat scrub draining into it. The ponds generally appear to have low turbidity and are being used by fish, invertebrates, amphibians, and birds. A large, abandoned clay pit exists near the southern boundary of the sub-basin. This pit is approximately 80 to 100 feet deep and dominated by open water with a narrow fringe of emergent marsh habitat. This large, abandoned pit is blue-green in color, and is not functioning as a viable ecosystem. Adjacent uplands in the sub-basin have a percentage of clay soils and support sensitive plant populations.

Summary of USACE Engineer Research and Development Center (ERDC) Functional Assessment

The USACE Engineer Research and Development Center Functional Assessment concludes the following about the Cristianitos Canyon Sub-basin:

The Cristianitos Creek Sub-basin originates near the San Juan Creek Watershed/San Mateo Creek Watershed border and drains southerly into San Mateo Creek in San Diego County. This sub-basin has a few abandoned clay mines on the eastern portion, the Donna O'Neill Conservancy on the western portion, a few private roads, and ranching activities. The USACE Engineer Research and Development Center mapped 133 acres of riparian habitat within this sub-basin. Notable aquatic habitat types include southern coast live oak riparian forest and

[4] Runoff volumes in Cristianitos Canyon are higher than those for the sandier areas of the San Juan Watershed.

mulefat scrub. Due to the historic mining activities, this sub-basin has experienced some degradation to riparian habitat. About 23 percent of the riparian habitat is categorized as having very high integrity, 100 percent of the riparian habitat is categorized as high to very high integrity, and 100 percent of the riparian habitat is categorized as medium to very high integrity.

Planning Considerations from Watershed Planning Principles

Planning considerations for the Cristianitos Canyon Sub-basin from the Watershed Planning Principles are as follows:

- Cristianitos Sub-basin has a less "flashy" hydrograph than other sub-basins of the western portion of the San Mateo Watershed due to its shape, infiltration characteristics, and drainage network.

- The terrains to the west of Cristianitos Creek are generally erodible silty sands while the terrains to the east of Cristianitos Creek are generally less erodible clays (where not disturbed). Intact clayey terrains tend to seal and functionally become nearly impervious upon saturation, generating more rapid runoff than sandy terrains.

- Major riparian areas exist in the northeast and southwest portions of the sub-basin.

- The middle and lower areas to the east of the creek contain few riparian areas and include numerous former open clay pits that are eroding and are not self healing.

- The middle portion of Cristianitos Creek supports alkaline wetlands. The hydrologic support of these wetlands in relation to the surface and subsurface hydrology of this portion of Cristianitos Creek is not fully understood; however, recently installed groundwater monitoring wells are intended to clarify this issue.

- The clay-rich soils to the east of the creek generate fine sediments, generally silts and clays, which contribute to turbidity in downstream waters (as contrasted with coarser sediments such as sands, silty sands, and cobbles contributed by Gabino and La Paz).

- A review of 1938 aerial photos indicates that the mainstem of Cristianitos Creek upstream from the confluence with Gabino Creek appears to have been deepening over the past 60 years.

4.2.4.4 Overview of Talega Canyon Sub-basin Characteristics

Terrains

The Talega Canyon drainage straddles the boundary of RMV Planning Area and MCB Camp Pendleton. The basin is underlain by bedrock of the Santiago, Silverado, Williams, and Trabuco formations and the Santiago Peak Volcanics. Approximately one-third to one-half of the Talega Canyon drainage basin lies within the SAMP Study Area boundary, most of which is occupied by the existing Northrop Grumman TRW Capistrano Test Site facilities. Within the boundaries of the RMV Planning Area, the underlying bedrock consists of the Santiago and Silverado formations and the Pleasants sandstone and Schulz Ranch members of the Williams formations. Surficial geologic units within the SAMP Study Area consist of alluvium, colluvium, non-marine terrace deposits, and a few landslides.

Hydrology

Talega Creek is a fifth order system where it meets Cristianitos Canyon, downstream of the Gabino Confluence. The 8.3-square-mile sub-basin has a drainage density of 9 mi/mi.^{2} with 501 first order channels. The Talega Canyon Sub-basin is extremely elongated; the longest watercourse is over 10.1 miles.

When considered as a percentage of total storm event rainfall, hydrologic losses in Talega Canyon were the lowest of all reported San Mateo sub-watersheds for all three modeled storm events. Overall, the low loss rates calculated for Talega Canyon indicate that infiltration rates within the sub-basin are also low, relative to the other reported sub-basins. In absolute terms, runoff volumes and peak flows from Talega Canyon are in the upper-middle of the range compared to other reported San Mateo sub-basins. Talega Canyon contributes about 33 percent of the runoff volume to Cristianitos Creek at their confluence while it occupies approximately 28.76 percent of the upstream watershed area at that point. Peak flows from Talega Canyon are approximately 25 percent of peak flows in Cristianitos Creek at the confluence. In terms of runoff per unit area, Talega Canyon produced between 66 percent and 78 percent as much runoff on a per-acre basis as the average for the San Mateo Creek Watershed as a whole. Talega Canyon provides a contrast between runoff peaks which are relatively low and runoff volumes which are relatively high. Higher runoff volumes are generated due to the high proportion of poorly draining soils. However, the elongated shape of the sub-basin and long routing distance reduces the magnitude of peak flow rates. Peak discharge rates are attenuated as they travel downstream through the sub-basin.

Sediment Processes

Because a large portion of the basin is outside the SAMP Study Area (in MCB Camp Pendleton and San Mateo wilderness) an analysis of sediment yield or transport rates for this sub-basin area was not performed.

Water Quality

The potential for generating large amounts of fine sediments indicates that the Talega Sub-basin can be a significant source of phosphates. Historical aerial photography shows that a well-vegetated floodplain has often been absent, suggesting that the riparian corridor may play a relatively minor role in cycling of pollutants. However, some sequestration may occur in pockets where sandy substrates are found. Metal partitioning should heavily favor transport in the less biologically available particulate forms.

Groundwater

The majority of the sub-watershed is underlain by soils of hydrologic groups C (18.8 percent) and D (75.6 percent). Talega Canyon has the highest proportion of poorer infiltrating Type D soils of any of the other sub-basins analyzed in the San Mateo Watershed.

Biological Resources

The riparian zones of Talega Creek are similar to those found in upper Cristianitos and Lower Gabino Creeks. The substrate is rock/cobble dominated with sandbars forming in depositional areas. The riparian habitat consists of dense stands of structurally diverse, mature coast live oak, and southern sycamore riparian woodlands. Center portions of the creek support mule fat scrub and open sand bar habitat. The riparian zones are confined by the geology of the valley,

but contain high topographic complexity, an abundance of coarse and fine woody debris, leaf litter, and a mosaic of understory plant communities. Talega Creek contains shallow pools that retain water into the late spring and early summer. Some of the highest concentrations of southwestern arroyo toad in the San Mateo Watershed are located along Talega Creek.

Summary of USACE Engineer Research and Development Center (ERDC) Functional Assessment

No USACE Engineer Research and Development Center general assessment and conclusions are available for the Talega Sub-basin.

Planning Considerations from Watershed Planning Principles

Planning considerations for the Talega Sub-basin from the Watershed Planning Principles are as follows:

- Talega Canyon straddles the boundary of the RMV Planning Area and MCB Camp Pendleton, with at least a third of the upper watershed located outside the SAMP and NCCP Study Areas in the San Mateo Wilderness Area. The existing Northrop Grumman TRW Capistrano Test Site facilities are on the ridge above Talega Canyon, with runoff draining both to Talega Canyon and to Blind Canyon/Gabino Canyon.

- Talega Canyon has the highest proportion of poorer infiltrating Type D soils of any of the other sub-basins analyzed in the San Mateo Watershed and yield relatively high runoff volumes. Although the simulated hydrographs for Talega Creek have a pronounced peak, they are relatively broad. The broader peaking is likely due to the elongated geometry of the sub-basin, which tends to attenuate flood movement as it travels through the sub-basin. Therefore, runoff volumes are high but peak discharge rates are attenuated as stormwater travels downstream through the sub-basin.

- The headwaters of Talega Creek (which are outside the SAMP and NCCP Study Areas) are in weathered granitic rocks that sustain a substantial density of springs. These springs help support a denser riparian corridor in the upper portion of the sub-basin and may contribute to late season moisture in Talega Creek.

- Talega Creek supports one of the two largest populations of arroyo toads in the planning area. The creek substrate is rock/cobble with sandbars forming in depositional areas. Riparian habitat consists of dense stands of mature, structurally diverse coast live oak and southern sycamore riparian woodlands. Central reaches of the creek support mule fat scrub and open sand bar habitat. Riparian zones contain high topographic complexity, an abundance of coarse and woody debris, leaf litter and a mosaic of understory plant communities. The creek contains shallow pools that retain water into the late spring and early summer, a water supply likely to be of significance for arroyo toad breeding habitat, but does not appear to be sufficient to sustain steelhead.

CHAPTER 5.0
DEVELOPMENT OF ALTERNATIVES

5.1 PLANNING PROCESS, SOUTHERN PLANNING GUIDELINES, AND WATERSHED PLANNING PRINCIPLES USED TO DEVELOP ALTERNATIVES

As planning has progressed for the SAMP Study Area and the Southern Subregion NCCP, a series of planning principles and tenets have been developed to guide the alternatives development process. Some of these principles and tenets are more focused on upland resources and broader conservation issues, while others are more focused on aquatic resources. It is these latter tenets that the USACE focused on in developing alternatives that provide for both economic and development activities and protection of aquatic resources. In particular, the USACE developed a set of SAMP general planning tenets. These SAMP Tenets are summarized as follows:

1) No net loss of acreage and functions of Waters of the U.S.;

2) Maintain/restore hydrologic, water quality, and habitat integrity of Waters of the U.S.;

3) Protect headwater areas;

4) Maintain/protect/restore diverse and contiguous riparian corridors;

5) Maintain and/or restore floodplain connection;

6) Maintain and/or restore sediment sources and transport equilibrium;

7) Maintain adequate buffer for the protected riparian corridors; and

8) Protect riparian areas and associated habitats supporting state/federally listed species and associated critical habitat.

A NCCP/MSAA/HCP and SAMP working group ("NCCP/SAMP Working Group") was formed that included representatives from the USACE, EPA, CDFG, the USFWS, County of Orange, and landowners. In order to provide focus for the coordinated planning efforts, the NCCP/SAMP Working Group compiled the body of information assembled to date into a set of Southern Planning Guidelines, for use largely in the NCCP/MSAA/HCP process. Consultants conducted further studies that focused on the fundamental hydrologic and geomorphic processes that shape and alter the creek systems in the SAMP Study Area over time. The results of these studies and supplemental technical analyses have been summarized in a set of Watershed Planning Principles for the SAMP that are roughly analogous to the NCCP Science Advisors Reserve Design Principles and are called the Draft Watershed and Sub-basin Planning Principles ("Watershed Planning Principles"). These Southern Planning Guidelines and Watershed Planning Principles build upon the broader tenets and recommendations of the Scientific Review Panel, the Science Advisors Report, and the SAMP tenets. The USACE recognizes that these Watershed Planning Principles supplement the USACE's functional assessment, planning level delineation, project-level delineation, and other available information to help form criteria that could be used to identify and evaluate alternatives. The Watershed Planning Principles are summarized as follows:

Geomorphology/Terrains

- Recognize and account for the hydrologic response of different terrains at the sub-basin and watershed scales.

Hydrology

- Emulate, to the extent feasible, the existing runoff and infiltration patterns in consideration of specific terrains, soil types, and ground cover.
- Address potential effects of future land use changes on hydrology.
- Minimize alterations of the timing of peak flows of each sub-basin relative to the mainstem creeks.
- Maintain and/or restore the inherent geomorphic structure of major tributaries and their floodplains.

Sediment Sources, Storage, and Transport

- Maintain coarse sediment yields, storage, and transport processes.

Groundwater Hydrology

- Utilize infiltration properties of sandy terrains for groundwater recharge and to offset potential increases in surface runoff and adverse effects to water quality.
- Protect existing groundwater recharge areas supporting slope wetlands and riparian zones and maximize alluvial groundwater recharge to the extent consistent with aquifer capacity and habitat management goals.

Water Quality

- Protect water quality using a variety of strategies, with particular emphasis on natural treatment systems, water quality wetlands, swales and infiltration areas

5.2 OFF-SITE ALTERNATIVES

The SAMP is a watershed (landscape-level) approach to Section 404 permitting within the San Juan Creek and Western San Mateo Creek Watersheds consistent with the requirements of federal law. Federal waters, including wetlands, have been identified in the watershed and, to the extent feasible, have been avoided. Unavoidable impacts would be minimized and fully mitigated under the proposed permitting procedures resulting from the SAMP process. While several on-site alternatives have been identified, there are no off-site alternatives to the SAMP Study Area that could accomplish the watershed-scale economic development and aquatic resource protection goals of the SAMP for the San Juan Creek and Western San Mateo Creek Watersheds in Orange County. The SAMP process is based on location-specific planning criteria and analysis, and its goals cannot be accomplished in another watershed(s).

5.3 ON-SITE ALTERNATIVES

As described in subchapter 1.1, the federal action being evaluated by this EIS is the adoption of three proposed permitting procedures that have resulted from the SAMP process. The alternatives described in this chapter are open space/development alternatives for the SAMP process that provide for Aquatic Resources Conservation Program (ARCP) considerations and that can be used to evaluate the proposed permitting procedures in Chapter 8.0. These alternatives were developed in accordance with the NEPA requirements for analysis of a reasonable range of project alternatives.

NEPA requirements for alternatives analysis (40 CFR 1502.14) direct federal agencies to consider a range of alternatives that could accomplish the applicant's purpose and need (in light of the basic purpose of the project) and present the alternatives in comparative form to define the issues and provide a clear basis for decision makers and the public to choose among options. In accordance with the USACE NEPA regulations, "Only reasonable alternatives need be considered in detail, as specified in 40 CFR 1502.14a." The USACE's NEPA regulations further state:

> *"Reasonable alternatives must be those that are feasible and such feasibility must focus on the accomplishment of the underlying purpose and need (of the applicant or public) that would be satisfied by the proposed Federal action (permit issuance). The alternatives analysis should be thorough enough to use for both the public interest review and the 404(b)(1) guidelines (40 CFR part 230) where applicable."* (33 CFR 325)

The alternatives considered in the EIS are:

NEPA Required No Action Alternatives

- Alternative A-1: No Action
- Alternative A-2: No Project/Pre-2004 Zoning
- Alternative A-3: No Project/Housing and Employment
- Alternative A-4: No Project/Incremental Project Review
- Alternative A-5: No Impact to Waters Alternative

Development/Open Space Alternatives

- Alternative B-1: Maximize Open Space
- Alternative B-2: Avoid Development in Chiquita Sub-basin and San Mateo Watershed
- Alternative B-3: Limit New Development in the San Mateo Creek Watershed
- Alternative B-4: Rancho Mission Viejo Filed GPA/ZC Ranch Plan Application
- Alternative B-5: Avoid the San Mateo Creek Watershed and Locate All New Development in the San Juan Creek Watershed

- Alternative B-6: Avoid new development in the Chiquita Sub-basin East of Chiquita Ridge and the Verdugo Sub-basin; Limit new development in the San Mateo Creek Watershed and concentrate development in already disturbed portions of the San Juan Creek Watershed

- Alternative B-7: Provide for limited development in the Chiquita Sub-basin and within the San Mateo Creek Watershed; Limit new development to the disturbed areas of the Talega Sub-basin and lower portions of the Cristianitos/Lower Gabino Sub-basins while avoiding the Upper Gabino, Verdugo, and La Paz Sub-basins

- Alternative B-8: Allow new development in the western portion of the RMV Planning Area adjacent to Ortega Highway, in and around the existing silica mining area in Trampas Canyon, in and adjacent to the existing nursery, ranching, and sand/gravel mining operations in the Gobernadora area, and avoid new development within Chiquita Canyon and the San Mateo Creek Watershed

- Alternative B-9: Alternative B-9 was prepared after completion of the Southern Planning Guidelines and Watershed Planning Principles and is specifically designed to address the sub-basin level Southern Planning Guidelines and Watershed Planning Principles in addition to the overall goals and objectives of the NCCP/MSAA/HCP and SAMP Programs. Alternative B-9 focuses on protecting resources associated with (1) the Chiquita Sub-basin, by protecting Chiquita Canyon above the treatment plant and west of Chiquita Creek; and (2) the San Mateo Creek Watershed, by concentrating development in and near areas with existing development. This alternative also concentrates development in San Juan Creek Watershed in areas with lower resource values while continuing to protect high resource value areas such as Verdugo Canyon.

- Alternative B-10 Modified: The County approved GPA/ZC project, the B-10 Modified Alternative, is designed specifically to address housing needs and other related project objectives while being responsive to the sub-basin recommendations contained in the Southern Planning Guidelines and Watershed Planning Principles.

- Alternative B-11: Provide for regional housing needs as identified in OCP-2000 within the RMV Planning Area while being responsive to the sub-basin recommendations contained in the Southern Planning Guidelines and Watershed Planning Principles

- Alternative B-12: Alternative B-12 was prepared after completion of the Southern Planning Guidelines and Watershed Planning Principles and is specifically designed to address the sub-basin-level Guidelines and Principles in addition to the overall goals and objectives of the NCCP/MSAA/HCP and SAMP Programs. This alternative is based on input from the USACE, CDFG, USFWS, environmental community, and the general public. Alternative B-12 focuses on protecting resources associated with (1) the Chiquita Sub-basin, by protecting Chiquita Canyon above the SMWD treatment plant and below Tesoro High School; and by protecting Chiquita Canyon west of Chiquita Creek; (2) Verdugo Canyon; (3) Sulphur Canyon and Gobernadora Creek; (4) wildlife movement along San Juan Creek; (5) habitat linkage connectivity between the San Juan Watershed and the San Mateo Watershed and; (6) the vast majority of the San Mateo Creek Watershed (by concentrating development in and near areas with existing development or areas previously disturbed). This alternative also concentrates development in the San Juan Creek Watershed in areas with lower resource values while continuing to protect high resource value areas.

Although the SAMP applies to the greater watershed areas of San Juan Creek and San Mateo Creek within Orange County, the alternatives focus on the activities within the RMV Planning Area. The remaining portion of the watersheds is either predominately developed (e.g., City of Mission Viejo) or set aside as permanent open space (e.g., U.S. Forest Service). Landowners of the few undeveloped parcels and the Foothill/Trabuco Specific Plan Area have not participated in the development of the SAMP. In addition, the alternatives do not explicitly consider, except where noted, the SOCTIIP road alignment, because that process is addressed through a separate EIS. Regardless of the alternative, the areas outside of the RMV Planning Area may be eligible for future Letters of Permission (LOPs), if they qualify. As a result, the alternatives analysis focuses on the differences in activities that would occur within the RMV Planning Area.

Regarding the SMWD Proposed Project, no alternatives to the maintenance of existing facilities are proposed because none are considered feasible. With respect to the existing facilities, ongoing maintenance must occur in their current location. The future storage facilities/reservoirs are alternatives. There is a need for two domestic reservoirs and one non-domestic storage reservoir; four sites are proposed. Because three of the four sites are located within the impact assessment area for the RMV Planning Area (B-10 Modified and B-12 Alternatives), and therefore would not cause additional impacts beyond those analyzed for these alternatives, only the site in Upper Chiquita is assessed in this EIS as a part of the SMWD Proposed Project. The Upper Chiquita reservoir site is reviewed in Chapter 8.0.

This chapter summarizes and reviews the above-stated alternatives with the goal of identifying those alternatives with the potential of attaining the SAMP Purpose reviewed in Chapter 3.0. Alternatives selected for further consideration are addressed in Chapters 6.0 and 8.0.

5.3.1 NEPA REQUIRED NO ACTION ALTERNATIVES

Table 5-1 provides a comparison of the acres of development and open space, and level of development (dwelling units and employment) associated with the No Action Alternatives.

TABLE 5-1
NO ACTION ALTERNATIVES COMPARISON

	A-1	A-2	A-3	A-4	A-5
Acres of Development	No new development	19,822[a.]	Undetermined	7,682	8,000
Acres of Open Space	No new dedications	No new dedications	Undetermined	15,132	14,815
Dwelling Units	0	3,265	20,468	14,000	3,000
Million Square Feet of Employment	0	0[b.]	Undetermined	5.2	Undetermined

a. This assumes subdividing the project site pursuant to pre-2004. Additionally, this alternative would allow an expansion of Sand and Gravel Extraction up to 1,620 acres in the ONIS leasehold. San Juan Creek was also zoned for *Sand and Gravel Extraction*; however, there is no active use permit allowing mining.
b. Existing nursery and industrial operations could continue. However, this alternative assumes the site would eventually be developed consistent with the one unit per four acres allowed under the pre-2004 zoning.

Source: The Ranch Plan EIR 589.

5.3.1.1 Alternative A-1

Without a NCCP/MSAA/HCP or SAMP, a “No Action” alternative would assume existing conditions within the RMV Planning Area and continued use of Rancho Mission Viejo property

for existing agricultural, livestock, resource extraction, and lease activities. No residential or other urban uses would be permitted under this alternative.

Existing grazing, dry farming, orchard, and other agricultural activities would continue on the RMV Planning Area. However, the extent (acreage) and intensity of these agricultural activities would be subject to market conditions and Rancho Mission Viejo responses to these market conditions. It is not possible to quantify the extent/intensity of future agricultural at this time. Resource extraction activities would continue. The extent and intensity of extraction activities would be limited to existing activities. Existing leases within the RMV Planning Area (e.g., Northrop Grumman Space Technology TRW Capistrano Test Site) would continue. Future open space would be limited to the regional parks, non-profit lands, and conservation easement open space already set aside in the subregion.

5.3.1.2 Alternative A-2

This alternative was developed by the NCCP/SAMP Working Group prior to the County's action to approve a General Plan amendment and zone change for the RMV Planning Area. Pre-2004 zoning was General Agricultural, which would have allowed for the development of large-lot residential development (one dwelling unit per four acres), as well as agricultural uses. Additionally, two areas were zoned for Sand and Gravel Extraction–ONIS site and San Juan Creek. Resource extraction and related uses would be allowed to continue and potentially expand within 1,620 acres of designated areas consistent with pre-2004 zoning. It was assumed that permits for mining in San Juan Creek would be pursued. Taking the total number of acres within the RMV Planning Area, less the areas designated for Sand and Gravel Extraction, the pre-2004 zoning would have allowed over 5,000 units.

In the development of this alternative, consideration was given to access and feasible building sites. Approximately 3,265 single-family dwelling units were assumed to be capable of being sited throughout the RMV Planning Area using existing ranch roads. This alternative would result in the subdivision of approximately 19,822 acres of the RMV Planning Area. Approximately 75 percent of the RMV Planning Area would be in open space. However, the land would not be publicly dedicated, but would occur within small estate lot parcels owned by individual homeowners and along the ridges and slopes deemed unsuitable for development.

5.3.1.3 Alternative A-3

Without a NCCP/MSAA/HCP and SAMP, this alternative addresses the need for new housing within the RMV Planning Area based on the County's OCP 2000 housing projections by providing for 20,468 new dwellings and 9,800 new jobs within the RMV Planning Area portion of the subregion. The OCP-2000 projections represented the growth projections adopted by the County, local jurisdictions, and regional planning agencies at the time the alternatives were being developed.

The focus of this alternative is on the provision of new housing consistent with long-term development/housing need projections provided by SCAG and the County of Orange. The distribution of these units was based on an allocation by the Center for Demographic Research in association with the County. This level of development generally represented a jobs/housing balance within the RMV Planning Area. The location, acreage, density, and community design of new residential units and associated uses was not determined. An undetermined amount of open space within the RMV Planning Area would be provided depending upon the acreage needed to construct a range of housing types totaling 20,468 units. Dedicated open space in the subregion would include the regional parks, non-profit lands, and conservation easement open

space already set aside and future open space dedicated to offset impacts from projects outside of the RMV Planning Area. The ability to provide for a habitat reserve and management program is unknown and would require further planning.

5.3.1.4 Alternative A-4

Under this alternative, a NCCP/MSAA/HCP or SAMP would not be prepared and permitting would proceed with incremental project-by-project review of new development proposals within the RMV Planning Area. This alternative is required to be addressed as a "No Project" alternative under NEPA to reflect Rancho Mission Viejo's ability to proceed with development under existing regulatory requirements (e.g., Section 10 and 7 of the Federal Endangered Species Act, individual USACE Section 404 permits, CDFG Section 2081 and Section 1600 permits) on a project-by-project basis without an NCCP/MSAA/HCP or SAMP. For purposes of analysis, the land area and amount of development assumed for Alternative A-4 would be the same as for Alternative B-10 Modified. For the RMV Planning Area, Rancho Mission Viejo and the Santa Margarita Water District would likely precede with a series of large-area Section 404 permits (e.g., one for each of the proposed development planning areas and associated infrastructure, phased over 15 to 25 years) whose exact configuration and timing would be influenced by the extension of infrastructure facilities and market demand. For illustrative purposes, Rancho Mission Viejo and Santa Margarita Water District could request USACE Section 404 permitting for each of the proposed development areas and associated infrastructure (approved by the County of Orange as part of the GPA/ZC project in November 2004). However, such a request would not be assured because, as stated above, development would be driven by the availability of infrastructure and market demand. If development did proceed on a planning area by planning area basis within the RMV Planning Area, the USACE Section 404 permitting could proceed in a manner comparable to the USACE Section 404 permitting for other large development projects, such as the 4,000 acre Ladera project. Development in the Foothill/Trabuco Specific Plan Area and other potentially developable areas would proceed in the same manner as with past development (on a project-by-project, permit-by-permit basis).

Open space provided within the RMV Planning Area would be designated incrementally over 15 to 30 years as part of agency actions on each separate project. It would likely be difficult to assure provision for open space in a configuration that could be managed as effectively as the larger open space system proposed by other alternatives. Additionally, funding for management of open space would be dependent on the sequential and incremental permitting process. The dedicated open space in the subregion would include the regional parks, non-profit lands, and conservation easement open space already set aside and future open space dedicated to offset impacts from projects outside of the RMV Planning Area.

5.3.1.5 Alternative A-5

The purpose of this alternative is to obviate the need for a SAMP by avoiding federally regulated Waters of the U.S, including wetlands. This alternative is required under USACE Section 404 regulations and NEPA. Due to the coordinated planning process, this alternative has also been formulated to address no take of state and federal threatened and endangered species and state-regulated wetlands and streams as required by the FESA, the 4(d) Special Rule for the coastal California gnatcatcher, Fish and Game Code Section 1600, CEQA, and NEPA. Therefore, this alternative assesses the feasibility of project alternatives that would not result in Take of listed species or impacts to state and federal jurisdictional waters and aquatic resources.

As depicted on Figure 5-1, under Alternative A-5, low density residential development would occur within approximately 8,000 acres (35 percent) of the 22,815-acre RMV Planning Area. Alternative A-5 assumes a maximum of 3,000 estate lots (assuming that a portion of the undevelopable portion of the lot would extend into open space areas and that other avoidance areas such as in Planning Area 3 would be included within the development envelope as community open space amenity areas. Approximately 14,824 acres (65 percent) of the RMV Planning Area would be in some form of open space. The ability to manage the open space effectively under an Aquatic Resources Conservation Program has not been determined. To ensure total avoidance of state and federal threatened/endangered species (new development would be limited to those portions of RMV Planning Area that are not occupied by state or federally listed species) and regulated waters, access would be dependent on existing arterial highways and the ranch road network (i.e., the existing dirt/gravel roads) with surfacing limited to existing road widths.

New development would avoid impacts to wetlands regulated under state and federal laws/regulations. Non-wetland Waters of the U.S. regulated by the USACE under Section 404 and non-wetland jurisdictional areas regulated by the state under Sections 1600 et seq. would be avoided. The ability to avoid temporary impacts to wetlands and impacts to all ephemeral drainages and non-wetland waters regulated by state/federal agencies would need to be confirmed on a site-specific basis as development occurs within the RMV Planning Area.

Dedicated open space in the subregion would include the regional parks, non-profit lands and conservation easement open space already set aside and future open space dedicated to offset impacts from projects outside of the RMV Planning Area. Given the level of development that would be feasible under this concept and the manner in which this type of development would be processed (i.e., incremental processing versus comprehensive planned community), there would be limited amounts of future open space dedicated within the RMV Planning Area.

5.3.2 DEVELOPMENT/OPEN SPACE ALTERNATIVES

Table 5-2 provides a comparison of the acres of development and acres of open space, and level of development (dwelling units and employment), for the Development/Open Space Alternatives.

TABLE 5-2
DEVELOPMENT/OPEN SPACE ALTERNATIVES COMPARISON

	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10 Modified	B-11	B-12
Acres of Development	900	3,900	6,400	7,694	7,170	6,740	7,170	3,680	6,582	7,683	8,621	5,873
Acres of Open Space	21,915	18,915	16,415	15,121	15,645	16,075	15,645	19,135	16,233	15,132	14,194	16,942
Dwelling Units	Unknown	Similar to B-8	Similar to B-4	14,000	14,000	14,000	14,000	8,400	13,600	14,000	19,200	14,000
Million Sq. Ft. Employment	Unknown	Similar to B-8	Similar to B-4	5.2	5.58	5.58	5.58	2.48	5.2	5.2	3.64	≤ 5.2
Sources: The Ranch Plan Final EIR 589, 2004 and EDAW, 2005.												

5.3.2.1 Alternative B-1

The purpose of this alternative is to maximize open space protection within the RMV Planning Area and restore areas degraded by past use. As depicted in Figure 5-2, Alternative B-1 would maintain and manage more than 21,915 acres (96 percent) of the RMV Planning Area as permanent open space. The 21,915 acres of RMV Planning Area open space would result in 51,780 acres of open space within the SAMP Study Area (64 percent), including regional parks, non-profit lands, and conservation easement open space already set aside, but not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space.

Under this alternative, potential development would occur on approximately 900 acres (4 percent) of the RMV Planning Area along both sides of Ortega Highway and along the western edge of the RMV Planning Area adjacent to the City of San Juan Capistrano. No future development would be permitted within the Gobernadora, Central San Juan, and Verdugo Sub-basins within the San Juan Creek Watershed. In addition, no future development would be permitted within the San Mateo Creek Watershed.

This alternative would maximize contiguous open space in both the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed by limiting new development to the extreme western edge of the RMV Planning Area. This alternative would restore disturbed/degraded areas in the Talega Sub-basin (Northrop Grumman Space Technology TRW Capistrano Test Site lease), Trampas Sub-basin (silica mining area), Gobernadora Sub-basin (nursery area), and two other sites adjacent to Ortega Highway through public and non-profit funding. Existing roads, power lines, and light sources within the open space area would be removed as feasible. A voluntary sale by Rancho Mission Viejo for purposes of open space acquisition would be required under this alternative.

5.3.2.2 Alternative B-2

The purpose of this alternative is to allow new development to occur in disturbed and other areas in the San Juan Creek Watershed and to avoid new development within Chiquita Canyon east of Chiquita Ridge and the San Mateo Creek Watershed.

As depicted in Figure 5-3, under the Alternative B-2 scenario, approximately 18,915 acres (83 percent) of the RMV Planning Area would be maintained and managed as permanent open space. Existing leases and ranching/farming would continue in open space. The 18,915 acres of the RMV Planning Area open space would result in 48,780 acres of open space within the SAMP Study Area (61 percent), including regional parks, non-profit lands, and conservation easement open space already set aside, but not including the 40,000 acres of open space within the Cleveland National Forest boundary.

Under this alternative, all potential development would be located on about 3,900 acres (17 percent) of the RMV Planning Area within areas already disturbed and away from intact native communities. Potential development would occur in the following areas:

- 900 acres of potential development located on both sides of Ortega Highway adjacent to the City of San Juan Capistrano; and

- 3,000 additional acres located adjacent to the City of San Juan Capistrano, the existing silica mining site (Trampas Canyon), existing nursery and ranching facilities immediately north of San Juan Creek, and an extension of the Coto de Caza area.

This alternative would avoid creating physical barriers to species movements, particularly in the San Mateo Creek Watershed and maintain the potential for species re-introduction, habitat enhancement, and restoration. A voluntary sale by Rancho Mission Viejo for purpose of open space acquisition would be required under this alternative.

5.3.2.3 Alternative B-3

The purpose of this alternative is to provide significant economic development (i.e., new housing, commercial, and employment uses) while limiting new development within the San Mateo Watershed to the Cristianitos Canyon Sub-basin and avoiding new development north of the County MPAH proposed extension of Crown Valley Parkway in the Chiquita Canyon sub-basin. Under this alternative, approximately 16,415 acres (71 percent) of the RMV Planning Area would be maintained as permanent, managed open space. The 16,415 acres of RMV Planning Area open space would result in 46,245 acres of open space within the SAMP Study Area (57 percent), including regional parks, non-profit lands, and conservation easement open space already set aside, but not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space. As depicted on Figure 5-4, approximately 6,400 acres (28 percent) of new development would be permitted within the RMV Planning Area in the San Juan Creek Watershed and the western portion of the San Mateo Watershed in the following areas:

- areas on both sides of Ortega Highway immediately east of the existing residential uses in the City of San Juan Capistrano;
- portions of the Chiquita Canyon south of the proposed extension of Crown Valley Parkway;
- Gobernadora Sub-basin, north of San Juan Creek;
- Trampas Canyon and Central San Juan Sub-basin; and,
- in the Cristianitos Sub-basin, inland of the City of San Clemente.

Future development would not be allowed in that portion of the Chiquita Canyon north of the proposed Crown Valley Parkway extension; and in the Verdugo, Upper and Middle Gabino, La Paz, and Talega Sub-basins.

This alternative would provide for a wide east-west habitat movement corridor within the Chiquita Canyon Sub-basin linking natural areas in Trabuco, Chiquita, and Gobernadora Canyons. This alternative would retain connections between existing large blocks of open space in the Cleveland National Forest and Caspers Wilderness Park and the San Mateo Creek Watershed by limiting new development to the Cristianitos Canyon area. An open space buffer would be maintained between the City of San Juan Capistrano and proposed RMV Planning Area south of Ortega Highway. The connectivity between the RMV Planning Area portion of San Mateo Creek Watershed and MCB Camp Pendleton would be maximized under this alternative.

5.3.2.4 Alternative B-4

This alternative was filed by Rancho Mission Viejo with the County of Orange in 2001 as an application for a General Plan Amendment and Zone Change. Subsequent to the application filing, this alternative was modified by Rancho Mission Viejo to address the Southern Planning Guidelines and Watershed Planning Principles. Under this alternative, approximately

15,121 acres (66 percent) of the RMV Planning Area would be maintained as permanent open space. The 15,121 acres of RMV Planning Area open space would result in 44,951 acres of open space within the SAMP Study Area (56 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space. As proposed by Rancho Mission Viejo, this alternative included a regional park along San Juan Creek that would extend across the entire width of the RMV Planning Area portion of the SAMP Study Area. Figure 5-5 depicts the distribution of land uses associated with Alternative B-4.

Under this alternative, 7,694 acres of new development (34 percent of the RMV Planning Area) would be permitted, including 14,000 dwelling units (including 6,000 senior housing units), 251 acres (3,480 square feet) of urban activity center uses, 50 acres (500,000 square feet) of neighborhood center uses, 80 acres (1,220,000 square feet) of business park uses, and 20 acres of golf resort uses. These uses would be located in the following areas:

- areas on both sides of Ortega Highway immediately east of the existing residential uses in the City of San Juan Capistrano;
- Chiquita Canyon;
- Gobernadora area north of San Juan Creek;
- Trampas Canyon;
- Upper Gabino Canyon area (O'Neill Ranch);
- Cristianitos Canyon area; and
- Talega and Lower Gabino (Northrop Grumman Space Technology TRW Capistrano Test Site lease area).

Also within the 7,694-acre development area, additional open space would be designated for passive and active recreation uses. Fuel modification zones would be included within future development areas. The 15,121 acres of open space would be permanently set aside at no cost to the public as part of a phased dedication program keyed to implementation of the B-4 Alternative.

5.3.2.5 Alternative B-5

The purpose of Alternative B-5 is to avoid new development within the western portion of the San Mateo Creek Watershed and locate all new development within the San Juan Creek Watershed. As depicted on Figure 5-6, approximately 15,645 acres (69 percent) of the RMV Planning Area would be designated as permanent open space. The 15,645 acres of RMV Planning Area open space would result in 45,475 acres of open space within the SAMP Study Area (56 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space.

Under this alternative, 7,170 acres of new development (31 percent of the RMV Planning Area) would be permitted within the San Juan Creek Watershed, including 14,000 dwelling units (including 6,000 senior units), 101 acres (1.1 million square feet) of urban activity center uses, 265 acres (over 4 million square feet) of business park uses, and 40 acres of neighborhood center. This alternative would achieve a jobs/housing balance on the site. Most of the future

development would occur primarily in the Chiquita, Gobernadora, Central San Juan, Verdugo, and Trampas Sub-basins. Additional development would be permitted on both sides of Ortega Highway in the western portion of the RMV Planning Area and along the south side of the highway in the eastern portions of the RMV Planning Area. This alternative would not provide for any new or expanded/improvements to existing regional parks. As required by the Quimby Act, new development would be required to either dedicate land or pay fees for local parks.

No development would be permitted within the San Mateo Creek Watershed, thereby avoiding fragmentation and retaining all existing wildlife habitat blocks linkages and movement corridors in this watershed.

5.3.2.6 Alternative B-6

This alternative would avoid future development in the Chiquita Sub-basin east of Chiquita Ridge and Verdugo Canyon Sub-basin. Development would be concentrated in areas in the San Juan Creek Watershed. New development in the San Mateo Creek Watershed would be restricted to areas already disturbed by past uses.

As depicted in Figure 5-7, approximately 16,075 acres (70 percent) of the RMV Planning Area would be set aside as permanent open space. The 16,075 acres of RMV Planning Area open space would result in 45,905 acres of open space within the SAMP Study Area (57 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space. A large block of unfragmented habitat would be retained in the southeastern portion of the RMV Planning Area. Approximately 6,740 acres (29 percent of the RMV Planning Area) of new development would be permitted under Alternative B-6. The alternative would provide 14,000 dwelling units (including 6,000 senior units) on approximately 6,334 acres, 91 acres (slightly over 1 million square feet) of urban activity center, 265 acres (over 4 million square feet) of business park uses, and 50 acres of neighborhood center uses would be provided. This alternative would achieve a jobs/housing balance on the site. This alternative would not provide for any new or expanded/improvements to existing regional parks. As required by the Quimby Act, new development would be required to either dedicate land or pay fees for local parks. It is assumed that parkland would be provided for within the development areas.

Alternative B-6 would allow for development in both the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed in the RMV Planning Area in the following areas:

- both sides of Ortega Highway adjacent to the City of San Juan Capistrano;
- Gobernadora Sub-basin;
- Trampas and Central San Juan Sub-basins;
- along the south side of San Juan Creek, east of Trampas Creek;
- in and adjacent to the disturbed areas of Upper Gabino Sub-basin;
- in and adjacent to the disturbed areas in Cristianitos and Lower Gabino Sub-basins; and
- In and adjacent to the disturbed areas in Talega Sub-basin (Northrop Grumman Space Technology TRW Capistrano Test Site lease area).

Within the San Juan Creek Watershed, no new development would be permitted in Chiquita Sub-basin east of Chiquita Ridge, in the Verdugo Sub-basin, or around Radio Tower Road. Except for future potential arterial roads, impacts to the major gnatcatcher population in/adjacent to Chiquita Canyon would be avoided under this alternative. East-west habitat movement corridors within the Chiquita Sub-basin would be protected to link Trabuco, Chiquita, and Gobernadora Canyons.

5.3.2.7 Alternative B-7

The purpose of this alternative is to limit development in Chiquita Canyon and the San Mateo Creek Watershed, and limit development to the disturbed areas of the Talega Sub-basin and Cristianitos/Lower Gabino Sub-basins while avoiding the Upper Gabino, Upper Verdugo, and La Paz Sub-basins.

As depicted on Figure 5-8, about 15,645 acres (69 percent) of the RMV Planning Area would be designated as permanent open space. The 15,645 acres of RMV Planning Area open space would result in 45,638 acres of open space within the SAMP Study Area (57 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/faming would continue in the open space.

Under this alternative, future development would be located on about 7,170 acres of the RMV Planning Area (31 percent) as follows:

- future development within Chiquita Sub-basin and adjacent ridgelines would be focused on the ridgelines south of the “narrows” and north of San Juan Creek, away from the riparian and slope wetlands, and minimizing impacts to alluvial side canyons and gnatcatcher sites;

- North of San Juan Creek, new development would be directed to Planning Area 1 of the RMV Proposed Project (Ortega Gateway area), Gobernadora Sub-basin, and Trampas and Central San Juan Sub-basins; and

- Within the San Mateo Creek Watershed, future development would be permitted only on/or adjacent to the already-disturbed portions of the Cristianitos and Talega/Lower Gabino Sub-basins.

No development would be permitted in the Upper and Middle Gabino or Verdugo and La Paz Sub-basins to protect headwater areas and maintain connectivity between MCB Camp Pendleton, Caspers Wilderness Park, and the Cleveland National Forest.

5.3.2.8 Alternative B-8

As depicted in Figure 5-9, Alternative B-8 would allow new development in the western portion of the RMV Planning Area adjacent to Ortega Highway; in/around the existing silica mining area in Trampas Canyon; in/adjacent to the existing nursery, ranching, and sand and gravel mining operations in the Gobernadora area; and would avoid new development within Chiquita Canyon and the San Mateo Creek Watershed.

Under this alternative approximately 19,135 acres (84 percent) of the RMV Planning Area would be maintained and managed about as permanent open space. The 19,135 acres of RMV Planning Area open space would result in 48,965 acres of open space within the SAMP Study

Area (61 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space.

Under this alternative, potential development would be located on about 3,680 acres (16 percent) of the RMV Planning Area. This alternative would provide for 8,400 dwelling units (none of the units would be age restricted), 82 acres (915,000 square feet) of urban activity center, 90 acres (1,373,000 square feet) of business park uses, and 20 acres (20,000 square feet) of neighborhood center uses would be provided. This alternative would provide a jobs/housing balance on the site.

New development would be directed to areas already disturbed and away from intact native communities as follows:

- Approximately 550 acres of potential development located on both sides of Ortega Highway adjacent to the City of San Juan Capistrano;
- 1,200 acres located on and adjacent to the existing silica mining site (Trampas Sub-basin), and
- Approximately 1,950 acres in and around the existing nursery and ranching facilities in the Gobernadora Sub-basin north of San Juan Creek

This alternative would avoid the creation of physical barriers to species movements and would maintain the potential for species re-introduction, habitat enhancement, and restoration. A voluntary sale by Rancho Mission Viejo for purposes of open space acquisition would be required under this alternative.

5.3.3 ALTERNATIVES DESIGNED TO ADDRESS THE RECOMMENDATIONS OF THE WATERSHED PLANNING PRINCIPLES AND SOUTHERN PLANNING GUIDELINES

The eight alternatives previously described in subchapter 5.3.2 were formulated prior to completion of the Southern Planning Guidelines and Watershed Planning Principles and addressed the broader NCCP/HCP SAMP/MSAA goals and objectives. Alternative B-4 was modified by Rancho Mission Viejo following completion of the Watershed Planning Principles and Southern Planning Guidelines to address many of the recommendations. Also, following completion of the Principles and Guidelines, the participating wildlife agencies and landowners decided to formulate a ninth reserve alternative (Alternative B-9) intended to address the findings and recommendations contained in the Watershed Planning Principles and Southern Planning Guidelines. In addition to the B-9 Alternative, the County of Orange also formulated two alternatives (Alternative B-10 and B-11) designed to specifically address the findings and recommendations contained in the Watershed Planning Principles and Southern Planning Guidelines. Through the GPA/ZC process, the County modified various aspects of the B-10 Alternative and subsequently approved the B-10 Modified Alternative as the Ranch Plan GPA/ZC project. Alternatives B-9, B-10 Modified, and B-11 are described below.

5.3.3.1 Alternative B-9

The purpose of this alternative is to address the recommendations and findings set forth in the Watershed Planning Principles and Southern Planning Guidelines in addition to the overall goals and objectives of the NCCP/MSAA/HCP and SAMP Programs. Under this alternative, about 16,233 acres (71 percent) of the RMV Planning Area as would be maintained and

managed as permanent open space. The 16,233 acres of RMV Planning Area open space would result in 46,063 acres of open space within the SAMP Study Area (57 percent), not including the 40,000 acres of open space within the Cleveland National Forest. Existing leases and ranching/farming would continue in the open space. Development would be intensified in the areas where development is permitted to enable the 13,600 dwelling units to be constructed.

Under this alternative, potential development would be located on about 6,582 acres (29 percent) of the RMV Planning Area. As depicted in Figure 5-10, this alternative assumes the development of 13,600 dwelling units (including 6,000 senior units), 91 gross acres (slightly over 1 million square feet) of urban activity center, 240 acres (over 3.6 million square feet) of business park uses, and 50 acres (500,000 square feet) of neighborhood center uses. A golf course with a 25-acre golf course resort component is also assumed for Planning Area 5. This alternative would achieve a jobs/housing balance on the site. This alternative would not provide for any new or expanded of/improvements to existing regional parks. As required by the Quimby Act, the subdivision of land for residential purposes requires either the dedication of land or the payment of fees for local parks. It is assumed that parkland would be provided for within the development areas.

New development would be focused in the following areas within the San Juan Creek Watershed:

- lands located in the southwest corner of the Rancho Mission Viejo property adjacent to the intersection of Antonio Parkway and Ortega Highway (on about 540 acres);
- the portion of the lower Chiquita Sub-basin (on about 615 acres);
- a portion of the Gobernadora Sub-basin (on about 2,171 acres, including 129 acres of non-reserve open space);
- Trampas Canyon portion of the Central San Juan Creek Sub-basin (on about 1,191 acres); and
- East Ortega portions of the Central San Juan Creek and Verdugo Sub-basins (on about 1,300 acres, including 49 acres of non-reserve open space).

Under this alternative, new development would be limited in the San Mateo Creek Watershed to the southernmost RMV Planning Area portion of the watershed, in and around the Northrop Grumman Space Technology TRW Capistrano Test Site. This alternative would maintain the functions of the underlying natural processes in the subregion (particularly fire, hydrologic and geomorphic processes) and would protect the identified primary habitat linkages and wildlife movement corridors within the RMV Planning Area.

5.3.3.2 Alternative B-10 Modified

The purpose of this alternative is to address the recommendations and findings set forth in the Watershed Planning Principles and Southern Planning Guidelines in addition to the overall goals and objectives of the County GPA/ZC, NCCP/MSAA/HCP, and SAMP Programs without the necessity for public acquisition of open space lands. Under the B-10 Modified Alternative scenario, about 15,132 acres (66 percent) of the RMV Planning Area would be maintained and managed as permanent open space. The 15,132 acres of RMV Planning Area open space would result in 44,962 acres of open space within the SAMP Study Area (56 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space. Under this alternative,

the permanent open space would be assembled through dedications; no public acquisition funding would be necessary under this alternative.

The B-10 Modified Alternative would locate potential future development on 7,683 acres (34 percent) of the RMV Planning Area. This alternative is depicted on Figure 5-11.

The B-10 Modified Alternative would allow for 14,000 dwelling units (including 6,000 senior housing units), 251 acres of Urban Activity Center uses, 80 acres of Business Park uses, 50 acres of neighborhood center uses, and a 25-acre golf resort. The alternative proposes the development of up to ten two-acre estate lots in the upper Gabino Sub-basin. As required by the Quimby Act, subdivided property for the purpose of residential uses are required to either dedicate land or pay fees for local parks. It is assumed that parkland would be provided for within the development areas.

Development is proposed in the following areas:

- the area on both sides of Ortega Highway immediately east of the existing residential uses in the City of San Juan Capistrano
- Chiquita Canyon
- in the Gobernadora area north of San Juan Creek
- in Trampas Canyon,
- in the Upper Gabino Canyon area (O'Neill Ranch)
- in the Cristianitos Canyon area, and
- in Talega and Lower Gabino (Northrop Grumman lease area)

In addition, this alternative would provide for a Planning Reserve designation in three areas where conditions of approval and mitigation requirements would be applied only when applications for subsequent development entitlements are received as follows:

- Middle Chiquita (Planning Reserve A): (i) 5 years following approval of The Ranch Plan GPA/ZC, (ii) Notice to Proceed Phase 2 by the Transportation Corridor Agencies for SR-241 South based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first
- Cristianitos Canyon (Planning Reserve B): (i) 5 years following approval of The Ranch Plan GPA/ZC, (ii) Notice to Proceed Phase 2 by the Transportation Corridor Agencies for SR-241 South based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first
- Northrop/Grumman (Planning Reserve C): (i) upon termination of the Northrop Grumman lease, (ii) Notice to Proceed Phase 2 by the Transportation Corridor Agencies for SR-241 South based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first

5.3.3.3 Alternative B-11

The purpose of this alternative is to provide for a similar amount of housing as assumed in the County OCP-2000M (19,200 dwellings), including 6,000 senior units while maintaining an open space system protecting the mainstem creeks in both the San Juan and San Mateo Watersheds that is responsive to the Watershed Planning Principles and Southern Planning Guidelines. This alternative would provide for designation of approximately 14,194 acres (62 percent) of the RMV Planning Area as permanent open space. This would result in 44,024 acres of open space within the SAMP Study Area (62 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Acquisition of the areas designated for open space would not be required with this alternative. Existing leases and continued ranching/farming activities would be permitted in the open space areas.

As depicted in Figure 5-12, this alternative assumes the development of 19,200 dwelling units, including 11,450 senior units, and 112 gross acres of urban activity center (slightly less than 1.3 million square feet), 115 acres (1.76 million square feet) of business park, and 60 acres of neighborhood center uses. Twenty-five acres are also designated for a golf resort, for a total of 8,621 acres of new development. In addition to the golf resort, a golf course is shown in Planning Area 7. This alternative would not achieve a jobs/housing balance on the site. This alternative would also have the Planning Reserve Overlay over the northern portion of Chiquita Canyon, Cristianitos, and Planning Area 8. This alternative would provide for expansion of existing regional parks. As required by the Quimby Act, the subdivision of property for residential land uses requires either the dedication of land or the payment fees for local parks. It is assumed that parkland would be provided for within the development areas.

With this alternative about 8,621 acres (38 percent) of the RMV Planning Area would be developed as follows:

- The area on both sides of Ortega Highway immediately east of the existing residential uses in the City of San Juan Capistrano,
- In Chiquita Canyon,
- In the Gobernadora area north of San Juan Creek,
- In Trampas Canyon,
- In the Cristianitos Canyon area, and
- In Talega and Lower Gabino (Northrop Grumman lease area)

Provide for a Planning Reserve designation in three areas where conditions of approval and mitigation requirements would be applied only when applications for subsequent development entitlements are received as follows:

- Middle Chiquita (Planning Reserve A): (i) 5 years following approval of Ranch Plan GPA/ZC, (ii) NTP2 (Notice to proceed phase 2) by TCA for SR-241 (SOCTIIP) based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first.
- Cristianitos Canyon (Planning Reserve B): (i) 5 years following approval of Ranch Plan GPA/ZC, (ii) NTP2 (Notice to proceed phase 2) by TCA for SR-241 (SOCTIIP) based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first.

- Northrop/Grumman (Planning Reserve C): (i) upon termination of the Northrop Grumman lease, (ii) NTP2 (Notice to proceed phase 2) by TCA for SR-241 (SOCTIIP) based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first.

5.3.3.4 Alternative B-12: RMV Proposed Project

Alternative B-12 addresses the following: (1) the purpose of the SAMP as set forth in Chapter 3.0, (2) the project need as presented by the SAMP Participants and set forth in Chapter 3.0, (3) consistency with the SAMP Tenets, consistency with the Watershed Planning Principles, (4) aquatic species considerations set forth in the Southern Planning Guidelines and Watershed Planning Principles, (5) issues raised by the environmental community regarding development with the RMV Planning Area, and (6) consideration of another alternative that does not require public acquisition of open space lands within the RMV Planning Area.

Under the Alternative B-12 scenario, about 16,942 acres (74 percent) of the RMV Planning Area would be maintained and managed as permanent open space, including the preservation of certain aquatic resources described below. The 16,942 acres of RMV Planning Area open space would result in 46,543 acres of open space within the SAMP Study Area (58 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Ranching and agricultural operations would continue within the preserved open space under this alternative. Under this alternative, the permanent open space would be assembled through dedications; no public acquisition funding would be necessary.

Alternative B-12 is one of four alternatives that were prepared after completion of the Southern Planning Guidelines and Watershed Planning Principles. This alternative focuses on preservation of aquatic resources in the Cristianitos, Gabino, La Paz, and Talega Sub-basins in the San Mateo Watershed. Limited impacts to mainstem creeks would be associated with infrastructure (e.g., roads crossings) and therefore the mainstem creeks in the San Juan Watershed (Chiquita, Gobernadora, San Juan, and Verdugo Creeks) would also largely be preserved. On an overall basis, the B-12 Alternative focuses on protecting resources associated with the Chiquita Sub-basin, Gobernadora Creek, Verdugo Canyon, and the San Mateo Creek Watershed.

Alternative B-12 would locate potential future development on 5,873 acres (26 percent) of the RMV Planning Area. The B-12 Alternative is depicted on Figure 5-13. The B-12 Alternative would allow for 14,000 dwelling units (including 6,000 senior housing units), as well as Urban Activity Center uses, Business Park uses, neighborhood center uses, and golf resort uses. Development is proposed in the following areas:

- the area on both sides of Ortega Highway immediately east of existing residential uses in the City of San Juan Capistrano (Planning Area 1),

- Chiquita Canyon immediately below Tesoro High School and adjacent to and below the SMWD Chiquita Water Treatment Plan (Planning Area 2),

- in the Gobernadora area north of San Juan Creek (Planning Area 3,

- Verdugo Canyon (Planning Area 4),

- Trampas Canyon (Planning Area 5),

- portions of Cristianitos Canyon (Planning Area 7), and

- Talega Canyon, generally in the area of the current Northrop Grumman lease area (Planning Area 8)

5.4 PRELIMINARY ALTERNATIVES ANALYSIS

This preliminary analysis of alternatives identifies alternatives selected for more detailed analysis in Chapter 6.0 of this EIS.

5.4.1 ALTERNATIVES REJECTED FROM FURTHER CONSIDERATION

Alternatives A-1, A-2, A-3, B-1, B-2, B-3, B-4, B-5, B-6, B-7, B-9, and B-11 were considered in the selection of alternatives to provide a broad range of possible alternative development and preservation scenarios for the RMV Planning Area. However, these alternatives are rejected from further analysis in this EIS. The following discussion explains why these alternatives were not selected for further consideration. In general, with regard to the "B" alternatives that are rejected, one or more of the following reasons applies:

- The alternative did not address or was inconsistent with the SAMP overall purpose as defined in Chapter 3.0 (e.g., allowing reasonable economic activities and development by identifying areas and/or activities suitable for coverage under a comprehensive abbreviated permitting process and establishment of an aquatic resource conservation program consisting of preservation, restoration and management of aquatic resources); or

- The alternative was duplicative in many respects to one or more of the alternatives chosen for continuing evaluation; or

- The alternative was withdrawn at the request of the SAMP participant or Working Group that initially proposed this alternative.

5.4.1.1 Alternative A-1

This alternative is one of the "No Action" and/or "No Development/Existing Conditions" project alternatives formulated as required by NEPA. Existing grazing, dry farming, orchard, and other agricultural activities would continue on the RMV Planning Area. Continuation of existing conditions on the RMV Planning Area would not achieve the SAMP overall project purpose as defined in Chapter 3.0 and restated above. This alternative also does not meet the growth management and land use objectives of the County. Alternative A-1 would not provide for any new development; therefore, the County would not be able to achieve housing and employment levels assumed in the adopted growth projections. Additionally, the requirement for consideration of a No Project alternative is satisfied by the inclusion of Alternative A-4 in the continuing analysis of alternatives. Therefore this alternative is rejected from further consideration.

5.4.1.2 Alternative A-2

As described above, this alternative became moot after approval by the County of Orange of a GPA/ZC for the RMV Planning Area which changed the zoning from A-1 General Agriculture (1 dwelling unit per 4 acres) to Planned Community. Approval of the GPA/ZC project by the County in November 2004 would permit 14,000 units on 7,683 acres, as well as retail, office,

and recreational uses. Therefore, Alternative A-2 is rejected from further consideration. The reader should also note that the requirement to analyze a "No Project" alternative are met by the analysis of the A-4 Alternative which assumes no SAMP and, therefore, no need for any federal action.

5.4.1.3 Alternative A-3

As described above, the focus of this alternative is on the provision of new housing consistent with long-term development/housing need projections provided by SCAG and the County of Orange. At the time this alternative was developed, the location and acreage of new residential units and associated uses were not determined. However, subsequent to the identification of this alternative, the County developed an alternative based on OCP-2000, the B-11 Alternative. The intent of providing development consistent with the regional housing needs is generally accommodated with Alternative B-11. Consequently, Alternative A-3 was effectively replaced by Alternative B-11 and thus is eliminated from further consideration.

5.4.1.4 Alternative B-1

The B-1 Alternative would preserve about 96 percent (21,915 acres) of the RMV Planning Area. This alternative would permit future development on about 900 acres of the RMV Planning Area in the Ortega Gateway portion of the Chiquita Sub-basin, west of Chiquita Ridge. No development would be permitted within the Chiquita Sub-basin east of Chiquita Ridge or in the Gobernadora, Central San Juan/Trampas, and Verdugo Sub-basins within the San Juan Creek Watershed. In addition, no future development would be permitted within the San Mateo Creek Watershed.

This alternative was eliminated for the following reasons:

- It would address the basic resource protection purpose of the SAMP, but it would not address the other SAMP purpose regarding the provision for a reasonable level of economic activities and development that would address housing and employment needs of the people of the region;

- It is essentially a "No Project" alternative because it involves the purchase of virtually the entire RMV Planning Area and there would be no need/incentive for landowners and local governments to prepare a Aquatic Resources Conservation Program designed to address the SAMP purpose;

5.4.1.5 Alternative B-2

The B-2 Alternative would preserve about 83 percent (18,915 acres) of the RMV Planning Area. The 18,915 acres of RMV Planning Area open space would result in 48,780 acres of open space within the SAMP Study Area (61 percent), including regional parks, non-profit lands, and conservation easement open space already set aside, but not including the 40,000 acres of open space within the Cleveland National Forest boundary.

No development would be permitted within the Chiquita Sub-basin (east of Chiquita Ridge) and Verdugo Sub-basin portions of the San Juan Creek Watershed. No development would be permitted within the San Mateo Creek Watershed. This alternative would permit future development on about 3,900 acres in the Ortega Gateway (Chiquita Sub-basin west of Chiquita Ridge), Trampas Canyon (Central San Juan and Trampas Sub-basins), and Gobernadora Sub-basin portions of the RMV Planning Area. It also would permit future development along the

slopes adjacent to the City of San Juan Capistrano between the Ortega and Trampas portions of the RMV Planning Area.

This alternative was eliminated from future consideration under the SAMP programs for the following reasons:

- The alternative includes development in portions of the RMV Planning Area (i.e., the slopes adjacent to San Juan Capistrano) that present severe landslide and other geotechnical issues that bring into question the feasibility of developing the areas; and

- The alternative is in many respects duplicative of Alternative B-8. Alternative B-8 was selected for continuing evaluation by the NCCP/SAMP Working Group because it provided for a similar level of economic development (i.e., 3,900 acres versus 3,700 acres) while being more protective of sensitive biological, aquatic, and hydrologic resources and avoiding areas with questionable geotechnical conditions.

5.4.1.6 Alternative B-3

The B-3 Alternative is very similar to the B-4 and B-10 Modified Alternatives. The major differences in the alternatives are limited to the deletion of future development in the Northrop Grumman Space Technology TRW Capistrano Test Site lease (Talega Sub-basin) and O'Neill Ranch (Upper Gabino Sub-unit) areas and slight reduction in the size of the development bubble in the Chiquita Sub-basin portion of the RMV Planning Area. The B-3 Alternative would preserve about 72 percent (16,415 acres) of RMV Planning Area open space as part of 46,245 acres of SAMP Study Area open space.

This alternative was eliminated from future consideration under the SAMP program for the following reason:

- The alternative does not represent significantly different approaches to protecting sensitive biological, aquatic, and hydrologic resources when compared to the alternatives selected for continuing evaluation.

5.4.1.7 Alternative B-4

This alternative was filed with the County of Orange in 2001 as an application for a General Plan Amendment and Zone Change by Rancho Mission Viejo. Subsequent to the application filing, this alternative was modified by Rancho Mission Viejo to address the Southern Planning Guidelines and Watershed Planning Principles. Under this alternative, approximately 15,121 acres (66 percent) of the RMV Planning Area would be maintained as permanent open space. The 15,121 acres of RMV Planning Area open space would result in 44,951 acres of open space within the SAMP Study Area (56 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. As proposed by Rancho Mission Viejo, this alternative included a regional park along San Juan Creek that would extend across the entire width of the RMV Planning Area portion of the SAMP Study Area. Proposed development, including residential, commercial, and active recreation uses, would be allowed on about 7,694 acres (34 percent) of the RMV Planning Area.

In reviewing this alternative in the GPA/ZC EIR 589, the County of Orange determined that certain modifications to this alternative would be necessary to address potential conflicts regarding habitat connectivity/fragmentation. The County rejected the B-4 Alternative and adopted a modified version of the B-10 Alternative (B-10 Modified Alternative), which it

determined was more responsive to the issues raised during the public review process for the GPA/ZC EIR (these issues are discussed extensively in Final EIR 589). The County, with Rancho Mission Viejo's concurrence, approved the B-10 Modified Alternative as the Ranch Plan project. Therefore, as a SAMP participant, Rancho Mission Viejo requested Alternative B-4 be withdrawn from consideration in favor of the B-10 Modified Alternative.

5.4.1.8 Alternative B-5

This alternative would avoid new development within the San Mateo Creek Watershed and locate all new development within the San Juan Creek Watershed. Approximately 15,645 acres (69 percent) of the RMV Planning Area would be designated as permanent open space. Existing leases and ranching/farming would continue in the open space. Under this alternative, 7,170 acres of new development (31 percent of the RMV Planning Area) would be permitted within the San Juan Creek Watershed.

This alternative was eliminated from future consideration under the SAMP program because of the likely impacts to sensitive biological, aquatic, and hydrologic resources in the San Juan Watershed when compared to the alternatives selected for continuing evaluation.

5.4.1.9 Alternative B-6

This alternative would avoid future development in the Chiquita Sub-basin east of Chiquita Ridge and Verdugo Canyon Sub-basin. Development would be concentrated in areas in the San Juan Creek Watershed. New development in the San Mateo Creek Watershed would be restricted to areas already disturbed by past uses. Approximately 16,075 acres (70 percent) of the RMV Planning Area would be set aside as permanent open space. Existing leases and ranching/farming would continue in the open space. A large block of unfragmented habitat would be retained in the southeastern portion of the RMV Planning Area. Approximately 6,740 acres (29 percent of the RMV Planning Area) of new development would be permitted under Alternative B-6.

This alternative was eliminated from future consideration under the SAMP program for the following reasons:

- The alternative is largely duplicative of other alternatives carried forward further evaluation, in particular the B-12 Alternative; and

- The alternative does not represent significantly different approaches to protecting sensitive biological, aquatic, and hydrologic resources when compared to the alternatives selected for continuing evaluation.

5.4.1.10 Alternative B-7

The B-7 Alternative would preserve about 69 percent (15,645 acres) of the RMV Planning Area as part of 45,638 acres of SAMP Study Area open space. Future development would be permitted in both the San Juan Creek Watershed and the San Mateo Creek Watershed. This alternative would permit development on about 7,170 acres in the Ortega Gateway, Chiquita, Gobernadora, Trampas Canyon, and Verdugo portions of the San Juan Creek Watershed. This alternative provides a variation on the B-4 Alternative in the middle portion of the Chiquita Sub-basin and along the south side of San Juan Creek in the Central San Juan Sub-basin. It also would permit future development in the Cristianitos and Lower Gabino, and Talega Sub-basins of the RMV Planning Area.

This alternative was eliminated from future consideration under the SAMP program for the following reasons:

- The alternative is largely duplicative of other alternatives carried forward further evaluation; and

- The alternative does not represent significantly different approaches to protecting sensitive biological, aquatic, and hydrologic resources when compared to the alternatives selected for continuing evaluation.

5.4.1.11 Alternative B-9

As described previously, the purpose of this alternative is to address the recommendations and findings set forth in the Watershed Planning Principles and Southern Planning Guidelines in addition to the overall goals and objectives of the NCCP/MSAA/HCP and SAMP Programs. Under this alternative, about 16,233 acres (71 percent) of the RMV Planning Area as would be maintained and managed as permanent open space, including the protection of aquatic resources such as Cristianitos Creek, Gabino Creek, La Paz Creek and Talega Creek. The 16,233 acres of RMV Planning Area open space would result in 46,063 acres of open space within the SAMP Study Area (57 percent), not including the 40,000 acres of open space within the Cleveland National Forest. Existing leases and continued ranching/farming activities would be permitted in the Verdugo Sub-basin (Planning Area 9) and San Mateo Creek Watersheds.

This alternative was eliminated by the USACE in coordination with the other members of the Working Group for the following reasons:

- The alternative is largely duplicative of other alternatives carried forward further evaluation, in particular the B-12 Alternative; and

- The alternative does not represent significantly different approaches to protecting sensitive biological, aquatic, and hydrologic resources when compared to the alternatives selected for continuing evaluation.

5.4.1.12 Alternative B-11

This alternative was developed by the County of Orange to provide for a similar amount of housing as assumed in the County OCP-2000M (19,200 dwellings), while maintaining an open space system protecting the mainstem creeks in both the San Juan and San Mateo Watersheds that is responsive to the Watershed Planning Principles and Southern Planning Guidelines. This alternative would provide for designation of approximately 14,194 acres (62 percent) of the RMV Planning Area as permanent open space. Existing leases and continued ranching/farming activities would be permitted in the open space areas. With this alternative about 8,621 acres (38 percent) of the RMV Planning Area would be developed.

In reviewing this alternative in the GPA/ZC EIR, the County of Orange determined that while this alternative would meet housing goals for the County it would not meet open space, habitat, and species preservation goals, particularly in light of the comments received on the GPA/ZC EIR. The County rejected this alternative in favor of the B-10 Modified Alternative. This alternative is also rejected from further consideration in the SAMP for similar reasons. Although the alternative may meet the reasonable economic development goals of the SAMP, it would not protect sensitive biological, aquatic, and hydrologic resources when compared to the alternatives selected for continuing evaluation.

5.4.2 ALTERNATIVES TO BE CONSIDERED FOR FURTHER ANALYSIS

The selection of alternatives to be carried forward for further review is based on legal mandates for the "A" Alternatives and, for the "B" Alternatives, on the extent to which each of the open space/development alternatives addresses the Purposes in Chapter 3.0 of this EIS and the SAMP Tenets and the Watershed Planning Principles. It also reflects a review of the cumulative databases and studies (including biologic, hydrologic, and geomorphic data and studies), relevant state and local laws, regulations and guidelines, public testimony, and the characteristics of the respective alternatives.

Alternatives A-4 and A-5 are carried forward in accordance with legal mandates. Alternative A-4 represents the No Action Alternative under NEPA because the SAMP process would not be completed within the SAMP Study Area, alternative permitting procedures would not be established under this alternative scenario and an Aquatic Resources Conservation Program would not be prepared. The existing Clean Water Act procedures would remain in place and the USACE would consider permit applications on a case-by-case basis. Alternative A-5 complies with the Clean Water Act requirement that applicants consider project alternatives that would not result in the fill of Waters of the U.S. including wetlands. A-5 is the No Impact to Waters alternative.

For the A-5 Alternative, upgrades in the form of paved surfaces to the existing ranch road network are assumed to be sufficient to support the level of development provided. Under the A-4 Alternative, the B-10 Modified Alternative circulation system is assumed to apply.

Development/Open Space Alternatives B-8, B-10 Modified, and B-12 are also identified for continuing evaluation in this EIS. These alternatives are considered sufficiently diverse to represent a reasonable range of alternatives in accordance with the SAMP Purposes set forth in Chapter 3.0.

To summarize, two programmatic alternatives (A-4 and A-5) and three open space/development alternatives (B-8, B-10 Modified, and B-12) will be carried forward for further analysis in this EIS. The USACE in cooperation with the NCCP/SAMP Working Group has determined that these alternatives represent a reasonable range of SAMP alternatives in accordance with federal laws, as reviewed below.

5.4.2.1 Alternative A-4

This alternative has been selected for continuing review but refined to become two separate "No Project" alternatives for purposes of the coordinated planning process. For NCCP/MSAA/HCP purposes, the decision to create two No Project Alternatives recognizes the ability of Rancho Mission Viejo to proceed with incremental, project-by-project review for HCPs under two options: (1) proceeding with the preparation of incremental project HCPs without preparing a SAMP, and (2) preparing individual project HCPs but also continuing to prepare a SAMP. However, for this EIS addressing the attainment of SAMP purposes, only the first refinement represents a "No Project" Alternative. Therefore, only this refinement will be evaluated.

5.4.2.2 Alternative A-5

This alternative has been selected for continuing review to comply with the Clean Water Act requirement that applicants consider project alternatives that would not result in the fill of wetlands. Similarly, federal ESAs require project applicants to consider alternatives that would

not involve Take of listed species. This alternative was developed to respond to these requirements and is therefore considered in this EIS.

5.4.2.3 Alternative B-8

This alternative is potentially capable of meeting the SAMP Purpose as it proposes an Aquatic Resources Conservation Program focusing on protection of Chiquita Sub-basin east of Chiquita Ridge and of the mostly undeveloped San Mateo Creek Watershed. This alternative avoids fragmentation of existing habitat in the San Mateo Watershed and protects all existing wildlife movement corridors and habitat linkages. Under this alternative approximately 3,680 acres of future development would be permitted within the San Juan Creek Watershed, outside the Chiquita Sub-basin.

5.4.2.4 Alternative B-10 Modified

This alternative is potentially capable of meeting the SAMP Purpose as it proposes an Aquatic Resources Conservation Program that focuses on protection of upper portions of the Chiquita Sub-basin and the main portion of Verdugo Canyon in the San Juan Watershed and the Gabino and La Paz Sub-basins in the San Mateo Watershed. This alternative was also selected because it is one of three reserve alternatives that specifically address the recommendations set forth in the Southern Planning Guidelines and Watershed Planning Principles. Under this alternative, 7,683 acres of future development would be focused within the San Juan Creek Watershed and the Talega Sub-basin in the San Mateo Watershed. Low intensity uses are also proposed in the Cristianitos Sub-basin.

5.4.2.5 Alternative B-12

This alternative is potentially capable of meeting the SAMP Purpose as it proposes an Aquatic Resources Conservation Program that focuses on protection of middle and upper portions of the Chiquita Sub-basin, Gobernadora Creek, San Juan Creek, and the main portion of Verdugo Canyon in the San Juan Watershed and the Cristianitos, Gabino, La Paz, and Talega Sub-basins in the San Mateo Watershed. This alternative was also selected because it was designed to specifically address the recommendations set forth in the Southern Planning Guidelines and Watershed Planning Principles and to respond to issues raised by the USACE, CDFG, USFWS, the environmental community, and the general public concerning the level of development within the Chiquita Sub-basin and within the San Mateo Watershed. Under this alternative, 5,873 acres of future development would be focused within the San Juan Creek Watershed and the Talega Sub-basin in the San Mateo Watershed.

5.5 AQUATIC RESOURCE PROTECTION FEATURES OF THE ALTERNATIVES

This subchapter expands the above descriptions to set forth the assumptions regarding the Aquatic Resources Conservation Program. The circulation systems necessary to support the development associated with each alternative are described in subchapter 5.6.

5.5.1 AQUATIC RESOURCES CONSERVATION PROGRAM ASSUMPTIONS

Each of the reserve program alternatives carried forward for further consideration proposes an Aquatic Resources Conservation Program that includes aquatic resources identified for preservation, restoration, and management. The following is a description of the areas identified for preservation under each alternative.

5.5.1.1 Alternative B-8

Impacts to aquatic resources in the Ortega Gateway area, Gobernadora Sub-basin, and Trampas Sub-basin would occur under this alternative. Limited impacts to mainstem creeks would be those associated with infrastructure (e.g., road crossings) and thus the mainstem creeks would largely be preserved. This alternative focuses on preservation of aquatic resources in the Chiquita Sub-basin, Verdugo Sub-basin, and all of the San Mateo Watershed. The following riparian systems would be preserved under this alternative:

- Chiquita Creek–one of only two generally perennial creek systems in Orange County (along with Gobernadora Creek) and characterized by: a) sandy soils in the valley floor and major side canyons and (b) a distinctive groundwater system with groundwater movement directed more toward Chiquita Creek than toward San Juan Creek;

- Verdugo Creek–a major source of coarse sediments (important to arroyo toad and other aquatic/riparian species' habitat) that are generated and transported to San Juan Creek by episodic storm events;

- Cristianitos Creek–a relatively rapidly evolving creek system influenced by adjacent clay soils that connects important aquatic/riparian systems in Cristianitos Canyon, Gabino Canyon, and La Paz Canyon with Talega Creek and downstream habitats located outside the RMV Planning Area;

- Gabino Creek–a creek system that contains three distinctive geomorphic reaches and that forms confluences with La Paz Creek in its middle reach and with Cristianitos Creek in its lower reach;

- La Paz Creek–a creek system that links Gabino Canyon to large-scale federal open space areas to the north (Cleveland National Forest) and east (San Mateo Wilderness and MCB Camp Pendleton) and that provides a source of cobbles and other coarse sediments important for downstream habitat systems; and

- Talega Creek–a major creek system with a very large population of arroyo toads, with part of the creek and canyon system located in RMV Planning Area and the remainder located on MCB Camp Pendleton property.

Restoration and management of preserved aquatic resources under this alternative would be as described in subchapter 5.5.2.

5.5.1.2 Alternative B-10 Modified

Impacts to aquatic resources in the Ortega Gateway area, Chiquita Sub-basin, Gobernadora Sub-basin, Central San Juan and Trampas Sub-basin, Verdugo Sub-basin, Cristianitos, and Talega Sub-basin would occur under this alternative. The mainstem creeks would largely be preserved. Limited impacts to mainstem creeks would be those associated with infrastructure (e.g., road crossings). This alternative focuses on preservation of aquatic resources in the Gabino and La Paz Sub-basins in the San Mateo Watershed. The following riparian systems would be preserved under this alternative:

- Cristianitos Creek–a relatively rapidly evolving creek system influenced by adjacent clay soils that connects important aquatic/riparian systems in Cristianitos Canyon, Gabino

Canyon, and La Paz Canyon with Talega Creek and downstream habitats located outside the RMV Planning Area;

- Gabino Creek–a creek system that contains three distinctive geomorphic reaches and that forms confluences with La Paz Creek in its middle reach and with Cristianitos Creek in its lower reach;

- La Paz Creek–a creek system that links Gabino Canyon to large-scale federal open space areas to the north (Cleveland National Forest) and east (San Mateo Wilderness and MCB Camp Pendleton) and that provides a source of cobbles and other coarse sediments important for downstream habitat systems; and

- Talega Creek–a major creek system with a very large population of arroyo toads, with part of the creek and canyon system located on the RMV Planning Area and the remainder located on MCB Camp Pendleton property.

Restoration and management of preserved aquatic resources under this alternative would be as described in subchapter 5.5.2.

5.5.1.3 Alternative B-12: RMV Proposed Project

Impacts to aquatic resources in the Ortega Gateway area, Chiquita Sub-basin, Gobernadora Sub-basin, Central San Juan and Trampas Sub-basin, Verdugo Sub-basin, Blind Sub-basin, and Talega Sub-basin would occur under this alternative. Limited impacts to mainstem creeks would be those associated with infrastructure (e.g., road crossings) and thus the mainstem creeks would largely be preserved. This alternative focuses on preservation of aquatic resources in the Cristianitos, Gabino, La Paz and Talega Sub-basins in the San Mateo Watershed, in addition to Chiquita Creek, Gobernadora Creek, San Juan Creek and Verdugo Creek. The following riparian systems would be preserved under this alternative:

- The proposed B-12 Alternative's open space would protect habitat and species in the Chiquita Sub-basin in drainage catchments located in middle Chiquita above the SMWD treatment plant and below Tesoro High School and west of Chiquita Creek.

- Gobernadora Creek would be protected, including areas identified for restoration and the Sulphur Canyon headwaters area.

- Verdugo Canyon riparian resources and terrains generating coarse sediments would be protected.

- The San Juan Creek floodplain and associated riparian habitats would be protected, including a 1,312-foot-wide (400 meter) minimum wildlife movement corridor.

- A large block of aquatic resources habitats and associated species in the San Mateo Creek Watershed in the Cristianitos, La Paz, and Gabino Sub-basins would be protected under this alternative, including:

  - Cristianitos Creek–a relatively rapidly evolving creek system influenced by adjacent clay soils that connects important aquatic/riparian systems in Cristianitos Canyon, Gabino Canyon, and La Paz Canyon with Talega Creek and downstream habitats located outside the RMV Planning Area;

- Gabino Creek–a creek system that contains three distinctive geomorphic reaches and that forms confluences with La Paz Creek in its middle reach and with Cristianitos Creek in its lower reach;

- La Paz Creek–a creek system that links Gabino Canyon to large-scale federal open space areas to the north (Cleveland National Forest) and east (San Mateo Wilderness and MCB Camp Pendleton) and that provides a source of cobbles and other coarse sediments important for downstream habitat systems; and

- Talega Creek–a major creek system with a very large population of arroyo toads, with part of the creek and canyon system located on the RMV Planning Area and the remainder located on MCB Camp Pendleton property.

Restoration and management of preserved aquatic resources under the B-12 Alternative scenario would be as described in subsection 5.5.2.

5.5.2 RESTORATION OF AQUATIC RESOURCES

Restoration of aquatic resources within the SAMP Study Area is guided by two planning documents: (1) Riparian Ecosystem Restoration Plan for San Juan and Western San Mateo Creek Watershed: General Design Criteria and Site Selection prepared by Smith and Klimas of the USACE Engineer Research and Development Center (2003), termed "Watershed Restoration Plan," as provided in Appendix F1; and (2) Aquatic Resources Restoration Plan prepared by GLA (2005). The latter, the Aquatic Resources Restoration Plan, more specifically addresses the RMV Planning Area and is included in its entirety in Appendix F2. Both documents are summarized here.

5.5.2.1 Watershed Restoration Plan

"The objective of the Watershed Restoration Plan is to facilitate development of an aquatic resources reserve program in the San Juan and San Mateo Watersheds through an evaluation of the potential for restoring a riparian ecosystem. The general approach to achieving this objective is to classify each riparian ecosystem in terms of its geomorphic characteristics, characterize the current condition of each riparian area, assign a general restoration design template, and then estimate the level of effort necessary to meet the target design" (page ii, Smith and Klimas, 2003). Five geomorphic zones were established in the Watershed Restoration Plan for the SAMP Study Area as follows:

- ***Geomorphic Zone 1*:** Riparian areas in V-shaped valleys with predominantly bedrock control.

- ***Geomorphic Zone 2*:** Small floodplains and terrace fragments in mountain and foothill valleys, where meander belt formation is restricted by lateral impingement of alluvial fans, colluvium, and large boulder rocks.

- ***Geomorphic Zone 3*:** Boulder-dominated floodplain and terrace complexes.

- ***Geomorphic Zone 4*:** Alluvium of meandering channels within broad lowland valleys.

- ***Geomorphic Zone 5*:** Large alluvial valleys.

A classification of potential Restoration Templates applicable across all geomorphic zones was developed. Ninety-six riparian reaches were analyzed to establish specific restoration criteria in terms of channel cross section and form, the scale of terraces present, and dominant vegetation types appropriate to each of the Restoration Templates. Using aerial photography, baseline assessment data, and field verification, one of six restoration templates was assigned to each riparian reach in the SAMP Study Area based on the condition of the channel, riparian vegetation, and surrounding land uses. The assigned restoration target was intended to represent the best possible restoration target given the potential natural patterns expected for the Geomorphic Zone, as described above. The restoration templates are described below.

- ***Natural Template:*** assigned where channel, floodplain, and terrace morphology and vegetation, as well as an upland buffer of native vegetation can be restored to a condition approximating the estimated undisturbed condition for the Zone and site-specific conditions.

- ***Incised Channel Template:*** applied to channels that have been incised or laterally scoured such that the existing condition did not fall within the normal range for channel, floodplain, or terrace dimensions, but where the full variety of community types expected for the Geomorphic Zone could be re-established in proportions generally reflecting the undisturbed condition.

- ***Constrained Channel Template:*** assigned to channels that would otherwise be included in the Incised Template, except that the immediate adjacent landscape prevents restoration of one or more components of stream geometry (e.g., flood prone width, sinuosity, terraces configuration) to normal ranges.

- ***Aggraded Channel Template:*** applied to only those reaches where the channel and floodplain are currently filled with sediments such that there is no distinct organization of surfaces.

- ***Engineered Channel Template:*** assigned to stream segments that are confined with concrete or riprap “banks” and which much remain so due to flood conveyance and safety concerns, or because only very limited recovery of ecological benefits is feasible.

- ***Restoration Impractical:*** applied to stream segments where there is no practical way to address the deficiencies present, within the guidelines adopted for this study, which preclude recommending fundamental changes to major roads and developed areas, or massive excavations.

Based on the field evaluation of 96 riparian reaches, a scale estimating the level of effort that would be required to restore a riparian reach to the prescribed Restoration Template was developed and assigned to each riparian reach. Level-of-effort was intended to serve as a tool for planners based on the assumption that there will be limited resources available for restoration, or limited potential sites available to offset certain type of impacts, and it may be useful to be able to consider cost as a factor in the event that a variety of potential scenarios must be assessed for feasibility and efficacy. To that end, the level-of-effort scale represents a crude surrogate of construction costs. There is no consideration of land purchase costs or similar issued included in these estimates, and unforeseen issues could easily change the estimates dramatically. Nevertheless, the following level-of-effort estimates are a useful planning tool.

- ***Level of Effort– None*:** no restoration necessary, because the reach is functional in its current condition, and requires only vigilance to prevent invasion of exotic plants species. Level of Effort–None reaches are assigned one level-of-effort unit (rather than a zero) to facilitate the calculations used in the assessment process.

- ***Level of Effort– Light Planting*:** no reconfiguration of the land surface is needed. Treatment consists of control of exotic species and spot-planting of native species. Three level-of-effort units are assigned to reaches in this category.

- ***Level of Effort– Light Earthwork*:** in addition to the activities mentioned under "Light Planting" large numbers of plants must be introduced and/or significant mechanical site preparation in the form of grubbing, tilling, or similar site preparation may be required prior to planting. Five level-of-effort units are assigned to reaches in this category.

- ***Level of Effort– Moderate Earthwork*:** involves excavation of less than six feet of soil depth and reconfiguration of site contours, in addition to those activities mentioned under "Light Earthwork." Seven level-of-effort units are assigned to reaches in this category.

- ***Level of Effort– Heavy Earthwork*:** encompasses a wide range of possible actions, all of which involve extensive site preparation and heavy planting. Ten level-of-effort units are assigned to reaches in this category.

- ***Level of Effort– Impracticable*:** extreme effort required assigned 20 level-of-effort units, but this does not imply that the costs involved to restore these identified reaches are similar amongst the reaches or that they are in proportion (i.e., 20 times) to the effort required on other reaches.

Restoration simulations were performed using the assigned Geomorphic Zone, Restoration Template, and Level of Effort for each riparian reach in the SAMP Study Area. Hydrology, water quality, and habitat integrity indices were then re-calculated based on the conditions that could be expected to exist after applying the prescribed Restoration Template. Three possible restoration simulations were then conducted:

- ***Simulation 1*:** identify the riparian reaches where application of the restoration template would result in the maximum possible increase in riparian ecosystem integrity regardless of the level of effort required.

- ***Simulation 2*:** identify riparian reaches where application of the restoration template would result in the greatest increase in riparian ecosystem integrity while considering the level of effort required.

- ***Simulation 3*:** identify riparian reaches where application of the restoration template as well as restoration of land uses in the local drainage basin of the riparian reach would result in an increase in riparian ecosystem integrity. In this simulation, the effects of revegetation on broad terraces as well as conversion on upland areas from agricultural or grazing uses to natural vegetation are considered.

It is important to recognize that the simulations are intended as a planning tool to determine the feasibility of restoring individual reaches, and to prioritize restoration actions based on the functional benefits likely to be realized. Although the USACE expects that final restoration designs will resemble the recommended Restoration Templates and associated relative dimensions, site-specific restoration designs would have to be developed that include grading

plans and specify planting stock, planting densities, irrigation practices, and similar requirements that constitute the precise specifications for a restoration project.

5.5.2.2 RMV Planning Area Aquatic Resources Restoration Plan

The Aquatic Resources Restoration Plan is the next step in restoration planning for the RMV Planning Area (Appendix F2). Using the Watershed Restoration Plan as a starting point and the Restoration and Management recommendations for aquatic resources set forth in the Southern Planning Guidelines and Watershed Planning Principles, specific riparian reaches within the RMV Planning Area are identified as potential candidates for restoration.

The Aquatic Resources Restoration Plan describes an area-specific conceptual approach for the creation, restoration, and/or enhancement of wetlands and non-wetland riparian habitats in the RMV Planning Area, including a summary of an invasive exotic control program for San Juan and Trabuco creeks as set forth in greater detail in the Invasive Exotics Control Plan, part of the Aquatic Resources Adaptive Management Program reviewed in subchapter 5.5.3 (the Aquatic Resources Adaptive Management Program is provided in Appendix F3). The term "restoration" is inclusive in this conceptual plan as it addresses the spectrum of possible restoration activities within the RMV Planning Area, ranging from creation of new habitats that in some instances may require substantial grading to enhancement of existing degraded habitats that could include limited grading or may require far less intensive measures such as minor recontouring, removal of invasive species, and/or some replanting.

As a planning area-wide comprehensive program, this subchapter summarizes the Aquatic Resources Restoration Plan restoration recommendations for several sub-basins and explains how these actions, implemented through the Aquatic Resources Adaptive Management Program, could contribute to a more effective Aquatic Resources Conservation Program. The restoration recommendations have been developed to ensure no-net-loss of either acreage or function associated with Waters of the U.S. subject to the jurisdiction of the USACE pursuant to Section 404 of the Clean Water Act. The approach taken in this program is consistent with recent Regulatory Guidance Letter No. 02-2, dated December 24, 2002, issued by the USACE regarding mitigation, which emphasizes watershed-wide and function-based programs where feasible.

In addition to employing a watershed and function-based approach, the Aquatic Resources Restoration Plan also describes site preparation, plant palettes, short-term and long-term monitoring and maintenance, and annual reporting of the restoration program to provide a framework and guidance for the restoration plan. The Aquatic Resources Restoration Plan is a working draft and will be subject to refinement and modification during the SAMP process including the environmental analysis of proposed permitting procedures in Chapter 8.0. However, it is important to note that extensive data have been collected on the aquatic ecosystems on the RMV Planning Area. These data, along with data collected during monitoring of approximately 125 acres of created and restored wetland and riparian areas in the RMV Planning Area, provide a data set that can be used to inform and guide future restoration projects.

Finally, the Aquatic Resources Restoration Plan would provide for low intensity monitoring and maintenance (as necessary) for approximately 18 acres of existing created alkali marsh, alkali meadow, and southern riparian scrub in the GERA. These 18 acres of existing wetland habitat were created in 1998 and 1999 as part of the Ladera Ranch wetland restoration program that, according to conditions in the Section 404 and Section 1603 authorizations from the USACE and CDFG, included a sliding scale whereby excess creation areas (i.e., areas not specifically

needed to offset impacts associated with Ladera Ranch) could be utilized for future projects within the RMV Planning Area portion of the Aquatic Reserve. The 18 acres have achieved the five-year performance standards and will be subject to ongoing monitoring until such time as they are used to offset future impacts associated with USACE Section 404 Authorizations.

The Aquatic Resources Restoration Plan (Appendix F2, and reviewed in Chapter 8.0) includes the following components:

- Regulatory Considerations
- Definition of Terms
- Habitat Restoration Goals
- Success Criteria
- Preliminary Designation of Streams to be Restored
- Preliminary Designation of Wetland Restoration/Enhancement Areas
- Preliminary Designation of Non-Wetland Riparian Restoration/Enhancement Areas
- Implementation Plan
- Maintenance Plan
- Monitoring Program

The main goal of the Aquatic Resources Restoration Plan is to set forth the methodologies for: (1) enhancement or restoration of wetland and/or riparian habitats that have been substantially degraded such that measurable losses of hydrologic, biogeochemical or habitat functions have occurred, and whereby the lost function(s) can be restored or reintroduced; (2) creation of wetland and/or riparian habitats to replace wetland or riparian areas lost to development, ensuring a no net loss of USACE jurisdictional acreage; and (3) enhancement, restoration, or creation that would replace hydrologic, biogeochemical and habitat functions such that there is no-net-loss of wetland functions. As noted above, a substantial portion of the compensatory mitigation can be implemented in advance of impacts, providing a high level of certainty that no-net-loss of function or acreage occurs. Areas evaluated and identified as potential restoration sites are set forth below. Based on the detailed evaluations, all of these sites represent excellent candidate sites; however, it may not be necessary or desirable to use each site, or only portions of these sites may ultimately be utilized. The determination of which candidate restoration site to be used would depend on the level of impact associated with the proposed permitting procedures reviewed in Chapter 8.0 and the associated mitigation in the form of aquatic resources identified for preservation, restoration, and management under the Aquatic Resources Conservation Program.

Potential Habitat Creation/Restoration Areas

Potential Habitat Creation/Restoration Areas are discussed in detail in the Aquatic Resources Restoration Plan and include areas within GERA, various locations in Gobernadora Canyon, Sulphur Canyon at the confluence with Gobernadora Creek, Chiquita Creek between the

"Narrows" and the SMWD Treatment Facility, Chiquita Creek between SMWD Treatment Facility and Cow Camp Road, and lower Chiquita Canyon.

Stream Restoration

In addition to the areas identified above for restoration, several locations for stream restoration have been identified including Gobernadora Creek at the knickpoint located adjacent to GERA, Chiquita Creek between the "Narrows" and the SMWD Treatment Facility, and the upper reaches of Gabino Creek. These locations are also discussed in detail in the Aquatic Resources Restoration Plan.

Invasive Exotic Control

Removal of giant reed from San Juan Creek has been identified as a "high priority" component of the Invasive Species Control Plan. The Invasive Species Control Plan, provided in Appendix F4, describes in detail the extent and type of invasive species present on the RMV Planning Area and identifies methods for their control, including the control of giant reed (*Arundo donax*). San Juan Creek supports populations of the arroyo toad and least Bell's vireo along with other special-status species such as the yellow-breasted chat, yellow warbler, southwestern pond turtle, and two-striped garter snake. As set forth in the Invasive Species Control Plan, *Arundo donax* can have a number of adverse impacts on native riparian ecosystems including alteration of hydrologic regimes, alteration of fire regimes, and elimination of native riparian habitat (i.e., willow scrub and forest) by direct competition. Elimination of *Arundo donax* would substantially enhance the ability of the reach of San Juan Creek associated within the Aquatic Resources Conservation Areas to support the arroyo toad and least Bell's vireo, contributing significantly to recovery of these species within the SAMP Study Area.

Removal of *Arundo donax* and Pampas Grass from Trabuco Creek between Crown Valley Parkway and Avery Parkway has been identified as a "high priority" component of the Invasive Species Control Plan. Trabuco Creek supports a major population in a key location of least Bell's vireo along with other special-status species such as the yellow-breasted chat, yellow warbler, and two-striped garter snake. Elimination of *Arundo donax* would substantially enhance the ability of this reach of Trabuco Creek to support least Bell's vireo, contributing significantly to recovery of this species within the SAMP Study Area.

5.5.3 MANAGEMENT OF AQUATIC RESOURCES

Where applicable, management of aquatic resources will be carried out in accordance with the SAMP Aquatic Resources Conservation Program and applied to the Aquatic Resources Conservation Areas identified for RMV lands. Aquatic resources adaptive management and monitoring activities would be conducted primarily in the RMV Planning Area as mitigation for impacts to aquatic resources subject to USACE jurisdiction. These management and monitoring activities are summarized below in subchapter 5.5.3.1, the Aquatic Resources Adaptive Management Program (Appendix F3, and reviewed in Chapter 8.0).

Under some circumstances, supplemental adaptive management and monitoring activities within adjacent upstream lands or coordination with measures undertaken outside the RMV Planning Area (e.g., Caspers Regional Park) may be necessary to ensure the overall health of the preserved aquatic resources where stressors can cause loss of habitat value and where conditions in one area can affect other preserved aquatic resources. *Arundo* is an excellent

example of such a stressor. Stressors that would require management and monitoring on other lands are exotic species and fire risk from fuel load buildups.

5.5.3.1 RMV Planning Area Aquatic Resources Adaptive Management Program

The Aquatic Resources Adaptive Management Program describes management actions for riparian/wetland resources and their associated focal species for the RMV Planning Area (Appendix F3). Key elements of the Aquatic Resources Adaptive Management Program are summarized here.

By definition, adaptive management is an experimental and flexible approach to resource management that integrates ecological theory, modeling, hypotheses generation, field manipulations and interventions, and feedback that allows for refinement of the model(s) and hypotheses and, ultimately, improved management of the resource. As stated by Gunderson (1999), adaptive management is "adaptive because it acknowledges that managed resources will always change as a result of human intervention, that surprises are inevitable, and that new uncertainties will emerge." A key concept of adaptive management is that the world is uncertain and flexibility in resources management is crucial (Holling 1995; Holling and Meffe 1996). This approach requires a departure from the traditional command-and-control approach to management, which assumes that the managed system is relatively simple and predictable (Holling and Meffe 1996).

Adaptive management programs exhibit the following characteristics:

1) Available theory, empirical information, and expertise are used to develop dynamic models that make predictions about the outcomes of different management actions (Carpenter et al. 1999; Walters 1997). Modeling is a powerful tool to simulate the spatial and temporal dynamics of key ecosystem factors, or what Holling (1995) terms "structuring variables," and to generate and screen hypotheses that may not yield useful data or are unlikely to be effective management policies (Walters 1997).

2) Models, hypotheses, and experiments must meet on-the-ground managers' needs and should be developed in collaboration with managers (Rogers 1998). As part of this process, the monitoring tools, the options, and strategies available to managers, and strategies for utilizing new data and information should be developed (Bosch et al. 1996).

3) Adaptive management is a "dual control problem" where short-term management goals and objectives need to be met while also learning about the managed system (Nichols 1999).

4) Adaptive management strategies may not yield decisive results for a decade or two and, thus, the agencies and stakeholders must be patient (Lee 1993; Walters 1997).

5) Adaptive management strategies may pose risks for some populations and habitats of endangered and rare species (Johnson 1999a; Walters 1997), but the focus should be on restoring and maintaining ecological resiliency such that risk and catastrophe to other resources are avoided. In other words, there are likely to be difficult tradeoffs in the adaptive management of habitats and species.

6) Reversible treatments should be used where possible so that if hypotheses turn out to be incorrect, the resource is not permanently lost (e.g., loss of a population, state-transition of a habitat) (Walters 1997).

The purpose of adaptive management within the framework of the SAMP is to help maintain and, where feasible, enhance the long-term net habitat value of riparian/wetland resources within the Aquatic Resources Conservation Areas.

The first and underlying guiding principle of the Aquatic Resources Adaptive Management Program is that management and monitoring should be directed towards environmental factors known or thought to be directly or indirectly responsible for ecosystem changes that would be inconsistent with meeting the three broad goals of:

- Ensure the persistence of a native-dominated vegetation mosaic in the Aquatic Resources Conservation Areas.

- Restore or enhance the quality of degraded riparian/wetland vegetation communities in the Aquatic Resources Conservation Areas.

- Maintain and restore biotic and abiotic natural processes, at all identified scales, for the Aquatic Resources Conservation Areas.

For example, allowing *Arundo donax* to proliferate would be inconsistent with the goal of ensuring the persistence of a native-dominated riparian/wetland vegetation community in the Aquatic Resources Conservation Program area. Natural flood events have both the adverse effect of destroying mature riparian systems that support certain species such as nesting raptors and the beneficial effect of rejuvenating the riparian system and creating habitat for endangered species such as the arroyo toad and least Bell's vireo, as well as many other species that thrive in early to mid-successional riparian systems. These natural and anthropogenic disturbance factors, called "environmental stressors," may have both adverse and beneficial effects on ecosystem characteristics such as vegetation communities and species. Natural and human-caused stressors known or likely to significantly affect riparian/wetland vegetation communities and aquatic/riparian species in the Southern Subregion include habitat fragmentation, altered hydrology, altered geomorphic processes, precipitation, exotic plant and wildlife species, wildfire, over-grazing, and human uses, including recreation.

It is important to understand that the aquatic vegetation communities and associated species in the aquatic resource program area are basically in good general health, but that certain known and potential stressors operate and can be identified (e.g., *Arundo* invasion of San Juan Creek). For this reason, the stressor approach is particularly appropriate and the basic management needs are to (1) address existing stressors so that net habitat value can be increased, and (2) identify future stressors that could reduce or adversely alter long-term net habitat value.

In conclusion, the environmental stressor approach is the guiding principle of the Aquatic Resources Adaptive Management Program both because it is state of art science for management and monitoring of ecological systems (e.g., Noon 2003a) and is particularly appropriate for the RMV Planning Area.

The Science Advisors identified five fundamental elements of an adaptive management program as follows:

- Setting Management Objectives

- Preparing Management Plans and Conceptual Models
- Identifying Uncertainties and Knowledge Gaps in Management Plans
- Monitoring the Management Program
- Incorporating Monitoring and Research Results Into Revised Management Plans

Figure 5-14 shows a conceptual flowchart for adaptive management that incorporates these fundamental concepts and which are addressed in the description of the Aquatic Resources Adaptive Management Program (Appendix F3). For the wetland/riparian communities, the Aquatic Resources Adaptive Management Program describes how these five fundamental elements are addressed, including the establishment of management objectives and the description of a management plan and conceptual model designed to respond to the identified management objectives. Uncertainties and knowledge gaps are identified in the Aquatic Resources Adaptive Management Program, as is how the management program would be monitored. Lastly, and key to the Aquatic Resources Adaptive Management Program approach, is how results get fed back into a "revised" management plan.

5.6 CIRCULATION SYSTEM ASSUMPTIONS

Implementation of the development associated with the alternatives carried forward for further consideration in Chapter 6.0 would require a supporting circulation system. The following describes the circulation system assumptions for each "B" Alternative carried forward for further consideration. Certain circulation facilities are common to all "B" Alternatives. The following are additions to or revisions to Master Plan of Arterial Highway (MPAH) facilities common to all "B" Alternatives, except where noted:

- ***Cow Camp Road*** – an addition to the MPAH of a new east-west arterial highway on the north side of San Juan Creek. Cow Camp Road would be constructed as a major arterial between Antonio Parkway and SR-241 (SOCTIIP), and as a primary arterial between SOCTIIP and Ortega Highway in a "with SR-241" scenario. In a "without SOCTIIP" scenario, Cow Camp Road would be constructed as a major arterial between Antonio Parkway and F Street and as a primary arterial between F Street and Ortega Highway.

- ***Cristianitos Road*** – depending on the alternative, existing Cristianitos Road between Avenida Pico and the development area in Trampas Canyon would remain a private ranch road (Alternatives B-8 and B-12), or be upgraded to a County collector with variances for existing geometry and constraints (Alternative B-10 Modified). From the proposed Trampas Canyon development area to the proposed development area in the Gobernadora Sub-basin, a new north-south arterial highway would cross San Juan Creek and Cow Camp Road, and connect to the proposed SR-241, in a "with SOCTIIP" scenario and Oso Parkway in a "without SOCTIIP" scenario (all alternatives).

- ***Avenida Talega*** – an MPAH reclassification of the segment of roadway in unincorporated Orange County from a secondary arterial highway to a collector road (all alternatives).

- ***La Pata Avenue/Antonio Parkway*** – existing La Pata Avenue/Antonio Parkway would be widened from the northerly limit of the RMV Planning Area, north of Ortega Highway, to the southerly limit of the RMV Planning Area. Also, the road would also be extended

further to the south beyond the RMV Planning Area to Avenida Pico outside of the SAMP Study Area.

- ***Ortega Highway (SR-74)–*** existing Ortega Highway would be widened from east of the intersection with La Pata to the westerly boundary of the RMV Planning Area. Also, the widening would extend further west into the City of San Juan Capistrano.

In addition to arterial highway improvements, certain local circulation facilities would be necessary including, but not limited to:

- ***Gobernadora Road–*** either a four-lane secondary or modified collector to provide internal circulation to development in Gobernadora Sub-basin.

- ***Center Gobernadora Road–*** a two-lane collector road to provide internal circulation to development in Gobernadora Sub-basin.

- ***Trampas Canyon Road–*** a two-lane collector road with a right-of-way reserve for four lanes to provide internal circulation for development in Trampas Sub-basin.

Under the B-8 Alternative, no north-south connector would be built in a "with SOCTIIP" scenario. In a "no SOCTIIP" scenario, Cristianitos Road would extend from Planning Area 3 to Oso Parkway. For Alternative B-10 Modified, F Street, an access controlled north-south road is proposed to extend from Cow Camp Road and connect to Tesoro Creek Road (in a "with SOCTIIP" scenario) or connect to Cristianitos Road (in a "without SOCTIIP" scenario). Under Alternative B-12, in a "with SOCTIIP" scenario, no north-south road would be constructed to connect with Tesoro Creek Road. In a "without SOCTIIP" scenario, Cristianitos Road would extend from PA 3 to Oso Parkway.

Development in the Verdugo sub-basin under the B-10 Modified and B-12 Alternatives would be accessed via collector roads internal to the development area from Cow Camp Road.

Alternative B-10 Modified would provide for estate development in Gabino Canyon. These estates would be accessed primarily through Planning Area 4 and then from Verdugo Road, a rural collector with variances for existing geometry and constraints, with access to individual estate lots from existing/improved to all weather access ranch roads. A secondary all-weather wildfire evacuation road may be required for the limited development proposed in upper Gabino under the B-10 Modified Alternative. Should such a facility be required, the existing ranch access road from upper Gabino to existing Cristianitos Road could serve as an evacuation route.

CHAPTER 6.0
ALTERNATIVES ANALYSIS

6.1 INTRODUCTION

Chapter 5.0 of this EIS addressed 5 No Action Alternatives ("A" Alternatives) and 12 Development/Open Space Alternatives ("B" Alternatives). The selection of alternatives to be carried forward for further review is based on legal mandates for the "A" Alternatives and, for the "B" Alternatives, on the extent to which each of the open space/development alternatives addresses the Purposes in Chapter 3.0 of this EIS and the SAMP Tenets and the Watershed Planning Principles. It also reflects a review of the cumulative databases and studies (including biologic, hydrologic, and geomorphic data and studies), relevant state and local laws, regulations and guidelines, public testimony, and the characteristics of the respective alternatives. Two programmatic alternatives (A-4 and A-5) and three open space/development alternatives (B-8, B-10 Modified, and B-12) are addressed in Chapter 6.0. The USACE in cooperation with the NCCP/SAMP Working Group has determined that these alternatives represent a reasonable range of SAMP alternatives in accordance with federal laws.

Chapter 1.0 described the federal action that is the subject of this SAMP EIS, namely;

> *Adoption of three permitting procedures for residential, commercial, industrial, recreational, infrastructure, and maintenance needs within the SAMP Study Area.*

Chapter 1.0 further notes that this EIS includes an alternatives evaluation for the proposed permitting procedures and associated mitigation, including the Aquatic Resources Conservation Program (ARCP). As reviewed in Chapter 1.0, the SAMP is a planning and policy document and serves as both: (a) a framework for the alternatives evaluation and (b) a potential mitigation framework for the proposed permitting procedures. With respect to its evaluation functions, the SAMP provides information for assessing aquatic resources at a watershed-scale in order to evaluate proposed permitting procedures and to formulate avoidance, minimization, and mitigation measures required under the Section 404 (b)(1) Guidelines.

The analysis in this chapter focuses on alternative open space/development configurations within the RMV Planning Area to assess whether one or more of the alternatives, or a modified version of one or more alternatives, can feasibly attain the SAMP goals set forth in subchapter 1.1 and the SAMP "Purpose" discussed in subchapter 3.1. If one or more of the proposed alternatives is determined to be capable of feasibly attaining the SAMP goals and purposes, these alternatives can be assessed in the required Section 404 (b)(1) Guidelines analysis (see Chapter 8.0) and provide a potential avoidance, minimization, and mitigation framework under the Section 404(b)(1) Guidelines. No data is available regarding potential projects which may be proposed by future SAMP participants through the LOP Procedures outside the RMV Planning Area. These potential projects will be subject to future NEPA and Section 404 (b)(1) Guidelines review at the time applications are received by the USACE.

Because the identification of SAMP alternatives is an important element of the Section 404 (b)(1) Guidelines analysis, the emphasis in this chapter is on biological resources and physical processes (hydrology/geomorphology) relating to the SAMP Purpose and Need statement, the overall SAMP goals, and the watershed planning perspective that is central to the SAMP. In particular, this chapter analyzes the "A" and "B" Alternatives in terms of their ability to provide for the three main elements of an Aquatic Resources Conservation Program: Aquatic Resources Preservation, Restoration, and Management, consistent with the SAMP goals and Purpose and

Need Statement (Chapters 1.0 and 3.0, respectively). Aquatic resources protection considerations are reviewed with respect to aquatic resources mapped in conjunction with the jurisdictional delineation under Section 404 of the Clean Water Act, SAMP technical studies, and the NCCP/MSAA/HCP GIS database, including the CDFG delineation. Aquatic resources restoration considerations are reviewed in relation to the ability of each alternative to protect and provide land and water areas identified for potential restoration. Aquatic resources management is assessed in relation to the Aquatic Resources Adaptive Management Program summarized in Chapter 1.0 and reviewed in Chapter 5.0, including the ability to fund management measures such as the long-term Invasive Species Control Plan.

As indicated in Chapter 2.0, the alternatives analyses used in Chapter 6.0 uses the ERDC alternatives analysis and the SAMP Tenets in consideration of the findings from the Watershed Planning Principles and additional aquatic species planning considerations from the Southern Planning Guidelines and the Watershed Planning Principles, as well as other studies referenced in Chapter 1.0. The SAMP is a planning and policy document and the selection of one or more SAMP alternatives for further consideration in Chapter 8.0 does not result in authorization of fill into Waters of the U.S. If one or more alternatives can achieve the SAMP Purpose, the alternative(s) will be further analyzed in Chapter 8.0 in conjunction with the analysis of compliance of the proposed permitting procedures with the Section 404 (b)(1) Guidelines, including avoidance, minimization, and mitigation under an Aquatic Resources Conservation Program. This EIS is intended to evaluate the SAMP process, evaluate the Clean Water Act Section 404 permitting procedures within specified areas where future activities would be allowed to occur, and identify aquatic areas to be preserved, restored, enhanced, and managed over the long-term pursuant to the final Aquatic Resources Conservation Program.

It should be noted that for the B-12 Alternative, an overstated impact analysis is discussed in this chapter for development proposed in Planning Areas 4 and 8 and for the orchards proposed in Planning Areas 6 and 7. The final footprint of future development/orchards within these planning areas is undefined at this time because the precise location of future development/orchards is not known. In order to provide an analysis of possible impacts to vegetation communities and species, the impacts in Planning Area 4 are assumed to affect a larger “impact area” of approximately 1,127 acres and the impacts for Planning Area 8 are assumed to affect a larger “impact area” of approximately 1,349 acres. The impact areas in Planning Areas 6 and 7 are approximately 249 acres and 182 acres, respectively. Therefore, the total impact area for Alternative B-12 is approximately 7,788 acres (Figure 5-13). It should be emphasized that this impact analysis overstates the possible impacts to vegetation communities and species because, ultimately, Rancho Mission Viejo is limited to developing a maximum of 550 acres in Planning Area 4, 500 acres in Planning Area 8, and a total of 50 acres of orchards in either/or Planning Area 6 and 7, as well as all necessary supporting infrastructure in addition to the proposed development in the other planning areas as previously addressed in Chapter 5.0. It should be noted that the configuration of the 500 acres of development in Planning Area 8 is required to take into consideration the findings of five years of arroyo toad telemetry studies in conjunction with minimizing impacts, as required by the USACE Special Conditions.

Regarding the SMWD Proposed Project, no alternatives to the maintenance of existing facilities are proposed because none are feasible (existing facilities must be maintained in their current location). The future storage facilities/reservoirs are alternatives; there is a need for two domestic reservoirs and one non-domestic storage reservoir. Because all but one of the sites are located within the impact assessment area for the B-10 Modified and B-12 Alternatives, and would, therefore, not result in additional impacts beyond those analyzed for these RMV Planning Area alternatives; only the site in Upper Chiquita is reviewed specifically as a part of

the SMW Proposed Project. The proposed SMWD Upper Chiquita reservoir site is addressed in Chapter 8.0. Alternatives A-4 and A-5 are addressed in Chapter 6.0, as applicable.

6.2 BIOLOGICAL RESOURCES

6.2.1 WETLAND AND RIPARIAN HABITATS

6.2.1.1 Thresholds of Significance

For the purposes of this EIS, an alternative would be considered to have a significant impact on wetland and riparian habitats if it would result in a:

- Substantial effect, either directly or indirectly on wetlands and/or riparian habitats within USACE jurisdiction.
- Net loss of hydrology, water quality, or habitat integrity.
- Conflict with the SAMP Tenets
- Inconsistency with aquatic species considerations from Southern Planning Guidelines and the Watershed Planning Principles

6.2.1.2 Impacts to and Conservation of USACE Jurisdiction and Riparian Habitats

This chapter focuses on a quantified summary of potential impacts and conservation by vegetation types to provide information that is used in subsequent subchapters to address consistency with the SAMP Tenets (subchapter 6.2.4) ,Southern Planning Guidelines, and the Watershed Planning Principles (subchapter 6.4) as they relate to wetlands/riparian habitats.

Table 6-1 identifies potential impacts to wetland and riparian habitats associated with each proposed "B" alternative. It is important to note that, due to the complexity of preparing infrastructure plans for such a range of alternatives, the impacts analysis provided in this chapter does not include impacts related to the construction and maintenance of infrastructure such as new water and sewer lines, lift stations, pump stations, reservoirs, etc. The exclusion of infrastructure impacts from the landscape-level alternatives' impact analyses does not affect the conclusions set forth in this chapter because infrastructure impacts comprise a small component of each alternative. However, the consistency of circulation systems associated with each alternative with the Watershed Planning Principles is provided in this chapter. For those alternatives under consideration for compliance with Section 404(b)(1), infrastructure impacts are quantified in Chapter 8.0 of this EIS.

State and federal jurisdictional delineations of the RMV Planning Area were prepared by GLA (2004) (Appendix E3). It should be noted that the GLA delineation did not include the entire SAMP Study Area or the RMV Planning Area for all of the alternatives, but was focused on the proposed development areas within the RMV Planning Area and associated major arterials that connect the development areas within the RMV Planning Area. The delineation determined that the maximal extent of potential development contains 267.12 acres that are within the jurisdiction of the USACE, of which 158.92 acres are considered jurisdictional wetland Table 4.1.2-4). The delineation also determined that the potential development areas contain 398.14 acres within the jurisdiction of the CDFG, of which 368.40 acres consist of vegetated

riparian habitat.[1] Jurisdictional areas typically include all vegetation types listed in Table 6-2 with exception of isolated waters such as vernal pools and slope wetlands. Based on the ERDC data for typical riparian vegetation communities, as noted in Chapter 4.0, existing setting for riparian and wetland resources, there are an estimated 9,287.6 acres of aquatic habitats within the SAMP Study Area of which 3,222.2 acres are probable USACE jurisdiction. In the RMV Planning Area, there are 2,299.7 acres of riparian/wetland habitats of which 857.1 acres are probable USACE jurisdiction. Therefore, the delineated resources that may be affected by development represent a small portion of the resources within both the SAMP Study Area and the RMV Planning Area.

TABLE 6-1
SUMMARY OF IMPACTS TO USACE JURISDICTIONAL AREAS AND CDFG RIPARIAN HABITATS BY ALTERNATIVE

Jurisdictional Areas				
Alternative	**Wetlands (acres)**	**Waters of the U.S. (acres)**	**Total USACE (acres)**	
B-8	7.70	16.95	24.65	
B-10 Modified	9.14	31.91	41.05	
B-12[a.]	9.39	31.39	40.78	
CDFG Riparian Habitats				
Alternative	**Riparian (acres)**	**Unvegetated (acres)**	**Total CDFG (acres)**	**Unresolved[b.]**
B-8	56.6	7.65	64.25	78.98
B-10 Modified	109.83	16.02	125.85	79.00
B-12[a.]	115.96	17.74	133.70	79.26

a. Note: as previously discussed this represents an overstated case impact analysis and ultimate impacts will be less due to the limitations on development in Planning Areas 4 and 8, and orchards in Planning Areas 6 and 7.
b. Total area for features being proposed as non-jurisdictional for which CDFG has not yet made their final determination.

Source: GLA 2004

Alternatives B-8, B-10 Modified, and B-12 (under the overstated impact scenario) result in impacts of 7.70 acres of wetlands and 16.95 acres of waters, 9.14 acres of wetlands and 31.91 acres of waters and 9.39 acres of wetlands and 31.39 acres of waters respectively. With respect to the 857.1 acres of probable USACE jurisdiction in the RMV Planning Area, Alternatives B-8, B-10 Modified, and B-12 avoid 97 percent, 95 percent, and 95 percent of USACE jurisdiction, respectively. To the extent that Rancho Mission Viejo could permit the B-10 Modified Alternative on a project-by-project basis as with A-4 Alternative, Alternative A-4 would result in the same impacts as the B-10 Modified. Alternative A-5 would not impact USACE jurisdiction. A qualitative or descriptive overview of the impacts for each wetland or riparian habitat type is provided in Tables 6-2 and Table 6-3 and is addressed in greater detail in Chapter 8.0 where the impacts are evaluated for consistency with Section 404(b)(1) for those alternatives carried forward. In addition, impacts to state and federally listed and unlisted aquatic species that potentially occupy these habitats are addressed in Chapter 6.0.

[1] An additional 91.70 acres have been evaluated in the field, including 55.88 acres of cattail marsh and 35.82 acres of open water, for which Rancho Mission Viejo and CDFG have not reached concurrence relative to their jurisdictional status (i.e., unresolved features). These unresolved features are located within Trampas Canyon (Planning Area 5) of the RMV Planning Area and consist of the ONIS artificial tailings facility and other mining related facilities. GLA noted that these features do not meet the definition of a streambed or lake under the Fish and Game Code at the time of project implementation (GLA 2004).

TABLE 6-2
SUMMARY OF IMPACTS TO USACE JURISDICTIONAL WETLANDS BY HABITAT TYPE BY ALTERNATIVE

Habitat Type	B-8	B-10 Modified	B-12[a.]
Alkali Meadow (5.2)	0.23	0.56	0.44
Seasonal Pond (5.3)	0.13	0.75	0.76
Coastal Freshwater Marsh (6.4)	1.19	1.18	1.18
Riparian Herb (7.1)	0.01	0.03	0.03
Southern Willow Scrub (7.2)	0.66	0.82	1.16
Mule fat Scrub (7.3)	0.00	0.33	0.34
Sycamore Riparian Woodland (7.4)	0.01	0.00	0.00
Arroyo Willow Forest (7.6)	5.47	5.48	5.48
Total	**7.70**	**9.14**	**9.39**

a. As previously discussed this represents an overstated impact analysis and ultimate impacts will be less due to the limitations on development in Planning Areas 4 and 8, and orchards in Planning Areas 6 and 7

Please note that USACE and CDFG jurisdiction are not entirely coincident with each other. Therefore, there are seasonal ponds and freshwater marsh habitat (generally occurring in isolated ponds/depressions) that are reported above but not to the same extent identified in Table 6-3. It should be noted that oak riparian woodland is identified in Table 6-3 but not in Table 6-2 for the same reason.

TABLE 6-3
SUMMARY OF IMPACTS TO CDFG RIPARIAN HABITATS BY ALTERNATIVE

Habitat Type	B-8	B-10 Modified	B-12[a.]
Alkali Meadow (5.2)	0.68	1.17	1.29
Seasonal Pond (5.3)	0.00	0.64	0.64
Coastal Freshwater Marsh (6.4)	0.54	0.54	0.54
Riparian Herb (7.1)	1.46	1.46	1.46
Southern Willow Scrub (7.2)	4.38	10.23	11.73
Mule fat Scrub (7.3)	7.48	12.52	17.72
Sycamore Riparian Woodland (7.4)	5.91	9.25	9.27
Oak Riparian Woodland (7.5)	16.06	53.64	52.29
Arroyo Willow Forest (7.6)	20.11	20.26	21.02
Total	**56.63**	**109.83**	**115.96**

a. As previously discussed this represents an overstated impact analysis and ultimate impacts will be less due to the limitations on development in Planning Areas 4 and 8, and orchards in Planning Areas 6 and 7.

Impacts to Alkali Meadow

Alkali meadow consists of variety low-growing herbaceous species. On the RMV Planning Area, the composition varies according to the hydrology and distribution. Species typically identified include saltgrass (*Distichlis spicata*), Mexican rush (*Juncus mexicanus*), wrinkled rush (*Juncus rugulosus*), clustered field sedge (*Carex praegracilis*), alkali ryegrass (*Leymus triticoides*),

creeping spikerush (*Eleocharis macrostachya*), and deergrass (*Muhlenbergia rigens*). Impacts to USACE jurisdictional alkali meadow are limited, ranging from a low of 0.23 acre for the B-8 Alternative to a high of 0.56 acre for the B-10 Modified Alternative. The B-12 Alternative would impact 0.44 acre of alkali meadow under the overstated impact scenario. As identified in Table 6-3, impacts to CDFG jurisdictional alkali meadow range from a low of 0.68 acre for the B-8 Alternative to a high of 1.29 for the B-12 Alternative (under the overstated impact analysis scenario).

Impacts to Seasonal Pond

Seasonal pond habitat generally consists of stock ponds created as part of the ranching operation on the RMV Planning Area and typically exhibit minimal habitat value. In most instances, these areas are dominated by non-native or ruderal (mostly herbaceous) wetland/riparian species such as swamp timothy (*Crypsis vaginiflora*), cocklebur (*Xanthium strumarium*), Rabbitsfoot grass (*Polypogon monspeliensis*), Spanish sunflower (*Pulicaria paludosa*), and occasional individuals of mule fat (*Baccharis salicifolia*) or willow (*Salix* spp.). Impacts to USACE jurisdictional seasonal pond would be 0.13, 0.75, and 0.76 acre for Alternatives B-8, B-10 Modified, and B-12 (under the overstated impact scenario), respectively. Impacts to CDFG jurisdictional seasonal pond are no impact, 0.64 acre for Alternatives B-10 Modified and B-12 (under the overstated impact scenario).

Impacts to Coastal Freshwater Marsh

Areas of coastal freshwater marsh typically are subject to long-term (in some cases year-round) inundation or saturation. These areas typically exhibit low diversity and are dominated by herbaceous monocots including southern cattail (*Typha domingensis*), California bulrush (*Scirpus californicus*), hardstem bulrush (*Scirpus acutus*), and Olney's bulrush (*Scirpus americanus*). Impacts to USACE jurisdictional freshwater marsh are 1.19 acre for Alternative B-8 and 1.18 for Alternative B-10 Modified and B-12 (under an overstated impact scenario). Impacts to CDFG jurisdictional freshwater marsh are 0.54 acre for all alternatives.

Impacts to Riparian Herb

Riparian herb habitat is typically associated with low gradient channels that exhibit seasonal flows or in some instances additional water from agricultural sources or other source of artificial irrigation. Many of the species are non-native and include cocklebur, Rabbitsfoot grass, Spanish sunflower, Mexican sprangletop (*Leptochloa uninervia*), water bentgrass (*Agrostis viridis*), and barnyard grass (*Echinochloa crus-galli*). Impacts to USACE jurisdictional riparian herb are 0.01 acre for Alternative B-8 and 0.03 for Alternatives B-10 Modified and B-12 (under an overstated impact scenario). Impacts to CDFG jurisdictional herb are 1.46 acres for all alternatives.

Impacts to Southern Willow Scrub

Southern willow scrub is associated with a variety of drainage types. However, typically this habitat is most common among low-gradient 3rd order streams or larger that exhibit seasonal surface water or associated groundwater (sometimes at depth of up to 30 feet) that supports the plants during the dry season. Dominant species include arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigeta*), sandbar willow (*Salix exigua*), and mule fat. Impacts to USACE jurisdictional southern willow scrub are 0.66 acre for Alternative B-8, 0.82 acre for Alternative B-10 Modified, and 1.16 acres for Alternative B-12 (under the overstated impact scenario). Impacts to CDFG jurisdictional southern willow scrub are 4.38 acres for

Alternative B-8, 10.23 acres for Alternative B-10 Modified, and 11.73 acres for Alternative B-12 (under the overstated impact scenario).

Impacts to Mule Fat Scrub

Mule fat scrub is associated with a variety of drainage types from 1st order high gradient drainages to low-gradient 3rd order streams or larger. Hydrologic regime varies accordingly, from ephemeral to intermittent. This community is typically dominated by almost pure stands of mule fat with an occasional mix of arroyo willow, red willow, or sandbar willow. Impacts to USACE jurisdictional mule fat scrub range from no impacts (Alternative B-8) to 0.33 acre (Alternative B-10 Modified) to 0.34 acre (Alternative B-12 under the overstated impact scenario). Impacts to CDFG jurisdictional mule fat scrub are 7.48 acres (Alternative B-8), 12.52 acres (Alternative B-10 Modified), and 17.72 acres (Alternative B-12 under the overstated scenario).

Impacts to Sycamore Riparian Woodland

Like mule fat scrub, sycamore woodland is associated with a variety of drainage types from 2nd order high gradient drainages to low-gradient 3rd order streams or larger. Hydrologic regime varies accordingly, from ephemeral to intermittent; groundwater, sometimes at great depth (i.e., 30 feet or more), likely supports the sycamores. This community is typically dominated by western sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*), and Mexican elderberry (*Sambucus mexicana*) with understory components of mule fat. On terraces outside of USACE jurisdiction, upland scrub and non-native grasses dominate the understory. Impacts to USACE jurisdictional sycamore riparian woodland are 0.01 acre for Alternative B-8 and none for Alternatives B-10 Modified and B-12. Impacts to CDFG jurisdictional sycamore riparian woodland are 5.91 acres for Alternative B-8, 9.25 acres for Alternative B-10 Modified, and 9.27 acres for Alternative B-12 (under the overstated impact scenario).

Impacts to Coast Live Oak Riparian Forest

Like sycamore woodland, coast live oak riparian forest is associated with a variety of drainage types from 2nd order high gradient drainages to low-gradient 3rd order streams or larger. Hydrologic regime varies accordingly, from ephemeral to intermittent. This community is typically dominated by coast live oak and may include scattered individuals of western sycamore and Mexican elderberry. Understory components include mule fat and herbaceous species such as clustered field sedge where there is shallow subsurface seasonal water. On terraces outside of USACE jurisdiction, upland scrub and non-native grasses dominate the understory. Impacts to CDFG jurisdictional coast live oak riparian forest are 16.06 acres (Alternative B-8), 53.64 acres (Alternative B-10 Modified), and 52.29 acres (Alternative B-12 under the overstated impact scenario). No USACE jurisdictional coast live oak forest would be impacted by the proposed alternatives because USACE jurisdiction does not extend to this vegetation community within the RMV Planning Area.

Impacts to Arroyo Willow Forest

Arroyo willow scrub is associated with a variety of drainage types. However, typically this habitat is most common among lower gradient higher order streams that exhibit intermittent or perennial flows (at least in some years) and/or associated groundwater (sometimes at depth of up to 30 feet) that supports the plants during the dry season. Dominant species include arroyo willow, red willow, sandbar willow, and mule fat. Impacts to USACE jurisdictional arroyo willow are 5.47 acres for Alternative B-8 and 5.48 acres for Alternative B-10 Modified and Alternative B-12 (under the overstated impact scenario). Impacts to CDFG jurisdictional arroyo willow forest

are 20.11 acres for Alternative B-8, 20.26 acres for Alternative B-10 Modified, and 21.02 acres for Alternative B-12 (under the overstated impact scenario).

Protection of Riparian Habitats

Using the ERDC database as the data source, Table 6-4 sets forth the protected riparian habitats within the SAMP Study Area. The table summarizes: (a) riparian vegetation protected by means of previously conserved open space (e.g., County parks, local conservancies) and alternative permitting mechanisms; and (b) riparian habitat proposed to be conserved under each of the three "B" Alternatives under review for the RMV Planning Area. Of the 8,729.5 acres of natural riparian habitat in the SAMP Study Area, Alternatives B-8, B-10 Modified, and B-12 would protect 8,100.7 acres, 7,848.9 acres, and 7,851.5 acres, respectively. Of the 3,222.3 acres of probable USACE jurisdiction, Alternatives B-8, B-10 Modified, and B-12 would protect 2,522.6 acres, 2,515.2 acres, and 2,514.5 acres, respectively.

TABLE 6-4
SUMMARY OF RIPARIAN AREAS PROTECTED IN SAMP STUDY AREA

Riparian Habitat	SAMP Study Area Total (ac.)	Protected by:		
		Alternative B-8	Alternative B-10 Modified	Alternative B-12
Bigcone Spruce-Canyon Live Oak Forest	477.7	477.7	477.7	477.7
Canyon Live Oak Forest	195.0	195.0	195.0	195.0
Canyon Live Oak Ravine Forest	243.9	243.9	243.9	243.9
Coast Live Oak Forest	239.5	226.6	166.8	171.0
Coast Live Oak Woodland	851.1	812.0	797.4	781.5
Coastal Freshwater Marsh	141.3	103.9	103.9	103.9
Intermittent Rivers and Streams	304.6	304.6	304.6	304.6
Mule fat Scrub	778.7	709.7	693.0	703.0
Open Water	345.0	239.4	238.5	238.8
Perennial Rivers and Streams	112.3	107.8	107.8	107.8
Riparian Herb	22.1	14.9	14.9	14.9
Salix exigua	1.9	1.9	1.9	1.9
Southern Arroyo Willow Forest	307.7	202.8	202.7	201.8
Southern Coast Live Oak Riparian Forest	3,018.6	2,882.4	2,730.5	2,737.1
Southern Coastal Salt Marsh	0.2	0.2	0.2	0.2
Southern Sycamore Riparian Woodland	619.9	611.7	605.1	603.8
Southern Willow Scrub	727.8	624.2	623.0	622.5
White Alder Riparian Forest	342.1	342.1	342.1	342.1
Total	**8,729.5**	**8,100.7**	**7,848.9**	**7,851.5**

Table 6-5 sets forth the conserved riparian habitat in the RMV Planning Area. From the tables, it can be seen that the B-8 Alternative would result in the most protected riparian habitats within the overall SAMP Study Area and most conserved within the RMV Planning Area. Alternatives B-10 Modified and B-12 (under the overstated impact scenario) would protect/conserve approximately the same amount of riparian habitats. Of the 2,174.3 acres of natural riparian habitat within the RMV Planning Area, Alternatives B-8, B-10 Modified, and B-12 would conserve 1,943.0 acres, 1,691.2 acres, and 1,693.7 acres respectively. Of the 857.1 acres of

probable USACE jurisdiction, Alternatives B-8, B-10 Modified, and B-12 would conserve 763.8 acres, 756.3 acres, and 755.6 acres, respectively.

TABLE 6-5
SUMMARY OF RIPARIAN AREAS CONSERVED IN RMV PLANNING AREA

Riparian Habitat	RMV Planning Area Total (Acres)	Conserved by:		
		Alternative B-8	Alternative B-10 Modified	Alternative B-12[a.]
Canyon Live Oak Ravine Forest	0.3	0.3	0.3	0.3
Coast Live Oak Forest	131.9	118.9	59.1	63.3
Coast Live Oak Woodland	160.3	128.1	113.5	97.6
Coastal Freshwater Marsh	104.2	75.9	75.9	75.9
Intermittent Rivers and Streams	92.0	92.0	92.0	92.0
Mule fat Scrub	410.4	404.5	387.8	397.8
Open Water	53.5	16.8	15.9	16.2
Perennial Rivers and Streams	0.8	0.8	0.8	0.8
Riparian Herb	8.0	5.1	5.1	5.1
Salix exigua	1.3	1.3	1.3	1.3
Southern Arroyo Willow Forest	144.8	132.8	132.6	131.8
Southern Coast Live Oak Riparian Forest	854.3	769.1	617.2	623.7
Southern Sycamore Riparian Woodland	125.8	123.3	116.7	115.3
Southern Willow Scrub	84.8	72.3	71.1	70.7
White Alder Riparian Forest	1.9	1.9	1.9	1.9
Total	**2,174.3**	**1,943.0**	**1,691.2**	**1,693.7**

a. Alternative B-12 has a conservative estimate of protection in Planning Areas 4 and 8. Those two planning areas encompass 104.1 acres of habitat consisting of (39.7 acres of coast live oak forest, 4.4 acres of coast live oak woodland, 5.7 acres of mule fat scrub, 48.5 acres of southern coast live oak riparian forest, and 5.8 acres of sycamore woodland.

6.2.2 LISTED AND SPECIAL STATUS AQUATIC SPECIES

6.2.2.1 Thresholds of Significance

For the purposes of this EIS, an alternative would be considered to have a significant impact on listed and special status aquatic species if it would result in a:

- Substantial adverse effect, either directly or through habitat modifications, on any species that is state- or federally-listed as Threatened or Endangered occupying riparian and/or wetlands habitats or otherwise cause impacts within the purview of USACE jurisdiction and statutory responsibility.

- Substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate for listing, sensitive, rare, or otherwise special status plant or animal species in local or regional plans, policies, or regulations, or by the CDFG or USFWS where such impacts are within the purview of USACE jurisdiction and statutory responsibility.

- Substantial interference 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 where such impacts are within the purview of USACE jurisdiction and statutory responsibility.

Table 6-6 sets forth potential impacts to listed and special status aquatic (i.e., occupying wetland and/or riparian habitats) species associated with each alternative. It is important to note that, due to the complexity of preparing infrastructure plans for such a range of alternatives, the impacts analysis provided in Chapter 6.0 does not include impacts related to the construction and maintenance of infrastructure (e.g., new water and sewer lines, lift stations, pump stations, roadways, and reservoirs). The exclusion of infrastructure impacts from the landscape-level alternatives' impact analyses does not affect the conclusions set forth in Chapter 6.0 because infrastructure impacts comprise a small component of each alternative. However, the consistency of circulation systems associated with each alternative with the Watershed Planning Principles is provided in Chapter 6.0. For those alternatives under consideration for compliance with Section 404(b)(1), circulation and infrastructure impacts are quantified in Chapter 8.0. Impacts to species are reviewed prior to application of avoidance and minimization measures and where feasible and necessary, mitigation measures. Avoidance, minimization, and mitigation measures are discussed in the context of the Section 404(b)(1) analysis in Chapter 8.0. The sensitive aquatic species known or expected to occur within the RMV Planning Area, reviewed in Chapter 4.0, are summarized in Table 6-6 to provide a broad overview of the "B" Alternatives and include: (1) state- or federally-listed as Threatened or Endangered Aquatic Species and (2) special status aquatic species. Impacts to common aquatic species are also discussed. To the extent that RMV could permit the B-10 Modified Alternative on a project-by-project basis as the A-4 Alternative, the Alternative A-4 would result in the same impacts as the B-10 Modified. Alternative A-5 would not impact USACE jurisdiction or listed species. As described in Section 4, CDFG jurisdiction was defined functionally to include riparian habitat, therefore, because Alternative A-5 avoids both USACE and CDFG jurisdiction, the habitat supporting special status or common aquatic species would not be impacted.

6.2.2.2 Impacts to State- or Federally-listed Threatened or Endangered Aquatic Species

San Diego Fairy Shrimp

All the vernal pool complexes supporting San Diego fairy shrimp on Chiquita Ridge and along Radio Tower Road, including their contributing hydrological sources would be avoided per County mitigation requirements set forth in GPA/ZC EIR 589. Mitigation Measure 4.9-35 states: "Prior to issuance of a grading permit for Planning Area 5, the Project Applicant shall demonstrate to the satisfaction of the County's Director of Planning Services Department or his/her designee that all vernal pools in the Trampas Sub-basin have been avoided."

Riverside Fairy Shrimp

All the vernal pool complexes supporting Riverside fairy shrimp on Chiquita Ridge and along Radio Tower Road, including their contributing hydrological sources would be avoided per County mitigation requirements set forth in GPA/ZC EIR 589. Mitigation Measure 4.9-35 states: "Prior to issuance of a grading permit for Planning Area 5, the Project Applicant shall demonstrate to the satisfaction of the County's Director of Planning Services Department or his/her designee that all vernal pools in the Trampas Sub-basin have been avoided."

TABLE 6-6
SENSITIVE AQUATIC SPECIES IMPACTS BY ALTERNATIVE

Species	RMV Planning Area (locations)	Impacts (locations)		
		Alternative B-8	Alternative B-10 Modified	Alternative B-12[a.]
Wildlife				
Arroyo Toad	see text	0	0	0
Cooper's Hawk	23	1	5	4
Least Bell's Vireo	31	0	0	0
Long-eared Owl	4	0	0	0
Riverside Fairy Shrimp	2	1	1	1
San Diego Fairy Shrimp	3	1	1	1
Southwestern Pond Turtle	12	2	2	3
Southwestern Willow Flycatcher	6	0	0	0
Two-striped Garter Snake	7	0	1	0
Western Spadefoot Toad	15	5	5	5
White-tailed Kite	14	1	2	2
Yellow Warbler	17	0	0	0
Yellow-breasted Chat	75	7	10	8
Plants				
Beaked Spikerush				
Locations	2	0	1	0
Individuals	1,501	0	1	0
Coulter's Saltbush				
Locations	34	0	4	9
Individuals	3,086	0	9	565
Fish's Milkwort				
Locations	1	0	0	0
Individuals	5	0	0	0
Mud Nama				
Locations	3	2	2	2
Individuals	9,850	9,500	9,500	9,500
Salt Spring Checkbloom				
Locations	3	1	3	3
Individuals	1,503	3	532	532
Southern Tarplant				
Locations	38	0	11	11
Individuals	146,067	0	23,751	12,386
Upright Burhead				
Locations	1	0	0	0
Individuals	1	0	0	0

a. As previously discussed this represents an overstated impact analysis and ultimate impacts will be less due to the limitations on development in Planning Areas 4 and 8, and orchards in Planning Areas 6 and 7.

Arroyo Toad

All of the alternatives would retain all of the arroyo toad breeding sites along floodplains and creek bottoms, including major and important populations in key locations in San Juan Creek, lower Gabino Creek, lower Cristianitos Creek, and Talega Creek.

Regarding the use of upland areas for foraging and over-wintering, arroyo toad activity in San Juan Creek largely is confined to the flood prone areas of the creek (Ramirez, 2003) in which no development would occur under any alternative scenario. For lower Gabino Creek, lower Cristianitos Creek, and Talega Creek, the 80-foot contour cited in the 2001 critical habitat designation (which has been incorporated by reference into the final critical habitat designation and corrected to 82-feet or 25 meters [Federal Register 70 19563]) was used as a planning guideline for siting development that would avoid and minimize impacts to upland foraging and estivation habitat. According to the 2001 critical habitat designation for the arroyo toad:

> *The width of the upland component of critical habitat varies based on topography. The habitat widens in broad alluvial valleys and narrows in places where streams run through constricted canyons or between surrounding hills*" (Federal Register 66 9420)
>
> *Although the upland habitat use patterns of this species are poorly understood, activity probably is concentrated in the alluvial flats (areas created when sediments from the stream are deposited) and sandy terraces found in valley bottoms of currently active drainages (Service 1999, Griffin et al. 1999, Sweet in litt., 1999, Ramirez 2000, Holland and Sisk 2000)*" (Id. 9415)

The 80-foot contour was cited in the 2001 designation of critical habitat for the arroyo toad because studies had consistently shown that the majority of toad activity adjacent to breeding areas is in areas below 80 feet above the stream courses and that areas below 80 feet "were most likely to contain primary constituent upland habitat elements that are essential to arroyo toads." (Federal Register 66 9420) That is, where stream courses are bound by steep slopes, toads tend to limit their activity to areas near the stream course. Where breeding areas are bound by flatter terrain, toads may move much farther from the stream course. Because the breeding areas in Talega and Gabino Canyons are bound by steep slopes that rise more than 80 feet above the stream courses, it was appropriate to use the 80-foot contour as a planning guideline for siting development that would avoid and minimize impacts to upland foraging and estivation habitat.

Development adjacent to the Talega toad populations under the B-10 Modified Alternative would be above the 80-foot contour. The development footprint adjacent to the Talega toad population under the B-12 Alternative would be established in coordination with CDFG and USFWS with input from the environmental community after five years of arroyo toad telemetry studies to determine upland habitat use. No impacts to the Talega toad population are anticipated to result from the development of 500 acres within this sub-basin. For the lower Gabino and lower Cristianitos populations, the B-10 Modified Alternative development would occur above the referenced 80-foot contour. The implementation of 50 acres of orchards provided for by the B-12 Alternative within the Cristianitos Sub-basin in the locations depicted on Figure 2-3 is not anticipated to result in impacts to the Cristianitos toad population as these areas are outside of the occupied toad habitat. No impacts to these populations would occur under the B-8 Alternative as this alternative does not propose development in the Cristianitos or Talega Sub-basins. Potential indirect effects from the Alternatives B-10 Modified and B-12 include hydrologic conditions of concern such as changes in rates of erosion or sedimentation and the generation of pollutants of concern such as heavy metals or pesticides. These potential impacts

are discussed later in this chapter. For the broader stream course of San Juan Creek, development setbacks were developed based on field studies (Ramirez 2000) for B-10 Modified Alternative and input by the USACE and USFWS for the B-12 Alternative.

Southwestern Willow Flycatcher

The alternatives would have no effect on habitat known to be occupied by the southwestern willow flycatcher. No significant impacts are anticipated.

Least Bell's Vireo

None of the alternatives would result in direct impacts to least Bell's vireo locations.

American Peregrine Falcon

The loss of foraging habitat (primarily wetland/riparian areas) associated with the alternatives would contribute to the ongoing regional and local loss of foraging habitat for the American peregrine falcon. However, due to the limited impacts resulting from the alternatives compared to the amount of similar foraging habitat available in the region and within the open space associated with the alternatives, specifically the Aquatic Resources Conservation Areas, the loss of habitat in the SAMP Study Area is not likely to adversely affect the American peregrine falcon. Therefore, there would be no significant effect on foraging habitat for this species.

Southern Steelhead

Southern steelhead habitat considerations within the San Juan Watershed and the western portion of the San Mateo Watersheds are discussed in the report titled *Geomorphic and Hydrologic Needs of Aquatic and Riparian Endangered Species: San Juan and Western San Mateo Watersheds* is provided in Appendix G.

The following information regarding the potential habitat information is from Appendix G.

> *The habitat requirements of southern steelhead are similar to those of more northern steelhead stock. However, Higgins (1991) suspected that southern steelhead have greater physiological tolerances of warmer and more variable conditions commonly encountered in southern California streams.*
>
> 1. *Major streams in southern California originate in the coastal mountains and often cross broad alluvial areas before flowing into the sea. Low-elevation alluvial flats are characterized by intermittent, warm surface waters with fluctuating temperatures, making them inhospitable as spawning areas for southern steelhead. Historically, these areas may have been important to steelhead for spawning and rearing in wet years when temperatures remained low late into the year. Today, only the higher elevation headwaters that are characterized by perennial flow are the primary spawning and rearing areas for steelhead (Moyle et al. 1995). CDFG (2000) reported that the best habitat for steelhead is considered to be within the Cleveland National Forest from the upper San Mateo Creek gauging station to a point approximately 4 km (2.5 mi) upstream (there is no hydrologic connection between this area and the sub-basins within the study area).*
>
>   *Many historic steelhead spawning areas have been degraded by excessive sedimentation from upstream agricultural runoff, surface water impoundments or*

> *diversions, or groundwater pumping that consequently increases infiltration and storage and leaves reaches of the streambed dry (Moyle et al. 1995). Individually, the production capability of small coastal streams such as San Mateo Creek may be relatively small compared to large, perennial river systems, but collectively they provide a means to ensure a greater diversity of subpopulations, and for range expansion and recovery after drought or other perturbations have reduced population numbers. Thus, utilization of these habitats increases the likelihood of the long-term persistence of the metapopulation and is even more critical now that habitat of many southern California streams has become severely impacted or eliminated due to water development and adverse land-use practices.*
>
> *Southern steelhead typically migrate as two-year-old juveniles from freshwater to the ocean and then reside in marine waters from two to three years before returning to their natal, freshwater stream to spawn as four- to five-year-olds (*National Marine Fisheries Service *1997). This behavior of anadromy separates this species from the commonly occurring freshwater rainbow trout.*

Information from PCR et al, 2002 and other information regarding steelhead within San Mateo Creek and San Juan Creek are summarized below:

***San Mateo Creek*.** San Mateo Creek Watershed historically supported steelhead runs from the creek mouth up to 8 miles upstream. At one time, San Mateo Creek was an important steelhead producing stream to the extent that it supported significant local fisheries of both juveniles and adults (Hubbs, 1946). Through the late 1940s, steelhead populations likely exceeded 10,000 individuals and adults as large as 20 pounds were observed. A February 2000 report prepared by CDFG for the National Marine Fisheries Service entitled *Steelhead Rainbow Trout in San Mateo Creek, San Diego County*, describes changes in habitat conditions since the 1940s as follows: There were fewer observations of juvenile steelhead/rainbow trout in San Mateo Creek after 1950. Trout were found from the lagoon to the headwaters at Los Alamos Canyon during a Department survey on September 1, 1979. Woelfel (1991) reported anecdotes of juvenile steelhead/rainbow trout presence in pools in the upper drainage during the early 1980s, and of a few steelhead adults captured by a local resident in the lower creek in 1986. However, no juvenile steelhead/rainbow trout were found in San Mateo Creek by Woelfel during surveys in 1987 and 1988.

The San Mateo Creek steelhead population was probably reduced periodically by natural episodes of sediment input from within the watershed. However, increased groundwater extraction in the lower creek area since the mid-1940s (including on the part of MCB Camp Pendleton) is responsible, both directly and indirectly, for the inability of steelhead to use the system as they have historically (Lang et al. 1998). Riparian vegetation has been lost, the stream channel width has increased, and surficial flow has been eliminated during most years. Thus, the migration corridor for immigrating adult steelhead and emigrating smolts has become very unreliable. Recent human-caused fires farther upstream resulted in large sediment inputs which filled in pools and the lagoon, both of which are important rearing habitats for juvenile steelhead. Fish faunal surveys in San Mateo Creek in 1995, 1996, and 1997 failed to find steelhead (Lang et al. 1998).

Lower San Mateo Creek (within MCB Camp Pendleton) contains runs, low gradient riffles, mid-channel pools, and lateral scour pools associated with bedrock throughout the drainage network (Lang et al. 1998). Suitable spawning and rearing habitat occurs on San Mateo Creek downstream of the SAMP Study Area and in Devil Canyon located within the Cleveland National Forest (Lang et al. 1998), in an area with granitic bedrock that sustains springs and base flows

more effectively than other terrains in the San Mateo Creek Watershed. Between March 3 and September 3, 1999, CDFG biologists observed 78 steelhead trout in San Mateo Creek. The majority of these observations occurred in the reach between the upper gauging station and the confluence with Devil Canyon Creek. Four steelhead trout were observed in San Mateo Creek above the confluence with Devil Canyon Creek, one of which was observed 2.5 miles above the confluence. Four steelhead trout were observed in Devil Canyon Creek (CDFG 2000). CDFG did not conduct mark-and-recapture studies, so the precise population size cannot be estimated; however, it is believed to be quite low (CDFG 2000). The best habitat for steelhead is considered to be from the upper gauging station to a point approximately 2.5 miles upstream, as this area typically contains numerous perennial pools connected by surficial flow (CDFG 2000).

Nehlsen et al. (1991) classified the San Mateo Creek steelhead population as extinct. Although conditions in the lower creek system, as described above, render the stream conducive to anadromy on a less frequent basis than it was prior to extensive groundwater pumping and development, it is recognized that the upstream spawning and rearing areas are functional for steelhead production, and that they are still used when sufficient flow allows passage of immigrating adults.

Cristianitos, Gabino, La Paz, and Talega Creeks are the main tributaries within the western portion of the watershed that are within in the SAMP and NCCP/MSAA/HCP study areas. None of these creeks has historically supported or currently supports steelhead runs (Lang et al. 1998). Furthermore, sub-basins in the upper, western portion of San Mateo Creek, such as Gabino and La Paz, are underlain by bedrock formations that yield low amounts of base flow. The dry nature of these sub-basins combined with their steep slope (which promotes rapid runoff) makes it unlikely that they can retain flow late enough into the summer to support steelhead spawning.

San Juan Creek. The CDFG has performed some fieldwork focused on the presence of native fish (including arroyo chub and three-spine stickleback) in the San Juan Creek Watershed in recent years. No southern steelhead individuals were found during these surveys.

The potential presence of southern steelhead has been documented in the Arroyo Trabuco, a tributary to San Juan Creek, south of the I-5 underpass, which is approximately 31,680 feet (6 miles) from the SAMP Study Area boundary (CDFG, November 25, 2003 letter to the National Oceanic and Atmospheric Administration). The CDFG letter acknowledges the barrier of the I-5 underpass as a “complete barrier to upstream migration of steelhead” at this location. The USACE’s understands that genetic studies are currently underway to confirm the initial identification of steelhead in the Arroyo Trabuco; however the results of these studies are not available. Steelhead have not been documented in San Juan Creek within the SAMP Study Area limits during decades of various biological surveys along San Juan Creek, including surveys specifically designed to detect fish species. In addition, there is no anecdotal information from fishing records within San Juan Creek in the RMV Planning Area for the steelhead.

On September 2, 2005, the National Oceanic and Atmospheric Administration published a final rule for the designation of critical habitat for seven Evolutionary Significant Units (ESUs) of Pacific Salmon and Steelhead in California (Federal Register 70 170). According to the final rule, several watershed units (490121, 490122, 490125, 490126 and 490128) including Trabuco, Upper Trabuco, Middle Trabuco, Upper San Juan, Mid upper San Juan and Middle San Juan “were determined to be unoccupied” (Federal Register 70 179) and as a result of this determination several miles of Trabuco and San Juan creeks were removed from the proposed critical habitat designation. Therefore, no critical habitat for the steelhead is designated within

the RMV Planning Area; however, critical habitat is designated in the SAMP Study Area on lower San Juan and lower Arroyo Trabuco.

None of the alternatives would hinder the species survival and recovery in the southern portion of the Evolutionary Significant Units' (ESUs) range for steelhead. Each alternative proposes a circulation system that would result in a bridge structure across San Juan Creek in new two locations. Limited modifications to San Juan Creek in the form of bridge piers for these crossings would occur; however, these modifications are not anticipated to impede potential fish passage through the RMV Planning Area to the upper watershed. Fish passage downstream of the RMV Planning Area is questionable as, as noted above, CDFG regards the barrier of the I-5 underpass as a "complete barrier to upstream migration of steelhead." Therefore, this barrier (the I-5 underpass) would require modification to provide for potential fish passage. It is the USACE's understanding that Trout Unlimited has applied for a state grant to examine the feasibility of a fish ladder at the I-5 underpass. The remaining potential issue with regard to fish passage is the existing RMV Planning Area earthen/pipe crossing of San Juan Creek (known as "Cow Camp Crossing") which CDFG and the National Marine Fisheries Service (John O'Brien, CDFG and Stan Glowacki, NMFS, pers com) have noted may pose difficulties for potential fish passage. This issue is addressed in greater detail in Chapter 8.0 for those alternatives carried forward for further review. Potential benefits to steelhead which would result from the Aquatic Resources Conservation Program include proposed restoration/management actions such as invasives species control *Arundo donax* (removal and bullfrog control).

6.2.2.3 Impacts to Special Status Aquatic Species

Cooper's Hawk

Impacts to Cooper's hawk nest locations vary from 5 locations out of 23 total RMV Planning Area nest locations associated with the B-10 Modified alternative, 4 locations associated with the B-12 Alternative, and 1 location associated with the B-8 Alternative. Impacts to suitable riparian habitat vary from a high of approximately 116 acres for the B-12 Alternative (under the overstated impact analysis scenario) to a low of 57 acres for the B-8 Alternative. The loss of a foraging/nesting habitat and historic nesting locations would contribute to the ongoing regional and local loss of habitat for the Cooper's hawk, however such losses are not considered significant in light of the conserved nest locations and foraging/nesting habitat.

Long-eared Owl

A habitat-based analysis of loss and conservation of long-eared owl habitat is difficult because of this species' apparent sensitivity to urban development and scientists' lack of understanding of the causal factors that may contribute to this sensitivity (e.g., human harassment of nest sites, loss of foraging habitat); the observed correlation between urban development and nest abandonment does not identify causal factors. A blanket criterion that assumes loss of all viable nest sites within 3,280 feet of any urban development may be too general to be meaningful because it does not take into consideration causal factors and does not include the potentially mitigating effects of steep terrains and elevation differences. Because of a lack of the necessary information, developing a valid habitat suitability index or population viability model for this species for the purpose of this EIS is not considered feasible.

In Bloom's (1994) study of the biology and status of the long-eared owl in coastal southern California, Bloom noted that he had never found an active long-eared owl nest within 3,280 feet of a residential street and he therefore considered any historic nest sites within this distance to be abandoned. It is important to understand that Bloom's observation just notes a correlation

and does not identify the direct cause(s) of these abandonments. There are four historic long-eared owl nest sites on the RMV Planning Area: one just south of Sulphur Canyon, one in middle Gabino Canyon, one in lower La Paz Canyon, and one in lower Cristianitos Canyon at the southern boundary of the RMV Planning Area. Perhaps because Ortega Highway is parallel to San Juan Creek, no long-eared owl nesting sites are known from this area. A fifth nest site is located in Talega Canyon on MCB Camp Pendleton just south of the RMV Planning Area and southeast of the RMV Proposed Project's Planning Area 8; this nest site is included in this alternatives analysis.

Using the 3,280-foot criterion following Bloom (1994), two of the four historic nest sites on the RMV Planning Area are considered abandoned; the Cristianitos site is adjacent to existing Talega residential development and the Sulphur Canyon site is about 2,000 feet south of existing residential development in Coto de Caza. The remaining two nest sites on the RMV Planning Area considered "active" under Bloom's criterion are in middle Gabino Canyon and lower La Paz Canyon. The nest site in Talega Canyon on MCB Camp Pendleton is considered active. Under all of the alternative scenarios, the lower La Paz Canyon site would be considered protected using Bloom's criterion.

The middle Gabino site would be 3,220 feet and 2,290 feet, respectively, south of the estate lots assumed under the B-10 Modified Alternative. Under the B-10 Modified Alternative, the 3,22-foot distance does not meet the 3,280-foot criterion, however, the effect of implementation of ten estate lots is not be considered as severe an impact as conventional residential development and the nesting site may remain active.

Alternatives B-10 Modified and B-12 propose development in Talega Canyon. Under the B-10 Modified Alternative, the Talega Canyon nest site is 3,565 feet from proposed estate residential development in the eastern portion of Planning Area 8 and 5,610 feet from proposed conventional residential development in the western part of Planning Area 8. Also, this nesting site would be separated from proposed development on the mesa in Planning Area 8 by an approximately 400 foot change in elevation, providing some additional physical separation between the nest site and development. Therefore, the site is expected to remain active. While the exact footprint of development with the Talega Sub-basin under the B-12 Alternative has not been defined, the prior discussion would apply to the entire planning area and therefore represents an overstated impact scenario. No significant impacts to the long eared owl would occur with the proposed alternatives.

White-tailed Kite

There are 14 historic nest site locations for white-tailed kites recorded on the RMV Planning Area. The alternatives would impact one (B-8 Alternative) or two historic (B-10 Modified and B-12 Alternatives) nest site locations. Depending on the alternative, loss of potential foraging and nesting riparian habitat varies from a high of 116 acres associated with the B-12 Alternative (under the overstated impact analysis scenario) to a low of 57 acres associated with the B-8 Alternative. However, such losses are not considered significant because this species does not have nesting fidelity, and because of the conserved nest locations and conserved riparian foraging/nesting habitat. Further, state law prohibits the take of active nests.

Tricolored Blackbird

Three locations of breeding/foraging areas for the tricolored blackbird occur on the RMV Planning Area: the "Narrows" area of Chiquita Canyon, the "Riverside Cement" colony in Lower Cristianitos and Lower Gabino Canyons, and at the mouth of Verdugo Canyon. The B-10

Modified Alternative would result in impacts to the Chiquita "Narrows" area; this impact is not considered significant due to its limited extent. Alternatives B-8 and B-12 would not impact the tri-colored blackbird.

Yellow-breasted Chat

Seventy-five locations of the yellow-breasted chat occur on the RMV Planning Area. The B-8, B-10 Modified, and B-12 Alternatives would impact 7, 10, and 8 known locations of yellow-breasted chats, respectively. The loss of potential riparian habitat for this species varies from a high of approximately 116 acres with the B-12 Alternative (under the overstated impact analysis scenario) to a low of approximately 57 acres with the B-8 Alternative. However, this loss is not considered significant in light of the conserved riparian habitat within both the RMV Planning Area and the overall SAMP Study Area.

Yellow Warbler

Seventeen locations of the yellow warbler occur on the RMV Planning Area. The B-8, B-10 Modified, and B-12 Alternatives would not impact known locations of yellow warblers. The loss of potential riparian habitat for this species varies from a high of approximately 116 acres with the B-12 Alternative (under the overstated impact analysis scenario) to a low of approximately 57 acres with the B-8 Alternative. This loss is not considered significant because of the conserved riparian habitat in both the RMV Planning Area and the overall SAMP Study Area.

Western Spadefoot Toad

The proposed alternatives would impact 5 of the 15 known locations of spadefoot toads on the RMV Planning Area. All of the alternatives would impact the locations associated within Planning Areas 1 (2 locations) and 5 (3 locations). Alternatives B-10 Modified and B-12 would impact the location in Planning Area 4. Impacts to western spadefoot toad are considered significant.

Southwestern Pond Turtle

The proposed alternatives would impact between 2 and 3 of the 12 known locations of spadefoot toads on the RMV Planning Area. Impacts to the two locations of the southwestern pond turtle next to the Color Spot Nursery associated with all alternatives are not considered significant because these locations are already degraded by nursery operations. For the B-12 Alternative, one location is within the area identified as potential orchard. However, the pond turtle location would be avoided and no significant impacts to southwestern pond turtle would occur because the wetland land habitat would be avoided.

Two-Striped Garter Snake

Seven locations occur in the RMV Planning Area. One location would be impacted by the B-10 Modified Alternative. The alternatives would directly impact riparian habitat that provide habitat for the two-striped garter snake. Loss of potential riparian habitat for this species varies from a high of approximately 116 acres with the B-12 Alternative (under the overstated impact analysis scenario) to a low of approximately 57 acres with the B-8 Alternative. The impacts to suitable habitat for these species are considered less than significant because of the amount of habitat loss relative to the availability of habitat for these species in the region and the amount of potential habitat that would be conserved and managed as part of the proposed Aquatic Resources Conservation Programs.

Arroyo Chub

Within the RMV Planning Area, arroyo chub habitat in San Juan Creek and Cañada Gobernadora would be subject to temporary alteration or diversion to accommodate grading and construction for the circulation system of the associated with the RMV Planning Area development alternatives. These activities would result in indirect impacts. Suitable habitat for the arroyo chub in Cañada Gobernadora is approximately 3,280 feet (1,000 meters) upstream of the potential impact areas and would not be affected by construction activities. Construction along or across San Juan Creek could potentially impact the quality of the natural habitats supporting the arroyo chub. Factors that could potentially impact these areas include: (a) the blockage or diversion of water flow in San Juan Creek, (b) increased siltation from grading or movement of construction equipment, and (c) degradation of water quality by the disturbance of anaerobic (low oxygen) sediments. Because most of the high quality habitat areas are upstream of the RMV Planning Area in Caspers Wilderness Park (including Bell Canyon) and extending into the Cleveland National Forest, the potential impacts would not be considered substantial.

Finally, as discussed for the steelhead, fish passage through the existing RMV Planning Area's earthen/pipe crossing of San Juan Creek (known as "Cow Camp Crossing"), which CDFG and NFMS have noted, may pose difficulties for potential fish passage. This issue is examined in greater detail in Chapter 8.0 of this EIS. Potential benefits to arroyo chub, which would result from the Aquatic Resources Conservation Program include proposed restoration/management actions such as invasive species control including giant reed removal and bullfrog control.

Coulter's Saltbush

Thirty-four locations totaling 3,086 individuals are known on the RMV Planning Area. Alternative B-8 would not result in impacts to Coulter's saltbush. Alternatives B-10 Modified and B-12 would result in impacts to 4 locations and 9 individuals and 9 location and 565 individuals, respectively. These limited impacts are not considered significant.

Southern Tarplant

A total of 39 locations totaling 145,067 individuals of southern tarplant are known on the RMV Planning Area. Alternative B-8 would not impact the southern tarplant. Alternatives B-10 Modified and B-12 would impact 11 locations and 23,726 individuals and 11 locations and 2,311 individuals, respectively. The impacts resulting from implementation of Alternatives B-10 Modified and B-12 would be considered significant.

Salt Spring Checkerbloom

One location, including three individuals of Salt Spring checkerbloom in Gobernadora Canyon, would be impacted by Alternative B-8. Alternatives B-10 Modified and B-12 would impact all 3 locations on RMV and 532 individuals (one population would be partially impacted). Impacts to the single location in Gobernadora Canyon would be considered less than significant because of the limited number of individuals impacted. The B-10 Modified and B-12 Alternatives would result in significant impacts to this species.

Mud Nama

Two locations, containing a large number of this species (9,500 individuals) would be impacted by all of the alternatives. This is considered a significant impact.

Beaked Spikerush

Impacts to beaked spikerush on the RMV Planning Area would result from implementation of the B-10 Modified Alternative (one location and one individual). This very limited impact is considered less than significant. Neither the B-8 Alternative nor the B-12 Alternative would impact beaked spikerush locations.

Upright Burhead

The one location of upright burhead on the RMV Planning Area would not be impacted by the alternatives. Therefore, there would be no significant impact on this species.

Fish's Milkwort

The one location of Fish's milkwort on the RMV Planning Area would not be impacted by any of the alternatives.

6.2.2.4 Impacts to Common Aquatic Species

Mountain Lion

While not an aquatic dependant species, this species is reviewed here because of its use of riparian corridors for movement throughout its home range. The mountain lion is considered a planning species in that it can function as a surrogate for other smaller species which use the same habitats for either movement habitat or live in habitat. Grassland, scrub, chaparral, riparian, and woodland communities are potential habitat for mountain lion. Riparian areas are particularly favored as movement corridors. Under all alternative scenarios, potential foraging habitat for the mountain lion would be impacted. The B-8 Alternative would result in the least impacts to potential habitat and the B-10 Modified Alternative would result in the most impacts. This loss, combined with habitat fragmentation associated with development and roads would reduce and restrict the use of the RMV Planning Area by the mountain lion compared to existing conditions. The cumulative loss of habitat in the RMV Planning Area could contribute to a decline in the population, but is highly unlikely to be the cause of it dropping below unsustainable levels within the context of the landscape-level conservation issues for the mountain lion. Based on population viability modeling by Beier (1993), the Santa Ana Mountains lion population the inhabits 275,158 acres currently in protected open space (including Cleveland National Forest, MCB Camp Pendleton, and Caspers Wilderness Park) is "demographically unstable" and at a high risk of extinction.[2] Beier states that "A movement corridor allowing immigration from the adjacent population and intra-range corridors would greatly enhance the prognosis" for this population." Beier concludes that, "If a wildlife movement corridor is available to allow immigration of up to three males and one female per decade an area as small as 600-1,600 km^2…can support a cougar population without significant extinction risk in 100 years." The movement corridor Beier refers to is at the eastern extent of the Santa Ana Mountains range and connects to the Palomar Range. Even without including the RMV Planning Area as part of protected land uses for the viability analysis, Beier concludes that with a functional connection to the Palomar Range, the extinction risk for the Santa Ana Mountain lion population would not be significant. However, given the critical importance of the eastern movement corridor for conserving this population, conservation of the entire RMV Planning Area (22,815 acres) would only increase the protected suitable habitat by 8 percent and would not be enough to significantly reduce the risk of extirpation of this population. Therefore, the key to

[2] Beier. P. 1993. Determining minimum habitat areas and habitat corridors for cougars. Conservation Biology 7:94-108.

sustaining the Santa Ana Mountains lion population is not conserving the RMV Planning Area, but functionally connecting the Santa Ana Mountains to the Palomar Mountains.

Nonetheless, the proposed conservation of open space in large habitat blocks under each of the alternatives would provide additional protected "live-in" habitat mountain lion habitat and important habitat linkages and movement corridors linking to Caspers Wilderness Park, the Cleveland National Forest, and MCB Camp Pendleton. Of all the alternatives, the B-8 Alternative would be the least restrictive to mountain lion movement. The B-12 Alternative may be restrictive in the San Juan Watershed, but would not be in the San Mateo Watershed. Although the risk of vehicle collisions may increase with additional traffic and roads, these impacts would be minimized to the extent possible by the siting and design of roads to protect linkages and movement corridors, as outlined in General Policy 4 described in Section 3 of the NCCP Planning Guidelines and Minimization/Avoidance Measures 4.9-22 and 4.9-23 in Final GPA EIR 589/ZC which provide guidelines for the design of bridges and culverts to accommodate wildlife movement, including mountain lion. Although box culverts may not be as desirable as bridge overpasses for wildlife movement because they are more constricted, there is evidence that mountain lions (Beier 1995; Beier and Barrett 1993) as well as mule deer, bobcats, and smaller species (Haas and Crooks 1999; Dudek 1995) will use culverts with dimensions of at least the minimum specified 15 x 15 feet.[3,4,5,6] All proposed road crossings of the major identified movement corridors for the mountain lion, as identified by Beier and Barrett (1993) and Michael Brandman Associates (Michael Brandman Associates 1996),[7] during SR-241 South studies would be bridge structures that exceed the design standards stated above.

Regarding mountain lions' willingness to use identified movement corridors, dispersing mountain lions apparently are quite flexible in finding travel routes, although it is preferable to maintain movement corridors in known travel routes (Foster and Humphrey 1995). Beier (1995) recommends that corridor widths designed for mountain lions should be more than 328 feet wide if the total distance to be spanned is less than 2,600 feet and greater than 1,312 feet wide for distances of (3,280 to 22,966 feet). All important movement corridors for mountain lion identified in the SAMP Study Area (i.e., linkages C, D, G, H, I, J, L, M, O, P, and Q) as identified in the Southern Planning Guidelines and the Watershed Planning Principles would exceed these minimum standards under the B-8 and B-12 Alternatives. The B-10 Modified Alternative includes a 300-foot-wide setback from the edge of the 100-year floodplain which provides a minimum 1,100-foot wide corridor for a distance of 5,150 linear feet. This corridor would not meet the standards recommended by Beier. By comparison, the B-12 Alternative provides the Beier recommended 1,312-foot-wide (400 meter) corridor setbacks between Planning Area 3 and 4.

American Bittern, Least Bittern, and White-Faced Ibis

The alternatives would directly impact wetland communities that provide potential habitat for the American bittern, least bittern, and white-faced ibis. The B-8 Alternative would result in approximately 7.7 acres, the B-10 Modified would result in 8.9 acres, and the B-12 Alternative

3 Beier, P. 1995. Dispersal of juvenile cougars in fragmented habitat. Journal of Wildlife Management 59:228-237.

4 Beier, P. and R.H. Barrett. 1993. *The Cougar in the Santa Ana Mountain Range, California*. Final Report, Orange County Cooperative Mountain Lion Study. 104 pp + Appendices.

5 Haas, C. and K. Crooks. 1999. *Carnivore Abundance and Distribution throughout the Puente/Chino Hills*. Prepared for The Mountains Recreation and Conservation Authority and State of California Department of Transportation. 64 pp. + Appendices

6 Dudek. 1995. *Southern Subregion NCCP Wildlife Corridor Survey*. Prepared for the Santa Margarita Company.

7 Michael Brandman Associates 1996. *Draft Natural Environmental Study for Foothill Transportation Corridor-South*. Prepared for the Orange County Foothill Transportation Corridor Agencies.

would result in 9.4 acres of lost wetland communities potentially supporting these species. The impacts to suitable habitat for these species is considered less than significant because the loss of potential habitat would not substantially reduce populations of these species in the SAMP Study Area or throughout their distribution in southern California.

California Gull, Osprey, American White Pelican, and Double-Crested Cormorant

The alternatives would directly impact the open water communities that provide potential habitat for the California gull, osprey, American white pelican, and double-crested cormorant. The ONIS mining facility (Planning Area 5) is the largest permanent largest open water body within the RMV Planning Area and under all alternatives this water body would be impacted. It should be noted that closure of the mine would eliminate this water body. Impacts to suitable habitat for these species is considered less than significant because the loss of potential habitat would not substantially reduce populations of these species in the SAMP Study Area or throughout their distribution in southern California.

Summer Tanager

The alternatives would directly impact woodland and riparian communities that provide potential habitat for the summer tanager. The B-10 Modified Alternative would result in the highest impacts to potential habitat for these species; while the B-8 Alternative would result in the least (Tables 6-3 and 6-4). Impacts to suitable habitat for these species is considered less than significant because the loss of potential habitat would not significantly reduce populations of this species in the SAMP Study Area or throughout their distribution in southern California.

Purple Martin and Red-Breasted Sapsucker

The RMV Planning Area proposed development alternatives would directly impact woodland and riparian communities that provide potential habitat for the purple martin and red-breasted sapsucker. The B-10 Modified Alternative would result in the highest impacts to potential habitat for these species, while the B-8 Alternative would result in the least. The impacts to suitable habitat for these species is considered less than significant because the loss of potential habitat would not significantly reduce populations southern California of these species in the SAMP Study Area or throughout their distribution in.

Partially Armored Threespine Stickleback

Within the RMV Planning Area, San Juan Creek and Cañada Gobernadora would be subject to temporary alteration or diversion to accommodate grading and construction for the development alternatives' circulation system; this would result in indirect impacts. Suitable habitat for the stickleback in Cañada Gobernadora is approximately 3,280 feet (1,000 meters) upstream of the potential impact areas and would not be affected by construction activities. Construction along or across San Juan Creek could potentially impact the quality of the natural habitats supporting the stickleback. Factors that could potentially impact these areas include: (a) the blockage or diversion of water flow in San Juan Creek, (b) increased siltation from grading or movement of construction equipment, and (c) the degradation of water quality by the disturbance of anaerobic (low oxygen) sediments. Because most of the high quality habitat areas are upstream of RMV Planning Area in Caspers Wilderness Park (including Bell Canyon) and extending into the Cleveland National Forest, the potential impacts would not be considered substantial.

Finally, as discussed for the steelhead, fish passage through the existing RMV Planning Area's earthen/pipe crossing of San Juan Creek (known as "Cow Camp Crossing"), which CDFG and

NFMS have noted, may pose difficulties for potential fish passage. This issue is addressed in greater detail in Chapter 8.0 of this EIS. Potential benefits to the stickleback which would result from the Aquatic Resources Conservation Program include proposed restoration/management actions such as invasive species control including giant reed removal and bullfrog control.

6.2.3 FUNCTIONAL ASSESSMENT

One of the objectives of the Clean Water Act is to "maintain the chemical, physical, and biological integrity of the Nation's water." Historically, the USACE promoted this policy through maximizing avoidance of aquatic resources, minimization of adverse effects, and compensation of any unavoidable impacts through creation, restoration, and/or enhancement using area of impact as the unit of measure. As part of the SAMP, an alternate way of determining impacts involves using the landscape-level functional assessment, as described in subchapter 4.1.2.4, to measure the loss in functional integrity. In reference to baseline riparian conditions as summarized in subchapters 4.1.2.4, 4.2.2, 4.2.3, and 4.2.4, impact assessment using the landscape-level functional assessment measures the loss of functional integrity units rather than the loss of area (Appendix E-4). Functional integrity unit is the product of area and the integrity index score for the affected area. For a 2-acre riparian area achieving a functional integrity index score of 0.9 for hydrologic and 0.5 for habitat integrity, the riparian area would have 1.8 hydrologic integrity units and 1.0 habitat integrity units. Assessing impacts through the loss of integrity units based on the landscape-level functional assessment considers both direct and indirect impacts, something not achievable by measuring impacts solely on area.

The landscape-level functional analysis measures loss of integrity units for hydrologic, water quality, and habitat integrity. For the analysis assessing impacts using the landscape-level functional assessment, the loss of integrity units was determined caused by the direct loss of aquatic resources and caused by the direct loss of aquatic resources and changes to the surrounding landscape (e.g., increase in the amount of runoff-inducing impervious cover, removal of buffer zones, increased cover of pollutant-generating land covers, etc.). Similar to the analysis measuring the loss in area of wetland or riparian resource, the significance of an alternative for the landscape-level functional analysis is assessed after consideration of compensatory mitigation with net loss in functions indicating a significant impact occurred.

The loss of integrity units arising from direct impacts and from changes in the landscape would require different mitigation measures. The loss of integrity units from direct impacts would require actual replacement of lost functions and acres. This would involve measures such as wetland creation and restoration, removal of invasive exotic vegetation, and long-term management of aquatic resources. The loss of integrity units from landscape changes are the result of indirect impacts due to alterations in flow of water, pollutant generation, and buffers outside of the riparian area. These types of losses can be minimized through appropriate minimization measures to control indirect effects on hydrology, water quality, and habitat. Although the landscape-level functional assessment cannot explicitly calculate the ecosystem benefits from these types of minimization measures, implementation of appropriate minimization measures to levels similar to pre-project levels would satisfactorily minimize for indirect impacts to aquatic resources.

6.2.3.1 B-8 Alternative

In terms of direct impacts to riparian ecosystem integrity and as identified on Table 6-7, the B-8 Alternative would result in the lowest amount of impacts to hydrologic, water quality, and habitat integrity of the three reviewed alternatives. Implementation of this alternative would result in the

direct loss of 26.1 hydrologic integrity units, 21.1 water quality integrity units, and 18.1 habitat integrity units. The direct loss of these integrity units without any compensation is significant.

TABLE 6-7
LOSS OF INTEGRITY UNITS FROM DIRECT IMPACTS TO RIPARIAN REACHES

Alternative	Hydrology	Water Quality	Habitat
B-8	26.1	21.1	18.1
B-10 Modified	45.1	37.3	33.6
B-12	41.2	34.0	31.3

In terms of all impacts to riparian ecosystem integrity arising from direct impacts to riparian areas and changes in the surrounding landscape and as identified in Table 6-8, the B-8 Alternative would result in the lowest amount of impacts to hydrologic, water quality, and habitat integrity of the three reviewed alternatives. Implementation of this alternative would result in the loss of 177.5 hydrologic integrity units, 115.7 water quality integrity units, and 57.6 habitat integrity units. The loss of these integrity units without any compensation or minimization is significant.

TABLE 6-8
LOSS OF INTEGRITY UNITS FROM DIRECT IMPACTS TO RIPARIAN REACHES AND INDIRECT IMPACTS FROM CHANGES TO THE SURROUNDING LANDSCAPE

Alternative	Hydrology	Water Quality	Habitat
B-8	177.5	115.7	57.6
B-10 Modified	273.0	208.7	134.5
B -12	263.7	200.0	128.1

6.2.3.2 B-10 Modified Alternative

In terms of direct impacts to riparian ecosystem integrity, the B-10 Modified Alternative would result in the most impacts to hydrologic, water quality, and habitat integrity of the three reviewed alternatives. Implementation of this alternative would result in the loss of 45.1 hydrologic integrity units, 37.3 water quality integrity units, and 33.6 habitat integrity units (Table 6-7). The direct loss of these integrity units without any compensation is significant.

In terms of all impacts to riparian ecosystem integrity arising from direct impacts to riparian areas and changes in the surrounding landscape, the B-10 Modified Alternative would result in the greatest amount of impacts to hydrologic, water quality, and habitat integrity of the three reviewed alternatives. Implementation of this alternative would result in the loss of 273.0 hydrologic integrity units, 208.7 water quality integrity units, and 134.5 habitat integrity units (Table 6-8). The loss of these integrity units without any compensation or minimization is significant.

6.2.3.3 B-12 Alternative

A separate analysis evaluating impacts to functional integrity was not performed for the B-12 Alternative. Because the B-12 Alternative assumes an overstated impact scenario, particularly

for Planning Areas 4 and 8, it was not possible to precisely determine the impacts. Assuming the maximum impacts possible under the overstated scenario, the impacts would be similar to B-10 Modified Alternative with the exception of avoided areas under the B-12 Alternative for portions of Planning Area 2 and the entirety of Planning Areas 6 and 7. The impacts from the 25 acres of orchards and the proposed relocated Rancho Mission Viejo headquarters under the B-12 Alternative will avoid all wetlands, resulting in little discernible impacts to functional integrity of the riparian ecosystem. The results of the B-10 Modified Alternative without impacts to Planning Areas 6 and 7 are a good approximation for impacts under the B-12 Alternative.

In terms of direct impacts to riparian ecosystem integrity, the B-12 Alternative would result in an intermediate amount of impacts to hydrologic, water quality, and habitat integrity compared to the B-8 Alternative and the B-10 Modified Alternative. Implementation of this alternative would result in the loss of 41.2 hydrologic integrity units, 34.0 water quality integrity units, and 31.3 habitat integrity units. Because the B-12 Alternative is an overstated impact scenario, the actual amount of impacts would decrease as impact limits are determined for Planning Area 4 and Planning Are 8 in accordance with the acreage limits described in the project description.

In terms of all impacts to riparian ecosystem integrity arising from direct impacts to riparian areas and changes in the surrounding landscape, the B-12 Alternative would result in an intermediate amount of impacts to hydrologic, water quality, and habitat integrity compared to the B-8 and B-10 Modified Alternatives. Implementation of this alternative would result in the loss of 263.7 hydrologic integrity units, 200.0 water quality integrity units, and 128.1 habitat integrity units (Table 6-8). The loss of these integrity units without any compensation or minimization is significant.

6.2.4 CONSISTENCY WITH SAMP TENETS

This section of Chapter 6.0 examines the consistency of the alternatives with the SAMP Tenets developed by the USACE for the San Juan Creek and Western San Mateo Creek Watersheds SAMP. The SAMP Tenets are as follows:

(1) No net loss of acreage and functions of Waters of the U.S. and Waters of the State

(2) Maintain/restore riparian ecosystem integrity

(3) Protect headwaters

(4) Maintain/protect/restore riparian corridors

(5) Maintain and/or restore floodplain connection

(6) Maintain and/or restore sediment sources and transport equilibrium

(7) Maintain adequate buffer for the protection of riparian corridors

(8) Protect riparian areas and associated habitats of listed and sensitive species

Four consistency finding categories are used in this section and elsewhere in this chapter as follows:

1. **Consistent** means that the alternative would be fully consistent with the SAMP Tenet and would require no modification of the alternative. A finding of consistency would not be identified as a significant impact.

2. **Could be consistent** means that the alternative is not fully consistent with the SAMP Tenet, but would be consistent if the specified conditions or performance criteria are implemented. A finding of "could be" consistent would be identified as a potentially significant impact. Additional avoidance and minimization measures would need to be identified to reduce the identified impact to a level of less than significant.

3. **Not consistent** means that the alternative would not be consistent with one or more substantive provisions of a particular SAMP Tenet. A finding of "not" consistent would be identified as a significant impact for which mitigation would need to be set forth to reduce the identified impacts to a level of less than significant.

4. **Not applicable** means that the SAMP Tenet would not be relevant.

6.2.4.1 Alternative A-4

As described in Chapter 5.0, under this alternative, a SAMP would not be prepared. Instead of a SAMP, an applicant would submit for individual Section 404 permits or coverage under the existing Nationwide Permit Program for incremental project-by-project approvals. Because a SAMP would not be prepared under this alternative scenario and the applicant would apply for Section 404 permits incrementally over time as necessary, an analysis of the consistency of this alternative with the SAMP Tenets fashioned for a broader watershed scale is not warranted. This alternative is discussed later in this chapter in the context of the SAMP goals set forth in subchapter 1.1 and the SAMP “Purpose” set forth in subchapter 3.1.

6.2.4.2 Alternative A-5

As described in Chapter 5.0, the Alternative A-5 scenario obviates the need for a SAMP and permits under Section 404 by avoiding regulated Waters of the U.S, including wetlands, as required by Section 404 and NEPA. Therefore, it would not necessary to apply the SAMP Tenets to Alternative A-5 because no SAMP would be prepared under this alternative. However, a brief analysis of this alternative in relation to the SAMP Tenets illustrates that, while the A-5 Alternative would avoid regulated waters, it would not necessarily achieve larger watershed protection goals. Under Alternative A-5, there would be a net loss of acreage and functions (SAMP Tenet 1) through indirect effects such as lack of ecologically meaningful buffers and continuous riparian corridors (SAMP Tenet 4 and 7), decreased sediment production through development of sandy areas (SAMP Tenet 6), and development within headwater areas (SAMP Tenet 3). This alternative is also discussed later in this chapter in the context of the SAMP goals set forth in subchapter 1.1 and the SAMP “Purpose” set forth in subchapter 3.1.

6.2.4.3 Alternative B-8

SAMP Tenet 1: No Net loss of Acreage and Functions of Waters of the U.S./Waters of the State

Alternative B-8 has been designed to protect all the major riparian/wetlands systems throughout the RMV Planning Area. Therefore, the impacts to regulated Waters of the U.S. for this alternative would be less than the other “B” Alternatives: 7.7 acres of wetlands and 16.95 acres of Waters of the U.S. With respect to net acreage of Waters of the U.S., Alternative B-8 would

need to provide mitigation in the form of new restoration/creation of wetlands acreage equal to the loss of wetlands and non-wetlands waters associated with proposed development. Mitigation for these impacts is discussed conceptually in the Aquatic Resources Restoration Plan (Appendix F2) in potential habitat creation/restoration areas including GERA, Gobernadora Canyon, Gobernadora Canyon/Fertile Crescent, Sulphur Canyon, Chiquita Creek between the "Narrows" and the SMWD wastewater treatment facility, Chiquita Canyon between SMWD wastewater treatment facility, and Cow Camp Road. Stream restoration opportunities are identified within Gobernadora at the knickpoint, Chiquita Creek between the "Narrows" and the SMWD wastewater treatment facility, and upper Gabino Creek. Because of the limited amount of regulated waters that would be affected by this alternative, no net loss of acreage is considered achievable by this alternative.

This alternative would impact 56.6 acres of CDFG riparian habitat that would be addressed through the NCCP/MSAA/HCP.

Further analysis would be required to determine whether this alternative can maintain long-term function, particularly with regard to its ability to implement measures such as long-term control of invasive species (e.g., giant reed, tamarisk, and pampas grass) that presently impact aquatic resources.

SAMP Tenet 2: Maintain/Restore Riparian Ecosystem Integrity

With its focus on protecting the major canyon systems as well as the mainstem creeks, Alternative B-8 addresses the protection aspect of this tenet within all of the major creek systems.

SAMP Tenet 3: Protect Headwaters

Each of the mainstem headwaters areas not already urbanized is proposed to be protected as a part of Alternative B-8. The headwaters area of Trampas Creek is proposed for development, but this area has previously been significantly altered by existing mining operations. Proposed development would be required to include BMPs for stormwater flows. Tributary headwaters in the Gobernadora Sub-basin would be affected by this alternative.

SAMP Tenet 4: Maintain/Protect/Restore Riparian Corridors

All major riparian corridors within the RMV Planning Area would be protected under this alternative scenario. Further analysis would be required to determine whether Alternative B-8 could restore aquatic resources areas that are impacted under existing conditions (e.g., Gobernadora Creek, invasive species in San Juan Creek)

SAMP Tenet 5: Maintain/and or/Restore Floodplain Connection

Alternative B-8 would maintain all existing areas of floodplain connection. Further analysis would be required to determine whether this alternative could provide for the recommended restoration of the historic floodplain connection above the knickpoint in the Gobernadora Creek Sub-basin. Where longer term terrains/hydrology processes are responsible for areas with existing loss of floodplain connection (e.g., Chiquita Canyon at the "Narrows" and lower Gobernadora Creek below the knickpoint), Alternative B-8 does not propose any actions that would be contrary to such processes.

SAMP Tenet 6: Maintain and/or Restore Sediment Sources and Transport Equilibrium

Alternative B-8 proposes to protect all of the major sources of coarse sediment in order to assure the continued generation of such sediments important for riparian/wetlands habitat systems.

SAMP Tenet 7: Maintain Adequate Buffer for the Protection of Riparian Corridors

All major riparian corridors would be adequately buffered from development bubbles including Chiquita, Gobernadora, San Juan, Verdugo, Cristianitos, Talega, La Paz, and Gabino Creeks. No development is proposed in the Chiquita, Verdugo, Cristianitos, La Paz, Gabino, or Talega Sub-basins. Therefore, all riparian corridors associated with these creeks would be protected under the B-8 Alternative. Development is proposed along San Juan Creek. However, the development is limited in extent and would not act as an impediment to wildlife movement, including large mammals such as mountain lions, and would not preclude watershed-to-watershed movement by less mobile species such as the arroyo toad.

SAMP Tenet 8: Protect Riparian Areas and Associated Habitats of Listed and Sensitive Species

Riparian areas associated with listed species, other planning and sensitive species are proposed to be protected under this alternative.

Conclusion

On an overall basis, the B-8 Alternative is consistent with the SAMP Tenets. This alternative is not expected to result in significant impacts.

6.2.4.4 Alternative B-10 Modified

SAMP Tenet 1: No Net Loss of Acreage and Functions of Waters of the U.S./Waters of the State

The B-10 Modified Alternative has been designed to protect the major riparian/wetlands systems. Specifically, land uses associated with the B-10 Modified Alternative (i.e., residential, commercial) would avoid direct impacts to all mainstem creeks other than those associated with infrastructure (e.g., road crossings, drainage outfalls).

With regard to net acreage of Waters of the U.S./Waters of the State, the B-10 Modified Alternative would need to provide mitigation in the form of new restoration/creation of wetlands acreage equal to the loss of 9.1 acres of wetlands and 31.9 non-wetlands waters due to development. Potential mitigation for these impacts to maintain acreage and function in the locations noted in the SAMP Tenet 1 analysis for Alternative B-8 is reviewed in the Aquatic Resources Restoration Plan (Appendix F2).

Approximately 110 acres of CDFG riparian habitat would be affected by this alternative that would be addressed through the NCCP/MSAA/HCP.

The B-10 Modified Alternative is consistent with this tenet.

SAMP Tenet 2: Maintain/Restore Riparian Ecosystem Integrity

With its focus on protecting (as noted above) and, where feasible and beneficial, restoring as compensatory mitigation each of the major canyon systems as well as mainstem creeks, the B-10 Modified Alternative addresses this tenet.

SAMP Tenet 3: Protect Headwaters

Each of the mainstem headwaters areas not already urbanized or otherwise altered as a result of resource extraction or agricultural activities would be protected and/or restored, with the exception of a limited area in the headwaters area of the Cristianitos Sub-basin. The ten estate lots proposed to be located in the Gabino Sub-basin would not impact the headwaters. The headwaters area of Trampas Creek is proposed for development, but this area is has been significantly altered by existing mining operations. Impacts to tributaries in the Gobernadora Sub-basin would occur under this alternative.

With the exception of impacts to a small portion of the headwaters of Cristianitos Creek and impacts to minor tributaries of Gobernadora Creek, the B-10 Modified Alternative is consistent with this tenet.

SAMP Tenet 4: Maintain/Protect/Restore Riparian Corridors

All major riparian corridors would be protected including Chiquita, Gobernadora, San Juan (with a possible exception as explained below), Verdugo, Cristianitos (with a possible exception as explained below), Talega, La Paz, and Gabino Creeks. Regarding San Juan Creek, the B-10 Modified Alternative would provide for 300 foot setbacks in Planning Areas 3 and 4. However, these setbacks do not achieve the 1,312-foot-wide (400 meter) recommendations of Beier for large mammal (e.g., mountain lion) movement. Regarding Cristianitos Creek, while development in Planning Area 6 would be limited, the aquatic species movement corridors in this area may not be sufficient to support the movement (over long time periods) of less mobile species aquatic species such as the arroyo toad from the San Juan Creek Watershed to the San Mateo Creek Watershed.

With the exceptions noted for portions of San Juan Creek and a portion of Cristianitos Creek, the B-10 Modified Alternative is consistent with this tenet.

SAMP Tenet 5: Maintain/and or/Restore Floodplain Connection

The B-10 Modified Alternative would maintain all existing areas of floodplain connection. The B-10 Modified Alternative would provide for the recommended restoration of the meander in Gobernadora Creek, thereby helping restore historic floodplain connection. Where longer term terrains/hydrology processes are responsible for areas with existing loss of floodplain connection (e.g., Chiquita Canyon at the “Narrows” and lower Gobernadora Creek below the knickpoint), the B-10 Modified Alternative does not propose any actions that would be contrary to such processes. The B-10 Modified Alternative is consistent with this tenet.

SAMP Tenet 6: Maintain and/or Restore Sediment Sources and Transport Equilibrium

The B-10 Modified Alternative would: (a) protect all of the major sources of coarse sediment in order to assure the continued generation and transport of such sediments important for riparian/wetlands habitat systems (see Watershed Planning Principles consistency analyses), and (b) focus development on areas generating fine sediments in order to reduce the runoff of

fine sediments that can cause deleterious impacts on riparian/wetlands habitats and associated species (see also the discussion in the Watershed Planning Principles consistency analysis). The B-10 Modified Alternative is consistent with all of the vegetation restoration recommendations for areas with clay soils, including Sulphur Canyon, Upper Cristianitos Canyon, and Upper Gabino Canyon.

SAMP Tenet 7: Maintain Adequate Buffer for the Protection of Riparian Corridors

Under the B-10 Modified Alternative, most major riparian corridors would be adequately buffered from development. Major riparian corridors within the RMV Planning Area can be defined as Chiquita Creek, Gobernadora Creek, San Juan Creek, Verdugo Creek, Cristianitos Creek, Gabino Creek, La Paz Creek, and Talega Creek and would be protected in the following manner:

- Development in Planning Area 2 below the SMWD wastewater treatment plant would be set back a minimum of 350 feet to over 750 feet from Chiquita Creek. Above the wastewater treatment plant, development would be focused on ridge tops away from the creek. The golf course proposed for Planning Area 2 would have a setback ranging from a minimum of 50 feet to over 200 feet from Chiquita Creek.

- Development in Planning Area 3 would have a setback ranging from 180 to 1,000 feet from Gobernadora Creek which is confined to the western edge of the sub-basin below the knickpoint. A 300-foot-wide setback from the 100-year floodplain of San Juan Creek would buffer Planning Area 3 on the South and Planning Area 4 on the north/west from San Juan Creek. As noted above, this setback would not meet the recommendations by Beier for mountain lion movement along San Juan Creek.

- Verdugo Canyon would not be directly impacted by the proposed Planning Area 4 development thereby protecting the Verdugo Creek riparian corridor and its associated coarse sediments.

- No development is proposed in the La Paz Sub-basin under Alternative B-10 Modified; therefore, La Paz Creek would be protected.

- The ten estate lots proposed in the Gabino Sub-basin would be located over 1,000 feet from the western edge of Gabino Creek, and no development is proposed on the east side of Gabino Creek. Therefore, Gabino Creek would be protected.

- Cristianitos Creek would be buffered through the implementation of minimization measures which call for a minimum setback of 200 feet from the creek and an average setback of 500 feet for the proposed golf course. The golf course would provide a further buffer between residential uses and Cristianitos Creek. As noted above, development in Planning Area 6 may impact, on a long-term basis, watershed-to-watershed connectivity for less mobile aquatic species.

- Development in the Talega Sub-basin is centered on the current Northrop Grumman test site above the Talega Creek riparian corridor. On the southwestern edge of Planning Area 8 to the southern middle of Planning Area 8, the setback from Talega Creek for development would range from 1,000 to 1,650 feet to the creek and 80 to 280 feet above the creek. From the southern middle of Planning Area 8 to the southeastern edge of Planning Area 8, the setback range for development would be 1,875 to 3,350 feet from the creek with an elevation range of 280 to 500 feet above the creek.

With the exceptions noted for portions of San Juan Creek and a portion of Cristianitos Creek, the B-10 Modified Alternative is consistent with this tenet.

SAMP Tenet 8: Protect Riparian Areas and Associated Habitats of Listed and Sensitive Species

As reviewed above for SAMP Tenet 1, regarding listed species, other planning and sensitive species associated with aquatic/riparian habitats (arroyo toad, least Bell's vireo, southwestern willow flycatcher, Cooper's hawk, tricolored blackbird, white-tailed kite, yellow warbler, yellow-breasted chat, western spadefoot toad and southwestern pond turtle), the B-10 Modified Alternative would protect these species within the proposed permanent open space associated with this alternative.

Conclusion

On an overall basis, the B-10 Modified Alternative is consistent with the SAMP Tenets with the two noted exceptions: (1) the dimension of the San Juan Creek wildlife movement corridor and (2) potential headwaters/wildlife movement impacts in Planning Area 6. Therefore, except for the two noted exceptions, the B-10 Modified Alternative is consistent with the SAMP Tenets. This alternative is not expected to result in significant impacts.

6.2.4.5 Alternative B-12

SAMP Tenet 1: No Net Loss of Acreage and Functions of Waters of the U.S./Waters of the State

The B-12 Alternative has been designed to protect the major riparian/wetlands systems, particularly those in the San Mateo Watershed and mainstem creeks in the San Juan Watershed. Specifically, land uses associated with the B-12 Alternative (i.e., residential, commercial) would avoid direct impacts to all mainstem creeks other than those associated with infrastructure (e.g., road crossings, drainage outfalls).

With regard to net acreage of Waters of the U.S./Waters of the State, the B-12 Alternative would need to provide mitigation in the form of new restoration/creation of wetlands acreage equal to the loss of 9.4 acres of wetlands and 31.3 acres of non-wetlands waters due to proposed development. Note that these impacts are calculated on the overstated impact analysis as described earlier and the ultimate development or orchard configuration for Planning Areas 4, 6, 7 and 8 will likely reduce these impacts and by association reduce the amount of mitigation required. Mitigation for these impacts is discussed conceptually in the Aquatic Resources Restoration Plan (Appendix F2). Because of the limited amount of Waters of the U.S. acreage impacted by Alternative B-12, it is anticipated that suitable compensatory mitigation sites could be identified.

Approximately 116 acres of CDFG riparian habitat would be affected by this alternative that would be addressed by the NCCP/MSAA/HCP. Again, as noted above, this represents an overstated analysis.

The B-12 Alternative is consistent with this tenet.

SAMP Tenet 2: Maintain/Restore Riparian Ecosystem Integrity

Given its focus on protecting the major canyon systems as well as the mainstem creeks, Alternative B-12 addresses the protection aspect of this tenet within all of the major creek systems. The restoration aspect of this tenet related to impacts caused by development proposed under this alternative would be addressed through the identification of compensatory mitigation noted above.

SAMP Tenet 3: Protect Headwaters

Each of the mainstem headwaters areas not already urbanized or otherwise altered would be protected under this B-12 Alternative scenario. The headwaters area of Trampas Creek is proposed for development, but this area is currently significantly altered due to existing mining operations. Tributaries within Gobernadora Sub-basin would be affected by this alternative. Overall, the B-12 Alternative is consistent with this tenet because all major headwaters would be protected.

SAMP Tenet 4: Maintain/Protect/Restore Riparian Corridors

All major riparian corridors would be protected including Chiquita, Gobernadora, San Juan, Verdugo, Cristianitos, Talega, La Paz, and Gabino Creeks. Regarding San Juan Creek, the B-12 Alternative provides for the 1,312-foot-wide (400 meter) recommendations of Beier for large mammal (e.g., mountain lion) movement via setbacks associated with Planning Areas 3 and 4. Restoration would be addressed through the implementation of the Aquatic Resources Restoration Plan.

SAMP Tenet 5: Maintain/and or/Restore Floodplain Connection

The B-12 Alternative would maintain all existing areas of floodplain connection. The B-12 Alternative could provide for the recommended restoration of the meander in Gobernadora Creek, thereby helping restore historic floodplain connection. Where longer term terrains/hydrology processes are responsible for areas with existing loss of floodplain connection (e.g., Chiquita Canyon at the “Narrows” and lower Gobernadora Creek below the knick point), the B-12 Alternative does not propose any actions that would be contrary to such processes.

SAMP Tenet 6: Maintain and/or Restore Sediment Sources and Transport Equilibrium

The B-12 Alternative would: (a) protect all of the major sources of coarse sediment in order to assure the continued generation of such sediments important for riparian/wetlands habitat systems (see Watershed Planning Principles consistency analysis) and (b) focus development on areas generating fine sediments in order to reduce the runoff of fine sediments that can cause deleterious impacts on riparian/wetlands habitats and associated species.

SAMP Tenet 7: Maintain Adequate Buffer for the Protection of Riparian Corridors

Under the B-12 Alternative, most major riparian corridors would be adequately buffered from development. Major riparian corridors within the RMV Planning Area can be defined as Chiquita Creek, Gobernadora Creek, San Juan Creek, Verdugo Creek, Cristianitos Creek, Gabino Creek, La Paz Creek, and Talega Creek and would be protected in the following manner:

- Development in Planning Area 2 below the SMWD wastewater treatment plant would be set back from a minimum of 225 feet to over 500 feet from centerline of Chiquita Creek.

- Development in Planning Area 3 would have a 656-foot-wide (200 meter) setback to buffer northerly San Juan Creek. When combined with the 656-foot-wide (200 meter) setback for Planning Area 4, a 1,312-foot-wide (400 meter) corridor as recommended by Beier would be provided for mountain lion movement along San Juan Creek.

- Verdugo Creek Canyon would not be directly impacted by the proposed Planning Area 4 development, thereby protecting the Verdugo Creek riparian corridor and its associated coarse sediments.

- No development is proposed in the Gabino, or La Paz Sub-basins under the B-12 Alternative; therefore, Gabino Creek, and La Paz Creek would be protected. Very limited development (50 acres of citrus orchard and a 25-acre Rancho Mission Viejo headquarters) is proposed for the Cristianitos Sub-basin and neither use is anticipated to result in significant impacts to this sub-basin.

- Based on the overstated impact analysis boundary for Planning Area 8, the setback for development from Talega Creek would range from 1,000 to 1,650 feet to the creek and has an elevation range of 80 to 280 feet above the creek. From the southern middle of Planning Area 8 to the southeastern edge of Planning Area 8, the setback range for development would be 1,875 to 3,350 feet from the creek with an elevation range of 280 to 500 feet above the creek. As noted previously, development in the Talega Sub-basin is limited to 500 acres; therefore, further protection of the Talega Creek riparian corridor is anticipated.

The B-12 Alternative is consistent with this tenet.

SAMP Tenet 8: Protect Riparian Areas and Associated Habitats of Listed and Sensitive Species

As reviewed above for SAMP Tenet 1, riparian areas associated with listed species, other planning and sensitive species would be protected. Regarding listed species and planning species associated with aquatic/riparian habitats (arroyo toad, least Bell's vireo, southwestern willow flycatcher, Cooper's hawk, tricolored blackbird, white-tailed kite, yellow warbler, yellow-breasted chat, western spadefoot toad, and southwestern pond turtle), the B-12 Alternative would protect these species.

Conclusion

On an overall basis, B-12 Alternative is consistent with the SAMP Tenets. This alternative is not expected to result in significant impacts.

6.2.4.6 Conclusion Regarding Alternatives' Consistency with SAMP Tenets

Alternatives B-8, B-10 Modified, and B-12 are generally consistent with the SAMP Tenets with exceptions as follows: Alternative B-8 slightly conflicts with SAMP Tenet 8 because of some impacts to sensitive aquatic species. Alternative B-10 Modified conflicts in varying degrees with SAMP Tenet 3, 4, 7, and 8 because of constraints in the size of the San Juan Creek riparian corridor, impacts to headwaters areas of Cristianitos Creek, lack of appropriate buffers along San Juan Creek and impacts to sensitive aquatic species. Alternative B-12 slightly conflicts with

SAMP 8 due to some impacts to sensitive species that are less than that for Alternative B-10 Modified, but greater than that for Alternative B-8.

6.2.5 AQUATIC SPECIES CONSIDERATIONS FROM THE WATERSHED PLANNING PRINCIPLES

As described in subchapter 4.1.3, Biological Resources, “planning species” for the Coordinated Planning Process were selected as representative of the wildland habitats in the SAMP Study Area. Whereas the SAMP Tenets discuss broad landscape- and ecosystem-based approaches to wetland and riparian habitat impact assessment, the SAMP Tenets have limits with respect to discussing impacts to individual species and their ecology. Discussion of the planning species allows for analysis of biological endpoints not addressed by the SAMP Tenets. The purpose of these species is to act as “surrogates” for species with similar habitat requirements. Twelve wetland and/or riparian dependent species were selected to address the habitat needs of a broad range of aquatic species. These twelve species are: arroyo toad, least Bell’s vireo, Southwestern willow flycatcher, Cooper’s hawk, tri-colored blackbird, white-tailed kite, yellow warbler, yellow-breasted chat, western spadefoot toad, southwestern pond turtle, Riverside fairy shrimp, and San Diego fairy shrimp. As described in subchapter 4.1.3, the Watershed Planning Principles make recommendations which apply to the physical process and conditions that support these aquatic species. It is therefore appropriate to examine the consistency of the alternatives with these recommendations. As noted previously, Alternatives A-4 and A-5 would not involve the preparation of a SAMP and changes to the available Section 404 permits for the SAMP Study Area, therefore neither alternative is addressed. Similar to the SAMP Tenet analysis, four consistency finding categories are used for this section as follows:

1. **Consistent** means that the alternative would be fully consistent with the Watershed Planning Principles and would require no modification of the alternative. A finding of consistency would not be identified as a significant impact.

2. **Could be consistent** means that the alternative is not fully consistent with the sub-basin recommendation, but would be consistent if the specified conditions or performance criteria are implemented. A finding of "could be" consistent would be identified as a potentially significant impact. Additional avoidance and minimization measures would need to be identified to reduce the identified impact to a level of less than significant.

3. **Not consistent** means that the alternative would not be consistent with one or more substantive provisions of a particular Watershed Planning Principle. A finding of "not" consistent would be identified as a significant impact for which mitigation would need to be set forth to reduce the identified impacts to a level of less than significant.

4. **Not applicable** means that the Watershed Planning Principle would not be relevant to, or necessary in, the sub-basin.

The total number and percent of consistent determinations are noted for each alternative. The number of conflicts (i.e., findings of “not consistent”) and potential conflicts (i.e., “could be consistent” for which modifications to the Alternative would have to be made in order for the alternative to become consistent) are also stated for each alternative, both in number and percentages. Note that not all totals among alternatives are equal because of instances where the Watershed Planning Principle was not applicable to the sub-basin and not included in the total. The analysis then draws a conclusion as to the most significant conflicts for each alternative and makes a statement of the degree (high, medium, or low) of overall consistency. An alternative that has a high degree of consistency has relatively few absolute conflicts and

few potential conflicts whereas the opposite would be true for alternatives with a low degree of consistency. For alternatives with a medium degree of consistency, the number of absolute conflicts provides additional insight into the overall performance of the particular alternative.

6.2.5.1 Alternative B-8

Alternative B-8 has low consistency with the Watershed Planning Principles for the 12 planning species for which they are directly relevant (i.e., aquatic/riparian species). Overall, the B-8 Alternative is 43 percent consistent with the Watershed Planning Principles, 27 percent not consistent, and 30 percent "could be consistent." This is considered a potentially significant impact. The consistency findings have a wide range of 0 percent consistent for the Riverside and San Diego fairy shrimp to 64 percent consistent for the arroyo toad. The "could be consistent" findings are complementary to the "consistent" findings, with a range of 29 percent for the arroyo toad (which has the highest consistency finding) to 67 percent for the willow flycatcher (which, with the exception of the fairy shrimp, has the lowest consistency finding).

Alternative B-8 is 64 percent consistent for the arroyo toad, 29 percent "could be consistent," and 7 percent not consistent. Alternative B-8 could be consistent with Watershed Planning Principles 25, 27, 30, and 33. Principle 25 recommends protecting the Cristianitos headwaters through restoration of native vegetation to reduce generation of fine sediments. Principle 27 pertains to stabilizing Cristianitos Creek. Principle 30 recommends protecting the upper Gabino headwaters through restoring existing gullies using a combination of slope stabilization, grazing management, and native vegetation restoration. Principle 33 recommends focusing development on clay soils in the lower portion of the area to reduce the generation of fine sediments. Under Alternative B-8, implementation of these recommendations could be consistent if additional funding were identified to implement the Aquatic Resources Adaptive Management Program.

Alternative B-8 is 47 percent consistent for the least Bell's vireo, 40 percent "could be consistent," and 13 percent not consistent. For the southwestern willow flycatcher, the B-8 Alternative is 17 percent consistent, 67 percent "could be consistent," and 17 percent is not consistent. Alternative B-8 is not consistent for both the vireo and willow flycatcher with Principle 10, which recommends a development setback from the Gobernadora valley floor, because the proposed development would occur at the edge of the valley floor in a few places and in the alluvial side canyons. The B-8 Alternative also is not consistent for the least Bell's vireo with Principle 26, which recommends siting development in Cristianitos Canyon on clayey soils to reduce the generation of fine sediments. Because no development is assumed in the Cristianitos Sub-basin under Alternative B-8, the generation of fine sediments from erodible clay soils would continue without some other kind of remediation action. The B-8 Alternative could be consistent with Principles 9 and 12 through 14 for both the least Bell's vireo and willow flycatcher. These Watershed Planning Principles address the protection of Gobernadora Creek and associated riparian and wetland habitats, including protecting natural creek meander (Principle 9), creating natural treatment systems (Principle 12), addressing excessive sediment from upstream development (Principle 13), and addressing existing channel incision (Principle 14). In addition, the B-8 Alternative could be consistent with Principles 25 and 27 for the least Bell's vireo, which recommend protecting the Cristianitos headwaters through restoration (Principle 25) and stream stabilization of the creek (Principle 27). Alternative B-8 could be consistent with these Principles if additional funding were identified to implement the Aquatic Resources Adaptive Management Program.

The B-8 Alternative is 100 percent "not consistent" for the Riverside and San Diego fairy shrimp because the Radio Tower Road vernal pool supporting the two species would be impacted in the proposed Trampas Canyon development area (Principle 19).

For the non-listed planning species, Alternative B-8 is not consistent with Principles 10 and 26, as described above for the least Bell's vireo, Cooper's hawk, white-tailed kite, yellow warbler, and yellow-breasted chat. For the tricolored blackbird, Alternative B-8 is not consistent with Principle 10. For the spadefoot toad and pond turtle, this alternative is not consistent with Principle 26. The B-8 Alternative is not consistent with Principle 19 for the spadefoot toad regarding the Radio Tower Road vernal pool in the proposed Trampas Canyon development area. This alternative could be consistent with Principles 9, 13, 14, 25, and 27, as described above for the least Bell's vireo, Cooper's hawk, white-tailed kite, yellow warbler, and yellow-breasted chat. For the spadefoot toad and pond turtle, the B-8 Alternative could be consistent with Principles 25, 27, 30, and 33. Principles 30 and 33 are described above for the arroyo toad. For the southwestern pond turtle, the B-8 Alternative could be consistent with Principles 25, 30, and 31. Principle 31 recommends modification of grazing management in upper Gabino Canyon to support restoration and vegetation management in the headwaters. Under Alternative B-8, implementation of these recommendations could be consistent if additional funding were identified to implement the Aquatic Resources Adaptive Management Program.

Although the B-8 Alternative has low consistency with the Watershed Planning Principles compared to Alternatives B-9, B-10 Modified, and B-11, adequate funding to implement the Aquatic Resources Adaptive Management Program would allow Alternative B-8 to achieve a much higher consistency (73 percent) with the Principles. However, adequate funding cannot be ensured at this time.

6.2.5.2 Alternative B-10 Modified

Alternative B-10 Modified has medium-high consistency with the Watershed Planning Principles for the 12 planning species for which they are directly relevant (i.e., aquatic/riparian species). Overall, the B-10 Modified Alternative is 82 percent consistent with the Watershed Planning Principles, 10 percent not consistent, and 9 percent "could be consistent" for the planning species, resulting in few significant or potentially significant impacts. The consistency findings are tightly distributed, with a low of 73 percent for the least Bell's vireo, yellow-breasted chat, and yellow warbler to 100 percent consistent for the Riverside and San Diego fairy shrimp.

The B-10 Modified Alternative is 79 percent consistent for the arroyo toad, 14 percent "could be consistent," and 7 percent not consistent. The two "could be consistent" findings are for Principle 30 and 36. Principle 30 recommends protecting Gabino headwaters through restoration of existing gullies using a combination of slope stabilization, grazing management, and native grassland and/or scrub revegetation. This Principle "could be consistent" because implementation of the short-term stabilization effort mentioned in the Grazing Management Plan would likely be feasible under this alternative as this approach is designed to be a low-cost temporary solution. The location of ten estates in Upper Gabino combined with the overall development acreage associated with this alternative make implementation of a long-term solution to the erosion in Upper Gabino feasible. Principle 36 calls for the maintenance of hydrologic and sediment transport processes to protect the integrity of arroyo toad breeding habitat in lower Gabino Creek. Alternative B-10 Modified is a "could be consistent" with this Principle due to the upgrade of Cristianitos Road that would need to comply with the recommended action for this Principle. Upgrading existing Cristianitos Road to County standards would require removal of the existing at-grade Arizona style (pipe and concrete)

crossing of Gabino Creek and the construction of a box culvert in the same general location, which would improve habitat quality for the toad.

The B-10 Modified Alternative is 73 percent consistent for the least Bell's vireo, 13 percent "could be consistent," and 13 percent not consistent. For the southwestern willow flycatcher, Alternative B-10 Modified is 83 percent consistent and 17 percent not consistent. Alternative B-10 Modified is not consistent for both the vireo and willow flycatcher with Principle 10, which recommends a setback of development from the valley floor in Gobernadora and concentration of development on Class D soils in order to emulate current hydrologic patterns, because the proposed development area is situated along the edge of the valley floor. Alternative B-10 Modified also is not consistent with Principle 25, which recommends protection of the Cristianitos headwaters by implementing native vegetation restoration to reduce generation of fine sediments. Alternative B-10 Modified would not be consistent with this Principle because the proposed development pattern of low density estate residential, golf course, and golf residential would preclude full implementation of the restoration program. The B-10 Modified Alternative is a "could be consistent" for the vireo for Principles 35 and 36 which both refer to protection of riparian habitat in lower Gabino Creek. These Principles could be consistent because the upgrade of Cristianitos Creek across lower Gabino Creek would have to meet these recommendations and County standards. Upgrading existing Cristianitos Road to County standards would require the removal of the existing at-grade Arizona style (pipe and concrete) crossing of Gabino Creek and construction of a box culvert in the same general location.

For the Riverside and San Diego fairy shrimp, the B-10 Modified Alternative is 100 percent consistent because the Radio Tower Road vernal pool supporting the two species in the Trampas Canyon subunit would be protected through implementation of site-specific avoidance measures.

For the non-listed planning species, the B-10 Modified Alternative is not consistent with Principle 10 for the Cooper's hawk, tricolored blackbird, white-tailed kite, yellow warbler, and yellow-breasted chat. The B-10 Modified Alternative is not consistent with Principle 25 for the western spadefoot toad, southwestern pond turtle, yellow warbler, yellow-breasted chat, white-tailed kite, and Cooper's hawk. Alternative B-10 Modified is a "could be consistent" with Principles 35 and 36 for Cooper's hawk, white-tailed kite, yellow warbler, and yellow-breasted chat. Principle 35 recommends limited development and other uses in Blind Canyon to areas away from the major oak woodlands, which provide suitable habitat for these species. Proposed development under the B-10 Modified Alternative scenario would focus on the grazed mesa and away from oak woodlands in Blind Canyon. Both Principles 35 and 36 also refer to protection of riparian habitat in lower Gabino Creek. For the western spadefoot toad and southwestern pond turtle, Alternative B-10 Modified is a "could be consistent" with Principle 30, as described above, and is also a "could be consistent" with Principle 36 for western spadefoot.

Overall, the B-10 Modified Alternative has medium-high (82 percent) consistency with the Watershed Planning Principles.

6.2.5.3 Alternative B-12

Alternative B-12 is highly consistent with the Watershed Planning Principles for the 12 planning species for which they are directly relevant (i.e., aquatic/riparian species). Overall, the B-12 Alternative is 90 percent consistent, 7 percent not consistent, and 3 percent "could be consistent" for the planning species, resulting a very few significant or potentially significant impacts. The consistency findings are tightly distributed, with a low of 78 percent consistent for the tricolored blackbird to a high of 100 percent consistent for the southwestern pond turtle and

the Riverside and San Diego fairy shrimp, assuming implementation of avoidance measures to avoid impacts to the shrimp in the Radio Tower vernal pools in the proposed Trampas development area.

The B-12 Alternative is 93 percent consistent for the arroyo toad and 7 percent not consistent. The single "not consistent" is Principle 33 which recommends focusing development on clayey soils and terrains in the lower portion of the Gabino and Blind Canyons Sub-basins thereby helping to reduce generation of fine sediments and associated turbidity in downstream areas that support the toad. The reason for a "not consistent" determination is that no development is proposed in the lower portion of this sub-basin sedimentation and turbidity is not addressed. For the same reason, Alternative B-12 is not consistent with this Principle for the western spadefoot toad.

Alternative B-12 is 87 percent consistent for the least Bell's vireo and 7 percent not consistent. For the southwestern willow flycatcher, Alternative B-12 is 83 percent consistent and 17 percent not consistent. Alternative B-12 is not consistent for both the least Bell's vireo and willow flycatcher with Principle 10 because the proposed development area is situated along the edge of the valley floor. Principle 10 recommends a setback of development from the valley floor in Gobernadora and concentration of development on Class D soils in order to emulate current hydrologic patterns. For the non-listed planning species, the B-12 Alternative is not consistent with Principle 10 for the Cooper's hawk, tricolored blackbird, white-tailed kite, yellow warbler, and yellow-breasted chat for the reasons described above for the least Bell's vireo and flycatcher. Alternative B-12 could be consistent with Principle 35 for Cooper's hawk, white-tailed kite, yellow warbler, and yellow-breasted chat. Principle 35 recommends limiting development and other uses in Blind Canyon to areas away from the major oak woodlands which provide suitable habitat for these species. Proposed development under the B-12 Alternative could impact the oak woodlands in Blind Canyon, depending on the final configuration of the 500 acres.

Overall, Alternative B-12 has very high (90 percent) consistency with the Watershed Planning Principles.

6.2.5.4 Alternative A-4

As described in Chapter 5.0, under this alternative, a SAMP would not be prepared. Instead of a SAMP, an applicant would submit for individual Section 404 permits or coverage under the existing Nationwide Permit Program for incremental project-by-project approvals. Because a SAMP would not be prepared under this alternative scenario and the applicant would apply for Section 404 permits incrementally over time as necessary, an analysis of the consistency of this alternative with the Watershed Planning Principles applicable to aquatic species is not warranted. This alternative is discussed later in this chapter in the context of the SAMP goals set forth in subchapter 1.1 and the SAMP "Purpose" set forth in subchapter 3.1.

6.2.5.5 Alternative A-5

As described in Chapter 5.0, the Alternative A-5 scenario obviates the need for a SAMP and permits under Section 404 by avoiding regulated Waters of the U.S, including wetlands, as required by Section 404 and NEPA. Therefore, it would not necessary to apply the Watershed Planning Principles applicable to aquatic species to Alternative A-5 because no SAMP would be prepared under this alternative. This alternative is also discussed later in this chapter in the context of the SAMP goals set forth in subchapter 1.1 and the SAMP "Purpose" set forth in subchapter 3.1.

6.2.6 MAJOR UPLAND VEGETATION COMMUNITIES AND LISTED NON-AQUATIC SPECIES

6.2.6.1 Thresholds of Significance

For the purposes of this EIS, an alternative would be considered to have a significant impact on biological resources if it would result in a:

- Substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate for listing, sensitive, rare, or otherwise special status plant or animal species in local or regional plans, policies, or regulations, or by the CDFG or USFWS where such impacts are within the purview of USACE jurisdiction and statutory responsibility.

- Significant interference 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 where such impacts are within the purview of USACE jurisdiction and statutory responsibility.

The following analyses of major upland vegetation communities and listed non-aquatic species addresses all of the major vegetation communities within the geographic areas encompassed by the RMV Planning Area. Conservation under the different alternatives and potential impacts to areas of particular concern for the SAMP planning process are discussed in the prior subchapter addressing the riparian/wetlands major vegetation community which encompasses both USACE jurisdictional areas and other riparian habitats.

6.2.6.2 Impacts to Major Upland Vegetation Communities

Tables 6-9 and 6-10 set forth a summary of potential impacts to: a) major upland vegetation communities and b) listed non-aquatic species, respectively, associated with each proposed alternative for the RMV Planning Area (for more detailed background information please refer to GPA/ZC EIR 589). Because of the complexity of preparing infrastructure plans for a wide range of alternatives, the impacts analysis provided in this chapter does not include impacts related to the construction and maintenance of infrastructure such as new water and sewer lines, lift stations, pump stations, and reservoirs. The exclusion of infrastructure impacts from the landscape-level alternatives' impact analyses does not affect the conclusions set forth in Chapter 6.0 because infrastructure impacts are a small component of each alternative. However, the consistency of circulation systems associated with each alternative with the Watershed Planning Principles is provided in Chapter 6.0. For those alternatives under consideration for compliance with Section 404(b)(1), circulation and infrastructure impacts are quantified in Chapter 8.0. To the extent that RMV could permit the B-10 Modified Alternative on a project-by-project basis as the A-4 Alternative, the Alternative A-4 would result in the same impacts as the B-10 Modified. Alternative A-5 would not impact habitat occupied by upland listed species. Because Alternative A-5 is based on the GPA/ZC approved development footprint (i.e., B-10 Modified), overall this alternative would also have fewer impacts to upland habitats than the B-10 Modified as a result of the avoidance of habitat occupied by listed species within the Planning Areas.

TABLE 6-9
UPLAND VEGETATION COMMUNITY/LAND COVER IMPACTS BY ALTERNATIVE

Vegetation/Land Cover	RMV Planning Area (acres)	Impacts (acres)		
		B-8	B-10 Modified	B-12
Agriculture	2,630	737	1,565	1,431
Alkali Meadow	38	1	2	2
Chaparral	3,854	482	1,101	1,099
Developed	486	213	350	375.4
Disturbed	474	234	260	254
Forest	848	242	442	444
Grassland	4,967	704	1,625	1,828
Cliff & Rock	6.8	5	5	5
Coastal Sage Scrub	7,636	885	2,072	2,063
Woodland	342	51	87	100
As previously discussed this represents an overstated impact analysis and ultimate impacts will be less due to the limitations on development in planning areas 4 and 8, and orchards in Planning Areas 6 and 7.				

Grassland Impacts

The alternatives would result in impacts on grasslands that vary from a low of approximately 704 acres associated with the B-8 Alternative to a high of approximately 1,828 acres associated with the B-12 Alternative under the overstated impact scenario. Although annual grasslands are considered to have relatively low biological value when compared to native vegetation communities, they do provide habitat for grassland species. Impacts on annual grasslands would be considered potentially significant because of the amount that would be impacted. Native grasslands are considered a sensitive vegetation community due to their limited distribution and their potential to support sensitive plant species. The B-8 Alternative would result in the least impacts to grasslands, while the B-12 Alternative would result in the most impacts to grasslands under the overstated impact scenario. Impacts to grasslands are considered significant.

Coastal Sage Scrub Impacts

The alternatives would result in impacts on coastal sage scrub that vary from a low of approximately 885 acres associated with the B-8 Alternative to a high of approximately 2,072 acres associated with the B-10 Modified Alternative. Coastal sage scrub is considered a sensitive plant community due to its limited distribution and its potential to support sensitive plant and wildlife species such as the endangered California gnatcatcher. The B-8 Alternative would result in the least impacts to coastal sage scrub, while the B-10 Modified Alternative would result in the most impacts to coastal sage scrub. Impacts to coastal sage scrub are considered significant.

Woodland and Forest Impacts

The alternatives would result in impacts on woodlands and forests that vary from a low of approximately 51 acres of woodland impact and 242 acres of forest impact associated with the B-8 Alternative to a high of approximately 100 acres of woodland and 444 acres of forest associated with the B-12 Alternative under the overstated impact scenario. Woodlands and forests are considered sensitive vegetation communities because of their limited distribution and

because they provide high quality wildlife habitat. The B-8 Alternative would result in the least impacts to woodlands and forest, while the B-12 Alternative would result in the most impacts under the overstated impact scenario. These impacts are considered significant.

Chaparral Impacts

The alternatives would result in impacts on chaparral that vary from a low of approximately 482 acres associated with the B-8 Alternative to a high of approximately 1,101 acres associated with the B-10 Modified Alternative. Chaparral is a high quality vegetation community, but is considered relatively common in the project region. The B-8 Alternative would result in the least impacts to chaparral, while the B-10 Modified Alternative would result in the most impacts. These impacts are not considered significant.

Cliff and Rock Impacts

The alternatives would result in the same impacts to cliff and rock (approximately 5 acres). Cliff and rock is a native community that is considered relatively uncommon in the project region. Impacts on cliff and rock would be considered significant.

Non-habitat Land Cover Impacts

The alternatives would result in impacts on agricultural areas that vary from a low of approximately 737 acres associated with the B-8 Alternative to a high of approximately 1,565 acres associated with the B-10 Modified Alternative. Although agriculture is considered of relatively low biological value when compared to native vegetation communities, it does provide habitat for grassland species and foraging raptors. The B-8 Alternative would result in the least impacts to agricultural areas, while the B-10 Modified Alternative would result in the most impacts. Impacts on agriculture would be considered adverse, but less than significant due to the relatively low biological value of this community.

The alternatives would result in impacts on disturbed land covers that vary from a low of approximately 234 acres associated with the B-8 Alternative to a high of approximately 260 acres associated with the B-10 Modified Alternative. These land covers provide little to no habitat value to native wildlife species, therefore impacts to disturbed land covers are not considered significant.

6.2.6.3 Impacts to Listed Non-Aquatic Species

Subchapter 4.2.3, Biological Resources, discusses the sensitive wildlife and plant species with potential to occur in the SAMP Study Area. This subchapter provides a quantitative overview of proposed conservation and potential impacts on non-listed aquatic species within the RMV Planning Area. Impacts to species are reviewed prior to application of avoidance and minimization measures and where feasible and necessary, mitigation measures. Avoidance, minimization, and mitigation measures are discussed in the context of the Section 404(b)(1) analysis in Chapter 8.0. The sensitive species known or expected to occur within the SAMP Study Area reviewed in Chapter 4.0 are summarized in Table 6-10 to provide a broad overview of the “B” Alternatives and state- or federally-listed as Threatened or Endangered Non-Aquatic Species. The analysis that follows the table provides brief summary overviews for these species.

TABLE 6-10
NON-AQUATIC LISTED SPECIES IMPACTS BY PROJECT ALTERNATIVES

Species	RMV Planning Area (acres)	Impact (acres)		
		B-8	B-10 Modified	B-12
California Gnatcatcher (locations)	243	20	71	66
Thread-leaved Brodiaea				
Locations	30	0	11	20
Individuals	9,314	0	428	2,311
As previously discussed this represents an overstated impact analysis and ultimate impacts will be less due to the limitations on development in Planning Areas 4 and 8, and orchards in Planning Areas 6 and 7.				

Thread-leaved Brodiaea

The B-8 Alternative would not result in any impacts to brodiaea. The B-10 Modified Alternative would impact 11 locations that total 428 individuals. The B-12 Alternative would result in the impacts to 20 locations and 2311 individuals under the overstated impact scenario. Impacts to brodiaea are considered significant.

California Gnatcatcher

The alternatives would result in impacts to locations of California gnatcatchers which vary from a high of 71 locations for the B-10 Modified Alternative to a low of 20 locations for the B-8 Alternative. The B-12 Alternative would impact 66 locations under the overstated impact scenario. These impacts are considered individually significant but because the B-8, B-10 Modified, and B-12 Alternatives are consistent with 80 percent protection standard set forth in the Southern Subregion NCCP Southern Planning Guidelines with respect to the major population/key location identified in the Southern Planning Guidelines for the gnatcatcher, the individual impacts to gnatcatcher sites are not considered cumulatively significant. The B-10 Modified would have some potential impacts to the connectivity between populations in the San Juan Watershed and those in the San Mateo Watershed in Planning Areas 6 and 7. Such potential connectivity impacts are avoided under the B-12 Alternative which emphasizes the protection of these connections with protection of a 5,000-foot-wide movement corridor between the San Juan and San Mateo Watersheds and major open space connectivity through Planning Areas 6 and 7 and along the lower Cristianitos Creek riparian corridor, in conjunction with the already protected Donna O'Neill Land Conservancy. The B-8 Alternative would not result in impacts to the major population in Chiquita Canyon and connectivity between populations would be unaffected due to the limited development provided under this alternative.

6.2.7 INDIRECT IMPACTS TO BIOLOGICAL RESOURCES RESULTING FROM THE PROPOSED ALTERNATIVES

6.2.7.1 Short-term Indirect Impacts

Noise Impacts

Noise levels in the RMV Planning Area would increase significantly over present levels during construction of any of the alternatives. During construction, temporary noise impacts have the potential to disrupt foraging, nesting, roosting, and denning activities for a variety of wildlife species. Depending on the alternative, this increase would occur across the entire RMV

Planning Area or be more limited. For example, increases would be most noticeable across the entire RMV Planning Area under the B-10 Modified Alternative and less so under the B-8 and B-12 Alternatives, particularly in the San Mateo Watershed. These impacts are considered adverse, but not significant for most wildlife species because the alternatives would not impact a substantial population of unlisted wildlife species in the region. However, nesting raptors and other sensitive bird species would potentially incur temporary short-term impacts from construction noise if present in the vicinity of proposed development in the RMV Planning Area, and may be temporarily displaced due to these disturbances. This short-term impact is considered significant.

Construction Impacts

Grading activities would disturb soils and result in the accumulation of dust on the surface of the leaves of trees, shrubs, and herbs. Grading activities would also result in an accumulation of trash and debris. Grading activities may result in the accidental disturbance of native vegetation. Construction impacts are considered a temporarily significant impact.

6.2.7.2 Long-term Indirect Effects

Noise

Noise would also increase over present levels with implementation of the alternatives. Depending on the alternative, this increase would occur across the entire RMV Planning Area or be more limited. For example increases would be most noticeable across the entire RMV Planning Area under the B-10 Modified Alternative and less so under the B-8 and B-12 Alternatives, particularly in the San Mateo Watershed. The chronic (permanent) noise increase would be considered adverse but less than significant because of the substantial amount of open space and vegetation communities within that open space preserved by each alternative.

Invasive Exotic Species

Implementation of any of the alternatives would include landscaping adjacent to proposed development areas. The landscaping has the potential to include planting ornamental species that can be invasive (e.g., Japanese honeysuckle [*Lonicera japonica*], fan palm [*Washingtonia* spp.], Peruvian pepper tree [*Schinus molle*], and pampas grass [*Cortaderia jubata*]). Seeds from invasive species may escape to natural areas and degrade the native vegetation.

The alternatives have the potential to increase the existing population of invasive invertebrate/vertebrate species on the RMV Planning Area or introduce new invasive species to previously undisturbed areas. Three invasive invertebrate species are known to occur within the SAMP Study Area including Argentine ant (*Linepithema humile*), red imported fire ant (*Solenopsis invicta*), and crayfish (*Procambrus* spp.). These species pose direct and indirect threats to native species at the urban-natural interface, including direct predation of native vertebrates and competition/displacement of important invertebrate prey of native species. Populations of vertebrate species including introduced fishes, bullfrog, brown-headed cowbird, European starling, opossums, and feral mesopredators such as cats and dogs also have the potential to become problematic within the natural open space areas adjacent to proposed development. These species can be an important factor in the decline of native wildlife populations in the SAMP Study Area. Impacts from invasive species are considered potentially significant.

Water Quality

Additional impacts to the biological resources in the RMV Planning Area could occur as a result of changes in water quality resulting from implementation of one of the proposed alternatives. Runoff from the development areas and associated arterials containing pesticides, herbicides, petroleum products, and other residues and the improper disposal of petroleum and chemical products from construction equipment have the potential to adversely affect the water quality within the RMV Planning Area and, in turn, affect populations of aquatic species. Of particular concern in regards to pollutants, is the effect pollutants, borne by runoff, may have on listed species proximate to the proposed development areas/roadways that live in wet environments (creeks) or require wet environments for an important part of their life cycle (reproduction). Pollutants would potentially affect various sensitive fish, amphibian, and reptiles within the SAMP Study Area. This impact is considered potentially significant.

Lighting

Lighting in development areas associated with the proposed alternatives could result in indirect effects on the behavioral patterns of nocturnal and crepuscular (i.e., active at dawn and dusk) wildlife adjacent to these areas. Of greatest concern is the effect on small ground-dwelling animals that use the darkness to hide from predators, and the effect on owls, which are specialized night foragers relying on the darkness for cover. These impacts would be considered potentially significant because the RMV Planning Area is primarily undeveloped. Depending on species sensitivity and the proximity of species use areas to development areas, lighting impacts could be significant.

Human Activity

The increase in human activity would increase the disturbance of natural open space adjacent to development associated with the proposed alternatives. Human disturbance could disrupt normal foraging and breeding behavior of wildlife remaining in the area adjacent to the development, diminishing the value of the habitat. Wildlife stressed by noise may vacate the natural open space adjacent to the development, leaving only wildlife tolerant of human activity. This increased disturbance is called an “edge effect.” This impact would be potentially significant because it could result in degradation of habitat.

6.3 WATERSHED-SCALE PHYSICAL PROCESSES AND CONDITIONS

6.3.1 THRESHOLDS OF SIGNIFICANCE

For the purposes of this EIS, the alternative would be considered to have a significant impact on watershed scale physical processes and conditions if it would:

- Significantly increase or decrease low flow estimates where high groundwater elevations are considered important.

- Significantly alter the existing drainage pattern of the site or area, including alteration of the course of a stream or river, in a manner that would cause significant erosion or siltation.

- Significantly increase the frequencies and duration of channel adjusting flows.

- Significantly deplete groundwater supplies or interfere significantly with groundwater recharge that would cause a net deficit in aquifer volumes or lowering of the local groundwater table.

- Require the construction of new storm water drainage facilities or expansion of existing facilities where the construction would cause significant environmental effects.

- Conflict with applicable watershed-scale Watershed Planning Principles applicable to aquatic species and associated habitats (this factor includes any potential significant adverse effect on any aquatic/riparian habitat identified in local or regional plans, policies, regulations, or by the CDFG or USFWS including the aforementioned Principles).

6.3.2 HYDROLOGY, GEOMORPHOLOGY, TERRAINS, AND WATER QUALITY: CONSISTENCY WITH THE WATERSHED PLANNING PRINCIPLES

This section of Chapter 6.0 is a consistency analysis of the proposed alternatives with the Watershed Planning Principles (i.e., those conditions applicable to the larger watershed scale). The Watershed Planning Principles are contained in Appendix B2. Each Baseline Principle consists of a primary principle which is numbered and one or more secondary or sub-principles which are italicized for clarity. For example,

Primary principle:

Principle 1: Recognize and account for the hydrologic response of different terrains at the sub-basin and watershed scale.

Secondary or sub-principle:

Land use/resource planning (hereafter Planning) should recognize the characteristics of each of the terrains found within the planning area; (1) "sandy" terrains, (2) "silty/sandy" terrains; (3) "clayey" terrains; and (4) "crystalline terrains" terrains.

A brief consistency analysis for each of the "B" Alternatives is provided under each Principle, including a conclusion of either "Consistent," "Not Consistent," "Partially Consistent" (the latter indicating different consistency conclusions for particular sub-basins) or "Questionable" (where presently irresolvable factors make it not feasible to make a consistency determination at this time). Because neither the A-4 Alternative nor the A-5 Alternative was formulated to address the purposes and goals of the SAMP, this consistency review addresses only the alternatives formulated to address the Watershed Planning Principles, namely the "B" Alternatives, are addressed in this subsection (see discussion of the A-4 and A-5 Alternatives under the SAMP Tenets consistency review).

Several of the principles prescribe methods for impact assessment. In the case of these principles, the following consistency review summarizes the methods used to respond to this type of principle.

6.3.2.1 Geomorphology/Terrains

Principle 1: Recognize and account for the hydrologic response of different terrains at the sub-basin and watershed scale.

Land use/resource planning (hereafter Planning) should recognize the characteristics of each of the terrains found within the planning area: "sandy" terrains; (2) "silty/sandy" terrains; (3) "clayey" terrains; and (4) "crystalline" terrains. Please refer to Figure 4.1.1-3.

Sandy Terrains

Planning in sandy terrains should provide for setbacks from the mainstem channel in order to retain the infiltration capacity of the valley floor and protect the integrity of the mainstem channels and corridors. Planning should avoid the addition of significant impervious surfaces to major tributary side canyons and swales to the extent feasible. Planning should direct significant new impervious surfaces to areas characterized by relatively high runoff rates/low infiltration rates under existing conditions.

The *B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent* with this principle. Except for development in minor side-canyons in the Gobernadora Sub-basin, the B-8 Alternative is consistent with this principle as it provides setbacks from the mainstem channels to retain infiltration capacity of the valley floor in canyons with sandy terrains. Except for development in one canyon in Lower Chiquita and in minor side-canyons in the Gobernadora Sub-basin, the B-10 Modified and B-12 Alternatives also provide setbacks from the mainstem channels to retain infiltration capacity of the valley floor in canyons with sandy terrains and thus are consistent with this principle.

Sandy Terrains

Drainage from new impervious surfaces should, where feasible, be directed to major tributary side canyons for infiltration/detention. Drainage into major side canyons and swales must be accompanied by adequate detention/infiltration addressing the particular characteristics of sandy terrains.

The B-8, B-10 Modified, and B-12 Alternatives are consistent with this principle. As reviewed in the WQMP (Appendix D), these alternatives provide drainage strategies consistent with this Principle as drainage is directed to major tributary side canyons for infiltration/detention through the combined control system discussed further below under Hydrology.

Clayey Terrains

Planning in clayey terrains should attempt, to the maximum extent feasible, to emulate the runoff/infiltration characteristics of clayey terrains and to correct any existing erosion in clayey terrains contributing to downstream turbidity impacts.

The B-10 Modified and B-12 Alternatives are consistent with this Principle As reviewed in the WQMP (Appendix D) and *Geomorphology Factors Affecting Sediment Generation and Transport under Pre-and Post-Urbanization Conditions at Rancho Mission Viejo and in the San Juan And San Mateo Watersheds, Orange County, California*, Balance Hydrologics, 2005 (see Appendix H), these alternatives generally concentrate development in areas with clayey or hardpan terrains that, under existing conditions, are characterized by relatively high runoff rates

and thus impervious surface runoff would be comparable to existing conditions. Both alternatives have the capability of restoring existing erosion in clayed terrains.

The consistency of the B-8 Alternative with this Principle is questionable. Under this alternative, the limited development is concentrated in areas with clayey or hardpan terrains; therefore, impervious surface runoff would be comparable to existing conditions. However, given the very limited development and other demands for long-term management funding, it has not been demonstrated that the B-8 Alternative could generate funding to address existing erosion conditions in clayey terrains through restoration actions.

Clayey Terrains

Restoration of native grasslands may be a strategy for existing grazing lands in headwaters and other appropriate areas to reduce surface erosion, increase stormwater infiltration and reduce downstream turbidity.

The B-10 Modified and B-12 Alternatives are consistent with this Principle. The B-10 Modified and B-12 Alternatives are consistent with this Principle as under the approved GPA/ZC Adaptive Management Program potential native grassland restoration areas are identified and the amount of development proposed under these alternatives can generate sufficient funding to support implementation of the GPA/ZC Adaptive Management Program.

The consistency of the B-8 Alternative with this Principle is questionable. Under this alternative the approved GPA Adaptive Management Program potential native grassland restoration areas are identified. However, given the very limited development and other demands for long-term management funding, it has not been demonstrated that the B-8 Alternative could generate funding to implement the restoration actions.

Crystalline Terrains

Planning in crystalline terrains should provide for the protection of sources of coarse sediments (e.g., Verdugo Canyon).

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. The B-8 Alternative avoids all crystalline terrains and is therefore consistent with this Principle. Alternatives B-10 Modified and B-12 avoid all crystalline terrains except a minor portion of the Verdugo Canyon Sub-basin outside Verdugo Canyon. Overall, these alternatives are consistent.

6.3.2.2 Hydrology

Principle 2: Emulate, to the extent feasible, the existing runoff and infiltration patterns in consideration of specific terrains, soil types and ground cover.

Planning should consider existing rainfall infiltration and runoff processes in the context of terrains, land use, ground cover, soil types (e.g., sandy soils with high infiltration vs. clays soils with high runoff), basin size and shape, natural zones of high runoff (e.g., hard-pan caps), and natural infiltration areas (e.g., sandy swales)

The above Principle is an "impact assessment principle." As reviewed in Chapter 3 of the WQMP (Appendix D of this EIS):

"The USEPA Storm Water Management Model (SWMM) was used to estimate the effects of the proposed development on the hydrologic balance. SWMM is a public domain model that is widely used for modeling hydrologic and hydraulic processes affecting runoff from urban and natural drainages. The model can simulate all aspects of the urban hydrologic cycle, including rainfall, surface and subsurface runoff, flow routing through the drainage network, storage, and treatment. The model is particularly appropriate for analyzing post development flow duration because the model takes into account the effects of precipitation, topography, land use, soils, and vegetation on surface runoff, infiltration, evapotranspiration, and groundwater recharge.

The model incorporates a continuous soil moisture accounting algorithm which requires soil properties to model infiltration and vegetation type to model evapotranspiration. Soils information was obtained from the US Department of Agriculture Soil Survey of Orange County and Western Par of Riverside County, California (1978) and also the hardpan areas mapped by Morton. More recent information on hardpan areas was provided by Balance Hydrologics. Evapotranspiration estimates utilized vegetation typing based on the PWA Codes contained in the Baseline Hydrologic Conditions Report (PCR et al. 2002). Reference evapotranspiration rates were obtained from the California Irrigation Management Information System (CIMIS) website (CIMIS 2003)."

Alternatives B-10 Modified include the results of the above modeling program and indicate the capability of emulating existing stormwater flow conditions. For the B-8 and B-12 Alternatives, the modeling for the B-10 Modified Alternative applies equally to proposed development areas that are comparable to this Alternative.

Planning should recognize and account for the inherent characteristics of each sub-basin's channel network as it relates to the particular terrains and infiltration/runoff characteristics of the sub-basin.

This is an "impact assessment principle." The WQMP (Appendix D) addressed the inherent characteristics of each sub-basin's channel network in relation to particular terrains and infiltration/runoff characteristics identified in the sub-basin Planning Recommendations of the Watershed Planning Principles. Additionally, the following methodology summarized in the WQMP was employed in the impact analyses:

"A detailed description of the hydrologic model, data sources and values, and calibration results is provided in Appendix A (of the WQMP).

In this application, PC-SWMM Version 4 was applied to each sub-basin to model the hydrologic response of the sub-basin under existing and proposed land use conditions, and to assess the hydrologic effectiveness of the proposed BMPs. Each sub-basin was divided into catchments to account for changes in topography, soils, and land use. For example, the Cañada Chiquita Sub-basin was divided into 18 catchments."

Alternatives B-8, B-10 Modified, and B-12 are generally consistent with this Principle.

Principle 3: Address potential effects of future land use changes on hydrology.

Planning should address the following hydrologic considerations under future land use scenarios: (1) potential increases in dry season streamflow and wet season baseflow between storms; (2) changes in the magnitude, frequency, and duration of annually expected flow events (1-2 year events); (3) changes in hydrologic response to major episodic storm events; [sub-part

(4) involving "potential changes in sediment supply" is addressed under Geomorphology/Terrains and Sediment Sources, Storage and Transport]…(5) changes in the infiltration of surface/soil water to groundwater.

This Principle is an "impacts assessment principle" that identifies key hydrologic considerations for impact assessment and associated minimization/mitigation measures. Each of the four elements of Principle 3 cited at the introduction to this subsection is addressed by the components of the WQMP summarized below.

According to the WQMP (unquoted sections are paraphrased for brevity):

"HYDROLOGIC MODELING

The [SWMM] model was applied in a continuous mode in which the model is driven with a continuous record of rainfall. The record extended for 53 years, from Water Year (WY) 1949 to WY 1998. The model was run for the entire 53 year period; a wet period of 17 years (WY 1978-1983 and 1991-2001); and a dry period of 36 years (WY 19459-1077 and 1984-1990). The model incorporates a continuous soil moisture accounting algorithm which requires soil properties to model infiltration and vegetation type to model evapotranspiration. The model also incorporated the effects of anticipated landscape irrigation on the water balance based on water usage projections in the Santa Margarita Water District Landscape Irrigation Usage Analysis.

Once calibrated for specific sub-basins, the SWMM model was used to model all aspects of the hydrologic cycle (e.g., rainfall, runoff, stream flow, evaporation, infiltration, percolation, and groundwater discharge) over the 53 year period of rainfall records. The output from the model includes continuous stream flow hydrographs for storm events at any location in the sub-basin; continuous stream flow hydrographs for dry weather base flows; the amount of precipitation infiltrated within each modeled catchment; and a continuous estimation of evapotranspiration losses due to plants within each modeled catchment. This output was then used to project, by month, the volume of storm runoff, groundwater flows, and evapotranspiration.

Runoff volumes and flows were predicted for pre-development or existing condition, post-development condition without BMPs, and post-development with BMPs condition. The latter scenario involved evaluating the effectiveness of the flow and water quality management facilities, and trying to optimize the performance of these facilities.

WATER BALANCE AND FLOW DURATION ANALYSIS

The effect of development on modifying the hydrologic regime within the riparian corridors and the subsequent effect on sediment transport and habitat are "hydrologic conditions of concern" [*the term used in the County of Orange MS4 Permit/DAMP and San Diego RWQCB Model SUSMP to embrace the analytic/regulatory framework for addressing potentially significant changes in post-development hydrology and the term applied throughout the WQMP*]. This effect was analyzed by comparing pre-versus-post development monthly ***water balance*** and ***flow duration***.

Water Balance Analysis

The ultimate goal of the WQMP is to manage the overall balance, termed "***water balance***," of all the hydrologic components of the water cycle. The water balance

concept is a useful accounting tool for evaluating and controlling the effects of land use changes on hydrology. A water balance, like a checkbook balance, is intended to show the balance between the "deposits," which include precipitation and irrigation, and "withdrawals" which include: (1) infiltration into the soils, (2) evapotranspiration, and (3) water which runs off the surface of the land. This latter withdrawal is called surface runoff and occurs during storm events or wet weather conditions. The water balance is a monthly accounting of how precipitation and irrigation water become distributed among (a) surface runoff, (b) groundwater infiltration that contributes to baseflows in streams or deep groundwater recharge, and (c) evapotranspiration.

Water that infiltrates into the ground ultimately moves down gradient and can contribute to stream flows. The contribution of groundwater flow provides for flow in streams when it is not raining, and [is] often referred to as "baseflow." In semi-arid areas, the water balance varies dramatically from season to season, and from stream to stream. In streams where the groundwater storage is sufficient to sustain stream flows throughout the year, the streams are referred to as perennial. In streams sustained by aquifers with limited storage volume, the baseflows are limited to the wet season and the streams are called intermittent or ephemeral streams. In the San Juan and San Mateo Watersheds, both types of streams exist, and the distinction is carefully preserved in the impact analysis.

A key element in the evaluation of impacts for the proposed alternatives is modeling changes to the water balance caused by development and implementation of BMPs. Important inputs and outputs that were assessed include precipitation, landscape irrigation, infiltration, groundwater discharge and baseflows, and evapotranspiration. Historical dry and wet cycles over a period of years or decades have an important effect on the water balance, and thus the water balance analyses were conducted for dry and wet cycles within the variable rainfall record. In semi-arid areas, the variability in the water balance between wet and dry cycles is important to characterize when defining the baseline conditions.

Flow Duration Analysis

The impacts of urbanization on hydrology include increased runoff volumes, peak flow rates, and the duration of flows, especially modest flows less than the 10-year event. Yet it is these more frequent, modest flows that can have the most effect on long-term channel morphology (Leopold 1997). The effect of changes in flow on stream geomorphology is a cumulative one; therefore the magnitude of flows (volume and flow rate), how often the flows occur (the frequency), and for how long (the duration) are all important. Managing the frequency and duration of flows is referred to herein as "***flow duration matching***" and refers to matching the post-development flow duration conditions with pre-development conditions. This matching is achieved through appropriate sizing of a flow duration basin and design of the outlet structure. In order to achieve flow duration matching, "***excess flows***," defined as the difference in runoff volume between the post-development without controls condition and the pre-development condition, must be captured and either infiltrated, stored and recycled, or diverted to a less sensitive stream or stream reach.

The flow duration analyses were conducted for the 53-year continuous rainfall record and the dry and wet cycles within that record as described above.

COMBINED FLOW AND WATER QUALITY CONTROL SYSTEM

In order to achieve flow duration matching, address the water balance and provide for water quality treatment, a combined flow and water quality control system (term ***combined control system***) will be utilized.

Combined Control System Components

The proposed combined control system will include one or more of the following components, each of which provides an important function to the system (Figure 3-5 of the WQMP):

- Flow Duration Control and Water Quality Treatment (FD/WQ) Basin
- Infiltration Basin
- Bioinfiltration Swale
- Storage Facility for Non-Potable Water Supply
- Diversion Conduit to Export Excess Flows out of the sub-basin

The flow duration control and water quality treatment basin provides the initial flow and water quality treatment control functions to the system. The remaining components address the excess flows, alone or in combination with each other, generated during wet weather…"

Thus, each of the four elements of Principle 3 cited at the introduction to this subsection is addressed by the components of the WQMP summarized above and as further elaborated in the WQMP. The WQMP presents a flow management strategy for each sub-basin and presents the impact analysis in applying the particular flow-management strategies to post-development conditions (with the Combined Control System Components, as applicable, serving as mitigation BMPs). The consistency review under Principle 5 below provides additional discussion.

The WQMP analyses have been prepared for the B-10 Modified Alternative, with qualitative analyses based on the former B-4 and B-9 Alternatives. Based on this analysis, *generally*, Alternatives B-8, B-10 Modified, and B-12 have a demonstrated capability of being consistent with the Watershed Planning Principles underlying this Principle (see analyses of "hydrologic conditions of concern" in the WQMP).

Principle 4: Minimize alterations of the timing of peak flows of each sub-basin relative to the mainstem creeks.

Planning should address the relationship between the timing of peak flows of each sub-basin in relation to peak flows through and along the mainstem creeks. Instances where the relative timing of peak flows from tributary sub-basins coincides with those of the mainstem channel may result in amplification of flow rates, volumes and associated sediment transport. Therefore, management of the timing of peak flows important to safeguard downstream areas from the effects of increased frequency of high flows and sediment yields. The goal should be to not adversely alter the runoff interactions between the sub-basins and mainstem creeks in relation to peak flow characteristics identified in the Baseline Conditions Report.

This Principle is "impact assessment principle" and was addressed for the "B" Alternatives as summarized below.

To address County Flood Control planning and management considerations, a HEC-1 analysis was completed for the pre- and post-project 2-, 5-, and 100-year events. HEC-1 was used to determine the comparative effects of the "B" Alternatives in relation to pre-project conditions. These analyses are in addition to the SWMM modeling prepared for the WQMP. Potential impacts on the timing of peak flows have been analyzed and would be addressed through the use of the combined control system. Commensurate with the level of entitlement being sought, the specific location and design of future flood control facilities are not identified. Rather, mitigation in terms of volume storage requirements and measures to assure that the timing of peak flows is not significantly altered from pre-development conditions is proposed where significant flood-related impacts are identified. While the general locations of facilities are identified, the specific location and design of future flood control facilities would be identified through subsequent levels of entitlement, specifically at the area plan approval stage; accordingly, the specific measures required to address and manage the timing of peak flows consistent with this policy would be provided for at the area plan approval stage through an Addendum or other appropriate CEQA review.

The B-8, B-10 Modified, and B-12 Alternatives are consistent with the peak flow timing policy set forth in this Principle due to flow control measures reviewed in the WQMP (Appendix D) and overall distribution of land uses.

Principle 5: Maintain and/or restore the inherent geomorphic structure of major tributaries and their floodplains.

Land use and restoration should be planned in the context of the nature of the mainstem channel and its associated floodplains, flow characteristics, terraces and important surface and sub-surface drainage systems. Land planning should consider channel form (e.g., well-defined single channel, meandering channel, braided channel system) in relation to governing physical processes in the sub-basin, including terrains and groundwater. To the extent possible, the role of long-term geologic processes needs to be differentiated from localized processes influenced by specific land uses.

The WQMP (Appendix D) presents flow control and water quality control strategies in response to the geographic-specific conditions found in each sub-basin. In this way, the role of long-term geologic processes identified in other planning documents has been differentiated from localized processes influenced by specific land uses. The introduction to the WQMP summarizes the manner in which the above concerns have been addressed in the WQMP:

> **"WATER QUALITY MANAGEMENT PLAN ELEMENTS**
>
> In order to address considerations of terrains and hydrologic conditions of concern, Section 4.2 through 4.9 rely on and address information set forth in the Baseline Conditions Report (PCR et al, 2002) and the Draft Watershed and Sub-basin Planning Principles (NCCP/SAMP Working Group, 2003a). The Geomorphology/Terrains; Hydrology; Sediment Sources, Storage and Transport; Groundwater Hydrology; and Water Quality Principles from the *Draft Watershed and Sub-Basin Planning Principles* have been employed. Additionally, the sub-basin "Planning Considerations" and Planning Recommendations" have been addressed and employed in formulating flow control and water quality control strategies in response to the geographic-specific conditions found in each sub-basin. The sub-basin specific elements include site

assessment, planning considerations, and combined control system conceptual design, and are presented in Section 4.2 through 4.9 of [of the WQMP]."

Within each sub-basin, the WQMP presents flow control strategies prepared both with respect to specific portions of the sub-basin using the "catchment" level of analysis and with respect to overall characteristics of the sub-basin (e.g., see the discussion of the proposed flow management planning for specific development areas). The particular characteristics of each sub-basin's surface and sub-surface drainage systems have been taken into account in each strategy analysis and relate governing physical processes in the sub-basin, including terrains and groundwater, to channel form. For instance, the ground infiltration and surface flow management prescriptions for the Gobernadora Sub-basin differ considerably from those for the Chiquita Sub-basin even though the two subbasins adjoin one another and both flow into San Juan Creek. Similarly, the management of "excess flows," takes into account the nature of San Juan Creek and overall goals of supplementing groundwater recharge in the San Juan Creek aquifers.

The WQMP evaluates the impacts of the proposed alternatives on pollutants of concern and hydrologic conditions of concern at a sub-basin level of analysis taking into account the WQMP elements. The cumulative impacts analysis further analyzes the cumulative implications of sub-basin flow management strategies on the large mainstem creeks (San Juan Creek and lower Cristianitos/San Mateo Creek) both within the RMV Planning Area and downstream of the SAMP Study Area.

Generally, Alternatives B-8, B-10 Modified, and B-12 address the goals stated in this planning principle (see discussion of B-10 Modified Alternative under the heading of "hydrologic conditions of concern in WQMP Chapter 5) and thus are consistent with this Principle. Because the B-8 and B-12 Alternative's planning areas are coterminous with the comparable planning areas under Alternatives B-10 Modified, both B-8 and B-10 Modified Alternatives are also consistent with this planning principle.

Planning should consider the role of longer-term wet/dry cycles and how such cycles influence hydrologic conditions.

This Principle is a "impact assessment principle." As reviewed previously under Planning Principle 3, both the water balance and flow duration analyses specifically address longer-term wet/dry cycles and how such cycles influence hydrologic conditions such as base flow and stream geomorphology. For instance, the flow control strategies and annual water balance analyses for each sub-basin are addressed in Chapter 5 of the WQMP under three climatic scenarios (All Years, Dry Years, and Wet Years) under pre-development conditions and post-development conditions with Project Design Features (PDFs). Thus, because climate cycle influences on hydrologic conditions have specifically been accounted for in the WQMP methodologies, all of the "B" Alternatives are consistent with this Principle.

The role of major episodic storm events in transporting sediment, re-organizing channel/ floodplain structure, and re-generating riparian plant communities should also be considered.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. The role of major episodic storm events in transporting sediment, re-organizing channel/ floodplain structure, and re-generating riparian plant communities has been considered and incorporated into the design of Alternative B-10 Modified and B-12. The B-10 Modified and B-12 Alternatives avoid all mainstem channels and geomorphically-active floodplain surfaces,

where episodic adjustments occur (Appendix H). With less development than the B-10 Modified and B-12 the B-8 Alternative is consistent with this Principle.

6.3.2.3 Sediment Sources, Storage and Transport

Principle 6: Maintain coarse sediment yields, storage and transport processes.

Planning should take into account the volume and grain size of sediment generation occurring within the terrains specific to each sub-basin. In general, sandy and crystalline terrains will produce coarse sediments that may be important for downstream channel structure and habitat. Clayey terrains will produce fine sediments that may be associated with increased turbidity in downstream areas.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. Please refer to Figure 6-1. The manner and extent to which all the alternatives protect sources of coarse sediments in sandy and crystalline terrains is reviewed under Geomorphology/Terrains–Principle 1. The manner in which the B-8, B-10 Modified, and B-12 Alternatives concentrate development in clayey trains, with the effect of reducing yields of fine sediments, is also reviewed under Geomorphology/Terrains–Principle 1. The WQMP (Appendix D) analyses of "hydrologic conditions of concern" and indicates that overall existing coarse sediment production would be maintained. An extensive discussion of these factors and the manner in which sediment size considerations have been taken into account.

Planning should maintain sediment transport and storage processes between hillslope, tributaries, sub-basin channels, and mainstem creeks.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. Alternatives B-8, B-10 Modified, and B-12 avoid the sandy and crystalline terrains that protect moderate and substantial sources of coarse sediments. Further, each source of coarse sediments–the sandy terrains in Chiquita and Gobernadora Sub-basins and the crystalline terrains in Verdugo Canyon, middle Gabino and La Paz Canyon–is avoided in such a way that sediment transport and storage processes between hillslope, tributaries, sub-basin channels, and mainstem creeks are protected by means of maintaining physical contiguity in these areas and through avoidance of structures that would impede sediment movement in tributaries and in mainstem creeks. An extensive discussion of sediment transport and storage processes factors and the manner in which these processes have been taken into account is addressed (Appendix H).

Planning should maintain the geomorphic characteristics of streambeds, including maintaining the supply and transport of sediment types that are important to aquatic habitat systems (e.g., sand, gravel, cobbles).

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. The above summary addressed the manner and extent to which the B-8, B-10 Modified, and B-12 Alternatives protect sources of coarse sediments that are important to aquatic habitat systems (also see the consistency analyses for the Watershed Planning Principles). The WQMP (Appendix D) presents flow management strategies addressing the sub-basin planning considerations and policies directed toward maintaining the geomorphic characteristics of streambeds. An extensive discussion of sediment types and processes important to aquatic habitat systems is provided and indicates consistency with this Principle.

Planning should maintain significant sediment transport and storage processes in: (a) central San Juan Creek which transports coarse sediments from the upper San Juan watershed, Bell Canyon and Verdugo Canyon to downstream areas; and (b) middle and lower Gabino Creek and Cristianitos Creek downstream of the Gabino/Upper Cristianitos confluence containing areas with coarse texture channel beds and over-bank terraces supporting important aquatic habitats.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. The B-8 Alternative does not impact sediment transport processes. The Balance Sediment Report analyses indicate consistency for the B-10 Modified and B-12 Alternatives with respect to this Principle.

Planning should assure that major new detrimental sources (or sinks) of sediment are not created. New sources can result from either causing new locations for sediment generation or mobilizing sediment through accelerating existing erosional areas or initiating sedimentation from recently inactive areas such as landslides. Particular attention must be paid to avoiding creating new sources of in-channel sediment.

The manner in which the "B" Alternatives address existing sources of erosion in clay soils has been reviewed previously under Principle 1. The manner in which each of the "B" Alternatives does or does not focus development in areas with clay soils, thereby reducing potential future generation of fine sediments, has also been reviewed previously. The extent to which the different "B" Alternatives avoid sandy soils and thereby avoid generating new sources of erosion has also been reviewed previously under Principle 1. The WQMP review strategies for the B-10 Modified Alternative directed toward achieving "flow duration matching" under the post-development "water balance" scenarios under average, wet and dry cycle rainfall conditions, which strategies are designed to protect stream geomorphology and avoid generating new sources of erosion; as noted previously, where there is congruence among development areas under the B-10 Modified and B-12 Alternatives, the WQMP analyses would apply to the other "B" Alternatives.

The B-8 Alternative is consistent with this Principle. The B-8 Alternative avoids developing in areas that would result in conflicts with this Principle.

The B-10 Modified and B-12 Alternatives are consistent with this Principle. As addressed in the WQMP, the combined control system measures would satisfy this Principle for the B-10 Modified and B-12 Alternatives (Appendix D). The Balance Sediment Report further confirms consistency with this Principle (Appendix H).

Planning should attempt, to the extent feasible, to address existing sources of sediment, deficits of sediments, that may be detrimental to the streams systems. Such sources may include increased fine sediment yields from upper Cristianitos Creek and upper Gabino Creek.

The consistency of the Alternative B-8 with this Principle is questionable. Due to limited development areas generating ongoing management and restoration revenues and the considerable costs of landform stabilization measures needed to address existing excess sources of fine sediments in the San Mateo Watershed, the ability of the B-8 Alternative to address this Principle is questionable.

The B-10 Modified and B-12 Alternatives are consistent with this Principle. These alternatives have the ability to generate funds sufficient to address necessary landform restoration.

6.3.2.4 Groundwater Hydrology

Principle 7: Utilize infiltration properties of sandy terrains for groundwater recharge and to offset potential increases in surface runoff and adverse effects to water quality.

Land planning should take advantage of the infiltration opportunities associated with sandy terrains to offset potential effects of changes in surface runoff and water quality associated with existing and future land uses and groundwater extractions.

Infiltration opportunities are most prevalent in sub-basins with sandy terrains, namely the valley floor and side canyons in the Chiquita and Gobernadora Sub-basins. The B-8 Alternative is consistent with this Principle. The B-8 Alternative assumes no development in the Chiquita Sub-basin; therefore, no increases in surface runoff and changes to water quality would occur. Existing infiltration and groundwater recharge would continue. In the Gobernadora Sub-basin the B-8 Alternative would allow limited development in the smaller side canyons of the sub-basin.

The B-10 Modified and B-12 Alternatives are consistent with this Principle. The B-12 Alternative assumes limited development in Chiquita Canyon in middle Chiquita Canyon; therefore, existing infiltration would continue. Alternative B-10 Modified would site development on the ridges of Middle Chiquita and uses the side canyons for infiltration. Although Alternatives B-10 Modified and B-12 allow limited development in smaller side canyons of the Gobernadora Sub-basin and also allow development in one side canyon of the lower Chiquita Sub-basin, as reviewed in the WQMP, Alternatives B-10 Modified and B-12 have taken advantage of the infiltration capacities of these sandy terrains and provide for monitoring.

Principle 8: Protect existing groundwater recharge areas supporting slope wetlands and riparian zones; and maximize groundwater recharge of alluvial aquifers to the extent consistent with aquifer capacity and habitat management goals.

Planning should take into account and provide for the differences in character and function of groundwater recharge areas in specific sub-basins.

The influence of terrains on recharge areas is discussed under Principles 1, 2, and 5.

The WQMP sets forth “hydrologic conditions of concern” in accordance with the Orange County DAMP and Orange County/San Diego Regional Water Quality Control Board MS4 permit. Two of the identified conditions of concern are: (1) decreased infiltration and groundwater recharge and (2) changed base flow.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. Although impacting a portion of the Gobernadora groundwater recharge area, the B-6 Alternative would avoid the Chiquadora Ridge and Sulphur Canyon areas that contribute to groundwater recharge while providing opportunities for increasing groundwater recharge in San Juan Creek. The WQMP analyzes and includes measures for the B-10 Modified Alternative for addressing high groundwater levels and for increasing flows to San Juan Creek to increase groundwater recharge. The measures identified in the WQMP analyses for the B-10 Modified Alternative, including monitoring and adaptive management, would apply to all three alternatives.

Planning should explore opportunities to utilize urban-generated runoff that has been treated in natural water quality systems for aquifer recharge.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. As noted below under "Water Quality," the combined control systems proposed for each sub-basin provide for aquifer recharge where such recharge may be beneficial. For example, recharge of the San Juan Creek aquifer may benefit the arroyo toad.

Planning should anticipate the need to maintain infiltration and groundwater recharge in the main valleys of Chiquita and Gobernadora Sub-basins and their wide and sandy tributaries in order to maintain groundwater levels important for sustaining creek flows and associated wetlands and riparian habitats.

The preceding analyses addressing the first principle under Principle 7 apply equally to this Principle.

Planning should protect the relationship between subsurface water and the slope wetlands.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. Site design BMPs have been incorporated into the WQMP (Appendix D) which seek to address recommendations contained in the Southern Planning Guidelines and the Watershed Planning Principles regarding the avoidance of slope wetlands within the SAMP Study Area. For those slope wetlands which are avoided by the different Alternatives, the recharge area for the slope wetland is also considered as part of the avoidance.

6.3.2.5 Water Quality

Principle 9: Protect water quality by using a variety of strategies, with particular emphasis on natural treatment systems such as water quality wetlands, swales and infiltration areas and application of Best Management Practices within development areas to assure comprehensive water quality treatment prior to the discharge of urban runoff into the Habitat Reserve.

Planning should account for the range of pollutant loadings and filtration functions associated with the specific terrains of each sub-basin.

The WQMP (Appendix D) analyzes potential development impacts and proposed water quality minimization/mitigation measures addressing pollutant loadings associated with specific terrains including TSS (total suspended solids), phosphorus, and nutrients. Although the modeling assumptions use information from the Los Angeles County database as a conservative baseline, the analysis of each sub-basin includes specific information regarding sub-basin geology and additional baseline information from Wildermuth's in-stream data and the Baseline Conditions Report to assess the modeling results. These strategies would be employed under the "B" Alternatives where feasible. With regard to the filtration functions associated with the specific terrains of each sub-basin, the WQMP identifies different flow management/water quality treatment strategies deriving in significant part from the infiltration characteristics of the soils/geology within each sub-basin.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. Alternative B-10 Modified is reviewed extensively in the WQMP (Appendix D) at the sub-basin level in order to provide different flow management/water quality treatment strategies for pollutant loadings that are responsive to differences in terrains/infiltration capacities within each sub-basin. The B-8 and B-12 Alternatives proposed development areas are coterminous with development areas identified in the B-10 Modified Alternative and are, therefore, fully addressed in the corresponding sub-basin strategies and impact analyses in the WQMP.

Planning should provide for water quality treatment prior to the discharge of stormwater runoff into native or restored habitat areas or shallow groundwater systems. To the maximum extent feasible, water quality management for future land-use scenarios should rely on the use of "natural treatment systems" such as water quality wetlands, swales and infiltration areas described in Management Measures 6B and 6C of the State Nonpoint Source Plan. These systems should address both dissolved and particulate-bound pollutants. Where feasible, such natural treatment systems should maintain existing hydrologic patterns, including infiltration of treated waters into groundwater systems, and should not displace existing significant habitat. Natural treatment system should be capable of treating dry season nuisance flows, non-storm wet season flows and 1-2 year storms.

All dry season non-storm wet season flows and 1- to 2-year stormwater flows in accordance with County DAMP requirements would receive water quality treatment prior to the discharge of stormwater runoff into native or restored habitat areas or to groundwater systems. Three components of the Combined Control System provide important water quality functions using natural treatment system approaches: (1) Flow Duration Control and Water Quality Treatment (FD/WQ) Basin; (2) Infiltration Basin; and (3) Bioinfiltration Swale. The flow duration control and water quality treatment basin provides the initial flow and water quality treatment control functions to the system. Depending on whether infiltration is an element of flow duration management and water quality treatment, additional water quality treatment control would also be provided in the infiltration basin and bioinfiltration swale components of the Combined Control System. Water quality/flow management strategies are reviewed in the WQMP and pollutant loadings minimization/mitigation and impact analyses are provided in the WQMP.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. Alternative B-10 Modified is reviewed extensively in the WQMP at the sub-basin level in order to provide different flow management/water quality treatment strategies for pollutant loadings that are responsive to differences in terrains/infiltration capacities within each sub-basin. The impact assessments in the WQMP demonstrate compliance with applicable water quality standards. The B-8 and B-12 Alternative's proposed development areas are coterminous with development areas identified for Alternatives B-10 Modified and, therefore, are fully addressed in the corresponding sub-basin strategies and impact analyses in the WQMP (Appendix D).

Planning should consider restoration of upland vegetation and riparian habitat as a strategy, where appropriate, to reduce loadings from uplands, and increase assimilation of pollutants.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. Each of these alternatives would avoid coastal sage scrub and native grasslands areas identified for potential restoration (except on Blind Canyon mesa in the case of the B-10 Modified and depending on the final development configuration, the B-12 Alternative).

Planning should consider infiltration in conjunction with created wetlands and recharge ponds as another strategy to assimilate and transform pollutants as near to the source as possible. Such systems should protect existing shallow aquifers.

The ability of each alternative to employ infiltration strategies was discussed previously. As described above, the WQMP proposes a combined control system to achieve flow duration matching, address the water balance and provide for water quality treatment for each sub-basin where development is proposed, thus treating "pollutants of concern" as close to the source as possible. Pre- and post-project pollutant loadings are reviewed extensively in the WQMP.

Comprehensive groundwater monitoring is included as part of the combined control system adaptive management program.

Planning should assess the need for changing agricultural practices to reduce nutrients loading consistent with applicable water quality requirements.

The B-10 Modified and B-12 Alternatives are consistent with this Principle. Although agricultural uses would continue under all alternatives, urban land uses would dominate in the San Juan Watershed for the B-10 Modified and B-12 Alternatives and to a lesser degree Alternative B-8. Thus the potential pollutants would be more urban in nature and include fine sediment, nutrients, trace metals, pathogens, hydrocarbons, pesticides, and trash and debris. Strategies and specific measures to reduce the excess generation of fine sediments would reduce non-agricultural sources of nutrients that, in combination with agricultural Best Management Practices to manage herbicides and pesticides over time, would reduce nutrient loadings compared with existing conditions.

The consistency of the B-8 Alternative with this Principle is questionable. Extensive areas would remain available for continuing and new agricultural uses under the B-8 Alternative. No changes in agricultural practices are included in the alternative. Additionally, it has not been demonstrated that the B-8 Alternative would be able to generate sufficient funding to undertake recommended restoration and landform stabilization in areas that currently generate fine sediments in clayed terrains, the primary source of nutrients under existing conditions.

Dry season and stormwater discharges under future land use scenarios should achieve appropriate levels of treatment for nutrients, metals, pathogens and other potential pollutants. Stormwater discharges should address the policies established by the San Diego Regional Water Quality Control Board and the County of Orange for purposes of preparing a Jurisdictional Urban Runoff Management Program pursuant to the Regional Board's Stormwater Program. Areas that contain aquatic habitats supporting sensitive aquatic species should receive particular attention and meet appropriate water quality requirements.

In conformance with the Orange County DAMP and Orange County/San Diego Regional Quality Control Board MS4 permit, the WQMP identifies "pollutants of concern" that are anticipated or potentially could be generated by a proposed project, based on the proposed land uses and past land uses that have been identified by regulatory agencies as potentially impairing beneficial uses in the receiving water bodies or that could adversely affect receiving water quality or endangered species. These "pollutants of concern" include fine sediment, nutrients, trace metals, pathogens, hydrocarbons, pesticides and trash and debris. The WQMP (Appendix D of this EIS) reviews the combined control system elements, including size, required for each sub-basin where development is proposed. The WQMP discusses pre-and post project pollutants loadings quantitatively and qualitatively relative to the standards set forth in the San Diego Basin Plan and the California Toxics Rule as applicable.

The B-8 Alternative, B-10 Modified Alternative, and B-12 Alternative are consistent with this Principle. As reviewed above, Alternative B-10 Modified is reviewed extensively in the WQMP at the sub-basin level in order to provide different flow management/water quality treatment strategies for pollutant loadings that are responsive to differences in terrains/infiltration capacities within each sub-basin; the WQMP provides an extensive review of pollutant loadings following treatment in relation to Orange County DAMP/San Diego RWQCB requirements, the California Toxics Rule, and other applicable water quality standards. The B-8 and B-12 Alternatives' proposed development areas are coterminous with the proposed development

areas identified for the B-10 Modified Alternative and, therefore, are fully addressed in the corresponding sub-basin strategies and impact analyses in the WQMP.

6.3.3 GEOLOGY

6.3.3.1 Thresholds of Significance

For the purposes of this EIS, impacts would be considered significant if the alternative would:

- Expose people or structures to major geologic hazards (e.g., earthquakes, expansive soils, liquefaction, subsidence, unique geologic feature, or landslides/mudslides) and/or permit development in areas of unsuitable geologic conditions.

- Result in substantial erosion or the loss of topsoil associated with grading activities.

All of the alternatives reviewed in this chapter have geologic impacts in common, (i.e., location within a seismically active region and expected ground shaking). Therefore these common impacts are stated here to avoid repetition and the individual discussion of alternatives is comparative in nature (i.e., notes where impacts are more or less than another alternative).

6.3.3.2 Seismic Ground Shaking Impacts

There are no known active or potentially active faults that cross the RMV Planning Area and the RMV Planning Area is not located in an Alquist-Priolo Earthquake Fault Zone. Ground rupture is not expected. The RMV Planning Area, as with most of southern California, is located in a seismically active region and ground shaking is expected.

6.3.3.3 Slope Stability Impacts

Review of Seismic Hazards Maps of the RMV Planning Area (source: California Geological Survey) indicates that portions of the RMV Planning Area are within a zone of required investigation for earthquake-induced landslides. Areas with a zone of required investigation does not conclude that a landslide is present but include “areas where previous occurrence of landslide movement or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacement…” This is considered a potentially significant impact prior to the implementation of remediation.

6.3.3.4 Compressible and Expansive Soils

Collapsible and/or compressible soils are located throughout the RMV Planning Area under all alternative development scenarios. Surficial deposits, including native soil, colluvium, perched soil, portions of the terrace deposits, landslide debris, and weathered portions of bedrock, are considered collapsible or compressible. Removal and compaction of all collapsible or compressible soils would be required in areas proposed for development.

Expansive soils are also present in most of the planning areas, particularly within the surficial units. Some of the finer-grained units in the Sespe Formation, upper beds of the Santiago Formation, and the finer-grained units in the Williams and Ladd formations are moderately expansive. Some of the beds of the Monterey Formation are expansive, particularly those with bentonite content, as well as in the Silverado Formation, especially those with high clay content. The lower beds of the Santiago Formation, the San Onofre Breccia, and Topanga Formation generally have low expansion potential. Significant impacts associated with the presence of

expansive soils in areas proposed for development can be remediated with proper foundation design.

Many of the areas proposed for development within the RMV Planning Area also contain isolated areas of undocumented fill material. Most of this fill material is located along ranch roads, in isolated areas, and in some tributary canyons of the RMV Planning Area. Areas of undocumented fill would need to be removed to expose stable, dense native materials and replaced with engineered fill in areas proposed for development.

6.3.3.5 Erosion

All surficial units are highly susceptible to erosion with the exception of the terrace deposits and perched soil horizon that caps some of the ridges in Planning Areas 2 (for those alternatives that propose development in Planning Area 2) and Planning Area 3 of the RMV Planning Area. Terrace deposits have a low to moderate erosion potential, with sand lenses and unconsolidated beds more likely to be subject to erosion. Perched soil horizons are clay-rich and have a low erosion potential and low permeability. Bedrock of the Monterey, Capistrano, Trabuco, and Silverado formations has high erosion potential. Bedrock of the Sespe Formation has a moderate to high erosion potential because of the friable nature of the material. The Pleasants Sandstone member of the Williams Formation has a moderate erosion potential; the Schulz Ranch member of the formation has a high erosion potential. The upper beds of the Santiago Formation have high erosion potential; the lower beds of the Santiago Formation have low erosion potential. The Holz Shale member of the Ladd Formation has high erosion potential; the Baker Canyon member of this formation has very low erosion potential. Bedrock of the San Onofre Breccia and Topanga Formation has moderately low erosion potential. Areas of moderate to high erosion potential would be subject to potentially significant erosion. This is considered a significant impact. Erodibility can be mitigated during grading using conventional grading techniques such as slope stabilization and construction of drainage devices.

6.3.3.6 Groundwater and Liquefaction

Liquefaction is an earthquake-induced effect that may cause damage to structures. Liquefaction usually occurs in a cohesionless soil with a high groundwater table, where ground shaking causes the soil to liquefy. Cohesionless soils are generally sandy, coarse-grained, unconsolidated soils with little or no clay content.

As depicted on Figure 6-2, portions of all areas proposed for development are within a seismic hazard zone of required investigation for liquefaction and therefore susceptible to liquefaction. A location within a zone of required investigation for liquefaction is not equivalent to the presence of a liquefaction hazard requiring mitigation; it notes that investigation is required.

The Seismic Hazards Mapping Act requires a site-specific geotechnical investigation to evaluate areas delineated as potential liquefaction hazards, and to determine specific mitigation measures for each of these hazards. These investigations would be performed at the grading plan stage of development. Measures to reduce the potential for liquefaction can be achieved using conventional grading techniques. These methods may include removal and recompaction of soils. Alternate methods may include deep dynamic compaction, dewatering, and stone columns.

Alternative B-8

Implementation of Alternative B-8 would encounter geotechnical constraints as discussed above, however on a much reduced scale. The reduction is associated with a reduction in proposed development when compared to other alternatives.

Alternative B-10 Modified

Alternative B-10 Modified would encounter geotechnical constraints as discussed above. Compared to the alternatives with less proposed development area (i.e., the B-8 Alternative), this alternative would encounter more geotechnical constraints.

Alternative B-12

Implementation of Alternative B-12 would encounter geotechnical constraints as discussed above, however on a reduced scale compared with the B-10 Modified Alternative. This reduction is associated with reduced proposed development associated with this alternative in Planning Area 2 (no development in middle Chiquita Canyon), Planning Area 6, and Planning Area 7 when compared to the B-10 Modified Alternatives.

Alternative A-4

If Rancho Mission Viejo were to permit the B-10 Modified on a project-by-project basis for the A-4 Alternative, this alternative would also encounter the geotechnical constraints described above.

Alternative A-5

Implementation of the A-5 Alternative would encounter the geotechnical constraints discussed above.

6.4 SUB-BASIN SCALE PHYSICAL PROCESSES AND CONDITIONS

6.4.1 THRESHOLDS OF SIGNIFICANCE

For the purposes of this EIS, the alternative would be considered to have a significant impact on sub-basin scale physical processes and conditions if it would result in a:

- Conflict with applicable sub-basin scale Watershed Planning Principles applicable to aquatic species and associated habitats (this factor includes any potential significant adverse effect on any aquatic/riparian habitat identified in local or regional plans, policies, regulations, or by the CDFG or USFWS including the aforementioned principles).

6.4.2 CONSISTENCY WITH WATERSHED PLANNING PRINCIPLES: SUB-BASIN SCALE CONDITIONS

Due to the wide-range of sub-basin planning considerations and recommendations set forth in the Watershed Planning Principles, it is important to understand how the specific sub-basin Planning Principles apply to individual alternatives, and how they comparatively relate to each alternative. A matrix approach has been selected as the most effective and “user-friendly” means of presenting a comparative analysis of the different alternatives in a comparative

context. Table 6-11 presents a matrix that provides "SAMP Watershed and Sub-Basin Planning Principles Consistency Findings." Specific recommendations are set forth for each sub-basin as described in the Watershed Planning Principles, followed by a "consistency analysis" for each alternative that is presented side-by-side in relation to the specific recommendation. In this way, each of the recommendations for a particular sub-basin is presented sequentially in the left hand column of the Consistency Matrix both in the context of the sub-basin and in relation to each of the alternatives. The table is accompanied in the text by narrative summaries of the findings.

Accompanying the tables, a narrative summary of consistency determinations is provided for each of the "B" Alternatives and Alternative A-5. The same four consistency finding categories are used for this analysis as previously described: "consistent," "could be consistent," "not consistent," and "not applicable."

It is important to note that, due to the complexity of preparing infrastructure plans for such a range of alternatives, the impacts analysis provided in Chapter 6.0 does not include impacts related to the construction and maintenance of infrastructure such as new water and sewer lines, lift stations, pump stations, reservoirs, etc. The exclusion of infrastructure impacts from the landscape-level alternatives' impact analyses does not affect the conclusions set forth in Chapter 6.0 because infrastructure impacts comprise a small component of each alternative. However, the consistency of circulation systems associated with each alternative with the Watershed Planning Principles is provided in Chapter 6.0. For those alternatives carried forward for consideration under Section 404(b)(1), circulation and infrastructure impacts are quantified in Chapter 8.0.

The following is a summary of the consistency analysis as set forth in Table 6-11.

6.4.2.1 Alternative A-5

Alternative A-5 is 29 percent (12/41 total) consistent with the Watershed Planning Principles. Modifications would be necessary to address 5 principles (5, 6, 16, 20, and 23). Alternative A-5 is 59 percent (24/41 total) not consistent with the Watershed Planning Principles.

For the A-5 Alternative, "Could be Consistent" findings (the types of modifications necessary to address Principles 5, 6, 16, 20 and 23) are all related to the treatment of water quality and storm flow management. Given the low intensity of proposed development associated with the A-5 Alternative and the requirements contained in the County of Orange/San Diego RWQCB MS4 permit, these modifications are considered feasible. Alternative A-5 is 59 percent not consistent with the Planning Principles, a low degree of consistency. This significant number of inconsistencies is a result of the purpose of the A-5 Alternative as a No Project/No SAMP Alternative and the land configuration required to avoid jurisdictional areas and listed species (e.g., limited buffers, habitat fragmentation, and impacts on sources of coarse sediments).

6.4.2.2 Alternative B-8

Alternative B-8 is 62 percent (20/32 total) consistent with the Watershed Planning Principles and 3 percent not consistent. Modifications would be necessary to the B-8 Alternative to achieve consistency with Principles 7, 9, 13, 14, 25, 27, 30, and 31.

TABLE 6-11
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	B-8	B-10 Modified	B-12
SAN JUAN CREEK WATERSHED				
Chiquita Canyon Sub-basin				
1. Consistent with the SAMP Tenets, protect the headwaters of Upper Chiquita Canyon.	**Consistent.** A-5 would be consistent because Upper Chiquita Canyon north of Oso Parkway was conserved as mitigation for the FTC-N segment between Oso Parkway and Antonio Parkway.	**Consistent.** B-8 would be consistent because Upper Chiquita Canyon north of Oso Parkway was conserved as mitigation for the FTC-N segment between Oso Parkway and Antonio Parkway.	**Consistent.** B-10 Modified would be consistent because Upper Chiquita Canyon north of Oso Parkway was conserved as mitigation for the FTC-N segment between Oso Parkway and Antonio Parkway.	**Consistent.** B-12 would be consistent because Upper Chiquita Canyon north of Oso Parkway was conserved as mitigation for the FTC-N segment between Oso Parkway and Antonio Parkway.
2. Avoid creating impervious surfaces in the sandy soils of the canyon floor. To the extent feasible, land uses in the major side canyons should be limited to primarily pervious surfaces in order to maintain infiltration.	**Not consistent.** A-5 would not be consistent because development would occur in the side canyons in Chiquita Canyon.	**Consistent.** B-8 would be consistent because it proposes no development within the Chiquita sub-basin north of San Juan Creek.	**Consistent.** B-10 Modified would be consistent because it would avoid creating impervious surfaces in the valley floor throughout the sub-basin and in the major side canyons above the treatment plant. The major side canyon below the treatment plant would be impacted. Uses proposed in the valley floor and major side canyons above the treatment plant would be pervious including golf course and habitat protection.	**Consistent.** B-12 would be consistent because no development would occur in the sandy soils in the main canyon floor throughout the sub-basin and therefore no impervious surfaces would occur in this location. Limited development would occur north of the treatment plant and the majority of the side canyon above the treatment plant would be avoided. Development would occur below the treatment plant under this alternative, and the major side canyon would be impacted.
3. Emulate existing terrains/hydrology and sediment transport processes by locating development on the ridges, which under present conditions have higher runoff rates and direct surface runoff flows to the permeable substrate of the major side canyons and along the valley floor.	**Not consistent.** A-5 would not be consistent because development would occur in the major side canyons.	**Not Applicable.** B-8 proposes no development within the Chiquita sub-basin north of San Juan Creek therefore existing terrains/hydrology and sediment transport processes would continue.	**Consistent.** B-10 Modified would be consistent because it would locate development on the ridges thus emulating existing terrains and hydrology and implementation of the WQMP would emulate existing sediment transport processes.	**Consistent.** B-12 would be consistent because development south of the treatment plant is concentrated on the ridges thus emulating existing terrains and hydrology and implementation of the WQMP would emulate existing sediment transport processes.

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	**B-8**	**B-10 Modified**	**B-12**
4. Promote stormwater surface flow connectivity between the major side canyons and the main stream channel to maintain transient surface channel connections that occur following extreme rainfall events, without significantly changing connections during small storms.	**Not consistent.** A-5 would not be consistent because development would impact the side canyons and the valley floor would disrupt surface flow connectivity between the major side canyons and the main stream channel	**Consistent.** B-12 would be consistent because it proposes no development within the Chiquita sub-basin north of San Juan Creek.	**Consistent.** B-10 Modified would be consistent through golf course uses and implementation of the WQMP which promotes stormwater connectivity between the majority of major side canyons and the main stem channel	**Consistent.** B-12 would be consistent through implementation of the WQMP which promotes stormwater connectivity between the majority of major side canyons, particularly north of the treatment plant and below Tesoro High School, and the main stem channel
5. Identify natural treatment systems for water quality treatment and stormwater detention that would be appropriate in the sandy soils of the major side canyons and the valley floor.	**Could be consistent.** A-5 could be consistent by siting or providing low density development to allow for water quality treatment and stormwater detention in the sandy soils of the major side canyons and the valley floor.	**Not Applicable.** B-8 proposes no development within the Chiquita sub-basin north of San Juan Creek therefore no water quality treatment would be necessary.	**Consistent.** B-10 Modified would be consistent because the Water Quality Management Plan identifies natural treatment systems and stormwater detention appropriate for the sandy soils in the major side canyons and the valley floor that would be implemented by this alternative.	**Consistent.** B-12 would be consistent because the Water Quality Management Plan identifies natural treatment systems and stormwater detention appropriate for the sandy soils in the major side canyons and the valley floor that would be implemented by this alternative.
6. Maintain groundwater recharge to the shallow subsurface water system to sustain flows to Chiquita Creek.	**Could be consistent** A-5 could be consistent by placing groundwater re-charge systems in the side canyons and along the valley floor.	**Consistent.** B-8 would be consistent because it proposes no development within the Chiquita sub-basin north of San Juan Creek, and therefore existing groundwater recharge would be maintained in the sub-basin.	**Consistent**. B-10 Modified would be consistent because stormwater flows would be directed to the major side canyons and detention areas along the valley floor as provided for in the Water Quality Management Plan Groundwater recharge would be maintained to Chiquita Creek under this alternative.	**Consistent.** B-12 would be consistent because existing groundwater recharge would be maintained north of the treatment plant under this alternative. South of the treatment plant, groundwater recharge would be maintained via protection of the valley floor below the treatment plant and implementation of the Water Quality Management Plan Groundwater recharge would be maintained to Chiquita Creek under this alternative.

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	B-8	B-10 Modified	B-12
7. Address existing areas of channel incision that result from primarily localized processes/land use practices, as contrasted with terrace-forming valley-deepening areas that are primarily a result of long-term geologic conditions. Site-by-site geomorphic analysis will be undertaken to define these areas.	**Not consistent.** A-5 would not be consistent because it does not include an Adaptive Management Program and thus would not provide for addressing areas of existing channel incision.	**Could be consistent.** B-8 could be consistent if an additional funding source is identified to implement the Adaptive Management Program, including the Habitat Restoration Plan component.	**Consistent.** B-10 Modified would be consistent because it proposes implementation of an Adaptive Management Program which includes a Habitat Restoration Plan to address localized headcuts.	**Consistent.** B-12 would be consistent because it proposes implementation of an Adaptive Management Program which includes a Habitat Restoration Plan to address localized headcuts.
8. To the maximum extent practical, avoid direct impacts to the slope wetlands and maintain primary recharge characteristics that support these wetlands	**Consistent.** A-5 would be consistent because as a wetlands avoidance alternative, it would avoid direct impacts on slope wetlands. Deep subsurface recharge areas would not be affected by development under this Alternative.	**Consistent.** B-6 would be consistent because it proposes no development within the Chiquita sub-basin north of San Juan Creek.	**Not consistent.** B-10 Modified would not be consistent because it would impact slope wetlands north of the treatment plant and east of the creek. Slope wetlands south of the treatment plant and west of the creek would be protected. With regard to maintaining the primary recharge characteristics that support these wetlands, project grading will not intersect the primary groundwater movement formations. Given existing hardpan soils, future landscape irrigation and the protection of a significant portion of Chiquadora Ridge, recharge would be maintained into the deep groundwater system supporting the slope wetlands.	**Consistent.** B-12 would be consistent because it would it would avoid all but two of the slope wetlands in Chiquita Canyon. One small and the edge of a large slope wetland below the treatment plant would be impacted. With regard to maintaining the primary recharge characteristics that support these wetlands, project grading will not intersect the primary groundwater movement formations. Given existing hardpan soils, future landscape irrigation and the protection of a significant portion of Chiquadora Ridge, recharge would be maintained into the deep groundwater system supporting the slope wetlands.

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	B-8	B-10 Modified	B-12
Gobernadora Canyon Sub-basin and Central San Juan Subunit North of San Juan Creek				
9. Protect Cañada Gobernadora valley floor above the knickpoint to provide for creek meandering (as occurred historically) and for restoration of riparian processes and habitat.	**Consistent.** A-5 would not be consistent because it would protect the valley floor above the knickpoint.	**Could be consistent.** B-8 would protect the valley floor above the knickpoint. B-8 could be consistent if an additional funding source is identified to implement the Adaptive Management Program, including the Habitat Restoration Plan component.	**Consistent.** B-10 Modified would be consistent because it would protect the valley floor above the knickpoint, allowing for restoration of creek meander and riparian processes and habitat.	**Consistent.** B-12 would be consistent because it would protect the valley floor above the knickpoint, allowing for restoration of creek meandering and riparian processes.
10. In order to emulate current hydrologic patterns, development areas should be set back from the valley floor and focus on areas that presently manifest Class D soils runoff characteristics, including those areas with existing hardpan caps.	**Not consistent.** A-5 would not be consistent because although it proposes development generally set back from the valley floor and located primarily on class C and D soils, a portion of the "development bubble" would allow development to the edge of the valley floor in a few locations and would allow for development in the alluvial side canyons.	**Not consistent.** B-8 would not be consistent because although it proposes development generally set back from the valley floor and located primarily on class C and D soils, a portion of the "development bubble" would allow development to the edge of the valley floor in a few locations and would allow for development in the alluvial side canyons.	**Not consistent.** B-10 Modified would not be consistent because although it proposes development generally set back from the valley floor and located primarily on class C and D soils, a portion of the "development bubble" would allow development to the edge of the valley floor in a few locations and would allow for development in the alluvial side canyons.	**Not consistent.** B-12 would not be consistent because although it proposes development generally set back from the valley floor and located primarily on class C and D soils, a portion of the "development bubble" would allow development to the edge of the valley floor.
11. Deep alluvial deposits that function as important infiltration/recharge areas underlie the valley floor and adjacent tributary swales. At the same time, any changes in future stormwater flows to these areas may need to be accompanied by groundwater management due to limited infiltration capacity resulting from high groundwater levels.	**Consistent.** A-5 would be consistent because it would provide for the ability to implement groundwater management.	**Consistent.** B-8 would be consistent because it would provide for the ability to implement groundwater management. Management of water quality would occur in compliance with the Water Quality Management Plan.	**Consistent.** B-10 Modified would be consistent because it would include special groundwater management provisions for Gobernadora as part of the Water Quality Management Plan "conditions of concern" element.	**Consistent.** B-12 would be consistent because it would include special groundwater management provisions for Gobernadora as part of the Water Quality Management Plan "conditions of concern" element.

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	B-8	B-10 Modified	B-12
12. Given the size of the valley floor, there are opportunities for creating natural treatment systems to treat potential existing and future urban runoff from the Gobernadora sub-basin, as well as provide opportunities for expanded wetlands habitat areas.	**Not consistent.** A-5 would not be consistent because while it could provide for natural treatment systems, it does not propose an Adaptive Management Program including a Habitat Restoration Plan.	**Consistent.** B-8 would be consistent because it would provide for the use of tributary side canyons for stormwater and water quality management. Opportunities for expanded wetlands habitat areas would be preserved above the knickpoint.	**Consistent.** B-10 Modified would be consistent because it would provide for the use of tributary side canyons for stormwater and water quality management. Opportunities for expanded wetlands habitat areas would be preserved above the knickpoint.	**Consistent.** B-12 would be consistent because it would provide for the use of tributary side canyons for stormwater and water quality management. Opportunities for expanded wetlands habitat areas would be preserved above the knickpoint
13. Sediment management and creek restoration activities may be necessary in lower Gobernadora Canyon to address the present excessive sediment input from upstream urbanized areas. The increased sediment resulting from upstream construction will likely be moving through the system for a prolonged period. Eventually, sediment loads may decrease due to buildout of the upper watershed. Consequently, floodplain restoration should account for both the existing and potential future sediment regimes.	**Not consistent.** A-5 would not be consistent because the Adaptive Management Program including the Habitat Restoration Plan would not be implanted under the A-5 Alternative.	**Could be consistent.** B-8 could be consistent if an additional funding source is identified to implement the Adaptive Management Program, including the Habitat Restoration Plan component.	**Consistent.** B-10 Modified would be consistent because this alternative provides for implementation of the Aquatic Resources Restoration Plan which identifies potential restoration actions for Sulphur Canyon and Gobernadora Creek. In addition, this alternative proposes implementation of the Gobernadora Multipurpose Basin to address upstream flow and sediment generation.	**Consistent.** B-12 would be consistent because this alternative provides for implementation of the Aquatic Resources Restoration Plan which identifies potential restoration actions for Sulphur Canyon and Gobernadora Creek. In addition, this alternative proposes implementation of the Gobernadora Multipurpose Basin to address upstream flow and sediment generation.
14. Existing channel incision that has isolated the creek from the floodplain in some areas should be addressed as part of the restoration effort.	**Not consistent.** A-5 would not be consistent because the Adaptive Management Program including the Habitat Restoration Plan would not be implanted under the A-5 Alternative.	**Could be consistent.** B-8 could be consistent if an additional funding source is identified to implement the Adaptive Management Program, including the Habitat Restoration Plan component.	**Consistent.** B-10 Modified would be consistent because this alternative provides for implementation of the Aquatic Resources Restoration Plan which identifies potential restoration actions for Sulphur Canyon and Gobernadora Creek. In addition, this alternative proposes implementation of the	**Consistent.** B-12 would be consistent because this alternative provides for implementation of the Aquatic Resources Restoration Plan which identifies potential restoration actions for Sulphur Canyon and Gobernadora Creek. In addition, this alternative proposes implementation of the

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	**B-8**	**B-10 Modified**	**B-12**
			Gobernadora Multipurpose Basin to address upstream flow and sediment generation.	Gobernadora Multipurpose Basin to address upstream flow and sediment generation
15. Protect the GERA and, to the extent feasible, minimize impacts to major riparian areas consistent with the overall restoration and management plan.	**Consistent.** A-5 would be consistent because it would avoid impacts to jurisdictional riparian areas including GERA and the "fertile crescent."	**Consistent.** B-8 would be consistent because it would protect GERA, and other major upstream and downstream riparian areas, except in the "fertile crescent" area.	**Consistent.** B-10 Modified would be consistent because it would protect GERA, and other major upstream and downstream riparian areas, except in the "fertile crescent" area.	**Consistent.** B-12 would be consistent because it would avoid impacts to GERA and other upstream and downstream riparian areas, although it would impact the "fertile crescent" area.
16. In order to help maintain the sediment transport functions of the central reach of San Juan Creek, the timing of peak flows in Cañada Gobernadora at the confluence with San Juan Creek should be managed to emulate existing conditions and avoid coincident peaks flows with San Juan Creek.	**Could be consistent.** A-5 could be consistent because development could provide for the management of peak flows.	**Consistent.** B-8 would be consistent because under the Water Quality Management Plan new development would be required to regulate the timing of peak flows in order to avoid coincident peak flows with San Juan Creek	**Consistent.** B-10 Modified would be consistent because under the Water Quality Management Plan new development would be required to regulate the timing of peak flows in order to avoid coincident peak flows with San Juan Creek.	**Consistent.** B-12 would be consistent because under the Water Quality Management Plan new development would be required to regulate the timing of peak flows in order to avoid coincident peak flows with San Juan Creek
Trampas Canyon Subunit and Central San Juan Subunit South of San Juan Creek				
17. Trampas Canyon is suitable for development	**Consistent.** A-5 would be consistent because it proposes development in Trampas Canyon.	**Consistent.** B-8 would be consistent because it proposes development in Trampas Canyon.	**Consistent.** B-10 Modified would be consistent because it proposes development in Trampas Canyon.	**Consistent.** B-12 would be consistent because it proposes development in Trampas Canyon.
18. Focus development in Trampas Canyon in disturbed and adjacent areas with low to moderate hydrologic, water quality and habitat integrity function and value.	**Not consistent.** A-5 would not be consistent because it proposes development outside of Trampas Canyon.	**Consistent.** B-8 would be consistent because it would confine development to Trampas Canyon.	**Consistent.** B-10 Modified would be consistent because it would confine development to Trampas Canyon.	**Consistent.** B-12 would be consistent because it would confine development to Trampas Canyon.

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	**B-8**	**B-10 Modified**	**B-12**
19. The area along Radio Tower Road should be protected because it contains a diversity of wetland types and endangered fairy shrimp in close proximity to one another, thereby increasing the heterogeneity of the landscape from an aquatic resources perspective.	**Consistent.** A-5 would be consistent because it would avoid the area along Radio Tower Road and protect the diversity of wetland types and the fairy shrimp.	**Not consistent.** B-8 would not be consistent because it would it would impact one area of vernal pools that support fairy shrimp. Avoidance of the vernal pool is not feasible because of the reduced development acreage available under this alternative.	**Consistent.** B-10 Modified would be consistent because it would avoid the area along Radio Tower Road and protect the diversity of wetland types and the fairy shrimp through implementation of avoidance measures.	**Consistent.** B-12 would be consistent because it would avoid the area along Radio Tower Road and protect the diversity of wetland types and the fairy shrimp through implementation of avoidance measures.
Verdugo Canyon Sub-basin				
20. Stormwater flows from Trampas Creek into San Juan Creek should be managed to provide flows comparable to existing conditions.	**Could be consistent.** A-5 could be consistent, because although not be obligated to maintain stormwater flows into San Juan Creek, it likely would do so as part of its overall stormwater system.	**Not Applicable.** B-8 proposes no development within the Verdugo sub-basin therefore development related stormwater flow management would not be necessary.	**Consistent.** B-10 Modified would be consistent because it would maintain flows comparable to existing conditions in conjunction with its stormwater and dry season flows management system per the Water Quality Management Plan.	**Consistent.** B-12 would be consistent because it would maintain flows comparable to existing conditions in conjunction with its stormwater and dry season flows management system per the Water Quality Management Plan.
21. Development with impervious surfaces should be limited in extent in order to protect the generation and transport of sediment to downstream areas, and to protect Verdugo Canyon from excessive erosion.	**Not consistent.** A-5 would not be consistent because although it proposes limited development in Verdugo Canyon, a collector road to connect with development in upper Gabino Canyon may be required, thus potentially affecting sediment processes.	**Consistent.** B-8 would be consistent because it proposes no development in the Verdugo sub-basin.	**Not Consistent.** B-10 Modified would not be consistent because development within the Verdugo sub-basin is extensive, although within Verdugo Canyon itself there would be virtually no development that would adversely affect the generation and transport of coarse sediments.	**Consistent.** B-12 would be consistent because development within the Verdugo sub-basin is limited to 550 acres. SMWD proposes an uncovered storage reservoir south of the mainstem canyon. In Verdugo Canyon itself there would be virtually no development that would adversely affect the generation and transport of coarse sediments.
22. Development should be set back from significant riparian vegetation within the relatively narrow and geologically confined floodplain.	**Not Consistent.** A-5 would not be consistent substantial buffers from significant riparian vegetation would not be provided under this alternative.	**Not Applicable** B-8 proposes no development in the Verdugo sub-basin.	**Consistent.** B-10 Modified would be consistent because it would avoid l riparian vegetation within the mainstem of Verdugo Canyon.	**Consistent.** B-12 would be consistent because it would avoid riparian vegetation within the mainstem of Verdugo Canyon.

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	B-8	B-10 Modified	B-12
23. Infiltration functions should be protected through site design. Cumulative stormwater flows should be managed in such a way as to not change peak flows that under present conditions lag behind those of the mainstem of San Juan Creek. The area adjacent to the mouth of Verdugo Canyon provides opportunities for infiltration and flow attenuation.	**Could be consistent.** A-5 could be consistent through implementation of the water quality management measures to maintain the existing relationship of peak flows.	**Not Applicable** B-8 proposes no development in the Verdugo sub-basin.	**Consistent.** B-10 Modified would be consistent because it would provide for infiltration functions by avoiding Verdugo Canyon. Storm flows from development elsewhere in the Verdugo sub-basin would be managed to maintain the existing relationship of peak flows per the Water Quality Management Plan.	**Consistent.** B-12 would be consistent because it would provide for infiltration functions by avoiding Verdugo Canyon. Storm flows from development elsewhere in the Verdugo sub-basin would be managed to maintain the existing relationship of peak flows per the Water Quality Management Plan.
SAN MATEO CREEK WATERSHED				
Cristianitos Canyon Sub-basin				
24. The headwater area should be protected, with new impervious surfaces limited in extent within the headwater area.	**Not consistent.** A-5 would not be consistent because it proposes significant development within the headwater area.	**Consistent.** B-8 would be consistent because it does not propose development within the headwater area.	**Not Consistent**. B-10 Modified would not be consistent because low- density estate residential development is proposed within the headwater area.	**Consistent.** B-12 would be consistent because it does not propose development within the headwater area.
25. Where feasible, protected headwater areas should be targeted for restoration of native vegetation to reduce the generation of fine sediments from the clayey terrains and to promote infiltration, and to enhance the value of upland vegetations adjacent to the streams.	**Not consistent.** A-5 would not be consistent because it proposes significant development within the headwater area. Furthermore, the Adaptive Management Program, including the Habitat Restoration Plan component, would not be implemented under A-5.	**Could be consistent.** B-8 does not propose development in upper Cristianitos Canyon. B-8 could be consistent if an additional funding source is identified to implement the Adaptive Management Program, including the Habitat Restoration Plan component.	**Not consistent.** B-10 Modified would not be consistent because the development pattern of low-density estate residential, golf course and golf residential would preclude full implementation of the restoration recommendations for the sub-basin.	**Consistent.** B-12 would be consistent because it does not propose development within the headwater area and implementation of the restoration recommendations for the sub-basin could occur.
26. In order to emulate existing hydrologic conditions, development should focus on areas with clayey soils, which presently seal fairly quickly under storm conditions and have relatively high runoff rates. The overall goal should	**Not consistent.** A-5 would not be consistent because while it proposes development in areas that are primarily clay soils, development would not be set back from the creek.	**Not consistent.** B-8 would not be consistent because it proposes no development within the Cristianitos sub-basin, and therefore generation of fine sediments from erodible clay soils would continue.	**Consistent**. B-10 Modified would be consistent because the development pattern and proposed uses would focus on the clay soils and would be setback from the creek to reduce the generation of fine sediments.	**Consistent.** B-12 would be consistent because it proposes very limited development within the Cristianitos sub-basin. New disturbances in the sub-basin would be limited to 50 acres of new citrus and 25 acres for a new Ranch operations center. B-

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	B-8	B-10 Modified	B-12
be to reduce the generation of fine sediments compared with existing conditions to reduce turbidity effects and other adverse impacts of fine sediments on downstream aquatic resources. Development in the middle and lower reach areas should be set back from the creek and should be located in higher areas to the east of the creek where existing erosion could be concurrently addressed.				12 proposes a Habitat Restoration Plan component of the Adaptive Management Program that would help reduce the generation of fine sediments.
27. Stream stabilization opportunities should be examined in Cristianitos Creek (above the confluence with Gabino Creek) in the context of longer-term geologic processes.	**Not consistent.** A-5 would not be consistent because substantial development would occur east of the creek and in the headwater area and thus stream stabilization opportunities would not likely be able to be addressed. Furthermore, no Adaptive Management Program or Habitat Restoration Plan is proposed under A-5.	**Could be consistent.** B-8 could be consistent if an additional funding source is identified to implement the Adaptive Management Program, including the Habitat Restoration Plan component.	**Consistent.** B-10 Modified would be consistent because it proposes a development pattern and type of development that would provide for stream stabilization opportunities. In addition, B-10 Modified would implement the Habitat Restoration Plan component of the Adaptive Management Program which includes stream stabilization in Cristianitos Creek.	**Consistent.** B-12 would be consistent because it proposes very limited development in the Cristianitos sub-basin. New citrus and the Ranch operations center would be sited so as not to preclude stream stabilization opportunities. In addition, B-12 would implement the Habitat Restoration Plan component of the Adaptive Management Program which includes stream stabilization in Cristianitos Creek.
28. The alkali wetlands within the middle portion of the sub-basin should be protected in conjunction with protection of the overall riparian system.	**Consistent.** A-5 would be consistent because it would avoid all wetlands and thus would avoid the alkali wetlands.	**Consistent.** B-8 would be consistent because it proposes no development in the Cristianitos sub-basin and therefore would avoid the alkali wetlands and overall riparian system.	**Consistent.** B-10 Modified would be consistent because it avoids wetland/riparian vegetation, including the alkali wetlands associated with Cristianitos Creek.	**Consistent.** B-12 would be consistent because it proposes very limited development in the Cristianitos sub-basin. New citrus and the Ranch operations center would be sited to avoid the alkali wetlands and overall riparian system.

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	B-8	B-10 Modified	B-12
Gabino and Blind Canyons Sub-basin				
29. Limit new impervious surfaces in the headwater area to locations that will not adversely impact runoff patterns.	**Not consistent.** A-5 would not be consistent because it proposes development in the headwaters area in Upper Gabino.	**Consistent.** B-8 would be consistent because it proposes no development in the Gabino sub-basin.	**Consistent.** B-10 Modified would be consistent because it proposes only 10 estate lots within the western portion of the Upper Gabino Subunit of the Gabino sub-basin and would have minimal impact on runoff patterns.	**Consistent.** B-12 would be consistent because it proposes no development in the Gabino sub-basin.
30. Protect the headwaters through restoration of existing gullies using a combination of slope stabilization, grazing management, and native grasslands and/or scrub restoration. To the extent feasible, restore native grasses to reduce sediment generation and promote infiltration of stormwater.	**Not consistent.** A-5 would not be consistent because it proposes development in areas shown for CSS/VGL enhancement and restoration and no Adaptive Management Program is proposed.	**Could be consistent.** B-8 could be consistent because it proposes no development in sub-basin. For B-8 to be consistent, an additional funding source would have to be identified to implement the Adaptive Management Program, including the Habitat Restoration Plan component.	**Consistent.** B-10 Modified would be consistent because through implementation of the Habitat Restoration Plan component of the Adaptive Management Program, fine sediment yields would be decreased.	**Consistent.** B-12 would be consistent because through implementation of the Habitat Restoration Plan component of the Adaptive Management Program, fine sediment yields would be decreased.
31. Modify grazing management in the upper portion of the sub-basin to support restoration and vegetation management in the headwater areas.	**Not consistent.** Under A-5, this recommendation would not be consistent because there would be no grazing in Upper Gabino due to development.	**Could be consistent.** B-8 could be consistent if an additional funding source was identified to implement the Adaptive Management Program.	**Consistent.** B-10 Modified would be consistent because it would implement the Adaptive Management Program and the Grazing Management Plan.	**Consistent.** B-12 would be consistent because it would implement the Adaptive Management Program and the Grazing Management Plan.
32. Minimize impacts to the steep side canyons in the middle portion of the sub-basin by limiting new impervious surfaces.	**Not consistent.** A-5 would not be consistent because it would allow development in the middle portion of the sub-basin.	**Consistent.** B-8 would be consistent because no development in Middle Gabino is proposed.	**Consistent.** B-10 Modified would be consistent because no development in Middle Gabino is proposed.	**Consistent.** B-12 would be consistent because no development in Middle Gabino is proposed.
33. To the extent feasible, focus development in clayey soils & terrains in the lower portions of the sub-basin, where it could serve to reduce the generation of fine sediments and associated turbidity.	**Not consistent.** A-5 would not be consistent because it would allow development in each of the three major reaches in the Gabino sub-basin. In addition, no Adaptive Management Program is proposed under A-5.	**Not Consistent.** B-8 proposes no development in upper Gabino Canyon that could serve to reduce the generation of fine sediments and associated turbidity.	**Consistent.** B-10 Modified would be consistent because, it focuses development on clayey soils and terrains to address the generation of fine sediments.	**Not Consistent.** B-12 proposes no development in upper Gabino Canyon that could serve to reduce the generation of fine sediments and associated turbidity.

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	B-8	B-10 Modified	B-12
34. To the extent feasible, utilize the side canyon currently degraded by past mining activities for natural water quality treatment systems.	**Consistent.** A-5 would be consistent because it would allow for use of the degraded side-canyon for natural water quality treatment systems.	**Not applicable.** B-8 proposes no development in the Gabino sub-basin, therefore water quality treatment facilities would be unnecessary.	**Consistent.** B-10 Modified would be consistent because it would allow for use of the degraded side-canyon for natural water quality treatment systems through implementation of the Water Quality Management Plan.	**Not applicable.** B-12 proposes no development in the Gabino Creek portion of the Gabino and Blind Canyons subunit and therefore water treatment facilities would not be necessary.
35. In the lower reach of the creek, protect significant riparian vegetation along the south side of the creek and on proximate side canyon slopes. Limit development and other uses in Blind Canyon to the grazed areas on the mesa and away from the major oak woodlands in Blind Canyon. Direct to and treat stormwater runoff in areas that will not contribute to appreciable increases in water delivery/flow to the oak woodlands in the lower portion of the sub-basin.	**Not consistent.** A-5 would not be consistent because it would allow development along the south side of the creek and on proximate side canyon slopes. A-5 would provide for comprehensive water quality treatment through water quality management measures.	**Consistent.** B-8 would be consistent because it proposes no development within the Gabino sub-basin.	**Could be consistent.** B-10 Modified could be consistent if expansion of Cristianitos Road across lower Gabino Creek would avoid significant riparian vegetation. Otherwise B-10 Modified would be consistent because no development is proposed along the south side of the Gabino Creek. Development would be focused on the grazed areas on the mesa and away from the major oak woodlands in Blind Canyon. Runoff from the Blind Canyon subunit would be managed through implementation of the Water Quality Management Plan.	**Could be consistent.** B-12 could be consistent because development in PA 8 is limited to a maximum of 500 acres, but the development footprint has not been determined. Development could be sited to avoid major oak woodlands in Blind Canyon. It would avoid riparian vegetation in lower Gabino Creek and it would manage any runoff from the Blind Canyon subunit through implementation of Water Quality Management Plan.
36. Protect the integrity of arroyo toad populations in lower Gabino Creek by maintaining hydrologic and sediment delivery processes, including maintaining the flow characteristics of episodic events in the sub-basin. Utilize natural water quality treatment systems to manage and treat runoff from any new land uses in areas adjacent to the lower creek.	**Not consistent.** A-5 would not be consistent because although it would be primarily low-density estate development, the amount of land area that could be developed in the sub-basin is so substantial that maintaining hydrologic and sediment delivery processes would be very difficult. However, due to the low-density character of development, A-5 could utilize natural water quality treatment systems consistent with the second part of the recommendation. A-5	**Consistent.** B-8 would be consistent because it proposes no development within the Gabino sub-basin and existing hydrologic and sediment delivery processes would be maintained.	**Could be consistent.** B-10 Modified could be consistent if a substantial bridge or box culvert creek crossing is designed and constructed in association with the expansion of Cristianitos Road to avoid arroyo toad breeding habitat and streamcourse morphology. Development in the Gabino and Blind Canyon subunit would be focused on the grazed areas on the mesa and runoff from Blind Canyon would be managed	**Consistent.** B-12 would be consistent because no development is proposed along Gabino Creek. Development in PA 8 is limited to a maximum of 500 acres, but the development footprint has not been determined. Any development in the Blind Canyon subunit would be focused on the grazed areas on the mesa and runoff from Blind Canyon would be managed through implementation of the Water Quality Management

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	**B-8**	**B-10 Modified**	**B-12**
	would not provide for comprehensive water quality treatment, although compliance with the County DAMP would be necessary.		through implementation of the Water Quality Management Plan.	Plan.
La Paz Canyon Sub-basin				
37. Development should be limited in extent in order to protect the generation and transport of coarse sediment to downstream areas. Note: The avoidance of impacts in this sub-basin is extremely important because: (1) La Paz canyon provides a very important source of cobbles that contribute to downstream arroyo toad breeding habitat (in conjunction with coarse sediments generated within the middle reach of Gabino Canyon) both within the planning area and in the stream system outside the planning area, and (2) episodic storm events occurring within the La Paz Canyon watershed will not be altered in any way, thereby contributing important streamcourse processes for arroyo toad and other aquatic species both within the planning area and downstream of the planning area. Therefore, the protection of the La Paz basin physical processes is an important element in overall consistency	**Consistent.** A-5 would be consistent because it proposes no development in this sub-basin.	**Consistent.** B-8 would be consistent because it proposes no development in this sub-basin.	**Consistent.** B-10 Modified would be consistent because it proposes no development in this sub-basin.	**Consistent.** B-12 would be consistent because it proposes no development in this sub-basin.

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	B-8	B-10 Modified	B-12
of the NCCP/HCP with the Watershed Planning Principles.				
38. Development should be set back from riparian vegetation within the relatively narrow and geologically confined riparian zone.	**Consistent.** A-5 would be consistent because it proposes no development in this sub-basin.	**Consistent.** B-8 would be consistent because it proposes no development in this sub-basin.	**Consistent.** B-10 Modified would be consistent because it proposes no development in this sub-basin.	**Consistent.** B-12 would be consistent because it proposes no development in this sub-basin.
Talega Canyon Sub-basin				
39. To the extent feasible, major stormwater flows from development areas should emulate current runoff patterns. Runoff during the dry season and high frequency/low magnitude storms (generally 1-2 year storm events) should be routed through natural water quality treatment systems and, where feasible, encouraged to flow generally away from arroyo toad habitat in Talega Canyon and toward Blind Canyon.	**Not consistent.** A-5 would not be consistent because of extensive development on side slopes on the ridge above the creek (where Northrop Grumman facilities are currently located). Thus, A-5 would not be able to feasibly route flows back up and over the ridge for much of the development area.	**Not Applicable.** B-8 proposes no development within the Talega sub-basin, therefore development related runoff management would not be necessary.	**Consistent.** B-10 Modified would be consistent because under B-10 Modified, the hydrology section of the Water Quality Management Plan indicates that routing both dry season flows and 1-2 year storm flows in excess of existing conditions toward Blind Canyon would occur, and current runoff patterns would be emulated..	**Consistent.** B-12 would be consistent because the hydrology section of the Water Quality Management Plan indicates that with the implementation of Best Management Practices for the future 500 acres of development, current runoff patterns would be emulated.
40. Development should focus on the ridge tops to avoid the canyon bottoms and preserve the steeper slopes. To the extent practical, development should generally be in the area of the existing Northrop Grumman facilities and adjacent ridges to the east/northeast.	**Not consistent.** A-5 would not be consistent because it proposes development on the side slopes as well as the top of the ridges.	**Not Applicable.** B-8 proposes no development within the Talega sub-basin therefore development related runoff management would not be necessary.	**Not consistent.** B-10 Modified would not be consistent because although it proposes development on the ridge tops within the Talega sub-basin to avoid the canyon bottom consistent with the recommendation, it also proposes development within the Blind sub-basin on both ridge tops and the canyon bottom, inconsistent with the recommendation. Development would largely be located on the	**Could be consistent.** B-12 could be consistent because development in PA 8 is limited to a maximum of 500 acres, but the development footprint has not been determined. It could be consistent because it proposes development on the ridge tops within the Talega sub-basin to avoid the canyon bottom consistent with the recommendation, but any development within the Blind sub-basin on both ridge tops and

TABLE 6-11 (Continued)
SAMP WATERSHED AND SUB-BASIN PLANNING PRINCIPLES CONSISTENCY FINDINGS

PLANNING PRINCIPLES	ALTERNATIVES			
	A-5	**B-8**	**B-10 Modified**	**B-12**
			existing Northrop Grumman uses and the area to the east/northeast, although a portion of the development area would extend south of the existing Northrop Grumman facilities.	the canyon bottom, would be inconsistent with the recommendation. It is anticipated that development would largely be located on the existing Northrop Grumman uses and the area to the east/northeast, although a portion of the development area could extend south of the existing Northrop Grumman facilities.
41. The timing of peak flows should emulate the timing of flows under existing conditions.	**Consistent.** A-5 likely would be consistent because given the low density nature of development, the timing of peak flows could be managed in order to be consistent because it would implement flow management measures.	**Not Applicable.** B-8 proposes no development within the Talega sub-basin therefore peak flow management would not be necessary.	**Consistent.** B-10 Modified would be consistent because the Water Quality Management Plan indicates that the timing of peak flows will emulate existing conditions consistent with the recommendation through the implementation of Best Management Practices.	**Consistent.** B-12 would be consistent because the Water Quality Management Plan indicates that the timing of peak flows will emulate existing conditions consistent with the recommendation through the implementation of Best Management Practices.

For the "could be consistent" findings, Principles 7, 9, 13, 14, 25, 27, 30, and 31 identify funding to support implementation of the Aquatic Resources Adaptive Management Program, including implementation of the Aquatic Resources Restoration Plan (Appendix F2), long-term control of invasive species, and stabilization/restoration of areas generating fine sediments in the San Mateo Creek Watershed. The availability of funds for implementation of the Aquatic Resources Adaptive Management Program as a result of the limited regulatory "nexus" under the B-8 Alternative cannot be determined at this time. Therefore, to ensure adequate funding is considered speculative. The inability to ensure funding of the Aquatic Resources Adaptive Management Program is significant in terms of overall aquatic resource conservation area design and long-term function. Additional feasibility considerations relating to funding required to assure the long-term protection of aquatic resources are reviewed in the following section.

For the "not consistent" findings, the three conflicts associated with the B-8 Alternative relate to proposed development in the valley floor and alluvial side canyons in the Gobernadora Sub-basin (Principle 10), the impact on a vernal pool supporting fairy shrimp on the Radio Tower Road mesa (Principle 19), and the continued generation of fine sediments from erodible clay soils in the Cristianitos Sub-basin (Principle 26) and in the Gabino Sub-basin (Principle 33). The lack of consistency with Principle 10 regarding the valley floor and alluvial side canyons in Gobernadora is common to all alternatives and is not a significant reserve design issue. Avoidance of the vernal pool supporting fairy shrimp on the portion of Radio Tower Road mesa within the Trampas Canyon proposed development area is not considered feasible because of the reduced available development acreage under this alternative scenario. The continued generation of fine sediments in the Cristianitos and Gabino Sub-basins if restoration is not undertaken is a potentially significant aquatic resource conservation area design as it may affect downstream resources.

6.4.2.3 Alternative B-10 Modified

Alternative B-10 Modified is 80 percent (33/40 total) consistent with the Watershed Planning Principles. Revisions to the B-10 Modified Alternative would be necessary to achieve consistency with Principles 35 and 36. Alternative B-10 Modified would conflict with six (15 percent) of the Principles (8, 10, 19, 21, 25, and 40).

With regard to "could be consistent" findings, consistency with Principles 35 and 36 could be attained by design and construction of a collector road over Cristianitos Creek that would avoid significant riparian habitat, arroyo toad breeding habitat, and avoid altering stream course morphology. Upgrading existing Cristianitos Road to County standards would require the removal of the existing at-grade Arizona style (pipe and concrete) crossing of Gabino Creek and construction of a box culvert in the same general location, which would improve habitat quality for the arroyo toad.

For the "not consistent" findings, Alternative B-10 Modified conflicts with recommendations in the Chiquita, Gobernadora, Trampas, Cristianitos, and Blind Canyon Sub-basins, including (1) impacts to slope wetlands north of the treatment plant in Chiquita; (2) impacts in the Gobernadora Sub-basin where development is proposed in the alluvial side canyons and the valley floor in a few locations, even though proposed development would generally avoid the valley floor and would be set back on Chiquadora Ridge; (3) impacts to one area of vernal pools in the Trampas Canyon Sub-basin that support the Riverside and San Diego fairy shrimp; (4) impacts in the Cristianitos Sub-basin that would preclude full implementation of the restoration recommendations; (5) impacts to the Verdugo Sub-basin; and (6) impacts in Planning Area 8 (Northrop Grumman) concentrated in the Blind Canyon Sub-basin on both

ridges and the valley bottom in order to avoid the vast majority of the San Mateo Watershed in the planning area.

Overall, Alternative B-10 Modified achieves a high (80 percent) degree of consistency with the Watershed Planning Principles and has limited conflicts (12 percent) and limited significant impacts.

6.4.2.4 Alternative B-12

Alternative B-12 is 90 percent (36/40 total) consistent with the Watershed Planning Principles. Modifications to the B-12 Alternative would be necessary to achieve consistency with Principles 35 and 40. Alternative B-12 would conflict with 2 (5 percent) of the Principles (10 and 33).

With regard to "could be consistent" findings, Principle 35 relates to the protection of oak woodlands in Blind Canyon. The final configuration of development within PA 8 is undetermined at this time therefore no final consistency finding can be made, although the final development configuration could avoid the oak woodlands. Principle 40 recommends that development in the Talega Sub-basin focus on the ridge tops and avoid the steeper side slopes, similar to Principle 35 a could be consistent determination is made pending the final configuration of Planning Area 8.

For the "not consistent" findings, Alternative B-12 primarily conflicts with recommendations in the Chiquita, Gobernadora, and Blind Sub-basins for protecting side canyons. According to the design of this alternative:

- **Chiquita Sub-basin.** Under the B-12 Alternative, limited development is assumed in middle Chiquita Canyon. Overall, development is focused on the ridges and away from the side canyons above the treatment plant. However, in order to achieve this level of avoidance (including avoidance of the main valley floor), all development would be concentrated mainly south of the treatment plant, resulting in impacts to one major side canyon.

- **Gabino Sub-basin.** B-12 proposed no development in the Gabino sub-basin that could serve to reduce the generation of fine sediments and associated turbidity.

Overall, Alternative B-12 achieves a high degree (36 of 40) of consistency with the Watershed Planning Principles and has limited conflicts (2 total) and therefore limited significant impacts. As noted above, each of the three main conflict areas result from concentrating development in a few side canyons in order to avoid most of the other planning area side canyons and all of the major canyon valley floors and associated stream courses.

6.4.2.5 Circulation Systems Consistency Analysis

Each of the "B" Alternatives analyzed in this chapter requires an overall circulation system to support potential development areas. The conceptual circulations systems for Alternatives B-8, B-10 Modified, and B-12 are depicted in Figures 6-3, 6-4, and 6-5, respectively. Alternative A-5 would use the existing ranch road network; therefore, no consistency analysis is required for this alternative. To identify the potential impacts of the alternative circulation systems on the proposed permanent open space for each of the alternatives, this subchapter analyzes the circulation systems with regard to the sub-basin Watershed Planning Principles.

Those portions of the circulation systems located outside the proposed development areas RMV Planning Area were reviewed for consistency with the specific Watershed Planning Principles applicable to each sub-basin. For the portions of the circulation systems located within proposed development areas of the RMV Planning Area, the potential impacts are already assumed in the development area impact and therefore do not require separate analysis.

Because the SAMP does not provide an evaluation framework for analyzing impacts to Waters of the U.S for the SOCTIIP and because the alternative circulation systems have been designed to serve the alternative development areas without the need for the SOCTIIP, the analysis for Alternatives B-8 and B-12 is limited to the circulation element features which are proposed to be authorized in conjunction with each alternative. Biological impacts associated with the alternative SOCTIIP alignments on the alternatives are addressed in the cumulative impacts chapter of this EIS. For Alternative B-10 Modified, the analysis assumes that the SOCTIIP project would be constructed as depicted on the Master Plan of Arterial Highways (MPAH) and, as a result, this alternative has assumed construction of the SOCTIIP as part of the circulation system. Therefore, for this alternative, the MPAH SOCTIIP alignment is reviewed for consistency, along with other circulation facilities, as described below.

The review of the different circulation systems reflects two different assumptions: (1) MPAH modifications proposed or identified in conjunction with the different alternatives; and (2) the circulation elements shown on the existing MPAH (with the exception of the SOCTIIP for the reasons previously noted, other than for Alternative B-10 Modified). These circulation system assumptions are used for each sub-basin consistency review in this chapter.

San Juan Creek Watershed

Chiquita Sub-Basin

***B-8 Alternative Circulation System Consistency Review*.** The level of development proposed under the B-8 Alternative would not necessitate the construction of the Crown Valley Parkway extension shown on the MPAH. Consistency review of this facility is therefore not required.

Because no development is proposed in the Chiquita Sub-basin, Chiquita Canyon Road would not be constructed and therefore habitat linkage E would be unaffected.

The arterial extension of Cristianitos Road/F Street crossing over from the Gobernadora development area to Oso Parkway would be required. Because of the increased habitat connectivity within the Chiquita Sub-basin under Alternative B-8, no significant connectivity impacts are anticipated.

The B-8 Alternative proposes one major change to the existing MPAH within the Chiquita Sub-basin: the addition of major east-west arterial (Cow Camp Road) north of San Juan Creek. This modification would require the construction of a bridge over Chiquita Creek. This MPAH change would have the following consistency implications:

- The construction of Cow Camp Road north of San Juan Creek would require a bridge crossing over Chiquita Creek, but generally would avoid the valley floor and biological resources.

- Construction of a major arterial on the north side of San Juan Creek is anticipated to reduce traffic on existing Ortega Highway as set forth in GPA/ZC EIR 589. The reduction

of traffic on Ortega Highway would reduce vehicle impacts on animal species and potentially further recovery efforts for the arroyo toad.

Alternative B-10 Modified Circulation System Consistency Review. Under Alternative B-10 Modified scenario, the SOCTIIP MPAH alignment is assumed to be constructed within the Chiquita Sub-basin. This SOCTIIP alignment is the same as that proposed for Cristianitos Road/F Street under the B-8 and B-12 Alternatives; therefore, some of the same consistency issues would occur, namely impacts to linkages D and E. Avian wildlife movement would not be impacted. In the event the SOCTIIP is not constructed, Cristianitos Road/F Street would be extended from the proposed Gobernadora development area to Oso Parkway as proposed for the other alternatives.

As with the other alternatives, the Crown Valley Parkway extension would not be constructed as a part of the B-10 Modified Alternative.

Similar to the other "B" Alternatives, Alternative B-10 Modified also proposes the construction of Cow Camp Road. Therefore, the consistency analysis described above for Alternative B-8 would also apply to Alternative B-10 Modified.

Chiquita Canyon Road to the east of the SMWD treatment plant would impact ground-dwelling wildlife movement in linkage E.

Widening of Ortega Highway between La Pata and the western boundary of the RMV Planning Area would result in temporary construction related impacts to San Juan Creek (linkage J) and permanent impacts associated with the placement of additional bridge piers. However, such impacts are not anticipated to impede wildlife movement along linkage J. Similar impacts would occur from the widening of the Antonio/La Pata bridge over San Juan Creek; these impacts are also not anticipated to impede wildlife movement.

B-12 Alternative Circulation System Consistency Review. The B-12 Alternative proposes one major change to the existing MPAH within the Chiquita Sub-basin: the addition of major east-west arterial (Cow Camp Road) north of San Juan Creek. Therefore, the consistency analysis described above for Alternative B-8 and Alternative B-10 Modified would also apply to Alternative B-12.

The level of development proposed under the B-12 Alternative, particularly the limited development in the Chiquita Sub-basin, would not necessitate the construction of the Crown Valley Parkway extension shown on the MPAH. Consistency review of this facility is therefore not required for this alternative.

The arterial extension (Cristianitos Road/F Street) from the Gobernadora development area to Oso Parkway would have limited impacts on linkage D due to the lack of development in middle Chiquita Canyon. Avian wildlife movement would not be impacted.

Widening of Ortega Highway between La Pata and the western boundary of the RMV Planning Area would result in temporary construction related impacts to San Juan Creek (linkage J) and permanent impacts associated with the placement of additional bridge piers. However, such impacts are not anticipated to impede wildlife movement along linkage J. Similar impacts would occur from the widening of the Antonio/La Pata bridge over San Juan Creek; these impacts are also not anticipated to impede wildlife movement.

Gobernadora Sub-basin

B-8 Alternative Circulation System Consistency Review. Cristianitos Road/F Street would extend from the proposed Gobernadora development area to Oso Parkway. This road is proposed to be elevated above the valley floor and, if the creek is bridged and is constructed in such a way as to allow for the recommended creek meander restoration program, the arterial road would be consistent with the sub-basin recommendations. The road has been aligned to avoid impacting Sulphur Canyon and thus would be consistent with the Sulphur Canyon restoration recommendations. The B-8 Alternative Circulation System would be consistent with the sub-basin recommendations.

***B-10 Modified Circulation System Consistency Review*.** The B-10 Modified Alternative assumes that the SOCTIIP project would be constructed in the MPAH alignment. In order to be consistent with the sub-basin recommendations, the SOCTIIP would have to be elevated above the valley floor, bridge Gobernadora Creek, and be constructed to allow for implementation of the Gobernadora Creek Restoration Plan recommendations. The MPAH alignment would avoid impacting Sulphur Canyon and would be consistent with the Sulphur Canyon restoration recommendations that are also an element of the Aquatic Resources Habitat Restoration Plan. In the event the SOCTIIP is not constructed, Cristianitos Road/F Street would be extended from the Gobernadora development area to Oso Parkway as proposed for the other alternatives.

B-12 Alternative Circulation System Consistency Review. The B-12 Alternative shows Cristianitos Road/F Street extending from the proposed Gobernadora development area to Oso Parkway. This road is proposed to be elevated above the valley floor and, if the creek is bridged and the road is constructed in such a way as to allow for the recommended creek meander restoration program, the arterial road would be consistent with the sub-basin recommendations. The road has been aligned to avoid impacting Sulphur Canyon and thus would be consistent with the Sulphur Canyon restoration recommendation. The B-12 Circulation System would be consistent with the sub-basin recommendations.

Trampas and Central San Juan Sub-basin

All of the “B” Alternatives propose the same arterial crossing of San Juan Creek and would have the same physical impacts, including permanent impacts resulting from placement of piers in the creek and temporary impacts associated with construction of Cristianitos Road/F Street. In addition to the arterial crossing, the B-10 Modified Alternative also assumes construction of the SOCTIIP in the MPAH alignment. This would require a second crossing of San Juan Creek. Impacts from SOCTIIP generally would be similar to those of the arterial crossing (i.e., temporary construction impacts and permanent impacts associated with the placement of piers).

Measures to reduce impacts to arroyo toad breeding habitat would be implemented during construction of the bridge, such as toad exclusion fencing, minimal to no construction activity during the breeding season, sediment control measures, and biological monitoring. Existing hydrology would be maintained with construction of the bridge.

Verdugo Sub-basin

B-8 Alternative Circulation System Consistency Analysis. Because no development is proposed in Verdugo Canyon, the B-8 Alternative would be consistent with the recommendations.

B-10 Modified Alternative Circulation System Consistency Analysis. Verdugo Road would provide access to proposed development within the Verdugo Sub-basin. This two-lane collector within Planning Area 4 would connect to Cow Camp Road near Caspers Wilderness Park. No consistency issues would occur with this road because it would avoid Verdugo Canyon and its source of coarse sediments. Outside of Planning Area 4, a combination of existing Verdugo Road and existing ranch roads would provide access to the ten proposed estate lots in upper Gabino Canyon. A waiver from County subdivision access requirements would be necessary for this type of access. Consistency with the sub-basin recommendations is dependent upon receipt of this waiver.

B-12 Alternative Circulation System Consistency Review. The B-12 Alternative proposes that development in the Verdugo Sub-basin, (but outside of Verdugo Canyon) be accessed via Cow Camp Road and Ortega Highway near Caspers Wilderness Park. No consistency issues would occur with this road as it would avoid the canyon and its source of coarse sediments.

San Mateo Creek Watershed

Cristianitos Sub-basin

B-8 Alternative Circulation System Consistency Analysis. Under the B-8 Alternative, existing Cristianitos Road, a two-lane private ranch access road, would remain in its existing condition. Therefore, the B-8 Alternative circulation system would be consistent with the sub-basin recommendations.

B-10 Modified Alternative Circulation System Consistency Analysis. The B-10 Modified Alternative circulation system in the Cristianitos Sub-basin proposes using a combination of existing, but upgraded Cristianitos Road and other ranch roads, in addition to the SOCTIIP, to access the proposed development in Cristianitos Canyon and Cristianitos Meadows. Upgrading the ranch roads would (1) avoid the headwaters of Cristianitos Creek, (2) preserve the opportunity to implement the coastal sage scrub/valley needlegrass grassland restoration recommendations, (3) avoid the alkali wetlands/creek riparian areas, and (4) preserve stream stabilization opportunities. Therefore, these upgraded roads would be consistent with the sub-basin recommendations.

The MPAH alignment for the SOCTIIP in the Cristianitos Sub-basin would conflict with the restoration recommendations for the sub-basin, and may impact the alkali wetlands and the headwaters of Cristianitos Creek. The MPAH alignment for the SOCTIIP also would impact habitat linkage N that has been identified as an important dispersal linkage for the California gnatcatcher. The SOCTIIP would not be consistent with the sub-basin recommendations.

B-12 Alternative Circulation System Consistency Review. Under the B-12 Alternative, existing Cristianitos Road, a two-lane private ranch access road, would remain in its existing condition. Therefore, the B-12 Alternative circulation system would be consistent with the sub-basin recommendations.

Gabino and Blind Canyons Sub-basin

B-8 Alternatives Circulation System Consistency Review. Because the B-8 Alternative does not propose development in the San Mateo Creek Watershed, this alternative would not create any potential circulation system impact considerations. This alternative would be consistent with the sub-basin recommendations.

B-10 Modified Alternative Circulation Consistency Analysis. The B-10 Modified Alternative proposes to upgrade the existing Cristianitos Road to County standards and assumes construction of the SOCTIIP in the MPAH alignment. Regarding the upgrade of Cristianitos Road, the consistency analysis described above for the Cristianitos Sub-basin would apply.

The SOCTIIP would likely result in temporary construction impacts and permanent impacts to Gabino Creek associated with placement of bridge piers in Gabino Creek.

B-12 Alternative Circulation System Consistency Review. Under the B-12 Alternative, existing Cristianitos Road, a two-lane private ranch access road, would remain in its existing condition. Therefore, the B-12 Alternative circulation system would be consistent with the sub-basin recommendations.

La Paz Sub-Basin

B-8, B-10 Modified, and B-12 Alternatives Circulation System Consistency Review. Alternatives B-8, B-10 Modified, and B-12 do not assume development within the La Paz Sub-basin and therefore would be consistent with the sub-basin recommendations.

Talega Sub-Basin

B-8 Alternative Circulation System Consistency Review. Because the B-8 Alternative does not propose development in the San Mateo Creek Watershed, this alternative would not create any potential circulation system impact considerations. This alternative would be consistent with the sub-basin recommendations.

B-10 Modified Alternative Circulation System Consistency Review. The B-10 Modified Alternative circulation system proposes construction of a bridge over Cristianitos Creek connecting Avenida Pico to existing Cristianitos Road. Internal residential streets would also be constructed in the Talega Sub-basin. Construction of a bridge over Cristianitos Creek would not affect dry season and stormwater flows and thus would not cause any potential conflicts with the recommendations for this sub-basin.

B-12 Alternative Circulation System Consistency Review. Access to proposed development in the Talega Sub-basin under the B-12 Alternative would be via the construction of a bridge over Cristianitos Creek connecting existing Avenida Pico to existing Cristianitos Road. Internal residential streets would also be constructed in the Talega Sub-basin. Temporary impacts to Cristianitos Creek resulting from construction of this bridge would occur, as would permanent impacts associated with the placement of piers in Cristianitos Creek to support the bridge structure. Long-term north-south wildlife movement along Cristianitos Creek would be unaffected by the bridge. Measures to reduce impacts to arroyo toad breeding habitat would be implemented during construction of the bridge, such as toad exclusion fencing, minimal to no construction activity during the breeding season, sediment control measures, and biological monitoring. Existing hydrology would be maintained with construction of the bridge. The B-12 Alternative circulation system could be consistent with the sub-basin recommendations.

Other Planning Area

B-8 Alternative Circulation System Consistency Review. Because the B-8 Alternative does not propose development in the "Other Planning Area," this alternative would not create any potential circulation system impact. This alternative would be consistent with the recommendations.

B-10 Modified Alternative Circulation System Consistency Review. Within the Other Planning Area, the B-10 Modified Alternative proposes the same Cristianitos Road Bridge and upgrades as discussed above for the Talega Sub-basin. However, in addition to the Cristianitos Road Bridge, the B-10 Modified Alternative also assumes that the SOCTIIP would be constructed in the MPAH alignment. The Far East alignment would impact habitat linkage N, potentially affecting gnatcatcher connectivity from northerly sub-basins, particularly the Cristianitos Sub-basin, to populations in lower Cristianitos Creek/San Mateo Creek on MCB Camp Pendleton. Breeding and foraging habitat and movement opportunities within the Cristianitos stream course and adjacent alluvial terraces for the arroyo toad may be affected by the Far East alignment. The east-west habitat linkage O from Gabino Creek to the confluence with Cristianitos Creek to protect wildlife movement from Gabino Canyon and the Donna O'Neill Conservancy may be impacted by construction of the SOCTIIP in the Far East alignment. The SOCTIIP in the Far East alignment would not be consistent with the sub-basin Planning Recommendations.

B-12 Alternative Circulation System Consistency Review. The B-12 Alternative circulation system proposes construction of a bridge over Cristianitos Creek connecting existing Avenida Pico to existing Cristianitos Road within the Other Planning Area. Temporary impacts to Cristianitos Creek resulting from construction of this bridge would occur, as would permanent impacts associated with the placement of piers in Cristianitos Creek to support the bridge structure. Long-term north-south wildlife movement along Cristianitos Creek would be unaffected by the bridge. Measures to reduce impacts to arroyo toad breeding habitat would be implemented during construction of the bridge, such as toad exclusion fencing, minimal to no construction activity during the breeding season, sediment control measures, and biological monitoring. Existing hydrology would be maintained with construction of the bridge. The B-12 Alternative circulation system could be consistent with the sub-basin recommendations.

6.5 ALTERNATIVES REJECTED FROM FURTHER CONSIDERATION IN CHAPTER 8.0 UNDER CLEAN WATER ACT SECTION 404(b)(1)

Subchapters 6.1, 6.2, and 6.3 provided detailed analyses of the consistency of each of the "B" Alternatives selected for further review with the SAMP Tenets and the Watershed Planning Principles. The following presents overviews and summaries of consistency with the SAMP Tenets and Watershed Planning Principles, and provides recommendations as to whether an alternative should be considered in the Chapter 8.0 Section 404(b)(1) Guidelines Consistency Review or should be removed from further consideration. This subchapter also reviews the ability of the No Project Alternatives, Alternative A-4 and Alternative A-5, to meet the SAMP Purposes and Goals as set forth in Chapter 3.0.

Substantial aquatic habitat resource areas have been protected under a variety of actions that preceded the SAMP process. These aquatic resource protection areas include: Bell Canyon, Lucas Canyon and San Juan Creek within Caspers Wilderness Park, virtually all of the riparian habitat within Arroyo Trabuco, GERA in the Gobernadora Sub-basin, riparian habitat in upper Chiquita and the Donna O'Neill Land Conservancy, and vernal pools in the Ladera Land Conservancy. These protected areas are assumed to provide a significant component of resources that could be protected in conjunction with the Aquatic Resources Conservation Program for the RMV Planning Area. Consequently, the following analyses focus primarily on three "B" Alternatives (Alternatives B-8, B-10 Modified, and B-12) and two "A" Alternatives (Alternatives A-4 and A-5) that address the RMV Planning Area. The RMV Planning Area comprises the vast majority of the private landholdings that provide SAMP/Aquatic Resources Conservation Program planning opportunities.

6.5.1 ALTERNATIVE A-4: NO PERMITTING PROCEDURES/NO SAMP

The No Project/No SAMP Alternative assumes that development in the RMV Planning Area, the Foothill-Trabuco Specific Plan Area and other potential developable areas within the SAMP Study Area would proceed on a project-by-project approach and that the SAMP Tenets and the Watershed Planning Principles would not be applicable.

Under the No Project/No SAMP Alternative, there would be no SAMP watershed plan. For the RMV Planning Area, Rancho Mission Viejo and the Santa Margarita Water District would likely proceed with a series of large-area Section 404 permits *(*e.g.*,* one for each of the proposed development planning areas and associated infrastructure, phased over 15 to 25 years) whose exact configuration and timing would be influenced by the extension of infrastructure facilities and market demand. For illustrative purposes, Rancho Mission Viejo and Santa Margarita Water District could request USACE Section 404 permitting for each of the proposed development areas and associated infrastructure for Planning Areas 1 through 9 of the County approved B-10 Modified (approved by the County of Orange as part of the Ranch Plan in November 2004). However, such a request would not be assured because, as stated above, development would be driven by the availability of infrastructure and market demand. If development did proceed on a planning area by planning area basis on the RMV Planning Area, the USACE Section 404 permitting could proceed in a manner comparable to the USACE Section 404 permit for other large development projects, such as the 4,000-acre Ladera project. Development in the Foothill-Trabuco Specific Plan Area and other potentially developable areas would proceed in the same manner as with past development: on a project-by-project, permit-by-permit basis.

Under the No Project/No SAMP Alternative, potential development areas would address the requirements of the Section 404(b)(1) Guidelines whenever impacts to wetlands are involved. Without a SAMP program and Watershed Planning Principles, areas such as the side canyons of Chiquita Canyon and flat areas in Gobernadora Canyon above the “knickpoint” could be developed because these areas are not within USACE jurisdiction.

6.5.1.1 Essential Elements of Alternative A-4

Alternative A-4 would be distinguished by the following significant elements:

- About 15,132 acres (66 percent) of the RMV Planning Area would be in dedicated open space subject to County General Plan and zoning requirements and about 7,683 acres (33 percent) of the RMV Planning Area could potentially be developed under this alternative.

- About 1,533 acres of the Foothill/Trabuco Specific Plan Area would be in open space and about 2,344 acres could be developed under the current County General Plan designations.

- Future development would be subject to incremental project-by-project application of state and federal regulatory program requirements and would be required to minimize and mitigate impacts on threatened and endangered species and on streambed resources at the project level.

- Future regulatory decisions would not be based on the SAMP Tenets or Watershed Planning Principles.

- Open space provided within the RMV Planning Area and on other private and public lands, in accordance with regulatory requirements, would be dedicated incrementally over 15 to 30 years as part of agency actions on each separate permit application.

- The potential restoration of Gobernadora Creek above the "knickpoint" in the Gobernadora Sub-basin would not be implemented.

- Open space/protected habitat ultimately provided in the subregion would include the regional parks, non-profit lands, and conservation easements previously set aside and future open space dedicated in increments to offset impacts from future projects, but subregional Aquatic Resources Conservation Areas would not be in place to provide a subregional planning and implementation framework.

6.5.1.2 Consistency with SAMP Purposes and Goals

Allowing Reasonable Economic Activities and Development

As discussed above, for illustrative purposes, Rancho Mission Viejo could permit on a project-by-project basis the County approved project: the B-10 Modified. However, while under a no SAMP scenario, Rancho Mission Viejo could apply for permits under the current Nationwide Permit Program or as necessary for an Individual Permit, there are no long-term assurances that Rancho Mission Viejo would in fact be permitted to develop the B-10 Modified as approved. The lack of long-term assurances regarding the ability to develop the B-10 Modified as approved would not meet Rancho Mission Viejo's objectives as set forth in subchapter 3.1.1.2. Rancho Mission Viejo's need is to have a development/open space plan approved that has the capability of providing the financial resources necessary for the landowner to offset the level of risk inherent in the long-term master plan development, the loss of investment opportunities, and the commitment of land and financial resources necessary to provide for the large-scale protection of many valuable resources, including required dedications for the SAMP. Because development approvals and open space dedications are linked, under a no SAMP scenario, there are no assurances that the open space dedications contemplated under the B-10 Modified would occur. Therefore, there are no assurances that the aquatic resources protection goals of the SAMP would be achieved.

Ability to Formulate the Three Elements of an Aquatic Resources Conservation Program

Aquatic Resources Conservation Program Element One: Protection of Aquatic Resources

If, as noted previously, Rancho Mission Viejo chose to permit the County-approved B-10 Modified Alternative on a planning area by planning area basis, under the current permitting procedures (i.e., individual permits and/or nationwide permits), the USACE would only regulate impacts to Waters of U.S. With no SAMP to provide the backdrop to consider landscape-level processes, the USACE would not give consideration to habitat connectivity, upland-wetland interfaces, and upstream-downstream riverine processes as provided for by either the SAMP Tenets or the Watershed Planning Principles. It is unlikely under a no SAMP scenario that all aquatic resources protected through the B-10 Modified would become Aquatic Resource Conservation Areas. Consistent with U.S. Supreme Court case law (*Dolan v. City of Tigard*, (1994) 512 U.S. 374), mitigation would need to be roughly proportional to impacts and could not be committed in advance of each permit application. While extensive riparian areas would be protected under an A-4 Alternative (1,691.2 acres in the RMV Planning Area; see Table 6-5),

these areas would not be designated Aquatic Resource Conservation Areas and would not be managed in accordance with a SAMP Aquatic Resources Conservation Program.

Aquatic Resources Conservation Program Element One: Protection of Listed and Unlisted Aquatic Species

Listed Aquatic Species. While impacts to aquatic species and aquatic ecosystems are required to be analyzed under the Section 404(b)(1) Guidelines, limits on discharge requirements apply only to listed species. Aquatic listed species found within the SAMP Study Area are the least Bell's vireo, southwestern willow flycatcher, arroyo toad, Riverside fairy shrimp, and San Diego fairy shrimp. Regarding the Riverside and San Diego fairy shrimp, the vernal pool habitats that support these species are not subject to USACE Section 404 jurisdiction. Given the extent of habitat protection for the remaining listed aquatic species and the limited development impacts associated with Alternative A-4 (assuming for illustrative purposes that Rancho Mission Viejo requests permits on a project-by-project basis, the impacts set forth in Tables 6-1, 6-2, and 6-6 for the B-10 Modified would apply), impacts on these species would be largely avoided with additional minimization requirements (e.g., for bridges across stream courses) and mitigation requirements offsetting all remaining impacts in accordance with the County requirements.

Unlisted Aquatic Species. Absent a SAMP, protection, restoration, and management for unlisted aquatic species would primarily be governed by state law under CEQA. Although CEQA mitigation requirements would have to be met for sensitive species, comprehensive protection, restoration, and management for aquatic species required by the SAMP Tenets and Southern Planning Guidelines and the Watershed Planning Principles would not be required. A coordinated, comprehensive program for protection, restoration, and management of aquatic resources in the SAMP Study Area would not occur.

Aquatic Resources Conservation Program Element Two: Long-Term Comprehensive Aquatic Resource Restoration Program

In contrast with the proposed permitting procedures/SAMP Aquatic Resources Conservation Program alternatives analyzed in this chapter, comprehensive long-term aquatic resource actions within Aquatic Resources Conservation Areas committed as partial mitigation for impacts on Waters of the U.S. and aquatic listed species would be more difficult to achieve because any management/restoration actions would be resolved as project-by-project Section 404 permits were processed. Some larger restoration projects require funding that may span the timeframe of several individual projects and associated permitting actions under the no SAMP alternative, such that implementation of the restoration project may not occur on a comprehensive basis. Under a project-by-project scenario, the success of such a restoration project cannot be assured. Consistent with U.S. Supreme Court case law (*Dolan v. City of Tigard*, (1994) 512 U.S. 374), funding for management/restoration would need to be roughly proportional to impacts and could not be committed in advance of each permit application. By comparison, under the proposed permitting procedures, a comprehensive restoration and management program would provide for and include a comprehensive prioritization of enhancement restoration areas and specific restoration measures to address pre-existing conditions currently impacting significant aquatic resource areas, consistent with the corresponding elements of the Aquatic Resources Conservation Program described in Chapters 1.0 and 5.0 of this EIS.

Aquatic Resources Conservation Program Element Three: Comprehensive Long-Term Management of Aquatic Resources

The proposed permitting procedures/SAMP Aquatic Resources Conservation Program alternatives include extensive adaptive management and monitoring commitments, along with funding requirements to implement those commitments. Because of the incremental nature of Alternative A-4 (a No Permitting Procedures/No SAMP Aquatic Resources Conservation Program alternative), it is not possible to determine whether a comprehensive management program could be formulated on a project-by-project basis. The USFWS has noted significant differences between management pursuant to Section 7 consultations and management under comprehensive resource programs such as large-scale HCPs. According to the final rule for critical habitat for the arroyo toad:

> *"Typically HCPs provide greater conservation benefits to a covered species by assuring the long-term protection and management of a covered species and its habitat, and funding for such management through the standards found in the 5-Point Policy for HCPs (64 FR 35242), the HCP No Surprises regulation (63 FR 8859) and relevant regulations governing the issuance and implementation of HCPs, such as those requiring the permittee to minimize and mitigate the taking to the maximum extent practicable. However, such assurances are typically not provided in connection with Federal projects subject to Section 7 consultations which, in contrast to activities on non-federal lands covered by HCPs, often do not commit to long-term special management or protections. Therefore, a consultation unrelated to an HCP typically does not accord the lands it covers the extensive benefits an HCP provides."* (70 FR 19571)

The USACE has noted a similar lack of long-term management commitments under incremental USACE permits. It is this lack of comprehensive management that has provided a major impetus for undertaking the SAMP (many of the Section 7 consultations cited above arise in conjunction with USACE Section 404 permits). As noted in the Purpose Statement in Chapter 3.0, "The broad objectives of the SAMP are to allow for comprehensive management of aquatic resource and to increase regulatory predictability for development and infrastructure projects that would impact aquatic resources."

6.5.1.3 Conclusion Regarding the Ability of Alternative A-4 to Meet the Goals of the SAMP

Although significant aquatic resource protection could be achieved on private lands through incremental USACE permitting of the County approved B-10 Modified Alternative, comprehensive aquatic resource management per a SAMP Aquatic Resources Conservation Program would not be undertaken because such commitments are generally lacking in incremental USACE Section 404 permits, including those subject to Section 7 consultations. Similarly, larger scale aquatic resource restoration would not be undertaken, but rather only mitigation for impacts to Waters of the U.S. would occur. Restoration actions involving a comprehensive watershed-wide approach to pre-existing conditions such as giant reed in Arroyo Trabuco and in San Juan Creek would not have a mitigation nexus with incremental USACE Section 404 permits. The USACE could require project by project invasive species control as mitigation, as it has done in the past. However, such efforts would be expected to have limited success because effective invasive species control generally requires comprehensive areawide efforts over a long time period in order to assure overall benefits to aquatic resources in contrast with project-by-project invasive species control mitigation efforts that are often of small scale and very localized. Therefore, Alternative A-4 is not recommended

for further consideration in Chapters 7.0 and 8.0 other than serving as a No SAMP alternative for comparison purposes.

6.5.2 ALTERNATIVE A-5: NO IMPACTS ON CLEAN WATER ACT/STATE JURISDICTIONAL AREAS/NO TAKE OF LISTED SPECIES ALTERNATIVE

Alternative A-5 (Figure 5-1) is intended to achieve no impact to federally regulated Waters of the U.S., including wetlands and to state-regulated wetlands and streams, in order to obviate the need for preparing a SAMP or the MSAA component of the NCCP/MSAA/HCP. This alternative also assumes no NCCP/MSAA/HCP because the absence of Take of listed species negates the need for preparing an HCP and eliminates an important incentive for participating in the NCCP/MSAA/HCP. Because this alternative can be implemented without impacts on the occupied habitat of listed species and without the need for federal permits, there would be no basis for future Section 7 consultations (a recent 9th Circuit decision has held that the standard for Take under FESA Section 7 is identical to the standard for Take under FESA Section 9, with the consequence that No Take under Section 9 would constitute No Take under Section 7). As such, any critical habitat "adverse modification" requirements derived from Section 7 of FESA would not be invoked.

With regard to land use assumptions, implementation of Alternative A-5 would have lower densities than the B-10 Modified Alternative. The Foothill/Trabuco Specific Plan area would be governed by existing County requirements but no assessment has been made as to how much development could occur under Alternative A-5). With regard to the RMV Planning Area, it is assumed that the number of estate lots would be a maximum of 3,000 lots (assuming that a portion of the undevelopable portion of the lot would extend into open space areas and that other avoidance areas such as in Planning Area 3 would be included within the development envelope as community open space amenity areas (e.g., Rancho Santa Lucia in Carmel Valley, Monterey County). Because Alternative A-5 would have reduced resource impacts, open space dedication requirements are expected to also be reduced. However, some intensification could occur in areas where larger roads could be constructed without requiring a USACE Section 404 permit or impacting listed species habitat. Given land values in Orange County and the demand for estate lots with high natural lands aesthetic resource values (e.g., the Shady Canyon development in the City of Irvine), this estate lot program is considered economically feasible.

6.5.2.1 Essential Elements of Alternative A-5

The following summarizes essential elements of the A-5 Alternative:

- About 14,815 acres (65 percent) of the RMV Planning Area would be in of open space and about 8,000 acres (35 percent) of the RMV Planning Area could potentially be developed under Alternative A-5.

- New development would be limited to those portions of the RMV Planning Area that are not occupied by state or federally listed species. The Foothill/Trabuco Specific Plan Area and other potentially developable areas within the SAMP Study Area would not be included in Alternative A-5 unless the applicable landowners were to agree to total avoidance of any listed species occupied habitat (as well as wetlands and other agency jurisdictional areas reviewed below) located outside areas currently designated as open space on the adopted plan or in previously committed open space areas.

- New development would avoid impacts to wetlands regulated under state and federal laws.

- Wetland and non-wetland Waters of the U.S., regulated by the USACE under Clean Water Act Section 404 and non-wetland jurisdictional areas regulated by the state under Fish and Game Code Section 1600 et seq., would be avoided.

- The ability to avoid temporary impacts to wetlands and impacts to all ephemeral drainages and non-wetland waters regulated by state/federal agencies would need to be confirmed on a site-specific basis as development occurred in the RMV Planning Area.

- As noted above, approximately 14,815 acres (65 percent) of the RMV Planning Area would be open space but would not be required under FESA, CESA, USACE Section 404, or Fish and Game Code Section 1600 et seq. to be committed to a public or non-profit management program because of the absence of impacts on listed species. Other requirements pursuant to CEQA review or the Subdivision Map Act could result in some open space dedications but would not likely be extensive if overall development density were to be low-density, estate types of development. The configuration of open space would be dictated by avoidance requirements applied to habitat actually occupied by listed species rather than Aquatic Resources Conservation Areas design considerations. Therefore, Alternative A-5 would not be a feasible means of achieving SAMP aquatic resource protection, restoration, or management planning considerations.

- As noted above, approximately 8,000 acres could potentially be developed. Assuming low density estate development in most areas, access to residential and other uses would be provided through the use of the existing ranch road network with surfacing limited to existing road widths; the potential development areas depicted on the map for Alternative A-5 (Figure 5-1) are all served by existing Rancho Mission Viejo ranch roads.

6.5.2.2 Consistency with SAMP Purposes and Goals

Allowing Reasonable Economic Activities and Development

Given the land values associated with estate housing, the A-5 Alternative is potentially economically feasible for Rancho Mission Viejo. This alternative would provide up to 3,000 estate units thereby providing a substantial economic return and much lower infrastructure costs than the A-4 and the "B" Alternatives. However, this alternative falls far short of the 14,000 residential units incorporated into the B-10 Modified Alternative approved by the County of Orange in November 2004 in furtherance of the County's OCP-2004 housing goals. Further, with almost all of the units expected to be estate units, this alternative would not provide a wide range of housing opportunities and would conflict with housing goals reflected in OCP-2004 and the GPA/ZC approval of the B-10 Modified Alternative in November 2004.

Ability to Formulate the Three Elements of an Aquatic Resources Conservation Program

Aquatic Resources Conservation Program Element One: Protection of Aquatic Resources, including Listed Aquatic Species

***Avoidance of Aquatic Resource Areas*.** Direct impacts to USACE jurisdictional areas would be avoided, thereby avoiding impacts to all resources located within these areas. Direct impacts to habitat occupied by species listed at the state and federal levels and to CDFG jurisdictional streambeds would also be avoided. As described previously, under Alternative A-5, there would be a net loss of acreage and functions (SAMP Tenet 1) through indirect effects such as lack of ecologically meaningful buffers (SAMP Tenet 7), decreased sediment production through

development of sandy areas (SAMP Tenet 6), and development within headwater areas (SAMP Tenet 3).

As noted previously, no regulatory approvals would be required under USACE Section 404, CDFG Fish and Game Code Section 1600 et seq., CESA Section 2081, and FESA Sections 7 and 9 (including no critical habitat consultation under Section 7). In contrast with land dedications that might be required as mitigation for USACE Section 404 permits, state streambed alteration agreements, and/or CESA/FESA Incidental Take permits, no commitment to Aquatic Resources Conservation Areas would be required because there would be no impacts to mitigate.

Some dedications could be required through the local government entitlement process for large lot subdivisions, but, due to the generally low density nature of anticipated development (as noted, few areas could accommodate higher density development without resulting in USACE Section 404 jurisdictional impacts, Take, or streambed alterations), the open space dedications would be expected to be limited. Because any dedicated lands would not likely be amalgamated in large blocks of open space, it is unlikely that a governmental entity would accept the open space areas for purposes of public agency management. Instead, most open space areas would probably be included as part of community association managed open space (e.g., Nellie Gale, Shady Canyon, Coto de Caza, and many of the San Clemente and San Juan Capistrano open space areas associated with master plan approvals). Without a large-scale Aquatic Resource Conservation Area on the RMV Planning Area, it is unlikely that a functional Aquatic Resource Conservation Area would be assembled for the SAMP Study Area.

Avoidance of Listed Aquatic Species. By definition, Alternative A-5 would not require state or federal Take permits or authorizations. It should be noted that this alternative would provide protection for avian listed species, the arroyo toad, and other listed species because it would direct avoid impacts to occupied coastal sage scrub, jurisdictional wetland and riparian areas, and certain clay soil areas supporting listed species. Indirect effects such as habitat fragmentation, encroachment and the introduction of feral species would still occur under this alternative.

Avoidance of Unlisted Aquatic Species. Virtually all wetlands and riparian resource areas would not be impacted through avoidance of USACE and CDFG jurisdictional areas (see summary of jurisdictional evaluation methodology keyed to functional attributes of riparian areas in Chapter 3.0).

The protection of listed species and associated habitat and state jurisdictional streambeds would be accomplished by avoidance and minimization of impacts, not by active management or an ongoing AMP. By avoiding/minimizing impacts to habitats occupied by state and federally listed species and avoiding/minimizing impacts to wetlands and streambeds, the habitats of listed species would be protected through conservation easements, community association CC&Rs, dedications, etc. required at the local government level to assure responsibility for areas that are not developed. However, such protective mechanisms may not address potential indirect effects, such as those noted above, which could affect unlisted aquatic species.

Given the total amount of open space under Alternative A-5, it could be expected that habitat areas of unlisted species would be protected indirectly as part of community associations' open space and would be located outside the planned development areas. However, habitat would not be actively managed for species benefit purposes. Many habitat areas of unlisted aquatic species would be avoided. However, due to the absence of a nexus requiring open space

dedications, these areas could be considered for development under a future entitlement request, including the need for a General Plan amendment.

Aquatic Resources Conservation Program Element Two: Long-Term Comprehensive Aquatic Resource Restoration Program

Because the implementation of Alternative A-5 would not impact aquatic resources, no aquatic resource restoration would be required. Potential long-term impacts caused by the expansion of invasive plant species would not be addressed. Invasive plants such as giant reed, pampas grass and, tamarisk are found in the RMV Planning Area and are a potentially severe threat to arroyo toad habitat and to other listed aquatic/riparian species in San Juan Creek and downstream of the RMV Planning Area in the San Mateo Creek Watershed. Several restoration actions proposed under the Aquatic Resources Conservation Program restoration element involve pre-existing conditions including giant reed in Arroyo Trabuco, San Juan Creek, and in the San Mateo Watershed and excessive surface and groundwater flows from existing development upstream of Gobernadora Creek habitats that are severely impacting these habitats. However, because these conditions presently exist, the presence of invasive plant species and existing flow conditions in the Gobernadora Creek Sub-basin would have no causal relationship to any new development (i.e., no "nexus") and would likely need to be addressed through public resources and funding in the absence of a SAMP.

Aquatic Resources Conservation Program Element Three: Comprehensive Long-Term Management of Aquatic Resources

Under the A-5 Alternative, an Aquatic Resources Adaptive Management Plan component of the Aquatic Resources Conservation Program could not be formulated and undertaken on a long-term basis to provide management for aquatic resources on the RMV Planning Area or on County lands. The absence of a regulatory nexus would preclude the USACE from providing for long-term management of aquatic resources, as described in Chapters 1.0 and 5.0 for the Aquatic Resources Conservation Program. Although some degree of management might be undertaken by community associations or a master community association (e.g., such as the Marblehead Coastal project in the City of San Clemente), such an association or associations would be under no obligation under USACE Section 404, CESA/FESA, or Fish and Game Section 1600 et seq., to undertake long-term adaptive management of different habitat types. As an example of the consequences of not implementing an Aquatic Resources Adaptive Management Plan, extensive invasive upland and riparian plant species have been documented within the subregional planning area. The inability to plan and carry out a comprehensive invasive species eradication program on a long-term basis is expected to have negative long-term species implications for aquatic species both within and downstream of the RMV Planning Area associated with giant reed, pampas grass, and tamarisk expansion.

6.5.2.3 Conclusion Regarding the Ability of the A-5 Alternative to Meet the Goals of the SAMP

Although Alternative A-5 may be economically feasible for Rancho Mission Viejo and potentially for landowners within the Foothill/Trabuco Specific Plan Area, it does not meet the Purposes and goals identified in Chapters 1.0 and 3.0, particularly those stated by the County regarding the provision of needed housing both in terms of dwelling units and range of housing types. Significant aquatic resource areas would be avoided, but because of the absence of impacts creating a regulatory nexus justifying land and water areas dedications, open space areas outside of proposed development areas may not have permanent use restrictions. As a consequence, while these areas would be "avoided," they would not be protected because

future land use entitlements could be requested by a private landowner. Given the low density of housing and the County's overall housing goals reflected in OCP 2004, such a scenario could occur. As previously noted, comprehensive aquatic resource restoration would not be undertaken. Additionally, two areas important to maintaining and restoring long-term hydrologic/terrains resources–the side canyons of middle Chiquita and the non-wetlands areas adjoining Gobernadora Creek–would not be protected under this alternative scenario. Finally, there would be no regulatory basis for establishing a comprehensive ARAMP (reviewed in Chapter 5.0). For these reasons, this alternative is not carried forward for further review in Chapters 7.0 and 8.0 other than to serve as a No SAMP Alternative for comparison purposes.

6.5.3 ALTERNATIVE B-8

6.5.3.1 Major Aquatic Resources Protection Features

In comparison with the B-10 Modified and B-12 Alternatives, the B-8 Alternative proposes to maximize the open space within the RMV Planning Area and to correspondingly reduce potential development to three planning areas (Figure 5-9). Alternative B-8 identifies Chiquita Canyon, Verdugo Canyon, and the entire RMV Planning Area portion of the San Mateo Creek Watershed as open space. All of the habitat linkages and wildlife movement corridors identified in the Southern Planning Guidelines and the Watershed Planning Principles would be protected. By reducing the size and number of the proposed development areas (compared to the other "B" Alternatives), the B-8 Alternative correspondingly reduces the regulatory "nexus" basis for open space dedications and increases the open space that would have to be acquired with public funds. Because the B-8 Alternative's emphasis is on maximizing open space with only limited contributions to County housing needs and related objectives, Alternative B-8 does not balance resource conservation and housing needs.

Aquatic resources considerations under the B-8 Alternative include the following:

- The majority of the significant aquatic resources found on the RMV Planning Area would be protected through the designation of approximately 19,135 acres (84 percent) of the RMV Planning Area as permanent open space.

- The 19,135 acres of the RMV Planning Area proposed for permanent open space would result in approximately 47,660 acres (54 percent) of protected open space within the subregion including regional parks, non-profit lands, and conservation easement open space already set aside, but not including 40,000 acres in the Cleveland National Forest.

- A large block of habitat totaling about 12,950 acres of unfragmented habitat would be retained in the southeastern portion of the RMV Planning Area.

With regard to the San Juan Creek Watershed, Chiquita Canyon is proposed to be protected in its entirety. Verdugo Canyon is also proposed to be protected in its entirety in order to maintain sources of coarse sediment for San Juan Creek and to maximize the Canyon's habitat linkage function connecting San Juan Creek to the Cleveland National Forest and to portions of Gabino Canyon. The proposed Ortega Gateway and Trampas Canyon development areas are the only development locations proposed in areas to the south of San Juan Creek. Alternative B-8 emphasizes preserving all planning areas within the San Mateo Creek Watershed.

6.5.3.2 Consistency with SAMP Purposes and Goals

Allowing Reasonable Economic Activities and Development

Although the B-8 Alternative maximizes the protection of aquatic resources, the B-8 Alternative would not address County housing goals in a manner comparable to the other ”B” Alternatives. The B-8 Alternative would likely allow for 8,400 units of housing compared with approximately 14,000 units of housing under the other “B” Alternatives and, given the limited land area available for housing development, would likely not provide for as great a range of housing opportunities as the other “B” Alternatives. In addition to not meeting the County housing goals, the B-8 would not meet Rancho Mission Viejo’s objectives as set forth in subchapter 3.1.1.2 which identifies that Rancho Mission Viejo’s need is to have a development/open space plan approved that has the capability of providing the financial resources necessary for the landowner to offset the level of risk inherent in the long-term master plan development, the loss of investment opportunities, and the commitment of land and financial resources necessary to provide for the large-scale protection of many valuable resources, including required dedications for the SAMP.

Summary of Issues Raised in the Reviews of the Consistency of the B-8 Alternative with the SAMP Tenets and Watershed Planning Principles

Except for constraints on Linkage K south of Trampas Canyon common to all of the “B” Alternatives, Alternative B-8 would achieve consistency with most of the landscape-level and sub-basin guidelines. This level of consistency would be achieved primarily through the proposed preservation of 84 percent of the RMV Planning Area in conjunction with already protected open space.

Economic Feasibility of Assuring the Long-Term Protection of Aquatic Resources

With regard to the assemblage of Aquatic Resource Conservation Areas on the RMV Planning Area, the B-8 Alternative would provide an open space-to-dedication ratio in excess of 5 to 1 that includes both aquatic resources and upland resources. As reviewed in GPA/ZC EIR 589, Appendix C, there are two large-scale land areas considered to be generally comparable to the RMV Planning Area with regard to resources and involvement in the NCCP program. The Newport Coast in Orange County (part of the County of Orange Central and Coastal NCCP/HCP) and Otay Ranch in the Chula Vista Subarea Plan area of San Diego County (part of the San Diego City and County MSCP program) made open space dedications at 62 percent of total private lands and 66 percent of total private lands, respectively. Under the Newport Coast and Otay Ranch plans, the ratio of open space to development is approximately 2 to 1. Like the RMV Planning Area, these two areas are under very stringent environmental regulations (the Newport Coast area is subject to the California Coastal Act of 1976 as well as the NCCP, and Otay Ranch is subject to the NCCP) and contain lands with very high natural resource values. To the extent that reasonable economic development requires a balancing of developmental needs and environmental protection, the B-8 Alternative requirement of a 5:1 open space to development dedication ratio for the RMV Planning Area is substantially greater than that of similar planning programs involving comparable aquatic and upland resources. Although the B-8 Alternative provides considerable “avoidance” of aquatic resources, it does not provide for the acquisition of conservation easements necessary to assure the permanent protection of aquatic resources in the dedication areas that would be provided by this alternative.

Chapter 3.0 of this EIS sets forth the Purposes of the SAMP, one of which is to allow reasonable economic activities and development. The term reasonable is evaluated in consideration of the no federal action alternative (i.e., Alternative A-5), project needs of the SAMP participants, and the SAMP Tenets. While Alternative B-8 would achieve many of the SAMP Tenets, this alternative would not achieve Rancho Mission Viejo's project needs as a SAMP participant because of the limited amount of development that would be permitted. Because alternatives carried forward for review in Chapter 8.0 must be reasonable, the B-8 Alternative does not meet the test of constituting a practicable alternative.

Long-Term Aquatic Resources Habitat Restoration and Management

The SAMP Tenets include restoration and management goals. Because implementation of the B-8 Alternative would result in less development than any of the other "B" Alternatives, the restoration and management components of an Aquatic Resources Conservation Program for the B-8 Alternative would probably not be as extensive from a monitoring perspective. However, aquatic resources are currently impacted by invasive species that require comprehensive, long-term control measures (e.g., giant reed infestation emanating from upstream open space areas). Aquatic habitat conditions in areas such as Gobernadora Creek that provide habitat for listed aquatic species are currently being impacted by urban runoff and stormwater flows from previously urbanized areas and would benefit from enhancement/restoration actions in furtherance of the SAMP purposes. Such considerations exist independently of the level of development proposed under particular "B" Alternatives. Therefore, while some long-term monitoring costs under the B-8 Alternative are expected to be less than for the other "B" Alternatives, other costs related to management (e.g., monitoring and management for invasive plant and animal species) are expected to be as high or higher than for the other "B" Alternatives because of the larger proposed habitat protection areas requiring oversight. While mitigation required under the Section 404(b)(1) Guidelines for 3,680 acres of development could address some of these management/restoration needs of aquatic resources, it is unlikely that mitigation funding from such limited development areas could address all existing and future needs of aquatic resources in an approximately 19,000-acre open space area.

Theoretically, funding for management of an aquatic ecosystem conservation program can come from any number of sources such as compensatory mitigation required with issued permits, restoration and ecosystem management grants, or as part of local agency budgets. For the SAMP Study Area, neither governmental nor non-governmental agencies are able to donate sufficient funds for management of the aquatic ecosystem. Governmental agencies, such as the County of Orange, do not have the financial standing to altruistically contribute funds for managing aquatic ecosystem restoration and preservation projects for an entire watershed. Another source of funds may be restoration and ecosystem management grants. Even though there are select projects having received funds or are seeking funds for ecosystem restoration and management (e.g., Upper Newport Bay), the whole effort is piecemeal, not comprehensive, or too small to result in development and implementation of a comprehensive, adaptively managed aquatic resource conservation plan. Ultimately, there are no guarantees that there would be sufficient amount of grants to allow for the development of a comprehensive aquatic resources conservation plan within the RMV Planning Area portion of the SAMP Study Area, which is by far the vast majority of presently private landholdings within the SAMP Study Area, particularly when there are so many ecosystem restoration management organizations throughout the state competing for the same pool of money (e.g., Ahmanson Ranch or Playa Del Rey). Having considered these other sources, the most likely source of monies to develop and implement a comprehensive aquatic resource conservation plan would arise out of permit requirements for those projects authorized to impact aquatic resources. Recipients of permits

can be required to contribute funds towards management of these systems at a rate commensurate with the magnitude of impact to the aquatic ecosystem.

Opportunities exist for providing recovery actions for aquatic species such as the arroyo toad and least Bell's vireo in the San Juan Creek Watershed through habitat restoration and invasive species control while actions to address existing areas of erosion in clay soils within the San Mateo Creek Watershed would benefit the arroyo toad. With considerably fewer residential units and opportunities for other types of development, the B-8 Alternative would have reduced management funding capability when compared to the other alternatives. As a consequence, it is likely that the B-8 Alternative would not implement several significant aspects of long-term monitoring, restoration, and adaptive management program essential for maintaining aquatic resource functions and values over the long term.

The importance of the potential inability to implement an effective AMP within the subregion is underscored by the comments provided by Drs. Noon and Murphy in their written comments to the County. Noon and Murphy state that:

> *…common threats in southern California such as wildfire, invasive species, and extreme weather events have emphasized that reserve management may be even more important to the success of conservation than reserve extent. Coping with environmental change, both natural and human-caused, is the single greatest challenge facing conservation planners in the new millennium – one that we believe can be met only by using adaptive management* (page 1, October 2004 letter)

Conclusions Regarding Consistency with SAMP Purposes and Goals

The B-8 Alternative does not meet the overall SAMP purpose of allowing reasonable economic activities and development due to the limited acreage provided for such activities and the reduced number of dwelling units and resulting limited range of housing opportunities that could be constructed on this limited development acreage. The B-8 Alternative could not implement the three elements of an Aquatic Resources Conservation Program: (1) Aquatic Resources Preservation, (2) Aquatic Resources Restoration, and (3) Aquatic Resources Management. While substantial avoidance of impacts on aquatic resources would be achieved by the B-8 Alternative, it does not reasonably provide assurances of permanent protection of many of the aquatic resources found in the SAMP Study Area due to the need to obtain acquisition funding for large areas that could not reasonably be required as dedication mitigation for development impacts. Additionally, the B-8 Alternative would not provide assurances for implementing invasive species control and restoration actions to the extent provided by other "B" Alternatives. Given these considerations and the limited development areas, the B-8 Alternative is not a feasible alternative because it does not meet the overall SAMP purpose of allowing reasonable economic development and establishing an Aquatic Resource Conservation Program. For the reasons stated in this chapter, Alternative B-8 is removed from further consideration as a potential LEDPA under the Section 404(b)(1) Guidelines review in Chapter 8.0.

6.6 ALTERNATIVES CARRIED FORWARD FOR FURTHER CONSIDERATION IN CHAPTER 8.0 UNDER CLEAN WATER ACT SECTION 404(b)(1)

6.6.1 ALTERNATIVE B-10 MODIFIED

6.6.1.1 Major Aquatic Resources Protection Features

Alternative B-10 Modified was formulated by the County of Orange to provide an alternative responsive to the SAMP Tenets, Southern Planning Guidelines, and the Watershed Planning Principles. In formulating the B-10 Modified Alternative, the County attempted to provide for balanced development/protection that would allow the B-10 Modified Alternative's open space to be assembled solely through development dedications. Because of all the avoidance and minimization measures incorporated in the development of Alternative B-10 Modified, the proposed developments would avoid 95 percent of probable USACE jurisdiction within the RMV Planning Area.

Aquatic resource considerations under the B-10 Modified Alternative include the following:

- *Aquatic Resources Protected within the San Juan Creek Watershed*:
  - Protection of Chiquita Creek for its entire length and the entirety of Chiquita Ridge west of the creek;
  - Protection of contiguous habitat located south of San Juan Creek that would provide connectivity between the western portion of the planning area and Chiquita Canyon and San Juan Creek;
  - Protection of the Gobernadora Creek floodplain from San Juan Creek north to the point where it exits the Coto de Caza planned community;
  - Provision of extensive habitat connectivity from Upper and Middle Chiquita Canyon across Sulphur Canyon/Chiquadora Ridge through the Gobernadora Creek floodplain, across Upper Gobernadora through a 2,000- to 2,500-foot-wide wildlife movement corridor to the Caspers Wilderness Park portion of the proposed Habitat Reserve;
  - Protection of the mesa area west of Trampas Canyon and south of San Juan Creek (i.e., the Radio Tower Road area) supporting vernal pool species, including Riverside and San Diego fairy shrimp, while also serving as a major north-south connectivity corridor;
  - Protection of all of the San Juan Creek 100-year floodplain within the RMV Planning Area; and
  - Protection of all of the mainstem creek and associated drainage within Verdugo Canyon.
- *Aquatic Resources Protected within the San Mateo Creek Watershed*:
  - Protection of the vast majority of the Gabino Canyon Sub-basin, with the exception of 10, 2-acre estate lot in upper Gabino Canyon west of the creek and the development area proposed within the Blind Canyon subunit;

- Protection of all of the La Paz Canyon Sub-basin on the RMV Planning Area;

- Protection of most of the Cristianitos Creek Sub-basin, with limited development in upper Cristianitos, including a golf course; and

- Protection of the lower Cristianitos Creek floodplain and the Talega Creek floodplain to the RMV Planning Area property line.

A major feature of the B-10 Modified Alternative is the use of a Planning Reserve designation in three significant areas on the RMV Planning Area. The following is the description of the Planning Reserve designation as stated in the Ranch Plan GPA/ZC EIR 589:

> *The Planning Reserve designation covers certain areas containing sensitive natural resources that would not be proposed for development until later phases of the project and/or until specified pre-conditions to development have been satisfied. Three distinct Planning Reserve areas have been identified for the B-10 Modified Alternative: (1) Planning Reserve A–the northern portion of Planning Area 2 (Chiquita); (2) Planning Reserve B–the entirety of Planning Areas 6 and 7 (Cristianitos); and Planning Reserve C–Planning Area 8.*
>
> *…The precise footprint of development within each Planning Reserve would be identified as part of the more detailed planning efforts to be carried out in the future and would consider the guidelines and principles applicable to those areas.* (Ranch Plan GPA/ZC EIR 589, p. 5-72)

For purposes of the analysis of the land uses allowable under the B-10 Modified with the Southern Subregion NCCP Guidelines Southern Planning Guidelines and the Watershed Planning Principles, the NCCP/MSAA/HCP uses the same maximum development acreage, density/intensity of development and development bubble locations employed in the GPA/ZC EIR 589.

> *In any event, as with the applicant's proposed project [i.e., the Ranch Plan GPA] and other development alternatives, any required federal and state permits (including those needed to allow take of listed species, or to authorize impacts on jurisdictional waters and/or streambeds) would need to be obtained prior to the commencement of development activities within the affected area, including the Planning Reserve areas."* (Ranch Plan GPA/ZC draft EIR, Final Response to Comments at pp. 5-18 to 5-19 [as modified by the County Board of Supervisors on November 8th, 2004]; bracketed text is intended to provide clarification).

A total of 15,132 acres (66 percent) of the RMV Planning Area would be committed to permanent open space protection through a series of phased dedications of conservation easements. The proposed designation of 15,132 acres of the RMV Planning Area as protected open space would be a central element of the overall open space system that would total about 44,962 acres in the SAMP Study Area. Habitat functions would likely benefit from a potential reduction in traffic on Ortega Highway due to the expected shift of traffic to the Cow Camp Road to be built north of San Juan Creek.

The B-10 Modified Alternative's open space would create four large blocks of habitat that are both connected with one another and with other large scale protected habitat areas:

- The eastern and northern portions of the proposed Open Space connect with other previously protected open space areas to comprise a large contiguous habitat block containing 21,870 acres encompassing portions of both the San Mateo Creek and San Juan Creek Watersheds and extending westward to include that portion of the San Juan Creek corridor located between the East Ortega and Trampas proposed development areas;

- A 3,230-acre block of habitat within the Chiquita Sub-basin extending from the Upper Chiquita Canyon conservation easement area in the northern portion of the sub-basin to San Juan Creek and connecting with the Riley Wilderness Park, through Sulphur Canyon to Gobernadora Creek and to Caspers Wilderness Park via an open space corridor at the northern edge of the proposed Gobernadora/Central San Juan development area;

- A 4,250-acre block of habitat starting at San Juan Creek and extending through the Radio Tower Road area to the immediate west of the Trampas development area; and

- A 1,830-acre block of habitat in Arroyo Trabuco, connecting with the Chiquita Canyon habitat block through Habitat Linkage B and extending to the Foothill-Trabuco Specific Plan Area to the north and to the Cleveland National Forest to the east.

6.6.1.2 Consistency with SAMP Purposes and Goals

Allowing Reasonable Economic Activities and Development

In approving the B-10 Modified as the County preferred alternative for the GPA/ZC project, the County determined that Alternative B-10 Modified would address County housing goals. In addition, the County also determined that the B-10 Modified Alternative met other County goals such as preservation of open space and natural resources. The B-10 Modified would also meet the Rancho Mission Viejo's objectives as set forth in subchapter 3.1.1.2 which states that Rancho Mission Viejo's need is to have a development/open space plan approved that has the capability of providing the financial resources necessary for the landowner to offset the level of risk inherent in the long-term master plan development, the loss of investment opportunities, and the commitment of land and financial resources necessary to provide for the large-scale protection of many valuable resources, including required dedications for the SAMP. The B-10 Modified Alternative, therefore, allows reasonable economic activities and development consistent with the SAMP overall project purpose.

Summary of Issues Raised in the Reviews of the Consistency of the B-10 Modified Alternative with the SAMP Tenets and Watershed Planning Principles

The B-10 Modified Alternative is consistent with the SAMP Tenets and the Watershed Planning Principles, with the exception of the potential fragmentation caused by the two small development areas in Planning Area 6 (Cristianitos Meadows), the width of the San Juan Creek wildlife movement corridor, habitat linkage connectivity between the San Juan Creek Watershed and the San Mateo Creek Watershed (including both the presence of development in Planning Area 6 and the extent of development in Planning Area 4), and impacts to regulated wetlands and Waters of the U.S. Although the B-10 Modified Alternative's proposed development areas in Planning Area 6 have been sited to allow wildlife movement areas between the two small development areas, the USACE raised questions on the GPA/ZC EIR 589 as to whether the width of these areas would functionally connect the San Juan Creek and San Mateo Creek Watersheds to allow for less mobile aquatic species such as the arroyo toad to interbreed

among separated populations. With regard to the San Juan Creek wildlife movement corridor, the USACE has stated a goal of achieving a minimum 400-meter-wide movement corridor for mountain lion movement between Planning Areas 3 and 4 located on the north and south side of San Juan Creek. Except for these two areas of concern, major tenet/guidelines/principles consistency would be achieved with respect to the protection of aquatic habitats planning species, wetlands/riparian vegetation communities, habitat blocks, connectivity, species diversity, significant hydrologic and geomorphic processes, and water quality.

Economic Feasibility of Assuring the Long-Term Protection of Aquatic Resources

The B-10 Modified Alternative would provide long-term protection of higher value aquatic resource areas within the RMV Planning Area and reasonable development that would provide for funding for long-term protection through a phased dedication program as conditions of development. Open space proposed as a part of this alternative, in conjunction with previously committed open space areas located within the SAMP Study Area, would meet the aquatic resources habitat protection provisions of the SAMP Tenets, Southern Planning Guidelines, and the Watershed Planning Principles.

Long-Term Aquatic Resources Restoration and Management

Regarding the overall aquatic resources restoration and management elements of an Aquatic Resources Conservation Program, Alternative B-10 Modified generally is consistent with and would help carry out the comprehensive Invasive Species Control Plan important to the protection, enhancement, and restoration of aquatic resources. Alternative B-10 Modified would protect the recommended coastal sage scrub restoration areas in Chiquita Canyon. Within the Gobernadora Sub-basin and Sulphur Canyon associated coastal sage scrub/grassland restoration areas would be protected, contributing to a reduction in the generation of fine sediments and increased stormwater infiltration which help enhance headwaters hydrologic and geomorphic processes affecting Gobernadora Creek. Importantly, Alternative B-10 Modified is consistent with the restoration recommended for Gobernadora Creek as reviewed in the Aquatic Resources Adaptive Management Plan. Native grasslands restoration and enhancement areas recommended in the Southern Planning Guidelines and the Watershed Planning Principles for Narrow Canyon within the Chiquita Sub-basin and Upper Cristianitos Canyon would be protected for restoration and management purposes, helping reduce the generation of fine sediments and increase stormwater infiltration thereby enhancing hydrologic and geomorphic processes affecting Chiquita Creek and Cristianitos Creek. However, as in the case of the B-12 Alternative, (assuming an overstated analysis as described previously), native grasslands restoration areas recommended for Blind Canyon Mesa would likely be largely precluded by proposed development. The B-10 Modified Alternative's open space configuration is consistent with the coastal sage scrub/valley needlegrass grasslands restoration/enhancement areas identified in Upper Gabino Canyon, benefiting hydrologic and geomorphic processes affecting Gabino Creek. As reviewed previously, the B-10 Modified Alternative would provide the opportunity for important soils stabilization actions in Cristianitos Canyon and potential funding for major soils stabilization in Upper Gabino.

Conclusions Regarding Consistency with SAMP Goals and Purposes

Alternative B-10 Modified generally meets the SAMP Goals and Purposes as described above, with areas of continuing concern raised by the USACE noted below:

- adequacy of setbacks from San Juan Creek for protection large mammal movement, particularly where the San Juan Creek corridor is less than 1,312 feet in width (see discussion under SAMP Tenet 4);

- riparian/wildlife corridor in Cristianitos in proposed Planning Area 6 may not be sufficient to support the movement of less mobile aquatic species from the San Juan Creek watershed to the San Mateo Creek Watershed;

- the small development proposed for Planning Area 6 also occurs within the headwaters of Cristianitos Creek and is in conflict with SAMP Tenet 3;

The B-10 Modified Alternative is generally consistent with the SAMP Tenets, Southern Planning Guidelines, and the Watershed Planning Principles (with the noted exceptions immediately above). Taken together with already protected open space in the SAMP Study Area, the B-10 Modified Alternative's open space would protect a very large block of habitat containing sensitive aquatic species and would provide connectivity with large-scale protected habitat areas in close proximity to these lands both within the planning area and in adjoining areas such as the Cleveland National Forest, San Mateo Wilderness, and San Mateo Creek within MCB Camp Pendleton.

Given the degree of consistency of the B-10 Modified Alternative with the SAMP Tenets and the Watershed Planning Principles, Alternative B-10 Modified is retained for further consideration as the LEDPA for analysis in the Section 404(b)(1) Guidelines review in Chapter 8.0.

6.6.2 ALTERNATIVE B-12

6.6.2.1 Major Aquatic Resources Protection Features

Alternative B-12 is one of the alternatives that were prepared after completion of the Southern Planning Guidelines and the Watershed Planning Principles (Figure 5-13). Alternative B-12 is designed to address the sub-basin-level Southern Planning Guidelines and the Watershed Planning Principles, in addition to the watershed scale SAMP Tenets. This alternative is based on input from the USACE, CDFG, USFWS, the environmental community and the general public. Alternative B-12 focuses on protecting aquatic resources associated with: (1) the Chiquita Sub-basin, by protecting Chiquita Canyon above the treatment plant and west of Chiquita Creek; (2) Verdugo Canyon; (3) Sulphur Canyon and Gobernadora Creek; (4) wildlife movement along San Juan Creek; (5) habitat linkage connectivity between the San Juan Watershed and the San Mateo Watershed; and (6) the vast majority of the San Mateo Creek Watershed (by concentrating development in and near areas with existing development (e.g., Northrup Grumman) or areas disturbed by historic activities (e.g., Ford-Philco lease). Because of all the avoidance and minimization measures incorporated in the development of Alternative B-12, the developments under an overstated impact scenario avoided 95 percent of probable USACE jurisdiction within the RMV Planning Area.

This alternative also concentrates development in San Juan Creek Watershed in areas with lower resource values while continuing to protect high resource value areas. Due to the longer term timeframe for development planning in Planning Areas 4 and 8, it is not possible at this time to identify which portions of each Planning Area would be potentially impacted by the maximum amount of development allowed within these two planning areas. Although the amount of development acreage allowed under the B-12 Alternative in Planning Areas 4 and 8 is considerably smaller than the size of the respective planning areas, the consistency analyses in this chapter and in Chapter 8 address a "overstated scenario" of development of the entirety

of the two planning areas. The consistency analyses for these two planning areas under the B-12 Alternative would therefore result in a considerably greater level of potential impact than would actually occur.

Specific aquatic resource protection features of the B-12 Alternative include:

- The proposed B-12 Alternative's open space would protect habitat and species in and adjacent to the major side canyons in the Chiquita Sub-basin in middle Chiquita above the SMWD treatment plant and below Tesoro High School; and drainage areas west of Chiquita Creek.

- Gobernadora Creek would be protected, including areas recommended for restoration.

- Verdugo Canyon riparian resources and terrains generating coarse sediments would be protected.

- The San Juan Creek floodplain and associated riparian habitats would be protected with a substantial movement corridor comprised of: (a) a habitat linkage 400 meters in width from the northern portion of the RMV Planning Area to Chiquita Creek and (b) a habitat linkage connecting San Juan Creek to the San Mateo Watershed through a 5,000-foot-wide block of protected riparian and upland habitat.

- A large block of aquatic resources habitats and associated species in the San Mateo Creek Watershed in the Cristianitos, La Paz, and Gabino Sub-basins comprising 95 percent of the RMV Planning Area of the San Mateo Watershed would be protected.

Specific aquatic resource considerations under the B-12 Alternative include the following:

- *Aquatic Resources Protected Within the San Juan Creek Watershed*

  - Chiquita Creek for its entire length, the entirety of Chiquita Ridge west of the creek and the adjacent uplands from the SMWD wastewater treatment facility to the headwaters of Chiquita Creek (except for Tesoro High School and a small development area to the south of the high school);

  - Substantial contiguous habitat located south of San Juan Creek that would provide connectivity between the western portion of the planning area and Chiquita Canyon and San Juan Creek, as well as connectivity with the San Mateo Watershed;

  - The Gobernadora Creek floodplain from San Juan Creek north to the point where it exits the Coto de Caza planned community;

  - Extensive habitat connectivity from Upper and Middle Chiquita Canyon across Sulphur Canyon/Chiquadora Ridge through the Gobernadora Creek floodplain, across Upper Gobernadora through a 2,000- to 2,500-foot-wide wildlife movement corridor to Caspers Wilderness Park;

  - The mesa area west of Trampas Canyon and south of San Juan Creek (i.e., the Radio Tower Road area) containing important vernal pool habitats;

  - All of the San Juan Creek 100-year floodplain within the RMV Planning Area and associated riparian habitat areas; and

- All of the mainstem creek and associated drainage within Verdugo Canyon.

- *Aquatic Resources Protected within the San Mateo Creek Watershed*

  - Cristianitos Creek is a relatively rapidly evolving creek system influenced by adjacent clay soils that connects important aquatic/riparian systems in Cristianitos Canyon, Gabino Canyon, and La Paz Canyon with Talega Creek, and downstream habitats located outside the RMV Planning Area;

  - Gabino Creek is a creek system that contains three distinctive geomorphic reaches and that forms confluences with La Paz Creek in its middle reach and with Cristianitos Creek in its lower reach;

  - La Paz Creek is a creek system that links Gabino Canyon to large-scale federal open space areas to the north (Cleveland National Forest) and east (San Mateo Wilderness and MCB Camp Pendleton) and that provides a source of cobbles and other coarse sediments important for downstream habitat systems;

  - Talega Creek is a major creek system with a very large population of arroyo toads, with part of the creek and canyon system located on the RMV Planning Area and the remainder located on MCB Camp Pendleton property; and

  - All of the La Paz Canyon Sub-basin on the RMV Planning Area providing for riparian habitat connectivity both within the SAMP Study Area and with habitat systems in adjoining areas to the north and east.

Overall, 16,942 acres of the RMV Planning Area would be committed to open space through phased dedications. The B-12 Alternative would create three large blocks of habitat that are both connected with one another and with three other large-scale protected habitat areas:

- The eastern and northern open space areas would connect with other previously protected open space areas to comprise a large, contiguous habitat block. This habitat block extends westward to include that portion of the San Juan Creek corridor located between the East Ortega and Trampas development areas;

- A western block, extending from the Chiquita Canyon conservation easement area in the northern portion of the Chiquita Canyon Sub-basin to San Juan Creek and connecting with adjacent portions of Chiquadora Ridge, the Riley Wilderness Park, Gobernadora Creek, and to Caspers Wilderness Park via an open space corridor at the northern edge of the proposed Gobernadora/Central San Juan development area; and

- The Arroyo Trabuco habitat block, connecting with the Chiquita Canyon habitat block through Habitat Linkage B and extending to the Foothill-Trabuco Specific Plan area to the north and to the Cleveland National Forest to the east.

6.6.2.2 Consistency with SAMP Purposes and Goals

Allowing Reasonable Economic Activities and Development

Because B-12 Alternative provides for the same number of dwelling units as the B-10 Modified Alternative, the B-12 Alternative would also address County housing goals. Because this alternative increases the amount of protected open space over that provided by the B-10

Modified Alternative, the B-12 Alternative would also meet other County goals such as preservation of open space and natural resources. In addition to meeting the County housing goals, the B-12 Alternative would meet Rancho Mission Viejo's objectives as set forth in subchapter 3.1.1.2 which states that Rancho Mission Viejo' need is to have a development/open space plan approved that has the capability of providing the financial resources necessary for the landowner to offset the level of risk inherent in the long-term master plan development, the loss of investment opportunities, and the commitment of land and financial resources necessary to provide for the large-scale protection of many valuable resources, including required dedications for the SAMP. Rancho Mission Viejo has indicated that the B-12 Alternative has the economic capability of meeting its central economic goal. The B-12 Alternative, therefore, allows reasonable economic activities and development consistent with the SAMP overall project purpose.

Summary of Issues Raised in the Reviews of the Consistency of the B-12 Alternative with the SAMP Tenets and Watershed Planning Principles

Alternative B-12's aquatic resources protection, restoration, and management features are consistent with the SAMP Tenets, as well as providing high levels of consistency with the Watershed Planning Principles reviewed previously in this chapter. Major principles consistency is achieved with respect to the protection of aquatic resources, riparian corridors, listed and unlisted aquatic species, riparian ecosystem integrity, connectivity between watersheds, species diversity, significant hydrologic and geomorphic processes, and water quality. Limited Impacts to regulated wetlands and Waters of the U.S. would occur with Alternative B-12.

Economic Feasibility of Assuring the Long-Term Protection of Aquatic Resources

The B-12 Alternative would provide long-term protection of higher value aquatic resource areas within the RMV Planning Area without any need for public or non-profit acquisition funding. Open space proposed as a part of this alternative, in conjunction with previously committed open space areas located within the SAMP Study Area, would meet the aquatic resources habitat protection provisions of the SAMP Tenets, the Southern Planning Guidelines, and the Watershed Planning Principles.

Long-Term Aquatic Resources Restoration and Management

Regarding aquatic resources restoration and adaptive management, Alternative B-12 generally is consistent with and helps carry out the comprehensive Invasive Species Control Plan. Within the Gobernadora Sub-basin, Sulphur Canyon and associated coastal sage scrub recommended restoration areas would be protected as a means of providing watershed runoff enhancement for Gobernadora Creek. Alternative B-12 would protect land areas and potentially could provide funding resources for the Gobernadora Creek restoration recommendations. Native grasslands restoration and enhancement areas recommended in the Southern Planning Guidelines and the Watershed Planning Principles for Narrow Canyon within the Chiquita Sub-basin and Upper Cristianitos Canyon would be protected, with attendant benefits for the enhancement of runoff management (reduced generation of fine sediments and increased infiltration of stormwater) to the creek systems. However, native grasslands restoration areas recommended for Blind Canyon Mesa pursuant to the GPA/ZC Adaptive Management Program would potentially be limited or precluded by development based on an overstated analysis. The recommended coastal sage scrub/valley needlegrass grasslands restoration/enhancement areas benefiting Gabino Creek riparian habitat areas would be protected under the B-12 Alternative.

The B-12 Alternative would provide the opportunity for important soils stabilization actions in Cristianitos Canyon and Upper Gabino. Both areas contain large land areas manifesting ongoing erosion in areas characterized by clay soils. This erosion has resulted from past clay mining actions (in the case of Cristianitos Canyon) and local roads (some of which serve development located outside the planning area) in the case of Upper Gabino.

Conclusions Regarding Consistency with SAMP Goals and Purposes

The key features of B-12 Alternative that address the issues raised by the USACE in reviewing the B Alternatives are as follows:

- No development would occur in Planning Area 6 resulting in a 5,000-foot-wide movement corridor between the San Juan and San Mateo Watersheds (a smaller development envelope in Planning Area 4 under the B-12 Alternative, compared with the B-10 Modified Alternative, might further increase the dimension of this corridor);

- The width of the wildlife movement corridor along San Juan Creek would be a minimum of 1,312 feet between Planning Areas 3 and 4 (certain limited non-pervious uses would be allowed within the 1,312-foot-wide wildlife movement area); and

- Provision of funding for restoration and management of aquatic resources, thereby assuring the long-term protection of ARCAs on the RMV Planning Area resulting from a phased dedication program.

In addition to these considerations, this alternative would address concerns expressed by the environmental community and other members of the general public regarding development within the RMV Planning Area, particularly those concerns related to the overall level of development within the San Mateo Watershed in Planning Areas 6, 7, and 8 including development adjacent or draining to Cristianitos Creek and the level of development within middle Chiquita Canyon.

Given the degree of consistency of the B-12 Alternative with the SAMP Tenets and the Watershed Planning Principles, Alternative B-12 is proposed to be retained for further consideration as the LEDPA consistent with the SAMP goals and purposes for analysis in the Section 404(b)(1) Guidelines review in Chapter 8.0.

6.7 SUMMARY OF SAMP ALTERNATIVES CONSIDERATIONS

The B-10 Modified Alternative and the B-12 Alternative embody aquatic resources protection, restoration, and management features that achieve a high degree of consistency (with the exceptions as noted) with the SAMP Tenets, with the Watershed Planning Principles, and with aquatic species considerations in the Southern Planning Guidelines. The B-8 Alternative also achieves a higher degree of consistency with these tenets, principles, and considerations. However, the B-8 Alternative would provide for such limited development that the feasibility of implementing the B-8 Alternative is so unlikely that it is not a reasonable SAMP Alternative in that the level of development does not meet the needs of the local landowner in terms of size (units, area, etc.) and the level of development does not meet housing needs identified by the local agency regulating land-use and population growth. As a consequence, the B-8 would not provide the economic basis for carrying out a phased dedication program for the protection of aquatic resources and associated adaptive management measures necessary to assure the long term values and functions of protected aquatic resources.

The B-10 Modified Alternative was approved by the County of Orange as the GPA/ZC project. In approving the B-10 Modified Alternative, the County of Orange stated its intent to assure GPA/ZC, NCCP/MSAA/HCP, and SAMP consistency. Equally important, the County stated its intent to further efforts toward closure on the development/open space dedication/acquisition issues by establishing the "Planning Reserve" designation as a GPA/ZC "bridge" between the County's land use program and SAMP aquatic resources protection goals. The County further stated its commitment to work with all planning participants to attempt to reach agreement on an overall basis.

The USACE has indicated specific concerns regarding the open space/development configuration of the B-10 Modified Alternative as it relates to the SAMP goals and purposes. These concerns, reviewed above under the discussion of the B-10 Modified Alternative, focus on the adequacy of the width of the wildlife movement corridor along San Juan Creek and the potential impediments to long-term wildlife movement between the San Juan and San Mateo Watersheds created by development that would be allowed in Planning Area 6 under the B-10 Modified Alternative. Of particular concern to the USACE is the Planning Reserve designation over Planning Area 6 in view of connectivity concerns between the San Juan Watershed and the San Mateo Watershed for less mobile aquatic species such as the arroyo toad. Consequently, the USACE is proposing that Alternative B-12 should be reviewed in Chapter 8.0, along with the review of Alternative B-10 Modified.

CHAPTER 7.0
NEPA PUBLIC INTEREST ISSUES

As discussed in subchapter 1.4.2, NEPA requires an analysis of the potential environmental impacts of the proposed action (i.e., the proposed permitting procedures), including alternatives to the proposed action and mitigation. As part of the NEPA review and alternatives analysis, the USACE is analyzing impacts on the environment associated with projects that receive authorization under Section 404 of the Clean Water Act. The analysis is being coordinated with the required analysis of alternatives under the Section 404(b)(1) Guidelines, and with those USACE regulations requiring an evaluation of the probable impacts of proposed activities on the public interest (in conjunction of issuance of permits) (33 CFR 320.4[a]).

Impacts on the aquatic ecosystem (biological resources and physical processes) are addressed in Chapter 6.0 for those alternatives carried forward after the preliminary alternatives analysis in Chapter 5.0. Chapter 7.0 presents an analysis of the following public interest issues for those alternatives carried forward for analysis in Chapter 8.0 (i.e., Alternative B-10 Modified, Alternative B-12, Alternative A-4, and Alternative A-5): non-aquatic biological resources; land use; transportation and circulation; agricultural and aggregate resources; air quality; noise; visual resources; cultural resources; population, housing and employment; and recreation.

7.1 NON-AQUATIC BIOLOGICAL RESOURCES

This chapter focuses on the impacts to other, non-aquatic, biological resources (i.e., major upland habitats and associated species) associated with the implementation of the alternatives carried forward for review under the Section 404(b)(1) Guidelines. In addition to summarizing the impacts on non-aquatic biological resources discussed in Chapter 6.0, this chapter also discusses impacts related to infrastructure.

In general, most impacts on non-aquatic biological resources are outside the USACE's statutory authority and responsibility under Section 404 of the Clean Water Act. The primary responsibility of evaluating and regulating impacts to non-aquatic biological resources resides with the County of Orange, the California Department of Fish and Game, and the U.S. Fish and Wildlife Service. As part of the NEPA review, the USACE is analyzing impacts on the environment associated with projects that receive authorizations under Section 404 of the Clean Water Act.

The following infrastructure assumptions are applicable to the assessment of non-aquatic biological impacts associated with the SMWD Proposed Project and RMV Proposed Project alternatives:

Impacts related to infrastructure are divided into permanent impacts and temporary impacts. Permanent impacts were calculated using GIS information provided by SMWD and Rancho Mission Viejo Zollars regarding the extent of disturbance associated with proposed reservoir locations (Figure 2-3), conceptual road/stream crossings (Figure 8-1), bikeways and trails (Figure 8-2), water facilities (Figure 8-3a), non-domestic water facilities (Figure 8-3b), sewer facilities (Figure 8-3c), and drainage facilities (Figure 8-4).

Temporary impacts to vegetation communities would occur in association with construction, operation, and maintenance/repair of infrastructure of the same facilities noted above and maintenance of existing SMWD facilities (Figure 2-3) and existing RMV Planning Area facilities (Figure 8-5). It is important to note that the temporary impacts would be cumulative over the life of the proposed projects and they would be temporally distributed so that only a few acres at

any given time would be impacted. The assumptions for estimating temporary impacts and the responsible party (in parentheses) include:

- 34-foot temporary impact zone for construction of trails (i.e., 17 feet from edge of trail) (Rancho Mission Viejo);
- Temporary impacts of 4 acres around new groundwater storage tanks (Rancho Mission Viejo;
- Temporary impacts of existing small reservoirs that serve ranch purposes (e.g., stock ponds) (Rancho Mission Viejo);
- 2,500 square feet for temporary impacts to wells (Rancho Mission Viejo);
- 30-foot-wide temporary impact area for existing and future domestic and non-domestic water/sewer pipeline operation and maintenance/repair (SMWD);
- 40-foot-wide temporary impact area for maintenance/repair of the existing RMV Planning Area water system (Rancho Mission Viejo);
- 50-foot-wide temporary impact area for construction of drainage culverts (Rancho Mission Viejo); and
- Varying widths and lengths ranging from 140 feet wide to 250 feet wide and 230 feet long to 1,400 feet long for the construction zones beneath bridges (Rancho Mission Viejo).

7.1.1 THRESHOLDS OF SIGNIFICANCE

An alternative would have a significant non-aquatic biological impact if it would result in a:

- Substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate for listing, sensitive, rare, or otherwise special status plant or animal species in local or regional plans, policies, or regulations, or by the CDFG or USFWS where such impacts are within the purview of USACE jurisdiction and statutory responsibility.
- Significant interference 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 where such impacts are within the purview of USACE jurisdiction and statutory responsibility.

7.1.2 SAMP PROPOSED PERMITTING PROCEDURES

As discussed previously, the proposed RGP and LOP procedures have been developed for current and future participants in the SAMP. The future participants have not yet defined projects for permitting by the RGP or LOP procedures. For projects eligible for authorization by the maintenance RGP, impacts to land use would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary impacts to a small area located in a mostly degraded landscape. New permanent impacts of any type are not expected. Impacts to non-aquatic biological resources are not expected under the RGP. For projects proposed by future participants that would be eligible for authorization by the LOP procedures,

not enough is known about the project size and location or potential impacts to analyze potential impacts to non-aquatic biological resources at this time. Such projects eligible for authorization by the LOP procedures will be subject to future NEPA review before a final permit decision can be made.

Current participants have defined their proposed project and have undergone extensive pre-application coordination with the USACE and other federal and state agencies. These projects, the SMWD Proposed Project, RMV Proposed Project, and other alternatives may have significant effects on the environment as noted in Chapter 6.0. Therefore, the authorization pursuant to the proposed permitting procedures may also have an effect on the environment per the thresholds of significance. These potential effects and minimization/mitigation measures applicable to these potential effects are further discussed below.

7.1.3 SMWD PROPOSED PROJECT

7.1.3.1 Impacts

Impact 7.1.3.1 *The SMWD Proposed Project would result in significant impacts to major upland vegetation communities.*

Major Upland Vegetation Communities and Listed Non-Aquatic Species

The SMWD Proposed Project (i.e., maintenance of existing facilities and construction and maintenance of the Upper Chiquita Reservoir) would result in the following impacts to major upland vegetation communities: 2.3 acres of chaparral, 13.7 acres of grassland, and 23.0 acres of coastal sage scrub. In addition, 32.2 acres of agriculture and 1.3 acres of developed land cover would be impacted related to construction of the Upper Chiquita Reservoir. Four California gnatcatcher locations would be impacted by the reservoir. In terms of temporary impacts associated with maintenance of existing facilities, 27.4 additional acres of grassland would be impacted, as well as 10.1 acres of coastal sage scrub, and 2.5 acres of woodland. Three additional gnatcatcher locations would be impacted. This is a significant impact.

Indirect Impacts

Indirect impacts for Upper Chiquita Reservoir would be primarily short-term and related to construction of the facility including noise, disturbance of soils, dust accumulation on adjacent vegetation, trash, and debris from the construction materials/workers. Grading activities may also result in the accidental disturbance of native vegetation. Although temporary, construction impacts are considered significant.

Long-term indirect impacts from Upper Chiquita Reservoir are not anticipated to be significant because lighting would be limited to the maintenance road and traffic would be minimal (periodic SMWD inspections). Therefore, impacts related to human activity and noise would not occur. Invasive species are not anticipated to be a significant impact because the reservoir would be covered. No water quality impacts are anticipated.

7.1.3.2 Mitigation Program

SMWD is a participant in the NCCP/MSAA/HCP and through participation in this process SMWD anticipates addressing its impacts to upland habitats, particularly impacts to coastal sage scrub and the California gnatcatcher. SMWD anticipates that likely mitigation for impacts

related to the construction and operation of the Upper Chiquita Reservoir would be restoration of temporarily disturbed areas with coastal sage scrub species and contributions towards funding of the GPA/ZC (or future NCCP/MSAA/HCP) Adaptive Management Program. SMWD anticipates that likely mitigation for maintenance of its existing facilities would be minimization measures related to construction such as placement of Environmentally Sensitive Area fencing around sensitive resources, dust and litter control, erosion and sedimentation control, and post-project restoration. In addition, SWMD anticipates contributions towards funding of the GPA/ZC (or future NCCP/MSAA/HCP) Adaptive Management Program would also provide mitigation for the temporary impacts associated with maintenance of their existing facilities.

7.1.3.3 Level of Significance After Mitigation

Through participation in the NCCP/MSAA/HCP, SMWD anticipates that impacts to upland habitats and associated species such as coastal sage scrub and the California gnatcatcher would be reduced to a level of less than significant. Should the NCCP/MSAA/HCP not be approved for any reason, the USACE would consult with the USFWS pursuant to Section 7 of the FESA for any Section 404 permit action involving the SMWD that may affect a listed threatened and/or endangered species or adversely modify their critical habitat and would require mitigation for adverse effects as a result of the consultation.

7.1.4 ALTERNATIVE B-10 MODIFIED

7.1.4.1 Impacts

Impact
7.1.4.1 *The Alternative B-10 Modified Alternative would result in significant impacts to major upland vegetation communities.*

Major Upland Vegetation Communities and Listed Non-Aquatic Species

Tables 6-8 and 6-9 in Chapter 6.0 summarize potential impacts to major upland vegetation communities and listed non-aquatic species respectively associated with the B-10 Modified Alternative (for more detailed background information, please refer to the GPA/ZC EIR 589).

Grassland

With implementation of the infrastructure necessary to support the B-10 Modified Alternative, impacts to grassland set forth in Table 6-8 would increase to a total of 1,827 acres. Infrastructure includes, but is not limited to the following types of facilities; roads, trails and bikeways, water and sewer lines, lift stations; pump stations, reservoirs, and drainage outfalls. Although annual grasslands are considered to have relatively low biological value when compared to native vegetation communities, they do provide habitat for grassland species. Impacts on annual grasslands would be considered potentially significant because of the amount that would be impacted. Native grasslands are considered a sensitive vegetation community due to their limited distribution and their potential to support sensitive plant species. Impacts to native grassland are considered significant.

Coastal Sage Scrub

Within implementation of the infrastructure necessary to support the B-10 Modified Alternative, impacts to coastal sage scrub set forth in Table 6-8 would increase to a total of 2,188 acres. Coastal sage scrub is considered a sensitive plant community due to its limited distribution and

its potential to support sensitive plant and wildlife species such as the endangered California gnatcatcher. Impacts to coastal sage scrub are considered significant.

Woodland and Forest

Within implementation of the infrastructure necessary to support the B-10 Modified Alternative, impacts to woodland and forests would set forth in Table 6-8 would increase to a total of 461 acres of forest impacts and to a total of 94 acres of woodland impacts. Woodland and forests are considered sensitive vegetation communities because of their limited distribution and because they provide high quality wildlife habitat. Impacts to woodland and forest impacts are considered significant.

Cliff and Rock

The B-10 Modified Alternative would result in the same impacts to cliff and rock (approximately 5 acres). Cliff and rock is a native community that is considered relatively uncommon in the project region. Impacts on cliff and rock would be considered significant.

Impact
7.1.4.2 *The Alternative B-10 Modified Alternative would result in significant impacts to the thread-leaved brodiaea.*

Listed Non-Aquatic Species

Chapter 4.1.3, Biological Resources, discusses the sensitive wildlife and plant species with potential to occur in the SAMP Study Area. Table 6-9 in Chapter 6.0 provide a broad overview of the impacts of the B-10 Modified Alternative to state- or federally-listed Threatened or Endangered Non-Aquatic Species.

Thread-leaved Brodiaea

The B-10 Modified would impact 11 locations totaling 428 individuals. Implementation of infrastructure necessary to the B-10 Modified Alternative would result increase these impacts by an additional 3 locations and 153 individuals on a permanent basis and 3 locations and 77 individuals on a temporary basis. Impacts to brodiaea are considered significant.

California Gnatcatcher

The B-10 Modified Alternative impacts 71 locations of California gnatcatchers. These impacts are considered significant. Implementation of infrastructure necessary to support the B-10 Modified Alternative would result in total impacts of 73 locations. The B-10 Modified Alternative would result in impacts to gnatcatcher populations in the San Juan Creek Watershed, particularly the location in Chiquita Canyon which is considered to be the major population in the SAMP Study Area, but these impacts are below the maximum level established in the Southern Planning Guidelines.

Impact
7.1.4.3 *Implementation of Alternative B-10 Modified Alternative would result in significant indirect impacts to biological resources.*

Indirect Impacts

Short-term Construction Noise Impacts

As noted in Chapter 6.0, nesting raptors and other sensitive bird species would potentially incur temporary short-term impacts from construction noise if present in the vicinity development activities associated with the B-10 Modified Alternative, and may be temporarily displaced due to these disturbances. This short-term impact is considered significant.

Other Short-term Construction Impacts

Grading activities would disturb soils and result in the accumulation of dust on the surface of the leaves of trees, shrubs, and herbs. Grading activities would also result in an accumulation of trash and debris. Grading activities may result in the accidental disturbance of native vegetation. Construction impacts are considered a significant impact.

Impact
7.1.4.4 *The introduction of invasive species into the area would be a significant impact.*

Long-term Indirect Effects: Invasive Exotic Species

Implementation of Alternative B-10 Modified would include landscaping adjacent to proposed development. The landscaping has the potential to include planting ornamental species that can be invasive (e.g., Japanese honeysuckle [*Lonicera japonica*], fan palm [*Washingtonia* spp.], Peruvian pepper tree [*Schinus molle*], pampas grass [*Cortaderia jubata*], etc.). Seeds from invasive species may escape to natural areas and degrade the native vegetation. This impact would be considered potentially significant.

The alternative has the potential to increase the existing population of invasive invertebrate/vertebrate species on the RMV Planning Area or introduce new invasive species to previously undisturbed areas. Three invasive invertebrate species are known to occur within the SAMP Study Area including Argentine ant (*Linepithema humile*), red imported fire ant (*Solenopsis invicta*), and crayfish (*Procambrus* spp.). These species pose direct and indirect threats to native species at the urban-natural interface, including direct predation of native vertebrates and competition/displacement of important invertebrate prey of native species. Populations of vertebrate species including introduced fishes, bullfrog, brown-headed cowbird, European starling, opossums, and feral mesopredators such as cats and dogs also have the potential to become problematic within the natural open space areas adjacent to proposed development. These species can be an important factor in the decline of native wildlife populations in the SAMP Study Area.

Impact
7.1.4.5 *Changes in water quality may affect sensitive fish, amphibian, and reptile species; this is considered a significant impact.*

Long-term Indirect Effects: Water Quality

Additional impacts to the biological resources in the RMV Planning Area could occur as a result of changes in water quality resulting from implementation of one of the proposed alternatives. Runoff from the development areas and associated arterials containing pesticides, herbicides, petroleum products, and other residues and the improper disposal of petroleum and chemical products from construction equipment have the potential to adversely affect the water quality

within the RMV Planning Area and, in turn, affect populations of aquatic species. Of particular concern in regards to pollutants, is the effect pollutants, borne by runoff, may have on listed species proximate to the proposed development areas/roadways that live in wet environments (creeks) or require wet environments for an important part of their life cycle (reproduction). Pollutants would potentially affect various sensitive fish, amphibian, and reptiles within the SAMP Study Area. This impact is considered potentially significant.

Impact
7.1.4.6 *The introduction of new lighting sources in species sensitive areas could result in significant impacts.*

Long-Term Lighting Effects

Lighting in development areas associated with the B-10 Modified Alternative could result in an indirect effect on the behavioral patterns of nocturnal and crepuscular (i.e., active at dawn and dusk) wildlife adjacent to these areas. Of greatest concern is the effect on small ground-dwelling animals that use the darkness to hide from predators, and the effect on owls, which are specialized night foragers relying on the darkness for cover. These impacts would be considered potentially significant because the RMV Planning Area is primarily undeveloped. Depending on species sensitivity and the proximity of species use areas to development areas, lighting impacts could be significant.

Impact
7.1.4.7 *Increased human activity in the RMV Planning Area could significantly degrade habitat; this would be a significant impact.*

Long-Term Human Activity Effects

The increase in human activity would increase the disturbance of natural open space adjacent to development associated with the B-10 Modified Alternative. Human disturbance could disrupt normal foraging and breeding behavior of wildlife remaining in the area adjacent to the development, diminishing the value of the habitat. Wildlife stressed by noise may vacate the natural open space adjacent to the development, leaving only wildlife tolerant of human activity. This increased disturbance is called an “edge effect.” This impact would be potentially significant because it could result in degradation of habitat.

7.1.4.2 Mitigation Program

In conjunction with the approval of GPA/ZC EIR 589, the County of Orange adopted a mitigation program to reduce the impacts associated with potential impacts on biological resources, specifically grassland, coastal sage scrub, woodland, and forest. These measures are listed below to provide the reader context of the mitigation program that is included as an integral part of the B-10 Modified Alternative adopted by the County of Orange. It is assumed that the same mitigation measures would apply to the B-12 Alternative (RMV Proposed Project). Although these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring, the mitigation measures reviewed in this chapter are considered to be integral elements of both alternatives. All references to Project Design Features and Mitigation Measures are to GPA/ZC EIR 589.

Project Design Features

PDF 4.9-1 Prior to approval of the first Master Area Plan, the landowner shall enter into an agreement with the County regarding the 15,132-acre RMV Open Space. The agreement shall address:

- Method of preservation for this open space (i.e., conservation easement or similar mechanism);
- Permitted uses within the open space as defined in the PC Text;
- Non-permitted uses within the open space as defined in the PC Text;
- Phasing of open space preservation areas. Phasing of open space areas will be consistent with development phasing; and
- Funding mechanism for implementation of the Adaptive Management Program (AMP) as described in the Draft Program EIR.

Major Upland Vegetation Communities and Listed Non-aquatic Species

PDF 4.9-2 Upon dedication of land to the RMV Open Space in accordance with the terms of the open space agreement described in PDF 9-1, the project applicant shall implement the Adaptive Management Program contained in Appendix J (of the GPA/ZC EIR 589) on the RMV Open Space, including the following sub-plans:

- Plant Species, Translocation, Propagation and Management Plan;
- Habitat Restoration Plan;
- Invasive Species Control Plan;
- Grazing Management Plan; and
- Wildland Fire Management Plan.

Water Quality

PDF 4.5-3 **Water Quality Management Plan.** A conceptual Water Quality Management Plan (the *Draft WQMP*) has been developed for the proposed project in compliance with the Model Water Quality Management Plan requirements of the County of Orange DAMP. The *Draft WQMP* addresses the following elements:

- **Site-design BMPs:** Site design BMPs have been selected to address the creation of a hydrologically functional project design that seeks to mimic the natural hydrologic regime.
- **Source Control BMPs:** Source controls BMPs (routine non-structural BMPs, routine structural BMPs, and BMPs for individual categories/project features) have been selected, including a combined flow and water quality control system to address hydrologic water balance and water quality treatment.

- **Urban Runoff and Stormwater Control Elements:** Water balance and flow duration analyses and conceptual combined flow and water quality control systems have been prepared for each sub-basin.

- **Stormwater BMP Operation and Maintenance Program:** An operation and maintenance program has been developed to address the following elements: Maintenance Responsibility, General Operation and Maintenance Activities, Routine Operation and Maintenance Activities and Major Operation and Maintenance Activities.

- **Stormwater Monitoring Program:** A stormwater monitoring program has been developed for the Water Quality BMPs.

Standard Conditions and Requirements

Short-term Impacts

SC 4.7-1 All construction contractors shall comply with South Coast Air Quality Management District (SCAQMD) regulations, including Rule 403, Fugitive Dust, and Rule 402, Nuisance. All grading (regardless of acreage) shall apply best available control measures for fugitive dust in accordance with Rule 403. To ensure that the project is in full compliance with applicable SCAQMD dust regulations and that there is no nuisance impact off the site, the contractor would implement each of the following:

a. Moisten soil not more than 15 minutes prior to moving soil or conduct whatever watering is necessary to prevent visible dust emissions from traveling more than 100 feet in any direction.

b. Apply chemical stabilizers to disturbed surface areas (i.e., completed grading areas) within five days of completing grading or apply dust suppressants or vegetation sufficient to maintain a stabilized surface.

c. Water excavated soil piles hourly or cover with temporary coverings.

d. Water exposed surfaces at least twice a day under calm conditions. Water as often as needed on windy days when winds are less than 25 miles per day or during very dry weather in order to maintain a surface crust and prevent the release of visible emissions from the construction site.

e. Wash mud-covered tires and under-carriages of trucks leaving construction sites.

f. Provide for street sweeping, as needed, on adjacent roadways to remove dirt dropped by construction vehicles or mud, which would otherwise be carried off by trucks departing from project sites.

Water Quality

SC 4.5-8 **Water Quality Management Plan.** Prior to the recordation of any final subdivision map (except those maps for financing or conveyance purposes only) or the issuance of any grading or building permit (whichever comes first), the

applicant shall submit for review and approval by the Manager, Inspection Services Division, a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used onsite to control predictable pollutant runoff. This WQMP shall identify, at a minimum, the routine structural and non-structural measures specified in the current Drainage Area Management Plan (DAMP). The WQMP may include one or more of the following:

- Discuss regional water quality and/or watershed programs (if available for the project);
- Address Site Design BMPs (as applicable) such as minimizing impervious areas, maximizing permeability, minimizing directly connected impervious areas, creating reduced or "zero discharge" areas, and conserving natural areas;
- Include the applicable Routine Source Control BMPs as defined in the DAMP.
- Demonstrate how surface runoff and subsurface drainage shall be managed and directed to the nearest acceptable drainage facility (as applicable), via sump pumps if necessary.

SC 4.5-9 **Compliance with the WQMP.** Prior to the issuance of a certificate of use and occupancy, the applicant shall demonstrate compliance with the WQMP in a manner meeting the satisfaction of the Manager, Inspection Services Division, including:

- Demonstrate that all structural Best Management Practices (BMPs) described in the project's WQMP have been implemented, constructed and installed in conformance with approved plans and specifications;
- Demonstrate that the applicant has complied with all non-structural BMPs described in the project's WQMP;
- Submit for review and approval an Operations and Maintenance (O&M) Plan for all structural BMPs for attachment to the WQMP;
- Demonstrate that copies of the project's approved WQMP (with attached O&M Plan) are available for each of the incoming occupants;
- Agree to pay for a Special Investigation from the County of Orange for a date (12) twelve months after the issuance of a Certificate of Use and Occupancy for the project to verify compliance with the approved WQMP and O&M Plan; and
- Demonstrate that the applicant has agreed to and recorded one of the following: (1) the CC&R's (that must include the approved WQMP and O&M Plan) for the project Home Owner's Association, (2) a water quality implementation agreement that has the approved WQMP and O&M Plan attached, or (3) the final approved Water Quality Management Plan (WQMP) and Operations and Maintenance (O&M) Plan.

Lighting

SC 4.10-3 Prior to issuance of any building permit, the applicant shall demonstrate that all exterior lighting has been designed and located so that all direct rays are confined to the property in a manner meeting the approval of the Manager, Building Permit. (County of Orange Standard Conditions of Approval, LG01)

Mitigation Measures

Short-term Impacts

MM 4.9-26 During construction, a construction monitoring program shall be implemented to mitigate for short-term noise impacts to nesting raptors, to the satisfaction of the County of Orange, Manager, Subdivision and Grading. Indirect impacts shall be mitigated by limiting heavy construction (i.e., mass grading) within 300 feet of occupied raptor nests. Occupied raptors nests shall be marked as "Environmentally Sensitive Areas" on grading/construction plans and shall be protected with fencing consisting of T-bar posts and yellow rope. Signs noting the area as an "Environmentally Sensitive Area" will be attached to the rope at regular intervals.

Invasive Species

MM 4.9-27 All plants identified by the California Exotic Pest Plant Council as an invasive risk in southern California shall be prohibited from development and fuel management zones adjacent to the RMV Open Space. The plant palette for fuel management zones adjacent to the RMV Open Space shall be limited to those species listed on the Orange County Fire Authority Fuel Modification Plant List. Plants native to Rancho Mission Viejo shall be given preference in the plant palette.

Prior to issuance of fuel modification plan approvals, the County of Orange shall verify that (1) plants identified by the California Exotic Pest Plant Council as an invasive risk in Southern California are not included in plans for fuel management zones adjacent to the RMV Open Space, and (2) the plant palette for fuel management zones adjacent to RMV Open Space is limited to those species listed on the Orange County Fire Authority Fuel Modification Plant List.

Prior to the recordation of a map for a tract adjacent to the RMV Open Space, the County of Orange shall verify that the CC&Rs contain language prohibiting the planting of plants identified by the California Exotic Pest Plant Council as an invasive risk in Southern California in private landscaped areas.

Water Quality

MM 4.5-3 **Master Area Plan-Level Water Quality Management Plan.** Prior to the approval of a Master Area Plan for each Planning Area, the applicant shall prepare a Master Area Plan WQMP that (i) is consistent with the terms and content of the Draft WQMP (see PDF 4.5-3) and (ii) provides more particularized information and detail concerning how the provisions of the Draft WQMP will be implemented within the area covered by the individual Master Area Plan. At a minimum, each Master Area Plan WQMP will provide supplemental and refined

information concerning (i) how site-design, source-control and treatment control BMPs will be implemented at the Master Area Plan level for the area in question, (ii) potential facility sizing and location within the subject Master Area Plan area, and (iii) monitoring, operation and maintenance of stormwater BMPs within the relevant Master Area Plan area.

MM 4.5-4 **Sub-Area Plan-Level Water Quality Management Plan.** Prior to the approval of a Sub-Area Plan for any portion of the project area that is the subject of an approved Master Area Plan, the applicant shall prepare a Sub-Area Plan WQMP that (i) is consistent with the terms and content of the Draft WQMP (see PDF 4.5-3), (ii) is consistent with the terms and content of the relevant Master Area Plan WQMP (see MM 4.5-3) and (iii) provides more particularized information and detail concerning how the provisions of the Draft WQMP and the relevant Master Area Plan WQMP will be implemented within the area covered by the individual Sub-Area Plan. At a minimum, each Sub-Area Plan WQMP will provide supplemental and refined information concerning (i) how site-design, source-control and treatment control BMPs will be implemented at the Sub-Area Plan level for the area in question, (ii) the size, location and design features of the individual water resource facilities to be developed within the subject Sub-Area Plan area, and (iii) monitoring, operation and maintenance of the stormwater BMPs within the relevant Sub-Area Plan area.

MM 4.5-6 **Combined Flow and Water Quality Control System.** All developments will be designed in order to achieve flow duration matching, address the water balance, and provide for water quality treatment through a combined flow and water quality control system (termed combined control system).

Combined Control System Components

The proposed combined control system will include one or more of the following components (see Exhibits 4.5-14, 15, and 16[1]), each of which provides an important function to the system:

- Flow Duration Control and Water Quality Treatment (FD/WQ) Basin
- Infiltration Basin
- Bioinfiltration Swale
- Storage Facility for Recycling Water for Non-Domestic Supply
- Diversion Conduit to Export Excess Flows out of the Sub-basin.

The flow duration control and water quality treatment basin provides the initial flow and water quality treatment control functions to the system. The remaining components address the excess flows, alone or in combination with each other, generated during wet weather. Additional water quality treatment control is also provided in the infiltration basin and bioinfiltration swale. The following sub-sections describe each combined control system component in more detail.

[1] See Section 4.5 of GPA/ZC EIR 589.

1. Flow Duration Control and Water Quality Treatment (FD/WQ) Basin

   The flow duration control and water quality treatment (FD/WQ) basin will provide both flow control and water quality treatment in the same basin. Detention basins are the most common means of meeting flow control requirements. The concept of detention is to collect runoff from a developed area and release it at a slower rate than it enters the collection system. The reduced release rate requires temporary storage of the excess amounts in a basin with release occurring over a few hours or days. The volume of storage needed is dependent on (1) the size of the drainage area; (2) the extent of disturbance of the natural vegetation, topography and soils, and creation of impervious surfaces that drain to the stormwater collection system; (3) the desired detention capacity/time for water quality treatment purposes; and (4) how rapidly the water is allowed to leave the FD/WQ basin, i.e., the target release rates.

   The FD/WQ basin shall incorporate extended detention to provide water quality treatment for storm flows. The FD/WQ basin shall also incorporate wetland vegetation in a low flow channel along the bottom of the basin for the treatment of dry weather flows and small storm events.

   To the extent feasible depending on the topography and grade, the FD/WQ basin will be located in areas where there is a larger depth to groundwater and more infiltrative soils. The FD/WQ basin shall be designed to have two active volumes, a low flow volume and a high flow volume. The low flow volume is designed to capture small to moderate size storms, the initial portions of larger storms, and dry weather flows. The high flow volume is designed to store and release higher flows to maintain, to the extent possible, the pre-development runoff conditions.

2. Infiltration Basin

   The second element in the combined control system shall consist of a separate downstream, shallow basin designed to infiltrate stormwater where soils have a high infiltration capacity. The infiltration basin is sized to infiltrate all the flows released from the lower volume in the FD/WQ basin; nonetheless, an overflow system would convey excess flows that may occur during very wet years to the bioinfiltration swale discussed below. Features of the proposed combined control system that shall guard against groundwater contamination include: (1) pretreatment of all runoff in a FD/WQ basin before it enters the infiltration basin, and (2) locating infiltration basins where there is at least 10 feet of separation to the groundwater.

3. Bio-infiltration Swale

   The third element of the combined control system shall be a bio-infiltration swale that leads from the FD/WQ basin to the stream channel. A bio-infiltration swale is a relatively flat, shallow vegetated conveyance channel that removes pollutants through infiltration, soil adsorption, and uptake by the vegetation. In areas characterized by terrains with good infiltration capabilities, flows released from the FD/WQ basin and carried in the bio-infiltration swale will mimic pre-development conditions, in which low flows

infiltrate in the soils and only high flows reach the main stem of the stream channel. In catchments where development is located on less pervious soils and therefore pre-development runoff is higher, the swale may be lined to better mimic pre-development hydrology or flows may be piped to the stream.

4. Storage Facility for Recycling Water for Non-Domestic Supply

   The fourth possible element of the combined control system shall be storage of surface water flows for recycling where there is opportunity for reuse of water for irrigation, such as a golf course, residential common area, or local park. All elements of the combined flow and water quality control system shall be reviewed with the SMWD for determination of feasibility of reuse and connection to non-domestic irrigation facilities. Diversion of outflows from the FD/WQ basin to non-domestic water supply reservoirs will be conducted if feasible and cost effective.

5. Diversion Conduit to Export Flows out of the Sub-basin

   The fifth possible element of the combined control system shall be the provision to export flows out of the sub-basin. This element provides an additional option that may be employed to better preserve the pre-development water balance within the sub-basin. Such diversions may be desirable where excess runoff could result in increased stormwater flows or increased base flows in sensitive streams. However, all diversions of drainage area are subject to approval by the County of Orange. The diversions would be for excess runoff only and would only be feasible for development bubbles that adjoin other sub-basins having less sensitive stream channels, or are close to San Juan Creek or Lower Cristianitos Creek, which have characteristics that allow them to handle additional flows without causing damage to the stream channel. In some locations, such as Cañada Chiquita, it may also be feasible to divert flows to the wastewater treatment plant for reclamation.

MM 4.9-19 Prior to issuance of a grading permit for Planning Area 8, the Project Applicant shall demonstrate to the satisfaction of the County's Director of Planning Services Department or his/her designee that the facilities specified in the Water Quality Management Plan to address pollutants of concern and conditions of concern are shown on the project plans.

Lighting

MM 4.9-28 Lighting shall be shielded or directed away from RMV Open Space habitat areas through the use of low-sodium or similar intensity lights, light shields, native shrubs, berms or other shielding methods.

Prior to the issuance of building permits for a tract with public street lighting adjacent to RMV Open Space habitat areas, the County of Orange shall verify that measures to shield such lighting have been incorporated in the building plans.

MM 4.10-1 All lighting along the perimeter of natural areas, particularly street lights, shall be downcast luminaries and shall be shielded and oriented in a manner that will

prevent spillage or glare into the remaining natural and open space areas. Final lighting orientation and design shall be to the satisfaction of the County of Orange, Manager, Building Permits. Prior to final inspection or issuance of a certificate of occupancy, where applicable, the Manager, Building Permit, shall cause to be performed a photometric field inspection of the approved lighting system for the project. The inspection shall verify the proper construction and installation of materials within the approved plan, determine the actual light patterns and values through light meter testing and observation, and determine the extent of any errant lighting. Deviations and/or violations shall be corrected prior to the final clearance for the project.

Human Activity

MM 4.9-28 Access to the RMV Open Space shall be managed and directed as specified in the Open Space Agreement between the County of Orange and RMV. Where potential conflicts between development and open space are identified per the agreement the following shall occur:

Prior to the issuance of building permits for a tract adjacent to the RMV Open Space, the County of Orange shall verify that measures, such as fencing, signs etc., to direct the public to public access points within the RMV Open Space have been incorporated into the building plans. To the extent that public access points are not identified, the County of Orange shall verify that measures, such as fencing, signs etc., to prohibit public access have been incorporated into the building plans.

USACE Special Conditions

Even with avoidance, additional special conditions for Rancho Mission Viejo (SC) and for the Santa Margarita Water District (SM SC) would be required to ensure proposed impacts are minimized to the maximum extent practicable. These special conditions include:

SC I.A.1 The permittee shall confine development and supporting infrastructure to the footprint (including infrastructure alignments and facilities within designated open space) shown on Figures 8-1, 8-2, 8-3a, 8-3b, 8-3c, and 8-4.

SC I.A.2 For the impact analysis areas, the permittee shall limit the size of the projects to 550 acres of development for Planning Area 4, 175 acres of reservoir for Planning Area 4, 500 acres of development for Planning Area 8, and 50 acres of orchards in Planning Areas 6 or 7.

SC I.A.3 The permittee shall avoid all impacts to the thread-leaved brodiaea (a threatened facultative wetland plant) in a major population in a key location (as described in Southern NCCP Planning Guidelines) on Chiquadora Ridge as part of construction for Planning Area 2.

SC I.B.1 Outside the footprint shown in Figure 8-1, the permittee shall insure post-project surface water hydrology for any stream of Strahler 3rd order or greater shall not be substantially different from pre-project hydrology. Strahler order may be determined from the Glenn Lukos Association jurisdictional determination.

SC I.B.2 For any stream located outside the development footprint of Strahler 3rd order or greater receiving project discharges, the permittee shall undertake adaptive management measures to insure no change in channel geomorphology. Strahler order may be determined from the Glenn Lukos Associates jurisdictional determination. The permittee shall provide a monitoring plan to the Corps explaining the protocol, standards constituting adverse impacts, and remedial measures should thresholds for adverse impacts be reached. The stream stabilization program required by Ranch Plan EIR Mitigation Measure 4.5-7 and the stream monitoring program required by Ranch Plan EIR Mitigation Measure 4.5-8 shall be submitted as part of the monitoring plan for review and approval.

SC I.B.4 For any Corps jurisdictional feature vegetated with coast live oaks located outside of the development footprint that receive discharges, the permittee shall monitor the health of the oaks for five years after the start of the discharges. Any oaks greater than six feet in height that die of excessive inundation, shall be mitigated at a ratio of one ten-gallon coast live oak for loss of one inch diameter at breast height. The permittee shall provide a monitoring plan to the Corps explaining the monitoring protocol and the standards constituting adverse impacts.

SC I.C.1 The permittee shall abide by all the terms and conditions of the applicable Section 401 certification.

SC I.C.2 The permittee shall develop and implement master area and sub-area water quality management plans for each Planning Area (Ranch Plan EIR Mitigation Measures 4.5-3 and 4.5-4). A copy of the plan shall be submitted to the Corps for review and approval for consistency with the Conceptual Water Quality Management Plan approved as part of the SAMP EIS. The Corps shall have 30-days to review and approve any submitted plan. If the Corps does not provide comments within 30 days, the submitted plan shall be deemed approved. In the event of a disagreement between the Corps requirements and those of the County of Orange, the permittee, Corps and County shall agree on a resolution of said disagreement within 15 days. Copies of the annual reports shall be provided to the Corps within 30 days of completion.

SC I.D.1 The permittee shall design new arterial roads or existing arterials upgraded to serve Ranch Mission Viejo projects along San Juan Creek, Chiquita Creek, and Gobernadora Creek in order to protect wildlife. The bridge crossings shall provide a minimum of 20 feet of clearance from the stream bottom. Chain link fencing or functionally similar barrier of 10 feet in height (or as revised/determined through adaptive management) shall be installed on both sides of the approaches to the bridge for a distance of 100 feet away (or as revised/determined through adaptive management) from the stream to deter wildlife from entering the roadway.

SC I.D.2 The permittee shall provide wildlife movement corridors along San Juan Creek, Canada Chiquita, Canada Gobernadora, Cristianitos, Gabino, and Talega Creeks. The corridor along San Juan Creek upstream of Trampas Canyon to the edge of the RMV property shall provide a 400-meter wide corridor (200-meter setback off the centerline) except for the narrowing due to infrastructure facilities; exclude residential or commercial structures shall not be constructed within the 400-meter corridor; allow for limited fuel modification zones, trails, and related

recreational facilities (i.e., interpretative signage, staging areas, picnic areas); and allow for infrastructure facilities including natural treatment systems for water quality treatment and related drainage facilities, outfalls that are located outside of the ordinary high water mark, approved bridge crossings, and water, sewer, and power facilities as set forth in Figures 8-3a, 8-3b, and 8-3c.

SC I.D.4 The permittee shall use best management practices, including and not limited to detention basins, retention basins, low-water irrigation, increase in pervious surfaces, and/or diversion of runoff to a collection system for re-use for irrigation purposes to prevent dry season runoff from entering San Juan Creek (upstream of Trampas Canyon), Gabino Creek, and Talega Creek from September to mid-October.

SC I.D.5 The permittee shall eradicate bullfrogs from any water quality treatment basin within 0.5 km of streams known to have arroyo toads. The eradication shall occur at the very least from September to mid-October to interrupt the annual breeding cycle. Permittee may use a variety of approaches to ensure compliance with this condition. Eradication efforts shall be monitored annually as part of the Aquatic Resources Adaptive Management Plan. If eradication efforts are not successful, the permittee shall cause the water quality treatment basin to be dry from September to mid-October by diverting dry season runoff to a collection system for re-use for irrigation purposes.

SC I.D.6 The permittee shall minimize light-spillover associated with the development to minimize indirect impacts to wildlife. Lighting shall be directed away from habitat areas through the use of low-sodium or similar intensity lights, light shields, native shrubs, berms, placement low near the ground, or other shielding methods.

SC I.D.7 The permittee shall refrain from using invasive exotic vegetation within fuel modification zones. Invasive exotic vegetation are those rated as medium or high by the California Invasive Plant Council in terms of their invasiveness.

SC II.2 The permittee shall perform initial vegetation clearing in Waters of the U.S. between September 15 and March 15. Work in waters may occur between March 15 and September 15 if breeding bird surveys indicate the absence of any nesting birds within a 50-foot-wide radius.

SC II.3 With each project LOP application, the permittee shall provide plans to the Corps showing the limits of grading, upland haul routes, fueling and storage areas for vehicles outside of waters of the U.S., temporary impact areas, dewatering areas, and temporary access roads within waters of the U.S. The permittee shall conform the grading to pre-identified impacts.

SC II.6 The permittee shall identify the limits of impacts in the field with brightly-colored flags, tape, or other marking to prevent unauthorized grading outside approved footprints.

SC II.7 The permittee shall install toad exclusion fencing for any work within 300 feet of a known population of arroyo toad adjacent to San Juan Creek, Verdugo Creek, Gabino Creek, Cristianitos Creek, and Talega Creek for activities occurring outside the estivation period.

SC II.8 The permittee shall implement best management practices to prevent the movement of sediment into Waters of U.S. Compliance with GPA/ZC EIR 589 Standard Condition 4.5-11 (Erosion and Sediment Control Plan (ESCP)) would satisfy this condition. The ESCP must be designed to minimize the mobilization of fine sediments into downstream waters occupied by steelhead and arroyo toad. A copy of the current ESCP shall be provided to the USACE for each project application.

SC II.10 The permittee shall restore all temporarily impacted areas to pre-construction elevations within one month following completion of work. If wetlands or non-wetland waters of the U.S. vegetated with native wetland species were impacted, re-vegetation should commence within three months after restoration of pre-construction elevations and be completed within one growing season. If re-vegetation cannot start due to seasonal conflicts (e.g., impacts occurring in late fall/early winter should not be re-vegetated until seasonal conditions are conducive to re-vegetation), exposed earth surfaces should be stabilized immediately with jute-netting, straw matting, or other applicable best management practice to minimize any erosion from wind or water.

SC II.12 During construction of each Planning Area or associated infrastructure, the permittee shall provide weekly construction reports via e-mail, fax, and/or mail demonstrating status of compliance with all project construction special conditions. Appropriate photos shall be submitted to show establishment of project construction minimization features.

The USACE will also require the following conditions that helps protect non-aquatic biological resources for approvals associated with SMWD projects. Even with avoidance, additional special conditions for the Santa Margarita Water District (SM SC) would be required to ensure proposed impacts are minimized to the maximum extent practicable. These special conditions include:

SM SC I.1 The permittee shall confine infrastructure facilities to the footprint (including infrastructure alignments and facilities within designated open space) shown on Figures 8-3a, 8-3b, and 8-3c in the EIS.

SM SC I.3 Same as SC I.C.1 for Section 401 water quality certification.

SM SC II.2 Same as SC II.2 for restrictions on work during breeding bird nesting.

SM SC II.3 Same as SC II.3 for grading plans.

SM SC II.6 Same as SC II.6 for limits of grading.

SM SC II.7 Same as SC II.7 for arroyo toad exclusion fencing.

SM SC II.8 The permittee shall implement best management practices to prevent the movement of sediment into waters of U.S. The permittee shall develop a program-level plan to minimize the mobilization of fine sediments into downstream waters. A copy of the plan shall be provided to the Corps before issuance of the final permit.

SM SC II.9 Same as SC II.10 for temporary impact restoration.

SM SC II.11 During work on each infrastructure project, the permittee shall provide weekly construction reports via e-mail, fax, and/or mail demonstrating status of compliance with all project construction special conditions. Appropriate photos shall be submitted to show establishment of project construction minimization features.

7.1.4.3 Level of Significance After Mitigation

The B-10 Modified Alternative would result in significant impacts to grassland, coastal sage scrub, woodland and forest, and cliff and rock. Through implementation of the GPA/ZC EIR 589 Adaptive Management Plan, impacts to grassland, coastal sage scrub, and woodland and forest would be reduced to a level of less than significant. Impacts to cliff and rock would remain a significant impact. Impacts to brodiaea would be reduced to a level of less than significant. Implementation of infrastructure associated with the B-10 Modified Alternative would result in significant impacts to nesting raptors. Significant construction impacts would be reduced to a level of less than significant. Implementation of the B-10 Modified Alternative would result in significant impacts related to invasive species. This impact would be reduced to a level of less than significant. Water quality impacts will be reduced to a level of less than significant. Through implementation of the mitigation measures adopted by the County of Orange and set forth above regarding control of lighting, this impact would be reduced to a level of less than significant. Without minimization and mitigation measures, implementation of the B-10 Modified Alternative would result in significant impacts related to human activity. Through implementation of the mitigation measures adopted by the County of Orange and set forth above, this impact would be reduced to a level of less than significant.

7.1.5 ALTERNATIVE B-12

7.1.5.1 Impacts

Impact
7.1.5.1 *The B-12 Alternative would result in significant impacts to major upland vegetation communities.*

Major Upland Vegetation Communities and Listed Non-Aquatic Species: Conservation of and Impacts to Major Upland Communities

Grassland

The B-12 Alternative would result in the conservation of a minimum of 3,129 acres of grassland habitat within the RMV Planning Area based on an overestimated impact analysis scenario (see discussion in Chapter 8.0). Because development in Planning Area 4 and 8 is limited to 550 acres (and a 175-acre water reservoir) and 500 acres, respectively, and the impact acreage in Planning Areas 6 and 7 are limited to 50 acres of new orchards, the conservation of grasslands under the B-12 Alternative is likely to increase as the exact footprint of these planning areas is defined (for instance, the impact analysis in Planning Areas 6 and 7 assume 431 acres in areas with extensive grasslands when the actual impact will be limited to 50 acres of new orchards).

With implementation of the infrastructure necessary to support the B-12 Alternative, permanent impacts to grassland would total 1,561 acres. A further 75 acres would be temporarily impacted by infrastructure facilities. Although annual grasslands are considered to have relatively low biological value when compared to native vegetation communities, they do provide habitat for

grassland species. Impacts on annual grasslands would be considered potentially significant because of the amount that would be impacted. Native grasslands are considered a sensitive vegetation community due to their limited distribution and their potential to support sensitive plant species. Impacts to native grassland are considered significant.

Coastal Sage Scrub

Under the overestimated impact analysis scenario, the B-12 Alternative would result in the conservation of 5,571 acres of coastal sage scrub, including coastal sage scrub important to the major population of California gnatcatchers within Chiquita Canyon. As noted above for grasslands, the conservation of coastal sage scrub is anticipated to increase when the limited development footprints for Planning Areas 4 and 8 are defined consistent with the development and water reservoir acreage limitations for Alternative B-12 prior to actual development. With implementation of the infrastructure necessary to support the B-12 Alternative, permanent impacts to coastal sage scrub would total 2,117 acres; an additional 43 acres would be temporarily impacted. Coastal sage scrub is considered a sensitive plant community due to its limited distribution and its potential to support sensitive plant and wildlife species such as the endangered California gnatcatcher. Impacts to coastal sage scrub are considered significant.

Woodland and Forest

Under the overestimated impact analysis scenario, the B-12 Alternative would result in the conservation of 241 acres of woodland and 404 acres of forest within the RMV Planning Area. Due to the limitations on overall development allowed within Planning Areas 4 and 8 under the B-12 Alternative, the overestimated impact scenario would be substantially refined in terms of overall impact as planning progresses for the development footprints for Planning Areas 4 and 8 consistent with the development and water reservoir acreage limitations for this alternative. With implementation of the infrastructure necessary to support the B-10 Modified Alternative, impacts to woodland and forest would increase by approximately 8 and 10 acres, respectively. Approximately six acres of woodland and forest would be temporarily impacted. Woodland and forests are considered sensitive vegetation communities because of their limited distribution and because they provide high quality wildlife habitat. Impacts to woodland and forest impacts are considered significant.

Cliff and Rock

The B-12 Alternative would result in the conservation of approximately two acres of cliff and rock habitat. Based on the location of cliff and rock habitat within the RMV Planning Area, this amount of conservation is unlikely to change based on further planning in Planning Areas 4 and 8. The B-12 Alternative would have the same impacts to cliff and rock (approximately 5 acres) as Alternative B-10 Modified. Cliff and rock is a native community that is considered relatively uncommon in the project region. Impacts on cliff and rock would be considered significant.

Non-Aquatic Species

Thread-leaved Brodiaea. The B-12 Alternative would impact 20 brodiaea locations that total 2,311 brodiaea individuals. Implementation of infrastructure necessary to support the B-12 Alternative would increase these impacts by an additional location and one individual on a permanent basis and one further location and four individuals on a temporary basis. Impacts to brodiaea are considered significant prior to the implementation of an avoidance measure for the major population on Chiquadora Ridge which would reduce the impacts by approximately 2,000 individuals.

California Gnatcatcher. As noted in Chapter 6.0, the B-12 Alternative impacts 66 locations of California gnatcatchers under the "overstated" impact scenario. Implementation of infrastructure necessary to support the B-12 Alternative would increase these impacts by 9 locations (75 total locations). The B-12 Alternative would result in impacts to gnatcatcher populations in the San Juan Creek Watershed, but these impacts are below the maximum level established in the Southern Planning Guidelines. With regard to protection of the California gnatcatcher, 298 of 349 locations (85 percent) of the *major population* in the Chiquita Canyon and Wagon Wheel sub-basins and Chiquadora Ridge portion of the Gobernadora sub-basin would be conserved. For *important populations* the proposed permanent open space would include: 14 of 15 locations (93 percent) of the East Caspers Wilderness Park *important population* (one location is mapped in the Nichols Institute property); all 40 locations of the East Coto de Caza/Starr Ranch *important population/key location*; 6 of 7 locations (86 percent) of the Trampas Canyon *important population/key location*; 11 of 13 locations of Upper Cristianitos *important population/key location*, and 28 of 41 locations (68 percent) of the Arroyo Trabuco *important population*. The two *important populations* in the Foothill/Trabuco Specific Plan Area are considered conserved due to existing regulatory limitations on "harm" to occupied sites).

Impact
7.1.5.2 *The B-12 Alternative would result in significant indirect impacts to biological resources.*

Indirect Impacts

As with the B-10 Modified Alternative, the B-12 Alternative is anticipated to cause potential indirect impacts such as noise, lighting, water quality, human activity, and invasive species. Because less development is proposed in the San Mateo Watershed, indirect impacts in this watershed are anticipated to be less than associated with the B-10 Modified Alternative.

7.1.5.2 Mitigation Program

As noted above, in conjunction with the approval of the GPA/ZC EIR 589, the County of Orange adopted a mitigation program to reduce the impacts associated with impacts on biological resources, specifically grassland, coastal sage scrub, and woodland and forest and sensitive species such as the brodiaea. This mitigation program (described above for the B-10 Modified Alternative) would apply to the B-12 Alternative.

Impacts to brodiaea would be mitigated through the dedication of open space and associated conservation of brodiaea populations (described below), implementation of the Plant Translocation Plan which is part of the GPA/ZC Adaptive Management Plan, and through the USACE conditions described under B-10 Modified and the additional conditions set forth below.

Impacts related to indirect impacts such as construction, water quality and invasive species would be mitigated via the mitigation measures and USACE conditions described previously for B-10 Modified.

USACE Special Condition

SC I.A.3 The permittee shall avoid all impacts to the thread-leaved brodiaea (a threatened facultative wetland plant) population on Chiquadora Ridge as part of construction for Planning Area 2.

7.1.5.3 Level of Significance After Mitigation

The B-12 Alternative would result in significant impacts to grassland, coastal sage scrub, woodland and forest, cliff and rock, and brodiaea. Through implementation of the GPA/ZC EIR 589 Adaptive Management Plan in conjunction with permanent protection provided through the GPA/ZC open space phased dedication program, impacts to grassland, coastal sage scrub, and woodland and forest would be reduced to a level of less than significant. Impacts to cliff and rock would remain a significant impact.

Impacts to brodiaea would be reduced to a level of less than significant through the dedication of open space and associated conservation of brodiaea populations. Implementation of the Plant Translocation Plan is part of the GPA/ZC Adaptive Management Plan and through the special condition set forth above, the location supporting 2,000 flowering stalks in the Chiquadora Ridge *major population/ key location* would be conserved. Four smaller populations totaling about 85 flowering stalks would be developed as a result of construction in Planning Area 2. The *major population/key location* located in southern Cristianitos/Gabino Canyons would be 100 percent conserved, and the Arroyo Trabuco *important population* would be conserved.

Implementation of infrastructure associated with the B-12 Alternative could potentially result in significant impacts to nesting raptors. Implementation of mitigation measures specifying avoidance of active nesting sites would reduce construction impacts to a level of less than significant.

Implementation of the B-12 Alternative would potentially result in significant impacts related to invasive species. With mitigation measures specifying prohibitions on planting invasive species within development areas and implementation of the Invasive Species Control Plan in conjunction with the Aquatic Resources Adaptive Management Program, and the USACE condition noted previously this impact would be reduced to a level of less than significant.

Through implementation of the mitigation measures adopted by the County of Orange and USACE conditions set forth above and as further reviewed in subchapter 8.5, water quality impacts will be reduced to a level of less than significant.

Through implementation of the mitigation measures adopted by the County of Orange and set forth above regarding control of lighting, this potential indirect impact would be reduced to a level of less than significant. Without minimization and mitigation measures addressing human activity within the ARCA and other RMV Planning Area open space, implementation of the B-12 Alternative would potentially result in significant impacts related to human activity. Through implementation of the mitigation measures adopted by the County of Orange and set forth above, this impact would be reduced to a level of less than significant

7.1.6 ALTERNATIVE A-4

7.1.6.1 Impacts

As previously described, Alternative A-4 would provide the same level of development as for Alternative B-10 Modified. However, because Alternative A-4 assumes the processing of USACE wetlands permits on a project-by-project basis, this incremental approach may not result in the same level of avoidance and minimization as would occur with the B-10 Modified Alternative.

7.1.6.2 Mitigation Program

Because the Alternative A-4 would provide the same level of development as the B-10 Modified Alternative, the mitigation program described above for B-10 Modified would apply to Alternative A-4.

7.1.6.3 Level of Significance After Mitigation

The level of significance after mitigation for Alternative A-4 would be as described above for Alternative B-10 Modified, except that incremental permitting may not achieve a level of avoidance and minimization comparable to the B-10 Modified due to comprehensive planning limitations inherent in incremental permitting.

7.1.7 ALTERNATIVE A-5

7.1.7.1 Impacts

Major Upland Vegetation Communities and Listed Non-Aquatic Species

As the "no impact to regulated waters" and "no take of listed species alternative," Alternative A-5 would not result in impacts to listed species. Therefore, no significant direct impacts would occur. However, the absence of long-term management measures such as invasive species controls and the Gobernadora Multipurpose Basin, the lack of adequate buffers and limited habitat connectivity would result in the continuation of existing adverse impacts. In addition, as noted in Chapter 6.0, while this alternative would not result in impacts to regulated waters, it would not necessarily achieve larger watershed protection goals particularly in uplands headwaters and contributing drainages due to the absence of comprehensive buffers and limited habitat connectivity. Therefore, under the Alternative A-5 scenario, there would be a net loss of acreage and functions through indirect effects such as lack of ecologically meaningful buffers, decreased sediment production through development of sandy areas, and development within headwater areas.

Impact
7.1.7.1 *Alternative A-5 would result in significant indirect impacts to biological resources.*

Indirect Impacts

Due to the absence of buffers and other measures required for consistency with the SAMP Tenets and the Watershed Planning Principles, indirect impacts for this alternative would be greater in nature and scope than described for the B-10 Modified and B-12 Alternatives. Potentially significant indirect impacts would occur.

7.1.7.2 Mitigation Program

The mitigation program set forth for indirect impacts related to Alternative B-10 Modified would also apply to Alternative A-5.

7.1.7.3 Level of Significance After Mitigation

Significant non-aquatic resource areas would be avoided. Because of the absence of impacts creating a regulatory nexus justifying open space dedications, open space areas outside of proposed development areas may not have permanent use restrictions. As a consequence, while these areas would be "avoided," they would not be protected because future land use

entitlements could be requested by a private landowner. Given the low density of housing and the County's overall housing goals reflected in OCP-2004, such a scenario could occur. As previously noted, comprehensive non-aquatic resource restoration would not be undertaken. Additionally, two non-USACE jurisdictional areas important to maintaining and restoring long-term hydrologic/terrains resources–the side canyons of middle Chiquita and the non-wetlands areas adjoining Gobernadora Creek–would not be protected under this alternative scenario. Finally, this alternative would not provide adequate buffers, would allow development in non-jurisdictional headwaters areas, and would not provide a level of wildlife habitat connectivity comparable to the B-10 Modified and B-12 Alternatives.

7.2 LAND USE

This chapter focuses on the impacts to land use and related local planning programs, associated with the implementation of the alternatives carried forward for review under the Section 404(b)(1) Guidelines. In general, most impacts land use and local planning are outside the USACE's statutory authority and responsibility under Section 404 of the Clean Water Act. The primary responsibility of evaluating and regulating impacts to land use and local planning resides with the County of Orange and the cities. As part of the NEPA review, the USACE is analyzing impacts on the environment associated with projects that receive authorizations under Section 404 of the Clean Water Act.

7.2.1 THRESHOLDS OF SIGNIFICANCE

An alternative would result in a significant land use impact if it would:

- Disrupt or divide the physical arrangement of an established community
- Create an incompatibility with existing or planned land uses adjacent to the project site.
- Create an incompatibility with an existing on-site land use at the time of development.

7.2.2 SAMP PROPOSED PERMITTING PROCEDURES

As discussed previously, the proposed RGP and LOP procedures have been developed for future participants and current participants in the SAMP. The future participants have not yet defined projects for permitting by the RGP or LOP procedures. For projects eligible for authorization by the maintenance RGP, impacts to land use would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary impacts to a small area located in a mostly degraded landscape. New permanent impacts of any type are not expected. For projects eligible for authorization by the LOP procedures, not enough is known about the project size and location or potential impacts to analyze potential impacts to land use at this time. Such projects eligible for authorization by the LOP procedures will be subject to future NEPA review before a final permit decision can be made.

Current participants have defined their proposed projects and have undergone extensive pre-application coordination with the USACE and other federal and state agencies. These projects, the SMWD Proposed Project, RMV Proposed Project, and other alternatives that may have significant effects on the environment are as noted in Chapter 6.0. Therefore, the authorization pursuant to the proposed permitting procedures may also have an effect on the environment per the thresholds of significance. The potential effects and minimization/mitigation measures applicable to these potential effects are further discussed below.

7.2.3 SMWD PROPOSED PROJECT

7.2.3.1 Impacts

The SMWD Proposed Project includes ongoing maintenance and operation of existing SMWD facilities and related infrastructure, as well as future proposed facilities, including the proposed Upper Chiquita Reservoir. The operation and maintenance activities would not result in any land use compatibility impacts. The SMWD, as a special district, would serve as the lead agency for its proposed project and would complete its own CEQA environmental analysis for the proposed Upper Chiquita storage reservoir. The following analysis is based upon the USACE's evaluation

of potential environmental effects associated with the construction and operation of the proposed reservoir.

The proposed reservoir site is located within the City of Rancho Santa Margarita and is currently undeveloped. The site is designated as Open Space in the City's General Plan Land Use Element and the zoning for the site is also Open Space. The reservoir would be considered an allowable use under the existing land use designation and zoning.

Implementation and operation of the proposed reservoir on the Upper Chiquita site would not displace or directly affect any developed on-site land uses or uses in the area. The closest developed areas are the Tesoro High School campus located across Oso Parkway and south of the reservoir site and the residential community of Las Flores approximately 0.8-mile west of the site. Additional land uses include a neighborhood park, Crestview Park, located just over 300 feet west of the site and the SMWD Las Flores Reservoir located approximately 250 feet west of the site. The proposed reservoir would not disrupt or divide the physical arrangement of either the high school or the residential neighborhoods of Las Flores and would not impact use of the athletic fields or operation of the water towers. No land use impacts are anticipated.

7.2.3.2 Mitigation Program

No land use mitigation is expected to be required.

7.2.3.3 Level of Significance After Mitigation

No significant land use impacts associated with the Upper Chiquita reservoir are anticipated.

7.2.4 ALTERNATIVE B-10 MODIFIED

7.2.4.1 Impacts

Physical Impacts on Established Communities

The RMV Planning Area is generally at the edge of urban development. Existing uses within the RMV Planning Area include various agricultural uses, industrial leases, and ranch-related residential uses. The Alternative B-10 Modified Alternative would not disrupt or divide the physical arrangement of an established community. The closest established communities are Ladera Ranch to the north, and the cities of San Juan Capistrano and San Clemente to the west. Alternative B-10 Modified would not have any physical impact on these communities. There would be no impacts based on this threshold of significance.

Impact
7.2.4-1: *There is the potential for residential uses in Planning Area 8 to experience disturbance from helicopter flights and artillery training exercises, especially those occurring during night hours, potentially resulting in incompatible land uses.*

Incompatibility with Existing and Planned Land Use Surrounding the RMV Planning Area

The following provides a discussion of the area surrounding the RMV Planning Area and the potential incompatibility of Alternative B-10 Modified with these adjacent uses.

North

Cleveland National Forest. The Cleveland National Forest is located along the northeastern tip and eastern edge of the RMV Planning Area, adjacent to Planning Area 10. There are no facilities or development within the Cleveland National Forest proximate to the RMV Planning Area. Access along Verdugo Canyon Road would be maintained for those private landholdings within the Cleveland National Forest that have an access easement. Planning Area 10 would be retained in open space and would, therefore, retain the natural open space interface between the RMV Planning Area and the Cleveland National Forest. There would be no significant land use impacts on the Cleveland National Forest.

Ronald W. Caspers Wilderness Park. Caspers Wilderness Park provides outdoor recreation for hikers, equestrians, mountain bikers, and campers. The park is adjacent to Planning Areas 3, 4, and 9. There would be no direct impact on the park.

Coto de Caza. Coto de Caza is a residential planned community, which is immediately north of the RMV Planning Area. The northern portion of Planning Area 3 is proposed for residential development. The Upper Chiquita portion of Planning Area 2 has a County land use Planning Reserve designation which stipulates development to the following conditions: Middle Chiquita (Planning Reserve A): (i) 5 years following approval of the GPA/ZC project, (ii) Notice to Proceed Phase 2 by the Transportation Corridor Agencies for SR-241 South based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first. Should these conditions be met, a golf course is proposed contiguous to Tesoro High School. This land use would be compatible with the existing uses in Coto de Caza. There would not be a significant land use impact.

General Thomas F. Riley Wilderness Park. This 524-acre park abuts Planning Area 10 and would be proximate to Planning Area 2. Planning Area 10 would be retained in open space and provide a buffer between the park and development in Planning Area 2. Development would be visible from vantage points along the ridgeline within the park. These would be mid-range and distant views, similar to what exists for other developments surrounding the park.

Upper Chiquita Conservation Area. This 1,200-acre conservation area abuts Planning Area 10. As previously indicated, Planning Area 10 would be retained in open space and would provide a buffer between development and the conservation area. Planning Area 10 protects a wildlife movement corridor, which would provide connectivity with the Upper Chiquita Conservation Area, Chiquita Canyon, Cañada Gobernadora, and Caspers Wilderness Park. Alternative B-10 Modified would not result in any significant impacts to the Upper Chiquita Conservation Area.

Tesoro High School. The existing high school would be adjacent to Planning Areas 2 and 10. As previously addressed, a golf course is proposed contiguous to and would be considered compatible with the high school. Chiquita Canyon Road, which would be constructed pursuant to the County of Orange Standard Plans for a two-lane collector road, would be constructed east of the high school and would connect with Tesoro Creek Road. Chiquita Canyon Road would be gated, which would reduce the amount of additional traffic in the vicinity of the school. Alternative B-10 Modified would not have a significant impact on Tesoro High School.

Las Flores Planned Community. This residential planned community is located immediately north and west of the RMV Planning Area. Las Flores would be adjacent to Planning Area 10, which would be retained in open space. The open space in Planning Area 10 would preserve the wildlife movement corridor south of the residential development required as part of the Las

Flores Planned Community approval. There would be no impact on the existing uses in the Las Flores Planned Community.

***City of Rancho Santa Margarita*.** The City of Rancho Santa Margarita provides a number of diverse land uses. The uses proposed as a part of Alternative B-10 Modified are similar in nature to uses in the City of Rancho Santa Margarita. Within the City immediately adjacent to the RMV Planning Area are the Upper Chiquita Conservation Area and SR-241. Alternative B-10 Modified would not conflict with any of the uses within the City. The alternative would not bisect any uses within the City of Rancho Santa Margarita. There would not be a significant land use impact.

West

***Ladera Ranch*.** Ladera Ranch, currently under construction, provides a mix of residential and urban activity uses. Ladera Ranch would abut Planning Areas 1 and 10. The portion of the planned community adjacent to Planning Area 10 is in preserved open space. This would be consistent with the open space uses proposed for Planning Area 10. Residential use (1B Suburban Residential) is proposed in Planning Area 1 adjacent to the Ladera Ranch Planned Community. This would be a consistent use and would be a continuation of the residential use with Ladera Ranch. There would not be a significant land use impact.

***City of San Juan Capistrano*.** The City of San Juan Capistrano provides a number of diverse land uses. The uses proposed as a part of the B-10 Modified Alternative are similar in nature to the uses within the City of San Juan Capistrano. Residential uses and open space extend along the eastern edge of the city immediately adjacent to the RMV Planning Area. North of Ortega Highway, existing residential development is predominately low density. This area would be adjacent to Planning Area 1; which proposes a combination of residential and urban activity center uses. However, the majority of the planning area would not be visible from the existing residential uses in the City of San Juan Capistrano because of an intervening minor ridgeline. Alternative B-10 Modified proposes low-density housing in the portion of Planning Area 1 visible from the existing residential housing. This would be a continuation of the existing development and would be considered a compatible use. Senior housing, with a mix of housing types, would be on the east side of the ridge. The area adjacent to Ortega Highway would be designated Urban Activity Center, with a mix of uses proposed. There would not be a significant land use impact.

***San Juan Hills High School*.** San Juan Hills High School is currently under construction and expected to open in August 2006. Access to the high school would be off of La Pata Avenue. Planning Area 10 would be on the east side of La Pata Avenue. This planning area would be retained in open space. There would not be any land use impacts associated with Alternative B-10 Modified and San Juan Hills High School.

***Donna O'Neill Land Conservancy*.** This approximately 1,200-acre area was set aside for conservation purposes as mitigation for the Talega development. Planning Areas 5, 6, 7, 8, and 10 would be immediately adjacent or proximate to the land conservancy. Development is proposed proximate to the conservancy for all the adjacent planning areas, except for Planning Area 10 which would be retained in open space. Planning Area 5, proposed for residential development is located northwest of the conservancy. A ridgeline separates the proposed development from the conservancy. Additionally, Avenida Talega would act as a boundary between the conservancy and Planning Area 5. Planning Areas 6 and 7 are to the north and east of the conservancy, respectively. Both of these planning areas are also proposed for residential development. Planning Area 6 would be low-density homes. Planning Area 7

proposes both conventional and low-density homes; however, the conventional housing would be adjacent to the conservancy. Cristianitos Road would separate Planning Area 7 from the conservancy. Though there would be no direct impact on the conservancy, development would be visible, especially along ridgelines from within the conservancy. Wildlife movement corridors connecting the conservancy to other open space within the RMV Planning Area and beyond to Caspers Wilderness Park and the Cleveland National Forest have been maintained. Alternative B-10 Modified would increase additional development in the area; however, approximately 66 percent of the area would be retained in open space and would not result in a significant impact on the function of the Donna O'Neill Land Conservancy.

***Talega*.** The Talega Planned Community, located predominately in the City of San Clemente, includes residential, business, and retail uses. Alternative B-10 Modified would be a continuation of similar uses. There would be no land use impacts.

The City of Mission Viejo is further to the west than the above listed uses. The RMV Planning Area does not abut the City of Mission Viejo. There would not be any direct land use impacts on the City of Mission Viejo.

South

***U.S. Marine Corps Base at Camp Pendleton*.** MCB Camp Pendleton borders the RMV Planning Area on the south and east, adjacent to Planning Areas 8 and 10. Uses immediately south of the RMV Planning area include the lease for San Onofre State Beach and Camp Talega. Alternative B-10 Modified would not have a direct impact on MCB Camp Pendleton**.** However, there is a potential for impacts from MCB Camp Pendleton on future sensitive land uses, specifically in Planning Area 8. Specific concerns relate to noise impacts from training operations. The northern portion of MCB Camp Pendleton, adjacent to the RMV Planning Area, is the busiest part of the base for training operations. Training operations include helicopter flights and artillery training exercises. These operations occur both during day and night hours.

The Department of the Navy has adopted several programs to ensure the compatibility of on- and off-site uses to minimize conflict with the ongoing training operations on the base. The Range Compatibility Use Zone (RCUZ) program was adopted in August 1993 to achieve and maintain, to the extent possible, compatible land uses on-base and in the vicinity of the base as they relate to noise and safety hazards generated from training activities at MCB Camp Pendleton. The primary objective of the RCUZ program is to preserve the existing land uses that are primarily training and operation (maneuver) areas on base. The off-base objective is to promote land uses in the vicinity of the base boundaries that are compatible with the mission of MCB Camp Pendleton, but do not prevent the civilian community from realizing reasonable use and benefit from the land. The RCUZ is being updated and is expected to be completed in late 2005. There is the potential that the updated RCUZ would identify the area within Planning Area 8 as being subject to impacts associated with training operations. If this were to occur, non-sensitive uses, such as commercial, business park, light industrial, and golf course uses, would be compatible uses. Residential use would be considered a sensitive, incompatible use by MCB Camp Pendleton. More detailed evaluation on the type of impact anticipated to occur must be evaluated when the RCUZ is prepared. Although the area may not be in a 65 CNEL impact zone[1] from the airfield operations, there may be an annoyance factor associated with helicopter operations and artillery fire. At the time the Area Plan for Planning Area 8 is processed, the most current RCUZ should be evaluated to avoid approval of potentially

[1] The County and state standard for identifying a significant noise impact for residential and other noise sensitive uses is the 65 Community Noise Impact Level (CNEL).

incompatible uses. Assuming a worst-case scenario, there is the potential for incompatible land uses within Planning Area 8, which would be a potentially significant impact. Implementation of the proposed mitigation measure to evaluate the current RCUZ prior to approval of development in Planning Area 8 would reduce this to a level of less than significant.

Associated with the land compatibility issue, MCB Camp Pendleton has expressed concern that the placement of residential development adjacent to the base would result in impacts to future residents, which may ultimately result in pressures to modify their training operations. If this were to occur, it is uncertain if there would be a significant physical impact associated with modification of training operations to reduce impact from MCB Camp Pendleton operations on the adjacent RMV Planning Area. There is a potential that impacts associated with training operations, such as noise, may then occur in an area not currently impacted. This impact is speculative because it is uncertain if the area in Planning Area 8 would be adversely impacted by MCB Camp Pendleton, and if the residents would pressure for modification to training operations, and how the training operations would be modified. However, the mitigation measure to evaluate the compatibility of the noise sensitive land use at the time of Area Plan, as well as a buyer notification program would reduce this potential impact to a level of less than significant.

Helicopter training is done throughout the San Mateo Valley. Flights are often at low altitude through the valley. This area has been used to support the low-ambient-light night vision goggle training for helicopter aircrews. The construction of residential and business uses along the southern edge of the RMV Planning Area would introduce lighting into an area that currently has minimal lighting. This lighting would add to the lighting distractions that currently exist elsewhere within the area. Current sources of lighting would include residential development along the southern boundary of the City of San Clemente, and lighting at the cantonment areas (Talega, Cristianitos, San Mateo, and San Onofre). Together, these lighting sources may reduce the effectiveness of night vision goggle training in this area. This would be an operational issue rather than a physical impact. The project by itself would not result in a significant reduction in the effectiveness of this type of training activity because of the generally low ambient light associated with residential uses (compared to lighting levels associated with I‒5 and the commercial uses adjacent to the freeway).

East

The majority of land east of the RMV Planning Area is undeveloped area within Orange, Riverside, and San Diego counties. As previously indicated, the Cleveland National Forest and Caspers Wilderness Park are the primary uses. There are several properties within the County of Riverside under private ownership that contain scattered homes and the Rancho Del Rio Girl Scout camp. This area would be adjacent to open space in Planning Area 10. Access to these parcels would be retained via easements on existing ranch roads and no expansion of these roads is proposed. Alternative B-10 Modified would not alter the easement agreements or the ability of residents of those parcels to maintain access. There would be no adverse land use impacts to these land uses.

Incompatibility with Existing and Planned Land Use within the RMV Planning Area

In addition to grazing and farming activities, there are more than 23 different entities operating within the RMV Planning Area, including mineral extraction, wholesale nurseries, waste management, and research and development businesses. Alternative B-10 Modified proposes to allow these uses to continue until they are replaced with urban uses adopted as part of the alternative or until applicable lease agreements covering these uses expire. A change in a land

use would not be considered a significant impact unless the change results in an incompatibility with other land uses. Impacts agricultural and aggregate resources are further discussed in Chapter 7.4 of this EIS. The following provides a discussion of on-site land uses and impact to these uses.

Planning Area 1. Planning Area 1 contains commercial, industrial, and agricultural businesses; the Rancho Mission Viejo headquarters; limited residences; and open fields.

- Alternative B-10 Modified would displace agricultural uses, including the market crops field, which occupies approximately 50 acres and approximately 100 acres of lemon orchard in the central and western portion of the planning area. This continuation of these uses would be the prerogative of the landowner and would not be considered a significant land use impact. The loss of agricultural lands is further discussed in Chapter 7.4.

- Other agricultural/commercial uses that would be displaced are the DM Color Express Nurseries (29001 and 29813 Ortega Highway) and Miramar Wholesale Nurseries (29813 Ortega Highway). These 29.4-acre and 17-acre nursery sites are both located in the southwestern portion of the planning area. Alternative B-10 Modified would displace these wholesale nurseries and the facilities constructed to support them. These include the seed ranch, as well as offices, maintenance shop, storage buildings, greenhouses, various sheds, and trailers. Both of these leases expire on October 1, 2006; both companies have been given notice. Given the number of approvals that would be required prior to any construction on the RMV Planning Area, it is likely that these uses would terminate pursuant to the lease agreements prior to initiation of construction.

- The Ladera Ranch construction yard, located at 28811-A Ortega Highway, is an approximately one-acre area located in the northern portion of the planning area. This area includes a large wooden structure and several office trailers. It is anticipated that the need for this facility would no longer be required when the construction of Alternative B-10 Modified is initiated because major construction operations for Ladera Ranch would be near completion. However, the site would serve as a construction yard while implementing the Alternative B-10 Modified Alternative.

- The maintenance shop area (28672 Ortega Highway), which includes several shop buildings and garage, provides support to Rancho Mission Viejo ranching/agricultural operations. This use would be displaced and would be relocated elsewhere on the ranch.

- The Oaks Corrals (28650 Ortega Highway) and Blenheim Oaks Rancho Mission Viejo Riding Park (29500 Ortega Highway) would be displaced. The lease on the Oaks Corrals is renewed annually; the lease on Blenheim Oaks has been renewed through 2008. Similar to the nursery leases, the lease agreements reflect the termination of these uses prior to construction initiation.

- Residential units, 28652 and 28632 Ortega Highway, are located in the southern portion of Planning Area 1. Additionally, residential uses on the north side of Ortega Highway (28651, 28653, 28731, and 28691) would also be displaced. These units are owned by Rancho Mission Viejo and used by ranching staff. These units would be displaced and commensurate housing would be provided. Similar to the other leases, these displacements would occur as part of ongoing property management.

- Miramar/Cellular on Wheels is located on less than one acre located at the southeast corner of Ortega Highway at La Pata Avenue. The site is used for a mobile communications tower and for the storage of potted plant stock. These uses may require relocation; however, this would be consistent with the lease agreement and permits.

- The Rancho Mission Viejo Headquarters, located at 28811 Ortega Highway, would remain in Planning Area 1. This approximately 15-acre headquarters would be located in the County Urban Activity Center area and would be considered a compatible use.

The displacement of the uses within Planning Area 1 would not be considered a significant impact. The leases on these uses either terminate prior to the anticipated initiation of construction or, in the case of the Ladera Ranch construction yard, the use would no longer be required. The termination date on a lease indicates that there is no commitment to continue the use onsite beyond the lease date.

Planning Area 2. Currently this planning area is undeveloped and used for agricultural purposes. The site contains lemon orchards. Barley fields are located in this planning area and are grazed by the cattle. The development of Alternative B-10 Modified would not result in a significant land use impact. The impacts to agricultural production are discussed in Chapter 7.4. The alternative would not impact the SMWD Chiquita Water Reclamation Plant, which is surrounded by Planning Area 2, but is not a part of the RMV Planning Area. The SMWD facility would not result in any impacts on the adjacent development. Project design and visual considerations would be addressed by the County as part of the tentative tract map process.

Planning Area 3. Planning Area 3 is predominately vacant and covered by natural vegetation in the northern portion of the area. The southern portion of the planning area is currently used for commercial, industrial, and agricultural businesses, as well as residences for agricultural workers. The displacement of the agricultural uses and residences would be the choice of the landowner and would not be considered a significant impact. The following are other on-site uses that would be affected.

- Cow Camp would remain in O'Neill family ownership. The existing uses, such as the agricultural worker residences, a horse riding arena, and restroom facilities would remain. No further development is proposed in this portion of the planning area; therefore, there would be little alteration of this portion of the planning area.

- The industrial-type uses, including Transit Mixed Concrete Company/Cemex Concrete (31601 Ortega Highway), Olsen Paving Stone (31511 Ortega Highway), Ewles Materials (32501 Ortega Highway) and Catalina Portland Cement/Catalina Pacific Concrete South (31511 Ortega Highway) are involved with construction supplies, such as a cement/ concrete batch plant, paving stone manufacturing plant and asphalt recycling. The expiration dates for leases are as follows:

    - Transit Mixed Concrete Company/Cemex Concrete—April 1, 2013
    - Olsen Paving Stone—Renewed monthly
    - Ewles Materials—Renewed monthly
    - Catalina Portland Cement/Catalina Pacific Concrete South—Renewed annually

    There is no commitment to continue these uses beyond the termination dates of the leases with or without Alternative B-10 Modified. The projected development date for this portion of Planning Area 3 is between 2013 and 2015. There would be no impact to these industrial-type uses.

- Color Spot Nursery (31101 Ortega Highway) is located within the planning area. Similar to other uses in the RMV Planning Area, there are no commitments to continue this use beyond the lease termination date of December 31, 2006. Development in this portion of Planning Area 3 is anticipated between 2009 and 2013; therefore, the leases would have expired prior to any Alternative B-10 Modified construction activities. Since this use would end prior to the development of the Alternative B-10 Modified, there would be no impact.

- The O'Connell Landscaping Yard (31821 Ortega Highway), which is only 1.5 acres, is also within this planning area and would be displaced. O'Connell Landscaping provides landscape services to Rancho Mission Viejo. Relocation of this use should not be difficult because of the portable nature of the buildings.

- CR&R/Solag Disposal Company, the waste management facility site, has a lease that extends to September 19, 2015, with an option for two five-year extensions. If both options were exercised, the lease would extend to 2025. The phasing plan identifies this area as being developed between 2013 and 2015. The Solag use would be permitted in the UAC designation; however, it may not be compatible with other surrounding uses. At the time of Area Plan approval, the nature of the uses surrounding the Solag site would need to be evaluated for consistency. The property owner may elect to work with the lessee to relocate the Solag use elsewhere within the RMV Planning Area. The potential impacts associated with relocation of the use would be evaluated when permits for the relocation of the use are requested. This would be a separate discretionary action and would be subject to separate environmental documentation. Given that the use is consistent with the County's urban activity center land use designation and it would only be speculation as to the future surrounding uses, the continuation of the Solag use would not be considered a significant land use impact.

- Ten residences at 31121, 31151, 31181, 31221, 31241, 31261, 31263, 31265, 31381, and 31825 Ortega Highway are located along the ridge north of Campo Vaquero, in the southwestern portion of Cow Camp along San Juan Creek, and adjacent to the O'Connell Landscaping storage yard. It is estimated that six of these units would be displaced by construction (31241, 31151, 31121, 31181, 31221, and 31381).

- St. Augustine Training Center would also be displaced by implementation of Alternative B-10 Modified. The lease for this use expires on August 31, 2008 or one year after written notice by the landlord, which ever is first. This area is proposed to be developed between 2009 and 2012. Since the lease would have terminated for this use prior to development, there would not be a conflict.

- The Cellular on Wheels site near Color Spot Nursery may need to be relocated; however, this would be consistent with the lease agreement and the permits; therefore, there would be no significant impacts.

There would be no significant land use impacts in Planning Area 3. The existing residential uses would be incorporated into the design plans for Alternative B-10 Modified. Uses currently on leases would be terminated prior to construction or would be deemed compatible with the County General Plan designation.

Planning Area 4. Development of Alternative B-10 Modified would displace uses within this 1,301-acre planning area. Uses that would be affected include:

- The Tree of Life Nursery is currently on an annual lease renewed each July. As with other lease holds, there is no commitment to continue the use beyond the terms of the lease.

- The RJO Horse Ranch would remain and be accommodated as part of the plans for this area, which would also include low-density housing.

- Verdugo Canyon Trailer site is vacant. There are no current uses that would be displaced.

- A pump station, owned and maintained by the SMWD, for the Nichols Institute is located in the eastern portion of Planning Area 4. Alternative B-10 Modified would not impact this pump station.

Planning Area 5. Mining operations by ONIS would be terminated with construction of the Alternative B-10 Modified. The ONIS lease is currently set to expire in February 1, 2013. This planning area is proposed for development between 2016 and 2020. The ONIS operations would have ceased operation when construction is planned to begin. There would be no impacts to this land use. Impacts on Aggregate Resources are discussed in Chapter 7.4.

Planning Areas 6, 7, and 9. These planning areas are currently undeveloped. There are agricultural operations (orchards) within Planning Area 7. The orchards would be eliminated with the construction of the B-10 Modified Alternative. No significant land use impacts would occur. Impacts to Agricultural Resources are discussed in Chapter 7.4.

Planning Area 8. The Northrop Grumman Space Technology TRW Capistrano Test Site is located within Planning Area 8. This facility would be displaced by proposed development. The lease with Northrop Grumman extends through 2018. Construction is proposed in Planning Area 8 between 2020 and 2025. The lease for the TRW Capistrano Test Site would have expired prior to the initiation of construction.

Planning Area 10. This planning area is currently undeveloped. No development is proposed for Planning Area 10; therefore, there would be no land use impacts.

7.2.4.2 Mitigation Program

In conjunction with the approval of the GPA/ZC EIR 589, the County of Orange adopted a mitigation program to reduce the impacts associated with impacts on land use. These measures are listed below to provide the reader context of the mitigation program, although these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. No additional measures are required as a part of the proposed SAMP project.

Project Design Features

PDF 4.1-1 Prior to approval of the first Master Area Plan, the landowner shall enter into an agreement with the County regarding the 15,132-acre RMV Open Space. The agreement shall address:

- Method of preservation for this open space (i.e., conservation easement or similar mechanism).

- Permitted uses within the open space as defined in the Planned Community Text.

- Non-permitted uses within the open space as defined in the Planned Community Text.

- Phasing of open space preservation areas. Phasing of open space areas will be consistent with development phasing.

- Funding mechanism for implementation of the Adaptive Management Program (AMP) as described in the Draft Program EIR.

PDF 4.1-2 A component of the *Ranch Plan Planned Community Program Text* is the provision for the processing of Master Area Plans, which would cover an entire Planning Area, as well as Subarea Plans for smaller areas within each Planning Area. These plans would address the project's compliance with the zoning regulations, as well as other applicable codes and requirements. The Master Area Plan shall cover the entire Planning Area and address the provisions for a Master Area Plan as defined in Section II.B.3a of the *Ranch Plan Planned Community Program Text*. In addition to a Master Area Plan, Subarea Plans addressing the provisions outlined in Section II.B.3b of the *Ranch Plan Planned Community Program Text* shall be required for all development areas. Multiple Subarea Plans addressing portions of a Planning Area may be prepared, provided a Master Area Plan for all development areas has been prepared. (The requirements for the Master Area Plan and the Subarea Plan are provided in Section 3.4.5.)

PDF 4.1-3 The project proposes a mix of uses and housing densities, including estates, single-family conventional housing, multi-family units, senior housing, and apartments that would provide housing opportunities for a range of income levels. Of the 14,000 dwelling units proposed within the Ranch Plan Planned Community Area, the Environmental Impact Report has analyzed the provision of approximately 6,000 senior citizen housing dwelling units. Each Master Area Plan shall provide a statistical table estimating the proposed senior citizen housing dwelling units by Planning Subarea. Each subsequent Subarea Plan shall then specify the location and number of Senior Housing dwelling units as regulated by Section III.A.5 of this Ranch Plan Planned Community Text. An Annual Monitoring Report (per General Note 11) will be prepared each year as an inventory of dwelling units.

PDF 4.1-4 In conjunction with the processing of the site development permit for any golf course, the applicant will submit an Integrated Golf Course Management Plan (IGCMP), which will provide direction for the operation of the golf course. The IGCMP will provide overall structure and guidance for turf grass management that creates desirable playing conditions while protecting adjacent sensitive habitats and species. The IGCMP would:

a. Describe the cultural, mechanical, biological, fertilizer, and irrigation strategies necessary to achieve and maintain turf health and vigor.

b. List anticipated pests, monitoring methods, area-specific damage thresholds, and control strategies for each identified pest.

c. Provide information on the type and class of pesticide, selection considerations, methods and restrictions for application, and environmental considerations.

d. Describe methods for monitoring chemicals in surface, storm, and groundwater. Mitigation and corrective actions would be identified.

Implementation of the IGCMP will be the responsibility of the golf course operator. The IGCMP shall be approved by the County of Orange in accordance with the applicable water quality requirements. The County of Orange will not be responsible for the management or maintenance of the proposed facility.

Mitigation Measures

MM 4.1-1 Prior to sale, lease, or rental of any residential structure or portion thereof within Planning Area 8, the applicant/owner shall provide to each prospective purchaser, lessee, or tenant a notice and statement of acknowledgment that shall be executed by the prospective purchaser, lessee or tenant that the property within Planning Area 8 may be subject to overflight and sound of military operations of MCB-Camp Pendleton. The form and method of distribution of said notice and statement of acknowledgment shall be as approved by the Manager, Building Permits.

MM 4.1-2 At the time of Master Area Plan approval for Planning Area 8, the Planning Director shall evaluate the most current RCUZ for MCB Camp Pendleton to ensure that noise sensitive land uses are not constructed in areas that would exceed state noise standards.

MM 4.1-3 Prior to the sale, lease or rental of any residential, commercial or industrial structure or portion thereof within Planning Area 5, the applicant/owner shall provide to each prospective purchaser, lessee, or tenant a notice and statement of acknowledgement that shall be executed by the prospective purchaser, lessee or tenant that the property within Planning Area 5 is located immediately adjacent to Prima Deshecha Landfill, a facility that will continue to operate until its scheduled closure in 2067 or until it reaches its design capacity in accordance with the 2001 General Development Plan and all subsequent amendments thereto. The form and method of distribution of said notice and statement acknowledging same shall be approved by the Director, Integrated Waste Management Department or his designee.

7.2.4.3 Level of Significance After Mitigation

The potential impact associated with impacts from MCB Camp Pendleton on noise sensitive uses in Planning Area 8 can be mitigated to a level of less than significant through the evaluation of the applicable RCUZ at the time development is proposed, and implementation of a buyer notification program.

7.2.5 ALTERNATIVE B-12

7.2.5.1 Impacts

Physical Impacts on Established Communities

As noted for Alternative B-10 Modified, the RMV Planning Area is generally at the edge of urban development. On-site uses include various agricultural uses, industrial leases, and ranch-related residential uses. Alternative B-12 would not disrupt or divide the physical arrangement of an established community. The closest established communities are Ladera Ranch to the north, and the cities of San Juan Capistrano and San Clemente to the west. Alternative B-12 would not have any physical impact on these communities. There would be no impacts associated with this threshold.

Impact
7.2.5-1: *There is the potential for residential uses in Planning Area 8 to experience disturbance from helicopter flights and artillery training exercises, especially those occurring during night hours, potentially resulting in incompatible land uses.*

Incompatibility with Existing and Planned Land Use Surrounding the RMV Planning Area

The following provides a discussion of the area surrounding the RMV Planning Area and the potential incompatibility of Alternative B-12 with these adjacent uses.

North

Cleveland National Forest. The Cleveland National Forest is located along the northeastern tip and eastern edge of the RMV Planning Area, adjacent to Planning Area 10. There are no facilities or development within the Cleveland National Forest proximate to the RMV Planning Area. Access along Verdugo Canyon Road would be maintained for those private landholdings within the Cleveland National Forest that have an access easement. Planning Area 10 would be retained in open space and would, therefore, retain the natural open space interface between the RMV Planning Area and the Cleveland National Forest. There would be no significant land use impacts on the Cleveland National Forest.

Ronald W. Caspers Wilderness Park. Caspers Wilderness Park provides outdoor recreation for hikers, equestrians, mountain bikers, and campers. The park is adjacent to Planning Areas 3 and 4. There would be no direct impact on the park.

Coto de Caza. Coto de Caza is a residential planned community, which is immediately north of the RMV Planning Area. Alternative B-12 proposes residential development in the northern portion of Planning Areas 2 and 3. The northern portion of Planning Area 2, contiguous to Tesoro High School, would include residential development. Adjacent to the RMV Planning Area, Coto de Caza is lower density single-family residences. Because of the limited development area in the northern portion of Planning Area 2, no incompatibilities are anticipated. There would not be a significant land use impact.

General Thomas F. Riley Wilderness Park. This 524-acre park abuts Planning Area 10 and is proximate to Planning Area 2. Planning Area 10 would be retained in open space and provide a buffer between the park and development in Planning Area 2. No development is proposed in middle Chiquita. Development may be visible from vantage points along the ridgeline within the

park. These would be mid-range and distant views, similar to what exists for other developments surrounding the park.

***Upper Chiquita Conservation Area*.** This 1,200-acre conservation area abuts Planning Area 10. As previously indicated, Planning Area 10 would be retained in open space and would provide a buffer between development and the conservation area. Planning Area 10 protects a wildlife movement corridor, which would provide connectivity with the Upper Chiquita Conservation Area, Chiquita Canyon, Cañada Gobernadora, and Caspers Wilderness Park. Alternative B-12 would not result in any significant impacts to the Upper Chiquita Conservation Area.

***Tesoro High School*.** The existing high school would be adjacent to Planning Areas 2 and 10. Residential development is proposed in the northern portion of Planning Area 2 in the vicinity of the high school. There would be no direct impacts on the high school. Residential use would be compatible with the high school. Chiquita Canyon Road, which would be constructed pursuant to the County of Orange Standard Plans for a two-lane collector road, would be constructed east of the high school and would connect with Tesoro Creek Road. As with Alternative B-10 Modified, this alternative assumes that Chiquita Canyon Road would be gated to reduce the amount of additional traffic in the vicinity of the school. Alternative B-12 would not have a significant impact on Tesoro High School.

***Las Flores Planned Community*.** This residential planned community is located immediately north and west of the RMV Planning Area. Las Flores would be adjacent to Planning Area 10, which would be retained in open space. The open space in Planning Area 10 would preserve the wildlife movement corridor south of the residential development required as part of the Las Flores Planned Community approval. There would be no impact on the existing uses in the Las Flores Planned Community.

***City of Rancho Santa Margarita*.** The City of Rancho Santa Margarita provides diverse land uses. The uses proposed as a part of Alternative B-12 are similar in nature to the uses in the City of Rancho Santa Margarita. Within the City immediately adjacent to the RMV Planning Area are the Upper Chiquita Conservation Area and SR-241. Alternative B-12 would not conflict with uses within the City. The alternative would not bisect any uses within the City of Rancho Santa Margarita. There would not be a significant land use impact.

West

***Ladera Ranch*.** Ladera Ranch, currently under construction, provides a mix of residential and urban activity uses. Ladera Ranch would abut Planning Areas 1 and 10. The portion of the planned community adjacent to Planning Area 10 is in preserved open space. This would be consistent with the open space uses proposed for Planning Area 10. Residential uses are proposed in Planning Area 1; this would be a consistent use and would be a continuation of the residential use with Ladera Ranch. There would not be a significant land use impact.

***City of San Juan Capistrano*.** The City of San Juan Capistrano provides a number of diverse land uses. The uses proposed as a part of the B-12 Alternative are similar in nature to the uses within the City of San Juan Capistrano. Residential uses and open space extend along the eastern edge of the city immediately adjacent to the RMV Planning Area. North of Ortega Highway, existing residential development is predominately low density. This area would be adjacent to Planning Area 1, which proposes a combination of residential and urban activity center uses. However, the majority of the planning area would not be visible from the existing

residential uses in the City of San Juan Capistrano because of an intervening minor ridgeline. There would not be a significant land use impact.

***San Juan Hills High School*.** San Juan Hills High School is currently under construction and expected to open in August 2006. Access to the high school would be off of La Pata Avenue. Planning Area 10 would be on the east side of La Pata Avenue. This planning area would be retained in open space. There would not be any land use impacts associated with Alternative B-12 and San Juan Hills High School.

***Donna O'Neill Land Conservancy*.** This approximately 1,200-acre area was set aside for conservation purposes as mitigation for the Talega development. Planning Areas 5, 6, 7, 8, and 10 would be immediately adjacent or proximate to the land conservancy. Development is proposed proximate to the conservancy for Planning Area 5. No development is proposed in Planning Area 6. Limited development would occur in Planning Area 7 and would occur further to the east than would occur under the B-10 Modified scenario. With respect to Planning Area 8, development would occur within the potential impact area for the planning area. Depending on the future siting of land uses, development in Planning Area 8 could occur further to the east than would be associated with the B-10 Modified Alternative. Planning Area 10 would be retained in open space. Planning Area 5, proposed for residential development, is located northwest of the conservancy. As identified for the B-10 Modified Alternative, Alternative B-12 would not result in a significant impact on the function of the Donna O'Neill Land Conservancy.

***Talega*.** The Talega Planned Community, located predominately in the City of San Clemente, includes residential, business, and retail uses. Alternative B-12 would be a continuation of similar uses. There would be no land use impacts.

The City of Mission Viejo is further to the west than the above listed uses. The RMV Planning Area does not abut the City of Mission Viejo. There would not be any direct land use impacts on the City of Mission Viejo.

South

***U.S. Marine Corps Base at Camp Pendleton*.** MCB Camp Pendleton borders the RMV Planning Area on the south and east, adjacent to Planning Areas 8 and 10. Uses immediately south of the RMV Planning area include the lease for San Onofre State Beach and Camp Talega. Alternative B-12 would not have a direct impact on MCB Camp Pendleton. However, there is a potential for impacts from MCB Camp Pendleton on future sensitive land uses, specifically in Planning Area 8. As noted for Alternative B-10 Modified, training operations at MCB Camp Pendleton include helicopter flights and artillery training exercises. These operations occur both during day and night hours. Assuming a worst-case scenario, there is the potential for incompatible land uses within Planning Area 8, which would be a potentially significant impact. Implementation of the proposed mitigation measure to evaluate the current RCUZ prior to approval of development in Planning Area 8 would reduce this to a level of less than significant. Associated with the land compatibility issue, MCB Camp Pendleton has expressed concern that the placement of residential development adjacent to the base would result in impacts to future residents, which may ultimately result in pressures to modify their training operations. However, it should be noted that Alternative B-12 assumes fewer residential units in Planning Area 8 than would be associated with Alternative B-10 Modified. If this were to occur, it is uncertain if there would be a significant physical impact associated with modification of training operations to reduce impact from MCB Camp Pendleton operations on the adjacent RMV Planning Area. There is a potential that impacts associated with training operations, such as noise, may then occur in an area not currently impacted. This impact is speculative because

it is uncertain if the area in Planning Area 8 would be adversely impacted by MCB Camp Pendleton and if residential uses in Planning Area 8 would be as close to the base as proposed for Alternative B-10 Modified, and if the residents would pressure for modification to training operations, and how the training operations would be modified. Mitigation to evaluate the compatibility of the noise sensitive land use at the time of Area Plan, as well as a buyer notification program would reduce this potential impact to a level of less than significant.

As previously addressed, helicopter training is done throughout the San Mateo Valley. Flights are often at low altitude through the valley. This area has been used to support the low-ambient-light night vision goggle training for helicopter aircrews. The construction of residential and business uses along the southern edge of the RMV Planning Area would introduce lighting into an area that currently has minimal lighting. These lighting sources may reduce the effectiveness of night vision goggle training in this area. This would be an operational issue rather than a physical impact. The project by itself would not result in a significant reduction in the effectiveness of this type of training activity because of the generally low ambient light associated with residential uses (compared to lighting levels associated with I─5 and the commercial uses adjacent to the freeway).

East

The majority of land east of the RMV Planning Area is undeveloped area within Orange, Riverside, and San Diego counties. As previously indicated, the Cleveland National Forest and Caspers Wilderness Park are the primary uses. There are several properties within the County of Riverside under private ownership that contain scattered homes and the Rancho Del Rio Girl Scout camp. This area would be adjacent to open space in Planning Area 10. Access to these parcels would be retained via easements on existing ranch roads and no expansion of these roads is proposed. Alternative B-12 would not alter the easement agreements or the ability of residents of those parcels to maintain access. There would be no adverse land use impacts to these land uses.

Incompatibility with Existing and Planned Land Use within the RMV Planning Area

In addition to grazing and farming activities, there are more than 23 different entities operating within the RMV Planning Area, including mineral extraction, wholesale nurseries, waste management, and research and development businesses. Alternative B-12 proposes to allow these uses to continue until they are replaced with urban uses adopted as part of the alternative or until applicable lease agreements covering these uses expire. A change in a land use would not be considered a significant impact unless the change results in an incompatibility with other land uses. Impacts agricultural and aggregate resources are further discussed in Chapter 7.4 of this EIS. The following provides a discussion of on-site land uses and impact to these uses.

Planning Area 1. Planning Area 1 contains commercial, industrial, and agricultural businesses; the Rancho Mission Viejo headquarters; limited residences; and open fields. The same changes to land uses that would occur with Alternative B-10 Modified would occur with the implementation of Alternative B-12 with the exception of the Rancho Mission Viejo Headquarters, located at 28811 Ortega Highway. The headquarters are anticipated to be relocated to a 25-acre site in Planning Area 7.

The displacement of the uses within Planning Area 1 would not be considered a significant impact. The leases on these uses either terminate prior to the anticipated initiation of construction or, in the case of the Ladera Ranch construction yard, the use would no longer be

required. The termination date on a lease indicates that there is no commitment to continue the use onsite beyond the lease date.

Planning Area 2. Currently this planning area is undeveloped and used for agricultural purposes. The site contains lemon orchards and barley fields; it is grazed by the cattle. The development of Alternative B-12 would not result in a significant land use impact. The impacts to agricultural production are discussed in Chapter 7.4. The alternative would not impact the SMWD Chiquita Water Reclamation Plant, which is surrounded by Planning Area 2, but is not a part of the RMV Planning Area. The SMWD facility would not result in any impacts on the adjacent development. Different than Alternative B-10 Modified, no development is proposed in middle Chiquita as a part of Alternative B-12.

Planning Area 3. Planning Area 3 is predominately vacant and covered by natural vegetation in the northern portion of the area. The southern portion of the planning area is currently used for commercial, industrial, and agricultural businesses, as well as residences for agricultural workers. The displacement of the agricultural uses and residences would be the choice of the landowner and would not be considered a significant impact. All of the existing on-site land uses would be affected in a similar manner as Alternative B-10 Modified with the exception of CR&R/Solag Disposal Company. This waste management facility site has a lease that extends to September 19, 2015, with an option for two five-year extensions. As a part of Alternative B-12, the facility is proposed for relocation in the RMV Planning Area. The new location would be sited to preclude any and/or mitigate for significant land use impacts.

There would be no significant land use impacts in Planning Area 3. Uses currently on leases would be terminated prior to construction or would be deemed compatible with the County General Plan designation.

Planning Area 4. Development of Alternative B-12 would displace uses within this 550 gross-acre planning area. Depending on the final future site development plan for this planning area, all of the uses that would be affected by Alternative B-10 Modified could be impacted by Alternative B-12.

Planning Area 5. Mining operations by ONIS would be terminated with construction of the Alternative B-12. The ONIS lease is currently set to expire in February 1, 2013. This planning area is proposed for development between 2016 and 2020. The ONIS operations would have ceased operation when construction is planned to begin. There would be no impacts to this land use. Impacts on Aggregate Resources are discussed in Chapter 7.4.

Planning Areas 6 and 7. These planning areas are currently undeveloped. There are agricultural operations (orchards) within Planning Area 7. The existing orchards would not be impacted be either relocation of the Rancho Mission Viejo Headquarters facility or the additional 50 acres of orchards. No significant land use impacts would occur. Impacts to Agricultural Resources are discussed in Chapter 7.4.

Planning Area 8. The Northrop Grumman Space Technology TRW Capistrano Test Site is located within Planning Area 8. This facility would be displaced by proposed development. The lease with Northrop Grumman extends through 2018. Activities at the TRW Capistrano Test Site would have ceased prior to the initiation of construction.

Planning Area 10. This planning area is currently undeveloped. No development is proposed for Planning Area 10; therefore, there would be no land use impacts.

7.2.5.2 Mitigation Program

The mitigation program set forth for Alternative B-10 Modified (see 7.2.4.3) would also be applicable for Alternative B-12.

7.2.5.3 Level of Significance After Mitigation

The potential impact associated with impacts from MCB Camp Pendleton on noise sensitive uses in Planning Area 8 can be mitigated to a level of less than significant through the evaluation of the applicable RCUZ at the time development is proposed, and implementation of a buyer notification program.

7.2.6 ALTERNATIVE A-4

7.2.6.1 Impacts

Impact
7.2.6-1: *There is the potential for residential uses in Planning Area 8 to experience disturbance from helicopter flights and artillery training exercises, especially those occurring during night hours, potentially resulting in incompatible land uses.*

Alternative A-4 would provide the same level of development as Alternative B-10 Modified. However, Alternative A-4 assumes that permits to authorize discharge or fill in Waters of the U.S. would be processed on a project-by-project basis instead of under the SAMP process. This procedural change related to Waters of the U.S. would not affect the land use findings set forth for Alternative B-10 Modified. As such, the land use impacts for both alternatives would be the same.

7.2.6.2 Mitigation Program

The mitigation program set forth for Alternative B-10 Modified (see 7.2.4.3) would also be applicable for Alternative A-4.

7.2.6.3 Level of Significance After Mitigation

The potential impact associated with impacts from MCB Camp Pendleton on noise sensitive uses in Planning Area 8 can be mitigated to a level of less than significant through the evaluation of the applicable RCUZ at the time development is proposed, and implementation of a buyer notification program.

7.2.7 ALTERNATIVE A-5

7.2.7.1 Impacts

Impact
7.2.7-1: *There is the potential for residential uses in Planning Area 8 to experience disturbance from helicopter flights and artillery training exercises, especially those occurring during night hours, potentially resulting in incompatible land uses.*

Under Alternative A-5, development would occur on approximately 8,000 acres (35 percent) of the RMV Planning Area. Approximately 14,824 acres (65 percent) of the RMV Planning Area would be in some form of open space. This alternative assumes the development of

3,000 dwelling units. New development would avoid impacts to wetlands regulated under state and federal laws/regulations.

Alternative A-5 would occur within the development footprint of Alternative B-10 Modified. Therefore, impacts associated with Alternative A-5 would be similar to Alternative B-10 Modified. This alternative would have similar impacts associated with compatibility with MCB Camp Pendleton, although the overall number of units would be less.

7.2.7.2 Mitigation Program

The mitigation program set forth for Alternative B-10 Modified (see 7.2.4.3) would also be applicable for Alternative A-5.

7.2.7.3 Level of Significance After Mitigation

The potential impact associated with impacts from MCB Camp Pendleton on noise sensitive uses in Planning Area 8 can be mitigated to a level of less than significant through the evaluation of the applicable RCUZ at the time development is proposed, and implementation of a buyer notification program.

7.3 TRANSPORTATION AND CIRCULATION

This chapter focuses on the impacts to transportation and circulation, associated with the implementation of the alternatives carried forward for review under the Section 404 (b)(1) Guidelines. In general, most transportation and circulation impacts are outside the USACE's statutory authority and responsibility under Section 404 of the Clean Water Act. The primary responsibility of evaluating and regulating impacts to transportation and circulation resides with the County of Orange and the cities. As part of the NEPA review, the USACE is analyzing impacts on the environment associated with projects that receive authorizations under Section 404 of the Clean Water Act.

7.3.1 THRESHOLDS OF SIGNIFICANCE

An alternative would have a significant circulation impact if any of the following thresholds are exceeded. Please also refer to the traffic performance criteria set forth in Chapter 4.1.5, Tables 4.1.5-1 through 4.1.5-4, of this EIS.

- A freeway mainline segment is considered to be adversely impacted if:

  1. The segment is forecast to operate deficiently with the project (i.e., worse than the performance standard); and,

  2. The volume to capacity ratio (V/C) for the project increases by greater than 0.03 (the impact threshold specified in the Congestion Management Plan [CMP]) compared to the V/C without the project.

- A freeway ramp is considered to be adversely impacted if:

  1. The ramp is forecast to operate deficiently with the project (i.e., worse than the performance standard); and,

  2. Compared to the V/C without the project, the V/C with the project alternative increases as follows:

     – 0.01 or greater for ramps at County of Orange, City of Mission Viejo, City of Rancho Santa Margarita, and City of San Juan Capistrano intersections (the impact threshold specified in the GMP and adopted by the cities of Mission Viejo, Rancho Santa Margarita, and San Juan Capistrano).

     – Greater than 0.01 for ramps at City of Laguna Hills, City of Laguna Niguel, and City of San Clemente intersections (the impact threshold adopted by those cities).

- For arterial highways, an intersection is considered to be adversely impacted if:

  1. The intersection is forecast to operate deficiently with the project (i.e., worse than the performance standard adopted by the local jurisdiction); and,

  2. Compared to the ICU without the project, the ICU with the project increases as follows:

- 0.01 or greater at County of Orange, City of Mission Viejo, City of Rancho Santa Margarita, and City of San Juan Capistrano intersections (the impact threshold specified in the GMP and adopted by the cities of Mission Viejo, Rancho Santa Margarita, and San Juan Capistrano).

- Greater than 0.01 at City of Laguna Hills, City of Laguna Niguel, and City of San Clemente intersections (the impact threshold adopted by those cities).

- Greater than 0.03 at CMP intersections (the impact threshold specified in the CMP).

7.3.1.1 Methodology and Assumptions

This transportation and circulation section addresses the traffic impacts of the proposed alternatives. The overall approach in this EIS is to focus on the analysis of *Long-Range (Year 2025)* which assumes cumulative growth in the traffic study area through year 2025, including buildout of the RMV Planning Area. The primary sources of information for areas outside of the RMV Planning Area were OCP-2000 Modified demographic data, which was adopted by the Orange County Board of Supervisors in 2000 and the General Plans for jurisdictions within the study area. The traffic study area circulation system assumes transportation improvements that have committed funding by 2010. As previously noted, the mitigation program for the RMV Planning Area is based on this assumption.

7.3.2 SAMP PROPOSED PERMITTING PROCEDURES

As discussed previously, the proposed RGP and LOP procedures have been developed for future participants and current participants in the SAMP. The future participants have not yet defined projects for permitting by the RGP or LOP procedures. For projects eligible for authorization by the maintenance RGP, impacts to land use would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary impacts to a small area located in a mostly degraded landscape. New permanent impacts of any type are not expected. Impacts to transportation and circulation would be localized and temporary under the RGP, involving increased traffic from the few vehicles involved in the maintenance work. For projects proposed by future participants that would be eligible for authorization by the LOP procedures, not enough is known about the project size and location or potential impacts to analyze potential impacts to land use at this time. Such projects eligible for authorization by the LOP procedures will be subject to future NEPA review before a final permit decision can be made.

Current participants have defined their proposed projects and have undergone extensive pre-application coordination with the USACE and other federal and state agencies. These projects, the SMWD Proposed Project, RMV Proposed Project, and other alternatives that may have significant effects on the environment are as noted in Chapter 6.0. Therefore, the authorization pursuant to the proposed permitting procedures may also have an effect on the environment per the thresholds of significance. The potential effects and minimization/mitigation measures applicable to these potential effects are further discussed below.

7.3.3 SMWD PROPOSED PROJECT

7.3.3.1 Impacts

Impact 7.3.3-1 *Construction of the proposed Upper Chiquita reservoir may have short-term significant traffic impacts during construction.*

There would be short-term traffic impacts generated during the construction period. Vehicle trips would be associated with trucks hauling materials and supplies to the site and workers commuting to and from the reservoir site. Once the reservoir is constructed, the only trips associated with the facility would be trips by SMWD employees for maintenance and inspection.

7.3.3.2 Mitigation Program

1. The project applicant shall prepare a truck route plan for Oso Parkway for review and approval by the County of Orange prior to the approval of the construction access permit.

7.3.3.3 Level of Significance After Mitigation

It is anticipated that implementation of mitigation would mitigate short-term SMWD-related traffic impacts to a level that is considered less than significant.

7.3.4 ALTERNATIVE B-10 MODIFIED

The RMV Planning Area traffic study has been conducted at a program level of analysis. The following discussion is taken from the GPA/ZC EIR 589 and includes a cumulative analysis of all development within the south Orange County area, including all of the SAMP Study Area. The analysis was conducted for the originally proposed RMV Planning Area project (Alternative B-4) but was also applied to Alternative B-10 Modified, the County's Preferred Alternative, which was adopted by the County Board of Supervisors in November 2004, because similar impacts were anticipated.

7.3.4.1 Impacts

Alternative B-10 Modified Trip Generation

Traffic generation is expressed in terms of vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation factors used in the traffic analysis are from SCSAM, and are consistent with generation factors used in the Orange County Transportation Analysis Model (OCTAM). Table 7.3-1 identifies the trip generation for buildout of Alternative B-10 Modified land uses, including peak hour and daily vehicle trip generation by land use type. The total trip generation is 183,338 trips per day, of which 14,289 are in the a.m. peak hour and 18,033 are in the p.m. peak hour.

TABLE 7.3-1
ALTERNATIVE B-10 MODIFIED TRIP GENERATION SUMMARY

Land Use	Units	A.M. Peak Hour			P.M. Peak Hour			ADT
		In	Out	Total	In	Out	Total	
Trip Generation								
1. Single-Family–Detached	4,212 DU	528	2,634	3,162	2,495	1,193	3,687	38,544
2. Single-Family–Attached	2,808 DU	293	1,548	1,841	1,423	641	2,064	21,560
3. Senior Housing	5,360 DU	330	991	1,321	1,092	688	1,780	18,739
4. Senior Apartments	640 DU	39	118	158	130	82	213	2,237
5. Apartments	980 DU	89	444	534	416	192	608	6,335
7. General Commercial	750 TSF	1,412	664	2,076	1,521	1,880	3,401	34,118
8. Specialty Retail	230 TSF	377	172	549	394	499	893	8,936
9. R&D/Business Park	3,660 TSF	2,495	573	3,069	1,074	2,692	3,766	35,502
10. Office	560 TSF	466	114	581	223	515	739	7,013
11. Golf Course	1,057 AC	153	47	200	104	189	293	2,854
12. Elementary/Middle School	4,200 STU	540	52	592	144	249	393	5,284
13. High School	900 STU	116	11	127	31	53	84	1,132
16. Resort Hotel	250 Rooms	61	18	79	38	74	112	1,085
Total		6,901	7,389	**14,289**	9,086	8,947	**18,033**	**183,338**

AC: acre
ADT: average daily trips
DU: dwelling unit
STU: student
TSF: thousand square fee

Source: The Ranch Plan EIR 589

Project Trip Distribution

The external trip distribution pattern for buildout of Alternative B-10 Modified is depicted in Figure 7.3-1. The distribution is derived from the SCSAM and reflects the site's proximity to surrounding land use patterns and the mix of uses within the RMV Planning Area. The distribution is depicted here for both the committed circulation network and a circulation network that includes the La Pata Avenue extension and the SR-241 extension.

Figure 7.3-2 depicts the on-site roadway system. With buildout of Alternative B-10 Modified, the proposed Cow Camp Road would provide a new east-west roadway north of San Juan Creek extending east from Antonio Parkway and connect to an intersection with existing Ortega Highway in the easternmost part of the RMV Planning Area. A Street would extend north from Cow Camp Road into Planning Area 2, and connect to an intersection with existing Oso Parkway (this roadway would not serve through traffic). C Street, a north-south roadway, would extend north from Cow Camp Road into Planning Area 3, and southerly to connect to the easterly termination point of Avenida Pico. If the SR-241 extension is not built, then the on-site roadway system would include an arterial (Cristianitos Road/F Street) along the SR-241 alignment. Chiquita Canyon Road would intersect with this arterial within the boundaries of development within Planning Area 2.

Impact 7.3.4-1 *Buildout of Alternative B-10 Modified under the Year 2025 + Alternative B-10 Modified Buildout traffic scenario would result in significant cumulative impacts to study area intersections, freeway ramps, and freeway mainline segments.*

Year 2025 + Alternative B-10 Modified Buildout + Cumulative Traffic Analysis

The cumulative analysis results presented herein represents *Existing Conditions + Alternative B-10 Modified Buildout + Cumulative Conditions*. As previously noted, the traffic forecasts for the surrounding areas use year 2025 demographic data as the basis for the cumulative setting. The primary information source is the OCP-2000 Modified demographic data forecasts for Orange County. These projections are the basis for long-range transportation planning in Orange County, and provide an appropriate cumulative database for long-range analysis purposes.

The cumulative analysis addresses three scenarios, each with different transportation system assumptions for the portion of the traffic study area outside the RMV Planning Area:

- Committed circulation system (see discussion and description earlier in Chapter 4.1.5).
- Committed circulation system plus La Pata Avenue extension.
- Committed circulation system plus La Pata Avenue extension and the SR-241 extension.

Each scenario assumes buildout of Alternative B-10 Modified and year 2025 cumulative land use assumptions for the remainder of the study area.

Year 2025 + Alternative B-10 Modified Buildout: Roadway Segment Volumes

The following summarizes *Year 2025 + Alternative B-10 Modified Buildout*, inclusive of cumulative, ADT traffic forecast data for the three circulation system scenarios.

Committed Circulation System. The ADT volumes for the *Year 2025 + Alternative B-10 Modified Buildout* scenario assuming the committed circulation system are depicted in Figure 7.3-3.

Committed Circulation System Plus La Pata Avenue Extension. The ADT volumes for the *Year 2025 + Alternative B-10 Modified Buildout* scenario assuming the committed circulation system and the extension of La Pata Avenue are depicted in Figure 7.3-4.

Committed Circulation System Plus La Pata Avenue Extension and the SR-241 Extension. The ADT volumes for the *Year 2025 + Alternative B-10 Modified Buildout* scenario assuming the committed circulation system, the extension of La Pata Avenue, and the SR-241 extension are depicted in Figure 7.3-5.

Year 2025 + Alternative B-10 Modified Buildout: Intersection Levels of Service

Figures 7.3-6 and 7.3-7 identify the location of intersections for year 2025 without and with the proposed SR-241 southerly extension, respectively. Locations that do not meet the traffic performance criteria set forth in this EIS are considered cumulative impacts of Alternative B-10 Modified. The impacted locations, as set forth in GPA/ZC EIR 589, are as follows for each of the year 2025 scenarios.

Committed Circulation System. For the scenario based on the committed circulation system, the following intersections (Figures 7.3-6 and 7.3-7) are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative B-10 Modified:

City of Mission Viejo

4. Felipe Road at Oso Parkway–p.m. peak

11. Marguerite Parkway at Crown Valley Parkway–a.m. peak and p.m. peak

24. Marguerite Parkway at Avery Parkway–a.m. peak

City of Rancho Santa Margarita

59. SR-241 northbound ramps at Antonio Parkway–a.m. peak

City of San Clemente

37. Avenida La Pata at Avenida Vista Hermosa–a.m. peak and p.m. peak

38. Avenida Talega at Avenida Vista Hermosa–a.m. peak and p.m. peak

39. Camino Vera Cruz at Avenida Vista Hermosa–a.m. peak and p.m. peak

56. I-5 southbound ramps at Avenida Pico–a.m. peak and p.m. peak

57. I-5 northbound ramps at Avenida Pico–a.m. peak

City of San Juan Capistrano

28. La Novia Avenue at Ortega Highway–p.m. peak

30. Camino Capistrano at Del Obispo Street–a.m. peak and p.m. peak

32. Valle Road at San Juan Creek–a.m. peak

33. La Novia Avenue at San Juan Creek–a.m. peak

53. Valle Road at La Novia Avenue/I-5 northbound ramps–a.m. peak and p.m. peak

74. I-5 northbound ramps at Junipero Serra Road–p.m. peak

Unincorporated Orange County

5. Antonio Parkway at Oso Parkway–a.m. peak and p.m. peak

12. Antonio Parkway at Crown Valley Parkway–p.m. peak

29. Antonio Parkway/La Pata Avenue at Ortega Highway–a.m. peak and p.m. peak

Committed Circulation System Plus La Pata Avenue Extension. For the scenario based on the committed circulation system with a La Pata Avenue extension, the following intersections (Figures 7.3-6 and 7.3-7) are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative B-10 Modified:

City of Mission Viejo

4. Felipe Road at Oso Parkway–p.m. peak

11. Marguerite Parkway at Crown Valley Parkway–a.m. peak and p.m. peak

City of Rancho Santa Margarita

59. SR-241 northbound ramps at Antonio Parkway–a.m. peak

City of San Clemente

37. Avenida La Pata at Avenida Vista Hermosa–a.m. peak and p.m. peak

39. Camino Vera Cruz at Avenida Vista Hermosa–a.m. peak and p.m. peak

56. I-5 southbound ramps at Avenida Pico–a.m. peak and p.m. peak

57. I-5 northbound ramps at Avenida Pico–a.m. peak

City of San Juan Capistrano

28. La Novia Avenue at Ortega Highway–p.m. peak

30. Camino Capistrano at Del Obispo Street–a.m. peak and p.m. peak

32. Valle Road at San Juan Creek–a.m. peak

74. I-5 northbound ramps at Junipero Serra Road–p.m. peak

Unincorporated Orange County

5. Antonio Parkway at Oso Parkway–a.m. peak and p.m. peak

12. Antonio Parkway at Crown Valley Parkway–p.m. peak

29. Antonio Parkway/La Pata Avenue at Ortega Highway–a.m. peak and p.m. peak

43. Antonio Parkway at New Ortega Highway–p.m. peak

Committed Circulation System Plus La Pata Avenue Extension Plus SR-241 Extension. For the scenario based on the committed circulation system with a La Pata Avenue extension and a SR-241 extension, the following intersections (Figures 7.3-6 and 7.3-7) are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative B-10 Modified.

City of Mission Viejo

4. Felipe Road at Oso Parkway–p.m. peak

11. Marguerite Parkway at Crown Valley Parkway–a.m. peak and p.m. peak

City of Rancho Santa Margarita

59. SR-241 northbound ramps at Antonio Parkway–a.m. peak

City of San Clemente

39. Camino Vera Cruz at Avenida Vista Hermosa–a.m. peak and p.m. peak

City of San Juan Capistrano

30. Camino Capistrano at Del Obispo Street–a.m. peak and p.m. peak

32. Valle Road at San Juan Creek–a.m. peak

74. I-5 northbound ramps at Junipero Serra Road–p.m. peak

Unincorporated Orange County

5. Antonio Parkway at Oso Parkway–a.m. peak and p.m. peak

12. Antonio Parkway at Crown Valley Parkway–a.m. peak and p.m. peak

29. Antonio Parkway/La Pata Avenue at Ortega Highway–a.m. peak and p.m. peak

43. Antonio Parkway at New Ortega Highway–p.m. peak

Year 2025 + Project Buildout: Freeway Ramp Levels of Service

As a part of the GPA/ZC EIR 589, the 2025 peak hour V/C ratios were determined for the traffic study area freeway ramps for the committed circulation system, the committed circulation system with the La Pata Avenue extension, and the committed circulation system with the La Pata Avenue extension and the SR-241 extension.

Committed Circulation System. For the scenario based on the committed circulation system, the following ramps are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative B-10 Modified.

- I-5 southbound off-ramp at Oso Parkway–p.m. peak
- I-5 northbound direct on-ramp at Crown Valley Parkway–p.m. peak
- I-5 southbound off-ramp at Crown Valley Parkway–p.m. peak
- I-5 northbound on-ramp at Junipero Serra Road–a.m. peak
- I-5 northbound on-ramp at Ortega Highway–a.m. peak and p.m. peak

- I-5 southbound off-ramp at Avenida Vista Hermosa–a.m. peak
- I-5 northbound on-ramp at Avenida Pico–p.m. peak

Committed Circulation System Plus La Pata Avenue Extension. For the scenario based on the committed circulation system with a La Pata Avenue extension, the following ramps are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative B-10 Modified.

- I-5 southbound off-ramp at Oso Parkway–p.m. peak
- I-5 northbound direct on-ramp at Crown Valley Parkway–p.m. peak
- I-5 southbound off-ramp at Crown Valley Parkway–p.m. peak
- I-5 northbound on-ramp at Junipero Serra Road–a.m. peak
- I-5 northbound on-ramp at Ortega Highway–a.m. peak and p.m. peak

Committed Circulation System Plus La Pata Avenue Extension Plus SR-241 Extension. For the scenario based on the committed circulation system with a La Pata Avenue extension and a SR-241 extension, the following ramps are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative B-10 Modified.

- I-5 southbound off-ramp at Oso Parkway–p.m. peak
- I-5 northbound direct on-ramp at Crown Valley Parkway–p.m. peak
- I-5 southbound off-ramp at Crown Valley Parkway–p.m. peak
- I-5 northbound on-ramp at Ortega Highway–a.m. peak and p.m. peak
- I-5 northbound on-ramp at Avenida Pico–p.m. peak

Year 2025 + Alternative B-10 Modified Buildout: Freeway Mainline Levels of Service

The GPA/ZC EIR 589 identified the year 2025 peak hour V/C ratios for the study area freeway mainline segments assuming the committed circulation system scenario, the committed circulation system scenario with the extension of La Pata Avenue, and the committed circulation system scenario with the extension of La Pata Avenue and the SR-241 extension.

Committed Circulation System. For the scenario based on the committed circulation system, the following freeway mainline segments are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative B-10 Modified:

- Northbound I-5 north of Oso Parkway–a.m. peak and p.m. peak
- Southbound I-5 north of Oso Parkway–p.m. peak
- Northbound I-5 north of Ortega Highway–a.m. peak
- Southbound I-5 north of Ortega Highway–p.m. peak

- Northbound I-5 north of Camino Capistrano–a.m. peak and p.m. peak
- Southbound I-5 north of Camino Capistrano–p.m. peak
- Northbound I-5 south of Camino Capistrano–a.m. peak and p.m. peak
- Southbound I-5 south of Camino Capistrano–p.m. peak
- Northbound I-5 north of Avenida Vista Hermosa–a.m. peak and p.m. peak
- Southbound I-5 north of Avenida Vista Hermosa–a.m. peak and p.m. peak
- Northbound I-5 north of Avenida Pico–a.m. peak and p.m. peak
- Southbound I-5 north of Avenida Pico–p.m. peak
- Northbound I-5 south of Avenida Pico–a.m. peak and p.m. peak
- Northbound I-5 south of Avenida Pico–a.m. peak and p.m. peak

Committed Circulation System Plus La Pata Avenue Extension. The following freeway mainline segments are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative B-10 Modified.

- Northbound I-5 north of Oso Parkway–a.m. peak
- Southbound I-5 north of Oso Parkway–p.m. peak
- Southbound I-5 north of Ortega Highway–p.m. peak
- Northbound I-5 north of Camino Capistrano–a.m. peak and p.m. peak
- Southbound I-5 north of Camino Capistrano–p.m. peak
- Northbound I-5 south of Camino Capistrano–a.m. peak and p.m. peak
- Southbound I-5 south of Camino Capistrano–a.m. peak
- Northbound I-5 north of Avenida Vista Hermosa–a.m. peak and p.m. peak
- Southbound I-5 north of Avenida Vista Hermosa–a.m. peak and p.m. peak
- Northbound I-5 north of Avenida Pico–p.m. peak
- Southbound I-5 north of Avenida Pico–p.m. peak
- Northbound I-5 south of Avenida Pico–a.m. peak and p.m. peak
- Southbound I-5 south of Avenida Pico–a.m. peak and p.m. peak

Committed Circulation System Plus La Pata Avenue Extension Plus SR-241 Extension. For the scenario based on the committed circulation system with a La Pata Avenue extension

and a SR-241 extension, the following freeway mainline segments are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative B-10 Modified.

- Northbound I-5 north of Camino Capistrano–a.m. peak
- Northbound I-5 south of Camino Capistrano–a.m. peak
- Northbound I-5 north of Avenida Vista Hermosa–p.m. peak
- Southbound I-5 north of Avenida Vista Hermosa–p.m. peak
- Northbound I-5 south of Avenida Pico–p.m. peak
- Southbound I-5 south of Avenida Pico–p.m. peak

7.3.4.2 Mitigation Program

In conjunction with the approval of the GPA/ZC project for Alternative B-10 Modified, the County of Orange adopted a mitigation program to reduce the impacts associated with impacts on transportation and circulation. These measures are listed below to provide the reader context of the mitigation program, although these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. No additional mitigation is required for Alternative B-10 Modified as part of the SAMP project.

Project Design Features

PDF 4.6-1 Antonio Parkway at Cow Camp Road is a new intersection that shall be designed to have adequate capacity with and without the proposed SR-241 extension. Lane configurations and potential grade separations shall be determined subject to the review and approval of the County of Orange and Caltrans in future design studies to ensure that the intersection provides the needed capacity for long-range cumulative demand and, therefore, operates at an acceptable level of service.

Standard Conditions and Requirements

SC 4.6-1 As a part of the submittal of a Tentative Tract Map for an Urban Activity Center development, the project applicant shall submit a Transportation Demand Management (TDM) program consistent with the requirements of the County of Orange TDM Ordinance.

SC 4.6-2 Prior to the recordation of a subdivision map, the subdivider shall place notes on the final map which release and relinquish vehicular access rights to all arterial highways to the County of Orange, except for access locations approved by the County of Orange, in a manner meeting the approval of the Manager, Subdivision and Grading. (County of Orange Standard Condition of Approval, T01, Access Rights)

SC 4.6-3 Prior to the recordation of a subdivision map, the subdivider shall place a note on the map, in a manner that meets the approval of the Manager, Subdivision and Grading Services, that states:

"The private streets constructed within this map shall be owned, operated and maintained by the developer, successors or assigns. The County of Orange shall have no responsibility therefore unless pursuant to appropriate sections of the Streets and Highways Code of the State of California, the said private streets have been accepted into the County Road System by appropriate resolution of the Orange County Board of Supervisors." (County of Orange Standard Condition of Approval, T02, Private Street Responsibility)"

SC 4.6-4 Prior to the recordation of a subdivision map, the subdivider shall design and construct the following improvements in accordance with plans and specifications meeting the approval of the Manager, Subdivision and Grading:

A. Streets, bus stops, on-road bicycle trails, street names, signs, striping and stenciling.

B. The water distribution system and appurtenances shall also conform to the applicable laws and adopted regulations enforced by the County Fire Chief.

C. Underground utilities (including gas, cable, electrical and telephone), streetlights, and mailboxes. (County of Orange Standard Condition of Approval, T04, Public Improvements)

SC 4.6-5 Prior to the issuance of building permits, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program for the Foothill/Eastern Transportation Corridor, in a manner meeting the approval of the Manager, Subdivision and Grading. (County of Orange Standard Condition of Approval, T05, Major Thoroughfare and Bridge Fee Programs)

SC 4.6-6 Prior to the issuance of any grading permits, the applicant shall provide adequate sight distance per Standard Plan 1117 at all street intersections, in a manner meeting the approval of the Manager, Subdivision and Grading. The applicant shall make all necessary revisions to the plan to meet the sight distance requirement such as removing slopes or other encroachments from the limited use area in a manner meeting the approval of the Manager, Subdivision and Grading Services. (County of Orange Standard Condition of Approval, T07, Site Distance)

SC 4.6-7 Prior to the recordation of a subdivision map, the subdivider shall install all underground traffic signal conduits (e.g., signals, phones, power, loop detectors, etc.) and other appurtenances (e.g., pull boxes, etc.) needed for future traffic signal construction, and for future interconnection with adjacent intersections, all in accordance with plans and specifications meeting the approval of the Manager, Subdivision and Grading. (County of Orange Standard Condition of Approval, T08, Traffic Signal Conduit)

SC 4.6-8 A. Prior to the recordation of a subdivision map or the issuance of any building permits, whichever occurs first, the subdivider shall provide plans and specifications meeting the approval of the Manager, Subdivision and Grading, for the design of the following improvements:

1) Internal street common private drive system.

2) Entrance to the site to emphasize that the development is private by use of signs and other features.

B. Prior to the recordation of a subdivision map, the applicant shall construct the above improvements in a manner meeting the approval of the Manager, Construction.

C. Prior to the issuance of any building permits, the subdivider shall provide plans meeting the approval of the Manager, Subdivision & Grading, for the design of the internal pedestrian circulation system within the development. (County of Orange Standard Condition of Approval, T12, Internal Circulation)

SC 4.6-9 Prior to the recordation of a subdivision map, the subdivider shall dedicate a signal maintenance easement to the County of Orange at the project site access, in a manner meeting the approval of the Manager, Subdivision and Grading. (County of Orange Standard Condition of Approval, T13b, Traffic Signal Maintenance Easement)

SC 4.6-10 Prior to the recordation of a subdivision map, the subdivider shall design and construct/provide a cash deposit of __ % of the cost of / /enter into an agreement with the County of Orange, accompanied by financial security, for the cost of __ % of) a traffic signal at the intersection of ___ and ___, in a manner meeting the approval of the Manager, Subdivision and Grading.[1] (County of Orange Standard Condition of Approval, T14b, Traffic Signal Installation)

SC 4.6-11 Prior to the recordation of a subdivision map, the applicant shall delineate on the subdivision map a two way reciprocal access and parking easement to all parcels within the map and place a note on the final map reserving the easement for the benefit of all parcels on the map, in a manner meeting the approval of the Manager, Subdivision and Grading. (County of Orange Standard Condition of Approval, T15, Access Easement for Commercial Centers)

SC 4.6-12 Prior to the recordation of a subdivision map, the applicant shall submit a traffic study of the development for review and approval by the Manager, Subdivision and Grading, in accordance with the Growth Management Plan, Transportation Implementation Manual. The applicant shall retain a traffic engineer licensed in the State of California to perform the traffic study. (County of Orange Standard Condition of Approval, T16, Traffic Study)

SC 4.6-13 Prior to the approval of any subdivision map (except for financing purposes) for the Ranch Plan development within 1,000 feet of the center line of the conceptual Crown Valley Parkway as shown on the current (as of the date of the Ranch Plan GPA/ZC approval) Master Plan of Arterial Highway (MPAH), between Antonio Parkway and the Foothill Transportation Corridor (FTC), the Director, Resource & Development Management Department (RDMD), County of Orange in consultation with Manager Programming/Planning of Orange County Transportation Authority (OCTA) shall make a finding that said subdivision map does not preclude implementation of Crown Valley Parkway as an MPAH facility.

[1] The specific location of intersections and percentage of deposit would be determined at a future date by the County of Orange.

SC 4.6-14 Prior to recordation of the first tract map (except for financing purposes) for Planning Areas 2, 3, or 5 in the Ranch Plan development, the applicant shall enter into an agreement with the Foothill/Eastern Transportation Corridor Agencies (TCA) to address right-of-way, cost, phasing, implementation and roles and responsibilities relating to all roadway connections to and/or crossings of the SR-241 extension within the Ranch Plan, and/or funding/phasing/construction of other roadways (i.e., F Street) that are needed in the even the extension of SR-241 does not occur. The agreement between the applicant and the TCA shall also be reviewed and approved by the Director, RDMD, County of Orange, for consistency with SCRIP/Development Agreement phasing/milestone objectives.

Mitigation Measures

Alternative B-10 Modified was formulated as part of a comprehensive planning process for the south Orange County sub-region's remaining undeveloped lands. This comprehensive planning approach is intended to result in the design and implementation of a circulation system to accommodate projected growth for the sub-region, including the RMV Planning Area. Given the nature and magnitude of Alternative B-10 Modified and the regional planning process, it is important that mitigation also be viewed in this larger context. For this reason, the traffic mitigation program takes a comprehensive approach in order to reduce/avoid significant adverse impacts. This approach recognizes that the alternative is intended to be built over an extended time period (for purposes of the traffic study, it is assumed that development would be completed by 2025) and that the mitigation program must take into account the circumstances that are reasonably foreseeable when the alternative is implemented. This includes the consideration of foreseeable changes to the circulation system,[2] as well as the addition of traffic from sources other than the alternative (i.e., cumulative traffic conditions). The proposed mitigation consists of several measures, including road and highway infrastructure improvements that would be provided by means of new and/or expanded capital improvement programs established by the public agencies and funded through fees and/or other methods of financing. Alternative B-10 Modified would contribute to the funding of these programs in an amount proportionate to its fair share contribution to the affected components of the circulation system.

The proposed long-range transportation improvements for 2025 are depicted in Figures 7.4-8 and 7.4-9. The first diagram pertains to the committed circulation system and the second diagram to the committed circulation system plus the addition of the SR-241 extension. Table 7.3-2 lists the transportation improvement program proposed as mitigation for 2025. As the figures and table indicate, the La Pata Avenue extension is a component of the improvement program and the improvements differ depending on whether the SR-241 extension is assumed. Figures 7.3-10 and 7.3-11 depict the *Year 2025 + Project Buildout* ADT volumes with the proposed improvements under conditions without and with the SR-241 extension, respectively.

The transportation improvements would be implemented over time as part of a comprehensive transportation improvement program. It is multi-jurisdictional with specific responsibilities of the various participants clearly defined as part of that program. Fair share contributions of improvements are identified. While such shares are considered in developing the improvement program, they will only be one of the factors considered in establishing the responsibility of Rancho Mission Viejo and other participants.

[2] In addition to improvements proposed as part of the project, the 2025 circulation system also incorporates those improvements that have already been "committed" in conjunction with existing public agency capital improvement programs, state transportation improvement programs, and mitigation for previously entitled development projects.

Intersections and Freeway Ramps

MM 4.6-1 Table 7.3-2 identifies the transportation improvement program proposed as mitigation for the Ranch Plan project for year 2025. Table 7.3-3 identifies interim improvements. The improvements differ depending on whether the SR-241 southerly extension is assumed. The project applicant shall participate on a fair share basis for improvements associated with cumulative impacts. Funds shall be paid to the County of Orange pursuant to the SCRIP Program.

The South County Roadway Improvement Program (SCRIP) Fee Program was proposed by the County in conjunction with planning efforts aimed at accelerating completion of critical links in the south County arterial highway system. The County has approved an Action Plan which includes a list of highway and intersection improvements. The SCRIP Program is a comprehensive method of implementing the Action Plan to ensure the timely phasing and financing of the highway improvements and intersection improvements. The SCRIP Program was prepared pursuant to Government Code Section 66484.3 and the Orange County Codified Ordinance Section 7-9-316 to finance construction of the highway gaps, intersection improvements, and traffic signals identified in the Action Plan. The "area of benefit" includes the RMV Planning Area and off-site highway links and intersections included in the Action Plan. The improvements, costs, and fees may be divided into zones depending on land uses and phasing. The SCRIP Fee Program is intended to complement, not replace, the existing road fee programs in the south County area. It was adopted by the County concurrent with its action on the GPA/ZC project.

MM 4.6-2 The mitigation program is based on the buildout of land uses in the surrounding area and may change based on the effects of the future land development and future changes to regional transportation patterns. The intersection and freeway ramp improvements shall be implemented and/or pro-rata payment shall be made in accordance with the transportation improvement phasing plan of the SCRIP. Prior to the approval of each Master Area Plan, a traffic analysis which supplements The Ranch Plan EIR Traffic Report (Austin-Foust Associates, Inc., May 2004) shall be submitted for review and approval to the County, Director of Planning and Development Services. The traffic study shall include:

a. An evaluation of how any proposed refinements to the circulation system and/or milestones remain in substantial compliance with appropriate Development Agreement obligations and Program EIR mitigation measures.

b. Average Daily Trips generated by uses proposed within the planning area, as distributed onto the surrounding circulation system (both within the Ranch Plan PC Area, and in the surrounding vicinity) including the peak hour characteristics of those trips.

TABLE 7.3-2
YEAR 2025 CIRCULATION SYSTEM IMPROVEMENT PROGRAM

Location	Jurisdiction	Improvement	Scenario in which Improvements are Needed[a.]	
			Without SR-241	With SR-241
Freeway Interchanges				
Marguerite Parkway-Saddleback College/I-5 Connectors	Caltrans	Construct new connector ramps to and from I-5 north.	X	X
		Note: Implementation of the ramps would require the acquisition of right-of-way. This improvement is expected to impact buildings/structures, as well as require the relocation of utilities. The ramps would be subject to separate, subsequent environmental review. Potential environmental effects may include construction-related traffic, air quality, and noise impacts; land use impacts, aesthetic impacts, and public service and facility impacts.		
Arterial Roads				
Antonio Pkwy. (Old Ortega Hwy. to New Ortega Hwy.)	County	Roadway widening.	X	X
		Note: This roadway widening is assumed as a part of the proposed project. Its impacts are assessed as a part of The Ranch Plan Program EIR.		
New Ortega Hwy. (Antonio Pkwy. to Old Ortega Hwy.)	County	Construct four/six lane roadway to existing Ortega Highway.	X	X
Ortega Highway (I-5 to Antonio Parkway)	San Juan Capistrano/ County	Traffic calming Roadway widening east of existing four-lane section to Antonio Parkway.	X	X
		Note: An Environmental Assessment has been prepared by Caltrans. Implementation of improvements is expected to require right-of-way. Potential environmental effects may include traffic, air quality, noise, land use, aesthetics, and public service and facility impacts.		
Oso Parkway (east of Las Flores to SR-241)	County	Roadway widening.	X	X
		Note: Implementation of this road widening could occur within existing graded right-of-way. The project would be subject to separate environmental review. Potential environmental impacts may include construction-related traffic, air quality, and noise impacts.		
Oso Parkway (I-5 to Marguerite Parkway)	Mission Viejo	Roadway widening.	X	X
		Note: Implementation of this road widening is expected to require		

TABLE 7.3-2 (Continued)
YEAR 2025 CIRCULATION SYSTEM IMPROVEMENT PROGRAM

Location	Jurisdiction	Improvement	Scenario in which Improvements are Needed[a.]	
			Without SR-241	With SR-241
		right-of-way and may impact buildings/structures. The improvement would require separate environmental review. Potential environmental impacts would include construction-related traffic, air quality, and noise impacts. Additional impacts could include land use, aesthetics, and public services and facilities.		
Intersections				
5. Antonio Parkway at Oso Parkway	County	Add fourth eastbound through lane.	X	
		Note: Implementation of these improvements would require right-of-way, but would not affect buildings or structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as public services and facilities, and land use.		
27. Rancho Viejo Road at Ortega Highway	San Juan Capistrano	Convert NB shared left-/through lane to second left-turn lane. Add separate northbound right-turn lane.	X	X
		Note: Implementation of these improvements would require right-of-way, but would not affect buildings or structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities, and land use.		
29. Antonio Parkway/La Pata Avenue at Ortega Highway	County	Add second northbound left-turn lane. Add third northbound through lane. Add third southbound through lane.	X	
		Note: Implementation of these improvements would require right-of-way, but would not affect buildings or structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities, and land use.		
30. Camino Capistrano at Del Obispo Street	San Juan Capistrano	Add second eastbound left-turn lane.	X	X
		Note: Implementation of this improvement would require right-of-		

TABLE 7.3-2 (Continued)
YEAR 2025 CIRCULATION SYSTEM IMPROVEMENT PROGRAM

Location	Jurisdiction	Improvement	Scenario in which Improvements are Needed[a]	
			Without SR-241	With SR-241
		way and would impact buildings/structures. The improvement would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities, and land use.		
37. Avenida La Pata at Avenida Vista Hermosa	San Clemente	Add southbound free right-turn lane. Add separate westbound right-turn lane. Add third eastbound left-turn lane.	X	
		Note: Implementation of these improvements would require right-of-way, but is not expected to affect any buildings or structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as public services and facilities and land use.		
39. Camino Vera Cruz at Avenida Vista Hermosa	San Clemente	Add second southbound left-turn lane. Add separate westbound right-turn lane.	X	X
		Note: Implementation of these improvements would require right-of-way, but is not expected to affect any buildings or structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as public services and facilities and land use.		
43. Antonio Parkway at Cow Camp Road	County	Improve at-grade intersection or reconstruct as grade-separated intersection.	X	X
		Note: This roadway widening is assumed as a part of the proposed project. Its impacts are assessed as a part of The Ranch Plan Program EIR.		

TABLE 7.3-2 (Continued)
YEAR 2025 CIRCULATION SYSTEM IMPROVEMENT PROGRAM

Location	Jurisdiction	Improvement	Scenario in which Improvements are Needed[a.]	
			Without SR-241	With SR-241
59. SR-241 northbound ramps at Antonio Parkway	Rancho Santa Margarita	Add second eastbound left-turn lane.	X	
		Note: Implementation of this improvement would not require right-of-way, but are expected to impact buildings/structures. The improvement would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities and land use.		
74. I-5 northbound ramps at Junipero Serra Road	San Juan Capistrano	Convert eastbound shared left-/thru lane to dedicated left-turn lane. Add second eastbound left-turn lane.	X	X
		Note: Implementation of these improvements would not require right-of-way, but may impact buildings/structures. The improvement would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities and land use.		
Source: The Ranch Plan EIR 589 Table 4.6-26.				

TABLE 7.3-3
INTERIM CIRCULATION SYSTEM IMPROVEMENT PROGRAM

Location	Jurisdiction	Improvements	Scenario in which Improvements are Needed[a.]		
			1	2	3
Freeway Interchanges					
Ortega Highway at I-5 Interchange	Caltrans	Reconstruct interchange: design to be determined by Caltrans.[d.] Note: A Project Study Report is under preparation by Caltrans. Reconstruction of the interchange would require right-of-way, and is expected to impact buildings/structures, as well as require the relocation of utilities. The ramps would be subject to separate environmental review. Potential environmental effects may include construction-related traffic, air quality, and noise impacts; land use impacts, aesthetic impacts, and public service and facility impacts.	X	X	X
Freeway Ramps					
I-5 southbound off-ramp at Oso Parkway	Caltrans	Add second drop lane from I-5 to the off-ramp. Note: An Environmental Assessment has been prepared by Caltrans. This improvement is not expected to require right-of-way or impact buildings/structures. The lane improvement would be subject to separate environmental review. Potential environmental effects may include construction-related traffic, air quality, and noise impacts; and public service and facility impacts.	X		X
I-5 southbound off-ramp at Crown Valley Parkway	Caltrans	Add second auxiliary lane from I-5 to the off-ramp. Note: An Environmental Assessment has been prepared by Caltrans. It is unknown whether this improvement would require right-of-way; it is not expected to impact buildings or structures. The lane improvement would be subject to separate environmental review. Potential environmental effects may include construction-related traffic, air quality, and noise impacts; and public service and facility impacts.	X	X	X
Arterial Roads					
La Pata Avenue extension	County	Extend as four-lane primary arterial from current terminus south of Ortega Highway to existing termination point in the City of San Clemente. Note: The County will be preparing an EIR for this project. This road improvement is expected to require right-of-way and result in the following environmental impacts: biological resources, geology, aesthetics, air quality, and noise.		X	X

TABLE 7.3-3 (Continued)
INTERIM CIRCULATION SYSTEM IMPROVEMENT PROGRAM

Location	Jurisdiction	Improvements	Scenario in which Improvements are Needed[a.]		
			1	2	3
Cow Camp Road (Antonio Parkway into project site)	County	Construct four-/six-lane roadway into project site. Note: This roadway is a part of the proposed project. Its impacts are assessed as a part of GPA/ZC EIR 589.	X[c.]	X[c.]	X[c.]
Intersections					
4. Felipe Road at Oso Parkway	Mission Viejo	Add second southbound left-turn lane. Note: Implementation of this improvement would require right-of-way, but would not affect buildings or structures. The improvement would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as public services and facilities and land use.	X	X	X
5. Antonio Parkway at Oso Parkway	County	Add fourth southbound through lane. Add third northbound left-turn lane. Allow right-turn overlap for northbound right. Allow right-turn overlap for eastbound right. Note: Implementation of these improvements would require right-of-way, but would not affect buildings or structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities, and land use.	X X X X	X X X X	X X X
11. Marguerite Parkway at Crown Valley Parkway	Mission Viejo	Restripe southbound movement from two through lanes and separate right turn-lane to a dedicated through lane, shared through/right-turn lane, and separate right-turn lane. Add a de-facto westbound right-turn lane. Note: Implementation of these improvements would require right-of-way, but would not affect buildings or structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities, and land use.	X	X	X
12. Antonio Parkway at Crown Valley Parkway	County	Add third northbound left-turn lane. Add third eastbound left-turn lane. Restripe eastbound movement from two through lanes and separate right-turn lane to single through lane and double right turns.	X	X	X

TABLE 7.3-3 (Continued)
INTERIM CIRCULATION SYSTEM IMPROVEMENT PROGRAM

Location	Jurisdiction	Improvements	Scenario in which Improvements are Needed[a.]		
			1	2	3
		Note: Implementation of these improvements would require right-of-way, but would not affect buildings or structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities, and land use.			
28. La Novia Avenue at Ortega Highway	San Juan Capistrano	Add second westbound left-turn lane.	X		
		Note: Implementation of these improvements would require right-of-way, but would not affect buildings or structures. The improvement would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as public services and facilities.			
29. Antonio Parkway/La Pata Avenue at Ortega Highway	County	Add southbound free right-turn lane. Add second northbound through lane.	X	X	X
		Note: Implementation of these improvements would require right-of-way, but would not affect buildings or structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities, and land use.			
30. Camino Capistrano at Del Obispo Street	San Juan Capistrano	Add second westbound left-turn lane. Restripe separate southbound right-turn lane to a shared through/right-turn lane.	X	X	X
		Note: Implementation of these improvements would require right-of-way and would impact buildings/structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities, and land use.			
32. Valle Road at San Juan Creek Road	San Juan Capistrano	Add second westbound through lane.	X		
		Note: Implementation of these improvements would require right-of-way and would impact buildings/structures. The improvement would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise			

TABLE 7.3-3 (Continued)
INTERIM CIRCULATION SYSTEM IMPROVEMENT PROGRAM

Location	Jurisdiction	Improvements	Scenario in which Improvements are Needed[a.]		
			1	2	3
		impacts, as well as public services and facilities and land use.			
37. Avenida La Pata at Avenida Vista Hermosa	San Clemente	Add second eastbound left-turn lane.	X	X	
		Note: Implementation of this turning lane improvement would require right-of-way, but is not expected to affect any buildings or structures. The improvement would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as public services and facilities and land use.			
43. Antonio Parkway at Cow Camp Road	County	Construct new at-grade intersection.	X	X	X
		Note: This roadway widening is assumed as a part of the proposed project. Its impacts are assessed as a part of GPA/ZC EIR 589.			
56. I-5 southbound ramps at Avenida Pico	San Clemente	Convert second westbound through lane to shared second left-turn/through lane.	X	X	
		Note: An Environmental Assessment has been prepared by Caltrans for this improvement. Implementation of this improvement would require right-of-way, but is not expected to affect any buildings or structures. The improvement would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as public services and facilities and land use.			
59. SR-241 northbound ramps at Antonio Parkway	Rancho Santa Margarita	Restripe westbound movements from three through lanes and separate right-turn lane to two through lanes, shared through/right-turn lane, and separate right-turn lane.	X	X	X
		Note: Implementation of these improvements would not require right-of-way, but are expected to impact buildings/structures. The improvements would require separate environmental review. Potential environmental impacts could include short-term traffic, air quality, and noise impacts, as well as aesthetics, public services and facilities and land use.			

a. The background circulation system assumptions for each scenario are as follows:
Scenario 1: Committed circulation system.
Scenario 2: Committed circulation system with La Pata Avenue extension.
Scenario 3: Committed circulation system with La Pata Avenue extension and arterial road south of Oso Parkway at SR-241.
b. Improvements at this location are not required in the long-range (2025) mitigation program for Alternative B-10 Modified.

TABLE 7.3-3 (Continued)
INTERIM CIRCULATION SYSTEM IMPROVEMENT PROGRAM

Location	Jurisdiction	Improvements	Scenario in which Improvements are Needed[a.]		
			1	2	3
c. In the interim, Cow Camp Road is only assumed to extend east of Antonio Parkway into the project site and not to existing Ortega Highway. d. The proposed mitigation for the I-5/Ortega Highway interchange involves reconstructing the interchange. A traffic study for the interchange reconstruction is currently ongoing by the City of San Juan Capistrano and Caltrans and the study is scheduled for completion by mid-2004. Source: The Ranch Plan EIR 589 Table 4.6-27.					

MM 4.6-3 No improvements are proposed herein to address the cumulative impacts of the project on I-5 mainline. Improvements to the I-5 mainline are a part of regional transportation improvement programs with associated timing and funding sources. If the responsible agencies establish a cumulative mitigation program, the project applicant shall participate on a fair share basis.

7.3.4.3 Level of Significance After Mitigation

The proposed improvements result in acceptable levels of service at each improvement location with the exception of three intersections (Marguerite Parkway at Crown Valley Parkway in the City of Mission Viejo, Camino Capistrano at Del Obispo Street in the City of San Juan Capistrano, and the I-5 southbound ramp intersection at Avenida Pico in the City of San Clemente) under cumulative with Alternative B-10 Modified conditions without the SR-241 extension.

The at-grade and grade-separated plans at the Antonio Parkway/Cow Camp Road intersection both result in acceptable levels of service under cumulative conditions with the SR-241 extension. However, only the grade-separated improvement plan results in acceptable levels of service under cumulative conditions without the SR-241 extension. For this reason, a grade-separated plan may be the preferred design option.

Alternative B-10 Modified's contribution to impacts on freeway mainline segments that are forecast to operate deficiently would be considered significant and unavoidable.

To address those proposed improvements located outside the County's jurisdiction, the County is endeavoring to enter into agreements with the affected jurisdictions regarding the design and construction of the improvements and the transfer of monies paid towards funding of these improvements from the SCRIP program. However, if the County is not able to reach agreement with one or more of the jurisdictions, for purposes of this EIS, the impacts to be mitigated by those improvements may remain significant and be unavoidable.

7.3.5 ALTERNATIVE B-12

7.3.5.1 Impacts

Impact 7.3.5-1 *Buildout of Alternative B-12 under the Year 2025 + Alternative B-12 Buildout traffic scenario would result in significant cumulative impacts to study area intersections, freeway ramps, and freeway mainline segments.*

Like the B-4 and the B-10 Modified Alternatives, the B-12 Alternative assumes 14,000 residential units and a similar amount of non-residential square footage. Therefore, maximum entitlements under Alternatives B-4, B-10 Modified, and B-12 are comparable. It is anticipated that there could be some differences between projected traffic impacts under the B-12 Alternative (as compared with the B-10 Modified Alternative) in the event of a reallocation of residential units/nonresidential square footage between and among the development areas, due to the reduction in size of development areas within Planning Areas 4, 6, 7, and 8, as well as the proposal under Alternative B-12 to retain Cristianitos Road as a private road south of the Ortega Highway. However, such reallocations will not be proposed until master area plans are submitted to the County for each of the planning areas. Therefore, any analysis of the changes would be speculative at this time. Because the maximum levels of development would be unchanged, the significant effects of Alternative B-12 are expected to be similar to those of

Alternative B-10 Modified. It should be noted that GPA/ZC EIR 589 anticipated that there could be changes in traffic over time due to evolving future land development and transportation patterns. For that reason, an updated traffic analysis is required at the master area plan stage of subsequent entitlement, as well as supplemental CEQA review. These supplemental traffic analyses/reviews would include estimates of the average daily traffic (ADT) generated by uses ultimately proposed within the proposed development planning areas, as distributed into the circulation system, and an evaluation of how any proposed changes/refinements to the circulation system are in compliance with applicable Development Agreement obligations and GPA/ZC EIR 589 mitigation measures.

7.3.5.2 Mitigation Program

The mitigation program set forth for Alternative B-10 Modified in GPA/ZC EIR 589 would apply to Alternative B-12. No additional traffic mitigation is required as part of the SAMP project.

7.3.5.3 Level of Significance After Mitigation

The levels of significance after mitigation would be the same for Alternative B-12 as for Alternative B-10 Modified.

7.3.6 ALTERNATIVE A-4

7.3.6.1 Impacts

Impact 7.3.6-1 *Buildout of Alternative A-4 under the Year 2025 + Alternative A-4 Buildout traffic scenario would result in significant cumulative impacts to study area intersections, freeway ramps, and freeway mainline segments.*

Alternative A-4 assumes the same amount of development within the same footprint as Alternative B-10 Modified. Under this alternative, a NCCP/MSAA/HCP or SAMP would not be prepared and permitting would proceed with incremental project-by-project review of new development proposals within the RMV Planning Area. Future development would be subject to incremental project-by-project application of state and federal regulatory jurisdictional wetland program requirements and would be required to minimize impacts on threatened and endangered species at the project level. Because Alternative A-4 assumes the same amount of development within the same footprint as Alternative B-10 Modified, it would have the same traffic and circulation impacts as Alternative B-10 Modified.

7.3.6.2 Mitigation Program

The mitigation program identified in the GPA/ZC 589 EIR for Alternative B-10 Modified would also apply to Alternative A-4.

7.3.6.3 Level of Significance After Mitigation

The levels of significance after mitigation would be the same for Alternative A-4 as for Alternative B-10 Modified.

7.3.7 ALTERNATIVE A-5

Implementation of Alternative A-5 assumes development would occur on approximately 8,000 acres (35 percent) with approximately 14,815 acres (65 percent) of the RMV Planning Area in

open space. This alternative assumes up to 3,000 dwelling units. With 3,000 dwelling units, it is expected that there would be limited employment-generating land uses. New development would avoid impacts to wetlands regulated under state and federal laws/regulations. Non-wetland Waters of the U.S. regulated by the USACE under Section 404 and non-wetland jurisdictional areas regulated by the state under Sections1601/1603 would be avoided. To ensure total avoidance of state and federal threatened/endangered species, new development would be limited to those portions of RMV Planning Area that are not occupied by state or federally listed species, and for regulated waters, access would be dependent on existing arterial highways and the ranch road network (i.e., the existing dirt/gravel roads) with surfacing limited to existing road widths.

The potential Alternative A-5 traffic impacts were not evaluated in GPA/ZC EIR 589. However, a traffic analysis was conducted for another alternative (i.e., Alternative A-2, Existing Zoning), assuming a committed circulation system, which was projected to have a similar amount of low-density estate residential development spread throughout the RMV Planning Area, with access also provided via existing ranch roads. Because of these similar characteristics, the total number of vehicular trips (approximately 30,000 ADT) and the impacts projected for Alternative A-2 are presented here as a surrogate for Alternative A-5.

7.3.7.1 Impacts

Impact 7.3.7-1 *Buildout of Alternative A-5 under the Year 2025 + Alternative A-5 Buildout traffic scenario would result in significant cumulative impacts to study area intersections, freeway ramps, and freeway mainline segments.*

To assume a worst-case analysis, this traffic scenario assumes that the 3,000 dwelling units would be detached units. Therefore, Alternative A-5 would generate approximately 29,878 trips per day.

Year 2025 + Alternative A-5: Intersection Levels of Service

For the scenario based on the committed circulation network, the following intersections (Figures 7.3-6 and 7.3-7) are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative A-5:

City of Mission Viejo

4. Felipe Road at Oso Parkway−p.m. peak

11. Marguerite Parkway at Crown Valley Parkway−a.m. peak and p.m. peak

24. Marguerite Parkway at Avery Parkway−a.m. peak

City of Rancho Santa Margarita

59. SR-241 northbound ramps at Antonio Parkway−a.m. peak

City of San Clemente

37. Avenida La Pata at Avenida Vista Hermosa−a.m. peak and p.m. peak

39. Camino Vera Cruz at Avenida Vista Hermosa−a.m. peak and p.m. peak

56. I-5 southbound ramps at Avenida Pico−a.m. peak and p.m. peak

57. I-5 northbound ramps at Avenida Pico−a.m. peak

City of San Juan Capistrano

28. La Novia Avenue at Ortega Highway−p.m. peak

30. Camino Capistrano at Del Obispo Street−a.m. peak and p.m. peak

32. Valle Road at San Juan Creek−a.m. peak

33. La Novia Avenue at San Juan Creek−a.m. peak

53. Valle Road at La Novia Avenue/I-5 northbound ramps−a.m. peak and p.m. peak

74. I-5 northbound ramps at Junipero Serra−p.m. peak

Unincorporated Orange County

5. Antonio Parkway at Oso Parkway−a.m. peak and p.m. peak

12. Antonio Parkway at Crown Valley Parkway−p.m. peak

29. Antonio Parkway/La Pata Avenue at Ortega Highway−a.m. peak and p.m. peak

Year 2025 + Alternative A-5 Buildout: Freeway Ramp Levels of Service

For the committed circulation network, the following ramps are forecast to operate at a deficient level of service and are considered cumulative impacts of Alternative A-5.

- I-5 southbound off-ramp at Oso Parkway−p.m. peak
- I-5 northbound direct on-ramp at Crown Valley Parkway−p.m. peak
- I-5 southbound off-ramp at Crown Valley Parkway−p.m. peak
- I-5 northbound on-ramp at Junipero Serra Road−a.m. peak
- I-5 northbound on-ramp at Ortega Highway−a.m. peak and p.m. peak
- I-5 northbound direct on-ramp at Avenida Vista Hermosa−p.m. peak
- I-5 southbound off-ramp at Avenida Vista Hermosa−a.m. peak
- I-5 northbound on-ramp at Avenida Pico−p.m. peak

Year 2025 + Alternative A-5 Buildout: Freeway Mainline Levels of Service

For the committed circulation network, the following freeway mainline segment locations are forecast to operate at a deficient level of service with Alternative A-5.

- I-5 north of Oso Parkway−a.m. peak and p.m. peak

- I-5 north of Ortega Highway−a.m. peak and p.m. peak
- I-5 north of Camino Capistrano−a.m. peak and p.m. peak
- I-5 south of Camino Capistrano−a.m. peak and p.m. peak
- I-5 north of Avenida Vista Hermosa−a.m. peak and p.m. peak
- I-5 north of Avenida Pico−a.m. peak and p.m. peak
- I-5 south of Avenida Pico−a.m. peak and p.m. peak

7.3.7.2 Mitigation Program

Although Alternative A-5 would generate substantially less traffic than the other alternatives addressed in this chapter, given the projected impacts under the 2025 scenario and the number of deficient intersections and other facilities, it is expected that a substantial mitigation program to provide required road/intersection improvements would also be required for this alternative in order to address cumulative impacts. As with the other alternatives, a fair share contribution towards the cost of these improvements would be required to be paid into a SCRIP-like program.

7.3.7.3 Level of Significance After Mitigation

As with the other alternatives, it is expected that the provision of necessary improvements would result in acceptable levels of service at most of the improvement locations. To the extent that the improvements lie outside of the County's jurisdiction, the County would be required to enter into agreements with the affected jurisdictions regarding the design and construction of the improvements and the transfer of monies paid towards funding of these improvements from a SCRIP-like program. However, if the County is not able to reach agreement with one or more of the jurisdictions, for purposes of this EIS, the impacts to be mitigated by those improvements may remain significant and be unavoidable. Alternative A-5's contribution to impacts on freeway mainline segments that are forecast to operate deficiently would be considered significant and unavoidable.

7.4 AGRICULTURAL AND AGGREGATE RESOURCES

This chapter focuses on the impacts to agricultural and aggregate resources associated with the implementation of the alternatives carried forward for review under the Section 404(b)(1) Guidelines. In general, most impacts to aggregate and agricultural resources are outside the USACE's statutory authority and responsibility under Section 404 of the Clean Water Act. The primary responsibility of evaluating and regulating impacts to non-aquatic biological resources resides with the County of Orange. As part of the NEPA review, the USACE is analyzing impacts on the environment associated with projects that receive authorizations under Section 404 of the Clean Water Act.

7.4.1 THRESHOLDS OF SIGNIFICANCE

7.4.1.1 Agricultural Thresholds of Significance

A project alternative would have a significant impact on agricultural resources if it would:

- Convert farmlands listed as "Prime," "Unique," or of "Statewide Importance," as shown on the State Farmland Mapping and Monitoring Program, to non-agricultural use.

- Conflict with existing Williamson Act contract.

7.4.1.2 Aggregate Thresholds of Significance

A project alternative would result in a significant impact if it would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or

- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

7.4.2 SAMP PROPOSED PERMITTING PROCEDURES

As discussed previously, the proposed RGP and LOP procedures have been developed for future participants and current participants in the SAMP. The future participants have not yet defined projects for permitting by the RGP or LOP procedures. For projects eligible for authorization by the maintenance RGP, impacts to agricultural and aggregate resources would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary impacts to a small area located in a mostly degraded landscape without where agricultural and aggregate resources are expected to be absent. Impacts to agricultural and aggregate resources are not expected under the RGP. For projects proposed by future participants that would be eligible for authorization by the LOP procedures, not enough is known about the project size and location or potential impacts to analyze potential impacts to agricultural and aggregate resources. Such projects eligible for authorization by the LOP procedures will be subject to future NEPA review before a final permit decision can be made.

Current participants have analyzed their activities (including SMWD Proposed Project, RMV Proposed Project, and alternatives) that may have significant effects on the environment as noted in Chapter 6.0. Therefore, the authorization pursuant to the proposed permitting procedures may also have an effect on the environment per the thresholds of significance.

These potential effects on agricultural and aggregate resources and minimization/mitigation measures applicable to these potential effects are further discussed below.

7.4.3 SMWD PROPOSED PROJECT

The SMWD Proposed Project, which includes the proposed Upper Chiquita domestic water storage reservoir and ongoing operation and maintenance activities, would have minimal impact on agricultural and aggregate resources. None of the three reservoir sites are proposed in locations designated as Important Farmland. The Upper Chiquita reservoir site would not remove or interfere with agricultural activities.

The SMWD Proposed Project would not have impacts on aggregate resources. The Upper Chiquita reservoir site is not located in an area with important aggregate resources. Its construction and use would not eliminate or preclude extraction activities.

7.4.4 ALTERNATIVE B-10 MODIFIED

7.4.4.1 Impacts

Impact 7.4.4-1 *The B-10 Modified Alternative would result in the development of urban uses on lands designated as Important Farmland in the RMV Planning Area. This alternative would result in the removal of 278 acres of Prime Farmland, 38 acres of Farmland of Statewide Importance, and 529 acres of Unique Farmland. Implementation of the B-10 Modified Alternative would result in the loss of 845 acres of Important Farmland.*

Conversion of Important Farmland to Non-Agricultural Use

The potential impact associated with the conversion of Important Farmland to non-agricultural use are evaluated for the direct conversion impacts (i.e., conversion associated with development of Alternative B-10 Modified), as well as indirect impacts (i.e., pressure on adjacent land to convert to non agricultural use). Implementation of the B-10 Modified Alternative in the RMV Planning Area would result in the development of urban uses on lands designated as Important Farmland. This alternative would result in the removal of 278 acres of Prime Farmland, 38 acres of Farmland of Statewide Importance, and 529 acres of Unique Farmland. Therefore, the B-10 Modified Alternative would result in the loss of 845 acres of Important Farmland.

The conversion to non-agricultural uses would be limited to those areas within Alternative B-10 because of the lack of agricultural uses adjacent to the RMV Planning Area. The surrounding uses are either urban or open space uses and are not currently in agricultural production. The RMV Planning Area is surrounded by urban development in the Ladera Ranch Planned Community and the cities of Mission Viejo, San Juan Capistrano, Rancho Santa Margarita, and San Clemente. MCB Camp Pendleton, Caspers Wilderness Park, and the Cleveland National Forest are also contiguous to the RMV Planning Area and are in public ownership. Although there are large agricultural leases on MCB Camp Pendleton, the closest being in the San Mateo Valley south of the SAMP Study Area, urban development in Orange County would not influence the continuation of this agricultural uses because the base would not be available for urban development. The Department of the Navy controls the allowed uses on MCB Camp Pendleton. Therefore, there would be no significant indirect (off-site) agricultural impacts.

Crops and Nursery

As indicated in Chapter 4.1.6, within the SAMP Study Area, there are citrus and avocado orchards, limited row crops, as well as nursery operations. Agricultural land in locations proposed for development as a part of the RMV Proposed Project would be converted to a non-agricultural use. Implementation of the B-10 Modified Alternative would result in the removal of majority of the orchards, the nurseries, and row crops. Of the approximately 482 acres of existing agricultural activity on the RMV Planning Area, approximately 65 acres would be retained.

All of the nursery operations are on leaseholds in areas proposed for development. The leases are proposed to expire by 2006. While the leases may be extended a short time to allow the continuation of the nursery stock production while development is phased, this would be an interim use. Ultimately, Alternative B-10 Modified would result in the removal of the approximately 325 acres of commercial nursery uses.

The amount of barley that is planted each year varies. In 2003, 886 acres were planted. In 2004 only 500 acres of barley was cultivated because of heavy rains areas were washed out. Using the 2003 footprint as a basis for evaluating the potential impact of Alternative B-10 Modified, which is reflective of a more typical year, more than 400 acres of area used for planting barley would be displaced.

Ranching Operations

The California Department of Conservation does not consider grazing land an Important Farmland. Based on the current practice of livestock grazing, only portions of the grazing area are in use at any given time. Throughout the RMV Planning Area, livestock grazing is conducted on a rotating schedule, thereby allowing areas to replenish their vegetation while active grazing is occurring elsewhere within the RMV Planning Area. As with farmland, all grazing lands located within areas proposed for development would be eliminated over time. Implementation of the B-10 Modified Alternative would eliminate grazing in substantial portions of the Lower Chiquita, Gobernadora, Rinconada, and Talega pastures. This alternative assumes the continuation of grazing practices in open space areas. The alternative would result in a loss of approximately 7,300 acres land currently designated as grazing land.

Future grazing would maintain the existing grazing pattern. Cattle would still use the natural southern pastures in the fall and winter months and rotate to the north in spring and summer months. To protect biotic resources, some fencing improvements would occur to ensure exclusion of the cattle from certain areas supporting sensitive resources, as well as developed areas. The project provides for a phased dedication of open space as urban land uses are developed. Though grazing would be allowed in the open space areas, with the phased dedication of open space both seasonal and permanent exclusions are proposed. Generally, the areas proposed for permanent exclusion include GERA and the Donna O'Neill Conservation area. Within these areas, cattle would only be used for limited fuel management periods.

The number of cattle that can be supported within the RMV Planning Area without substantially degrading the biotic resources within the open space areas is dependent upon the amount of residual dry matter available. The Grazing Management Plan, which would be coordinated with the Adaptive Management Plan adopted by the County of Orange as a mitigation measure for the GPA/ZC, establishes standards for residual dry matter needed to support each head of cattle. Therefore, the stocking rates are designed to be adapted to the conditions in any given year to ensure the recommended residue is maintained. Other factors that influence the

decision of how many cattle to stock are related to expenses, such as insurance, interest, utilities, health costs, transportation, materials, and labor. The combination of forage availability, expenses, and market demand for beef ultimately would determine the herd size. Based on the evaluation in the Grazing Management Plan, the grazing areas that would be retained after development would support at a minimum the 500 head of cattle currently grazing on the RMV Planning Area. Although there would be no reduction in current stocking levels, there would be a reduction in the overall carrying capacity of the RMV Planning Area because there would be a reduction in the amount of grazing lands available. This would not be a significant impact.

Conflict with Williamson Act Contract

Although there are areas within the Alternative B-10 Modified footprint that are currently in Agricultural Preserve, implementation under this alternative scenario would not require cancellation of the Williamson Act contract. Notices of non-renewal have been filed for all the areas on the RMV Planning Area. The lands will be removed from the Agricultural Preserve between December 31, 2005 and December 31, 2008. The phasing of development would avoid any conflict with the current Williamson Act contract.

Impact 7.4.4-2 *The inability to extract the resources at the ONIS site would be a loss of a resource of value to Orange County.*

Impact 7.4.4-3 *Implementation of Alternative B-10 Modified on the RMV Planning Area would result in the inability to extract the sand and gravel within San Juan Creek. The California Geological Survey identifies this resource as a locally important mineral resource recovery site.*

Mineral Extraction Opportunities

The Oglebay-Norton Industrial Sands (ONIS) operation in Trampas Canyon would be displaced by proposed urban development associated in the RMV Planning Area. The lease/license on this property extends to 2013. Based on discussions with Michael Miclette, Director of Production for Building Materials at ONIS, mining operations are planned to continue through the end of the lease/license period. There are sufficient resources that would allow continued mining operations past the 2013 lease. However, with the expiration of the lease/license and the anticipated phasing of development these resources would not be available for extraction. The resources at the ONIS location have not been identified in the County of Orange General Plan or by the California Geological Survey as being an important resource. However, given the local demand for building materials, this resource would be considered of value to the region.

The California Geological Survey Updated Special Report 143 (1994) projected the demand for aggregate resources in Orange County to be between 73 and 80 million tons annually for the next 40 years. The inability to extract the resources at the ONIS site beyond 2013 would be considered a significant impact. Although the lease with ONIS is scheduled to end in 2013, the B-10 Modified Alternative would preclude the future extraction of resources by ONIS or other entity. Extraction and processing of sand and gravel material in conjunction with grading operations is allowed; however, there would be a long-term loss of resources.

San Juan Creek traverses the SAMP Study Area in a generally east-west direction. According to the California Geological Survey Updated Special Report 143, prepared in 1994, San Juan Creek contains aggregate resources equaling 120 million short tons. Currently there are no

aggregate extraction activities in the creek. The depiction of a Mineral Resource Zone in the California Geological Survey report is not intended to represent a commitment to mineral extraction for those areas but rather as a response to the Surface Mining and Reclamation Act's (SMARA) mandate to recognize mineral resource areas. Resources include reserves as well as all potentially usable aggregate materials that may be extracted in the future, but for which no permits allowing extraction have been granted or for which marketability has not been established. Extraction of sand and gravel resources within San Juan Creek would be incompatible with the open space use identified for the San Juan Creek area. The County of Orange evaluated the loss of this resource as part of their action that removed the S&G, Sand and Gravel Extraction zoning district on this portion of the RMV Planning Area. As part of the County's need to balance conflicting demands and in recognition that there would also be significant biological impacts, specifically to the arroyo toad, if the sand and gravel resources in San Juan Creek were to be mined, the S&G, Sand and Gravel Extraction zoning was removed. By removing the zoning designation, the local agency determined that preservation of these resources was a higher priority than sand and gravel extraction. At that same time, the County of Orange removed the designation as an important resource in the Resource Element of the General Plan. However, since the state still designates this area as a Mineral Resource Zone the loss of this resource would be considered a significant impact.

7.4.4.2 Mitigation Program

In conjunction with the approval of the GPA/ZC, the County of Orange adopted a mitigation program to reduce the impacts associated with impacts on agricultural and aggregate resources. These measures are listed below to provide the reader context of the mitigation program, although these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. No additional mitigation is required as part of the SAMP.

Project Design Features

Agricultural Resources

PDF 4.2-1 The project has incorporated provisions into the project design to continue the cattle ranching activities and maintain the agricultural operation or portions of The Ranch. The ongoing grazing will be conducted in compliance with the Grazing Management Plan proposed as part of the Adaptive Management Plan (Appendix J of Final EIR 589) to ensure protection of sensitive species.

PDF 4.2-2 The project provides for continued citrus production in Planning Areas 2, 7, and 10 and avocado orchards in Planning Areas 2 and 7. The location and amounts of the agricultural resources shall be identified as part of the Master Area Plan for Planning Areas 2, 7, and 10.[1]

Aggregate Resources

PDF 4.13-1 The project would provide for the ONIS surface mining to continue within Planning Area 5[2] as an interim use until such time as development is proposed.

[1] Planning Areas 2 and 10 corresponds to Cañada Chiquita sub-basin watershed; Planning Area 7 is within the Cristianitos and Gabino and Blind Canyon sub-basin watersheds.
[2] Planning Area 5 is within Trampas Canyon.

PDF 4.13-2 Temporary excavation/extraction of construction aggregate or construction-related materials extraction shall be allowed during construction grading and on-site earthmoving activities to promote project construction efficiencies and limit long distance transportation of construction aggregate and construction related material.

Mitigation Measures

Agricultural Resources

MM 4.2-1 Prior to planting of the planned orchards in Planning Area 7, a qualified biologist shall survey the site for listed species to avoid potential environmental impacts. Should any listed species be identified the location of the planned orchards will be modified to avoid the resources or a mitigation plan consistent with the applicable requirements outlined in Section 4.9, Biological Resources (of GPA/ZC EIR 589), shall be developed and implemented.

Aggregate Resources

No additional feasible mitigation was identified.

7.4.4.3 Level of Significance After Mitigation

Alternative B-10 Modified would result in the elimination of 845 acres of Important Farmland. There are no feasible mitigation measures that would reduce the loss of Important Farmland to less than significant. The identification of development areas took into consideration the need to avoid and minimize impacts to sensitive habitat and species. Relocation of agriculture to other locations within the SAMP Study Area is limited because consideration must be given to the sensitive habitat, suitable soils, topography, and availability of water. Therefore, the impacts to Important Farmland would be considered a significant, unavoidable impact. It should also be noted that while the nurseries are located on what is considered Important Farmland, the plant material is being grown in containers, although the impact on Important Farmland is unaffected. These uses would be able to relocate outside of the RMV Planning Area and continue operation elsewhere.

Alternative B-10 Modified would result in significant unavoidable impacts by precluding the extraction of mineral resources in San Juan Creek, an area designated as a Mineral Resource Zone by the state. There are no mitigation measures that can reduce this impact to a level of less than significant. Additionally, implementation of this alternative would curtail the extraction of resources at the ONIS site, a locally important resource. In this latter instance, Project Design Features can help to reduce the level of impact, but not to a level of less than significant.

7.4.5 ALTERNATIVE B-12

7.4.5.1 Impacts

Impact 7.4.5-1 *The B-12 Alternative would result in the development of urban uses on lands in the RMV Planning Area designated as Important Farmland. This alternative would result in the removal of up to 307 acres of Prime Farmland, 48 acres of Farmland of Statewide Importance, and 584 acres of Unique Farmland. In total, implementation of*

the B-12 Alternative would result in the loss of up to 939 acres of Important Farmland.

Conversion of Important Farmland to Non-Agricultural Use

It should be noted that for the B-12 Alternative, an overstated impact analysis is discussed in this chapter for development proposed in Planning Areas 4 and 8 and for the orchards proposed in Planning Areas 6 and 7. The final footprint of future development/orchards within these planning areas is undefined at this time because the precise location of future development/orchards is not known. In order to provide an analysis of possible impacts to Important Farmland, the impacts in Planning Area 4[3] are assumed to affect a larger "impact area" of approximately 1,127 acres and the impacts for Planning Area 8 are assumed to affect a larger "impact area" of approximately 1,349 acres. The impact areas in Planning Areas 6 and 7 are approximately 249 acres and 182 acres, respectively. This impact analysis overstates the possible impacts to Important Farmlands and agricultural uses because, ultimately, Rancho Mission Viejo is limited to developing a maximum of 550 acres in Planning Area 4, 500 acres in Planning Area 8, and a total of 50 acres of orchards in either/or Planning Area 6 and 7, as well as all necessary supporting infrastructure in addition to the proposed development in the other planning areas.

Indirect impacts associated with conversion of Important Farmland to non-agricultural use in the RMV Planning Area would be similar to Alternative B-10 Modified. Implementation of this alternative scenario would result in the development of urban uses on lands designated as Important Farmland. The alternative would result in the removal of 307 acres of Prime Farmland, 48 acres of Farmland of Statewide Importance, and 584 acres of Unique Farmland. In total, the B-12 Alternative would result in the loss of up to 939 acres of Important Farmland.

The conversion to non-agricultural uses would be limited to those areas within Alternative B-12 because of the lack of agricultural uses adjacent to the RMV Planning Area. With Alternative B-12, there would be no significant indirect (off-site) agricultural impacts.

Crops and Nursery

Impacts associated with Alternative B-12 would be similar in nature as the impacts that would occur with Alternative B-10 Modified. Agricultural land in locations proposed for development would be converted to a non-agricultural use. The proposed development would result in the removal of majority of the orchards, nurseries, and row crops. Of the approximately 482 acres of existing agricultural activity on the RMV Planning Area, approximately 20 acres would be retained compared to the 65 acres for Alternative B-10 Modified. All 325 acres of commercial nursery uses would be displaced by development. Using the footprint of the 2003 barley plantings, Alternative B-12 would displace approximately 627 acres of area previously used for planting barley. As previously noted, this represents an overstated impact.

Ranching Operations

Impacts on ranching operations would be similar in nature those associated with Alternative B-10 Modified. However, this alternative would not eliminate as much land designated for grazing because less land would be developed. The existing grazing pattern would be maintained and would support at a minimum the 500 head of cattle currently grazing on the RMV Planning Area. There would still be a reduction in the overall carrying capacity of the RMV

[3] It should be noted that only Planning Area 4 includes Important Farmlands.

Planning Area because there would be a reduction in the amount of grazing lands available. This would not be a significant impact.

Conflict with Williamson Act Contract

Similar to Alternative B-10 Modified, implementation of Alternative B-12 would not conflict with existing Agricultural Preserves. It would not require cancellation of the Williamson Act contract. The phasing of development would avoid any conflict with the current Williamson Act contract.

Impact 7.4.5-2 *The inability to extract the resources at the ONIS site would be a loss of a resource of value to Orange County.*

Impact 7.4.5-3 *Implementation of Alternative B-12 would result in the inability to extract the sand and gravel within San Juan Creek. The California Geological Survey identifies this resource as a locally important mineral resource recovery site.*

Mineral Extraction Opportunities

Alternative B-12 would have the same impacts, to the same level of intensity, as Alternative B-10 Modified. This alternative would also displace the ONIS operation in Trampas Canyon and result in protection of San Juan Creek. These impacts would be considered significant.

7.4.5.2 Mitigation Program

The mitigation program adopted by the County of Orange in conjunction with the approval of the GPA/ZC would apply to Alternative B-12 (see subchapters 7.4.4.3 and 7.4.4.4, above). As with Alternative B-10 Modified, these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. No additional mitigation is required as part of the SAMP.

7.4.5.3 Level of Significance After Mitigation

Alternative B-12 would result in the elimination of up to 939 acres of Important Farmland. There are no feasible mitigation measures that would reduce the loss of Important Farmland to less than significant. The identification of development areas took into consideration the need to avoid and minimize impacts to sensitive habitat and species. Relocation of agriculture to other locations within the SAMP Study Area is limited because consideration must be given to the sensitive habitat, suitable soils, topography, and availability of water. Therefore, the impacts to Important Farmland would be considered a significant, unavoidable impact. It should also be noted that while the nurseries are located on what is considered Important Farmland, the plant material is being grown in containers, although the impact on Important Farmland is unaffected. These uses would be able to relocate outside of the RMV Planning Area and continue operation elsewhere.

Alternative B-12 would result in significant unavoidable impacts by precluding the extraction of mineral resources in San Juan Creek, an area designated as a Mineral Resource Zone by the state. There are no mitigation measures that can reduce this impact to a level of less than significant. Additionally, the alternative would curtail the extraction of resources at the ONIS site, a locally important resource. In this latter instance, a Project Design Feature can reduce the level of impact, although not to a level of less than significant.

7.4.6 ALTERNATIVE A-4

7.4.6.1 Impacts

Impact
7.4.6-1 *The A-4 Alternative would result in the development of urban uses on lands within the RMV Planning Area designated as Important Farmland. This alternative would result in the removal of 278 acres of Prime Farmland, 38 acres of Farmland of Statewide Importance, and 529 acres of Unique Farmland. In total, development of the A-4 Alternative would result in the loss of 845 acres of Important Farmland.*

Conversion of Important Farmland to Non-Agricultural Use

Indirect impacts associated with conversion of Important Farmland to non-agricultural use would be the same as Alternative B-10 Modified. Impacts would be limited because of the lack of agricultural uses adjacent to the RMV Planning Area. With Alternative A-4, there would be no significant indirect (off-site) agricultural impacts.

Crops and Nursery

Impacts associated with Alternative A-4 would be the same as the impacts that would occur with Alternative B-10 Modified because the land area proposed for development is the same with both alternatives. Alternative A-4 would remove the majority of the orchards, nurseries, and row crops; only 65 acres would be retained. Alternative A-4 would displace approximately 400 acres of area previously used for planting barley.

Ranching Operations

As with agricultural operations, the impacts on ranching operations would be the same as with Alternative B-10 Modified because the same land area is proposed for development. Implementation of the A-4 Alternative would result in a loss of approximately 7,300 acres land designated as grazing land. While there would be a reduction in the overall carrying capacity of the RMV Planning Area because there would be a reduction in the amount of grazing lands available, the RMV Planning Area would support at a minimum the 500 head of cattle currently grazing on the RMV Planning Area. This would not be a significant impact.

Conflict with Williamson Act Contract

Alternative A-4 would not conflict with existing Agricultural Preserves. It would not require cancellation of the Williamson Act contract. The phasing of development would avoid any conflict with the current Williamson Act contract.

Impact
7.4.6-2 *The inability to extract the resources at the ONIS site would be a loss of a resource of value to Orange County.*

Impact
7.4.6-3 *Implementation of Alternative A-4 would result in the inability to extract the sand and gravel within San Juan Creek. The California Geological Survey identifies this resource as a locally important mineral resource recovery site.*

Mineral Extraction Opportunities

Alternative A-4 would have the same impacts, to the same level of intensity, as Alternative B-10 Modified and Alternative B-12. This alternative would also displace the ONIS operation in Trampas Canyon and result in protection of San Juan Creek. These impacts would be considered significant impacts.

7.4.6.2 Mitigation Program

The mitigation program adopted by the County of Orange in conjunction with the approval of the GPA/ZC would apply to Alternative A-4 (see subchapters 7.4.4.3 and 7.4.4.4). As with Alternative B-10 Modified, these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. No mitigation measures are required as part of the SAMP.

7.4.6.3 Level of Significance After Mitigation

Alternative A-4 would result in the elimination of 845 acres of Important Farmland. There are no feasible mitigation measures that would reduce the loss of Important Farmland to less than significant. The identification of development areas took into consideration the need to avoid and minimize impacts to sensitive habitat and species. Relocation of agriculture to other locations within the SAMP Study Area is limited because consideration must be given to the sensitive habitat, suitable soils, topography, and availability of water. Therefore, the impacts to Important Farmland would be considered a significant, unavoidable impact. It should also be noted that while the nurseries are located on what is considered Important Farmland the plant material is being grown in containers, although the impact on Important Farmland is unaffected. These uses would be able to relocate outside of the RMV Planning Area and continue operation elsewhere.

Alternative A-4 would result in significant unavoidable impacts by precluding the extraction of mineral resources in San Juan Creek, an area designated as a Mineral Resource Zone by the state. There are no mitigation measures that can reduce this impact to a level of less than significant. Additionally, the project would curtail the extraction of resources at the ONIS site, a locally important resource. In this latter instance, a Project Design Feature can help to reduce the level of impact, though not to a level of less than significant.

7.4.7 ALTERNATIVE A-5

7.4.7.1 Impacts

Impact
7.4.7-1 *The A-5 Alternative would result in the development of urban uses on lands within the RMV Planning Area designated as Important Farmland. This alternative could result in the removal of up to 273 acres of Prime Farmland, 45 acres of Farmland of Statewide Importance, and 512 acres of Unique Farmland. In total, development of the A-5 Alternative could result in the loss of up to 830 acres of Important Farmland.*

Conversion of Important Farmland to Non-Agricultural Use

Indirect impacts associated with conversion of Important Farmland to non-agricultural use would be the same as Alternative B-10 Modified. Impacts would be limited because of the lack of

agricultural uses adjacent to the RMV Planning Area. With Alternative A-5, there would be no significant indirect (off-site) agricultural impacts.

As previously addressed in Chapter 5.0, for Alternative A-5, low density residential development would occur within approximately 8,000 acres (35 percent) of the 22,815-acre RMV Planning Area. Alternative A-5 assumes a maximum of 3,000 estate lots (assuming that a portion of the undevelopable portion of the lot would extend into open space areas and that other avoidance areas such as in Planning Area 3 would be included within the development envelope as community open space amenity areas. Approximately 14,824 acres (65 percent) of the RMV Planning Area would be in some form of open space. Because Alternative A-5 assumes a maximum of 3,000 estate lots within a 8,000-acre development area, the potential conversion of all 830 acres of Important Farmland (Prime Farmland, Farmland of Statewide Importance, and Unique Farmland) to nonagricultural uses represents a worst-case scenario. The 830 acres is inclusive of 273 acres of Prime Farmland, 45 acres of Farmland of Statewide Importance, and 512 acres of Unique Farmland. This would be a significant impact.

Crops and Nursery

Impacts associated with Alternative A-5 would be potentially greater than the impacts that would occur with Alternative B-10 Modified because the land area proposed for development with Alternative A-5 is the area that would not affect regulated waters and avoidance of state and federal threatened/endangered species. Because the area currently under cultivation is already disturbed, these areas would be developed with Alternative A-5. Alternative A-5 would remove the majority of the orchards, nurseries, and row crops; only 65 acres would be retained. Alternative A-5 could displace up to 530 acres of area previously used for planting barley.

Ranching Operations

As with agricultural operations, the impacts on ranching operations would be less with Alternative A-5 than with Alternative B-10 Modified. Under the worst-case scenario, implementation of the A-5 Alternative could result in a loss of approximately 4,771 acres land designated as grazing land. While there would be a reduction in the overall carrying capacity of the RMV Planning Area because there would be a reduction in the amount of grazing lands available, the RMV Planning Area would support at a minimum the 500 head of cattle currently grazing on the RMV Planning Area. This would not be a significant impact.

Conflict with Williamson Act Contract

Alternative A-5 would not conflict with existing Agricultural Preserves. It would not require cancellation of the Williamson Act contract. The phasing of development would avoid any conflict with the current Williamson Act contract.

Impact 7.4.7-2 *The inability to extract the resources at the ONIS site would be a loss of a resource of value to Orange County.*

Impact 7.4.7-3 *Implementation of Alternative A-5 would result in the inability to extract the sand and gravel within San Juan Creek. The California Geological Survey identifies this resource as a locally important mineral resource recovery site.*

Mineral Extraction Opportunities

Alternative A-5 would have the same impacts, to the same level of intensity, as previously discussed alternatives. Alternative A-5 would also displace the ONIS operation in Trampas Canyon and result in protection of San Juan Creek. As a result of the ongoing aggregate extraction activities, the ONIS site is highly disturbed. With Alternative A-5 this area could be developed without impacting threatened and endangered species or regulated waters. Because of the resources in San Juan Creek, Alternative A-5 would preclude the extraction of aggregate from San Juan Creek, a designated Mineral Resource Zone. These impacts would be considered significant impacts.

7.4.7.2 Mitigation Program

This alternative is very different from the land use plan adopted by the County of Orange. There would be no assurances that the mitigation program adopted by the County of Orange in conjunction with the approval of the GPA/ZC would apply to Alternative A-5. This alternative was developed to protect aquatic resources. There are no reasonable mitigation measures to avoid or reduce the impacts to Important Farmland and aggregate resources for this alternative.

7.4.7.3 Level of Significance After Mitigation

Alternative A-5 would result in the elimination of 830 acres of Important Farmland. There are no feasible mitigation measures that would reduce the loss of Important Farmland to less than significant. The identification of development areas took into consideration the need to avoid and minimize impacts to aquatic resources. Relocation of agriculture to other locations within the SAMP Study Area is limited because consideration must be given to the sensitive habitat, suitable soils, topography, and availability of water. Therefore, the impacts to Important Farmland would be considered a significant, unavoidable impact. It should also be noted that while the nurseries are located on what is considered Important Farmland the plant material is being grown in containers, although the impact on Important Farmland is unaffected. These uses would be able to relocate outside of the RMV Planning Area and continue operation elsewhere.

Alternative A-5 would result in significant unavoidable impacts by precluding the extraction of mineral resources in San Juan Creek, an area designated as a Mineral Resource Zone by the state. There are no mitigation measures that can reduce this impact to a level of less than significant. Additionally, the project would curtail the extraction of resources at the ONIS site, a locally important resource.

7.5 AIR QUALITY

This chapter focuses on the impacts to air quality associated with the implementation of the alternatives carried forward for review under the Section 404(b)(1) Guidelines. In general, most impacts to air quality are outside the USACE's statutory authority and responsibility under Section 404 of the Clean Water Act. The primary responsibility of evaluating and regulating impacts to non-aquatic biological resources resides with the local agencies. As part of the NEPA review, the USACE is analyzing impacts on the environment associated with projects that receive authorizations under Section 404 of the Clean Water Act.

7.5.1 THRESHOLDS OF SIGNIFICANCE

An alternative's air quality impacts can be separated into short-term impacts due to construction and long-term permanent impacts from project operations. The lead agency is responsible for making determinations regarding the existence of significant air quality impacts. The South Coast Air Quality Management District (SCAQMD) emission thresholds apply to all federally regulated air pollutants except lead, which is not exceeded in the South Coast Air Basin.

A significant air quality impact would occur if the alternative would:

- Result in a violation of any state or national ambient air quality standard or contribute substantially to an existing or projected air quality violation. The significance thresholds recommended by the SCAQMD in its *CEQA Air Quality Handbook,* as revised in November 1993 and approved by the SCAQMD's Board of Directors, are the basis for determining significance of an impact for this project. Construction and operational emissions are considered by the SCAQMD to be significant if they exceed the thresholds identified in Table 7.5-1.

TABLE 7.5-1
EMISSIONS THRESHOLDS OF SIGNIFICANCE

Pollutant	Construction		Operations (pounds/day)
	pounds/day	tons/quarter	
Carbon Monoxide (CO)	550	24.75	550
Sulfur Oxides (SO_x)	150	6.75	150
Nitrogen Oxides (NO_x)	100	2.50	55
Particulate Matter (PM_{10})	150	6.75	150
Reactive Organic Compounds (ROC)	75	2.50	55
Source: South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 1993.			

- Result in an increase in carbon monoxide concentrations where: (1) an increase in CO concentrations is sufficient to cause an exceedance of the most stringent state or national CO standard (20 parts per million for 1-hour concentrations and nine parts per million for 8-hour concentrations); or (2) in an area that already exceeds national or state CO standards, the project increase exceeds 1 part per million (ppm) for a 1-hour average or 0.45 ppm for an 8-hour average.

In addition, the SCAQMD *CEQA Air Quality Handbook* lists additional indicators of potential air quality impacts (Secondary Effects). Projects would have a significant impact if they would:

- Conflict with or obstruct implementation of the applicable air quality plan.

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including release in emissions which exceed quantitative thresholds for ozone precursors).

- Expose sensitive receptors to substantial pollutant concentrations.

- Expose a substantial number of people to objectionable odors. An objectionable odor is defined in the SCAQMD *CEQA Air Quality Handbook* as 1 over 10 dilution to thresholds (D/T).

7.5.2 SAMP PROPOSED PERMITTING PROCEDURES

As discussed previously, the proposed RGP and LOP procedures have been developed for future participants and current participants in the SAMP. The future participants have not yet defined projects for permitting by the RGP or LOP procedures. For projects eligible for authorization by the maintenance RGP, impacts to air quality would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary impacts to a small area located in a mostly degraded landscape. Since effects to air quality would occur from just a few maintenance vehicles, impacts to air quality are not expected under the RGP. For projects proposed by future participants that would be eligible for authorization by the LOP procedures, not enough is known about the project size and location or potential impacts to analyze potential impacts to air quality. Such projects eligible for authorization by the LOP procedures will be subject to future NEPA review before a final permit decision can be made.

Current participants have analyzed their activities−SMWD Proposed Project and RMV Proposed Project−and alternatives that may have significant effects on the environment as noted in Chapter 6.0. Therefore, the authorization pursuant to the proposed permitting procedures may also have an effect on the environment per the thresholds of significance. These potential effects on air quality and minimization/mitigation measures applicable to these potential effects, are further discussed, below.

7.5.3 SMWD PROPOSED PROJECT

7.5.3.1 Impacts

The SMWD, as a special district, would serve as the lead agency for its proposed project and would complete its own CEQA environmental analysis for the proposed Upper Chiquita storage reservoir. The following analysis is based upon the USACE's evaluation of potential environmental effects associated with the construction and operation of the proposed reservoir.

Impact 7.5.3-1: *Construction of the SMWD Upper Chiquita reservoir may result in significant short-term air quality impacts.*

Ongoing operation and maintenance activities conducted by SMWD are not expected to result in significant air quality impacts. Construction of these facilities has already occurred. With respect to the proposed Upper Chiquita domestic water storage reservoir, implementation of this facility would generate short-term construction-related impacts that have the potential to affect

local and regional air quality. Long-term operation of the reservoir facility would not result in air quality impacts due to the nature of the reservoir and the limited number of vehicle trips associated with daily operation of the facility.

7.5.3.2 Mitigation Program

The following mitigation is expected to be required.

AQ-1 SWMD shall require the contractor to comply with the South Coast Air Quality Management District's (SCAQMD) regulations during construction, including Rule 402 which specifies that there be no dust impacts offsite sufficient to cause a nuisance, and SCAQMD Rule 403, which restricts visible emissions from construction. Specific measures to reduce fugitive dust shall include the following:

a. Moisten soil prior to grading.

b. Water exposed surfaces at least twice a day under calm conditions and as often as needed on windy days when winds are less than 25 miles per day or during very dry weather in order to maintain a surface crust and prevent the release of visible emissions from the construction site.

c. Treat any area that will be exposed for extended periods with a soil conditioner to stabilize soil or temporarily plant with vegetation.

d. Wash mud-covered tires and under-carriages of trucks leaving construction sites.

e. Provide for street sweeping, as needed, on adjacent roadways to remove dirt dropped by construction vehicles or mud which would otherwise be carried off by trucks departing project sites.

f. Securely cover loads of dirt with a tight fitting tarp on any truck leaving the construction sites to dispose of excavated soil.

g. Cease grading during periods when winds exceed 25 miles per hour.

h. Provide for permanent sealing of all graded areas, as applicable, at the earliest practicable time after soil disturbance.

AQ-2 All contractors shall:

a. Maintain construction equipment in peak operating condition so as to reduce operation emissions.

b. Use low-sulfur diesel fuel in all equipment.

c. Use electric equipment whenever practicable.

d. Shut off engines when not in use.

7.5.3.3 Level of Significance After Mitigation

It is expected that even with the above-stated mitigation measures, construction impacts associated with grading and excavation would result in significant, unavoidable air quality impacts. These unavoidable impacts are expected as a result of particulate emissions associated with excavation activities.

7.5.4 ALTERNATIVE B-10 MODIFIED

7.5.4.1 Impacts

Impact
7.5.4-1 *Construction-related air quality emissions would result in significant impacts on a daily and quarterly basis.*

Construction-Related Air Quality Emissions

Construction impacts may be regional or local and include (1) airborne dust from demolition, grading, excavation, and dirt hauling; and (2) gaseous emissions from the use of heavy equipment, delivery, and dirt hauling trucks, employee vehicles, and paints and coatings. Regional pollutants, such as ozone, are those where emissions from many sources combine in the atmosphere and impact areas far removed from the emission sources. Local pollutants are those where the impacts occur very close to the source, such as carbon monoxide or large particulate matter (fugitive dust) that settles in the vicinity of the source and does not become airborne.

Because of the similarities in the development assumptions for both the B-10 Modified Alternative and the B-4 Alternative, the latter which was the primary project evaluated in the GPA/ZC EIR 589, the assumptions set forth for the B-4 Alternative are used in this air quality assessment for the B-10 Modified Alternative. Implementation of the B-10 Modified Alternative is projected to take approximately 20 to 25 years to be fully built out and would be developed in seven grading phases (over 19 years) and eight construction phases.

Both construction grading and operation emissions were analyzed with the California Air Resources Board model, URBEMIS2002. This computer model estimates both construction and operational emissions associated with the specific land uses associated with a project, including grading based on the total acreage and the time frame in which grading would occur. The model uses current California Air Resources Board emission factors for automobile and truck emissions and EPA emission factors for equipment emissions and fugitive dust emissions. The model is approved for use on all projects in the South Coast Air Basin. Because the URBEMIS estimates of worker trips and truck trips are based on average construction requirements for total land uses in the project, the worker and truck trip estimates were based on assumed needs in 2014 and include worker trips and truck trips for other activities besides grading. With respect to maximum daily construction emissions during the highest phase of proposed development, Alternative B-10 Modified is expected to generate 1,435 pounds per day (lbs/day) of carbon monoxide (SCAQMD daily significance threshold is 550 lbs/day), 1,417 lbs/day of volatile organic compounds (the threshold is 75 lbs/day), 1,051 lbs/day of oxides of nitrogen (the threshold is 100 lbs/day), and 12,085 lbs/day of particulate matter (the threshold is 150 lbs/day). With respect to quarterly construction emissions, Alternative B-10 Modified is expected to generate 49.7 tons per quarter of carbon monoxide (SCAQMD daily threshold is 24.75 tons per quarter), 46.26 tons per quarter of volatile organic compounds (the threshold is 2.5 tons per quarter), 34.69 tons per quarter of oxides of nitrogen (the threshold is 2.5 tons per quarter), and

398.8 tons per quarter of particulate matter (the threshold is 6.75 tons per quarter). Because the region is in non-attainment for ozone, CO, and NO_2, and project-related increases of these pollutants are above SCAQMD thresholds, operation of Alternative B-10 Modified would result in a significant cumulative air quality impact for CO, NO_X, and ROG (an ozone precursor).

Grading and Excavation

Grading concepts described in the GPA/ZC EIR 589, most specifically for the B-4 Alternative, were developed by EDAW. These concepts were used by the civil engineering firm of Huitt-Zollars, Inc. to produce cut and fill quantities, as measured between the proposed landform alterations and existing terrain. The analysis was conducted at varying scales between 1"=200' and 1"= 400' (depending on the size and required detail for the planning area). The raw data was analyzed for adjustments in elevation to allow for the balancing between mass excavation and mass fills for each planning area. The data was also reviewed by the geotechnical consultant for feasibility including the estimations of quantities associated with the removal, replacement, and re-compaction of low-density materials; the stabilization of slopes and landslides, as required, and other buttressing, over-excavation, and remedial work estimated to construct the project in accordance with the County's current standards of practice. This information was also used to determine construction equipment and construction employee requirements. Because the B-10 Modified Alternative is expected to require similar amounts of cut and fill grading when compared to Alternative B-4, these assumptions are used in this EIS.

Alternative B-10 Modified would require approximately 288,461,000 cubic yards (cy) of cut and fill grading, inclusive of remedial grading. Of this amount, 107,957,000 cubic yards of soil movement are expected to occur in one phase, resulting in an average of 26,989,250 cy in the year. Assuming 22 workdays per month, this would average 102,232 cy per day. During each development phase, all soil would be balanced (retained) within the development footprint of the alternative. Therefore, the model assumes no on-road truck travel.

SCAQMD Rule 403, last amended April 2, 2004, governs fugitive dust emissions from construction projects. This rule sets forth a list of control measures that must be undertaken for any activity or man-made condition capable of generating fugitive dust to prevent, reduce, or mitigate fugitive dust emissions. The rule applies to all construction projects with a disturbed area of five or more acres. In addition, large projects, which are defined as active operations on property which contains in excess of 50 acres of disturbed surface area or any operation which exceeds a daily earthmoving or throughput volume of 5,000 cubic yards three times over a 365-day period, must file a fully executed Large Operation Notification Form (Form 403N) with the SCAQMD Executive Officer within 7 days of qualifying as a large operation under the rule. The rule sets forth a number of requirements regarding record keeping, as well as specific mitigation measures that must be contained in an approved dust-control plan. Recommended dust control measures are incorporated in the URBEMIS model. Because the B-10 Modified Alternative would exceed 50 acres and would move at least 5,000 cubic yards of dirt three or more times in a year during construction, this alternative would be required to file a 403N form.

SCAQMD Rule 402, Nuisance, also would apply to the B-10 Modified Alternative. Most of the fugitive dust associated with construction is comprised of particles larger than 10 microns in diameter. While these larger particles settle out quickly and do not cause health effects associated with the smaller sized particles (i.e., PM_{10} and $PM_{2.5}$), they can damage plants and property sufficiently to qualify as a nuisance. Rule 402 prohibits visible dust emissions from extending beyond a project site's boundaries. The same mitigation measures used to control PM_{10} would also effectively control the unwanted transmission of larger particles.

Sensitive Receptors

The California Air Resources Board has identified diesel particulate emissions as carcinogenic air toxics. Because much of the RMV Planning Area is remote from the nearest currently populated area, there are few identified sensitive receptors in the immediate vicinity of where most of the grading would occur. Sensitive receptors would include existing residents contiguous to the RMV Planning Area (e.g., Coto de Caza) and students and faculty at Tesoro High School. However, cancer risk is cumulative, based on lifetime exposure, and the California Air Resources Board has not set a safe level for exposure to diesel exhaust. Therefore, a receptor's exposure to any amount of diesel exhaust should be mitigated. Construction workers would be most at risk because of the large amount of diesel equipment that would be operating simultaneously. Workers should wear masks when working near diesel equipment or diesel trucks; all diesel equipment should be fitted with particulate traps.

Impact
7.5.4-2: *On a regional basis, operational air quality emissions would result in significant impacts, with the exception of sulfur oxides.*

Regional Operational Impacts

The primary source of operational emissions would be vehicle travel; a small amount of gaseous emissions would occur from use of natural gas and other area sources. There would also be some indirect emissions from electricity usage. Landscaping emissions are principally those associated with garden equipment (such as mowers, leaf blowers, etc.) while emissions from consumer products are principally generated by activities associated with typical residential and commercial land uses (e.g., hair sprays, household and industrial cleaning solvents, floor cleaners and waxes, colognes, and deodorants).

Year 2025 + Alternative B-10 Modified Buildout

This scenario assumes buildout of the Alternative B-10 Modified development plus cumulative growth in the study area assumed for the traffic analysis through 2025. Table 7.5-2 identifies the operational air quality emissions associated with this scenario. As shown in this table, operation of Alternative B-10 Modified would result in significant emissions of all pollutants except sulfur oxides on a regional scale based on SCAQMD thresholds of significance. However, because of fleet turnover to vehicles with already implemented emission controls and because of the implementation of already adopted but future effective vehicle emissions controls, total emissions in 2025 would be considerably lower than they would be if the alternative were operative in 2005.

Local Operational Impacts

The purpose of the local analysis is to determine if Alternative B-10 Modified could cause or contribute to CO hot spots (defined as locations where the CO concentrations exceed a state or federal CO standard). Because of carbon monoxide controls that have been implemented in the past decade, the number of potential CO hotspots has been greatly reduced throughout the South Coast Air Basin. It is expected that potential hotspots will continue to decline in the foreseeable future as background CO levels decrease. The entire South Coast Air Basin has been an attainment area for all 1-hour CO standards for more than five years; therefore, the 8-hour CO standards are the critical standards for assessing hotspots. No CO standard has been exceeded in Orange County since 1992; and the SCAQMD's 2003 Air Quality Management Plan demonstrates attainment of all standards throughout the South Coast Air

Basin, as well as continued maintenance of that status. Background CO levels are projected to decline until 2010 and remain stable thereafter despite continued projected population and traffic growth.

TABLE 7.5-2
YEAR 2025 + PROJECT BUILDOUT
OPERATIONAL EMISSIONS (Pounds per Day)

Source Category	Pollutant				
	CO	VOC	NO_X	SO_X	PM_{10}
Traffic Emissions	4,073	495	330	10	1,434
Consumer Products and Landscaping	62	691	1	2	0
Natural Gas Emissions	73	13	173	2	0
Total Project Emissions	4,208	1,199	504	14	1,434
SCAQMD Significance Thresholds for Operation	550	55	55	150	150
Significant	**Yes**	**Yes**	**Yes**	**No**	**Yes**
Source: The Ranch Plan EIR 589					

The SCAQMD requires that current or projected background CO concentrations at the air monitoring station nearest a project be added to modeled concentrations. This addition is intended to provide an extra measure of safety to account for any amount of carbon monoxide that might be in the ambient air. In general, this addition is very conservative because CO dissipates within a few hundred feet from where it is emitted. Because cumulative traffic from sources other than Alternative B-10 Modified is included in the traffic analysis, the modeling accounts for almost all the CO that could be present.

The background concentration is indicative of conditions near the monitoring station, which is in an area of high traffic volume, not where the alternative would have the greatest impact. CO concentrations are projected to continue to decline until at least 2010; and the SCAQMD has generated a table of estimated future 1-hour and 8-hour CO concentrations at each of its monitoring stations that accounts for this decrease through the year 2020. In this analysis, 2025 traffic is used with Year 2020 projected background levels. Because background carbon monoxide concentrations have declined substantially, actual 2002 CO concentrations are much lower than those predicted by the SCAQMD for that year. Predicted 2020 concentrations may be similarly overstated.

Existing traffic volumes and future traffic volumes (Alternative B-10 Modified buildout) were used to determine the potential for future hotspots occurring as a result of the alternative. All of the future traffic projections include the cumulative traffic impacts resulting from related projects that may be built in the vicinity of the RMV Planning Area between now and 2025.

The following intersections were modeled with California Air Resources Board's Caline 4 model: Marguerite Parkway at Avery Parkway, I-5 southbound ramps at Avenida Pico, and SR-241 southbound ramps at Oso Parkway. Intersections were selected for modeling on the basis of whether they currently exist, would experience relatively heavy traffic from both the project and other sources, and would experience a level of service (LOS) F when both cumulative traffic and traffic from the project are combined. The SCAQMD has determined that intersections operating at LOS C or better would not exceed existing CO standards. Decreases in CO concentrations at

some intersections between existing levels and those in 2006 are the result of decreases in per-vehicle emissions resulting from fleet turnover with new, better-controlled vehicles.

Eight-hour concentrations were assumed at 70 percent of the modeled 1-hour concentration, consistent with Caltrans, the California Air Resources Board, and SCAQMD guidelines. Emission factors were those contained in EMFAC 2002, V2.2 issued September 23, 2002. Receptors were set at three meters from the roadway edges. A breakdown of 1-hour and 8-hour CO concentrations within these intersections for year 2005 is provided in Table 7.5-3. The table shows that no intersections would exceed the strictest CO standard (i.e., the state 8-hour standard of 9.0 ppm) even after adding background concentrations.

For year 2025, the same intersections were modeled with California Air Resources Board's Caline 4 model. A breakdown of 1-hour and 8-hour CO concentrations within these intersections is provided in Table 7.5-4. The table shows that no intersections would exceed the strictest CO standard (i.e., the state 8-hour standard of 9.0 ppm) even after adding background concentrations. Emission levels are forecast to be lower in 2025 because of new vehicle emission controls. Therefore, there would be no significant adverse impacts on local air quality with implementation of the B-10 Modified Alternative.

Odors

There would be some odors, such as from cooking and gardening, associated with residential uses, but those odors are not considered significant on a regional scale. Local odors would be no different than in any other residential area with supporting services and would not be significant. The proposed land uses would not significantly contribute to background air toxics.

Air Quality Management Plan Consistency

Consistency with an Air Quality Management Plan requires that the project be consistent with the approved Air Quality Management Plan/State Implementation Plan for the region that provides controls sufficient to attain the national ozone standards by the required attainment date. The Air Quality Management Plan is based on growth projections agreed to the five affected counties and SCAG. If the total population accommodated by a new project, together with the existing population and the projected population from all other planned projects in the subarea, does not exceed the growth projections for that subarea incorporated in the most recently adopted Air Quality Management Plan, the completed project is consistent with the Air Quality Management Plan. The entire County of Orange is considered to be one subarea. The Air Quality Management Plan is region-wide and accounts for, and offsets, cumulative increases in emissions that are the result of anticipated growth throughout the region. Because implementation of Alternative B-10 Modified would not exceed growth projections for the subarea, the alternative is considered consistent with the Air Quality Management Plan.

TABLE 7.5-3
ALTERNATIVE B-10 MODIFIED:
CARBON MONOXIDE CONCENTRATIONS AT IMPACTED INTERSECTIONS (IN PPM) IN 2005

Intersection	Time	Monitored CO[a.]	Modeled Existing Traffic	Adjusted CO Existing Traffic	Projected CO (2005)[b.]	Modeled CO Cumulative Without Project	Adjusted CO Cumulative Without Project	Modeled CO Cumulative With Project	Adjusted CO Cumulative With Project[c.]
1-Hour									
Marguerite Parkway/Avery Parkway	A.M.	6.0	4.7	10.7	6.0	1.1	7.1	1.1	7.1
I-5 SB Ramps/Avenida Pico	A.M.	6.0	4.9	10.9	6.0	1.1	7.1	1.1	7.1
SR-241 SB Ramp/Oso Parkway	A.M.	6.0	3.3	9.3	6.0	0.6	6.6	1.2	7.2
Marguerite Parkway/Avery Parkway	P.M.	6.0	6.3	12.3	6.0	1.3	7.3	1.3	7.3
I-5 SB Ramps/Avenida Pico	P.M.	6.0	5.9	11.9	6.0	1.3	7.3	1.4	7.5
SR-241 SB Ramps/Oso Parkway	P.M.	6.0	3.1	9.1	6.0	0.6	6.6	1.7	7.7
8-Hour									
Marguerite Parkway/Avery Parkway	A.M.	3.1	2.80	5.90	3.1	0.77	3.87	0.77	3.87
I-5 SB Ramps/Avenida Pico	A.M.	3.1	3.43	6.53	3.1	0.77	3.87	0.77	3.87
SR-241 Ramps/Avenida Pico	A.M.	3.1	2.31	5.41	3.1	0.42	3.52	0.84	3.94
Marguerite Parkway/Avery Parkway	P.M.	3.1	4.41	7.51	3.1	0.91	4.01	0.91	4.01
I-5 SB Ramps/Avenida Pico	P.M.	3.1	4.13	7.23	3.1	0.91	4.01	0.98	4.08
SR-241 SB Ramps/Oso Parkway	P.M.	3.1	2.17	5.27	3.1	0.42	3.52	1.19	4.29

a. CO concentrations measured in 2002 at SRA 19 monitoring station
b. SCAQMD projected concentration in 2020 (Source: www.AQMD.org)
c. The project would not have a significant impact because no concentration would exceed the most stringent 1-hour CO standard of 20 ppm or the most stringent 8-hour standard of 9 ppm.

Source: The Ranch Plan EIR 589

TABLE 7.5-4
ALTERNATIVE B-10 MODIFIED:
CARBON MONOXIDE CONCENTRATIONS AT IMPACTED INTERSECTIONS (IN PPM) IN 2025

Intersection	Time	Monitored CO[a.]	Modeled Existing Traffic	Adjusted CO Existing Traffic	Projected CO (2025)[b.]	Modeled CO Cumulative Without Project	Adjusted CO Cumulative Without Project	Modeled CO Cumulative With Project	Adjusted CO Cumulative With Project[c.]
1-Hour									
Marguerite Parkway/Avery Parkway	A.M.	3.0	4.7	7.7	5.1	1.1	6.2	1.1	6.2
I-5 SB Ramps/Avenida Pico	A.M.	3.0	4.9	7.9	5.1	1.1	6.2	1.1	6.2
SR-241 SB Ramp/Oso Parkway	A.M.	3.0	3.3	6.3	5.1	0.6	5.7	1.2	6.3
Marguerite Parkway/Avery Parkway	P.M.	3.0	6.3	9.3	5.1	1.3	6.4	1.3	6.8
I-5 SB Ramps/Avenida Pico	P.M.	3.0	5.9	8.9	5.1	1.3	6.4	1.4	6.5
SR-241 SB Ramps/Oso Parkway	P.M.	3.0	3.1	6.1	5.1	0.6	5.6	1.7	6.8
8-Hour									
Marguerite Parkway/Avery Parkway	A.M.	3.6	2.80	6.40	1.8	0.77	2.57	0.77	2.57
I-5 SB Ramps/Avenida Pico	A.M.	3.6	3.43	7.03	1.8	0.77	2.57	0.77	2.57
SR-241 Ramps/Avenida Pico	A.M.	3.6	2.31	5.91	1.8	0.42	2.22	0.84	2.64
Marguerite Parkway/Avery Parkway	P.M.	3.6	4.41	8.01	1.8	0.91	2.71	0.91	2.71
I-5 SB Ramps/Avenida Pico	P.M.	3.6	4.13	7.73	1.8	0.91	2.71	0.98	2.78
SR-241 SB Ramps/Oso Parkway	P.M.	3.6	2.17	5.77	1.8	0.42	2.22	1.19	2.99

a. CO concentrations measured in 2002 at SRA 19 monitoring station
b. SCAQMD projected concentration in 2020 *(Source: www.AQMD.org)*
c. The state CO standards of 20 ppm (1-hour) and 9.0 ppm (8-hour) are the most stringent CO standards. A project would result in a significant impact if it caused a standard to be exceeded in an area that presently does not exceed that standard.

Source: The Ranch Plan EIR 589

7.5.4.2 Mitigation Program

Project Design Features

PDF 4.7-1 The project has been designed to minimize the need for external vehicular trips through the provision of residential, commercial, office, and institutional uses within the boundaries of the project site, thereby reducing vehicular air emissions.

Standard Conditions and Regulations

Construction: Fugitive Dust Emissions (PM_{10})

Alternative B-10 Modified would be considered a "large project" under SCAQMD Rule 403 and the applicant would be required to file a fugitive dust emissions control notice with the SCAQMD. The SCAQMD must determine that a project is implementing controls, as specified by the Rule, prior to the commencement of grading. The Rule 403 Implementation Handbook contains compliance guidelines for large operations and suggests dust control measures for incorporation into the fugitive dust emissions control plans, where applicable. Control measures are incorporated in the URBEMIS model. SCAQMD Rule 402, Nuisance, also would apply to the B-10 Modified Alternative. Rule 402 prohibits visible dust emissions from extending beyond a project site's boundaries.

SC 4.7-1 All construction contractors shall comply with South Coast Air Quality Management District (SCAQMD) regulations, including Rule 403, Fugitive Dust, and Rule 402, Nuisance. All grading (regardless of acreage) shall apply best available control measures for fugitive dust in accordance with Rule 403. To ensure that the project is in full compliance with applicable SCAQMD dust regulations and that there is no nuisance impact off the site, the contractor would implement each of the following:

a. Moisten soil not more than 15 minutes prior to moving soil or conduct whatever watering is necessary to prevent visible dust emissions from traveling more than 100 feet in any direction.

b. Apply chemical stabilizers to disturbed surface areas (i.e., completed grading areas) within five days of completing grading or apply dust suppressants or vegetation sufficient to maintain a stabilized surface.

c. Water excavated soil piles hourly or cover with temporary coverings.

d. Water exposed surfaces at least twice a day under calm conditions. Water as often as needed on windy days when winds are less than 25 miles per day or during very dry weather in order to maintain a surface crust and prevent the release of visible emissions from the construction site.

e. Wash mud-covered tires and under-carriages of trucks leaving construction sites.

f. Provide for street sweeping, as needed, on adjacent roadways to remove dirt dropped by construction vehicles or mud, which would otherwise be carried off by trucks departing from project sites.

Construction: ROC and NO_X Emissions

SC 4.7-2 The applicant shall comply with the following measures, as feasible, to reduce NO_X and ROC from heavy equipment.

a. Turn equipment off when not in use for more than five minutes.

b. Maintain equipment engines in good condition and in proper tune as per manufacturers' specifications.

c. Lengthen the construction period during smog season (May through October) to minimize the number of vehicles and equipment operating at the same time.

Mitigation Measures

Construction: Diesel Emissions

MM 4.7-1 In order to reduce diesel fuel engine emissions, the project applicant shall require that all construction bid packages include a separate "Diesel Fuel Reduction Plan." This plan shall identify the actions to be taken to reduce diesel fuel emissions during construction activities (inclusive of grading and excavation activities). Reductions in diesel fuel emissions can be achieved by measures including, but not limited to, the following: a) use of alternative energy sources, such as compressed natural gas or liquefied petroleum gas, in mobile equipment and vehicles; b) use of "retrofit technology," including diesel particulate trips, on existing diesel engines and vehicles; and c) other appropriate measures. Prior to the issuance of a grading permit, the Diesel Fuel Reduction Plan shall be filed with the County of Orange. The Diesel Fuel Reduction Plan shall include the following provisions:

a. All diesel fueled off-road construction equipment shall be California Air Resources Board (California Air Resources Board) certified or use post-combustion controls that reduce pollutant emissions to the same level as California Air Resources Board certified equipment. California Air Resources Board certified off-road engines are engines that are three years old or less and comply with lower emission standards. Post-combustion controls are devices that are installed downstream of the engine on the tailpipe to treat the exhaust. These devices are now widely used on construction equipment and are capable of removing over 90 percent of the PM10, carbon monoxide, and volatile organic compounds from engine exhaust, depending on the specific device, sulfur content of the fuel, and specific engine. The most common and widely used post-combustion control devices are particulate traps (i.e., soot filters), oxidation catalysts, and combinations thereof.

b. All diesel fueled on-road construction vehicles shall meet the emission standards applicable to the most current year to the greatest extent possible. To achieve this standard, new vehicles shall be used or older vehicles shall

use post-combustion controls that reduce pollutant emissions to the greatest extent feasible.

c. The effectiveness of the latest diesel emission controls is highly dependant on the sulfur content of the fuel. Therefore, diesel fuel used by on-road and off-road construction equipment shall be low sulfur (>15 ppm) or other alternative low polluting diesel fuel formulation such as PuriNOxTM or Amber363. Low sulfur diesel fuel shall be required by existing regulations after the year 2007 and it is already being produced and sold as the regulation is phased in.

Local and Regional Operational Impacts

Traffic mitigation measures incorporated into the alternative would reduce local impacts to less than significant levels. No additional feasible mitigation is available to reduce regional operational impacts to a less than significant level.

7.5.4.3 Level Of Significance After Mitigation

As shown in Table 7.5-5, the recommended control measures would substantially reduce short-term, construction-related PM_{10} emissions. However, short-term, construction-related emissions of NO_X, CO, VOC, and PM_{10} during the peak construction period would remain significant after mitigation. Heavy-duty equipment emissions are assumed with today's emissions standards. However, both the California Air Resources Board and the EPA are proposing new controls on off-road diesel equipment that should go into effect prior to the peak construction period. Equipment would be required to comply with all control regulations in force at that time. NO_X emissions identified in the table represent a worst-case assumption.

TABLE 7.5-5
PEAK DAILY CONSTRUCTION EMISSIONS AFTER MITIGATION
(In Pounds Per Day)

Source Category	Pollutant				
	CO	VOC	NO_X	SO_X	PM_{10}
Total Daily Emissions Before Mitigation	1,435	170	1,049	0	12,085
Particulate Emissions Reduced					11,007
Maximum Daily Construction Emissions After Mitigation	1,412	169	1,049	0	1,078
SCAQMD Significance Thresholds for Construction	550	75	100	150	150
Significant	**Yes**	**Yes**	**Yes**	**No**	**Yes**
Source: The Ranch Plan EIR 589					

With respect to local operational air emissions, no additional mitigation beyond that assumed in the traffic analysis is assumed for traffic emissions. Alternative B-10 Modified would not result in significant local operational air quality effects. Long-term operational emissions of CO, VOC, NO_X, and PM_{10} would remain significant and unavoidable.

7.5.5 ALTERNATIVE B-12

7.5.5.1 Impacts

Impact
7.5.5-1 *Construction-related air quality emissions would result in significant impacts on a daily and quarterly basis.*

Construction-Related Air Quality Emissions

Alternative B-12 is very similar to Alternative B-10 Modified. It would allow for the development of a maximum of 14,000 residential units, with a similar mix of single-family attached and detached units, multi-family, and the 6,000 senior housing units (including both single-family units and apartments). This alternative is expected to provide similar employment use when compared to Alternative B-10 Modified. Because of similar grading and construction assumptions between Alternative B-12 and Alternative B-10 Modified, the findings for Alternative B-10 Modified would also be applicable for this alternative. Emissions of all pollutants except sulfur oxides would be significant, based on the thresholds of significance set forth in this EIS. Because the region is in non-attainment for ozone, CO, and NO_2, and project-related increases of these pollutants are above SCAQMD thresholds, operation of Alternative B-12 would result in a significant cumulative air quality impact for CO, NO_X, and ROG (an ozone precursor).

Impact
7.5.5-2: *On a regional basis, operational air quality emissions would result in significant impacts, with the exception of sulfur oxides.*

Regional Operational Impacts

The primary source of operational emissions would be vehicle travel; a small amount of gaseous emissions would occur from use of natural gas and other area sources. There would also be some indirect emissions from electricity usage. Landscaping emissions are principally those associated with garden equipment (such as mowers, leaf blowers, etc.) while emissions from consumer products are principally generated by activities associated with typical residential and commercial land uses (e.g., hair sprays, household and industrial cleaning solvents, floor cleaners and waxes, colognes, and deodorants).

The *Year 2025 + Alternative B-12 Buildout* scenario assumes buildout of the alternative plus cumulative growth in the study area assumed for the traffic analysis through 2025. Operation of Alternative B-12 would result in significant emissions of all pollutants except sulfur oxides on a regional scale based on SCAQMD thresholds of significance. However, because of fleet turnover to vehicles with already implemented emission controls and because of the implementation of already adopted but future effective vehicle emissions controls, total emissions in 2025 would be considerably lower than they would be if the alternative were operative in 2005.

Local Operational Impacts

Existing traffic volumes and future traffic volumes are used to determine the potential for future hotspots occurring as a result of the alternative. All of the future traffic projections include the cumulative traffic impacts resulting from related projects that may be built in the vicinity of the RMV Planning Area between now and 2025. No intersections would exceed the strictest CO

standard (i.e., the state 8-hour standard of 9.0 ppm). Therefore, there would be no significant adverse impacts on local air quality with implementation of the Alternative B-12.

Odors

There would be some odors, such as from cooking and gardening, associated with residential uses, but those odors are not considered significant on a regional scale. Local odors would be no different than in any other residential area with supporting services and would not be significant. The proposed land uses would not significantly contribute to background air toxics.

Air Quality Management Plan Consistency

Consistency with an Air Quality Management Plan requires that the project be consistent with the approved Air Quality Management Plan/State Implementation Plan for the region that provides controls sufficient to attain the national ozone standards by the required attainment date. The Air Quality Management Plan is based on growth projections agreed to the five affected counties and SCAG. If the total population accommodated by a new project, together with the existing population and the projected population from all other planned projects in the subarea, does not exceed the growth projections for that subarea incorporated in the most recently adopted Air Quality Management Plan, the completed project is consistent with the Air Quality Management Plan. The entire County of Orange is considered to be one subarea. The Air Quality Management Plan is region-wide and accounts for, and offsets, cumulative increases in emissions that are the result of anticipated growth throughout the region. Because implementation of Alternative B-12 would not exceed growth projections for the subarea, the alternative is considered consistent with the Air Quality Management Plan.

7.5.5.2 Mitigation Program

The mitigation program identified for Alternative B-10 Modified would also be applicable for Alternative B-12. No additional mitigation is required as part of the SAMP.

7.5.5.3 Level Of Significance After Mitigation

As addressed for the B-10 Modified Alternative, the recommended control measures would substantially reduce short-term, construction-related PM_{10} emissions associated with Alternative B-12. However, short-term, construction-related emissions of NO_X, CO, VOC, and PM_{10} during the peak construction period would remain significant after mitigation. With respect to local operational air emissions, no additional mitigation beyond that assumed in the traffic analysis is assumed for traffic emissions. Alternative B-12 would not result in significant local operational air quality effects. Long-term operational emissions of CO, VOC, NO_X, and PM_{10} would remain significant and unavoidable.

7.5.6 ALTERNATIVE A-4

7.5.6.1 Impacts

Impact
7.5.6-1 *Construction-related air quality emissions would result in significant impacts on a daily and quarterly basis.*

Construction-Related Air Quality Emissions

Alternative A-4 would provide the same level of development as Alternative B-10 Modified. However, permits to authorize discharge or fill in Waters of the U.S. would be processed on a project-by-project basis instead of under the SAMP process. This procedural changes related to Waters of the U.S. would not affect the air quality findings set forth for Alternative B-10 Modified. As such, the air quality impacts for both alternatives would be the same. As noted for Alternative B-10 Modified, emissions of all pollutants except sulfur oxides, would be significant, based on the thresholds of significance set forth in this EIS. Because the region is in non-attainment for ozone, CO, and NO_2, and project-related increases of these pollutants are above SCAQMD thresholds, operation of Alternative A-4 would result in a significant cumulative air quality impact for CO, NO_X, and ROG (an ozone precursor).

Impact
7.5.6-2: *On a regional basis, operational air quality emissions would result in significant impacts, with the exception of sulfur oxides.*

Regional Operational Impacts

The primary source of operational emissions would be vehicle travel; a small amount of gaseous emissions would occur from use of natural gas and other area sources. There would also be some indirect emissions from electricity usage. Emissions of all pollutants, except sulfur oxides, would be significant based on SCAQMD thresholds of significance.

Local Operational Impacts

As noted for the B-10 Modified Alternative, no intersections would exceed the strictest CO standard (i.e., the state 8-hour standard of 9.0 ppm). Therefore, there would also be no significant adverse impacts on local air quality with implementation of Alternative A-4.

Odors

There would be some odors, such as from cooking and gardening, associated with residential uses, but those odors are not considered significant on a regional scale. Local odors would be no different than in any other residential area with supporting services and would not be significant. The proposed land uses would not significantly contribute to background air toxics.

Air Quality Management Plan Consistency

Consistency with an Air Quality Management Plan requires that the project be consistent with the approved Air Quality Management Plan/State Implementation Plan for the region that provides controls sufficient to attain the national ozone standards by the required attainment date. Because implementation of Alternative A-4 would not exceed growth projections for the subarea, the alternative is considered consistent with the Air Quality Management Plan.

7.5.6.2 Mitigation Program

The mitigation program identified for Alternative B-10 Modified would also be applicable for Alternative A-4. No additional mitigation is required as part of the SAMP.

7.5.6.3 Level Of Significance After Mitigation

As addressed for the B-10 Modified Alternative, the recommended control measures would substantially reduce short-term, construction-related PM_{10} emissions associated with Alternative A-4. However, short-term, construction-related emissions of NO_X, CO, VOC, and PM_{10} during the peak construction period would remain significant after mitigation. With respect to local operational air emissions, no additional mitigation beyond that assumed in the traffic analysis is assumed for traffic emissions. Alternative A-4 would not result in significant local operational air quality effects. Long-term operational emissions of CO, VOC, NO_X, and PM_{10} would remain significant and unavoidable.

7.5.7 ALTERNATIVE A-5

7.5.7.1 Impacts

Impact
7.5.7-1 *Construction-related air quality emissions would result in significant impacts on a daily and quarterly basis.*

Construction-Related Air Quality Emissions

Under Alternative A-5, development would occur on approximately 8,000 acres (35 percent) of the 22,815-acre RMV Planning Area. Approximately 14,824 acres (65 percent) of the RMV Planning Area would be in some form of open space. It is estimated that Alternative A-5 could accommodate approximately 2,500 to 3,000 dwelling units. Alternative A-5 assumes total avoidance of state and federal threatened/endangered species (new development would be limited to those portions of RMV Planning Area that are not occupied by state or federally listed species) and regulated waters, access would be dependent on existing arterial highways and the ranch road network (i.e., the existing dirt/gravel roads) with surfacing limited to existing road widths. Because substantially less development would occur associated with this alternative and the avoidance of all state and federal threatened/endangered species is required, this alternative assumes less disturbance activities. However, it is anticipated that emissions of all pollutants except sulfur oxides would be significant, based on the thresholds of significance set forth in this EIS. Because the region is in non-attainment for ozone, CO, and NO_2, and project-related increases of these pollutants are above SCAQMD thresholds, operation of Alternative A-5 would result in a significant cumulative air quality impact for CO, NO_X, and ROG (an ozone precursor).

Impact
7.5.7-2: *On a regional basis, operational air quality emissions would result in significant impacts, with the exception of sulfur oxides.*

Regional Operational Impacts

The primary source of operational emissions would be vehicle travel; a small amount of gaseous emissions would occur from use of natural gas and other area sources. Although the A-5 Alternative would generate less vehicular air emissions than the previously addressed

alternatives, emissions of all pollutants, except sulfur oxides, would be significant based on SCAQMD thresholds of significance.

Local Operational Impacts

As noted for the other alternatives, all which would generate more traffic than Alternative A-5, no intersections would exceed the strictest CO standard (i.e., the state 8-hour standard of 9.0 ppm). Therefore, there would also be no significant adverse impacts on local air quality with implementation of Alternative A-5.

Odors

There would be some odors, such as from cooking and gardening, associated with residential uses, but those odors are not considered significant on a regional scale. Local odors would be no different than in any other residential area with supporting services and would not be significant. The proposed land uses would not significantly contribute to background air toxics.

Air Quality Management Plan Consistency

Consistency with an Air Quality Management Plan requires that the project be consistent with the approved Air Quality Management Plan/State Implementation Plan for the region that provides controls sufficient to attain the national ozone standards by the required attainment date. Because implementation of Alternative A-5 would not exceed growth projections for the subarea, the alternative is considered consistent with the Air Quality Management Plan.

7.5.7.2 Mitigation Program

The mitigation program identified for Alternative B-10 Modified would also generally be applicable for Alternative A-5. However, unlike the B-10 Modified and B-12 Alternatives, PDF 4.7-1 would not be applicable. No additional mitigation is required as part of the SAMP.

7.5.7.3 Level Of Significance After Mitigation

As addressed for the B-10 Modified Alternative, the recommended control measures would substantially reduce short-term, construction-related PM_{10} emissions associated with Alternative A-5. However, short-term, construction-related emissions of NO_X, CO, VOC, and PM_{10} during the peak construction period would remain significant after mitigation. With respect to local operational air emissions, no additional mitigation beyond that assumed in the traffic analysis is assumed for traffic emissions. Alternative A-5 would not result in significant local operational air quality effects. Long-term operational emissions of CO, VOC, NO_X, and PM_{10} would remain significant and unavoidable.

7.6 NOISE

This chapter focuses on the impacts to noise with the implementation of the alternatives carried forward for review under the Section 404(b)(1) Guidelines. In general, most impacts to noise are outside the USACE's statutory authority and responsibility under Section 404 of the Clean Water Act. The primary responsibility of evaluating and regulating impacts to noise resides with the local agencies such as cities and counties. As part of the NEPA review, the USACE is analyzing impacts on the environment associated with projects that receive authorizations under Section 404 of the Clean Water Act.

7.6.1 THRESHOLDS OF SIGNIFICANCE

An alternative would be considered to have a significant noise effect if:

- short-term construction noise impacts would violate the provisions of the applicable noise ordinances.

- both of the following criteria are met:

  a. the project traffic results in a substantial noise level increase on a roadway segment adjacent to a noise sensitive land use (e.g., residential use) (a substantial noise increase is defined as an increase of 3 dB or more); and

  b. the resulting "future with project" noise level exceeds the criteria for the noise sensitive land use, as identified above, for the County of Orange. The following interior and exterior noise standards apply to the proposed project:

     – 45 CNEL residential interior noise levels

     – 65 CNEL residential exterior noise levels

7.6.1.1 Impact Criteria

Off-site impacts resulting from on-site activities, both temporary and long-term, are measured against noise ordinance standards. Construction activities and commercial area activities must also comply with these standards.

Long-term off-site impacts from traffic noise are measured against two criteria, and both criteria must be met for a significant impact to be identified. First, traffic generated by a project must cause a substantial noise level increase on a roadway segment adjacent to a noise sensitive land use. Second, the resulting "future with project" noise level must exceed the criteria level for the noise sensitive land use. For analysis purposes, the criteria level is the Orange County *General Plan Noise Element* standard of 65 CNEL (outdoor) for residential land uses. Other land uses would permit a higher noise level and are therefore not addressed in this analysis.

In community noise assessment, changes in noise levels greater than 3 dB are often identified as significant, while changes less than 1 dB will not be discernible to local residents. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dB. However, in a community noise situation, noise exposures are over a long time period, and changes in noise levels occur over years rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become

discernible is likely to be some value greater than 1 dB; 3 dB appears to be appropriate for most people. For the RMV Proposed Project, a 3 dB traffic noise level increase due to a project alternative is considered substantial.

Cumulative impacts are measured by an assessment of the total noise increase due to the project alternative together with other growth in the area as compared to existing conditions. Because increases over existing conditions will take place over a long period of time, a 3 dB cumulative increase over existing conditions would be considered substantial. Therefore, for purposes of this noise analysis, a cumulative noise increase is considered a significant cumulative impact if the cumulative increase over existing conditions would be 3 dB or more, and the resulting future noise level would exceed the interior noise level standard of 45 CNEL or the exterior noise level standard of 65 CNEL.

Long-term on-site traffic noise impacts are measured against the noise level limits applied by the County (see Table 4.1.8-2). Long-term on-site impacts associated with on-site activities are measured against the *Noise Ordinance* standards.

7.6.2 SAMP PROPOSED PERMITTING PROCEDURES

As discussed previously, the proposed RGP and LOP procedures have been developed for future participants and current participants in the SAMP. The future participants have not yet defined projects for permitting by the RGP or LOP procedures. For projects eligible for authorization by the maintenance RGP, impacts to noise would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary impacts to a small area located in a mostly degraded landscape. New permanent impacts are not expected. Since there would be no permanent effects from these maintenance activities and since effects are very localized, impacts are not expected under the RGP. For projects proposed by future participants that would be eligible for authorization by the LOP procedures, not enough is known about the project size and location or potential impacts to analyze potential impacts to noise. Such projects eligible for authorization by the LOP procedures will be subject to future NEPA review before a final permit decision can be made.

Current participants (SMWD Proposed Project and RMV Proposed Project) have analyzed their activities and alternatives that may have significant effects on the environment as noted in Chapter 6.0. Therefore, the authorization pursuant to the proposed permitting procedures may also have an effect on the environment per the thresholds of significance. These potential effects on noise and minimization/mitigation measures applicable to these potential effects are further discussed below.

7.6.3 SMWD PROPOSED PROJECT

7.6.3.1 Impacts

Impact 7.6.3-1 *Construction of the proposed Upper Chiquita reservoir may have short-term noise impacts during construction.*

Generally, construction noise represents a short-term impact on ambient noise levels. Noise generated by construction equipment and construction activities can reach high levels. Construction equipment noise comes under the control of the Environmental Protection Agency's Noise Control Program (Part 204 of Title 40, Code of Federal Regulations). Examples of construction noise at 50 feet are presented in Figure 7.6-1. Noise levels generated by

commonly used grading equipment (i.e., loaders, graders, and trucks) typically generate noise levels that typically do not exceed the middle of the range shown in the figure.

The equipment used for site grading would generate the highest construction noise levels. Peak noise level generated by the equipment that would be used during grading is 70 to 95 dBA at a distance of 50 feet. When grading occurs directly adjacent to residences, high noise levels, upwards of 100 dBA, can reach the yards of the residences for very short periods of time as a piece of equipment passes by the home. At 150 feet, the peak construction noise levels range from 61 to 86 dBA. At 1,000 feet, the peak noise levels range from 44 to 69 dBA. It should be noted that these noise levels are based upon worst-case conditions and, typically, noise levels near a site would be less.

As addressed in Chapter 4.1.8, the City of Rancho Santa Margarita has adopted the County of Orange Noise Ordinance for use in the city. The County *Noise Ordinance* limits noise generated by construction to the hours of 7 a.m. to 8 p.m. on weekdays and Saturdays. No noise generating activities are expected outside of these hours. In addition, the County requires compliance with the *Noise Ordinance*, the use of mufflers, and location of stock piles away from residential areas. Therefore, the construction of the alternative would not result in significant short-term noise impacts.

Once the reservoir is constructed, the only vehicular trips associated with the facility would be trips by SMWD employees for maintenance and inspection. No significant noise impacts would be associated with these limited vehicular trips. Operation of the reservoir would not result in significant long-term operational noise impacts.

7.6.3.2 Mitigation Program

The following measure is expected to be required:

1. During construction, the project applicant shall ensure that all noise generating activities be limited to the hours of 7 a.m. to 8 p.m. on weekdays and Saturdays. No noise generating activities shall occur on Sundays and holidays in accordance with the *Noise Ordinance.*

7.6.3.3 Level of Significance After Mitigation

It is anticipated that implementation of hours of operation standards would mitigate short-term SMWD-related noise impacts to a level that is considered less than significant.

7.6.4 ALTERNATIVE B-10 MODIFIED

7.6.4.1 Impacts

Impact 7.6.4-1: *Construction noise represents a short-term effect on ambient noise levels. Construction conducted consistent with the County of Orange Noise Ordinance would not result in any significant short-term noise impacts.*

As previously addressed, construction noise represents a short-term impact on ambient noise levels. Most of the proposed development associated with Alternative B-10 Modified is located away from existing noise-sensitive uses. The exception to this situation is at the edge of the RMV Planning Area near Ortega Highway where development would occur directly adjacent to

existing residences. Alternative B-10 Modified would be developed in phases, potentially resulting in construction occurring adjacent to or near residential areas already constructed within or proximate to the RMV Planning Area. The Noise Ordinance limits noise generated by construction to the hours of 7 a.m. to 8 p.m. on weekdays and Saturdays. No noise generating activities are expected outside of these hours. In addition, the County requires compliance with the *Noise Ordinance*, the use of mufflers, and location of stock piles away from residential areas. Therefore, the construction would not result in significant short-term noise impacts.

Traffic Noise on Surrounding Land Uses

Impacts from noise produced by project-generated traffic are estimated based on the traffic projections presented in the traffic study. By comparing the traffic volumes for different scenarios, the changes in noise levels along roadways in the vicinity of the RMV Planning Area can be estimated. To estimate noise level increases and noise impacts due to the development of Alternative B-10 Modified, the "with Alternative B-10 Modified" traffic volumes are compared to the "without Alternative B-10 Modified" traffic volumes.

To assess the impacts of buildout of the alternative, year 2025 conditions with and without the alternative were compared. Both scenarios assume the committed circulation system described in Chapters 4.1.5 and 7.3 of this EIS. Table 7.6-1 identifies project-specific traffic noise level increases associated with buildout of the alternative (year 2025). To focus on the roadway segments that are most impacted by projected changes in traffic noise, only roadway segments expected to have project alternative-specific noise level increases of greater than 0.5 dB are presented in the table. Noise level increases in excess of the 3 dB threshold are in bold italics.

The table shows that Alternative B-10 Modified is forecast to result in noise increases greater than the 3 dB threshold along three roadway segments. However, based on the thresholds of significance set forth in this EIS, no significant project-specific impacts would occur.

***Avenida Pico, Avenida La Pata and Avenida Vista Hermosa*.** There are existing residences located on the north side of this roadway segment. These residences are either located outside the forecast future 65 CNEL contour or have existing sound walls. Therefore, the alternative would not result in a significant traffic noise impact along this roadway segment.

***Avenida Pico, east of Avenida Vista Hermosa*.** There are existing residences located on the north side of this roadway segment have existing sound walls. Analysis of the performance of the sound walls found that all of the residences along this roadway segment are projected to be exposed to future traffic noise levels of less than 65 CNEL. Therefore, Alternative B-10 Modified would not result in a significant traffic noise impact along this roadway segment because it would be designed to avoid impacts to sensitive receptors such that uses are not subject to noise levels exceeding 65 CNEL.

***Antonio Parkway, north of Ortega Highway*.** The segment of Antonio Parkway north of Ortega Highway would experience increased noise levels. Buildout of Alternative B-10 Modified would not result in significant noise impacts to this roadway segment because the project alternative would be designed to avoid impacts to sensitive receptors such that uses are not subject to noise levels exceeding 65 CNEL.

TABLE 7.6-1
YEAR 2025 ALTERNATIVE B-10 MODIFIED BUILDOUT TRAFFIC NOISE CNEL INCREASES

Roadway Segment	B-10 Modified Buildout Traffic Noise CNEL Change	Significant?
SR-241		
North of Antonio Parkway	1.1	No
Antonio Parkway to Oso Parkway	2.2	No
Oso Parkway		
East of I-5	0.3	No
West of Marguerite Parkway	0.3	No
Marguerite Parkway to Felipe Road	0.7	No
Felipe Road to Antonio Parkway	1.0	No
East of Antonio Parkway	1.8	No
West of SR-241	2.1	No
Crown Valley Parkway		
West of Marguerite Parkway	0.5	No
East of Marguerite Parkway	0.7	No
West of Antonio Parkway	1.1	No
Ortega Highway		
I-5 to Rancho Viejo Road	0.5	No
West of La Novia	0.7	No
East of La Novia	1.0	No
West of Avenida La Pata	1.5	No
East of New Ortega Highway	0.7	No
Avenida Vista Hermosa		
Avenida Talega to Avenida Pico	2.4	No
Avenida Pico		
West of Avenida La Pata	1.3	No
Avenida La Pata to Vista Hermosa	***4.3***	***No***
East of Avenida Vista Hermosa	***4.3***	***No***
Antonio Parkway		
South of Crown Valley Parkway	1.0	No
North of New Ortega Highway	2.9	No
North of Ortega Highway	***3.1***	***No***
Avenida La Pata		
South of Ortega Highway	2.2	No
South of Avenida Pico	1.8	No
Avenida Talega		
East of Avenida Vista Hermosa	1.8	No
Source: The Ranch Plan EIR 589		

Impact

7.6.4-2 *The B-10 Modified Alternative's contribution to cumulative noise would result in significant traffic noise impacts.*

Cumulative traffic noise impacts are assessed by comparing traffic noise CNEL increases compared to existing conditions with Alternative B-10 Modified and all other projected development within the study area. To estimate the noise level increases compared to existing conditions, existing traffic volumes were compared to the forecast future with Alternative B-10

Modified traffic volumes. This provides the forecast traffic noise level increases due to the project alternative in addition to other projects and general growth anticipated for the area. Cumulative traffic noise impacts in 2025 with buildout of Alternative B-10 Modified have been assessed. This presents the cumulative noise increases due to the alternative project and general growth in the area.

Table 7.6-2 identifies the cumulative traffic noise CNEL increases with buildout of Alternative B-10 Modified. Three circulation system scenarios are used for the *Year 2025* analysis as follows:

- Committed circulation system.
- Committed circulation system plus La Pata Avenue extension.
- Committed circulation system plus La Pata Avenue extension and the southerly extension of SR-241.

Increases greater than the 3 dB threshold are shown in bold italics. Segments presented in the table are those projected to experience noise level increases of 1.5 dB or greater. Up to 14 roadway segments (depending on the above-noted circulation system scenarios) are forecast to experience 2025 traffic noise level increases over existing conditions greater than 3 dB as a result of implementation of the proposed alternative and projected growth in the area. These segments are:

SR-73 between Oso Parkway and Crown Valley Parkway**.** Residences are located along both sides of the entire roadway segment. All of the residences have existing sound walls or elevation differences from the roadway such that the roadway structure and/or topography act as a noise barrier. Analysis of the performance of the sound walls and noise barriers found that all of the residences along this roadway segment are forecast to be exposed to future traffic noise levels less than 65 CNEL. Therefore, Alternative B-10 Modified, in combination with cumulative growth, would not result in a significant cumulative traffic noise impact along this roadway segment for each of the roadway scenarios.

SR-73 between Crown Valley Parkway and I-5**.** There are residences located along both sides of the entire roadway segment. All of the residences have existing sound walls or elevation differences from the roadway where the roadway structure and/or topography act as a noise barrier. Analysis of the performance of the sound walls and noise barriers found that all of the residences along this roadway segment are forecast to be exposed to future traffic noise levels less than 65 CNEL. Therefore, Alternative B-10 Modified, in combination with cumulative growth, would not result in a significant cumulative traffic noise impact along this roadway segment for each of the roadway scenarios.

SR-241, north of Antonio Parkway**.** Under the committed circulation system and the committed circulation system with the La Pata Avenue extension, SR-241 north of Antonio Parkway would increase noise levels by more than 3 dB. Alternative B-10 Modified project plus cumulative growth scenario would not result in a significant traffic noise impact along this roadway segment for each of the roadway scenarios. Residences are either outside of the 65 CNEL contour or have existing sound walls.

TABLE 7.6-2
YEAR 2025 ALTERNATIVE B-10 MODIFIED + CUMULATIVE TRAFFIC NOISE CNEL INCREASES

Roadway Segment	Cumulative Traffic Noise CNEL Change			
	B-10 Modified Buildout + Cumulative (Committed Circulation System)	**B-10 Modified Buildout + Cumulative (Committed Circulation System + La Pata)**	**B-10 Modified Buildout + Cumulative (Committed Circulation System+ La Pata + Arterial South of Oso Parkway)**	**Significant Impact?**
I-5				
Avery Parkway to Junipero Serra	1.6	1.6	1.3	No
Junipero Serra to Ortega Highway	1.6	1.6	1.3	No
Ortega Highway to San Juan Creek	1.7	1.7	1.3	No
San Juan Creek to Stonehill	1.7	1.6	1.3	No
Stonehill to Camino Las Ramblas	1.8	1.7	1.3	No
Camino Las Ramblas to Camino de Los Mares	1.7	1.6	1.3	No
Camino de Los Mares to Vista Hermosa	1.8	1.6	1.3	No
Avenida Vista Hermosa to Avenida Pico	1.8	1.8	1.4	No
SR-73				
Oso Parkway to Crown Valley Parkway	***3.2***	***3.1***	2.7	***No***
Crown Valley Parkway to I-5	***3.1***	***3.1***	2.7	***No***
SR-241				
North of Antonio Parkway	2.9	***3.1***	***5.0***	***No***
Antonio Parkway to Oso Parkway	***4.9***	***4.9***	***7.9***	***No***
Oso Parkway				
West of Marguerite Parkway	2.2	2.2	1.6	No
Marguerite to Felipe Road	1.3	1.3	1.0	No
Felipe Road to Antonio Parkway	1.3	1.3	1.0	No
East of Antonio Parkway	2.2	2.3	1.2	No
West of SR-241	2.1	2.3	0.8	No
Crown Valley Parkway				
West of Marguerite Parkway	2.5	2.4	2.4	No
East of Marguerite Parkway	2.8	2.6	2.6	No
West of Antonio Parkway	***3.2***	***3.0***	***3.0***	***No***
Junipero Serra				
West of I-5	2.0	1.8	1.8	No

TABLE 7.6-2 (Continued)
YEAR 2025 ALTERNATIVE B-10 MODIFIED + CUMULATIVE TRAFFIC NOISE CNEL INCREASES

Roadway Segment	Cumulative Traffic Noise CNEL Change			
	B-10 Modified Buildout + Cumulative (Committed Circulation System)	B-10 Modified Buildout + Cumulative (Committed Circulation System + La Pata)	B-10 Modified Buildout + Cumulative (Committed Circulation System+ La Pata + Arterial South of Oso Parkway)	Significant Impact?
Ortega Highway				
West of La Novia	1.5	1.2	1.1	No
East of La Novia	2.2	1.9	1.9	No
West of La Pata	2.8	2.5	2.4	No
East of New Ortega Highway	1.1	1.1	1.5	No
San Juan Creek Road				
West of La Novia	1.8	1.5	1.5	No
East of La Novia	2.1	2.1	2.1	No
Avenida Vista Hermosa				
East of I-5	2.9	2.9	2.0	No
Avenida Pico				
East of I-5	1.9	1.5	0.9	No
West of La Pata	1.8	1.7	0.5	No
La Pata to Avenida Vista Hermosa	***3.4***	***3.4***	***3.6***	***No***
East of Avenida Vista Hermosa	***6.5***	***6.5***	***7.1***	***No***
Camino Capistrano				
South of Paseo de Colinas	0.8	0.8	0.8	No
North of Junipero Serra	***4.8***	0.0	0.0	***No***
Junipero Serra to Roso	2.4	2.1	2.1	No
Antonio Parkway				
North of SR-241	1.5	1.5	1.5	No
Empressa to SR-241	1.3	1.6	1.5	No
Empressa to Banderas	1.5	1.8	1.5	No
Oso Parkway to Crown Valley Parkway	2.4	2.8	2.5	No
South of Crown Valley Parkway	***4.2***	***4.8***	***4.8***	***No***
North of New Ortega Highway	***5.3***	***5.9***	***6.0***	***No***
North of Ortega Highway	***5.5***	***6.8***	***5.7***	***No***

TABLE 7.6-2 (Continued)
YEAR 2025 ALTERNATIVE B-10 MODIFIED + CUMULATIVE TRAFFIC NOISE CNEL INCREASES

Roadway Segment	Cumulative Traffic Noise CNEL Change			
	B-10 Modified Buildout + Cumulative (Committed Circulation System)	**B-10 Modified Buildout + Cumulative (Committed Circulation System + La Pata)**	**B-10 Modified Buildout + Cumulative (Committed Circulation System+ La Pata + Arterial South of Oso Parkway)**	**Significant Impact?**
Avenida La Pata				
South of Ortega Highway	2.2	***9.2***	***6.0***	***No***
South of Avenida Pico	2.6	***3.0***	***3.4***	***No***
Camino Vera Cruz				
Camino de Los Mares to Avenida Vista Hermosa	***3.7***	***3.9***	***3.9***	***No***
Avenida Talega				
East of Avenida Vista Hermosa	***11.8***	***10.8***	***10.8***	***No***
Source: The Ranch Plan EIR 589				

***SR-241, Antonio Parkway to Oso Parkway*.** Alternative B-10 Modified, in combination with cumulative growth in the study area, would not result in a significant cumulative traffic noise impact along this roadway segment for each of the roadway scenarios. Residences are either outside of the 65 CNEL contour or have existing sound walls.

Crown Valley Parkway, west of Antonio Parkway. There are residences on both sides of the entire roadway segment. Some have existing sound walls and others have topographical features that act as noise barriers. Analysis of the performance of the sound walls and topography found that all of the residences along this roadway segment are projected to be exposed to future traffic noise levels of less than 65 CNEL. There are no other noise sensitive uses along this roadway segment. Therefore, Alternative B-10 Modified, in combination with cumulative growth in the study area, is not expected to result in a significant cumulative traffic noise impact along this roadway segment for each of the roadway scenarios.

***Avenida Pico, Avenida La Pata to Avenida Vista Hermosa*.** Cumulative growth with buildout of Alternative B-10 Modified would not result in a significant cumulative traffic impact for each of the roadway scenarios. Residences are either located outside of the 65 CNEL contour or have existing sound walls.

***Avenida Pico, east of Avenida Vista Hermosa*.** Cumulative growth with buildout of Alternative B-10 Modified would not result in a significant cumulative traffic impact for each of the roadway scenarios. Residences would be exposed to noise levels less than 65 CNEL.

***Camino Capistrano, north of Junipero Serra*.** There are scattered residences located on the west side of this roadway segment. These residences do not have noise barriers and are exposed to existing and future noise levels in excess of 65 CNEL. I-5 is located on the east side of the roadway segment and dominates the noise environment. The actual noise level increase along this segment is a combination of the increase along Camino Capistrano and the increase along I-5. The actual noise level increase is dependant on the specific receptor location relative to these two roadways. The greatest increase is forecast to occur at the receptor closest to Camino Capistrano (which experiences the greatest increase in noise level) and is furthest from I-5 (which generates the highest noise levels). The greatest increase in noise levels over existing conditions is projected to be 2.6 dB. Therefore, while the traffic noise level generated by vehicles on Camino Capistrano will increase by more than 3 dB, the total traffic noise level at the residences would not be greater than 3 dB. Therefore, Alternative B-10 Modified in combination with cumulative growth would not result in a significant traffic noise impact along this roadway segment for each of the roadway scenarios.

***Antonio Parkway, south of Crown Valley Parkway*.** Cumulative growth with buildout of Alternative B-10 Modified would not result in a significant cumulative traffic impact for each of the roadway scenarios. Residences would be exposed to noise levels less than 65 CNEL.

***Antonio Parkway, north of New Ortega Highway*.** Buildout of Alternative B-10 Modified combined with cumulative growth would not result in significant cumulative noise impacts for each of the roadway scenarios. Forecast noise levels would be less than the County standards.

***Antonio Parkway, north of Ortega Highway*.** Cumulative growth with Alternative B-10 Modified would not result in significant noise impacts for each of the roadway scenarios. Forecast noise levels would be less than the County standards.

***Junipero Serra, west of I-5*.** No noise sensitive uses are located within the future forecast 65 CNEL contour from this roadway segment. Therefore, Alternative B-10 Modified, in

combination with cumulative growth and changes in the area's roadway network, would not result in a significant traffic noise impact along this roadway segment for each of the roadway scenarios.

***Avenida La Pata, south of Ortega Highway*.** Cumulative growth with buildout of Alternative B-10 Modified would not result in significant noise impacts for each of the roadway scenarios for each of the roadway scenarios. Sensitive receptors would not be exposed to noise levels exceeding County standards.

***Avenida La Pata, south of Avenida Pico*.** Under the committed circulation system and the committed circulation system with the La Pata Avenue extension, there would be 3 dB or greater noise increases. There are no existing noise sensitive uses located within the forecast future 65 CNEL contour for this roadway segment. Therefore, Alternative B-10 Modified, in combination with all other growth and changes in the area's roadway network, would not result in a significant traffic noise impact along this roadway segment for each of the roadway scenarios.

***Camino Vera Cruz, Camino de los Mares to Avenida Vista Hermosa*.** Future forecast noise levels at some sensitive receptors along the Camino Vera Cruz segment are projected to be exposed to traffic noise levels greater than County standards. However, implementation of Alternative B-10 Modified does not change the traffic noise levels along this roadway segment. Therefore, Alternative B-10 Modified, in combination with cumulative growth, would not result in a significant cumulative traffic noise impact to this roadway segment for each of the roadway scenarios.

***Avenida Talega, east of Avenida Vista Hermosa*.** Buildout of Alternative B-10 Modified in combination with cumulative growth in the study area would not result in a significant cumulative traffic noise impact along these roadway segments for each of the roadway scenarios.

Impact 7.6.4-3 *Prior to mitigation, on-site activities could result in significant noise impacts thereby impacting sensitive receptors.*

On-Site Land Uses and Activities

Noise from activities on one property impacting another typically occurs only where non-residential land uses (e.g., commercial, manufacturing) abuts residential uses. Typical sources of noise from commercial uses adjacent to residential uses that have the potential to impact residential uses include parking lot activity, mechanical equipment, and delivery trucks/loading docks. Although Alternative B-10 Modified does not propose commercial uses directly adjacent to any existing residential areas, the Urban Activity Center land use designation permits residential development. The nearest commercial uses to existing residential uses would be Urban Activity Center uses in Planning Area 1. These uses are located more than 1,500 feet from the nearest existing residence and there will be residential uses associated with the alternative between the commercial and existing residences. Specific uses in the commercial portions of the RMV Planning Area not yet identified could generate significant noise levels internal to the RMV Planning Area. Restaurants, nightclubs, and bars are often sources of noise issues due to their late night operation. Proposed commercial uses would be required to comply with the Noise Ordinance at the nearer residential areas developed by Alternative B-10 Modified and would not approach the Noise Ordinance limits at the nearest existing residences. Compliance with County Standard Condition N08 would ensure that commercial uses proposed by Alternative B-10 Modified would not significantly impact any proposed residential uses. This

condition will require a specific noise study for any commercial uses that are deemed to have the potential to generate noise levels in excess of the Noise Ordinance. Measures that may be required to meet the Noise Ordinance include additional setbacks through site design, noise barriers, mufflers/silencers, and/or operational restrictions.

Golfing is not a significant noise-generating activity and therefore, would not result in a significant noise impact. Maintenance activities on the golf courses have the potential to result in a noise impact. The County of Orange exempts noise associated with the maintenance of real property if these activities occur between 7:00 a.m. and 8:00 p.m. Monday through Saturday, or between 9:00 a.m. and 8:00 p.m. on a Sunday or a federal holiday. Therefore, maintenance activities occurring within these hours would not result in a significant noise impact. However, golf course operators typically mow greens as early as possible in the morning. Residences located near greens would be subject to early morning mowing noise. Further, some golf course operations begin mowing fairways early in the morning; therefore, residences located adjacent to fairways could be subject to early morning noise. Application of County Standard Condition N08 would ensure that the golf course facilities proposed by Alternative B-10 Modified would not significantly impact any proposed residential uses. This condition will require a specific noise study for any golf course facilities that are deemed to have the potential to generate noise levels in excess of the Noise Ordinance. Measures that may be required to meet the Noise Ordinance include additional setbacks through site design, noise barriers, mufflers/silencers, and/or operational restrictions.

Parks

Local parks would be developed as a part of Alternative B-10 Modified. Noise generated by park activities is typically limited to the voices of participants and spectators. These noise levels are quite varied and dependent on the specific activity. Larger crowds will tend to generate higher noise levels. Important games (e.g., championship vs. preseason) with close scores will tend to result in higher noise levels. Any amplified speech (e.g., bull-horns) or music could generate substantial noise levels. Noise levels at sensitive receptors would depend on their location relative to activity areas at a park and any intervening terrain or walls that act as sound barriers. Section 4-6-7 of the County of Orange Noise Ordinance specifically exempts “Activities conducted on any park or playground, provided such park or playground is owned and operated by a public entity.” If the park is publicly owned and operated and designed to County of Orange standards and required to comply with the Noise Ordinance, noise generated by the park would be considered less than significant.

SR-241 Southerly Extension

The proposed southern extension of SR-241 (i.e., the alignment that was selected by the Transportation Corridor Agencies [TCA] as the locally preferred toll road alignment in 1991) would traverse the RMV Planning Area. The TCA and Federal Highway Administration (FHWA) are currently evaluating the South Orange County Transportation Infrastructure Improvement Project (SOCTIIP), which includes the southern extension of SR-241. Should the TCA and FHWA select an alignment for the SR-241 extension that is different from the 1991 alignment, Alternative B-10 Modified would be modified to reflect the adopted alignment. The impacts associated with the construction of the extension of SR-241 are being addressed in a separate environmental document for the SOCTIIP study. Because the construction of the toll road is not part of the Alternative B-10 Modified project and is not dependent on the completion of the toll road, this alternative is not required to evaluate impacts associated with the development of the toll road. However, potential noise impacts from traffic generated by the southern extension of SR-241 have been evaluated in this EIS for informational purposes. The southerly extension of

SR-241 could result in noise levels that would exceed 65 CNEL at 100 feet from the toll road centerline to 18 roadway segments. Sound attenuation would be required for proposed Alternative B-10 Modified sensitive receptors affected by SR-241 noise.

Airfields

The RMV Planning Area is not located in the immediate vicinity of any airfield and is not directly impacted by noise generated from any airport operations. In route aircraft overfly the RMV Planning Area and are audible at times. These conditions are not expected to change in the future. Because of the relatively low aircraft noise levels experienced on the RMV Planning Area and the limited time that this occurs, aircraft do not generate noise levels that approach the County's noise standards.

On-Site Heliport

There is a private heliport located at the Rancho Mission Viejo headquarters within the RMV Planning Area. The heliport is used infrequently, approximately four times a year, for aerial tours of the ranch property or other Rancho Mission Viejo business. Typically, operations do not occur during the nighttime hours and this is not projected to change in the future. Areas, including residential development, around the heliport would be exposed to substantial single-event noise levels as helicopters arrive and depart the heliport. These levels could be high enough to interfere with speech in the immediate area around the heliport. However, because of the infrequency of operations, noise levels in the vicinity of the heliport would not approach the County's noise standards. The RMV Planning Area is not significantly impacted by aircraft noise.

MCB Camp Pendleton

Residences proposed in Planning Area 8 would be the most impacted by noise generated from activities at MCB Camp Pendleton. Noise levels from the base are not expected to exceed the County's 65 CNEL outdoor residential noise standard within the RMV Planning Area, including Planning Area 8. However, noise from activities on the base, including aircraft and artillery firings, would be audible in Planning Area 8.

Planning Area 8 is currently leased by Northrop Grumman Space Technology. The lease for this area lasts until 2018 and would preclude development of Planning Area 8 before this time. Activity at MCB Camp Pendleton and their noise impacts on the project may be substantially different than it is today. Two mitigation measures are included in the chapter and require a buyer's notification program for residents of Planning Area 8 and the compliance with the most current Range Compatibility Use Zone at the time of Area Plan approval to ensure that noise levels in Planning Area 8 do not exceed the appropriate noise standards. With these mitigation measures, Planning Area 8 would not be significantly impacted by noise from activities at the base.

7.6.4.2 Mitigation Program

Standard Conditions and Regulations

In conjunction with the approval of the GPA/ZC, the County of Orange adopted a mitigation program to reduce the impacts associated with impacts on recreational facilities. These measures are listed below to provide the reader context of the mitigation program, although these measures would be implemented as part of the development project and would be the

responsibility of the County of Orange for monitoring. No additional mitigation is required as part of the SAMP.

Construction Noise

SC 4.8-1 During construction, the project applicant shall ensure that all noise generating activities be limited to the hours of 7 a.m. to 8 p.m. on weekdays and Saturdays. No noise generating activities shall occur on Sundays and holidays in accordance with the County of Orange *Noise Ordinance*.

SC 4.8-2 A. Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, Building Permits Services, that:

(1) All construction vehicles or equipment, fixed or mobile, operated within 1,000' of a dwelling shall be equipped with properly operating and maintained mufflers.

(2) All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control).

(3) Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of the project's permitted grading plans, will be considered as adequate evidence of compliance with this condition. (County of Orange Standard Condition N10)

Residential Development

SC 4.8-3 The applicant shall sound attenuate all residential lots and dwellings against present and projected noise (which shall be the sum of all noise impacting the project) so that the composite interior standard of 45 dBA CNEL for habitable rooms and a source specific exterior standard of 65 dBA CNEL for outdoor living areas is not exceeded. The applicant shall provide a report prepared by a County-certified acoustical consultant, which demonstrates that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137.5, as follows:

a. Prior to the recordation of a subdivision map or prior to the issuance of grading permits, as determined by the Manager, Building Permits Services, the applicant shall submit an acoustical analysis report to the Manager, Building Permits Services, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report in which case it may also satisfy Condition B below.

b. Prior to the issuance of any building permits for residential construction, the applicant shall submit an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards to the Manager, Building Permits Services, for approval

along with satisfactory evidence which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.

c. Prior to the issuance of any building permits, the applicant shall show all freestanding acoustical barriers on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, Building Permits Services. (County of Orange Standard Condition N01)

Multi-Family Residential Development

SC 4.8-4 Prior to the issuance of any certificates of use and occupancy, the applicant shall perform field testing in accordance with Title 24 Regulations to verify compliance with FSTC and FIIC standards if determined necessary by the Manager, Building Inspection Services. In the event such a test was previously performed, the applicant shall provide satisfactory evidence and a copy of the report to the Manager, Building Inspection Services, as a supplement to the previously required acoustical analysis report. (County of Orange Standard Condition N09)

Non-Residential Development

SC 4.8-5 Except when the interior noise level exceeds the exterior noise level, the applicant shall sound attenuate all nonresidential structures against the combined impact of all present and projected noise from exterior noise sources to meet the interior noise criteria as specified in the Noise Element and Land Use/Noise Compatibility Manual.

Prior to the issuance of any building permits, the applicant shall submit to the Manager, Building Permit Services, an acoustical analysis report prepared under the supervision of a County-certified acoustical consultant which describes in detail the exterior noise environment and the acoustical design features required to achieve the interior noise standard and which indicates that the sound attenuation measures specified have been incorporated into the design of the project. (County of Orange Standard Condition N02)

Noise-Generating Equipment (Non-Residential Projects)

SC 4.8-6 Prior to the issuance of any building or grading permits, the applicant shall obtain the approval of the Manager, Building Permits Services of an acoustical analysis report and appropriate plans which demonstrate that the noise levels generated by this project during its operation shall be controlled in compliance with Orange County Codified Ordinance, Division 6 (Noise Control). The report shall be prepared under the supervision of a County-certified Acoustical Consultant and shall describe the noise generation potential of the project during its operation and the noise mitigation measures, if needed, which shall be included in the plans and specifications of the project to assure compliance with Orange County Codified Ordinance, Division 6 (Noise Control). (County of Orange Standard Condition N08)

Other

SC 4.8-7 Prior to the issuance of certificates of use and occupancy, the developer shall produce evidence to the Manager, Building Inspection Services, that the Department of Real Estate has been notified that the project area is adjacent to a regional transportation corridor. The corridor is expected to be a high capacity, high-speed, limited-access facility for motor vehicles, and will have provisions for bus lanes and other mass transit type facilities. (County of Orange Standard Condition N12)

Mitigation Measures

Land Use Compatibility

MM 4.1-2 At the time of Master Area Plan approval for Planning Area 8, the Planning Director shall evaluate the most current RCUZ for MCB Camp Pendleton to ensure that noise sensitive land uses are not constructed in areas that would exceed state noise standards.

Cumulative Vehicular Traffic Noise

MM 4.8-1 For Camino Capistrano, north of Junipero Sera, prior to the issuance of precise grading permits, a detailed acoustical study shall be performed by a qualified acoustical consultant and submitted to the County of Orange to determine the specific height and location of the noise barriers required to meet the County's noise standards. To be effective, a noise barrier is required to have a surface density of at least 3.5 pounds per square foot and have no openings or cracks. It may be constructed as a solid wall, an earthen berm, or a combination of the two. It may be constructed of wood studs with stucco exterior, 1/4-inch plate glass, 5/8-inch Plexiglas, any masonry material, or a combination of these materials.

7.6.4.3 Level of Significance After Mitigation

Implementation of the recommended standard conditions and mitigation measures would reduce all impacts to less than significant levels with the exception of cumulative noise impacts on Camino Capistrano north of Junipero Serra that would require the construction of a sound wall on private residential property. If a sound barriers could be constructed on public right-of-way in a manner to reduce noise levels at the affected residences to below 65 CNEL, the significant impact would be fully mitigated. Where this is not possible due to the topography between the road and the residence, permission to construct a sound wall on the resident's property would be requested. However, at this time, it cannot be guaranteed that this permission would be granted. Therefore, an unavoidable significant noise impact would occur when it is not feasible to construct an effective sound wall on public property and the affected resident does not grant permission for construction of a sound wall on his/her property.

All other impacts would be reduced to less than significant levels with implementation of the recommended Standard Conditions and Regulations and Mitigation Measures.

7.6.5 ALTERNATIVE B-12

7.6.5.1 Impacts

Impact 7.6.5-1: *Construction noise represents a short-term effect on ambient noise levels. Construction conducted consistent with the County of Orange Noise Ordinance would not result in any significant short-term noise impacts.*

Impact 7.6.5-2 *Alternative B-12 project's contribution to cumulative noise would result in significant traffic noise impacts.*

Impact 7.6.5-3 *Prior to mitigation, on-site activities could result in significant noise impacts thereby impacting sensitive receptors.*

Like the B-10 Modified Alternative, the B-12 Alternative assumes 14,000 residential units and a similar amount of non-residential square footage. Therefore, maximum entitlements under Alternatives B-10 Modified and B-12 are comparable. It is anticipated that there could be some differences in traffic-related noise impacts under the B-12 Alternative (as compared with the B-10 Modified Alternative) in the event of a reallocation of residential units/nonresidential square footage between and among the development areas, due to the reduction in size of development areas within Planning Areas 4, 6, 7, and 8, as well as the proposal under Alternative B-12 to retain Cristianitos Road as a private road south of the Ortega Highway. However, such reallocations will not be proposed until master area plans are submitted to the County for each of the planning areas. Therefore, any analysis of the changes would be speculative at this time. Because the maximum levels of development would be unchanged, the significant effects of Alternative B-12 are expected to be similar to those of Alternative B-10 Modified. It should be noted that GPA/ZC EIR 589 anticipated that there could be changes in traffic due to evolving future land development and transportation patterns. Should the updated traffic analysis required at the master area plan stage of subsequent entitlement determine that noise impacts differ, supplemental environmental analysis and mitigation, if required, would be implemented.

As previously noted, there is a private heliport located at the Rancho Mission Viejo headquarters within the RMV Planning Area. As a part of Alternative B-12, this EIS assumes that the heliport would be relocated as a part of the proposed relocation of the headquarters facility. The heliport is used infrequently, approximately four times a year, for aerial tours of the ranch property or other Rancho Mission Viejo business. Typically, operations do not occur during the nighttime hours and this is not projected to change in the future. Areas around the heliport would be exposed to substantial single-event noise levels as helicopters arrive and depart the heliport. These levels could be high enough to interfere with speech in the immediate area around the heliport. However, because of the infrequency of operations, noise levels in the vicinity of the heliport would not approach the County's noise standards. The RMV Planning Area is not significantly impacted by aircraft noise.

7.6.5.2 Mitigation Program

The mitigation program set forth for Alternative B-10 Modified would apply to Alternative B-12. No additional mitigation is required as part of the SAMP.

7.6.5.3 Level Of Significance After Mitigation

The levels of significance after mitigation would be the same for Alternative B-12 as for Alternative B-10 Modified.

7.6.6 ALTERNATIVE A-4

7.6.6.1 Impacts

Impact 7.6.6-1: *Construction noise represents a short-term effect on ambient noise levels. Construction conducted consistent with the County of Orange Noise Ordinance would not result in any significant short-term noise impacts.*

Impact 7.6.6-2 *Alternative A-4's contribution to cumulative noise would result in significant traffic noise impacts.*

Impact 7.6.6-3 *Prior to mitigation, on-site activities could result in significant noise impacts thereby impacting sensitive receptors.*

Alternative A-4 assumes the same amount of development within the same footprint as Alternative B-10 Modified. Under this alternative, a NCCP/MSAA/HCP or SAMP would not be prepared and permitting would proceed with incremental project-by-project review of new development proposals within the RMV Planning Area. Future development would be subject to incremental project-by-project application of local and state regulatory program requirements and would be required to minimize impacts at the project level. Alternative A-4 would have the same noise impacts as Alternative B-10 Modified.

7.6.6.2 Mitigation Program

The mitigation program identified for Alternative B-10 Modified would also apply to Alternative A-4.

7.6.6.3 Level of Significance After Mitigation

The levels of significance after mitigation would be the same for Alternative A-4 as for Alternative B-10 Modified.

7.6.7 ALTERNATIVE A-5

7.6.7.1 Impacts

Impact 7.6.7-1: *Construction noise represents a short-term effect on ambient noise levels. Construction conducted consistent with the County of Orange Noise Ordinance would not result in any significant short-term noise impacts.*

Implementation of Alternative A-5 assumes development would occur on approximately 8,000 acres (35 percent) with approximately 14,815 acres (65 percent) of the RMV Planning Area in open space. This alternative assumes up to 3,000 dwelling units. With 3,000 dwelling units, it is expected that there would be limited employment-generating land uses. New development

would avoid impacts to wetlands regulated under state and federal laws/regulations. Non-wetland Waters of the U.S. regulated by the USACE under Section 404 and non-wetland jurisdictional areas regulated by the state under Sections1601/1603 would be avoided. To ensure total avoidance of state and federal threatened/endangered species, new development would be limited to those portions of RMV Planning Area that are not occupied by state or federally listed species, and for regulated waters, access would be dependent on existing arterial highways and the ranch road network (i.e., the existing dirt/gravel roads) with surfacing limited to existing road widths.

The A-5 Alternative would generate similar short-term construction noise levels when compared to the other RMV Planning Area alternatives, but the duration of construction would be shorter because of less development associated with this alternative. Alternative A-5 would generate approximately 30,000 trips per day. The A-5 Alternative would generate less long-term operational noise when compared to the other alternatives project because of the reduction in development associated with this alternative. In particular, less traffic noise would be generated.

7.6.7.2 Mitigation Program

Many of the elements of the mitigation program identified for Alternative B-10 Modified would also likely apply to Alternative A-5.

7.6.7.3 Level of Significance After Mitigation

The levels of significance after mitigation for construction-related noise impacts would be the same for Alternative A-5 as for Alternative B-10 Modified.

7.7 VISUAL RESOURCES

This chapter focuses on the impacts to visual resources associated with the implementation of the alternatives carried forward for review under the Section 404(b)(1) Guidelines. In general, most actions that would result in visual impacts are outside the USACE's statutory authority and responsibility under Section 404 of the Clean Water Act. The primary responsibility of evaluating and regulating visual resources impacts resides with the County of Orange and the affected cities. As part of the NEPA review, the USACE is analyzing impacts on the environment associated with projects that receive authorizations under Section 404 of the Clean Water Act.

7.7.1 THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, an alternative is considered to have a significant visual resources impact if any of the following occurs:

- The project would substantially degrade the existing visual character or quality of the site and its surroundings.

- The project would result in substantial landform alteration that would adversely affect the visual quality of the area.

- The project would create light, glare, or illumination beyond the physical limits of the project site, which would adversely affect views in the area.

The aesthetic impacts of a project include both the objective visual resource change created by the project and the subjective viewer response to that change. Distance from a project site, frequency of view, length of view, viewer activity, viewer perception, and viewing conditions contribute to the assessment of an aesthetic impact. The physical limits and changes of the views and the quantity of the viewers are objective.

Viewer perception is subjective. The perception of different viewer groups to the visual environment and its elements varies based on viewer activity and awareness. Activities such as commuting in heavy traffic can distract an observer from many aspects of the visual environment. Conversely, pleasure driving or relaxing in a scenic environment can encourage an observer to look at the view more closely and at greater length, thereby increasing the observer's attention to detail. Sensitivity is also determined by how much the viewer has at stake in the viewshed. Typically, people who own property in an area would be more sensitive to change than those just passing through an area.

7.7.2 SAMP PROPOSED PERMITTING PROCEDURES

As discussed previously, the proposed RGP and LOP procedures have been developed for future participants and current participants in the SAMP. The future participants have not yet defined projects for permitting by the RGP or LOP procedures. For projects proposed by future participants that would be eligible for authorization by the maintenance RGP, visual resource impacts would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary impacts to a small area located in a mostly degraded landscape. New permanent impacts of any type are not expected. For projects eligible for authorization by the LOP procedures, not enough is known about the project size and location or potential impacts to analyze potential visual resource impacts at this time. Such projects eligible for authorization by the LOP procedures will be subject to future NEPA review before a final permit decision can be made.

Current participants have defined their proposed project and have undergone extensive pre-application coordination with the USACE and other federal and state agencies. These projects, the SMWD Proposed Project, RMV Proposed Project, and other alternatives that may have significant effects on the environment are as noted in Chapter 6.0. Therefore, the authorization pursuant to the proposed permitting procedures may also have an effect on the environment per the thresholds of significance. These potential effects and minimization/mitigation measures applicable to these potential effects are further discussed below.

7.7.3 SMWD PROPOSED PROJECT

7.7.3.1 Impacts

The SMWD Proposed Project includes ongoing maintenance and operation of existing SMWD facilities and related infrastructure, as well as future proposed facilities, including the proposed Upper Chiquita Reservoir. The operation and maintenance activities would not result in any land use compatibility impacts. The SMWD, as a special district, would serve as the lead agency for its proposed project and would complete its own CEQA environmental analysis for the proposed Upper Chiquita seasonal storage reservoir. The following analysis is based upon the USACE's evaluation of potential environmental effects associated with the construction and operation of the proposed reservoir.

The proposed Upper Chiquita Reservoir site is not located in an area considered to be a scenic vista or near a state or locally designated scenic highway. Implementation of the proposed reservoir would alter the appearance of the site by developing a vacant area with a reservoir facility, ancillary structures, and an access roadway. Although the project has the potential to degrade the existing natural, undisturbed visual character of the site, limited views of the site would only be visible to passing motorists along Oso Parkway and from the SR-241 southbound off-ramp. Residential uses within the Las Flores community located to the west would be visually separated from the Upper Chiquita Reservoir site by intervening topography. No significant impacts are anticipated.

7.7.3.2 Mitigation Program

No visual resources mitigation is expected to be required.

7.7.3.3 Level of Significance After Mitigation

No significant visual impacts associated with the Upper Chiquita reservoir are anticipated.

7.7.4 ALTERNATIVE B-10 MODIFIED

7.7.4.1 Impacts

Impact 7.7.4-1: *Grading activities would significantly alter the existing visual characteristics and topography of the site.*

Landform Alteration

Short-term impacts would fall within several categories of visual change. Mass grading would affect existing topography, vegetation cover, and vistas. Throughout much of the grading, large construction vehicles would be visible from adjacent (and some distant) vantage points. Barren

slopes and new development in various stages of construction would be visible intermittently throughout the implementation of Alternative B-10 Modified.

Implementation of Alternative B-10 Modified would alter the visual characteristics of the RMV Planning Area. Implementation would require approximately 288,461,000 cubic yards (cy) of cut and fill (153,235,000 cy of mass grading and 135,226,000 cy of remedial grading) including cuts to ridgelines and fills in valleys.

Landscaping would involve the replanting of slopes in order to reduce the aesthetic impacts associated with grading, to the extent possible given fuel modification and habitat preservation goals.

Impact 7.7.4-2: *The visual character of the RMV Planning Area visible from several viewpoints will be significantly altered through implementation of the Alternative B-10 Modified project.*

Surrounding Views

A photographic aesthetic impact analysis was conducted from key vantage points within and outside the RMV Planning Area. A Viewshed Analysis Key Map is provided as Figure 7.7-1. The limits of the proposed grading are delineated in the photographs and, therefore, represent a worst-case depiction of the area of disturbance associated with Alternative B-10 Modified.

The following describes the existing views and anticipated impacts associated with the implementation of Alternative B-10 Modified.

View 1a: West of the RMV Planning Area on Ortega Highway in the City of San Juan Capistrano

Figure 7.7-2 depicts Ortega Highway, west of the RMV Planning Area looking east.

Effect: As depicted in View 1a, the RMV Planning Area is not visible from this vantage point. Therefore, no significant impacts would occur. It should be noted that Ortega Highway is planned for widening to a four-lane road in this location, and landscaped as a landscape corridor as part of a future Caltrans road improvement project. These improvements are not a part of Alternative B-10 Modified or any other RMV Planning Area alternative.

View 1b: West of the RMV Planning Area on Ortega Highway in the City of San Juan Capistrano

This view is looking east near the RMV Planning Area boundary on Ortega Highway (Figure 7.7-2).

Effect: The southernmost portion of Planning Area 2 would be visible in the background. Planning Area 2 is located north of Ortega Highway, east of Antonio Parkway, south of Oso Parkway and Tesoro High School, and west of Cañada Gobernadora in Chiquita Canyon. Of the 1,631-acre planning area, 1,025 acres is proposed for development; 606 acres would be in open space. Approximately 37,300,000 cy of cut and fill (18,650,000 cy of mass

grading and 18,650,000 cy of remedial grading) would be required. From this distance (over 1.5 miles), the change in topography and land use from open space to residential development would not result in significant aesthetic impacts because of limited visibility.

View 2: Intersection of Ortega Highway at Antonio Parkway

Figure 7.7-3 shows the proposed development area in Planning Area 1, looking west and northwest, at the southeast corner of the existing intersection of Ortega Highway at Antonio Parkway. The Planned Community of Ladera Ranch is in the background.

Effect: Planning Area 1 is an 810-acre site proposed for a mix of residential, urban activity center uses, and open space uses. Of the 810 acres, approximately 540 acres is proposed for development; 270 acres would be in open space. Approximately 14,250,000 cy of cut and fill (4,500,000 cy of mass grading and 9,750,000 cy of remedial grading) would be required.

From this vantage point, residential development in Planning Area 1 would be visible between La Pata Avenue and Ortega Highway. Urban activity center uses are proposed in Planning Area 1 on three of the four quadrants of the intersection of Ortega Highway at Antonio Parkway/La Pata Avenue. Proposed residential development on the hillside below Ladera Ranch would also be visible from this vantage point. Although the southeast quadrant is partially developed with polo fields and the southwest quadrant contains nursery facilities, the change in character of the site from this public view and the introduction of night lighting is considered a significant impact because of the extent of the change.

View 3: Covenant Hills Development in Ladera Ranch, Unincorporated Orange County

Figure 7.7-4 depicts the project site looking southeasterly towards Planning Areas 1, 2, and 3 from the paved community trail along the southerly edge of Ladera Ranch.

Effect: As depicted in photograph, proposed development in Planning Areas 1, 2, and 3 would be visible from this vantage point. With respect to Planning Area 1, senior housing would be visible in the foreground; residential and urban activity center uses, which include retail, business, and residential uses, would be visible in the background. In the middle/right portion of the photograph, urban activity center uses are proposed on the northeast, northwest, and southwest quadrants of the intersection of Ortega Highway at Antonio Parkway; residential development is proposed in the southeast quadrant of the intersection. Proposed Cow Camp Road would be visible, east of Antonio Parkway, as well as with the vehicular bridge crossing of Cañada Gobernadora Creek. The residential community of Covenant Hills, in the southernmost portion of Ladera Ranch, is under construction and is visible from this vantage point (see development area in far left portion of photograph). Proposed development in Planning Area 1 would be considered a continuation of existing residential development both constructed and under

construction in Ladera Ranch. However, the visibility of land uses and alterations in the landform are considered significant.

Urban activity center uses in Planning Area 2 would be visible from this vantage point. The southerly portion of the proposed development in Planning Area 3 would be visible from this vantage point. The proposed development area is approximately two miles from the vantage point. Based on the distance from this vantage point, no significant aesthetic impacts are anticipated.

View 4: Ortega Highway, East of Antonio Parkway

Figure 7.7-5 depicts the RMV Planning Area looking north from Ortega Highway east of Antonio Parkway.

Effect: Proposed residential development in Planning Area 1 northeast of the intersection of Antonio Parkway at proposed Cow Camp Road would be visible from this vantage point. Cow Camp Road, as it travels in an easterly direction, from its intersection at Antonio Parkway and enters Planning Area 2, as well as the proposed bridge crossing over Chiquita Creek would be visible from this vantage point.

Proposed residential development in the southern portion of Planning Area 2 would also be visible from this vantage point. The middle development area of Planning Area 2 would be partially visible from this location. Based on the thresholds of significance set forth in this EIS, the change in views from this public vantage point, as well as the change in landform and introduction of nighttime lighting, is considered a significant impact.

View 5: West Ridge Trail in Caspers Wilderness Park

Figure 7.7-6 depicts Planning Areas 2, 3, and 5 looking southwest from the West Ridge Trail in Caspers Wilderness Park.

Effect: Proposed residential and urban activity center development, the latter of which also permits residential uses, in Planning Area 2 would be visible from the trail in Caspers Regional Park. As conceptually depicted, the proposed large lot, low-density and conventional residential development in Planning Area 3 would be visible in the foreground from this vantage point. A small portion of the proposed residential development area in Planning Area 5 would also be visible from this vantage point. Existing residential development in Coto de Caza is also visible from this location. Due to the proximity of change in visual character that would occur in Planning Area 3 near this existing County park trail, implementation of Alternative B-10 Modified would result in significant aesthetic impacts.

View 6: West Ridge Trail in Caspers Wilderness Park

Figure 7.7-7 depicts views of Planning Areas 2 and 3 from the West Ridge Trail that traverses the most westerly ridgeline in Caspers Wilderness Park. At points along the 2.2-mile trail, hikers and bicycle riders would have views into the RMV Planning Area.

Effect: Proposed Planning Area 3 residential development would be visible in the foreground from this vantage point. Proposed Planning Area 2 development, the Chiquita Canyon arterial road alignment, and the bridge crossing Cañada Gobernadora Creek (from Planning Area 2 into Planning Area 3) would also be visible in the background from this public vantage point. Changes to the topography and character from this vantage point would result in significant aesthetic impacts.

View 7: Ortega Highway at Verdugo Canyon

Figure 7.7-8 depicts a portion of Planning Area 4 looking southwest from Ortega Highway at Verdugo Canyon.

Effect: As conceptually depicted, the proposed residential development in Planning Area 4 would be visible to the Ortega Highway commuter traffic and the local traffic as it exits Verdugo Canyon. The foreground views of proposed development may be partially obscured by proposed landscaping (e.g., trees and walls) associated with residences in the planning area. Although implementation of residential development in this location would result in a change in land use, the proposed development area has been subject to disturbance and development. Therefore, implementation of residential development is not considered to result in a substantial degradation of the visual quality of the area of site and, therefore, is not considered a significant impact.

View 8: Ortega Highway at Cristianitos Road

Figure 7.7-9 shows Planning Areas 2 and 3 looking north from Ortega Highway.

Effect: Much of the residential development proposed in Planning Areas 2 and 3 would be visible from this vantage point. The foreground views would continue to be dominated by the floodplain of San Juan Creek. Future residences in Planning Area 3 may obscure the proposed alignment of Cow Camp Road; the bridge crossing from Planning Area 3 to Planning Area 2 would be visible. Implementation of residential development in this location would result in a change in land use from open space, orchards, and existing ranch uses. Although portions of the site visible from Ortega Highway are disturbed from industrial lease operations and agricultural activities, the change in character of the area is considered a significant aesthetic impact.

View 9: North of Ortega Highway at San Juan Creek

Figure 7.7-10 is a view of Planning Area 5 looking south from the northern bank of San Juan Creek.

Effect: Proposed residential development of the northern portion of Planning Area 5 would be visible from this vantage point. The foreground San Juan Creek floodplain, lower elevation hills, and background higher-elevation ridges would continue to be visible. The change in the topographical character and change of land use of the planning area visible from this public roadway is considered a significant impact.

View 10: Donna O'Neill Land Conservancy

Figure 7.7-11 depicts Planning Areas 3 through 8, as well as the proposed alignment of Cristianitos Road looking north and east from the Donna O'Neill Land Conservancy.

Effect: Planning Area 3 is proposed for residential and urban activity center uses. Planning Areas 4, 7, and 6 are proposed exclusively for residential development. Planning Area 8 is proposed for residential and business park uses. The change in land use from open space to urban land uses, as well as changes to the topographical character of the area, would result in significant aesthetic impacts from this vantage point.

View 11: End of Avenida Pico/Cristianitos Road in the City of San Clemente

Figure 7.7-12 depicts Planning Area 8 from the existing terminus of Avenida Pico/Cristianitos Road in the Planned Community of Talega, looking northeasterly. Avenida Pico would enter Planning Area 8 in this location.

Effect: The proposed extension of Avenida Pico/Cristianitos Road would cross Cristianitos Creek via a bridge crossing and enter the southern development area of proposed Planning Area 8. The Talega Apartment Community is visible on the northern side of Avenida Pico. Residents of this apartment complex will be able to view residential and business park uses in the southern developed portion of Planning Area 8. The Northrop Grumman site is visible from this vantage point and would be demolished to facilitate development in Planning Area 8. Although the proposed land uses are consistent and compatible with existing land uses in Talega, the extensive grading (approximately 48,141,000 cy of cut and fill) necessary to implement proposed land uses would result in changes to the visual character of the area that are considered significant.

View 12: Near I-5 at Cristianitos Road

Figure 7.7-13 depicts Planning Area 8 looking northeast from the I-5 off-ramp area for Cristianitos Road in the City San Clemente.

Effect: The proposed southern development of Planning Area 8 would be visible in the distant view (approximately 3.8 miles). MCB Camp Pendleton and the existing San Diego Gas & Electric electrical tower easement lines are visible in the foreground. The existing Northrop Grumman facilities would be demolished to allow for the implementation of residential development. Extensive grading would be required. Although the proposed development is not proximate to the vantage point, the view of Planning Area 8 is not obscured. The change in topographical character and visibility of development are considered significant aesthetic impacts.

Impact 7.7.4-3: *Foreground, middleground, and background ridgelines located in landscape zones would be significantly impacted by project grading to allow for the implementation of proposed land uses.*

Ridgeline Modifications

Figure 7.7-14 identifies ridgelines that would be impacted by development of Alternative B-10 Modified. Ridgelines significantly impacted by grading activities associated with development (landform alteration) are listed below by planning area:

Planning Area 1: The westerly foreground ridgeline (under 600 feet), identified in the *City of San Juan Capistrano General Plan*, would be impacted by proposed grading. Please note that this ridgeline is identified on the city's General Plan but is located outside of the city's boundaries. The ridgeline would be visible from the following vantage points:

- View 2: Ortega Highway at Antonio Parkway
- View 3: Covenant Hills in Ladera Ranch, unincorporated Orange County

Planning Area 2: The southern portion of the westerly Planning Area 2 foreground ridgeline (under 600 feet) would be impacted by proposed grading which is anticipated to be visible from the following vantage points:

- View 1b: Easterly from Ortega Highway prior to the entrance to the RMV Planning Area in the City of San Juan Capistrano
- View 3: Covenant Hills Development in Ladera Ranch, unincorporated Orange County
- View 4: North from Ortega Highway
- View 5: West Ridge Trail in Caspers Wilderness Park
- View 6: West Ridge Trail in Caspers Wilderness Park

The easterly Planning Area 2 foreground ridgeline would be preserved and result in no grading impacts.

Planning Area 3: Proposed grading would impact two central Planning Area 3 ridgelines. These ridgelines are classified as middleground ridgelines (600 to 1,000 feet) in the northern portion of Planning Area 3 and foreground ridgelines (under 600 feet) in the mid-southern portion of Planning Area 3. These two ridgelines are anticipated to be visible from the following vantage points:

- View 3: Convenant Hills in Ladera Ranch, unincorporated Orange County
- View 5: West Ridge Trail in Caspers Wilderness Park
- View 6: West Ridge Trail in Caspers Wilderness Park
- View 8: Northwest from Ortega Highway
- View 10: Donna O'Neill Land Conservancy

Planning Area 5: The northern portion of the background ridgeline (over 1,000 feet) at the western edge of Planning Area 5 would be impacted by proposed grading which is anticipated to be visible from the following vantage points:

- View 5: West Ridge Trail in Caspers Wilderness Park
- View 9: Ortega Highway at San Juan Creek
- View 10: Donna O'Neill Land Conservancy

Planning Area 7: Two eastern middleground ridgelines (between 600 and 1,000 feet) would be impacted by proposed grading which is anticipated to be visible from the following vantage point:

- View 10: Donna O'Neill Land Conservancy

Planning Area 8: Two eastern middleground ridgelines (between 600 and 1,000 feet) would be impacted by proposed grading which is anticipated to be visible from the following vantage points:

- View 11: End of Avenida Pico/Cristianitos Road in the City of San Clemente
- View 12: Near I-5 at Cristianitos Road
- View 10: Donna O'Neill Land Conservancy

Impact
7.7.4-4: *Views from some recreational area vantage points within wilderness parks would be significantly impacted by project grading and associated development activities. Changes in the character would be significant.*

Wilderness Parks

Aesthetic impacts associated with proposed grading and associated development are anticipated to be visible from, but not limited to, the following vantage points:

- View 5: West Ridge Trail in Caspers Wilderness Park
- View 6: West Ridge Trail in Caspers Wilderness Park

It should be noted that the Cleveland National Forest is not considered to be affected because there are no publicly accessible roads or trails within the forest proximate to the RMV Planning Area.

Impact
7.7.4.-5: *Alternative B-10 Modified would introduce new sources of nighttime lighting and the potential for glare. The change in character of the RMV Planning Area through the introduction of land uses requiring night lighting and the potential for the use of building materials resulting in glare is considered significant.*

Night Lighting and Glare

Development and construction of Alternative B-10 Modified would introduce new sources of nighttime light into the area. New light sources are anticipated to occur from the illumination of on-site structures such as commercial buildings and recreational uses (i.e., signage, interior and exterior lighting), residences (i.e., interior and exterior lighting), and street and vehicle lights. The most prominent light source is expected to originate from the proposed sports park in Planning Area 3. The goal of lighting a sports facility is to provide an appropriately illuminated environment for players and spectators for nighttime activities. Light "spills" when it shines beyond the sports facility and illuminates an unintended area. The amount of light spill, measured in foot-candles, is a function of distance and intensity of the light source.

To determine if light and glare that would occur with implementation of Alternative B-10 Modified would result in a significant impact, some basic information regarding light and glare is provided.

Light Scales

Illuminance is the amount of total light received from a source by a unit of surface area. Illumination is measured in foot-candles of light. One candlepower is approximately equal to the light emitted from one candle, and a foot-candle is the amount of light produced by this candle on one-square-foot of a spherical surface one foot from the light source. Illuminance values for natural outdoor light levels are listed in Table 7.7-1. This table is provided for informational purposes to provide the reader with the range of illuminance associated with natural and man-made light sources.

TABLE 7.7-1
SCENE ILLUMINATION UNDER VARIOUS OUTDOORS CONDITIONS

Lighting Conditions	Scene Illuminance (Foot-candles)
Direct Sunlight	10,000
Full Daylight	1,000
Overcast Day	100
Very Dark Day	10
Twilight	1
Deep Twilight	0.1
Full Moon	0.01
Quarter Moon	0.001
Starlight	0.0001
Overcast Starlight	0.00001
Source: User's Manual, Tetronix Digital Photometer.	

As a part of Alternative B-10 Modified, land uses will introduce night lighting associated with outdoor structure lighting, street fixtures, recreational facilities, signage, etc. Although these light sources are not expected to extend beyond the physical limits of the RMV Planning Area, they have the potential and spillage to create night glow in an area that has very limited night light sources. This change is considered a significant impact.

Glare is defined as the sensation produced when brightness of an object is greater than the brightness to which the eyes are adapted. Glare, a function of candlepower, may be caused directly by a lamp or indirectly from the reflection of surrounding surfaces within the field of view.

The presence of glare is frequently a subjective issue. In such cases, the magnitude of glare may prove of less importance than its very presence. When glare is excessive, it can cause discomfort, reduction of visibility, and even momentary loss of vision. This EIS has been prepared to address potential impacts at a programmatic-level of analysis; no site-specific development is proposed at this time within the RMV Planning Area. Although the intent of the applicant would be to site structures in a manner that would preclude glare impacts that could affect the safety of motorists, the potential for glare impacts is considered a significant impact.

7.7.4.2 Mitigation Program

In conjunction with the approval of the GPA/ZC project, the County of Orange adopted a mitigation program to reduce visual resource impacts associated with Alternative B-10 Modified. These measures are listed below to provide the reader context of the mitigation program, although these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. No additional mitigation is required for Alternative B-10 Modified as part of the SAMP.

Project Design Features

PDF4.10-1 Approximately two-thirds of the project site shall be retained in open space.

PDF4.10-2 A 1,000-foot-wide buffer shall be provided between Coto de Caza and the project site.

PDF 4.10-3 Within Planning Area 4 and along the easterly development edge of Planning Area 3 adjacent to Caspers Wilderness Park, the exterior lighting shall be designed and located to confine direct rays to the premises. In addition, parking lots and lighting within Planning Area 4 and along the easterly development edge of Planning Area 3 shall be designed and constructed in a manner that minimizes the diffusion of refractive light into surrounding neighborhoods and/or into the night sky.

PDF 4.10-4 Within Planning Area 4 and along the easterly development edge of Planning Area 3 adjacent to Caspers Wilderness Park, the applicant shall demonstrate that the exterior walls, and particularly the roofing materials, of residences and businesses visible from Caspers Regional Park are compatible with the natural surroundings.

Standard Conditions and Regulations

Many standard conditions and regulations are enacted at subsequent levels of approval. The following are the County of Orange Standard Conditions that would apply to Alternative B-10 Modified. These are listed because they would be applicable at subsequent levels of approvals (i.e., grading permits and tract maps). The number of the standard condition is listed in parentheses at the end of each condition.

SC4.10-1 The applicant shall install landscaping, equip for irrigation, and improvements on lots in accordance with an approved plan as stated below:

A. Detailed Plan − Prior to the issuance of any building permit(s), the applicant shall submit a detailed landscape plan showing the detailed irrigation and landscaping design to the Manager, Subdivision and Grading for approval, in

consultation with the Manager HBP/Program Management. Detailed plans shall show the detailed irrigation and landscaping design and shall take into account the previously approved landscape plan for the Ranch Plan project, the County Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

B. Installation Certification − Prior to the issuance of final certificates of use and occupancy and the release of financial security, if any, guaranteeing the landscape improvements, said improvements shall be installed and shall be certified by a licensed landscape architect or licensed landscape contractor, as having been installed in accordance with the approved detailed plans. The applicant shall furnish said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report determined applicable, to the Manager, Construction, and the Manager, Building Inspection Services, prior to the issuance of any certificates of use and occupancy. (County of Orange Standard Conditions of Approval, LA01b)

SC4.14-2 A. Prior to the issuance of precise grading permits, the applicant shall prepare a detailed landscape plan for privately maintained common areas which shall be reviewed and approved by the Manager, Subdivision and Grading. The plan shall be certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account the approved preliminary landscape plan (if any), County Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

B. Prior to the issuance of certificates of use and occupancy, applicant shall install said landscaping and irrigation system and shall have a licensed landscape architect or licensed landscape contractor, certify that it was installed in accordance with the approved plan.

C. Prior to the issuance of any certificates of use and occupancy, the applicant shall furnish said installation certification, including an irrigation management report for each landscape irrigation system, and any other implementation report determined applicable, to the Manager, Building Inspection Services. (County of Orange Standard Conditions of Approval, LA02b)

SC4.10-3 Prior to issuance of any building permit, the applicant shall demonstrate that all exterior lighting has been designed and located so that all direct rays are confined to the property in a manner meeting the approval of the Manager, Building Permit. (County of Orange Standard Conditions of Approval, LG01)

Mitigation Measures

Night Lighting

Please also refer to Section 7.1, Non-Aquatic Biological Resources, which addresses night lighting related to wildlife movement corridors.

MM 4.10-1 All lighting along the perimeter of natural areas, particularly street lights, shall be downcast luminaries and shall be shielded and oriented in a manner that will prevent spillage or glare into the remaining natural and open space areas. Final lighting orientation and design shall be to the satisfaction of the County of Orange, Manager, Building Permits. Prior to final inspection or issuance of a certificate of occupancy, where applicable, the Manager, Building Permit, shall cause to be performed a photometric field inspection of the approved lighting system for the project. The inspection shall verify the proper construction and installation of materials within the approved plan, determine the actual light patterns and values through light meter testing and observation, and determine the extent of any errant lighting. Deviations and/or violations shall be corrected prior to the final clearance for the project.

7.7.4.3 Level Of Significance After Mitigation

Alternative B-10 Modified involves altering the existing natural visual characteristics of the RMV Planning Area through the grading and construction of residential, urban activity center, commercial, business park, and recreational uses. The alternative incorporates design features and would implement County of Orange standard conditions and requirements and mitigation measures that would apply at the time of subsequent approvals, for the purpose of reducing visual disruption associated with this change in uses. However, to the extent that the open space appearance of the predominantly undeveloped portion of the RMV Planning Area would be irreversibly lost, this significant impact is unavoidable. Also, implementation of Alternative B-10 Modified would result in significant lighting impacts. After mitigation, there would also be incremental increases in light levels that are considered significant and unavoidable.

7.7.5 ALTERNATIVE B-12

7.7.5.1 Impacts

Impact 7.7.5-1: *Grading activities would significantly alter the existing visual characteristics and topography of the site.*

Landform Alteration

As with Alternative B-10 Modified, Alternative B-12 would result in landform alterations. Mass grading would affect existing topography, vegetation cover, and vistas. Throughout much of the grading, large construction vehicles would be visible from adjacent (and some distant) vantage points. Barren slopes and new development in various stages of construction would be visible intermittently throughout the implementation of Alternative B-12.

Implementation of Alternative B-12 would alter the visual characteristics of the RMV Planning Area. It is anticipated that Alternative B-12 would require less cut and fill grading when compared to Alternative B-10 Modified because less land would be developed. Alternative B-12

assumes development on 5,873 acres with 16,942 acres in open space. Less grading would occur in Planning Areas 2, 4, and 8. With the exception of additional orchards in Planning Areas 6 and 7 and the relocation of the Rancho Mission Viejo headquarters to Planning Area 7, no development would occur within these two planning areas. Planning Area 9 has been eliminated.

Landscaping would involve the replanting of slopes in order to reduce the aesthetic impacts associated with grading, to the extent possible given fuel modification and habitat preservation goals.

Impact
7.7.5-2: *The visual character of the RMV Planning Area visible from several viewpoints will be significantly altered through implementation of the Alternative B-12 project.*

Surrounding Views

The following identifies the views locations and whether development associated with Alternative B-12 would be considered a significant impact.

View 1a: ***West of the RMV Planning Area on Ortega Highway in the City of San Juan Capistrano (Figure 7.7-2)***

Effect: Not visible; no significant impacts.

View 1b: ***West of the RMV Planning Area on Ortega Highway in the City of San Juan Capistrano (Figure 7.7-2)***

Effect: Southernmost portion of Planning Area 2 would be visible in the background; not a significant impact because of limited visibility.

View 2: ***Intersection of Ortega Highway at Antonio Parkway (Figure 7.7-3)***

Effect: Development in the 566-acre Planning Area 1 would be visible. The change in character of the site from this public view and the introduction of night lighting is considered a significant impact because of the extent of the change.

View 3: ***Covenant Hills Development in Ladera Ranch, Unincorporated Orange County (Figure 7.7-4)***

Effect: Proposed development in Planning Areas 1, 2, and 3 would be visible from this vantage point. The visibility of land uses and alterations in the landform associated with Planning Area 1 are considered significant. Because of the distance from this vantage point (approximately two miles), no significant aesthetic impacts associated with Planning Areas 2 and 3 are anticipated.

View 4: ***Ortega Highway, East of Antonio Parkway (Figure 7.7-5)***

Effect: Proposed development in Planning Area 1 northeast of the intersection of Antonio Parkway at proposed Cow Camp Road would be visible from this vantage point. Proposed development in the southern portion of Planning Area 2 would also be visible from this vantage point. The change

in views from this public vantage point, as well as the change in landform and introduction of nighttime lighting, is considered a significant impact.

View 5: West Ridge Trail in Caspers Wilderness Park (Figure 7.7-6)

Effect: Proposed development in Planning Area 2 is not expected to be would be visible from the trail in Caspers Regional Park. Development in Planning Area 3 would be visible in the foreground from this vantage point. A small portion of the proposed development area in Planning Area 5 would also be visible from this vantage point. Existing residential development in Coto de Caza is also visible from this location. Implementation of Alternative B-12 would result in significant aesthetic impacts.

View 6: West Ridge Trail in Caspers Wilderness Park (Figure 7.7-7)

Effect: Proposed Planning Area 3 development would be visible in the foreground from this vantage point. Planning Area 2 development, the Chiquita Canyon arterial road alignment, and the bridge crossing Cañada Gobernadora Creek (from Planning Area 2 into Planning Area 3) would also be visible in the background from this public vantage point. Changes to the topography and character from this vantage point would result in significant aesthetic impacts.

View 7: Ortega Highway at Verdugo Canyon (Figure 7.7-8)

Effect: From this location, proposed development in Planning Area 4 would be visible to the Ortega Highway commuter traffic and the local traffic as it exits Verdugo Canyon. Although implementation development in this location would result in a change in land use, the proposed development area has been subject to disturbance and development. This would not be considered a significant impact.

View 8: Ortega Highway at Cristianitos Road (Figure 7.7-9)

Effect: Much of the development proposed in Planning Areas 2 and 3 would be visible from this vantage point. The foreground views would continue to be dominated by the floodplain of San Juan Creek. Implementation of development in this location would result in a change in land use from open space, orchards, and existing ranch uses. Although portions of the site visible from Ortega Highway are disturbed, the change in character of the area is considered a significant aesthetic impact.

View 9: North of Ortega Highway at San Juan Creek (Figure 7.7-10)

Effect: Proposed development of the northern portion of Planning Area 5 would be visible from this vantage point. The change in the topographical character and change of land use of the planning area visible from this public roadway is considered a significant impact.

View 10: Donna O'Neill Land Conservancy (Figure 7.7-11)

Effect: Planning Areas 3, 4, and 8. As opposed to residential development in Planning Areas 6 and 7 associated with the B-10 Modified Alternative, the B-12 Alternative would limit uses in Planning Areas 6 and 7 to orchards and the relocated Rancho Mission Viejo headquarters facility. Although less area would be disturbed (when compared to Alternative B-10 Modified), the change in land use from open space to urban land uses, as well as changes to the topographical character of the area, would result in significant aesthetic impacts from this vantage point.

View 11: End of Avenida Pico/Cristianitos Road in the City of San Clemente (Figure 7.7-12)

Effect: The proposed extension of Avenida Pico/Cristianitos Road would cross Cristianitos Creek via a bridge crossing and enter the southern portion of Planning Area 8. Depending on the siting of future development in Planning Area 8, existing apartment residences in Talega may be able to view proposed development in the planning area. The Northrop Grumman site is visible from this vantage point and would be demolished. The expected extensive grading needed to develop Planning Area 8 would result in changes to the visual character of the area that are considered significant.

View 12: Near I-5 at Cristianitos Road (Figure 7.7-13)

Effect: Planning Area 8 would be visible in the distant view (approximately 3.8 miles). Depending on where future development is sited will determine whether these uses would be visible from this viewpoint. The change in topographical character and visibility of development are considered significant aesthetic impacts.

Impact 7.7.5-3: *Foreground, middleground, and background ridgelines located in landscape zones would be significantly impacted by project grading to allow for the implementation of proposed land uses.*

Ridgeline Modifications

Ridgelines expected to be significantly impacted by grading activities associated with development (landform alteration) of Alternative B-12 are listed below by planning area:

Planning Area 1

- View 2: Ortega Highway at Antonio Parkway
- View 3: Covenant Hills in Ladera Ranch, unincorporated Orange County

Planning Area 2

- View 1b: Easterly from Ortega Highway prior to the entrance to the RMV Planning Area in the City of San Juan Capistrano

- View 3: Covenant Hills Development in Ladera Ranch, unincorporated Orange County
- View 4: North from Ortega Highway
- View 5: West Ridge Trail in Caspers Wilderness Park
- View 6: West Ridge Trail in Caspers Wilderness Park

Planning Area 3

- View 3: Convenant Hills in Ladera Ranch, unincorporated Orange County
- View 5: West Ridge Trail in Caspers Wilderness Park
- View 6: West Ridge Trail in Caspers Wilderness Park
- View 8: Northwest from Ortega Highway
- View 10: Donna O'Neill Land Conservancy

Planning Area 5

- View 5: West Ridge Trail in Caspers Wilderness Park
- View 9: Ortega Highway at San Juan Creek
- View 10: Donna O'Neill Land Conservancy

Planning Area 8

- View 11: End of Avenida Pico/Cristianitos Road in the City of San Clemente
- View 12: Near I-5 at Cristianitos Road
- View 10: Donna O'Neill Land Conservancy

Impact 7.7.5-4: *Views from some recreational area vantage points within wilderness parks would be significantly impacted by project grading and associated development activities. Changes in the character would be significant.*

Wilderness Parks

Aesthetic impacts associated with proposed grading and associated development are anticipated to be visible from, but not limited to, the following vantage points:

- View 5: West Ridge Trail in Caspers Wilderness Park
- View 6: West Ridge Trail in Caspers Wilderness Park

Cleveland National Forest is not considered to be affected because there are no publicly accessible roads or trails within the forest proximate to the RMV Planning Area.

Impact

7.7.5.-5: *Alternative B-12 would introduce new sources of nighttime lighting and the potential for glare. The change in character of the RMV Planning Area through the introduction of land uses requiring night lighting and the potential for the use of building materials resulting in glare is considered significant.*

Night Lighting and Glare

Development and construction of Alternative B-12 would introduce new sources of nighttime light into the area. New light sources are anticipated to occur from the illumination of on-site structures such as commercial buildings and recreational uses (i.e., signage, interior and exterior lighting), residences (i.e., interior and exterior lighting), and street and vehicle lights.

As a part of Alternative B-12, land uses will introduce night lighting associated with outdoor structure lighting, street fixtures, recreational facilities, signage, etc. Although these light sources are not expected to extend beyond the physical limits of the RMV Planning Area, they have the potential and spillage to create night glow in an area that has very limited night light sources. This change is considered a significant impact. Although the intent of the applicant would be to site structures in a manner that would preclude glare impacts that could affect the safety of motorists, the potential for glare impacts is considered a significant impact.

7.7.5.2 Mitigation Program

The mitigation program set forth for Alternative B-10 Modified would also be applicable to Alternative B-12.

7.7.5.3 Level Of Significance After Mitigation

Alternative B-12 involves altering the existing natural visual characteristics of the RMV Planning Area through the grading and construction of residential, urban activity center, commercial, business park, and recreational uses. The alternative incorporates design features and would implement County of Orange standard conditions and requirements and mitigation measures that would apply at the time of subsequent approvals, for the purpose of reducing visual disruption associated with this change in uses. However, to the extent that the open space appearance of the predominantly undeveloped portion of the RMV Planning Area would be irreversibly lost, this significant impact is unavoidable. Also, implementation of Alternative B-12 would result in significant lighting impacts. After mitigation, there would also be incremental increases in light levels that are considered significant and unavoidable.

7.7.6 ALTERNATIVE A-4

7.7.6.1 Impacts

Impact

7.7.6-1: *Grading activities would significantly alter the existing visual characteristics and topography of the site.*

Impact
7.7.6-2: *The visual character of the RMV Planning Area visible from several viewpoints will be significantly altered through implementation of the Alternative A-4 project.*

Impact
7.7.6-3: *Foreground, middleground, and background ridgelines located in landscape zones would be significantly impacted by project grading to allow for the implementation of proposed land uses.*

Impact
7.7.6-4: *Views from some recreational area vantage points within wilderness parks would be significantly impacted by project grading and associated development activities. Changes in the character would be significant.*

Impact
7.7.6.-5: *Alternative A-4 would introduce new sources of nighttime lighting and the potential for glare. The change in character of the RMV Planning Area through the introduction of land uses requiring night lighting and the potential for the use of building materials resulting in glare is considered significant.*

Impacts associated with Alternative A-4 would be the same as the impacts that would occur with Alternative B-10 Modified because the land area proposed for development is the same with both alternatives.

7.7.6.2 Mitigation Program

The mitigation program set forth for Alternative B-10 Modified would also be applicable to Alternative A-4.

7.7.6.3 Level Of Significance After Mitigation

The level of significance after mitigation would be the same for Alternative A-4 as Alternative B-10 Modified. To the extent that the open space appearance of the predominantly undeveloped portion of the RMV Planning Area would be irreversibly lost, this significant impact is unavoidable. Alternative A-4 would result in significant lighting impacts. After mitigation, there would also be incremental increases in light levels that are considered significant and unavoidable.

7.7.7 ALTERNATIVE A-5

7.7.7.1 Impacts

Impact
7.7.7-1: *Grading activities would significantly alter the existing visual characteristics and topography of the site.*

Impact
7.7.7-2: *The visual character of the RMV Planning Area visible from several viewpoints will be significantly altered through implementation of the Alternative A-5 project.*

Impact 7.7.7-3: *Foreground, middleground, and background ridgelines located in landscape zones would be significantly impacted by project grading to allow for the implementation of proposed land uses.*

Impact 7.7.7-4: *Views from some recreational area vantage points within wilderness parks may be significantly impacted by project grading and associated development activities. Changes in the character would be significant.*

Impact 7.7.7.-5: *Alternative A-5 would introduce new sources of nighttime lighting and the potential for glare. The change in character of the RMV Planning Area through the introduction of land uses requiring night lighting and the potential for the use of building materials resulting in glare is considered significant.*

Impacts associated with Alternative A-5 are expected to be less than would be associated with Alternatives B-10 Modified, B-12, or A-4 because less development would be implemented and less area would be disturbed. Alternative A-5 assumes up to 3,000 estate lots within a development footprint of up to 8,000 acres with 14,815 acres in open space. This alternative also assumes that a portion of the undevelopable portion of each residential lot would extend into open space areas and that other avoidance areas such as in Planning Area 3 would be included within the development envelope as community open space amenity areas. However, because it is unknown where individual estate lots would be sited within the development footprint, the exact locations where development would be visible cannot be determined at a programmatic-level of analysis. Although this alternative would be expected to result in a reduction in the severity of the visual impacts when compared to the other alternatives, implementation of Alternative A-5 within the RMV Planning Area is expected to require grading, be visible from existing viewpoints, may be visible from wilderness parks, and would introduce nighttime lighting. These changes in the character of the RMV Planning Area are considered significant visual impacts of Alternative A-5.

7.7.7.2 Mitigation Program

The mitigation program set forth for Alternative B-10 Modified would also be applicable to Alternative A-5.

7.7.7.3 Level Of Significance After Mitigation

Although the significance of the change would be less for Alternative A-5 when compared to the other alternatives, to the extent that the open space appearance of the predominantly undeveloped portion of the RMV Planning Area would be irreversibly lost, this significant impact is unavoidable. Alternative A-5 would result in significant lighting impacts. After mitigation, there would also be incremental increases in light levels that are considered significant and unavoidable.

7.8 CULTURAL RESOURCES

This chapter focuses on the impacts to cultural resources with the implementation of the alternatives carried forward for review under the Section 404(b)(1) Guidelines. Impacts to cultural resources attributable to USACE permit action depend on the physical relationship between the location of the cultural resource and the scope of analysis taken by the USACE. As part of the NEPA review, the USACE is analyzing impacts on the environment associated with projects that receive authorizations under Section 404 of the Clean Water Act.

7.8.1 THRESHOLDS OF SIGNIFICANCE

As addressed in Chapter 4.1.10, the federal government has developed laws and regulations designed to protect cultural resources that may be affected by actions undertaken, regulated, or funded by federal agencies. The National Historic Preservation Act (NHPA) of 1966 established the Advisory Council on Historic Preservation and State Historic Preservation Officers (SHPO) to assist federal and state officials regarding matters related to these resources. Section 106 of the Act requires federal agencies to consider the effects of an action on cultural resources (prehistoric and historic resources) in or eligible for listing in the National Register of Historic Places (NRHP). The administering agency, the Advisory Council on Historic Preservation, has authored regulations implementing Section 106 located in 36 Code of Federal Regulations (CFR) Part 800, *Protection of Historic Properties* (revised January 11, 2001).

The proposed SAMP permitting procedures are considered an undertaking, and therefore must comply with the NHPA. The NHPA regulations provide detailed procedures called the Section 106 process by which the assessment of impacts on archaeological and historical resources, as required by the Act, is implemented. NEPA addresses compliance with the NHPA; the required environmental documentation (whether it be an environmental assessment or an environmental impact statement) must discuss cultural resources.

In accordance with the NHPA, three steps are required for NHPA compliance: (1) identification of significant resources that may be affected by an undertaking, (2) assessment of project impacts on those resources, and (3) development and implementation of mitigation measures to offset or eliminate adverse impacts. All three steps require consultation with interested Native American Indian tribes, local governments, and other interested parties.

The consultation process is discussed in 36 CFR Part 800.3. Section 800.4 sets out the steps the lead agency must follow to identify historic properties. The NRHP eligibility determinations are discussed in 36 CFR Part 800.4(c)(1).

Cultural resources that are determined eligible for listing in the NRHP, along with SHPO concurrence, are termed “historic properties” under Section 106 and are afforded the same protection as sites listed in the NRHP.

7.8.1.1 Results of Identification and Evaluation

Results of literature searches, field surveys, and tribal consultation are coordinated with the SHPO staff. Regulations stipulate that when the lead agency finds that either there are no historic properties present or there are historic properties present but the undertaking would have no effect upon them, then the lead agency will make a “no historic properties affected” determination (36 CFR Part 800.4(d)). If the lead agency finds that there are historic properties which may be affected by the undertaking, the lead agency will make a “historic properties affected” determination.

7.8.1.2 Assessment of Adverse Effects

In accordance with 36 CFR Part 800.5 of the Advisory Council on Historic Preservation's implementing regulations (criteria of adverse effects) impacts on cultural resources are considered significant if one or more of the following conditions would result from implementation of the proposed action:

(a) An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the NRHP. For the purpose of determining the type of effect, alteration to features of a property's location, setting, or use may be relevant depending on a property's significant characteristics and should be considered.

(b) An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:

1. Physical destruction, damage, or alteration of all or part of the property;

2. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the NRHP;

3. Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;

4. Neglect of a property resulting in its deterioration or destruction;

5. Transfer, lease, or sale of the property.

7.8.2 SAMP PROPOSED PERMITTING PROCEDURES

7.8.2.1 Prehistoric and Historic Archaeological Resources Impacts

Impact 7.8.2-1: *Grading and construction activities future projects eligible for the proposed RGP and LOP procedures could impact NRHP-eligible/potentially eligible archaeological and historic sites.*

As discussed previously, the proposed RGP and LOP procedures have been developed for future participants and current participants in the SAMP. The future participants have not yet defined projects for permitting by the RGP or LOP procedures. For projects proposed by future participants that would be eligible for authorization by the maintenance RGP, impacts to cultural resources would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary impacts to a small area located in a mostly degraded landscape. Within a degraded landscape, any cultural resource would have been impacted some time ago. Cultural resources are mainly affected when there is maintenance involving a historical structure greater than 50 years old. In such cases, the USACE is required to consult with SHPO to assess the eligibility of the structure for the National Register of Historic Places. However, for the most part, impacts are not expected under the RGP from these localized maintenance activities.

For projects eligible for authorization by the LOP procedures, not enough is known about the project size and location or potential impacts to analyze potential impacts to cultural resources. Such projects eligible for authorization by the LOP procedures would be subject to future NEPA review before a final permit decision can be made.

7.8.2.2 Mitigation Requirements

The following mitigation measure would be required by the USACE:

1. No activity that may affect historic properties listed, or eligible for listing, on the National Historic Register of Historic Places is authorized, until the U.S. Army Corps of Engineers (USACE) has complied with the National Historic Preservation Act. If the proposed activity may affect any historic properties listed, determined to be eligible, or may be eligible for listing on the National Register of Historic Places, the prospective permittee shall not begin the activity until notified by the USACE that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Office of Historic Preservation (SHPO) and the National Register of Historic Places.

7.8.2.3 Level of Significance After Mitigation

With implementation of the mitigation program, potential impacts to prehistoric archaeological and historic resources could be reduced to a level considered less than significant.

7.8.3 SMWD PROPOSED PROJECT

7.8.3.1 Prehistoric and Historic Archaeological Resources Impacts

Impact 7.8.3-1: *Grading and construction activities associated with the Upper Chiquita Reservoir would have the potential to impact NRHP-eligible/potentially eligible archaeological sites.*

The SMWD Proposed Project includes the proposed Upper Chiquita domestic water storage reservoir and ongoing operation and maintenance activities. The ongoing operational and maintenance activities are not expected to result in any new significant impacts to cultural resources. All operational and maintenance activities at existing SMWD facilities are assumed to involve no new development/construction activities.

With respect to the Upper Chiquita reservoir, the proposed reservoir site has not been subject to prior archaeological surveys. However, the site is located in an area known to contain archaeological resources (e.g., the RMV Planning Area) and therefore there is a potential for the presence of archaeological resources at the proposed reservoir site. Potential impacts to resources would be considered a significant impact.

7.8.3.2 Mitigation Program

The following identifies the standard measure that SMWD, as lead agency, applies to proposed water district projects that have the potential to impact prehistoric and historic archaeological resources. Additionally, USACE Mitigation Measure 1 would be applicable.

1. Prior to any significant ground-disturbing activity on the project site, Santa Margarita Water District or the contractor shall retain a SOPA (Society of Professional Archaeologists)-certified archaeologist to attend pre-grade meetings and to monitor grading activities. During grading activities, the archaeologist shall conduct limited monitoring to observe and retrieve any buried artifacts that may be uncovered. During construction, if cultural remains are encountered during grading, a SOPA-certified archaeologist shall be called to evaluate the finds, and develop and carry out a plan of mitigation. The archaeological monitor shall have the authority to temporarily divert or direct grading to allow time to evaluate any exposed prehistoric or historic material. Any recovered prehistoric and historic artifacts shall be offered, on a first right-of-refusal basis, to a repository with a retrievable collection system and an educational and research interest in the materials such as the Fowler Museum of Cultural History (UCLA) and California State University, Fullerton, or alternatively to the Pacific Coast Archaeological Society where collections are held locally.

7.8.3.3 Level of Significance After Mitigation

With implementation of the mitigation program, potential impacts to prehistoric archaeological and historic resources would be reduced to a level considered less than significant.

7.8.4 ALTERNATIVE B-10 MODIFIED

7.8.4.1 Prehistoric Archaeological Resources Impacts

Impact 7.8.4-1: *Grading and construction activities associated with the B-10 Modified Alternative would have a significant impact on the following NRHP-eligible/potentially eligible archaeological sites: CA-ORA-535, -656, -753, -754, -882, -997, -1043, -1048, −1121, -1222, -1134, -1136, -1137, -1138, -1449, -1556, -1559, -1560, and -1565.*

A significant impact would occur if grading and construction activities would result in a substantial adverse change in the significance of an archaeological resource listed or eligible for the NRHP or that has not been evaluated for the NRHP. To assess potential impacts, the limits of disturbance for Alternative B-10 Modified were overlain on the location of the identified archaeological resources to determine if this alternative would have an effect on the known sites. Under a worst-case scenario, it is assumed that any archaeological resources located within the development areas for Alternative B-10 Modified would be eliminated through grading and construction activities. However, the significance of the impact would be based upon whether the resource is listed or eligible for the NRHP or has not yet been evaluated for the NRHP and is therefore considered a significant resource. If a site is not in a development area, there would be no direct impact.

Implementation of Alternative B-10 Modified would directly impact 19 archaeological sites. As indicated in Table 7.8-1, 19 of the 53 sites in the RMV Planning Area are either eligible or potentially eligible for the NRHP. They are prehistoric sites: CA-ORA-535, -656, -753, -754, −882, -997, -1043, -1048, -1121, −1222, -1134, -1136, -1137, -1138, -1449, -1556, -1559, −1560, and -1565. Inclusive of these identified sites are sites that have not had their eligibility determined: CA-ORA-535, -753, -754, -1134, -1136, -1137, and -1138. Because the significance of these sites has not yet been determined, any impacts to these sites would be considered significant until proven otherwise.

TABLE 7.8-1
ALTERNATIVE B-10 MODIFIED
ARCHAEOLOGICAL AND HISTORIC RESOURCES SIGNIFICANCE

Watershed	Site Number	NRHP Eligible Criteria	Potential Significant Impact?[a.]
San Juan Watershed: Central San Juan and Trampas Canyon	**Archaeological Resources**		
	CA-ORA-653	Ineligible[b.]	No
	CA-ORA-654	Ineligible[b.]	No
	CA-ORA-655	Ineligible[b.]	No
	CA-ORA-656	Yes (Criterion D)	**Yes**
	CA-ORA-657	Ineligible[b.]	No
	CA-ORA-658	Ineligible[b.]	No
	CA-ORA-1102	Not considered eligible[c.]	No
	CA-ORA-1103	Not considered eligible[c.]	No
	CA-ORA-1111	Ineligible[b.]	No
	CA-ORA-1121	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1122	Not considered eligible[c.]	No
	CA-ORA-1123	Not considered eligible[c.]	No
	Historic Resources		
	CA-ORA-29	Yes (Criteria B and D)[b.]	**Yes**
San Juan Watershed: Cañada Gobernadora (including Wagon Wheel and Sulfur Canyons)	**Archaeological Resources**		
	CA-ORA-1446	Ineligible[b.]	No
	CA-ORA-1564	Ineligible[b.]	No
	CA-ORA-1565	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1566	Ineligible[b.]	No
San Juan Watershed: Cañada Chiquita and Narrow Canyon	**Archaeological Resources**		
	CA-ORA-26	Not considered eligible[c.]	No
	CA-ORA-27	Not considered eligible[c.]	No
	CA-ORA-28	Ineligible	No
	CA-ORA-880	Not considered eligible[c.]	No
	CA-ORA-881	Not considered eligible[c.]	No
	CA-ORA-882	Yes (Criterion D)	**Yes**
	CA-ORA-902	Ineligible	No
	CA-ORA-997	Yes (Criterion D)	**Yes**
	CA-ORA-1043	Yes (Criterion D)	**Yes**
	CA-ORA-1048	Yes (Criterion D)	**Yes**
	CA-ORA-1049	Not considered eligible[c.]	No
	CA-ORA-1050	Not considered eligible[c.]	No
	CA-ORA-1105	Ineligible[b.]	No
	CA-ORA-1106	Ineligible	No
	CA-ORA-1447	Not considered eligible[c.]	No
	CA-ORA-1559	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1560	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1561	Ineligible[b.]	No
	CA-ORA-1562	Ineligible[b.]	No
	CA-ORA-1563	Ineligible[b.]	No
	Historic Resources		
	30-176631	Undetermined[d.]	**Yes**

TABLE 7.8-1 (Continued)
ALTERNATIVE B-10 MODIFIED
ARCHAEOLOGICAL AND HISTORIC RESOURCES SIGNIFICANCE

Watershed	Site Number	NRHP Eligible Criteria	Potential Significant Impact?[a.]
San Mateo Watershed: Gabino Canyon (including Airplane Canyon)	**Archeological Resources**		
	CA-ORA-535	Not determined	**Yes**
	CA-ORA-1134	Not determined	**Yes**
	CA-ORA-1135	Ineligible[b.]	No
	CA-ORA-1136	Not determined	**Yes**
	CA-ORA-1137	Not determined	**Yes**
	CA-ORA-1138	Not determined	**Yes**
	CA-ORA-1553	Ineligible[b.]	No
	CA-ORA-1557	Ineligible[b.]	No
	Historic Resources		
	30-176633	Not determined	**Yes**
San Mateo Watershed: Cristianitos Canyon (including Blind Canyon)	**Archaeological Resources**		
	CA-ORA-753	Not determined	**Yes**
	CA-ORA-754	Not determined	**Yes**
	CA-ORA-916	Not considered eligible[c.]	No
	CA-ORA-921/-1127	Ineligible	No
	CA-ORA-1124	Ineligible[b.]	No
	CA-ORA-1126/-1452	Ineligible	No
	CA-ORA-1184	Ineligible[b.]	No
	CA-ORA-1222	Yes (Criterion D)	**Yes**
	CA-ORA-1449	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1450	Ineligible[b.]	No
	CA-ORA-1550	Ineligible[b.]	No
	CA-ORA-1556	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1573	Ineligible	No
San Mateo Watershed: Talega Canyon	**Archaeological Resources**		
	RMV-15	Not considered eligible	No
	Historic Resources		
	30-176634	Yes (Criterion D)[e.]	**Yes**
	30-176635	Yes (Criterion D)[e.]	**Yes**

a. All sites identified are within the proposed area of disturbance for Alternative B-10 Modified.
b. Source: Office of Historic Preservation letter dated January 27, 2004.
c. Source: Demcak, 2000.
d. Eligibility of the site has not yet been determined by SHPO for listing on the NRHP.
e. Eligibility of the site was determined by the USACE for listing on the NRHP.

Source: Archaeological Resource Management Corporation, 2003, 2004.

For those sites determined not to be eligible for the NRHP, the sites were further evaluated to determine if they meet the criteria as a unique resource. A unique archaeological resource implies an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one of the following criteria:

1. Contains information needed to answer important scientific questions and there is a demonstrable public interest in that information; or

2. Has a special and particular quality, such as being the oldest of its type or the best available example of its type; or

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

None of the sites not previously identified as eligible for the NRHP qualify as unique archaeological sites. Therefore, impacts to these remaining sites would not be considered significant.

The B-10 Modified Alternative assumes the continuation of cattle ranching in portions of canyons designated open space. In Planning Area 10, the only improvements would be a community trail connecting to the existing Ladera Ranch Community Trail and a segment of the Prima Deshecha Riding and Hiking Trail. Public access would be restricted by fencing along trail; trails would be sited away from any known archaeological resources with public access limited to the trails. Some water and wastewater facilities will be constructed to provide service to adjacent developments. These facilities would be sited to avoid all direct and indirect impacts to known resources.

Increased on-site population could result in increased pedestrian traffic into areas of the RMV Planning Area not proposed for development. The increased access to these portions of the RMV Planning Area could result in greater risks to cultural deposits associated with vandalism, inadvertent damage, and illegal collecting. However, because there would be limited access to these areas (trails would be fenced) and the location of known archaeological resources would not be public information, increased access into these areas would not result in significant impacts to resources.

7.8.4.2 Historic Resources Impacts

Impact
7.8.4-2: *Implementation of the B-10 Modified Alternative would have a significant impact on historic sites CA-ORA-29, 30-176631, 30-176633, 30-176634, and 30-176635, which have been determined to be eligible or potentially eligible for the NRHP.*

A historic resource located in the development areas of Alternative B-10 Modified is assumed to be significantly impacted by grading and construction activities if the site(s) cannot be avoided. As previously identified on Table 7.8-1, there are five historic sites which would be directly impacted through implementation of this alternative. They are CA-ORA-29, 30-176631, 30-176633, 30-176634, and 30-176635; impacts to these sites are considered significant. The eligibility of historic site 30-176633 and historic site 30-176631 has not been determined. Any impacts to these sites would be considered significant unless subsequent evaluation determines otherwise.

7.8.4.3 Mitigation Program

In conjunction with the approval of the GPA/ZC project, the County of Orange adopted a mitigation program to reduce the impacts associated with impacts on prehistoric and historic archaeological resources. These measures are listed below to provide the reader context of the mitigation program, although these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. As a part of the SAMP, USACE Mitigation Measure 1 would also be applicable (see subchapter 7.8.2.2).

Standard Conditions and Requirements

SC 4.11-1 Prior to the issuance of any grading permit, the applicant shall provide written evidence to the County or Orange Manager, Subdivision and Grading, that

applicant has retained a County-certified archaeologist to observe grading activities and salvage and catalogue archaeological resources as necessary. The archaeologist shall be present at the pre-grade conference; shall establish procedures for archaeological resource surveillance; and shall establish, in cooperation with the applicant, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeological observer shall determine appropriate actions, in cooperation with the project applicant, for exploration and/or salvage.

Prior to the release of the grading bond, the applicant shall obtain approval of the archaeologist's follow-up report from the Manager, Harbors, Beaches & Parks HBP/Coastal and Historical Facilities. The report shall include the period of inspection, an analysis of any artifacts found and the present repository of the artifacts. Applicant shall prepare excavated material to the point of identification. Applicant shall offer excavated finds for curatorial purposes to the County of Orange, or its designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources shall be subject to the approval of the Manager, HBP/Coastal and Historical Facilities. Applicant shall pay curatorial fees if an applicable fee program has been adopted by the Board of Supervisor, and such fee program is in effect at the time of presentation of the materials to the County of Orange or its designee, all in a manner meeting the approval of the Manager, HBP/Coastal and Historical Facilities. (County of Orange Standard Conditions of Approval, A04)

Mitigation Measures

MM 4.11-1 Prior to the approval of final plans and specifications for the development of Area Plans, the project applicant shall prepare a Cultural Resources Management (CRM) Plan to address the presence of cultural resources, evaluate the significance of any resource finds, provide final mitigation and monitoring program recommendations, and determine proper retention or disposal of resources. The CRM Plan shall be reviewed and approved by the County Director of Planning in Consultation with the County Manager, Harbors, Beaches & Parks HBP/Coastal and Historical Facilities.

MM 4.11-2 Based on the mitigation standards set forth in the California Environmental Act (CEQA) Guidelines §15126.4(b) and Public Resources Code §21083.2, prior to the approval Area Plans for the applicable planning areas, the applicant shall provide the County of Orange with evidence regarding the determination of eligibility of prehistoric sites CA-ORA-535, -753, -754, -1134, -1136, -1137, and -1138, and historic sites 30-176631 and -176633. Should a site(s) be deemed ineligible for listing on the National Register of Historic Places (NRHP) or California Register of Historic Places (CRHR), no further mitigation is required. Should a site(s) be deemed eligible, the County of Orange standard conditions and requirements and subsequent Mitigation Measure 4.11-3 shall apply.

MM 4.11-3 As applicable, the following archaeological sites shall be mitigated to a less than significant level: CA-ORA-535, -656, -753, -754, -882, -997, -1043, -1048, −1121, -1222, -1134, -1136, -1137, -1138, -1449, -1556, -1559, -1560, and -1565 and historic sites CA-ORA-29, 30-176631, 30-176633, 30-176634, and 30-176635. Based on the mitigation standards set forth in the California Environmental Act

(CEQA) Guidelines §15126.4(b) and Public Resources Code §21083.2, mitigation shall be accomplished through implementation of one of the following mitigation options consistent with the Cultural Resources Management Plan:

a. Relocation of grading boundaries/fuel modification zones to completely avoid disturbance to the site(s). Should the boundary relocation be infeasible, an archaeological monitor shall be present during grading and fuel modification brush clearance in the vicinity of archaeological resources (note: confidential archaeological mapping is on file at the County of Orange). Fencing or stakes shall be erected outside of the sites to visually depict the areas to be avoided during construction.

b. Prior to grading in the vicinity of archaeological resources (note: confidential archaeological mapping is on file at the County of Orange), Phase I data recovery (salvage excavations) shall be conducted for these archaeological sites or any other sites within the potential impact area of development that cannot be avoided. The Phase III work shall provide sufficient scientific information to fully mitigate the impacts of development on these sites and be performed in accordance with standards of the State Office of Historic Preservation.

In accordance with California Health and Safety Code Section 7050.5, if human remains are found, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined the appropriate treatment and disposition of the human remains. The County Coroner shall make such determination within two working days of notification of discovery. The County Coroner shall be notified within 24 hours of the discovery. If the County Coroner determines that the remains are or believed to be Native American, the County Coroner shall notify the Native American Heritage Commission in Sacramento within 24 hours. In accordance with California Public Resources Code Section 5097.98, the Native American Heritage Commission must immediately notify those persons it believes to be the most likely descended from the deceased Native American. The descendents shall complete their inspection within 24 hours of notification. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains.

7.8.4.4 Level of Significance After Mitigation

With implementation of the mitigation program, potential impacts to prehistoric archaeological and historic resources would be reduced to a level considered less than significant.

7.8.5 ALTERNATIVE B-12

7.8.5.1 Prehistoric Archaeological Resources Impacts

Impact 7.8.5-1: *Grading and construction activities associated with the B-12 Alternative would have a significant impact on the following NRHP-eligible/potentially eligible archaeological sites: CA-ORA-656, -753, -754, -882, -1043, -1048, -1121,-1137, -1144, -1185, -1222, -1449, –1556, -1559, -1560, and -1565.*

Implementation of Alternative B-12 would have fewer impacts to prehistoric archaeological resources than Alternative B-10 Modified. As indicated in Table 7.8-2, implementation of Alternative B-12 would directly impact 16 of the 53 archaeological sites that are either eligible or potentially eligible for the NRHP. They are prehistoric sites: CA-ORA-656, -753, -754, -882, -1043, -1048, -1137, -1121, -1144, -1185, -1222, -1449, -1556, -1559, -1560, and -1565. Inclusive of these identified sites are sites that have not had their eligibility determined: CA-ORA-535, -753, and –754. Because the significance of these sites has not yet been determined, any impacts to these sites would be considered significant until proven otherwise.

The B-12 Alternative assumes the continuation of cattle ranching in portions of canyons designated as open space. As with Alternative B-10 Modified, the only improvements would be a community trail connecting to the existing Ladera Ranch Community Trail and a segment of the Prima Deshecha Riding and Hiking Trail. Public access would be restricted by fencing along the trail; trails would be sited away from any known archaeological resources with public access limited to the trails. Some water and wastewater facilities will be constructed to provide service to adjacent developments. These facilities would be sited to avoid all direct and indirect impacts to known resources. Although increased access to these portions of the RMV Planning Area could result in greater risks to cultural deposits associated with vandalism, inadvertent damage, and illegal collecting, there would be limited access to these areas (trails would be fenced) and the location of known archaeological resources would not be public information. Therefore, increased access into these areas would not result in significant impacts to resources.

7.8.5.2 Historic Resources Impacts

Impact 7.8.5-2: *Implementation of Alternative B-12 would have a significant impact on historic sites CA-ORA-29, 30-176631, 30-176633, 30-176634, and 30-176635, which have been determined to be eligible or potentially eligible for the NRHP.*

As previously identified on Table 7.8-2, five historic sites would be directly impacted through implementation. They are CA-ORA-29, 30-176631, 30-176633, 30-176634, and 30-176635; impacts to these sites are considered significant.

TABLE 7.8-2
ALTERNATIVE B-12
ARCHAEOLOGICAL AND HISTORIC RESOURCES SIGNIFICANCE

Watershed	Site Number	NRHP Eligible Criteria	Potential Significant Impact?[a.]
San Juan Watershed: Central San Juan and Trampas Canyon	**Archaeological Resources**		
	CA-ORA-653	Ineligible[b.]	No
	CA-ORA-654	Ineligible[b.]	No
	CA-ORA-655	Ineligible[b.]	No
	CA-ORA-656	Yes (Criterion D)	**Yes**
	CA-ORA-657	Ineligible[b.]	No
	CA-ORA-658	Ineligible[b.]	No
	CA-ORA-1102	Not considered eligible[c.]	No
	CA-ORA-1103	Not considered eligible[c.]	No
	CA-ORA-1111	Ineligible[b.]	No
	CA-ORA-1121	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1122	Not considered eligible[c.]	No
	CA-ORA-1123	Not considered eligible[c.]	No
	Historic Resources		
	CA-ORA-29	Yes (Criteria B and D)[b.]	**Yes**
San Juan Watershed: Cañada Gobernadora (including Wagon Wheel and Sulfur Canyons)	**Archaeological Resources**		
	CA-ORA-1446	Ineligible[b.]	No
	CA-ORA-1565	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1566	Ineligible[b.]	No
San Juan Watershed: Cañada Chiquita and Narrow Canyon	**Archaeological Resources**		
	CA-ORA-26	Not considered eligible[c.]	No
	CA-ORA-27	Not considered eligible[c.]	No
	CA-ORA-28	Ineligible	No
	CA-ORA-880	Not considered eligible[c.]	No
	CA-ORA-881	Not considered eligible[c.]	No
	CA-ORA-882	Yes (Criterion D)	**Yes**
	CA-ORA-902	Ineligible	No
	CA-ORA-1043	Yes (Criterion D)	**Yes**
	CA-ORA-1048	Yes (Criterion D)	**Yes**
	CA-ORA-1049	Not considered eligible[c.]	No
	CA-ORA-1050	Not considered eligible[c.]	No
	CA-ORA-1106	Ineligible[b.]	No
	CA-ORA-1137	Undetermined	Yes
	CA-ORA-1144	Undetermined	Yes
	CA-ORA-1559	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1560	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1563	Ineligible[b.]	No
	Historic Resources		
	30-176631	Undetermined[d.]	**Yes**

TABLE 7.8-2 (Continued)
ALTERNATIVE B-12
ARCHAEOLOGICAL AND HISTORIC RESOURCES SIGNIFICANCE

Watershed	Site Number	NRHP Eligible Criteria	Potential Significant Impact?[a.]
San Mateo Watershed: Gabino Canyon (including Airplane Canyon and Verdugo)	**Historic Resources**		
	30-176633	Not determined	**Yes**
San Mateo Watershed: Cristianitos Canyon (including Blind Canyon)	**Archaeological Resources**		
	CA-ORA-753	Not determined	**Yes**
	CA-ORA-754	Not determined	**Yes**
	CA-ORA-916	Not considered eligible[c.]	No
	CA-ORA-1124	Ineligible[b.]	No
	CA-ORA-1184	Ineligible[b.]	No
	CA-ORA-1185	Not determined	**Yes**
	CA-ORA-1222	Yes (Criterion D)	**Yes**
	CA-ORA-1449	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1450	Ineligible[b.]	No
	CA-ORA-1550	Ineligible[b.]	No
	CA-ORA-1556	Yes (Criterion D)[b.]	**Yes**[e.]
	CA-ORA-1573	Ineligible	No
San Mateo Watershed: Talega Canyon	**Historic Resources**		
	30-176634	Yes (Criterion D)[e.]	**Yes**[e.]
	30-176635	Yes (Criterion D)[e.]	**Yes**[e.]

a. All sites identified are within the proposed area of disturbance for Alternative B-12.
b. Source: Office of Historic Preservation letter dated January 27, 2004.
c. Source: Demcak, 2000.
d. Eligibility of the site has not yet been determined by SHPO for listing on the NRHP.
e. Eligibility of the site was determined by the USACE for listing on the NRHP.
f. Dependent on the final development plan for Planning Areas 4 and 8, the two sites identified may be avoided. This analysis represents a worst-case assessment of potential impacts.

Source: Archaeological Resource Management Corporation, 2003, 2004; EDAW, 2005.

7.8.5.3 Mitigation Program

The mitigation program adopted by the County of Orange in conjunction with the approval of the GPA/ZC project would apply to Alternative B-12 (see subchapter 7.8.4.3, above). Mitigation Measures MM 4.11-2 and MM 4.11-3 have been modified and therefore are stated below. As with Alternative B-10 Modified, these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. As a part of the SAMP, USACE Mitigation Measure 1 would also be applicable (see subchapter 7.8.2.2).

Mitigation Measures

MM 4.11-2 Based on the mitigation standards set forth in the California Environmental Act (CEQA) Guidelines §15126.4(b) and Public Resources Code §21083.2, prior to the approval Area Plans for the applicable planning areas, the applicant shall

provide the County of Orange with evidence regarding the determination of eligibility of prehistoric sites CA-ORA-753, -754, -1137, -1144, and -1185. Should a site(s) be deemed ineligible for listing on the National Register of Historic Places (NRHP) or California Register of Historic Places (CRHR), no further mitigation is required. Should a site(s) be deemed eligible, the County of Orange standard conditions and requirements and subsequent Mitigation Measure 4.11-3 shall apply.

MM 4.11-3 As applicable, the following archaeological sites shall be mitigated to a less than significant level: CA-ORA-656, -753, -754, –882, -1043, -1048, -1137, -1144, -1185, -1121, -1137, -1144, -1185, –1222, -1449, -1556, -1559, -1560, and -1565 and historic sites CA-ORA-29, 30-176631, 30-176633, 30-176634, and 30-176635. Based on the mitigation standards set forth in the California Environmental Act (CEQA) Guidelines §15126.4(b) and Public Resources Code §21083.2, mitigation shall be accomplished through implementation of one of the following mitigation options consistent with the Cultural Resources Management Plan:

a. Relocation of grading boundaries/fuel modification zones to completely avoid disturbance to the site(s). Should the boundary relocation be infeasible, an archaeological monitor shall be present during grading and fuel modification brush clearance in the vicinity of archaeological resources (note: confidential archaeological mapping is on file at the County of Orange). Fencing or stakes shall be erected outside of the sites to visually depict the areas to be avoided during construction.

b. Prior to grading in the vicinity of archaeological resources (note: confidential archaeological mapping is on file at the County of Orange), Phase I data recovery (salvage excavations) shall be conducted for these archaeological sites or any other sites within the potential impact area of development that cannot be avoided. The Phase III work shall provide sufficient scientific information to fully mitigate the impacts of development on these sites and be performed in accordance with standards of the State Office of Historic Preservation.

In accordance with California Health and Safety Code Section 7050.5, if human remains are found, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined the appropriate treatment and disposition of the human remains. The County Coroner shall make such determination within two working days of notification of discovery. The County Coroner shall be notified within 24 hours of the discovery. If the County Coroner determines that the remains are or believed to be Native American, the County Coroner shall notify the Native American Heritage Commission in Sacramento within 24 hours. In accordance with California Public Resources Code Section 5097.98, the Native American Heritage Commission must immediately notify those persons it believes to be the most likely descended from the deceased Native American. The descendents shall complete their inspection within 24 hours of notification. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains.

7.8.5.4 Level of Significance After Mitigation

With implementation of the mitigation program, potential impacts to prehistoric archaeological and historic resources would be reduced to a level considered less than significant.

7.8.6 ALTERNATIVE A-4

7.8.6.1 Prehistoric Archaeological Resources Impacts

Impact
7.8.6-1: *Grading and construction activities associated with Alternative A-4 would have a significant impact on the following NRHP-eligible/potentially eligible archaeological sites: CA-ORA-535, -656, -753, -754, -882, -997, -1043, -1048, -121, -1222, –1134, -1136, -1137, -1138, -1449, -1556, -1559, -1560, and -1565.*

Alternative A-4 assumes the same amount of development within the same footprint as Alternative B-10 Modified. Under this alternative, a NCCP/MSAA/HCP or SAMP would not be prepared and permitting would proceed with incremental project-by-project review of new development proposals within the RMV Planning Area. Future development would be subject to incremental project-by-project application of state and federal regulatory program requirements and would be required to minimize impacts on threatened and endangered species at the project level. Alternative A-4 would have the same cultural resource impacts as Alternative B-10 Modified. Implementation of this alternative would have significant impacts to archaeological sites: CA-ORA-535, -656, -753, -754, -882, –997, -1043, -1048, -1121, -1222, -1134, -1136, –1137, -1138, -1449, -1556, -1559, -1560, and -1565.

The A-4 Alternative assumes the continuation of cattle ranching in portions of canyons designated as open space. As with Alternative B-10 Modified, the only improvements would be a community trail connecting to the existing Ladera Ranch Community Trail and a segment of the Prima Deshecha Riding and Hiking Trail. Public access would be restricted by fencing along the trail; trails would be sited away from any known archaeological resources with public access limited to the trails. Some water and wastewater facilities will be constructed to provide service to adjacent developments. These facilities would be sited to avoid all direct and indirect impacts to known resources. Although increased access to these portions of the RMV Planning Area could result in greater risks to cultural deposits associated with vandalism, inadvertent damage, and illegal collecting, there would be limited access to these areas (trails would be fenced) and the location of known archaeological resources would not be public information. Therefore, increased access into these areas would not result in significant impacts to resources.

7.8.6.2 Historic Resources Impacts

Impact
7.8.6-2: *Implementation of Alternative A-4 would have a significant impact on historic sites CA-ORA-29, 30-176631, 30-176633, 30-176634, and 30-176635, which have been determined to be eligible or potentially eligible for the NRHP.*

As with Alternative B-10 Modified and Alternative B-12, implementation of Alternative A-4 would directly impact five historic sites: CA-ORA-29, 30-176631, 30-176633, 30-176634, and 30-176635. Any impacts to these sites would be considered significant.

7.8.6.3 Mitigation Program

The mitigation program identified for Alternative B-10 Modified (see subchapter 7.8.4.3) would also apply to Alternative A-4. USACE Mitigation Measure 1 would not be applicable to Alternative A-4 because this alternative does not assume a SAMP.

7.8.6.4 Level of Significance After Mitigation

With implementation of the mitigation program, potential impacts to prehistoric archaeological and historic resources would be reduced to a level considered less than significant.

7.8.7 ALTERNATIVE A-5

Implementation of Alternative A-5 assumes development would occur on approximately 8,000 acres (35 percent) with approximately 14,824 acres (65 percent) of the RMV Planning Area in open space. This alternative assumes up to 3,000 dwelling units. New development would avoid impacts to wetlands regulated under state and federal laws/regulations. Non-wetland Waters of the U.S. regulated by the USACE under Section 404 and non-wetland jurisdictional areas regulated by the state under Sections1601/1603 would be avoided. To ensure total avoidance of state and federal threatened/endangered species, new development would be limited to those portions of RMV Planning Area that are not occupied by state or federally listed species, and for regulated waters, access would be dependent on existing arterial highways and the ranch road network (i.e., the existing dirt/gravel roads) with surfacing limited to existing road widths.

7.8.7.1 Prehistoric Archaeological Resources Impacts

Impact
7.8.7-1: *Grading and construction activities associated with the A-5 Alternative would have a significant impact on the following NRHP-eligible/potentially eligible archaeological sites: CA-ORA-753, -754, -882, -997, -1043, -1048, -1121, -1134, -1222, -1555, –1556, -1559, -1560, and -1565.*

Implementation of Alternative A-5 would have fewer impacts to prehistoric archaeological resources when compared to the other alternatives. As indicated in Table 7.8-3, implementation of Alternative A-5 would directly impact 14 of the 53 archaeological sites that are either eligible or potentially eligible for the NRHP. They are prehistoric sites: CA-ORA-753, -754, –882, -997, –1043, -1048, -1121, -1134, –1222, -1555, -1556, -1559, -1560, and -1565. Where the significance of a site has not yet been determined, any impacts to the site would be considered significant until proven otherwise.

As with the other alternatives, the continuation of cattle ranching in those portions of the canyons designated as open space. As with Alternative B-10 Modified, the only improvements would be a community trail connecting to the existing Ladera Ranch Community Trail and a segment of the Prima Deshecha Riding and Hiking Trail. Public access would be restricted by fencing along the trails; trails would be sited away from any known archaeological resources with public access limited to the trails. Some water and wastewater facilities will be constructed to provide service to adjacent developments. These facilities would be sited to avoid all direct and indirect impacts to known resources. Although increased access to these portions of the RMV Planning Area could result in greater risks to cultural deposits associated with vandalism, inadvertent damage, and illegal collecting, there would be limited access to these areas (trails would be fenced) and the location of known archaeological resources would not be public

information. Therefore, increased access into these areas would not result in significant impacts to resources.

TABLE 7.8-3
ALTERNATIVE A-5
ARCHAEOLOGICAL AND HISTORIC RESOURCES SIGNIFICANCE

Watershed	Site Number	NRHP Eligible Criteria	Potential Significant Impact?[a.]
San Juan Watershed: Central San Juan and Trampas Canyon	**Archaeological Resources**		
	CA-ORA-653	Ineligible[b.]	No
	CA-ORA-654	Ineligible[b.]	No
	CA-ORA-655	Ineligible[b.]	No
	CA-ORA-657	Ineligible[b.]	No
	CA-ORA-658	Ineligible[b.]	No
	CA-ORA-1102	Not considered eligible[c.]	No
	CA-ORA-1121	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1122	Not considered eligible[c.]	No
	CA-ORA-1123	Not considered eligible[c.]	No
	CA-ORA-1555	Yes (Criterion D)[b.]	**Yes**
	Historic Resources		
	CA-ORA-29	Yes (Criteria B and D)[b.]	**Yes**
San Juan Watershed: Cañada Gobernadora (including Wagon Wheel and Sulfur Canyons)	**Archaeological Resources**		
	CA-ORA-1446	Ineligible[b.]	No
	CA-ORA-1565	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1566	Ineligible[b.]	No
San Juan Watershed: Cañada Chiquita and Narrow Canyon	**Archaeological Resources**		
	CA-ORA-26	Not considered eligible[c.]	No
	CA-ORA-27	Not considered eligible[c.]	No
	CA-ORA-880	Not considered eligible[c.]	No
	CA-ORA-881	Not considered eligible[c.]	No
	CA-ORA-882	Yes (Criterion D)	**Yes**
	CA-ORA-902	Ineligible	No
	CA-OR-997	Yes (Criterion D)	**Yes**
	CA-ORA-1043	Yes (Criterion D)	**Yes**
	CA-ORA-1048	Yes (Criterion D)	**Yes**
	CA-ORA-1049	Not considered eligible[c.]	No
	CA-ORA-1050	Not considered eligible[c.]	No
	CA-ORA-1105	Ineligible[b.]	No
	CA-ORA-1106	Ineligible	No
	CA-ORA-1447	Not considered eligible[c.]	No
	CA-ORA-1559	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1560	Yes (Criterion D)[b.]	**Yes**
	CA-ORA-1562	Ineligible[b.]	No
	CA-ORA-1563	Ineligible[b.]	No
	Historic Resources		
	30-176631	Not determined[d.]	**Yes**

TABLE 7.8-3 (Continued)
ALTERNATIVE A-5
ARCHAEOLOGICAL AND HISTORIC RESOURCES SIGNIFICANCE

Watershed	Site Number	NRHP Eligible Criteria	Potential Significant Impact?[a.]
San Mateo Watershed: Gabino Canyon (including Airplane Canyon and Verdugo)	**Archeological Resources**		
	CA–ORA-1134	Not determined[d.]	**Yes**
	Historic Resources		
	30-176633	Not determined	**Yes**
San Mateo Watershed: Cristianitos Canyon (including Blind Canyon)	**Archaeological Resources**		
	CA-ORA-753	Not determined	**Yes**
	CA-ORA-754	Not determined	**Yes**
	CA-ORA-1124	Ineligible[b.]	No
	CA-ORA-1184	Ineligible[b.]	No
	CA-ORA-1222	Yes (Criterion D)	**Yes**
	CA-ORA-1450	Ineligible[b.]	No
	CA-ORA-1550	Ineligible[b.]	No
	CA-ORA-1556	Yes (Criterion D)[b.]	**Yes**
San Mateo Watershed: Talega Canyon	CA-ORA-1573	Ineligible	No
	Archaeological Resources		
	RMV-15	Not considered eligible	No

a. All sites identified are within the proposed area of disturbance for Alternative A-5.
b. Source: Office of Historic Preservation letter dated January 27, 2004.
c. Source: Demcak, 2000.
d. Eligibility of the site has not yet been determined by SHPO for listing on the NRHP.
d. Eligibility of the site was determined by the USACE for listing on the NRHP.

Source: Archaeological Resource Management Corporation, 2003, 2004; EDAW, 2005.

7.8.7.2 Historic Resources Impacts

Impact
7.8.7-2: *Implementation of Alternative A-5 would have a significant impact on historic sites CA-ORA-29, 30-176631, and 30-176633 which have been determined to be eligible or potentially eligible for the NRHP.*

As previously identified on Table 7.8-3, three historic sites would be directly impacted through implementation. They are CA-ORA-29, 30-176631, and 30-176633; impacts to these sites are considered significant.

7.8.7.3 Mitigation Program

The mitigation program adopted by the County of Orange in conjunction with the approval of the GPA/ZC project would apply to Alternative A-5 (see subchapter 7.8.2.3, above). Because Mitigation Measures MM 4.11-2 and MM 4.11-3 have been modified, they are provided below. As with Alternative B-10 Modified, these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. USACE Mitigation Measure 1 would not be applicable to Alternative A-5 because new development would avoid impacts to wetlands regulated under state and federal laws/regulations. Non-wetland Waters of the U.S. regulated by the USACE under Section 404 and non-wetland jurisdictional areas regulated by the state under Section1600 et al. would be avoided.

Mitigation Measures

MM 4.11-2 Based on the mitigation standards set forth in the California Environmental Act (CEQA) Guidelines §15126.4(b) and Public Resources Code §21083.2, prior to the approval Area Plans for the applicable planning areas, the applicant shall provide the County of Orange with evidence regarding the determination of eligibility of prehistoric sites CA-ORA-753, -754, and -1134. Should a site(s) be deemed ineligible for listing on the National Register of Historic Places (NRHP) or California Register of Historic Places (CRHR), no further mitigation is required. Should a site(s) be deemed eligible, the County of Orange standard conditions and requirements and subsequent Mitigation Measure 4.11-3 shall apply.

MM 4.11-3 As applicable, the following archaeological sites shall be mitigated to a less than significant level: CA-ORA-753, -754, -882, -997, -1043, -1048, -1121, -1134, -1222, -1555, -1556, -1559, -1560, and -1565 and historic sites CA-ORA-29, 30-176631, and 30-176633. Based on the mitigation standards set forth in the California Environmental Act (CEQA) Guidelines §15126.4(b) and Public Resources Code §21083.2, mitigation shall be accomplished through implementation of one of the following mitigation options consistent with the Cultural Resources Management Plan:

a. Relocation of grading boundaries/fuel modification zones to completely avoid disturbance to the site(s). Should the boundary relocation be infeasible, an archaeological monitor shall be present during grading and fuel modification brush clearance in the vicinity of archaeological resources (note: confidential archaeological mapping is on file at the County of Orange). Fencing or stakes shall be erected outside of the sites to visually depict the areas to be avoided during construction.

b. Prior to grading in the vicinity of archaeological resources (note: confidential archaeological mapping is on file at the County of Orange), Phase I data recovery (salvage excavations) shall be conducted for these archaeological sites or any other sites within the potential impact area of development that cannot be avoided. The Phase III work shall provide sufficient scientific information to fully mitigate the impacts of development on these sites and be performed in accordance with standards of the State Office of Historic Preservation.

In accordance with California Health and Safety Code Section 7050.5, if human remains are found, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined the appropriate treatment and disposition of the human remains. The County Coroner shall make such determination within two working days of notification of discovery. The County Coroner shall be notified within 24 hours of the discovery. If the County Coroner determines that the remains are or believed to be Native American, the County Coroner shall notify the Native American Heritage Commission in Sacramento within 24 hours. In accordance with California Public Resources Code Section 5097.98, the Native American Heritage Commission must immediately notify those persons it believes to be the most likely descended from the deceased Native American. The descendents shall complete their inspection within 24 hours of notification.

The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains.

7.8.7.4 Level of Significance After Mitigation

With implementation of the mitigation program, potential impacts to prehistoric archaeological and historic resources would be reduced to a level considered less than significant.

7.9 POPULATION, HOUSING, AND EMPLOYMENT

This chapter focuses on the impacts to population, housing, and employment associated with the implementation of the alternatives carried forward for review under the Section 404(b)(1) Guidelines. In general, most impacts to population, housing, and employment are outside the USACE's statutory authority and responsibility under Section 404 of the Clean Water Act. The primary responsibility of evaluating and regulating impacts to population, housing, and employment resides with the local agencies such as cities and counties. As part of the NEPA review, the USACE is analyzing impacts on the environment associated with projects that receive authorizations under Section 404 of the Clean Water Act.

7.9.1 THRESHOLDS OF SIGNIFICANCE

The project alternatives would result in a significant impact on population, housing, or employment if it would:

- Exceed adopted regional or local population projections.
- Displace existing housing affecting a substantial number of people.

7.9.2 SAMP PROPOSED PERMITTING PROCEDURES

As discussed previously, the proposed RGP and LOP procedures have been developed for future participants and current participants in the SAMP. The future participants have not yet defined projects for permitting by the RGP or LOP procedures. For projects proposed by future participants that would be eligible for authorization by the maintenance RGP, impacts to population, housing, and employment would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary impacts to a small area located in a mostly degraded landscape. Since there would be no change in population, housing, and employment from these maintenance activities, impacts are not expected under the RGP. For projects eligible for authorization by the LOP procedures, not enough is known about the project size and location or potential impacts to analyze potential impacts to population, housing, and employment. Such projects eligible for authorization by the LOP procedures will be subject to future NEPA review before a final permit decision can be made.

Current participants have analyzed their activities, including the SMWD Proposed Project, RMV Proposed Project, and alternatives that may have significant effects on the environment as noted in Chapter 6.0. Therefore, the authorization pursuant to the proposed permitting procedures may also have an effect on the environment per the thresholds of significance. These potential effects on population, housing, and employment and minimization/mitigation measures applicable to these potential effects are further discussed below.

7.9.3 SMWD PROPOSED PROJECT

The SMWD Proposed Project would not result in any impacts with regard to population, housing, and employment. The proposed reservoirs are designed to accommodate the projected population for the SMWD service area. No modifications of land uses are associated with the proposed reservoirs. They would not support substantially greater numbers of people, thereby encouraging development beyond the adopted population projections. The proposed facilities would not displace existing housing. The operation and maintenance activities would also not displace any housing or support development that would exceed local population projections.

7.9.4 ALTERNATIVE B-10 MODIFIED

7.9.4.1 Impacts

Exceed Adopted Regional and Local Population Projections

Orange County Projections (OCP)-2004

Alternative B-10 Modified would allow for the development of a maximum of 14,000 residential units. Of those 14,000 units, 7,020 would be single-family attached and detached units; 6,000 would be senior housing units (including both single-family units and apartments); and 980 units would be multi-family units. Population and employment projections were developed, using factors from the Center for Demographic Research (CDR) based on the approved land uses. Population projections were based on the number of proposed housing units, using a generation factor of 3.13 persons per single-family unit, 2.5 persons per multi-family unit, and 1.4 persons per senior unit. Employment projections were based the following generation factors:

- 2.3 jobs per 1,000 square feet of general and specialty retail uses;
- 3 jobs per 1,000 square feet of research and development/business park uses;
- 3.5 jobs per 1,000 square feet of office uses;
- 0.5 job per acre for golf courses;
- 0.11 job per students for elementary, middle, and high schools; and
- 0.9 job per room for resort hotel uses.

Based on this information, Alternative B-10 Modified has the potential to generate 32,823 new residents living within the RMV Planning Area and 16,508 jobs. This would not exceed OCP-2004 projections for the RMV Planning Area. Because exceedance of projections is the criteria for significance set forth in this chapter of the EIS, implementation of Alternative B-10 Modified would not have a significant impact. The shortfall of development compared to the OCP-2004 projections has been addressed through the evaluation of consistency with regional planning programs in Chapter 10.0, Consistency with Federal, Regional, and Local Plans and Programs. It should be noted that while implementation of Alternative B-10 Modified would result in fewer residences than projected in OCP-2004, it is closer to achieving regional projections than the status quo.

Regional Housing Needs Assessment

The Regional Housing Needs Assessment (RHNA), adopted in November 2000, provided housing allocations for 1998 to 2005. Development associated with Alternative B-10 Modified would not be under construction within the timeframe covered by the 2000 RHNA allocation. The OCP-2004 projections did not assume housing development within the year 2000 to 2005 timeframe for the RMV Planning Area. Therefore, it would not have been assumed that proposed development within the RMV Planning Area would contribute to meeting the County's RHNA requirement. However, subsequent RHNA (post-2005 timeframe) allocations would have growth assumptions inclusive of development on the RMV Planning Area. The County is required to comply with the RHNA allocations and Alternative B-10 Modified would be responsible for contributing to the County's portions for regional housing. Alternative B-10 Modified would not conflict with the RHNA and no impact would occur related to RHNA.

Jobs/Housing Balance

Based on the jobs projected for the RMV Planning Area, Alternative B-10 Modified would generate approximately 16,509 jobs, resulting in a jobs-to-housing ratio of 1.18. This ratio means that Alternative B-10 Modified would be housing rich, which is consistent with the current trends in southern Orange County. However, of the 14,000 dwelling units proposed, 6,000 units would be age-restricted units (i.e., one resident must be aged 55 or older), resulting in a lower ratio. Based on national labor force participation rates (U.S. Census Bureau), it has been assumed that approximately 32 percent of the senior residents (aged 55 and older) continue to work. As a result of the reduced employment rates for residents of the 6,000 age-restricted units, the adjusted jobs/housing ratio for the RMV Planning Area would be approximately 1.7 jobs per household; therefore, this alternative would be jobs rich. This jobs-to-housing ratio would exceed SCAG's regional jobs/housing ratio of 1.33 for the Orange County Subregion projected for 2025. This alternative would be consistent with the jobs/housing balance goal; as a result, implementation of the B-10 Modified Alternative would not result in significant jobs/housing balance impacts.

Housing Displacement

Alternative B-10 Modified would displace 11 housing units. These housing units are owned by Rancho Mission Viejo and occupied by people affiliated with Rancho Mission Viejo. These residents would be relocated to comparable housing units by Rancho Mission Viejo prior to demolition of the existing units. Because of the small number of units affected, as well as relocation of the residents by Rancho Mission Viejo, the impact resulting from the displacement of housing would be less than significant.

7.9.4.2 Mitigation Program

The SAMP program and development projects that would be authorized by the SAMP would not result in any significant impacts related to population, housing, and employment. Alternative B-10 Modified would result in a small amount of housing displacement. However, the County of Orange, the local agency with land use jurisdiction over the RMV Planning Area, has adopted a mitigation program requiring evidence of relocation of any residents that would be displaced. These measures are listed below to provide the reader context of the mitigation program, although these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. No additional mitigation is required as part of the SAMP.

Project Design Features

PDF 4.3-1 The Ranch Plan would provide a slightly higher jobs/housing ratio than SCAG's assumed ratio for Orange County. This would increase the overall jobs/housing balance for southern Orange County, which is currently below the SCAG ratio.

PDF 4.3-2 Rancho Mission Viejo would relocate displaced residents prior to approval of demolition permits. Mitigation Measure 4.3-1 further supports this project design feature.

Mitigation Measures

MM 4.3-1 In conjunction with approval of an Area Plan for those portions of Planning Areas 1 and 3 where existing residential units would be displaced, the applicant shall provide evidence of relocation of any remaining residents.

7.9.4.3 Level of Significance After Mitigation

Based on the thresholds of significance, there would be no significant impacts associated to population, housing, or employment associated with the implementation of Alternative B-10 Modified.

7.9.5 ALTERNATIVE B-12

7.9.5.1 Impacts

Exceed Adopted Regional and Local Population Projections

OCP-2004

Alternative B-12 is very similar to Alternative B-10 Modified. It would allow for the development of a maximum of 14,000 residential units, with a similar mix of single-family attached and detached units and multi-family units. This alternative would provide a similar amount of employment uses (5.2 million square feet) as Alternative B-10 Modified.

Alternative B-12 has the potential to generate 32,823 new residents living within the RMV Planning Area (the same as Alternative B-10 Modified) and 16,508 jobs. This increase would not exceed OCP-2004 projections for the RMV Planning Area. As with Alternative B-10 Modified, there would be no significant impacts associated with implementation of this alternative.

Regional Housing Needs Assessment

The relationship of Alternative B-12 to the RHNA would be the same as Alternative B-10 Modified. This alternative would not conflict with the RHNA and no impact would occur related to RHNA.

Jobs/Housing Balance

Based on the employment-generating square footage proposed for the RMV Planning Area under the Alternative B-12 scenario, approximately 16,509 jobs would be generated. When the senior housing component is factored in, this alternative would have an adjusted jobs-to-housing ratio of 1.7 and would be considered jobs rich. Alternative B-12 would be over the SCAG target of a 1.33 jobs-to-housing ratio for the Orange County Subregion projected for 2025. The B-12 Alternative would be consistent with the jobs/housing balance goal. Therefore, no significant jobs/housing balance impacts are anticipated.

Housing Displacement

Alternative B-12 would displace 13 housing units. Similar to Alternative B-10 Modified, these residents would be relocated to comparable housing units by Rancho Mission Viejo prior to demolition of the existing units. Alternative B-12 has designated a 11-acre site in Planning Area 3 for relocation of displaced units. Because of the small number of units affected, as well

as relocation of the residents by Rancho Mission Viejo, the impact resulting from the displacement of housing would be less than significant.

7.9.5.2 Mitigation Program

Alternative B-12 would be subject to the same mitigation program as Alternative B-10 Modified. This program would be monitored by the County of Orange as the local jurisdiction with land use authority. No additional mitigation is required as part of the SAMP.

7.9.5.3 Level of Significance After Mitigation

Based on the thresholds of significance, there would be no significant impacts.

7.9.6 ALTERNATIVE A-4

7.9.6.1 Impacts

Exceed Adopted Regional and Local Population Projections

OCP-2004

Alternative A-4 would provide the same level of development as Alternative B-10 Modified. However, permits to authorize discharge or fill in Waters of the U.S. would be processed on a project-by-project basis instead of under the SAMP process. As such, the population and employment numbers would be the same. This alternative would still result in a shortfall of development compared to the OCP-2004 projections. However, Alternative A-4 would not result in exceedances of regional and local population projections and therefore would not have significant impacts.

Regional Housing Needs Assessment

Alternative A-4 would be able to meet future RHNA requirements as effectively as Alternative B-10 Modified or Alternative B-12. This alternative would not conflict with the RHNA and no impact would occur.

Jobs/Housing Balance

Alternative A-4 would have an adjusted jobs/housing ratio of approximately 1.7, meaning it would be considered jobs rich. This jobs-to-housing ratio would exceed SCAG's regional jobs/housing ratio of 1.33 for the Orange County Subregion projected for 2025. Because the Orange County Subregion is considered housing rich, implementation of development consistent with the A-4 development scenario would be consistent with the jobs/housing balance goal.

Housing Displacement

Alternative A-4 would displace 11 housing units. These housing units are owned by RMV and occupied by people affiliated with RMV. These residents would be relocated to comparable housing units by RMV prior to demolition of the existing units. Because of the small number of units affected, as well as relocation of the residents by RMV, the impact resulting from the displacement of housing would be less than significant.

7.9.6.2 Mitigation Program

Alternative A-4 would be subject to the same mitigation program as Alternative B-10 Modified. This program would be monitored by the County of Orange as the local jurisdiction with land use authority. No mitigation measures are required as part of the SAMP.

7.9.6.3 Level of Significance After Mitigation

Based on the thresholds of significance, there would be no significant impacts to population, housing, or employment associated with implementation of Alternative A-4.

7.9.7 ALTERNATIVE A-5

7.9.7.1 Impacts

Exceed Adopted Regional and Local Population Projections

OCP-2004

Alternative A-5 would allow for the development of 3,000 residential units. This alternative would provide limited employment opportunities. The only employment would be possible small services to support the residential uses (e.g., small markets and schools). The only employment use would be uses that can be implemented within a residential designation. Based on the generation factors identified for the other alternatives, Alternative A-5 has the potential to generate approximately 9,000 new residents living within the RMV Planning Area. This increase would not exceed OCP-2004 projections for the RMV Planning Area. As with Alternative B-10 Modified, there would be no significant impacts associated with implementation of this alternative.

Regional Housing Needs Assessment

The relationship of Alternative A-5 to the RHNA would be the same as Alternative B-10 Modified, in that no development would occur within the timeframe of the adopted RHNA. Since the allocations for future RHNA have not been made, it is not possible to determine the consistency of Alternative A-5 with future RHNA numbers; therefore. However, the limited number of housing units proposed with this alternative would severely limit the ability of the County to contribute to future RHNA allocation. It is possible that the County's contribution would be reduced accordingly. Therefore, the assessment of impact is based on the currently adopted RHNA numbers. Alternative A-5 is consistent with the adopted RHNA numbers.

Jobs/Housing Balance

This alternative does not provide a jobs/housing balance. As previously indicated, the only employment use would be uses that can be implemented within a residential designation. SCAG has adopted regional jobs/housing ratio of 1.33 for the Orange County Subregion. This alternative would be housing rich and not meet the jobs-to-housing ratio. This alternative on an individual basis would not meet the adopted jobs-to-housing ratio. It would continue the housing-rich trend in south Orange County. However, the SCAG jobs/housing ratio applies to the entire Orange County Subregion, which as a whole is jobs-rich. Therefore, there would not be a significant impact related to jobs/housing balance.

Housing Displacement

Alternative A-5 would not necessarily displace housing units. A comprehensive development plan has not been prepared for this alternative. With the overall low density associated with this alternative, there is likely that new housing would be developed surrounding existing housing. There would be no impact resulting from the displacement of housing.

7.9.7.2 Mitigation Program

No mitigation measures would be required for Alternative A-5.

7.9.7.3 Level of Significance After Mitigation

Based on the thresholds of significance, there would be no significant impacts.

7.10 RECREATION

This chapter focuses on the impacts to recreation associated with the implementation of the alternatives carried forward for review under the Section 404(b)(1) Guidelines. In general, most recreation impacts are outside the USACE's statutory authority and responsibility under Section 404 of the Clean Water Act. The primary responsibility of evaluating and regulating recreation impacts resides with the local agencies such as cities and counties. As part of the NEPA review, the USACE is analyzing impacts on the environment associated with projects that receive authorizations under Section 404 of the Clean Water Act.

7.10.1 THRESHOLDS OF SIGNIFICANCE

An alternative would result in a significant impact if it would:

- Increase the use of the existing neighborhood and regional parks or other recreational facilities such that a substantial physical deterioration of the facilities would occur or be accelerated.
- Substantially degrade the recreational use of existing parks.
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.
- Preclude the implementation of planned facilities.

7.10.2 SAMP PROCESSING PROCEDURES AND PROGRAMS

As discussed previously, the proposed RGP and LOP procedures have been developed for future participants and current participants in the SAMP. The future participants have not yet defined projects for permitting by the RGP or LOP procedures. For projects proposed by future participants that would be eligible for authorization by the maintenance RGP, impacts to recreation would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary impacts to a small area located in a mostly degraded landscape. Since there would be no change in recreation activities from these maintenance activities, impacts are not expected under the RGP. For projects eligible for authorization by the LOP procedures, not enough is known about the project size and location or potential impacts to analyze potential impacts to recreation. Such projects eligible for authorization by the LOP procedures will be subject to future NEPA review before a final permit decision can be made.

Current participants have analyzed their activities including SMWD Proposed Project, RMV Proposed Project, and alternatives that may have significant effects on the environment as noted in Chapter 6.0. Therefore, the authorization pursuant to the proposed permitting procedures may also have an effect on the environment per the thresholds of significance. These potential effects on recreation and minimization/mitigation measures applicable to these potential effects are further discussed below.

7.10.3 SMWD PROPOSED PROJECT

The SMWD Proposed Project would not impact recreational facilities. None of the SMWD facilities are in or adjacent to a park. Therefore, it would not degrade existing parks or have substantial indirect impacts (i.e., visual impacts). The construction of the Upper Chiquita

Reservoir and operation and maintenance activities would not result in any additional use of the recreational facilities nor result in over use of facilities.

7.10.4 ALTERNATIVE B-10 MODIFIED

7.10.4.1 Impacts

Increased Use of Recreation Facilities Resulting in Physical Deterioration

Alternative B-10 Modified would result in a substantial increase in population in the SAMP Study Area. Based on preliminary estimates using the type of housing proposed, the 14,000 dwelling units would generate a population of approximately 32,823 residents. Associated with this increase in population would be an increased demand for recreational resources. This increased demand would be served through the development of neighborhood and community parks that would be provided to serve the proposed development. Based on the County local park requirements, 2.5 acres of parkland for every 1,000 residents would be required. Alternative B-10 Modified would have to provide an estimated 82 acres of local parkland. Through the provision of both active and passive parkland in compliance with the Local Park Code, spillover demand on other park facilities in currently developed areas is not expected. New local facilities would serve the future demand associated with the development in Alternative B-10 Modified. As a result, this alternative would not result in increased use of existing recreational facilities that would result in physical deterioration.

Effect on the Recreational Use of Existing Parks

Federal Parks

Alternative B-10 Modified would not have a significant impact on the Cleveland National Forest. The locations of proposed future development do not abut forest property. This would minimize indirect impacts, such as visual impacts. Increased population in the SAMP Study Area would mean that more people are proximate to the Cleveland National Forest and it would be more convenient to use the facilities. However, population associated with Alternative B-10 Modified would be less than what has been assumed in local and regional growth projections. The number of new residents in the area would be less than one percent of the number of people in the region (i.e., Orange and Riverside counties) adjacent to the Cleveland National Forest. Alternative B-10 Modified would provide opportunities for both passive and active recreation within the RMV Planning Area. Given the size of the forest and generally passive nature of the recreational opportunities within the SAMP Study Area portion of the Cleveland National Forest, the incremental increase in usage would not substantially degrade the forest.

State Parks

***San Onofre State Beach*.** As previously indicated, existing uses within the Cristianitos subarea of San Onofre State Beach include a network of trails and the San Mateo Campground. The development of Alternative B-10 Modified would not have direct impacts on San Onofre State Beach. Limited development is proposed in the Talega Canyon Watershed, which would be the closest development area to the beach. There would be an approximately 500-foot setback between the RMV Planning Area and the park boundary. There is a very gradual elevation change from the San Mateo Campground to the proposed development areas within the RMV Planning Area. The campground sits at an elevation of about 50 feet. Traveling north to the southern edge of the RMV Planning Area, the elevation gradually rises to about 300 feet. The terrain throughout the RMV Planning Area rises and falls between approximately 500 feet to

about 1,300 feet with peaks reaching approximately 2,000 feet. This elevational change would provide visual barriers from much of the proposed development.

The visual character of the Cristianitos area is generally undeveloped; however, urban influences are visible within the State Beach, particularly in the southern portion of the park. I-5 is located in the southern portion of Cristianitos; high power lines from the San Onofre Nuclear Generating Station traverse the lower portion of the Cristianitos area, and development in San Clemente and base housing is visible in the southern edge as well. Agricultural areas are adjacent to the San Onofre State Beach within MCB Camp Pendleton. The area surrounding the San Mateo Campground and the area proposed for hiking trails, primitive camps, and a primitive group camp is mostly undeveloped and natural. Views from San Mateo Campground would not be significantly altered because of the distance between the campground and the development associated with Alternative B-10 Modified. There would be no direct impact on proposed hiking trails and camps. Indirect impact associated with viewshed would be dependent on the timing of the park improvements relative to the timing of the implementation of Alternative B-10 Modified. Additionally, the design and orientation of the facilities would be a factor. There is the potential that the trails and camps would have mid-range views of development, rather than views of undeveloped canyons. Given the uncertainty of the timing and design of these future facilities and the limited affect the development would have, this would not be considered a significant impact.

Regional Parks

The countywide regional park system has been designed to serve the existing and future needs of the residents of Orange County. Alternative B-10 Modified would increase usage of the nearby facilities because it would introduce more people into the region. However, as part of County of Orange General Plan, the Master Plan of Regional Parks has been designed to meet the needs associated with the projected growth in the County. Based on information from the County's website (www.ocparks.com), the County currently has approximately 9,000 acres of existing regional parks, of which 3,300 acres (O'Neill Regional Park) are within the two-mile radius of the proposed development area for Alternative B-10 Modified. This acreage figure does not account for the proposed Prima Deshecha Regional Park, which currently operates as a landfill. The six County designated wilderness parks comprise approximately 23,600 acres, of which slightly more than 9,000 acres are within the two-mile radius of the development area (Caspers and Riley Wilderness Parks). With approximately 37 percent of the regional parks and wilderness parks designed to serve the entire County within two miles of the RMV Planning Area, it is anticipated the proposed development would not result in the over use of these regional facilities such that a substantial degradation of the recreational use of the facilities would occur or be accelerated.

General Thomas F. Riley Wilderness Park. Alternative B-10 Modified would not have any direct impacts on General Thomas F. Riley Wilderness Park Indirect impacts due to the proximity of development to the park could potentially occur. A wilderness park is defined in the Recreation Element of the Orange County General Plan as:

> *"A regional park in which the land retains its primeval character with minimal improvements and which is managed and protected to preserve natural processes. The park (1) generally appears to have been affected primarily by forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude of a primitive and unconfined type of recreation; (3) is sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also*

contain ecological, geological, or other features of scientific, educational, scenic or historical value."

The wilderness park designation requires that the undeveloped character not be substantially degraded, so as to not impact the park's function. The topography of the park helps to serve as a buffer between General Thomas F. Riley Wilderness Park and the surrounding area. The ridgelines along the perimeter of the park help to shield the interior portion of the park from surrounding development. Existing development is seen upon the approach to the park, as well as at the higher elevations within the park. Development surrounds the park on three sides. Areas designated for open space in Cañada Gobernadora and Chiquita Canyon would abut the park on its western and southern boundaries. This would provide an approximately 2,000-foot-wide buffer between development and the park boundary. Additionally, in closest proximity to General Thomas F. Riley Wilderness Park within Cañada Gobernadora and Chiquita Canyon would be low-density estate development. This would minimize the intrusion of urban development on the park. There would not be a significant impact on the park's wilderness experience for park visitors from urban development associated with Alternative B-10 Modified.

***Ronald W. Caspers Wilderness Park*.** Alternative B-10 Modified would not have any direct impacts on Ronald W. Caspers Wilderness Park. This alternative does have the potential to have indirect impacts due to the proximity of proposed development in relationship to the park. As previously indicated, Caspers is designated as a wilderness park, so the undeveloped character of the park is integral to its function. The topography of Caspers Wilderness Park helps to serve as a buffer between park and the surrounding area. The ridgeline along the western edge of the park would generally minimize any views of Alternative B-10 Modified from within the park. As discussed in Chapter 7.7, Visual Resources, views of the development from within Caspers Wilderness Park would be limited to various vantage points, such as points along the Eastridge Trail and the parking lot for the observation deck. From these locations, there would be limited views of the proposed development in Verdugo Canyon Watershed. Similarly, along the Westridge Trail there would be views of development in the Central San Juan Watershed. Along this trail, there would be mid-range views of development to the west. A 500-foot-wide development setback is proposed along the RMV Planning Area boundary with Caspers Wilderness Park to serve as a buffer. More distant views would be possible along Oso Trail. Trail elevations rise from approximately 700 feet above mean sea level to approximately 1,450 feet above mean sea level. While the trail is located in the northern portion of the park, at the peak elevations there would be distant views of Alternative B-10 Modified. The distance between the development and these vantage points would reduce the impact on the park to a less than significant level. Overall, Alternative B-10 Modified would introduce an urban component into the open space surrounding the park. However, the wilderness character of the park would be preserved. Camping activities are in valley areas and no views of urbanization would occur. Given the limited scale of visible development and the protection of the surrounding areas in open space, there would be minimal impacts on the character of the park as a result of development.

***O'Neill Regional Park*.** O'Neill Regional Park is approximately one mile west of the western boundary of the RMV Planning Area. Given intervening topography and other development (Las Flores Planned Community and Ladera Ranch), Alternative B-10 Modified would have limited influence on O'Neill Regional Park. The development would not be visible from any locations within the park. There is no drainage from the development area to Arroyo Trabuco which is located in O'Neill Regional Park. Alternative B-10 Modified provides for a wildlife corridor connection between O'Neill Regional Park, General Thomas F. Riley Wilderness Park, and Caspers Wilderness Park. The wildlife corridor would use the open space area adjacent to O'Neill Regional Park, which was established for wildlife movement between Las Flores and

Ladera Ranch. Across Chiquita Ridge, open space within Chiquita and Gobernadora Canyons would provide for wildlife movement. There would be no significant impacts on O'Neill Regional Park.

Require the Construction or Expansion of Recreational Facilities Resulting in Adverse Physical Effects on the Environment

Alternative B-10 Modified would be required to construct new parks and recreational facilities, such as trails and bikeways. The parks would all be constructed within the development areas associated with this alternative. Therefore, the impacts on the environment have been addressed as part of the development impacts. No additional significant impacts would result from construction of new recreational facilities.

The San Juan Creek Trail, Cristianitos Trail, and a portion of the Prima Deshecha Trail would be developed in conjunction with Alternative B-10 Modified. In addition, a staging area for riding and hiking trails is proposed near the San Juan Creek Trail junction with the Prima Deshecha Trail. These trails would be built in conjunction with the RMV Proposed Project; however, because of their proposed locations and linear nature they would traverse open space area. The impacts associated with the construction of the trails have been calculated as part of the overall infrastructure impacts associated with this alternative. Alternative B-10 Modified does not conflict with implementation of any of the proposed Master Plan facilities.

Additional community trails may be provided as a means of providing for connectivity to trails that have been developed in nearby communities. Generally, these trails would be located within development areas; therefore, there would not be adverse physical impacts beyond what has been addressed for Alternative B-10 Modified. However, to provide for connectivity to other community trails and/or recreational facilities, the trails would traverse areas designated for open space. The trails would generally use existing ranch roads to reduce the impact on natural resources within the open space areas.

There are two designated bikeways within the limits of Alternative B-10 Modified. Both bikeways would be provided for as part of the development of Alternative B-10 Modified. The Class II bikeway on Antonio Parkway would be constructed in conjunction with the widening of the roadway. The Class I San Juan Creek Bikeway is proposed to follow San Juan Creek. Approximately six miles of the San Juan Creek bikeway would fall within the Alternative B-10 Modified boundaries. It is anticipated the bikeway would be developed within the development areas and in open space adjacent to Cow Camp Road. Alternative B-10 Modified would not conflict with the implementation of the Master Plan bikeways.

7.10.4.2 Mitigation Program

In conjunction with the approval of the GPA/ZC, the County of Orange adopted a mitigation program to reduce the impacts associated with impacts on recreational facilities. These measures are listed below to provide the reader context of the mitigation program, though these measures would be implemented as part of the development project and would be the responsibility of the County of Orange for monitoring. No additional mitigation is required as part of the SAMP.

Project Design Features[1]

PDF 4.12-2 The project incorporates a 20- to 25-acre sports park.

PDF 4.12-3 The project provides for 15,132[2] acres of open space within the Ranch Plan boundaries. The large amount of open space would provide for protection of many of the major ridgelines. Specifically, the open space in Planning Area 10 would provide a buffer with the General Thomas F. Riley and Ronald W. Caspers Wilderness Parks. This minimizes indirect impacts on the existing parks.

PDF 4.12-4 The project provides for trail linkages between the Ladera Ranch and the Ranch Plan community trails, which provides connection to the regional trail system.

PDF 4.12-5 The project would facilitate implementation of the Master Plan of Regional Riding and Hiking Trails, through the construction of portions of the San Juan Creek, the Cristianitos, and the Prima Deshecha trails.

PDF 4.12-6 The project would facilitate implementation of the Master Plan of County Bikeways through construction of portions of the San Juan Creek Bikeway.

PDF 4.12-7 The project proposes the construction of up to four golf courses.

PDF 4.12-8 Local park sites will be provided in accordance with the provisions of the Orange County Local Park Code as contained in the Park Implementation Plan for the Ranch Plan PC Area. Park sites will also be identified at the Master Area Plan level per Section II.B.3.a.6.

Standard Conditions and Regulations

Many of the standard conditions and regulations are enacted at subsequent levels of approval. The following are the County of Orange Standard Conditions associated with recreational resources that would apply to the project. These are listed even though they may not be applicable at the GPA/ZC level of approval, but because they would be applicable at subsequent levels of approvals (i.e., grading permits and tract maps). These standard conditions often identify lots that would be provided for public purposes. This level of information cannot be known until tract maps are proposed. However, as previously indicated, the identification of the standard conditions at this time is to allow the reader an understanding of conditions that are applicable to the project at subsequent levels of approval. The number of the standard condition is listed in parentheses at the end of each condition.

SC 4.12-1 A. Prior to the recordation of any subdivision map that creates building sites and is immediately adjacent to or contains a public park lot, the subdivider shall make an irrevocable offer of fee dedication for local park purposes to the County of Orange or its designee over Lot(s) __.[3] The form of the offer shall be suitable for recordation as approved by the Manager, Current Planning Services. Said offer shall be free and clear of money and all other

[1] PDF 4.12-1 and SC 4.12-3 pertained to a proposed new regional park. Alternative B-10 Modified, as adopted by the County of Orange did not include a new regional park; therefore, these Project Design Features were eliminated.

[2] Alternative B-12 would result in 16,942 acres of open space.

[3] The lot numbers would be tied to specific lots identified on the tentative tract map when it is filed. At the GPA/ZC there is no tentative tract map; therefore, the precise lot numbers or letters are unknown and a placeholder is provided.

encumbrances, liens, leases, fees, easements (recorded and unrecorded), assessments and unpaid taxes except those meeting the approval of the Manager, Current Planning Services.

B. The subdivider applicant shall grade Lot(s) __, the public park site(s), to provide a minimum ___ acres of creditable local park land and shall secure the park site(s) against erosion and shall stub out sewer, water, gas, electricity, telephone, storm drain, etc., connections to the property lines.

C. The developer, or his assigns, and successors in interest shall maintain the offered park site(s) until such time as the County or its designee accepts the offer of dedication. (Standard Condition CP01 Public Park Dedication)

SC 4.12-2 A. Prior to the recordation of an applicable subdivision map which creates building sites, the subdivider shall make an irrevocable offer to dedicate an easement over Lot(s) ___for private local park purposes to the County of Orange in a form approved by the Manager, the Manager, Current Planning Services. The subdivider shall not grant any other easement over the private park easement which is inconsistent with the local park uses, unless that easement is made subordinate to said local park easement in a manner meeting the approval of the Manager, Current Planning Services.

B. Prior to the recordation of an applicable final subdivision map, the subdivider shall submit a preliminary concept plan of the proposed private recreation facilities to the Manager, Current Planning Services, for review and approval. (Standard Condition CP02 Private Park Dedication)

SC 4.12-4 Prior to the recordation of each applicable subdivision map, the subdivider shall reserve open space Lots ___ for granting in fee to a homeowner's association who shall be responsible for their maintenance and upkeep in a manner meeting the approval of the Manager HBP/Program Management. (Standard Condition HP02 Open Space Dedications)

SC 4.12-5 The subdivider shall provide an easement for a recreational trail for riding and hiking trail purposes in accordance with the following:

A. Prior to the recordation of an applicable subdivision map, the subdivider shall:

1. Irrevocably offer a recreation easement for riding and hiking trail purposes in a location and in a manner meeting the approval of the Manager HBP/ Program Management. The subdivider shall not grant any easement(s) over the property subject to the recreation easement unless such easements are first reviewed and approved by the Manager HBP/Program Management.

2. Design the necessary improvements for the trail, including, but not limited to grading, erosion control, signage, fencing, and a grade-separated crossing, as applicable, in a manner meeting the approval of the Manager HBP/ Program Management, in consultation with the Manager, Subdivision and Grading. Trail design shall also avoid affecting areas known to contain sensitive biological resources as identified in Section 4.9, Biological Resources.

3. Enter into an agreement, accompanied by financial security, with the County of Orange, to insure the installation of the necessary improvements.

B. Prior to the issuance of precise grading permits, applicant shall obtain approval from the Manager HBP/ Program Management, that the proposed grading provides for and will not interfere with or preclude the installation of the recreational riding and hiking trail.

C. Prior to the issuance of final certificates of use and occupancy and the release of financial security guaranteeing the riding and hiking trail improvements, the applicant shall install the riding and hiking trail improvements in a manner meeting the approval of the Manager HBP/Program Management, in consultation with the Manager, Construction. (Standard Condition HP03 Recreation Easement for Regional Trail)

Mitigation Measures

MM 4.12-1 In conjunction with approval of the first Master Area Plan, the applicant shall develop a Master Trail and Bikeways Implementation Plan for the Ranch Plan that would establish viable routes for trails and bikeways to provide connectivity to community trails and bikeways in adjacent developments and with existing and proposed recreational facilities. The Master Trail and Bikeways Implementation Plan shall meet with the approval by the Director of PSD in consultation with the Manager, Harbors, Beaches and Parks/Program Management.

7.10.4.3 Level Of Significance After Mitigation

Alternative B-10 Modified would not have any significant physical impacts on recreational resources. The implementation of the mitigation program provides measures to better protect resources. There would be no significant unavoidable impacts on recreational resources.

7.10.5 ALTERNATIVE B-12

7.10.5.1 Impacts

Increased Use of Recreation Facilities Resulting in Physical Deterioration

Alternative B-12 would result in a substantial increase in population in the SAMP Study Area. As with Alternative B-10 Modified, this increase in population would result in an increased demand for recreational resources. This increased demand would be served through the development of neighborhood and community parks that would be provided to serve the proposed development. Based on the County local park requirements, 2.5 acres of parkland for every 1,000 residents would be required. Assuming the same amount of single-family and multi-family units as Alternative B-10 Modified, Alternative B-12 Modified would have to provide an estimated 82 acres of local parkland. As with Alternative B-10 Modified, Alternative B-12 would be required to comply with the Local Park Code to reduce spill over demand on other park facilities in currently developed areas. As a result, this alternative would not result in increased usage of recreational facilities that would result in physical deterioration.

Effect on the Recreational Use of Existing Parks

Federal Parks

Alternative B-12 would be similar to Alternative B-10 Modified in that it would not have a significant impact on the Cleveland National Forest. The locations of future development do not abut the forest thereby minimizing visual impact. The increased population in the area would mean that more people are in close proximity to the forest; however, the incremental increase in forest usage would not substantially degrade the forest.

State Parks

San Onofre State Beach. Alternative B-12 would not have direct impacts on San Onofre State Beach. This alternative limits the amount of development proximate to the Cristianitos Sub-basin to 500 acres (within the Talega/Blind Sub-basin). The precise location of the development has not been defined; however, the setback from the State Beach would likely be greater than the 500-foot-wide setback provided for in Alternative B-10 Modified. No other development in the San Mateo Watershed is proposed. Therefore, the potential for visual intrusion and other impacts associated with development is less than significant.

Regional Parks

General Thomas F. Riley Wilderness Park. Alternative B-12 would not significantly alter the wilderness character of General Thomas F. Riley Wilderness Park. The topography of the park helps to serve as a buffer between the park and the surrounding area. Areas designated for open space in Cañada Gobernadora and Chiquita Canyon would abut much of the park on its western and southern boundaries. With this alternative, residential development and a cemetery is proposed in Middle Chiquita (adjacent to Tesoro Creek High School), which assumes development closer to the park than was provided for Alternative B-10 Modified. The approximately 2,000-foot-wide buffer provided in Alternative B-10 Modified would also be provided under this alternative development scenario. Additionally, the remainder of Middle Chiquita is left undeveloped. This would enhance wildlife movement and minimize the intrusion of urban development on the park. There would not be a significant impact on the park's wilderness experience for park visitors from urban development associated with Alternative B-12.

Ronald W. Caspers Wilderness Park. Alternative B-12 would not have any direct impacts on Ronald W. Caspers Wilderness Park. Indirect impacts due to the proximity of development in relationship to the park would be similar in nature as Alternative B-10 Modified. However, with Alternative B-12, the amount of development in the Verdugo Canyon Watershed would be substantially reduced, thereby reducing the potential for visual intrusion. The topography of the park, which helps to serve as a buffer between Caspers Wilderness Park and the surrounding area, would not be altered with this alternative. As with Alternative B-10 Modified, views of development from within Caspers Wilderness Park would be limited to various vantage points, such as points along the Eastridge Trail and the parking lot for the observation deck, the Westridge Trail, and distant views along Oso Trail. The distance between the development and these vantage points would reduce the impact on the park to less than significant. Alternative B-12 would introduce an urban component into the open space surrounding the park. However, the wilderness character of the park would be preserved. Camping activities are in valley areas and no views of urbanization would be visible. Given the limited scale of visible development, and the protection of the surrounding areas in open space, there would be minimal impacts on the character of the park as a result of development.

***O'Neill Regional Park*.** Similar to Alternative B-10 Modified, intervening topography and other development (Las Flores Planned Community and Ladera Ranch) would limit the influence of Alternative B-12 on O'Neill Regional Park. Proposed development would not be visible from any locations within the park. There is no drainage from the development area to Arroyo Trabuco, located in O'Neill Regional Park. Compared to Alternative B-10 Modified, Alternative B-12 expands the wildlife corridor connection between O'Neill Regional Park, General Thomas F. Riley Wilderness Park and Caspers Wilderness Park. There would be no significant impacts on O'Neill Regional Park.

Require the Construction or Expansion of Recreational Facilities Resulting in Adverse Physical Effects on the Environment

Alternative B-12 would be required to construct new parks and recreational facilities, such as trails and bikeways. All parks would be constructed within the RMV Planning Area. Therefore, the impacts on the environment have been addressed as part of the development impacts. No additional significant impacts would result from construction of new recreational facilities.

Similar to Alternative B-10 Modified, the San Juan Creek Trail, the Cristianitos Trail, a portion of the Prima Deshecha Trail, and the trail staging area would be developed in conjunction with Alternative B-12. These trails would be built in conjunction with development. The impacts associated with the construction of the trails have been calculated as part of the overall infrastructure impacts associated with the B-12 Alternative. Alternative B-12 does not conflict with implementation of any of the proposed Master Plan facilities. Similar to Alternative B-10 Modified, additional community trails may be provided as a means of providing for connectivity to trails that have been developed in nearby communities. Generally, these trails would be located within development area and along existing ranch roads to reduce the impact on natural resources within the open space areas.

Alternative B-12 would construct the Class II bikeway on Antonio Parkway and the Class I San Juan Creek Bikeway. The Antonio Parkway bikeway would be constructed in conjunction with roadway widening. The San Juan Creek bikeway would be located in open space at the edge of the development area, adjacent to Cow Camp Road. The bikeway would be entirely on the south side of the San Juan Creek. Alternative B-12 would not conflict with the implementation of the Master Plan of Bikeways.

7.10.5.2 Mitigation Program

The mitigation program adopted for Alternative B-10 Modified (see Chapter 7.10.4.2, above) would apply to Alternative B-12. Implementation and monitoring of these measures would be the responsibility of the County of Orange. No additional mitigation is required as part of the SAMP.

7.10.5.3 Level Of Significance After Mitigation

Alternative B-12 would not have any significant physical impacts on recreational resources. The implementation of the mitigation program provides measures to better protect resources. There would be no significant unavoidable impacts on recreational resources.

7.10.6 ALTERNATIVE A-4

7.10.6.1 Impacts

Increased Use of Recreation Facilities Resulting in Physical Deterioration

The impacts associated with Alternative A-4 would be the same as those outlined above for Alternative B-10 Modified. The development proposal and footprint for this alternative is the same as Alternative B-10 Modified. However, this alternative assumes that impacts to Waters of the U.S. would be processed with individual and nationwide permits rather than the SAMP. The increased demand associated with new development would be served through the development of neighborhood and community parks. Based on the County local park requirements, 2.5 acres of parkland for every 1,000 residents would be required. Alternative A-4 Modified would have to provide an estimated 82 acres of local parkland. As with Alternative B-10 Modified, compliance with the Local Park Code would reduce spill over demand on other park facilities in currently developed areas. As a result, this alternative would not result in increased usage of recreational facilities that would result in physical deterioration.

Effect on the Recreational Use of Existing Parks

Federal Parks

Alternative A-4 would be similar to Alternative B-10 Modified in that it would not have a significant impact on the Cleveland National Forest. The locations of future development do not abut the forest thereby minimizing visual impacts. The increased population in the area would mean that more people are proximate to the forest; however, the incremental increase in forest usage would not substantially degrade the forest.

State Parks

San Onofre State Beach. Development of Alternative A-4 would not have direct impacts on San Onofre State Beach. As discussed in subchapter 7.10.4, the limited development proposed in the Talega Canyon Watershed, an approximately 500-foot-wide setback between the development area and the park boundary, and existing topography serve to limit the views of development from the park.

Regional Parks

General Thomas F. Riley Wilderness Park. As discussed above for Alternative B-10 Modified, the topography of the park helps to serve as a buffer between the park and the surrounding area. This buffering would minimize the potential impacts associated with Alternative A-4. Areas designated for open space in Cañada Gobernadora and Chiquita Canyon would abut much of the park on its western and southern boundaries, providing an approximately 2,000-foot-wide buffer between development and the park boundary. Low-density estate development would be the type of development in closest proximity to General Thomas F. Riley Wilderness Park within Cañada Gobernadora and Chiquita Canyon. This would lessen the intrusion of urban development on the park. There would not be a significant impact on the park's wilderness experience for park visitors from urban development associated with Alternative A-4.

***Ronald W. Caspers Wilderness Park*.** Alternative A-4 would not directly impact the Ronald W. Caspers Wilderness Park. Indirect impacts due to the proximity of development in relationship to the park would be similar in nature as Alternative B-10 Modified. The topography of the park,

which helps to serve as a buffer between Caspers Wilderness Park and the surrounding area, would not be altered with this alternative. As with Alternative B-10 Modified, views of development from within Caspers Wilderness Park would be limited to various vantage points, such as points along the Eastridge Trail and the parking lot for the observation deck, the Westridge Trail, and distant views along Oso Trail. The distance between the development and these vantage points would reduce the impact on the park to less than significant. Alternative A-4 would introduce an urban component into the open space surrounding the park. However, the wilderness character of the park would be preserved. Camping activities are in valley areas and no views of urbanization would be visible. Given the limited scale of visible development, and the protection of the surrounding areas in open space, there would be minimal impacts on the character of the park as a result of development.

***O'Neill Regional Park*.** Similar to Alternative B-10 Modified, intervening topography and other development (Las Flores Planned Community and Ladera Ranch) would limit the influence of Alternative A-4 on O'Neill Regional Park. The development would not be visible from any locations within the park. There is no drainage from the development area to Arroyo Trabuco, located in O'Neill Regional Park. A wildlife corridor connecting O'Neill Regional Park, General Thomas F. Riley Wilderness Park, and Caspers Wilderness Park would be provided. There would be no significant impacts on O'Neill Regional Park.

Require the Construction or Expansion of Recreational Facilities Resulting in Adverse Physical Effects on the Environment

Alternative A-4 would be required to construct new parks and recreational facilities, such as trails and bikeways. The parks would all be constructed within the development areas. Therefore, the impacts on the environment have been addressed as part of the development impacts. No additional significant impacts would result from construction of new recreational facilities.

Similar to Alternative B-10 Modified, the San Juan Creek Trail, Cristianitos Trail, a portion of the Prima Deshecha Trail, and the trail staging area would be developed in conjunction with Alternative A-4. These trails would be built in conjunction with development. The impacts associated with the construction of the trails have been calculated as part of the overall infrastructure impacts. Alternative A-4 does not conflict with implementation of any of the proposed Master Plan facilities. Similar to Alternative B-10 Modified, additional community trails may be provided as a means of providing for connectivity to trails that have been developed in nearby communities. Generally, these trails would be located within development area and along existing ranch roads to reduce the impact on natural resources within the open space areas.

Alternative A-4 would construct the Class II bikeway on Antonio Parkway and the Class I San Juan Creek Bikeway. The Antonio Parkway bikeway would be constructed in conjunction with roadway widening. The San Juan Creek bikeway would be located in both development and open areas adjacent to Cox Camp Road. Alternative A-4 would not conflict with the implementation of the implementation of the Master Plan of Bikeways.

7.10.6.2 Mitigation Program

The mitigation program adopted for Alternative B-10 Modified (see subchapter 7.10.4.2) would apply to Alternative A-4. Implementation and monitoring of these measures would be the responsibility of the County of Orange. No additional mitigation is required as part of the SAMP.

7.10.6.3 Level Of Significance After Mitigation

Alternative A-4 would not have any significant physical impacts on recreational resources. The implementation of the mitigation program provides measures to better protect resources. There would be no significant unavoidable impacts on recreational resources.

7.10.7 ALTERNATIVE A-5

7.10.7.1 Impacts

Increased Use of Recreation Facilities Resulting in Physical Deterioration

The County of Orange local park requirement calls for 2.5 acres of parkland for every 1,000 residents. Under the Alternative A-5 scenario, it is anticipated that in the larger blocks of development, this requirement would be met through the provision of local parks. However, in the more remote areas or smaller pockets of development, this local parks requirement may be met through the payment of fees. For those areas where fees are paid, residents would use existing parks until sufficient fees are collected for the County to provide park area. This could place additional demand on existing recreational facilities in the short term. However, in the long range, it is anticipated that sufficient parks would be provided. Whether through provision of parkland or the payment of fees, Alternative A-5 would be required to comply with the County's Local Park Code; no significant impacts would occur.

Effect on the Recreational Use of Existing Parks

Federal Parks

Alternative A-5 would allow development in closer proximity to the Cleveland National Forest than any of the other alternatives. In places, development would be allowed along the eastern edge of the RMV Planning Area. However, since this development would generally need to rely on the existing ranch road network, it is anticipated that the development in this portion of the RMV Planning Area would be low density. While it may introduce development closer to the Cleveland National Forest, it would not substantially degrade the viewshed from the forest. With Alternative A-5, the increased population in the area would be limited and the incremental increase in forest usage would not substantially degrade the forest.

State Parks

***San Onofre State Beach*.** Development of Alternative A-5 would not have direct impacts on San Onofre State Beach. However, with this alternative, development would be allowed along the southern RMV Planning Area boundary immediately adjacent to the State Beach. Unlike the other alternatives, no setback from the park boundary is provided. This would alter the viewshed from the existing trails in the northern portion of the Cristianitos Sub-basin. While intervening topography would minimize views of the development beyond the Talega Watershed, the development in the southern portion of the RMV Planning Area would also be visible from the San Mateo campground. However, this would not be a significant impact because of the generally low density of the development.

Regional Parks

***General Thomas F. Riley Wilderness Park*.** With Alternative A-5, there are locations where proposed development could occur immediately adjacent to the park boundary. However, the topography of the park would help serve as a buffer between park and the surrounding area. Given the overall low density of the development, this change would not be considered a significant impact because it would not substantially alter the use or the character of the park.

***Ronald W. Caspers Wilderness Park*.** Alternative A-5 would not have any direct impacts on the Ronald W. Caspers Wilderness Park. There would be potential indirect impacts due to the proximity of proposed development in relationship to the park. This alternative does not provide for a setback or buffer between development and the park. However, as with the other alternatives, existing topography would minimize the visual impacts from development on the park. Precise locations and grading quantities are not known for this alternative. It is anticipated that development would be visible in many of the same locations as with Alternative B-10 Modified but at a lower density. Views of development from within Caspers Wilderness Park are expected along the Eastridge Trail and the parking lot for the observation deck, the Westridge Trail, and distant views along Oso Trail. The distance between the development and these vantage points would reduce the impact on the park to less than significant. Although visible from certain vantage points, the wilderness character of the park would be preserved. Camping activities are in valley areas and no views of urbanization would be visible. Given the limited scale of visible development and the protection of the surrounding areas in open space, there would be minimal impacts on the character of the park as a result of development.

***O'Neill Regional Park*.** Similar to the other alternatives, intervening topography and other development (Las Flores Planned Community and Ladera Ranch) would limit the influence of Alternative A-5 on O'Neill Regional Park. The development would not be visible from any locations within the park. There is no drainage from the development area to Arroyo Trabuco, located in O'Neill Regional Park. The overall density of development would be less with Alternative A-5. Dependent on the placement of development, a wildlife corridor connecting General Thomas F. Riley Wilderness Park to Caspers Wilderness Park would be provided. However, this alternative does not provide a defined wildlife movement corridor connecting Riley Wilderness Park to O'Neil Regional Park. However, it would not be an impact on the recreational value of the O'Neill Regional Park which is not designated a wilderness park. There would be no significant impacts on O'Neill Regional Park.

Impact
7.10.7-1 *Alternative A-5 may result in gaps in the implementation of the Master Plan of Riding and Hiking Trails within the RMV Planning Area.*

Impact
7.10.7-2 *Alternative A-5 may result in gaps in the implementation of the Master Plan of Bikeways and the OCTA within the RMV Planning Area.*

Require the Construction or Expansion of Recreational Facilities Resulting in Adverse Physical Effects on the Environment

Alternative A-5 would be required to construct new parks and recreational facilities, such as trails and bikeways. The parks would all be constructed within the development areas associated with Alternative A-5. Therefore, the impacts on the environment have been addressed as part of the development impacts. No additional significant impacts would result from construction of new recreational facilities.

The Master Plan of Riding and Hiking Trails depicts the San Juan Creek Trail, the Cristianitos Trail, a portion of the Prima Deshecha Trail, and the trail staging area within the RMV Planning Area. In those locations where trails are designated and development would occur, the trails would be implemented. However, there are large areas where trails are designated where no development would be allowed. Given the limited amount of development, it is uncertain if the entire trail network would be constructed. With limited residential development, it may not be financially possible for the 3,000 units to finance the implementation off-site portions of the trail network. This would result in gaps in the trail network. This would be a significant impact. Similarly, given the limited amount of residences, the provision of a community trails network may not be feasible. Community trails are desirable for providing connectivity to trails that have been developed in nearby communities, although it would not be a significant impact because it is not part of a regional trails network.

Similar to riding and hiking trails, Alternative A-5 would potentially leave gaps in the bikeway network. With Alternative A-5, Antonio Parkway would not be widened. As a result, the designated Class II bikeway would not be constructed. Since there is only limited development along San Juan Creek, it is uncertain if the Class I San Juan Creek Bikeway would be fully implemented. This alternative would not provide a parallel arterial highway (e.g., Cow Camp Road) which could be designed to include a Class I bike trail. With limited residences, it may not be financially possible for the 3,000 units to finance the implementation off-site portions of the bikeway network. Alternative A-5 would potentially conflict with the implementation of the County Master Plan of Bikeways.

7.10.7.2 Mitigation Program

The mitigation program adopted for Alternative B-10 Modified (see subchapter 7.10.4.2) would not apply to Alternative A-5. However, it is assumed that the County's standard conditions of approval outlined above would apply to future tentative tract maps. Implementation and monitoring of these measures would be the responsibility of the County of Orange. No additional mitigation is required as part of the SAMP.

7.10.7.3 Level Of Significance After Mitigation

Alternative A-5 would not have any significant physical impacts on recreational resources. However, this alternative does not provide for the comprehensive implementation of the County Master Plan of Riding and Hiking Trails, the County Master Plan of Bikeways or the OCTA Commuter Bikeway Strategic Plan within the RMV Planning Area. This would be considered a significant unavoidable impact on recreational resources.

7.11 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This subsection presents a summary of the environmental consequences reviewed in Chapter 7.0 and, afterwards, discusses whether the conclusions reached regarding each alternative would affect the choice of alternatives carried forward into Chapter 8.0 for analysis pursuant to the Section 404(b)(1) Guidelines.

7.11.1 NON-AQUATIC BIOLOGICAL RESOURCES

7.11.1.1 Alternative B-10 Modified

The B-10 Modified Alternative would result in significant impacts to grassland, coastal sage scrub, woodland and forest, and cliff and rock and brodiaea. Through implementation of the GPA/ZC EIR 589 Adaptive Management Plan, including the Plant Species, Translocation Propagation and Management Plan, and in conjunction with the open space dedication program, the impacts to grassland, coastal sage scrub, and woodland and forest, and brodiaea would be reduced to a level of less than significant. Impacts to cliff and rock would remain a significant impact. Implementation of infrastructure associated with the B-10 Modified Alternative would result in significant impacts to nesting raptors. Significant construction impacts to nesting raptors would be reduced to a level of less than significant through implementation of GPA/ZC EIR 589 mitigation measures and UASCE Special Conditions. Implementation of the B-10 Modified Alternative would result in significant impacts related to invasive species; this impact would be reduced to a level of less than significant through implementation of the Invasive Species Control Plan. Water quality impacts would be reduced to a level of less than significant through implementation of GPA/ZC EIR 589 mitigation measures (inclusive of a WQMP) and compliance with UASCE Special Conditions. Through implementation of the mitigation measures adopted by the County of Orange and USACE Special Conditions regarding the control of lighting, potential lighting impacts on wildlife would be reduced to a level of less than significant. Without minimization and mitigation measures, implementation of the B-10 Modified Alternative would result in significant impacts related to human activity. Through implementation of the mitigation measures adopted by the County of Orange, this impact would be reduced to a level of less than significant.

7.11.1.2 Alternative B-12

The B-12 Alternative would result in significant impacts to grassland, coastal sage scrub, woodland and forest, cliff and rock, and brodiaea. Through implementation of the GPA/ZC EIR 589 Adaptive Management Plan in conjunction with permanent protection provided through the GPA/ZC open space phased dedication program, impacts to grassland, coastal sage scrub, and woodland and forest would be reduced to a level of less than significant. Impacts to cliff and rock would remain a significant impact.

Impacts to brodiaea would be reduced to a level of less than significant through the dedication of open space and associated conservation of brodiaea populations. Implementation of the Plant Translocation Plan is part of the GPA/ZC Adaptive Management Plan and through the USACE Special Condition regarding this species, the location supporting 2,000 flowering stalks in the Chiquadora Ridge *major population/ key location* would be conserved. Four smaller populations totaling about 85 flowering stalks would be developed as a result of construction in Planning Area 2. The *major population/key location* located in southern Cristianitos/Gabino Canyons would be 100 percent conserved, and the Arroyo Trabuco *important population* would be conserved.

As reviewed in Chapter 7.0, individual impacts to gnatcatchers are not considered cumulatively significant and would be mitigated through the conservation of over 80 percent of the major population/key location and additional important populations and key locations, in conjunction with the long-term management and enhancement actions provided through the GPA/ZC Adaptive Management Program.

Implementation of infrastructure associated with the B-12 Alternative could potentially result in significant impacts to nesting raptors. Implementation of mitigation measures specifying avoidance of active nesting sites would reduce construction impacts to a level of less than significant.

Implementation of the B-12 Alternative would potentially result in significant impacts related to invasive species. Mitigation measures specifying prohibitions on planting invasive species within development areas and requiring the implementation of the Invasive Species Control Plan, in conjunction with the Aquatic Resources Adaptive Management Program and the USACE Special Condition, invasive species impacts would be reduced to a level of less than significant.

Through implementation of the mitigation measures adopted by the County of Orange and USACE Special Conditions, water quality impacts would be reduced to a level of less than significant. Through implementation of the mitigation measures adopted by the County of Orange and USACE Special Condition regarding control of lighting, this potential indirect impact to wildlife would be reduced to a level of less than significant. Without minimization and mitigation measures addressing human activity within the ARCA and other RMV Planning Area open space, implementation of the B-12 Alternative would potentially result in significant impacts related to human activity. Through implementation of the mitigation measures adopted by the County of Orange, this impact would be reduced to a level of less than significant.

7.11.1.3 Alternative A-4

Impacts for, and the level of significance after mitigation for, Alternative A-4 would be as described above for Alternative B-10 Modified, except that incremental permitting may not achieve a level of avoidance and minimization comparable to the B-10 Modified due to the planning limitations inherent in incremental permitting.

7.11.1.4 Alternative A-5

Significant non-aquatic resource areas would be avoided. However, because of the absence of impacts creating a regulatory nexus justifying open space dedications, open space areas outside of proposed development areas may not have permanent use restrictions. As a consequence, while these areas would be “avoided,” they would not be protected because future land use entitlements could be requested by a private landowner. Given the low density of housing and the County’s overall housing goals reflected in OCP-2004, requests for densification could occur. As previously noted, comprehensive non-aquatic resource restoration would not be undertaken. Additionally, two non-USACE jurisdictional areas important to maintaining and restoring long-term hydrologic/terrains resources–the side canyons of middle Chiquita and the non-wetlands areas adjoining Gobernadora Creek–would not be protected under this alternative scenario. Finally, this alternative would not provide adequate buffers, would allow development in non-jurisdictional headwaters areas, and would not provide a level of wildlife habitat connectivity comparable to the B-10 Modified and B-12 Alternatives.

7.11.2 LAND USE

7.11.2.1 Alternative B-10 Modified

The RMV Planning Area is generally at the edge of urban development. Existing uses within the RMV Planning Area include various agricultural uses, industrial leases, and ranch-related residential uses. The Alternative B-10 Modified Alternative would not disrupt or divide the physical arrangement of an established community.

There is the potential for residential uses in Planning Area 8 to experience disturbance from helicopter flights and artillery training exercises, especially those occurring during night hours, potentially resulting in incompatible land uses. MCB Camp Pendleton borders the RMV Planning Area on the south and east, adjacent to Planning Areas 8 and 10. Alternative B-10 Modified would not have a direct impact on MCB Camp Pendleton. However, there is a potential for impacts from MCB Camp Pendleton on future sensitive land uses, specifically in Planning Area 8. Specific concerns relate to noise impacts from training operations and increased night lighting from proposed development in Planning Area 8 affecting base training operations and vice versa. Residential use would be considered a sensitive, incompatible use by MCB Camp Pendleton. Associated with the land compatibility issue, MCB Camp Pendleton has expressed concern that the placement of residential development adjacent to the base would result in impacts to future residents, which may ultimately result in pressures to modify their training operations. If this were to occur, it is uncertain if there would be a significant physical impact associated with modification of training operations to reduce impact from MCB Camp Pendleton operations on the adjacent RMV Planning Area. There is a potential that impacts associated with training operations, such as noise, may then occur in an area not currently impacted. Any impact is speculative because it is uncertain if the area in Planning Area 8 would be adversely impacted by MCB Camp Pendleton, and if the residents would pressure for modification to training operations, and how the training operations would be modified. However, mitigation requiring the evaluation of the compatibility of the noise sensitive land use at the time of the processing of an area plan with the County of Orange for review and approval, as well as a buyer notification program, would reduce this potential impact to a level of less than significant.

7.11.2.2 Alternative B-12

Alternative B-12 could have the same potential land use compatibilities with MCB Camp Pendleton as would occur with Alternative B-10 Modified. However, given the reduced development in Planning Area 8, the potential could be less. Any impact is speculative because it is uncertain if the area in Planning Area 8 would be adversely impacted by MCB Camp Pendleton and if residential uses in Planning Area 8 would be as close to the base as proposed for Alternative B-10 Modified, and if the residents would pressure for modification to training operations, and how the training operations would be modified. Mitigation requiring the evaluation of the compatibility of the noise sensitive land use at the time of the processing of an area plan with the County of Orange for review and approval, as well as a buyer notification program, would reduce this potential impact to a level of less than significant.

7.11.2.3 Alternative A-4

Alternative A-4 would provide the same level of development as Alternative B-10 Modified. However, Alternative A-4 assumes that permits to authorize discharge or fill in Waters of the U.S. would be processed on a project-by-project basis instead of under the SAMP process. This procedural change related to Waters of the U.S. would not affect the land use findings set forth

for Alternative B-10 Modified. As such, the land use impacts for both alternatives would be the same.

7.11.2.4 Alternative A-5

Under Alternative A-5, estate residential development would occur within an approximately 8,000-acre development area (35 percent) of the RMV Planning Area. Approximately 14,815 acres (65 percent) of the RMV Planning Area would be in some form of open space. This alternative assumes the development of up to 3,000 estate lots. This alternative also assumes that a portion of the undeveloped portion of each residential lot would extend into open space areas and that other avoidance areas such as in Planning Area 3 would be included within the development envelope as community open space amenity areas. Implementation of the A-5 Alternative would not result in significant physical land use impacts. It would not result in the disruption of an established community because all development would occur within the RMV Planning Area boundaries. The land uses associated with the alternative would be compatible with existing or planned on-site land uses and uses adjacent to the RMV Planning Area because they would be a continuation of large-lot residential development. This alternative would have similar impacts associated with compatibility with MCB Camp Pendleton, although the overall number of units in Planning Area 8 would be substantially less.

7.11.3 TRANSPORTATION AND CIRCULATION

7.11.3.1 Alternative B-10 Modified

The total trip generation of Alternative B-10 Modified is 183,338 trips per day, of which 14,289 are in the a.m. peak hour and 18,033 are in the p.m. peak hour. Buildout of Alternative B-10 Modified under the *Year 2025 + Alternative B-10 Modified Buildout* traffic scenario would result in significant cumulative impacts to study area intersections, freeway ramps, and freeway mainline segments. Under the committed circulation scenario, this alternative would significantly impact 17 intersections, 7 freeway ramps, and 14 freeway mainline segments. Under the Committed Circulation System plus La Pata Avenue Extension scenario, Alternative B-10 Modified is expected to significantly impact 15 intersections, 5 freeway ramps, and 13 freeway mainline segments. Under the Committed Circulation System plus La Pata Avenue Extension plus SR-241 Extension, Alternative B-10 Modified is expected to significantly impact 11 intersections, 5 freeway ramps, and 6 freeway mainline segments.

The proposed transportation improvements result in acceptable levels of service at each improvement location with the exception of three intersections (Marguerite Parkway at Crown Valley Parkway in the City of Mission Viejo, Camino Capistrano at Del Obispo Street in the City of San Juan Capistrano, and the I-5 southbound ramp intersection at Avenida Pico in the City of San Clemente) under cumulative with Alternative B-10 Modified conditions without the SR-241 extension. The at-grade and grade-separated plans at the Antonio Parkway/New Ortega Highway intersection both result in acceptable levels of service under cumulative conditions with the SR-241 extension. However, only the grade-separated improvement plan results in acceptable levels of service under cumulative conditions without the SR-241 extension. For this reason, a grade-separated plan may be the preferred design option.

Alternative B-10 Modified's contribution to impacts on freeway mainline segments that are forecast to operate deficiently would be considered significant and unavoidable.

To address those proposed transportation improvements located outside the County's jurisdiction, the County is endeavoring to enter into agreements with the affected jurisdictions

regarding the design and construction of the improvements and the transfer of monies paid towards funding of these improvements from the SCRIP program. However, if the County is not able to reach agreement with one or more of the jurisdictions, for purposes of this EIS, the impacts to be mitigated by those improvements may remain significant and be unavoidable.

7.11.3.2 Alternative B-12

Like the B-10 Modified Alternative, the B-12 Alternative assumes 14,000 residential units and a similar amount of non-residential square footage. Therefore, maximum entitlements under Alternatives B-10 Modified and B-12 are comparable. It is anticipated that there could be some differences between projected traffic impacts under the B-12 Alternative (as compared with the B-10 Modified Alternative) in the event of a reallocation of residential units/nonresidential square footage between and among the development areas, due to the reduction in size of development areas within Planning Areas 4, 6, 7, and 8, as well as the proposal under Alternative B-12 to retain Cristianitos Road as a private road south of the Ortega Highway. However, such reallocations will not be proposed until master area plans are submitted to the County for each of the planning areas. Therefore, any analysis of the changes would be speculative at this time. Because the maximum levels of development would be unchanged, the significant effects of and level of significance after mitigation for Alternative B-12 are expected to be similar to those of Alternative B-10 Modified.

7.11.3.3 Alternative A-4

Alternative A-4 assumes the same amount of development within the same footprint as Alternative B-10 Modified. Because Alternative A-4 assumes the same amount of development within the same footprint as Alternative B-10 Modified, it would have the same traffic and circulation impacts as Alternative B-10 Modified.

7.11.3.4 Alternative A-5

Implementation of Alternative A-5 assumes development would occur on approximately 8,000 acres (35 percent) with approximately 14,815 acres (65 percent) of the RMV Planning Area in open space. This alternative assumes up to 3,000 dwelling units. With 3,000 dwelling units, it is expected that there would be limited employment-generating land uses. For Year 2025, under a committed network scenario, Alternative A-5 is anticipated to result in 19 intersection deficiencies, 8 freeway ramp deficiencies, and 7 freeway mainline deficiencies. Although Alternative A-5 would generate substantially less traffic than the other alternatives, given the projected impacts under the 2025 scenario and the number of deficient intersections and other facilities, it is expected that a substantial mitigation program to provide required road/ intersection improvements would also be required for this alternative in order to address cumulative impacts. As with the other alternatives, a fair share contribution towards the cost of these improvements would be required to be paid into a SCRIP-like program. As with the other alternatives, it is expected that the provision of necessary improvements would result in acceptable levels of service at each improvement location. To the extent that the improvements lie outside of the County's jurisdiction, the County would be required to enter into agreements with the affected jurisdictions regarding the design and construction of the improvements and the transfer of monies paid towards funding of these improvements from a SCRIP-like program. However, if the County is not able to reach agreement with one or more of the jurisdictions, for purposes of this EIS, the impacts to be mitigated by those improvements may remain significant and be unavoidable. Alternative A-5's contribution to impacts on freeway mainline segments that are forecast to operate deficiently would be considered significant and unavoidable.

7.11.4 AGRICULTURAL AND AGGREGATE RESOURCES

7.11.4.1 Alternative B-10 Modified

The B-10 Modified Alternative would result in the development of urban uses on lands designated as Important Farmland in the RMV Planning Area. This alternative would result in the removal of 278 acres of Prime Farmland, 38 acres of Farmland of Statewide Importance, and 529 acres of Unique Farmland. Cumulatively, implementation of the B-10 Modified Alternative would result in the loss of 845 acres of Important Farmland. There are no feasible mitigation measures that would reduce the loss of Important Farmland to less than significant. The identification of development areas took into consideration the need to avoid and minimize impacts to sensitive habitat and species. Relocation of agriculture to other locations within the SAMP Study Area is limited because consideration must be given to the sensitive habitat, suitable soils, topography, and availability of water. Therefore, the impacts to Important Farmland would be considered a significant, unavoidable impact. It should also be noted that while the nurseries are located on what is considered Important Farmland, the plant material is being grown in containers and the impact on Important Farmland is unaffected. These uses would be able to relocate outside of the RMV Planning Area and continue operation elsewhere.

Implementation of Alternative B-10 Modified on the RMV Planning Area would result in the inability to extract the sand and gravel within San Juan Creek. The California Geological Survey identifies this resource as a locally important mineral resource recovery site. This is considered a significant unavoidable impact. Additionally, implementation of this alternative would curtail the extraction of resources at the ONIS site, a locally important resource. In this latter instance, Project Design Features can help to reduce the level of impact, but not to a level of less than significant.

7.11.4.2 Alternative B-12

The B-12 Alternative would result in the development of urban uses on lands in the RMV Planning Area designated as Important Farmland. It should be noted that for the B-12 Alternative, an overstated impact analysis is assumed for Planning Areas 4 and 8 and for the orchards proposed in Planning Areas 6 and 7. The final footprint of future development/orchards within these planning areas is undefined at this time because the precise location of future development/orchards is not known. In order to provide an analysis of possible impacts to Important Farmland, the impacts in Planning Area 4 are assumed to affect a larger “impact area” of approximately 1,127 acres and the impacts for Planning Area 8 are assumed to affect a larger “impact area” of approximately 1,349 acres. The impact areas in Planning Areas 6 and 7 are approximately 249 acres and 182 acres, respectively. This impact analysis overstates the possible impacts to vegetation communities and species because, ultimately, Rancho Mission Viejo is limited to developing a maximum of 550 acres in Planning Area 4, 500 acres in Planning Area 8, and a total of 50 acres of orchards in either/or Planning Area 6 and 7, as well as all necessary supporting infrastructure in addition to the proposed development in the other planning areas. Therefore, under the overstated impact scenario, this alternative would result in the removal of up to 307 acres of Prime Farmland, 48 acres of Farmland of Statewide Importance, and 584 acres of Unique Farmland. In total, implementation of the B-12 Alternative would result in the loss of up to 939 acres of Important Farmland.

There are no feasible mitigation measures that would reduce the loss of Important Farmland to less than significant. The identification of development areas took into consideration the need to avoid and minimize impacts to sensitive habitat and species. Relocation of agriculture to other locations within the SAMP Study Area is limited because consideration must be given to the

sensitive habitat, suitable soils, topography, and availability of water. Therefore, the impacts to Important Farmland would be considered a significant, unavoidable impact. It should also be noted that while the nurseries are located on what is considered Important Farmland, the plant material is being grown in containers, although the impact on Important Farmland is unaffected. These uses would be able to relocate outside of the RMV Planning Area and continue operation elsewhere.

Alternative B-12 would result in significant unavoidable impacts by precluding the extraction of mineral resources in San Juan Creek, an area designated as a Mineral Resource Zone by the state. There are no mitigation measures that can reduce this impact to a level of less than significant. Additionally, the alternative would curtail the extraction of resources at the ONIS site, a locally important resource. In this latter instance, a Project Design Feature can reduce the level of impact, although not to a level of less than significant.

7.11.4.3 Alternative A-4

The A-4 Alternative would result in the same impacts as Alternative B-10 Modified.

7.11.4.4 Alternative A-5

The A-5 Alternative would result in the development of urban uses on lands within the RMV Planning Area designated as Important Farmland. Under a worst-case scenario, this alternative could result in the removal of up to 273 acres of Prime Farmland, 45 acres of Farmland of Statewide Importance, and 512 acres of Unique Farmland. Therefore, development of the A-5 Alternative could result in the loss of up to 830 acres of Important Farmland. There are no feasible mitigation measures that would reduce the loss of Important Farmland to less than significant. The identification of development areas took into consideration the need to avoid and minimize impacts to aquatic resources. Relocation of agriculture to other locations within the SAMP Study Area is limited because consideration must be given to the sensitive habitat, suitable soils, topography, and availability of water. Therefore, the impacts to Important Farmland would be considered a significant, unavoidable impact. It should also be noted that while the nurseries are located on what is considered Important Farmland the plant material is being grown in containers, although the impact on Important Farmland is unaffected. These uses would be able to relocate outside of the RMV Planning Area and continue operation elsewhere.

Alternative A-5 would result in significant unavoidable impacts by precluding the extraction of mineral resources in San Juan Creek, an area designated as a Mineral Resource Zone by the state. There are no mitigation measures that can reduce this impact to a level of less than significant. Additionally, the project would curtail the extraction of resources at the ONIS site, a locally important resource.

7.11.5 AIR QUALITY

7.11.5.1 Alternative B-10 Modified

Construction-related air quality emissions would result in significant impacts on a daily and quarterly basis. With respect to quarterly construction emissions, Alternative B-10 Modified is expected to generate 49.7 tons per quarter of carbon monoxide (CO) (SCAQMD daily threshold is 24.75 tons per quarter), 46.26 tons per quarter of volatile organic compounds (VOC) (the threshold is 2.5 tons per quarter), 34.69 tons per quarter of oxides of nitrogen ($NO_{X)}$ (the threshold is 2.5 tons per quarter), and 398.8 tons per quarter of particulate matter (PM_{10}) (the

threshold is 6.75 tons per quarter). Recommended control measures would substantially reduce short-term, construction-related PM_{10} emissions. However, short-term, construction-related emissions of NO_X, CO, VOC, and PM_{10} during the peak construction period would remain significant after mitigation.

Because the region is in non-attainment for ozone, CO, and NO_2, and project-related increases of these pollutants are above SCAQMD thresholds, operation of Alternative B-10 Modified would result in a significant cumulative air quality impact for CO, NO_X, and ROG (an ozone precursor). Long-term operational emissions of CO, VOC, NO_X, and PM_{10} would remain significant and unavoidable.

With respect to local operational air emissions, no additional mitigation beyond that assumed in the traffic analysis is assumed for traffic emissions. Alternative B-10 Modified would not result in significant local operational air quality effects.

Consistency with an Air Quality Management Plan requires that the project be consistent with the approved Air Quality Management Plan/State Implementation Plan for the region that provides controls sufficient to attain the national ozone standards by the required attainment date. The Air Quality Management Plan is based on growth projections agreed to the five affected counties and SCAG. If the total population accommodated by a new project, together with the existing population and the projected population from all other planned projects in the subarea, does not exceed the growth projections for that subarea incorporated in the most recently adopted Air Quality Management Plan, the completed project is consistent with the Air Quality Management Plan. The entire County of Orange is considered to be one subarea. The Air Quality Management Plan is region-wide and accounts for, and offsets, cumulative increases in emissions that are the result of anticipated growth throughout the region. Because implementation of Alternative B-10 Modified would not exceed growth projections for the subarea, the alternative is considered consistent with the Air Quality Management Plan.

7.11.5.2 Alternative B-12

Alternative B-12 is very similar to Alternative B-10 Modified. It would allow for the development of a maximum of 14,000 residential units, with a similar mix of single-family attached and detached units, multi-family, and the 6,000 senior housing units (including both single-family units and apartments). Because of similar grading and construction assumptions between Alternative B-12 and Alternative B-10 Modified, the findings for Alternative B-10 Modified would also be applicable for this alternative. Emissions of all pollutants except sulfur oxides would be significant, based on the thresholds of significance set forth in this EIS. Because the region is in non-attainment for ozone, CO, and NO_2, and project-related increases of these pollutants are above SCAQMD thresholds, operation of Alternative B-12 would result in a significant cumulative air quality impact for CO, NO_X, and ROG (an ozone precursor). Long-term operational emissions of CO, VOC, NO_X, and PM_{10} would remain significant and unavoidable. Alternative B-12 would also be considered consistent with the Air Quality Management Plan. Alternative B-12 would not result in significant local operational air quality effects.

7.11.5.3 Alternative A-4

Alternative A-4 would provide the same level of development as Alternative B-10 Modified. However, permits to authorize discharge or fill in Waters of the U.S. would be processed on a project-by-project basis instead of under the SAMP process. This procedural change related to Waters of the U.S. would not affect the air quality findings set forth for Alternative B-10 Modified. As such, the air quality impacts for both alternatives would be the same.

7.11.5.4 Alternative A-5

Under Alternative A-5, development would occur within approximately 8,000 acres (35 percent) of the 22,815-acre RMV Planning Area. Approximately 14,815 acres (65 percent) of the RMV Planning Area would be in some form of open space. It is estimated that Alternative A-5 could accommodate approximately up to 3,000 estate lots. Because substantially less development would occur associated with this alternative and the avoidance of all state and federal threatened/endangered species is required, this alternative assumes less disturbance activities. However, it is anticipated that emissions of all pollutants except sulfur oxides would be significant, based on the thresholds of significance set forth in this EIS. Because the region is in non-attainment for ozone, CO, and NO_2, and project-related increases of these pollutants are above SCAQMD thresholds, operation of Alternative A-5 would result in a significant cumulative air quality impact for CO, NO_X, and ROG (an ozone precursor). Long-term operational emissions of CO, VOC, NO_X, and PM_{10} would remain significant and unavoidable. Alternative A-5 is considered consistent with the Air Quality Management Plan.

7.11.6 NOISE

7.11.6.1 Alternative B-10 Modified

Most of the proposed development associated with Alternative B-10 Modified is located away from existing noise-sensitive uses. The exception to this situation is at the edge of the RMV Planning Area near Ortega Highway where development would occur directly adjacent to existing residences. Alternative B-10 Modified would be developed in phases, potentially resulting in construction occurring adjacent to or near residential areas already constructed within or proximate to the RMV Planning Area. The Noise Ordinance limits noise generated by construction to the hours of 7 a.m. to 8 p.m. on weekdays and Saturdays. No noise generating activities are expected outside of these hours. In addition, the County requires compliance with the *Noise Ordinance*, the use of mufflers, and location of stock piles away from residential areas. Therefore, the construction would not result in significant short-term noise impacts.

Impacts from noise produced by project-generated traffic are estimated based on the traffic projections presented in the traffic study. By comparing the traffic volumes for different scenarios, the changes in noise levels along roadways in the vicinity of the RMV Planning Area can be estimated. To estimate noise level increases and noise impacts due to the development of Alternative B-10 Modified, the “with Alternative B-10 Modified” traffic volumes are compared to the “without Alternative B-10 Modified” traffic volumes.

To assess the impacts of buildout of the alternative, year 2025 conditions with and without the alternative were compared. Both scenarios assume the committed circulation system described in Chapters 4.1.5 and 7.3 of this EIS. Alternative B-10 Modified is forecast to result in noise increases greater than the 3 dB threshold along three roadway segments. However, based on the thresholds of significance set forth in this EIS, no significant project-specific impacts would occur.

Cumulative traffic noise impacts are assessed by comparing traffic noise CNEL increases compared to existing conditions with Alternative B-10 Modified and all other projected development within the study area. This provides the forecast traffic noise level increases due to the project alternative in addition to other projects and general growth anticipated for the area. Up to 14 roadway segments are forecast to experience 2025 traffic noise level increases over existing conditions greater than 3 dB as a result of implementation of Alternative B-10 Modified and projected growth in the area. Implementation of the recommended standard conditions and

mitigation measures would reduce all impacts to less than significant levels with the exception of cumulative noise impacts on Camino Capistrano north of Junipero Serra that would require the construction of a sound wall on private residential property. At this time, it cannot be guaranteed that permission to construct a wall of private property would be granted.

With respect to potential noise impacts to on-site land uses attributable to the Alternative B-10 Modified, noise-generating activities could include noise from commercial uses adjacent to residential uses, restaurants and nightclubs with late night operations, etc. Proposed commercial uses would be required to comply with the Noise Ordinance. Compliance with County Standard Condition N08 would ensure that commercial uses proposed by Alternative B-10 Modified would not significantly impact any proposed residential uses. The proposed southern extension of SR-241 could result in noise levels that would exceed 65 CNEL at 100 feet from the toll road centerline to 18 roadway segments. Sound attenuation would be required for proposed Alternative B-10 Modified sensitive receptors affected by SR-241 noise.

Residences proposed in Planning Area 8 would be the most impacted by noise generated from activities at MCB Camp Pendleton. Noise levels from the base are not expected to exceed the County's 65 CNEL outdoor residential noise standard within the RMV Planning Area, including Planning Area 8. However, noise from activities on the base, including aircraft and artillery firings, would be audible in Planning Area 8. With mitigation, Planning Area 8 would not be significantly impacted by noise from activities at the base.

7.11.6.2 Alternative B-12

Like the B-10 Modified Alternative, the B-12 Alternative assumes 14,000 residential units and a similar amount of non-residential square footage. Therefore, maximum entitlements under Alternatives B-10 Modified and B-12 are comparable. It is anticipated that there could be some differences in traffic-related noise impacts under the B-12 Alternative (as compared with the B-10 Modified Alternative) in the event of a reallocation of residential units/nonresidential square footage between and among the development areas, due to the reduction in size of development areas within Planning Areas 4, 6, 7, and 8, as well as the proposal under Alternative B-12 to retain Cristianitos Road as a private road south of the Ortega Highway. However, any changes would not be known until master area plans are requested in the future to the County of Orange. Because the maximum levels of development would be unchanged, the significant effects of Alternative B-12 are expected to be similar to those of Alternative B-10 Modified.

7.11.6.3 Alternative A-4

Alternative A-4 assumes the same amount of development within the same footprint as Alternative B-10 Modified. Under this alternative, a NCCP/MSAA/HCP or SAMP would not be prepared and permitting would proceed with incremental project-by-project review of new development proposals within the RMV Planning Area. Alternative A-4 would have the same noise impacts as Alternative B-10 Modified.

7.11.6.4 Alternative A-5

Implementation of Alternative A-5 assumes development would occur within approximately 8,000 acres (35 percent) with approximately 14,815 acres (65 percent) of the RMV Planning Area in open space. With up to 3,000 estate units, it is expected that there would be limited employment-generating land uses. The A-5 Alternative would generate similar short-term construction noise levels when compared to the other RMV Planning Area alternatives, but the

duration of construction would be shorter because of less development associated with this alternative. Alternative A-5 would generate approximately 30,000 trips per day. The A-5 Alternative would generate less long-term operational noise when compared to the other alternatives project because of the reduction in development associated with this alternative. In particular, less traffic noise would be generated.

7.11.7 VISUAL RESOURCES

7.11.7.1 Alternative B-10 Modified

Alternative B-10 Modified involves altering the existing natural visual characteristics of the RMV Planning Area through the grading and construction of residential, urban activity center, commercial, business park, and recreational uses. Alternative B-10 Modified would require approximately 288,461,000 cubic yards (cy) of cut and fill (153,235,000 cy of mass grading and 135,226,000 cy of remedial grading) including cuts to ridgelines and fills in valleys. The alternative incorporates design features and would implement County of Orange standard conditions and requirements and mitigation measures that would apply at the time of subsequent approvals, for the purpose of reducing visual disruption associated with this change in uses. However, to the extent that the open space appearance of the predominantly undeveloped portion of the RMV Planning Area would be irreversibly lost, this significant impact is unavoidable. Also, implementation of Alternative B-10 Modified would result in significant lighting impacts. After mitigation, there would also be incremental increases in light levels that are considered significant and unavoidable.

7.11.7.2 Alternative B-12

Alternative B-12 would also alter the existing natural visual characteristics of the RMV Planning Area through the grading and construction of residential, urban activity center, commercial, business park, and recreational uses. Alternative B-12 would require less cut and fill grading when compared to Alternative B-10 Modified because less land would be developed. Alternative B-12 assumes development on 5,873 acres with 16,942 acres in open space. Less grading would occur in Planning Areas 2, 4, and 8. With the exception of additional orchards in Planning Areas 6 and 7 and the relocation of the Rancho Mission Viejo headquarters to Planning Area 7, no development would occur within these two planning areas. Planning Area 9 has been eliminated. The alternative incorporates design features and would implement County of Orange standard conditions and requirements and mitigation measures that would apply at the time of subsequent approvals, for the purpose of reducing visual disruption associated with this change in uses. However, to the extent that the open space appearance of the predominantly undeveloped portion of the RMV Planning Area would be irreversibly lost, this significant impact is unavoidable. Also, implementation of Alternative B-12 would result in significant lighting impacts. After mitigation, there would also be incremental increases in light levels that are considered significant and unavoidable.

7.11.7.3 Alternative A-4

Alternative A-4 assumes the same amount of development within the same footprint as Alternative B-10 Modified. Under this alternative, a NCCP/MSAA/HCP or SAMP would not be prepared and permitting would proceed with incremental project-by-project review of new development proposals within the RMV Planning Area. Alternative A-4 would have the same visual impacts as Alternative B-10 Modified.

7.11.7.4 Alternative A-5

Impacts associated with Alternative A-5 are expected to be less than would be associated with Alternatives B-10 Modified, B-12, or A-4 because less development would be implemented and less area would be disturbed. Alternative A-5 assumes up to 3,000 estate lots within a development footprint of up to 8,000 acres with 14,815 acres in open space. This alternative also assumes that a portion of the undeveloped portion of each residential lot would extend into open space areas and that other avoidance areas such as in Planning Area 3 would be included within the development envelope as community open space amenity areas. However, because it is unknown where individual estate lots would be sited within the development footprint, the exact locations where development would be visible cannot be determined at a programmatic-level of analysis. Although this alternative would be expected to result in a reduction in the severity of the visual impacts when compared to the other alternatives, implementation of Alternative A-5 within the RMV Planning Area is expected to require grading, be visible from existing viewpoints, may be visible from wilderness parks, and would introduce nighttime lighting. These changes in the character of the RMV Planning Area are considered significant visual impacts of Alternative A-5.

7.11.8 CULTURAL RESOURCES

7.11.8.1 Alternative B-10 Modified

Implementation of Alternative B-10 Modified would directly impact 19 of the 53 archaeological sites in the RMV Planning Area that are either eligible or potentially eligible for the NRHP. They are prehistoric sites: CA-ORA-535, -656, -753, -754, –882, -997, -1043, -1048, -1121, –1222, –1134, -1136, -1137, -1138, -1449, -1556, -1559, –1560, and -1565. Inclusive of these identified sites are sites that have not had their eligibility determined: CA-ORA-535, -753, -754, -1134, -1136, -1137, and -1138. Because the significance of these sites has not yet been determined, any impacts to these sites would be considered significant until proven otherwise. Additionally, there are five historic sites which would be directly impacted through implementation of this alternative: CA-ORA-29, 30-176631, 30-176633, 30-176634, and 30-176635; impacts to these sites are considered significant. The eligibility of historic site 30-176633 and historic site 30-176631 has not been determined. Any impacts to these sites would be considered significant unless subsequent evaluation determines otherwise. With implementation of the mitigation program, potential impacts to prehistoric archaeological and historic resources would be reduced to a level considered less than significant.

7.11.8.2 Alternative B-12

Implementation of Alternative B-12 would have fewer impacts to prehistoric archaeological resources than Alternative B-10 Modified. Alternative B-12 would directly impact 16 of the 53 archaeological sites that are either eligible or potentially eligible for the NRHP: CA-ORA-656, –753, -754, -882, -1043, -1048, -1137, -1121, -1144, -1185, -1222, -1449, -1556, -1559, -1560, and -1565. Inclusive of these identified sites are sites that have not had their eligibility determined. Because the significance of these sites has not yet been determined, any impacts to these sites would be considered significant until proven otherwise. Five historic sites would be directly impacted through implementation. They are CA-ORA-29, 30-176631, 30-176633, 30-176634, and 30-176635; impacts to these sites are considered significant. With implementation of the mitigation program, potential impacts to prehistoric archaeological and historic resources would be reduced to a level considered less than significant.

7.11.8.3 Alternative A-4

Alternative A-4 assumes the same amount of development within the same footprint as Alternative B-10 Modified. Alternative A-4 would have the same cultural resource impacts as Alternative B-10 Modified. With implementation of the mitigation program, potential impacts to prehistoric archaeological and historic resources would be reduced to a level considered less than significant.

7.11.8.4 Alternative A-5

Implementation of Alternative A-5 would have fewer impacts to prehistoric archaeological resources when compared to the other alternatives. Alternative A-5 would directly impact 13 of the 53 archaeological sites that are either eligible or potentially eligible for the NRHP: CA-ORA-753, -754, –882, -997, –1043, -1048, -1121, -1134, –1222, -1555, -1556, -1559, and -1560. Where the significance of a site has not yet been determined, any impacts to the site would be considered significant until proven otherwise. Three historic sites would be directly impacted through implementation: CA-ORA-29, 30-176631, and 30-176633; impacts to these sites are considered significant. With implementation of the mitigation program, potential impacts to prehistoric archaeological and historic resources would be reduced to a level considered less than significant.

7.11.9 POPULATION, HOUSING, AND EMPLOYMENT

7.11.9.1 Alternative B-10 Modified

Alternative B-10 Modified would allow for the development of a maximum of 14,000 residential units. Of those 14,000 units, 7,020 would be single-family attached and detached units; 6,000 would be senior housing units (including both single-family units and apartments); and 980 units would be multi-family units. Alternative B-10 Modified has the potential to generate 32,823 new residents living within the RMV Planning Area and 16,508 jobs. This would not exceed OCP-2004 projections for the RMV Planning Area. No significant impacts would occur based on the thresholds of significance set forth in this EIS. With respect to the Regional Housing Needs Assessment (RHNA), the County of Orange is required to comply with the RHNA allocations and Alternative B-10 Modified would be responsible for contributing to the County's portions for regional housing. Alternative B-10 Modified would not conflict with the RHNA and no impact would occur related to RHNA.

Based on the jobs projected for the RMV Planning Area, Alternative B-10 Modified would generate approximately 16,509 jobs, resulting in a jobs-to-housing ratio of 1:18. This ratio means that Alternative B-10 Modified would be housing rich, which is consistent with the current trends in southern Orange County. However, of the 14,000 dwelling units proposed, 6,000 units would be age-restricted units (i.e., one resident must be aged 55 or older), resulting in a lower ratio. As a result of the reduced employment rates for residents of the 6,000 age-restricted units, the adjusted jobs/housing ratio for the RMV Planning Area would be approximately 1.7 jobs per household; therefore, this alternative would be jobs rich. This jobs-to-housing ratio would exceed SCAG's regional jobs/housing ratio of 1.33 for the Orange County Subregion projected for 2025. Because Orange County is considered "housing rich," this alternative would contribute employment opportunities in south Orange County and be consistent with the jobs/housing balance goal. As a result, implementation of the B-10 Modified Alternative would not result in significant jobs/housing balance impacts.

Alternative B-10 Modified would displace 11 housing units that are owned by Rancho Mission Viejo and occupied by people affiliated with Rancho Mission Viejo. These residents would be relocated to comparable housing units by Rancho Mission Viejo prior to demolition of the existing units. Because of the small number of units affected, as well as relocation of the residents by Rancho Mission Viejo, the impact resulting from the displacement of housing would be less than significant. Alternative B-10 Modified would not result in any significant impacts associated to population, housing, or employment.

7.11.9.2 Alternative B-12

Alternative B-12 is very similar to Alternative B-10 Modified. It would allow for the development of a maximum of 14,000 residential units, with a similar mix of single-family attached and detached units, multi-family, and the 6,000 senior housing units (including both single-family units and apartments). This alternative would provide the same amount of employment uses (5.2 million square feet) as Alternative B-10 Modified.

Alternative B-12 has the potential to generate 32,823 new residents living within the RMV Planning Area (the same as Alternative B-10 Modified) and 16,508 jobs. This increase would not exceed OCP-2004 projections for the RMV Planning Area. As with Alternative B-10 Modified, there would be no significant impacts associated with implementation of this alternative. The relationship of Alternative B-12 to the RHNA would be the same as Alternative B-10 Modified. This alternative would not conflict with the RHNA and no impact would occur related to RHNA. The B-12 Alternative would be consistent with SCAG's jobs/housing balance goal. Therefore, no significant jobs/housing balance impacts are anticipated. Because Orange County is considered "housing rich," this alternative would contribute employment opportunities in south Orange County and be consistent with the jobs/housing balance goal.

Alternative B-12 would also displace 13 housing units. Similar to Alternative B-10 Modified, these residents would be relocated to comparable housing units by Rancho Mission Viejo prior to demolition of the existing units. Alternative B-12 has designated an 11-acre site in Planning Area 3 for relocation of displaced units. Because of the small number of units affected, as well as relocation of the residents by Rancho Mission Viejo, the impact resulting from the displacement of housing would be less than significant.

7.11.9.3 Alternative A-4

Alternative A-4 would provide the same level of development as Alternative B-10 Modified. However, permits to authorize discharge or fill in Waters of the U.S. would be processed on a project-by-project basis instead of under the SAMP process. As such, the findings for Alternative B-10 Modified are applicable for Alternative A-4. Based on the thresholds of significance, there would be no significant impacts to population, housing, or employment associated with implementation of Alternative A-4.

7.11.9.4 Alternative A-5

Alternative A-5 would allow for the development of 3,000 residential units. This alternative would provide limited employment opportunities. The only employment would be possible small services to support the residential uses (e.g., small markets). Based on the generation factors identified for the other alternatives, Alternative A-5 has the potential to generate approximately 9,000 new residents living within the RMV Planning Area. This increase would not exceed OCP-2004 projections for the RMV Planning Area. As with Alternative B-10 Modified, there would be no significant impacts associated with implementation of this alternative.

7.11.10 RECREATION

7.11.10.1 Alternative B-10 Modified

Alternative B-10 Modified would result in a substantial increase in population in the SAMP Study Area. Associated with this increase in population would be an increased demand for recreational resources. This increased demand would be served through the development of neighborhood and community parks that would be provided to serve the proposed development. Based on the County local park requirements, 2.5 acres of parkland for every 1,000 residents would be required. Alternative B-10 Modified would have to provide an estimated 82 acres of local parkland. Alternative B-10 Modified would be required to construct new parks and recreational facilities, such as trails and bikeways. The parks would all be constructed within the development areas associated with this alternative. Therefore, the impacts on the environment have been addressed as part of the development impacts. No additional significant impacts would result from construction of new recreational facilities.

7.11.10.2 Alternative B-12

Alternative B-12 also would result in a substantial increase in population in the SAMP Study Area. As with Alternative B-10 Modified, this increase in population would result in an increased demand for recreational resources. Assuming the same amount of single-family and multi-family units as Alternative B-10 Modified, Alternative B-12 Modified would have to provide an estimated 82 acres of local parkland. As with Alternative B-10 Modified, Alternative B-12 would be required to comply with the Local Park Code and provide local parks within the new development areas to reduce spillover demand on other park facilities in currently developed areas. Alternative B-12 would not have any significant physical impacts on recreational resources. There would be no significant unavoidable impacts on recreational resources.

7.11.10.3 Alternative A-4

The development proposal and footprint for Alternative A-4 is the same as Alternative B-10 Modified. Therefore, the impacts associated with Alternative A-4 would be the same as those outlined above for Alternative B-10 Modified. Alternative A-4 would not have any significant physical impacts on recreational resources. There would be no significant unavoidable impacts on recreational resources.

7.11.10.4 Alternative A-5

The County of Orange local park requirement calls for 2.5 acres of parkland for every 1,000 residents. Under the Alternative A-5 scenario, it is anticipated that in the larger blocks of development, this requirement would be met through the provision of local parks. However, in the more remote areas or smaller pockets of development, this local parks requirement may be met through the payment of fees. For those areas where fees are paid, residents would use existing parks until sufficient fees are collected for the County to provide park area. This could place additional demand on existing recreational facilities in the short term. However, in the long range, it is anticipated that sufficient parks would be provided. Whether through provision of parkland or the payment of fees, Alternative A-5 would be required to comply with the County's Local Park Code; no significant impacts would occur.

The Master Plan of Riding and Hiking Trails depicts the San Juan Creek Trail, the Cristianitos Trail, a portion of the Prima Deshecha Trail, and the trail staging area, within the RMV Planning Area. In those locations where trails are designated and development would occur, the trails

would be implemented. However, under the Alternative A-5 scenario, there are large areas where trails are designated where no development would be allowed. Given the limited amount of development, it is uncertain if the entire trail network would be constructed. With limited residential development, it may not be financially possible for the 3,000 units to finance the implementation off-site portions of the trail network. This would result in gaps in the trail network. This would be a significant impact. Similarly, given the limited amount of residences, the provision of a community trails network may not be feasible. Community trails are desirable for providing connectivity to trails that have been developed in nearby communities, although it would not be a significant impact because it is not part of a regional trails network.

Similar to riding and hiking trails, Alternative A-5 would potentially leave gaps in the bikeway network. With Alternative A-5, Antonio Parkway would not be widened. As a result, the designated Class II bikeway would not be constructed. Since there is only limited development along San Juan Creek, it is uncertain if the Class I San Juan Creek Bikeway would be fully implemented. This alternative would not provide a parallel arterial highway (e.g., Cow Camp Road) which could be designed to include a Class I bike trail. With limited residences, it may not be financially possible for the 3,000 units to finance the implementation off-site portions of the bikeway network. Alternative A-5 would potentially conflict with the implementation of the County Master Plan of Bikeways. This would be considered a significant unavoidable impact on recreational resources.

7.11.11 RELEVANCE TO SECTION 404(b)(1) GUIDELINES ANALYSIS

The public interest issues discussed above may be considered as the “other environmental consequences” mentioned in the Section 404(b)(1) Guidelines (40 CFR 230.10[a]). Significant adverse environmental consequences with regard to these non-aquatic issues can be a consideration in deciding which alternatives to consider as a potential LEDPA. However, with regard to the Section 404(b)(1) Guidelines, “other environmental consequences test,” the conclusions discussed above for each of the various environmental topics/public interest issues do not affect the choice of alternatives carried forward into Chapter 8.0.

7.12 OTHER IMPACT CONSIDERATIONS

7.12.1 THE RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The SAMP Study Area covers the San Juan Creek Watershed and those portions of the San Mateo Creek Watershed in the southern portion of Orange County. The San Juan Creek Watershed is approximately 177 square miles (113,000 acres) extending from the Cleveland National Forest in the Santa Ana Mountains to the Pacific Ocean at Doheny State Beach near Dana Point Harbor. Caspers Wilderness Park and San Mateo Wilderness Area lands are located adjacent to the Cleveland National Forest along the eastern boundary. The western area is highly urbanized encompassing portions of the cities of Mission Viejo and San Juan Capistrano and the planned community of Ladera Ranch. Urbanized areas in the northern portion of the San Juan Creek Watershed include the City of Rancho Santa Margarita. The southern portion of the San Juan Creek Watershed is bound by the cities of Dana Point and San Clemente.

The entire San Mateo Creek Watershed is located in the southern portion of Orange County, the northern portion of San Diego County, and the western portion of Riverside County. The total San Mateo Creek Watershed is approximately 139 square miles (88,960 acres) and lies mostly within the Cleveland National Forest, the northern portion of the U.S. Marine Corps Base at Camp Pendleton (MCB Camp Pendleton), and ranch lands in south Orange County (Lang et al., 1998). The SAMP Study Area includes the 23.6 square mile portion of the San Mateo Creek Watershed within Orange County (approximately 17 percent of the watershed). Rancho Mission Viejo owns the majority of the remaining undeveloped land in the central portion of the San Juan Watershed, as well as almost all of the undeveloped land within the western portion of the San Mateo Creek Watershed just north of the City of San Clemente. The unincorporated, undeveloped RMV Planning Area is approximately 22,815 acres.

The RMV Proposed Project allows for the development of 5,873 acres of the 22,815-acre RMV Planning Area with up to 14,000 residential dwelling units, urban activity center uses, business park uses, neighborhood retail uses, and golf course uses. Approximately 16,942 acres would be retained in open space. Ranching activities would also be retained within a portion of the proposed open space area. Infrastructure would be constructed to support all of the proposed uses, including road improvements, utility improvements, and schools. Existing agriculture uses may also be expanded within defined areas subject to certain restrictions concerning the protection of biological resources. The project is expected to be implemented over 20 to 25 years.

SMWD's long-term planning for the water district has identified the potential need for three seasonal storage facilities, two for domestic and one for recycled non-domestic water. SMWD is considering two sites each for the domestic and non-domestic storage: the Upper Chiquita Site and San Juan Creek East 3 Site for domestic water storage and the San Juan Creek East 3 Site and Trampas Canyon Pit Site for non-domestic water storage. All but the Upper Chiquita Site are within the development boundaries of the RMV Proposed Project.

Additional areas where development may occur in the future within the SAMP Study Area are portions of the Foothill/Trabuco Specific Plan area (encompasses approximately 3,666 acres) and a further approximately 494 acres of land scattered throughout both unincorporated County jurisdiction and incorporated cities. Landowners within these areas may identify potential projects in the future. It should be noted that these 494 acres do not represent all potentially

available land within the SAMP Study Area, only those areas where development may affect natural resources.

With implementation of land uses on these identified development areas, existing land uses, including agricultural operations, would be phased out. On-site grading and subsequent development of proposed uses, given the costs of developing urban infrastructure, would likely preclude any return of a site to a natural state. All projects within the SAMP Study area affecting jurisdictional waters would be subject to the proposed permitting procedures.

The short-term costs of project development include the commitment of substantial financial and natural resources and some adverse construction-related impacts such as noise and air quality. In the short-term, there would be benefits derived from the creation of construction-related jobs and increased long-term employment opportunities for the residents of Orange County.

Future development would contribute air emissions to a non-attainment area. The impact from vehicular emissions cannot be completely mitigated and would have a long-term impact on air quality. Many projects within the SAMP Study would contribute to the cumulative loss of non-aquatic biological habitat and non-aquatic biological species. However, with respect to wetlands, federal policy requires that there be no net loss of wetlands.. Therefore, if a Section 404 permit has been or can be issued for a project, it can be assumed that the project would not result in a loss to wetlands. Development within the SAMP Study Area would remove Important Farmlands which is considered a long-term impact. Development within the SAMP Study Area would irrevocably alter viewsheds by altering natural features, removing natural vegetation, and building urban uses.

7.12.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The environmental effects related to the implementation of the project are addressed in the prior chapters of this EIS. Implementation of the currently proposed (RMV Proposed Project and SMWD Proposed Project) and future proposed projects would require the long-term commitment of natural resources and land. Development would result in the commitment of land resources for residential, commercial, institutional, recreational, open space uses, infrastructure facilities, etc.

Environmental changes associated with development would result in alterations to the physical environment. In order to implement the currently proposed projects, extensive grading would be required and nature habitat would be removed to irrevocably commit sites to urban uses. New structures and streets would be built, and additional utilities would be constructed.

Implementation of the development would require the commitment and reduction of nonrenewable and slowly renewable resources. These resources include, but are not limited to, petrochemical construction material; lumber; sand and gravel; asphalt; steel; copper; lead; and other metals, etc.

Approval and implementation of development would also result in the loss of other resources. These resources would be for the heating and cooling of homes; potable and non-potable water for sanitary purposes, drinking, irrigation, etc.; transportation of people and goods to and from the site; as well as lighting and other associated energy needs.

7.12.3 EFFECTS OF SAMP ON APPLICANTS

This section summarizes the effects of the alternate permitting system of the SAMP on the regulated community compared to the existing permitting system. The existing permitting system uses NWPs for permanent impacts (generally ≤0.5 acre of permanent impacts to Waters of the U.S.) and Standard Individual Permits (SIPs) for projects with greater permanent impacts to Waters of the U.S., regardless of the project location. The alternate permitting system consists of revocation of specific NWPs followed by establishment of an RGP for maintenance activities, LOP procedures for all other activities, and a long-term individual permit/LOP procedures for the Ranch Mission Viejo with implementation depending on the location of the proposed activity within the SAMP Study Area. Projects within areas eligible for abbreviated permitting are able to fully take advantage of the alternate permitting systems using the RGP for projects with temporary impacts to Waters of the U.S. (most maintenance activities) and LOPs for projects with permanent impacts to Waters of the U.S. Projects within areas ineligible for abbreviated permitting would be processed as LOPs for projects with either temporary impacts or small permanent impacts (≤0.1 acre of impact) and individual permits for all other impacts.

The concept that aquatic areas of different condition warrant different considerations in the Section 404 permitting program is suggested in the Section 404(b)(1) Guidelines, the substantive regulations that govern the Section 404 permitting program. The Section 404(b)(1) Guidelines state, “Although all requirements in [the Guidelines] must be met, the compliance evaluation procedures will vary to reflect the seriousness of the potential for adverse impacts on the aquatic ecosystems posed by specific dredged or fill material discharge activities” (40 CFR 230.10 introduction). The Section 404(b)(1) Guidelines further this point by emphasizing that evaluation “must recognize the different levels of effort that should be associated with varying degrees of impact and require or prepare commensurate documentation” and that “the level of documentation should reflect the significance and complexity of the discharge activity” (40 CFR 230.6(b)).

A major determinant of whether an activity will have a high level of impact is the location of the site within the watershed. Projects that propose to impact Waters of the U.S. in areas ineligible for abbreviated permitting would impact higher quality aquatic resources and warrant the appropriate level of permitting review commensurate with the level of impacts. Likewise, projects that propose to impact Waters of the U.S. in areas eligible for abbreviated permitting would impact lower quality aquatic resources and warrant the appropriate level of permitting review commensurate with the level of impacts. The analysis in this section differentiates permitting processes within areas eligible for abbreviated permitting from permitting processes in areas ineligible for abbreviated permitting.

7.12.3.1 Revocation of Selected Nationwide General Permits

An important step in implementing the alternate permitting program is the revocation of specific NWPs, including NWP 14, NWP39, NWP40, and others. Many NWPs have a threshold of 0.5 acre of permanent impacts. Under the current permitting framework, projects impacting greater than 0.5 acre of Waters of the U.S. must undergo processing as an SIP. Projects impacting 0.5 acre or less of Waters of the U.S. would undergo processing as a NWP. This 0.5-acre threshold is applied regardless of the type or quality of aquatic resource involved.

USACE believes that the current NWP framework provides an inappropriate level of protection for aquatic resources within the SAMP Study Area. In some areas where riparian condition is poor, the thresholds required by the NWP program result in greater delays and more uncertainty for projects proposing impacts to greater than 0.5 acre of these lower quality aquatic resources.

These types of aquatic resources have a low level of hydrologic, water quality, and habitat integrity with little strategic ecosystem value in the landscape context. The additional procedures including the public notice and environmental assessment required under the SIP program tend to elicit little input from the public and other resource agencies or provide little additional insight on aquatic resource condition above what was obtained by the formal functional assessment methods used for the SAMPs.[1] The NWP thresholds are overly restrictive in light of the poor condition of the aquatic resources in question.

Conversely, in other areas where riparian condition is better, the NWP framework provides an insufficient amount of review for those projects proposing to impact these higher quality aquatic resources. These types of aquatic resources possess a high level of hydrologic, water quality, and habitat integrity with important strategic value in a landscape context with respect to endangered aquatic species habitat and riparian movement corridors. The NWP thresholds do not provide the public with a suitable opportunity for permit review in light of the condition of the aquatic resources in question. Additional public input and review is needed to ensure higher quality resources receive the appropriate amount of review and regulatory attention.

After receiving input from the regulated community in working sessions through the course of developing the SAMP, consideration was given to retaining the NWPs for use within the lower quality aquatic resource areas. Whereas there was generally an understanding of the need for additional permit review for projects affecting higher value aquatic resources, some comments expressed a concern over the need to revoke NWPs in the lower value aquatic areas. In particular, there were concerns about potential time delays in using an LOP system instead of a nationwide general permit system. After evaluating the concerns and changing specific program elements to address those concerns, the USACE has determined that retaining the NWPs is not needed after establishment of the LOP procedures for several reasons.

First, the use of the alternate permitting program by itself would be simpler than establishing the alternate permitting process and retaining the existing NWP framework. With multiple thresholds and activity-specific conditions for multiple NWPs, the existing NWP framework combined with the alternate permitting processes results in a complex system that may be difficult for the regulated public and future regulators to understand and implement. Instead, the proposed revocation of selected NWPs and the establishment of the RGP and the LOP procedures would simplify the process. The alternate permitting process would be similar to the Section 1600 streambed alteration agreements by the CDFG, which do not have multiple thresholds for multiple activity types. Applicants for a CDFG Streambed Alteration Agreement face a simpler application process that does not have the multiple thresholds of the varying NWPs. Future permit applicants with projects affecting lower quality aquatic resources have to consider only two options: an option for maintenance actions (the RGP) and an option for other actions (the LOP procedures).

[1] A review of the USACE permit database was performed to identify those projects permitted to impact lower quality aquatic resources within Orange County using standard individual permits. The focus of the review was on channelization projects converting undersized riprap-lined channels to larger riprap-lined channels or concrete-lined channels. The riprap-lined channels were considered lower ecological quality. The review indicated that there were 7 permits issued for such projects. Six of the seven permits during the public notice phase elicited 0 to 3 comments from individuals or organizations outside of the federal and state agencies. One permit elicited 12 comments from individuals or organizations outside of the federal and state agencies. Most of the comments were focused on ensuring the construction did not infringe on people's property with some concerns over the loss of wildlife habitat within the channels. A few comments expressed concern over people using the larger channels to trespass onto people's property. In general, the comments did not express appreciable opposition to these projects, and comments were addressed by requiring the work to stay within public right-of-way and through compensation of impacts to any low quality habitat.

Second, the alternate permitting strategies would allow for the processing of permits on similar timelines as the existing NWP framework. Table 3-2 in Chapter 3.0 shows that for all actions that could be permitted by the revoked NWPs, there would be no time delays due to the strict timeframes established for the proposed RGP or the proposed LOP procedures. For the proposed LOP procedures, actions would be completed within 45 days. The timeframe is possible due to the advanced analysis undertaken in terms of baseline aquatic resource characterization in support of any potential decision-making and the required pre-application consultation. If there had not been any detailed upfront analysis performed in the context of the SAMP, the relatively quick review times would not have been possible. For the maintenance activities eligible under the proposed RGP, the actual processing time is substantially faster, resulting in authorizations within 15 days. When combined with a pre-approved Section 401 certification, the time savings for the RGPs would be substantially greater overall for these types of activities compared to the current framework.

Third, the increased pre-application coordination required of the LOPs would not need an excessive amount of coordination between the regulated community and the USACE compared to the existing NWP framework. Most routine maintenance activities eligible under the proposed RGP would not require pre-application consultation. For other activities, the pre-application coordination would only be required of those projects that permanently impact greater than 0.1 acre of Waters of the U.S. or temporarily impact greater than 0.25 acre of native riparian vegetation. Also, given the amount of coordination most applicants in southern California already undertake with other state and federal resource agencies, additional coordination with the USACE in the context of the LOP procedures would not result in delays. In fact, the upfront coordination would actually defuse potentially disruptive conflicts.

Fourth, the use of the alternate permitting program provides the appropriate amount of review that ensures projects have the supporting environmental analysis to make informed decisions compared to the existing NWP framework. Providing a fuller amount of review required by the LOP process ensures permit decision are defensible. Although such a review process may be perceived as burdensome, the USACE is able to improve the environmental decision-making process and avoid the pitfalls of projects with faulty environmental analysis. For the alternate permitting programs, the additional environmental analysis has been performed upfront to ensure that review was proactively considered on the watershed level.

Overall, the use of the alternate permitting program includes program-level safeguards to ensure that advantages provided by the NWPs are not lost. The alternate permitting program allows for a simpler process akin to the Section 1600 Streambed Alteration Agreement, a process that does not rely on the multitude of NWPs for different categories of activities. Combined with program-level considerations with respect to timing and coordination, the alternate permitting procedures in the context of California's regulatory climate do not adversely affect the regulated community. There is no need for most NWPs in the SAMP Study Area.

7.12.3.2 Permitting Outcomes Before and After the SAMP

To provide some sense of the effects of the SAMP permitting procedures on the regulated public, the outcome of permit actions from the last five years were re-examined in light of the alternative permitting processes. This analysis involved final NWP and SIP actions initiated within the last six years (October 1999 to current) within the Orange County SAMP permitting areas for the San Juan Creek/San Mateo Creek Watersheds and the San Diego Creek Watershed. These actions were re-evaluated using the 0.5-acre thresholds of the 2002 NWP, where permanent impacts greater than 0.5 acre would involve processing as SIPs and impacts at the threshold or less would involve processing as NWPs. Any instances of pre-application

coordination were noted. These actions were also re-evaluated using the SAMP alternate permitting program in terms of which permitting process would be undertaken after factoring in its location with respect to the areas ineligible for abbreviated permitting and the size of the permanent impact.

Using the 2002 NWP thresholds, the 103 actions in the review timeframe were processed or would have been processed as 18 SIPs and 85 NWPs, involving 17 pre-application meetings. Under the alternate permitting system, these actions would have been processed as 6 SIPs, 8 NWPs, 12 RGPs, and 77 LOPs, involving 40 pre-application meetings. The alternate system would have resulted in a marked decrease in the number of SIPs processed in the SAMP areas. The NWPs issued would have been for boat docks, single-family homes, and geotechnical surveys, actions with minimal impacts to the aquatic environment and quickly processed. For 12 projects, the RGP for maintenance would have been used, resulting in a quick review and authorization of these activities. The main difference would have been the issuance of 77 LOPs under the alternate permitting system. Of these, 15 LOPs would have been issued in place of a SIP (resulting in time savings for the applicant) and 62 LOPs would have been issued in place of a NWP. Of the 62 LOPs, there would have been 25 pre-application meetings required because the permanent impacts would have been greater than 0.1 acre of Waters of the U.S. with the remainder applying directly to the USACE. As stated above, the use of LOPs instead of NWPs would not adversely affect applicants because of built-in timelines that would allow the LOPs to be processed in the same timeframes. Although the LOPs involve a greater level of review, much of the analysis has been performed in the course of developing the SAMP, allowing for minimization of review times.

7.12.3.3 Effects of Implementing the RGP

In California, actions involving maintenance of structures, requires authorizations from the USACE, CDFG, and RWQCB. Although some maintenance activities do not require pre-construction notification to the USACE, it is still a requirement for those actions to obtain approvals from the CDFG for the Section 1600 Streambed Alteration Agreement and the RWQCB for Section 401 certifications. Nevertheless, many applicants also request from the USACE verification that an activity would be covered by a NWP.

For the SAMP Study Area, there will be expected time savings due to the maintenance RGP for Section 404 actions. It is expected that the CDFG will issue a similar permitting system resulting in quicker review times in the context of their proposed MSAA. In terms of the Section 404 action and the associated Section 401 certification, applicants would only have to contact the USACE for individual actions. The USACE would apply for a Section 401 certification for the RGP, obviating the need for obtaining a Section 401 certification for individual maintenance actions. As a result, the RGP would allow for more predictability by the regulated community and less consternation over the perceived difficulties of obtaining permits from two different agencies. The proposed 15-day timeframe would ensure that the regulated public can undertake their maintenance activities for roads, flood control channels, weir structures, pipelines, bank protection structures, and other projects in the eligible areas with less regulatory hindrances.

7.12.3.4 Effects of Implementing the LOP Procedures

The effects of implementing the LOP procedures depend on the location of a proposed project within the SAMP Study Area. The effects would depend on whether those projects are located within areas ineligible for abbreviated permitting or whether they are located in areas eligible for abbreviated permitting. Areas ineligible for abbreviated permitting tend to have higher quality

aquatic resources and would result in restrictions on the use of LOPs for authorizing impacts to Waters of the U.S. by requiring SIPs for permanent impacts greater than 0.1 acre of Waters of the U.S. Areas eligible for abbreviated permitting tend to have lower quality aquatic resources and would not have any thresholds governing their use, except in instances involving proposals to substantially modify compensatory mitigation sites or involving proposals to undertake capital improvements of major stream courses.

Within areas ineligible for abbreviated permitting, there will be a threshold of 0.1 acre. Impacts greater than 0.1 acre to Waters of the U.S. may be authorized with a SIP, and impacts at or less than 0.1 acre of Waters of the U.S. may be authorized with a LOP. These higher value aquatic resources would require the appropriate amount of review to minimize impacts to the maximum extent practicable. Through the review of most of these actions through the SIP process, opportunities would be given to other resource agencies and to the public to review and comment on the proposed action. In addition, a full environmental assessment and public interest review would allow for the USACE to conduct an appropriate level of evaluation within the decision-making process. Although actions with impacts at or less than 0.1 acre of Waters of the U.S. would be processed as LOPs rather than SIPs, review of these actions by other agencies through the inter-agency notification process would help minimize adverse impacts that may result. Within the Los Angeles District of the USACE, this action of requiring SIPs for impacts greater than 0.1 acre to Waters of the U.S. has precedence, having been required within the upper Santa Margarita River Watershed in Riverside County due to the concern about impacts to Waters of the U.S.

Overall, there would be additional restrictions on permit applicants in areas ineligible for abbreviated permitting. Actions that could have been processed within 45 days as a NWP would now be processed within 120 days as a SIP. Although an extended review period is being proposed, the SAMP permitting process recognizes the need to protect higher value aquatic resources is important in the context of implementing regulations supportive of the goal of the Clean Water Act, which is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” The requirement of processing most actions through SIPs would ensure that all impacts to Waters of the U.S. are unavoidable.

Within areas eligible for abbreviated permitting, there will be no threshold for impacts. Activities not involving maintenance would be processed as LOPs instead of NWPs or SIPs. Only those actions that propose to line major streams with concrete or completely fill such streams or those actions that propose to impact compensatory mitigation sites would require SIPs. As a result, SIPs would be very rare within areas eligible for abbreviated permitting. Due to the lower quality of these aquatic resources, additional review would not result in any substantial differences. Public notices disseminated for these proposed projects tend to elicit no appreciable opposition from other regulatory agencies or the public. Nevertheless, the review of all non-maintenance actions through LOPs would involve inter-agency coordination to ensure that other regulatory agencies can provide appropriate comments.

Overall, a net benefit to permit applicants would be realized in areas eligible for abbreviated permitting. For projects that propose impacts to greater than 0.5 acre of Waters of the U.S., the LOP process would allow for shortened resolution time for permit actions, resulting in a permit within 45 days rather than the 120 days under the current SIP process. Comments on the aquatic resources would still be provided by the resource agencies under LOP procedures, but a public notice and full environmental assessment would not be needed. Savings to the applicant in terms of time and resources would result. For projects that propose impacts at or less than 0.5 acre of Waters of the U.S., the LOP process would not result in adverse consequences as discussed above in the discussion on revoking the NWPs. There would not be

time delays due to the strict timelines required. The requirements for pre-application coordination would not be burdensome due to the coordination many applicants already undertake with the other California resource agencies as part of their normal course of business.

7.12.3.5 Summary

Overall, the benefit of the alternate permitting system to the applicant depends on the location of a proposed project within the San Juan Creek and Western San Mateo Creek Watersheds. Excessive delays would be minimized for permit applications proposing to impact lower quality aquatic resources. Increased review of permit and consequent duration it takes to receive permits would increase for permit applications proposing to impact higher quality aquatic resources. The SAMP permitting process results in a common sense approach allowed by the Section 404(b)(1) Guidelines, which emphasizes providing the appropriate amount of documentation commensurate with the level of impact to the aquatic environment.

CHAPTER 8.0
COMPLIANCE WITH SECTION 404(b)(1) GUIDELINES

8.1 SPECIFIC ACTIVITIES REQUIRING USACE SECTION 404 PERMITS

As described in Chapter 2.1, participants in the SAMP are identified as either "current" participants or "future" participants. Current participants have identified proposed projects within the SAMP Study Area and are eligible for Section 404 permitting by one or more of the proposed permitting procedures described in this EIS (i.e., the Regional General Permit or the proposed permitting procedures for authorized activities within the RMV Planning Area). This chapter evaluates the Applicants' Proposed Projects and any alternative carried forward from Chapter 6.0 that is potentially capable of meeting the Purpose and Need of the SAMP as defined in Chapter 3.0 in light of 40 CFR Part 230. The regulations set forth in 40 CFR Part 230 are guidelines issued by the Environmental Protection Agency which generally require the USACE, in order to determine whether to issue a Section 404 permit, to determine whether there are any practicable alternatives to the proposed discharge (i.e., Applicants' Proposed Projects) that would have less adverse impacts on the aquatic ecosystem as long as the alternative does not have other significant environmental consequences 40 CFR §230.10(a). The requirements of this section and other requirements of 40 CFR 230.10 – 230.75 are reviewed in this chapter.

8.1.1 APPLICANTS' PROPOSED PROJECTS

8.1.1.1 RMV Proposed Project

As described in subchapter 2.1.1, the Orange County Board of Supervisors approved a General Plan amendment and zone change for the RMV Planning Area on November 8, 2004, referred to as the B-10 Modified Alternative. Subsequent to this action by the Board of Supervisors, the B-12 Alternative was developed to further address the sub-basin-level Southern Planning Guidelines and the Watershed Planning Principles in addition to the overall goals and objectives of the NCCP/MSAA/HCP and SAMP Programs. This alternative is based on input from the USACE, CDFG, USFWS, the environmental community, and the general public. The following is a description of the B-12 Alternative, the "RMV Proposed Project" for which a current SAMP participant, Rancho Mission Viejo, is requesting Section 404 permits (Figure 5-13).

Proposed Types and Locations of Development

The RMV Proposed Project provides for 5,873 acres of development, inclusive of 14,000 dwelling units, and 16,942 acres of open space within the RMV Planning Area. The RVM Proposed Project would allow for development in six planning areas: Planning Areas 1, 2, 3, 4, 5, and 8; Planning Area 10 would be 16,942 acres of open space. Planning Area 9 was eliminated. The planning areas are as follows:

Planning Area 1 is located primarily in the Narrow Canyon Sub-basin. This planning area is also referred to as Ortega Gateway. Under the RMV Proposed Project, development in Planning Area 1 would consist of 566 gross acres.

Planning Area 2 is located primarily in the Chiquita Canyon Sub-basin; a small portion is in the Cañada Gobernadora Sub-basin. Under the RMV Proposed Project, development in Planning Area 2 would consist of 895 gross acres.

Planning Area 3 is located within the Cañada Gobernadora and Central San Juan Sub-basins. Under the RMV Proposed Project, development in Planning Area 3 would consist of 2,171 gross acres.

Planning Area 4 is located within the Verdugo and Central San Juan Sub-basins. Under the RMV Proposed Project, development in Planning Area 4 would consist of 550 gross acres.

Planning Area 5 is located within the Trampas and Central San Juan Sub-basins. Under the RMV Proposed Project, development in Planning Area 5 would consist of 1,191 gross acres.

Planning Area 8 is located within the Talega and Blind Canyon Sub-basins. Under the RMV Proposed Project, development within Planning Area 8 would consist of 500 gross acres.

Planning Area 10 is all remaining open space (16,942 acres) and includes portions of the Narrow, Chiquita, Gobernadora, Central San Juan, Verdugo, Trampas, Cristianitos, Gabino, La Paz, and Talega Sub-basins.

In addition to the above development, Rancho Mission Viejo is requesting the approval of the following additional facilities to the extent that these facilities impact aquatic resources under USACE jurisdiction.

- relocated Rancho Mission Viejo headquarters on an approximately 25-acre site
- relocated CR&R facility on an approximately 18.3-acre site[1]
- relocated employee housing on an approximately 14-acre site
- 50 acres of orchards

It should be noted that for the B-12 Alternative, an overstated impact analysis is discussed in this chapter for development proposed in Planning Areas 4 and 8 and for the orchards proposed in Planning Areas 6 and 7. The final footprint of future development/orchards within these planning areas is undefined at this time because the precise location of future development/ orchards is not known. In order to provide an analysis of possible impacts to vegetation communities and species, the impacts in Planning Area 4 are assumed to affect a larger "impact area" of approximately 1,127 acres and the impacts for Planning Area 8 are assumed to affect a larger "impact area" of approximately 1,349 acres. The impact areas in Planning Areas 6 and 7 are approximately 249 acres and 182 acres, respectively. Therefore, the total impact area for Alternative B-12 is approximately 7,788 acres (Figure 2-2). It should be emphasized that this impact analysis overstates the possible impacts to vegetation communities and species because, ultimately, Rancho Mission Viejo is limited to developing a maximum of 550 acres in Planning Area 4 and a 175-acre reservoir, 500 acres in Planning Area 8, and a total of 50 acres of orchards in either/or Planning Area 6 and 7 (as well as all necessary supporting infrastructure in areas outside of the individual development Planning Areas, in addition to the proposed development in the other planning areas as previously described above and in Chapter 5.0). It should be noted that the configuration of the 500 acres of development in Planning Area 8 is required to take into consideration the findings of five years of arroyo toad telemetry studies in conjunction with minimizing impacts, as required by the USACE Special Conditions.

[1] CR&R/Solag Disposal Company, 31641 Ortega Highway, is located on six acres in the sub-basin. The waste management facility site includes an office building, maintenance shop, fueling station, waste-processing unit, and storage units and yard use for refuse collection.

Infrastructure

Infrastructure facilities will be necessary to support the RMV Proposed Project. These facilities fall into four general categories; roads, bikeways/trails, sewer and water, and drainage facilities. The following describes the infrastructure facilities for the RMV Proposed Project.

Roads

The circulation system for the RMV Proposed Project would have the following components, as shown on Figure 8-1.

- ***Cow Camp Road.*** This is an addition to the County of Orange Master Plan of Arterial Highways (MPAH) of a new east-west arterial highway on the north side of San Juan Creek. Cow Camp Road would be constructed as a major arterial between Antonio Parkway and SR-241, and as a primary arterial between SR-241 and Ortega Highway in a "with SOCTIIP" scenario. In a "without SOCTIIP" scenario, Cow Camp Road would be constructed as a major arterial between Antonio Parkway and F Street and as a primary arterial between F Street and Ortega Highway.

- ***Cristianitos Road.*** The existing Cristianitos Road between Avenida Pico and the development area in Trampas Canyon would remain a private ranch road. From the proposed Trampas Canyon development area to the proposed development area in the Gobernadora Sub-basin, a new north-south primary arterial highway would cross San Juan Creek and Cow Camp Road, and connect to the proposed SR-241, in a "with SOCTIIP" and Oso Parkway in a "without SOCTIIP" scenario.

- ***Avenida Talega.*** An MPAH reclassification of the segment of roadway in unincorporated Orange County from a secondary arterial highway to a collector road (with and without SOCTIIP alternatives).

- ***La Pata Avenue/Antonio Parkway.*** Existing La Pata Avenue/Antonio Parkway would be widened from the northerly limit of the RMV Planning Area, north of Ortega Highway, to the southerly limit of the RMV Planning Area boundary. Also, the road would also be extended further to the south beyond the RMV Planning Area to Avenida Pico outside of the SAMP Study Area.

- ***Ortega Highway (SR-74).*** Existing Ortega Highway would be widened from east of the intersection with La Pata to the westerly RMV Planning Area boundary. Also, the widening would extend further west into the City of San Juan Capistrano.

In addition to arterial highway improvements, certain local circulation facilities would be necessary including, but not limited to:

- ***Gobernadora Road.*** The roadway would be improved to either a four-lane secondary or modified collector to provide internal circulation to development in Gobernadora Sub-basin.

- ***Center Gobernadora Road.*** The roadway would be improved to a two-lane collector road to provide internal circulation to development in Gobernadora Sub-basin.

- ***Trampas Canyon Road.*** The two-lane collector road with a right-of-way reserve would be improved to four lanes to provide internal circulation for development in Trampas Sub-basin.

Development in the Verdugo Sub-basin under the RMV Proposed Project would be accessed via collector roads internal to the development area from Cow Camp Road and Ortega Highway.

Bikeways and Trails

Bikeways and trails are shown on Figure 8-2 as follows:

- Class I Off-Road Bikeway along the north side of San Juan Creek
- San Juan Creek Riding and Hiking Trail along the south side of San Juan Creek
- Internal Community Trails that would also provide other community connections to Ladera Ranch, Coto de Caza, and Talega Ranch

Sewer and Water

Sewer and water facilities (i.e., domestic water, non-domestic water, and wastewater) are shown on Figures 8-3a, 8-3b, and 8-3c. Domestic and Non-Domestic Water Facilities needed to support the RMV Proposed Project are identified in Table 8-1. Wastewater needs for the RMV Proposed Project are identified in Table 8-2.

Drainage and Water Quality

Drainage facilities (i.e., culverts) are shown on Figure 8-4. Combined control facilities to address pollutants and conditions of concern of the type and extent described in the WQMP for the RMV Proposed Project would also be associated with each proposed planning area. The exact location of these facilities is undetermined; however, the Conceptual Water Quality Management Plan (Appendix D) identifies the necessary area, volume, and catchment location for these facilities. All combined control facilities would be located within the footprint of the development planning areas. In addition all detention facilities required for flood control purposes (above the combined control facilities) would also be located within the footprint of the development planning areas.

In addition to culverts, combined control facilities and flood detention facilities, Rancho Mission Viejo in cooperation with SMWD would construct the Gobernadora Multi-Purpose Basin (Figure 5-13). The Gobernadora Multi-Purpose Basin would consist of a storm detention basin that would be established as a wetland and riparian habitat, an infiltration gallery to capture and divert flows to the wetlands, a pump station, and pipeline. The Gobernadora Multi-Purpose Basin would be used to capture and naturally treat urban runoff and storm flows to (1) reduce downstream erosion and sedimentation, (2) address excessive surface and groundwater, and (3) improve the water quality in the Gobernadora Creek that flows downstream to the Gobernadora Ecological Restoration Area (GERA).

TABLE 8-1
DOMESTIC AND NON-DOMESTIC WATER FACILITIES

Location	Type of Facility	Facility Capacity
Planning Area 1	One (1) Zone 1 Domestic Water Reservoir No. 1[a.]	4.4 MG
	One (1) Zone A Non-Domestic Water Reservoir No. 1[a.]	4.3 MG
Planning Area 2	One (1) Zone 2 Domestic Water Reservoir No. 1[c.]	*1.1*MG
	One (1) Zone B Non-Domestic Water Reservoir No. 1[c.]	3.5 MG
	One (1) Zone A Non-Domestic Water Pump Station No. 1[a.]	2,440 gpm
	One (1) Zone B Non-Domestic Water Pump Station No. 1[a.]	4,320 gpm
Planning Area 3	One (1) Zone 1 Domestic Water Reservoir No. 2[a.]	5.3 MG
	One (1) Zone 2 Domestic Water Reservoir No. 2[a.]	5.4 MG
	One (1) Zone 3 Domestic Water Reservoir No. 1[c.]	1.4 MG
	One (1) Zone 3 Domestic Water Pump Station No. 1[a.]	500 gpm
	One (1) Zone A Non-Domestic Water Reservoir No. 2[a.]	2.3 MG
	One (1) Zone B Non-Domestic Water Reservoir No. 2[a.]	3.4 MG
	One (1) Zone B Non-Domestic Water Pump Station No. 2[a.]	2,370 gpm
Planning Area 4	One (1) Zone 2 Domestic Water Reservoir[b.]	Undetermined
	One (1) Zone 3 Domestic Water Reservoir[b.]	Undetermined
	One (1) Zone 3 Domestic Water Pump Station[b.]	Undetermined
	One (1) Zone 4 Domestic Water Reservoir[b.]	Undetermined
	One (1) Zone 4 Domestic Water Pump Station[b.]	Undetermined
	One (1) Zone B Non-Domestic Water Reservoir[b.]	Undetermined
Planning Area 5	One (1) Zone 2 Domestic Water Reservoir No. 3[a.]	2.9 MG
	One (1) Zone 3 Domestic Water Reservoir No. 2[c.]	1.5 MG
	One (1) Zone 4 Domestic Water Reservoir No. 1[c.]	1.1 MG
	One (1) Zone 3 Domestic Water Pump Station No. 2[a.]	1,000 gpm
	One (1) Zone 4 Domestic Water Pump Station No. 1[c.]	400 gpm
	One (1) Zone A Non-Domestic Water Reservoir No. 3[a.]	1.2 MG
	One (1) Zone B Non-Domestic Water Reservoir No. 3[a.]	2.3 MG
	One (1) Zone A Non-Domestic Water Pump Station No. 2[a.]	2,870 gpm
	One (1) Zone B Non-Domestic Water Pump Station No. 3[a.]	1,560 gpm
Planning Area 7/ New RMV Headquarters	One (1) Zone 2 Domestic Water Reservoir No. 4[b.]	Undetermined
	One (1) Zone B Non-Domestic Water Pump Station No. 5[b.]	Undetermined
Planning Area 8	One (1) Zone 2 Domestic Water Reservoir No. 5[b.]	3.9 MG
	One (1) Zone 3 Domestic Water Pump Station No. 4[b.]	320 gpm
	One (1) Domestic Water Pump Station[b.]	60 gpm
	One (1) Zone B Non-Domestic Water Reservoir No. 5[b.]	2.1 MG
	One (1) Zone C Non-Domestic Water Reservoir No. 1[b.]	0.7 MG
	One (1) Zone C Non-Domestic Water Pump Station No. 1[b.]	510 gpm

gpm: gallons per minute
MG: million gallons
a. facility to be located within the development Planning Area boundary.
b. facility to be located within impact analysis/potential orchard area boundary.
c. facility to be located in open space.

Sources: Rancho Mission Viejo, Huitt Zollars, and Tetra Tech, Inc., 2005

TABLE 8-2
WASTEWATER FACILITIES

Location	Type of Facility	Facility Capacity
Planning Area 2	One Small Wastewater Lift Station[a.]	260 gpm
Planning Area 3	One Small Wastewater Lift Station	350 gpm
	One Large Wastewater Lift Station	4,850 gpm
Planning Area 5	One Large Wastewater Station: ID No. 3	2,720 gpm
Planning Area 7/New RMV Headquarters	One Small Wastewater Lift Station	Undetermined
Planning Area 8	One Large Wastewater Lift Station	1,684 gpm
	Expansion to Talega Lift Station	Undetermined

gpm: gallons per minute
a. facility to be located within development Planning Area boundary.

Source: Tetra Tech, Inc., 2004

Existing RMV Planning Area Facilities

To service its ongoing ranch operations, Rancho Mission Viejo has existing water lines, wells, and stream crossing culverts that require periodic maintenance. These facilities are shown on Figure 8-5.

8.1.1.2 SMWD Proposed Project

The SMWD provides water, wastewater, and sewer service through a network of existing and future facilities as follows:

Existing Water Facilities

The SMWD provides water, and sewer service to approximately 52,000 households through a network of existing facilities comprised of 1,330 miles of water and sewer mains, 15 connections to other water districts, 30 domestic reservoirs (298 million gallons of storage), 4 non-domestic reservoirs (1.5 billion gallons of capacity), 21 water pump stations, 30 pressure reducing stations, 6 non-domestic water pump stations, 2 wells with chlorine injection, 21 sewer lift stations, and 3 sewage treatment plants. These existing facilities require ongoing operation and maintenance described as follows:

- Periodic grading and clearing of vegetation, periodic improvements and/or upgrades, patrols, and inspections of access roads and rights-of-way
- Maintenance and repair of plant and pipelines
- Replacement, rehabilitation, retrofitting, and upgrading of plant and pipelines
- Maintenance and repair of reservoirs, appurtenances, and communication facilities
- Flushing of blow-off values and pipelines
- Pumping of storm water from valve vaults

- Provision of lay down areas
- Weed and vector abatement
- Sediment removal and treatment of open reservoirs
- Other activities required by various laws and regulations

Future Facilities

In addition to existing facilities, SMWD has identified the need for several future facilities which may impact Waters of the U.S. in their initial construction. Subsequent to construction, these facilities would require ongoing maintenance and operation as previously addressed in this EIS. The future facilities for which SMWD is requesting permits include all those facilities described above under RMV Proposed Project Infrastructure (Rancho Mission Viejo and SMWD will jointly hold permits for these facilities) and future domestic and non-domestic storage reservoirs. As such, only the proposed Upper Chiquita domestic water storage reservoir is considered a part of the SMWD Proposed Project.

Storage Reservoirs

SMWD's long-term planning for the water district has identified the potential need for three storage facilities, two for domestic water and one for the seasonal storage of recycled non-domestic water. The facilities would be built in compliance with the requirements of the California Division of Safety of Dams design standards. The purpose of these facilities is to store domestic water for emergency use and to store recycled water supply during the winter months when more supply is available and demands are low, then use the water during summer months when the demands are in excess of supply. While only three storage facilities (two domestic and one non-domestic) would be constructed, SMWD has identified and evaluated multiple potential sites. The report, *Future Seasonal and Emergency Water Storage Needs* (Henry Miedema and Associates, July 2003), recommended further evaluation for four potential sites for each of the domestic and the non-domestic seasonal storage facilities.[2] SMWD subsequently refined these four sites to two each for the domestic and non-domestic storage: Upper Chiquita Site and San Juan Creek East 3 for domestic water storage, and San Juan Creek East 3 Site and Trampas Canyon Pit Site for non-domestic water storage.

Domestic Seasonal Storage Facility Alternatives

Upper Chiquita Site. Located in a side canyon on the west side of Chiquita Canyon, north of Oso Parkway, this site would include a conventional earthfill dam and reservoir. The reservoir would have a high water level of 820 feet and an estimated capacity of 860 acre-feet. This site is outside of the RMV Planning Area boundary.

San Juan Creek East 3 Site. This site is located in a tributary canyon on the south side of Verdugo Canyon east of Ortega Highway. The reservoir would be a conventional earthfill dam with a high water level of 600 feet and an estimated storage volume of 1,300 acre-feet. The site is within the impact area boundary of Planning Area 4.

[2] The *Future Seasonal and Emergency Water Storage Needs* study evaluated 20 different potential sites based on location, hydraulics, capacity potential, geographic dispersion, geotechnical constraints, land uses, and environmental sensitivity.

Recycled Non-Domestic Seasonal Storage Facility Alternatives

San Juan Creek East 3 Site. The site is located in a tributary canyon on the south side of Verdugo Canyon east of Ortega Highway. The reservoir would be a conventional earthfill dam with a high water level of 600 feet and an estimated storage volume of 4,600 acre-feet. The site is within the impact area boundary of Planning Area 4.

Trampas Canyon Pit Site. The site is located in a mined pit on the Oglebay-Norton sand plant in Trampas Canyon. The reservoir would have a high water level of 475 feet and an estimated storage volume of 2,020 acre-feet. This site is within Planning Area 5.

8.2 PROCESS FOR IDENTIFYING LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE (LEDPA)

8.2.1 FUTURE PARTICIPANTS PROJECTS OUTSIDE OF THE RMV PLANNING AREA

Most of this section focuses on Rancho Mission Viejo's and SMWD's (applicants) compliance with the Section 404(b)(1) Guidelines. Under the SAMP, future applicants may qualify for the use of either the Regional General Permit for maintenance activities or for the SAMP LOP for most other actions. For the most part, the LOP for future applicants outside the RMV Planning Area boundaries is a separate individual permit that would require a separate NEPA document that would analyze a future project's compliance with the Section 404(b)(1) Guidelines. Programmatic aspects of the LOP for such future permit applicants is discussed in this chapter in the context of anticipated future compliance with the Section 404(b)(1) Guidelines, but the analysis of potential environmental impacts will be provided in separate future NEPA documents. The bulk of the analysis for future participant's projects in this chapter will focus on the Regional General Permit. In the context of very limited impacts allowed by the Regional General Permit in relation to the existing Nationwide Permits, the review of potential environmental effects in this chapter would serve as the documentation showing compliance of the proposed Regional General Permits with the Section 404(b)(1) Guidelines.

8.2.2 SUMMARY OF CHAPTER 6.0 SCREENING CRITERIA FOR SELECTION OF ALTERNATIVES CARRIED FORWARD FOR COMPLIANCE WITH SECTION 404(b)(1) GUIDELINES

As described in Chapter 6.0, the following criteria were used to evaluate whether or not proposed alternatives would be carried forward for analysis in this chapter:

- Impacts to Biological Resources (including impacts to riparian and wetland habitats, impacts to listed and special status aquatic species, the USACE Engineer Research and Development Center (ERDC) functional assessment, consistency with the SAMP Tenets, Aquatic Species Considerations, impacts to upland vegetation communities and listed non-aquatic species, and indirect impacts)

- Impacts to Watershed-Scale Physical Processes and Conditions (including consistency with the Watershed Planning Principles and geology)

- Impacts to Sub-basin-Scale Physical Processes and Conditions (including consistency with the Sub-basin-scale Planning Recommendations)

Based on the analysis set forth in Chapter 6.0, the following alternatives are carried forward for analysis in accordance with Section 404(b)(1) Guidelines for the following reasons:

- ***Alternative A-4: No Permitting Procedures/No SAMP*.** This alternative could achieve substantial aquatic resource protection through incremental permitting. However, this alternative would not provide for comprehensive aquatic resource restoration and management. Alternative A-4 provides no assurances of meaningful protection of Waters of the U.S. There is no guarantee that the permitting outcome of each individual project would achieve the same outcome as the B-10 Modified Alternative. There may be some development areas within the RMV Planning Area that would have more impacts and some areas of open space that would not be preserved. Therefore, permit-by-permit processing is not environmentally beneficial. This alternative would not meet the Purpose and Need as set forth in Chapters 1.0 and 3.0. This alternative is reviewed in this chapter only as a no SAMP alternative for comparison purposes.

- ***Alternative A-5: No Impacts to Clean Water Act/State Jurisdictional Areas/No Take of Listed Species*.** This alternative would obviate the need to prepare a SAMP or NCCP/MSAA/HCP because no regulated Waters of the US or State or listed species would be affected. Alternative A-5 violates two SAMP tenets. One, is the lack of buffers, and two, is the lack of continuous corridors. Therefore, this alternative is not environmentally beneficial. This alternative would not meet the Purpose and Need as set forth in Chapters 1.0 and 3.0. However, Alternative A-5 is a required alternative and is reviewed in this chapter for comparison purposes.

- ***Alternative B-10 Modified: County Approved GPA/ZC Project*.** This alternative achieves substantial protection of wetlands/riparian vegetation communities (with the exception of the headwaters of Cristianitos Creek in Planning Area 6), aquatic resource dependent planning species, habitat blocks, and connectivity between these blocks (with the exception of two areas: San Juan Creek between Planning Areas 3 and 4 and Cristianitos Creek in Planning Area 6), species diversity, significant hydrologic and geomorphic processes, and water quality. Alternative B-10 Modified generally meets the SAMP Goals and Purposes and is therefore reviewed in this chapter.

- ***RMV Proposed Project (Alternative B-12)*.** This alternative achieves substantial protection of wetlands/riparian vegetation communities, aquatic resource dependent planning species, habitat blocks and connectivity between these blocks, species diversity, significant hydrologic and geomorphic processes, and water quality. This alternative addresses the issues raised by the B-10 Modified Alternative as follows:

  - No development is proposed in Planning Area 6, thereby avoiding development in the headwaters of Cristianitos Creek and resulting in a 5,000-foot-wide habitat/species movement linkage between the San Juan Creek and San Mateo Creek Watersheds; and

  - The width of the movement corridor between Planning Areas 3 and 4 is 1,312 feet (400 meters), creating a wildlife movement corridor adequate for all species.

  The RMV Proposed Project generally meets the SAMP Goals and Purposes and is therefore reviewed in this chapter.

8.2.3 REQUIREMENTS FOR DETERMINING COMPLIANCE WITH CODE OF FEDERAL REGULATIONS 230.10

The Section 404(b)(1) Guidelines are substantive criteria used to evaluate the discharge of dredged and/or fill materials into Waters of the U.S. under Section 404 of the Clean Water Act.

The Section 404(b)(1) Guidelines, which are binding regulations, were published by the Environmental Protection Agency at 40 CFR 230 on December 24, 1980. The fundamental precept of the Guidelines is that discharges of dredged or fill material into Waters of the U.S., including wetlands, should not occur unless it can be demonstrated that such discharges, either individually or cumulatively, will not result in unacceptable adverse effects on the aquatic ecosystem.

Compliance with the Guidelines is outlined in 40 CFR 230.12, which requires the specific determination that a project satisfies the Guidelines. Compliance with the Guidelines relies of appropriate restrictions of the discharge of dredged and/or fill material (40 CFR 230.10). First, the approved discharge of dredged and/or fill materials must demonstrate that there are no other practicable alternatives that would have less adverse effects on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequence (40 CFR 230.10[a]). Second, the approved discharge of dredged and/or fill materials must not be contrary to restrictions to protect the aquatic ecosystem (40 CFR 230.10[b] or [c]). Third, the approved discharge of dredged and/or fill materials must include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem (40 CFR 230.10[d]).

The focus of this chapter is on complying with the requirement for permitting the least environmentally damaging practicable alternative (40 CFR 230.10[a]), along with the other discharge requirements set forth in 40 CFR 230.10(b)-(d) referenced above. In so doing, the project must demonstrate that there are no other practicable alternatives to the proposed discharge which would have less adverse effects on the aquatic ecosystem. An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose. The overall project purpose is defined in consideration of the perspective of the applicant(s), but determined solely by the USACE.

Where the activity associated with the discharge proposes to discharge into a special aquatic site such as a wetland and does not require access or proximity to or siting to water bodies, there are two rebuttable presumptions. First, practicable alternatives are presumed to be available, unless clearly demonstrated otherwise. Second, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.

The rebuttable presumptions apply to those activities whose fundamental, irreducible purpose (basic project purpose) does not depend on location within or near Waters of the U.S. In contrast to a marina, whose basic project purpose of “aquatic recreation” requires location within or near waters, the basic project purpose of most residential developments is “housing,” which does not require access to Waters of the U.S. Consequently, a residential development impacting wetlands must clearly demonstrate that practicable alternative sites that do not impact wetlands are not available or, if they are, that such an alternative would not have a less adverse impact to the aquatic ecosystem.

The restrictions of the discharge of dredged and/or fill materials into Waters of the U.S. must follow sequencing in accordance with the Section 404(b)(1) Guidelines Memorandum of Agreement dated February 6, 1990. In virtually all situations, the restrictions must focus on avoidance (40 CFR 230.10[a]), minimization (40 CFR 230.10[d]), and then compensatory mitigation, in that order. Compensatory mitigation may not be used to reduce environmental impacts in the determination of the least environmentally damaging practicable alternative that is required to be determined within 40 CFR 230.10(a). Therefore, any alternative must be evaluated on the merits of its own ability to avoid impacts to aquatic resources.

8.3 SUMMARY OF PROPOSED PERMITTING PROCEDURES

In response to developmental pressures within the San Juan Creek and San Mateo Creek Watersheds on the aquatic ecosystem including streams, wetlands, and riparian vegetation, the Regulatory Branch of the Los Angeles District USACE is developing this SAMP. The USACE has undertaken a long-term, joint process with local participating applicants, including private landowners and local public agencies, to develop a comprehensive, watershed-specific plan to address wetlands permitting, compensatory mitigation, and long-term management of aquatic resources. Through this process, the USACE proposes to establish permitting policies to protect aquatic resource ecosystem functions and values in the San Juan Creek and San Mateo Creek Watersheds while minimizing delays for those projects that may impact aquatic resources with lesser functions. This process allows for better balancing of aquatic resource protection and reasonable development not attainable by traditional project-by-project review, which is limited by its inability to have a true watershed-wide, landscape-based perspective.

As a result of comprehensive studies on the location and quality of aquatic resources within the San Juan Creek and San Mateo Creek Watersheds, this SAMP would provide a contextual framework to implement a more effective permitting system that provides additional protections to higher value resources while minimizing delays for projects impacting lower value resources. Through the comprehensive studies, the USACE has identified geographic areas with higher quality aquatic resources.

Several criteria were used to identify these areas with higher quality aquatic resources. First, the USACE used the USACE Engineer Research and Development Center landscape-level functional assessment to identify those aquatic areas with medium to high integrity with respect to hydrology, water quality, and habitat. The USACE Engineer Research and Development Center landscape-level functional assessment evaluates each riparian reach in the watershed using a suite of indicators to assess the hydrologic, water quality, and habitat integrity in relationship to historical baselines. For each of the three integrity indices, scores were scaled from 0 to 1.0, and riparian reaches were determined to have high integrity (≥70 percent of the maximum score), medium integrity (≥40 percent, and <70 percent of the maximum score), and low integrity (<40 percent of the maximum score). Any riparian reach with medium to high integrity (≥40 percent of the maximum score) for any of the three integrity indices were included for further consideration. These riparian reaches and other riparian areas and uplands draining into them were mapped.

Second, the USACE considered critical habitat designations for federally listed threatened and/or endangered species. For the SAMP Study Area, officially designated critical habitat exists for the California gnatcatcher, San Diego fairy shrimp, and southern steelhead. These critical habitats were added to the map of the higher quality aquatic resources and their contributing uplands.

Third, the USACE removed areas that have already been impacted by residential, commercial, and industrial development. Many of these areas do not provide important aquatic resource ecosystem functions and were excluded from the mapping effort.

In addition to these initial steps, areas within the RMV Planning Area were given additional review and consideration. Through the course of the SAMP process, various development alternatives within the RMV Planning Area were developed and evaluated using the SAMP Tenets and the Watershed Planning Principles. Important considerations included providing continuous riparian corridors, providing adequate buffers of protected riparian corridors, protecting threatened and/or endangered species habitat, protecting headwaters, and

maintaining sediment equilibrium. The ultimate configuration of open space and development as represented by the RMV Proposed Project (Alternative B-12) identifies important areas that contribute to long-term overall riparian integrity for hydrology, water quality, and habitat.

Based on the findings of the resource assessments and mapping, the USACE was able to identify different geographic areas that warrant different permitting considerations that reflect the quality of the aquatic resources in question. For higher quality resources, these areas warrant either complete protection of the aquatic resource through upfront preservation in accordance with the local land use authorities, or full review of projects proposing to impact these aquatic resources by the USACE to ensure all impacts have been avoided, minimized, and compensated through full engagement with the applicant and other regulatory resource agencies. Conversely, for lower quality aquatic resources, projects in these areas warrant a more abbreviated review to provide the regulatory public with certainty in permitting outcomes to allow for better long-term planning, while freeing the regulatory agencies to devote more time towards evaluating potential projects that may have more considerable impacts to the aquatic ecosystem. This new permitting process explicitly considers the quality of the aquatic resources on an aggregate level is an improvement compared to the existing permitting process, which cannot make strategic considerations in the context of the watershed landscape.

In order to implement the alternate permitting process that considers the condition of the aquatic resources being affected, the USACE proposes to revoke several Nationwide Permit (NWP) authorizations within the San Juan Creek and San Mateo Creek Watersheds consistent with 33 CFR 330.5(c). The revoked NWPs (Table 3-1), including NWP 03, NWP 07, NWP 12, NWP 13, NWP 14, NWP 16, NWP 17, NWP 18, NWP 19, NWP 25, NWP 27, NWP 31, NWP 33, NWP 39, NWP 40, NWP 41, NWP 42, NWP 43, and NWP 44.

In consideration of the SAMP watershed-wide assessment, these NWPs may provide an inappropriate level of protection to aquatic resources. For instance, in some situations, the NWPs may be insufficiently protective of the higher aquatic resource value areas in the context of watershed-level protection. In other situations, some of the NWPs may be overly restrictive for projects with minor impacts to the aquatic environment. In place of the revoked NWPs, the alternative permitting process would minimize delays for projects with minimal impacts on the aquatic environment and provide greater efficacy in protecting the aquatic environment by strengthening the review process through increased inter-agency review. The USACE believes these steps would strengthen aquatic resource protections in the watershed's higher value areas and provide regulatory flexibility for activities in lower value resource areas in situations where the impacts are not substantial.

In the place of some of the revoked NWPs, the USACE proposes a Regional General Permit for maintenance activities and Letters of Permission (LOPs) for all other activities. The applicability of a permit system depends on the location of the proposed activity with respect to the RMV Planning Area boundaries and with respect to the areas identified as ineligible for abbreviated permitting (see Figure 1-3, Letter of Permission and Regional General Permit Map). These permitting procedures are summarized below and fully described in subchapter 3.2.2 and in Appendix A.

- Proposed Long-Term Individual Permits/Letter of Permission (LOP) procedures for long-term activities proposed by Rancho Mission Viejo and the Santa Margarita Water District on the RMV Planning Area lands in reliance on the SAMP and in conjunction with the review, approval and implementation of an Aquatic Resources Conservation Program coordinated with the Southern Subregion NCCP/MSAA/HCP (Figure 1-3). The potential

impacts and compliance with USACE regulatory requirements of proposed long-term individual permits will be addressed through this SAMP EIS review process.

- The proposed use of LOP Procedures for other future qualifying permit applicants whose potential impacts on the Waters of the U.S. will be assessed through reliance on the SAMP at future points in time. The potential use of the SAMP as the guidance document for identifying avoidance areas within the SAMP Study Area will be addressed through the SAMP EIS process (Figure 1-3).

- Potential establishment of a Regional General Permit (RGP) for certain limited activities and the suspension of selected NWPs for small-scale activities and ongoing maintenance activities within the SAMP planning area but outside of the RMV Planning Area (Figure 1-3). The potential impacts and compliance with USACE regulatory requirements of the RGP program will be addressed through the SAMP EIS process.

8.4 SECTION 230.10(A) ALTERNATIVES ANALYSIS/LEDPA DETERMINATION

POTENTIAL ADVERSE IMPACTS ON THE AQUATIC ECOSYSTEM

Section 230.10 (a) of the Section 404(b)(1) Guidelines identifies requirements for identifying the least environmentally damaging practicable alternative. Specifically:

> *"Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem , so long as the alternative does not have other significant adverse environmental consequences."*

For purposes of addressing these requirements, the following subsections address avoidance of wetlands and riparian habitats comprising the aquatic ecosystem within the RMV Planning Area. Chapter 7.0 provides a review of other potentially significant adverse environmental consequences to address the "other significant environmental consequences" element of the above guidelines (minimization and mitigation measures are reviewed in Chapter 7.0 in relation to other environmental consequences so that impact reduction and mitigation can be taken into account in assessing overall comparative impacts for non-aquatic ecosystem impacts).

With regard to potential impacts on "special aquatic sites," it is assumed that alternatives that do not involve special aquatic sites are presumed to be available unless clearly demonstrated otherwise. Given the scale of the SAMP program and the large size of the area proposed to be subject to the proposed permitting procedures, Chapters 5.0 and 6.0 review alternative land use locations with respect to consistency with the SAMP Tenets, and related elements of the Southern Planning Guidelines and the Watershed Planning Principles. Some circulation system and infrastructure activities may affect an aquatic site to the extent that providing necessary services to particular development planning areas requires bridges and would require streamcourses to be traversed (i.e., San Juan Creek and lower Cristianitos Creek). Where creek crossings can be feasibly bridged (i.e., the mouth of Chiquita Creek and the mouth of Gobernadora Creek), proposed road crossings would span these creeks; where a stream crossing is too wide to be bridged (e.g., San Juan Creek), pilings to support the bridging would be required within the streamcourse. Additionally, some alternatives (such as Alternative B-12) do not require changes in existing crossings such as at lower Gabino Creek.

8.4.1 IMPACTS ON USACE JURISDICTION AREAS AND AVOIDANCE OF WETLAND AND RIPARIAN HABITATS

8.4.1.1 Potential Impacts on USACE Jurisdictional Areas

Activities Outside of the RMV Planning Area Authorized by the RGP or Potentially Authorized by LOPs

Under Alternative B-10 Modified and Alternative B-12, implementation of the proposed RGP and LOP procedures outside of the RMV Planning Area is expected to be the same for each alternative. The proposed RGP will not have any permanent impacts on USACE jurisdictional habitats. Eligible actions will have no more than 0.5 acre of temporary impact of which no more than 0.1 acre may be vegetated by native wetland vegetation. Because the proposed RGP would apply only to areas with low riparian integrity, little native vegetation is expected in such areas. Due to the temporary nature of the impact, the small extent, and low integrity of such areas, there would not be any permanent impact of the proposed RGP procedures on USACE jurisdictional areas.

Under Alternative B-10 Modified and Alternative B-12, the proposed LOPs would be subject to future NEPA review and evaluation under the Section 404(b)(1) Guidelines in order to determine the extent of impacts to riparian and wetland habitats. Given future NEPA and Section 404(b)(1) Guidelines review and the provision of the LOP procedures (including General Conditions and any future Special Conditions), future use of the LOPs would not likely have extensive impacts to higher quality aquatic resources proposed to be ineligible for abbreviated permitting, impacts would be limited to 0.1 acre of permanent impacts to USACE jurisdictional areas. Subject to NEPA review and the maximum allowable impact allowed under the proposed LOPs for these areas, large amounts of impacts to higher quality USACE jurisdictional habitats including streams, wetlands, and riparian areas are not expected under the future LOP procedures. Within areas proposed to be eligible for abbreviated permitting, there would be no limits on acreage of impacts. Impacts to native habitats within these areas proposed to be eligible for abbreviated permitting would be expected to be lower due to past degradation that had decreased the riparian integrity of such areas. In conjunction with future NEPA review, impacts would be expected to be minimized to the same degree as standard individual permits due to the requirement for upfront coordination with the agencies through the USACE, followed by the USACE formal notification to the other agencies for their comments.

Under Alternative A-4, project-by-project review would continue to occur outside of the RMV Planning Area under the current framework, resulting in the authorization of activities through mostly existing NWPs and standard Individual Permits. Temporary impacts that could be authorized by the proposed RGP would continue be authorized by existing NWPs. Due to the lower quality conditions of aquatic areas that are proposed to be covered by the RGP, authorization using NWPs for these activities is expected to result in similar outcomes. Activities that could be authorized by the proposed LOPs would continue to be authorized by existing NWPs or by standard Individual Permits. Compared to the proposed LOPs, existing NWPs would require less upfront coordination with the USACE and with other resource agencies, resulting in less likelihood of improved project design that would minimize impacts to USACE jurisdictional areas. Compared to the proposed LOPs, the standard individual permits would involve the same level of participation by the resource agencies, resulting in similar outcomes.

Alternative A-5 obviates the need for a SAMP and permits under Section 404 by avoiding regulated Waters of the U.S, including wetlands. Whether a proposed project is in an area eligible or ineligible for abbreviated permitting, the project would most likely build as close to the

USACOE jurisdictional feature as possible, resulting in isolation and encroachment of any buffers, resulting in an undeterminable amount of indirect impacts.

SMWD Proposed Project

Figure 2-3 in Chapter 2.0 identifies the locations of SMWD's existing facilities. This figure shows that a majority of the existing facilities are located within developed areas; a very limited number of these facilities which cross and/or parallel areas with aquatic resources with high integrity. The majority of such resources have been avoided by prior site planning by SWMD. Table 8-3 identifies the 3.34 acres of temporary impacts to wetlands and 14.54 acres of impacts to non-wetland waters that are anticipated to result from maintenance activities. It should be noted that this impact analysis reflects all impacts as if they were occurring concurrently. In reality, this would not be the case. Maintenance activities would be spread out over time; therefore, impacts to wetlands would also occur over time. As such, the actual impacts to any specific wetland habitat in any given year would be a small increment of the total presented in the table. Impacts resulting from maintenance of existing facilities are significant.

TABLE 8-3
SUMMARY OF TEMPORARY INFRASTRUCTURE IMPACTS ASSOCIATED WITH SMWD FACILITIES

Habitat Type	USACE Wetlands Impacts	USACE Non-Wetland Waters Impacts
Alkali Meadow (5.2)	0.00	0.00
Seasonal Pond (5.3)	0.00	0.00
Coastal Freshwater Marsh (6.4)	0.25	0.00
Riparian Herb (7.1)	0.24	0.00
Southern Willow Scrub (7.2)	0.48	3.27
Mulefat Scrub (7.3)	0.84	1.60
Sycamore Riparian Woodland (7.4)	0.00	0.28
Oak Riparian Woodland (7.5)	0.00	0.04
Arroyo Willow Forest (7.6)	1.53	1.72
Spreading Grounds/ Detention Basins (12.3)	0.00	0.00
Intermittent Rivers and Streams	0.00	1.19
Coast Live Oak Forest	0.00	0.00
Coast Live Oak Woodland	0.00	0.00
Mitigation	0.00	1.06
Open Water	0.00	0.21
Perennial Rivers and Streams	0.00	3.85
Unvegetated Streambed	0.00	1.32
Total	**3.34**	**14.54**
Note: There would be no permanent impacts to USACE wetlands and waters.		

B-10 Modified and B-12 Alternatives

This subchapter focuses on a quantified summary of potential impacts and conservation by alternative and vegetation type. Other avoidance considerations have been reviewed extensively in Chapters 5.0 and 6.0, with this subchapter focusing on the alternatives selected in Chapter 6 for further consideration. Chapters 5.0 and 6.0 are incorporated by reference into this subchapter and should be reviewed for a full understanding of avoidance alternatives.

Table 8-4 identifies potential impacts to wetland habitats and non-wetland waters associated with the B-10 Modified and B-12 Alternatives, including impacts related to development within the RMV Planning Area (RMV Planning Areas 1 through 8 under the B-10 Modified and B-12 Alternatives) and infrastructure outside of the individual development areas within the RMV Planning Area. Table 8-5 summarizes impacts to wetlands within proposed development areas by habitat type. Impacts resulting from infrastructure outside RMV Planning Areas 1 through 8 are summarized in Tables 8-6, 8-7, and 8-8 and are noted as either temporary (i.e., the area disturbed by construction or maintenance of an infrastructure facility) or permanent (i.e., the area within which the infrastructure facility is located). Infrastructure includes, but is not limited to the following types of facilities; roads, trails and bikeways, water and sewer lines, lift stations; pump stations, reservoirs, and drainage outfalls.

TABLE 8-4
SUMMARY OF DEVELOPMENT AND INFRASTRUCTURE IMPACTS TO USACE JURISDICTIONAL AREAS FOR ALTERNATIVES B-10 MODIFIED AND B-12

	Permanent Impacts							Temporary Impacts		
	Development			Infrastructure				Infrastructure		
Alternative	Wetland	Non-wetland Waters	Subtotal	Wetland	Non-wetland Waters	Subtotal	Total Permanent Impacts	Wetland	Non-wetland Waters	Subtotal
B-10 Modified	9.14	31.91	41.05	9.02	7.88	16.90	**57.95**	16.19	21.08	37.27
B-12[a.]	9.39	31.39	40.78	8.52	6.12	14.68	**55.46**	15.82	21.07	36.89

a. As previously discussed this represents an overstated impact analysis and ultimate impacts will be less due to the limitations on development in Planning Areas 4 and 8, and orchards in Planning Areas 6 and 7. The overstated footprint for Planning Area 4 impacts 2.34 acres of Waters of the U.S. (none of which are wetland), for Planning Area6 impacts 0.41 acre of Waters of the U.S. (of which 0.03 acre is wetland), for Planning Area 7 impacts (0.36 acres (of which 0.001 acre is wetland) and for Planning Area 8 impacts 8.19 acres (of which 1.10 acre is wetland).

TABLE 8-5
SUMMARY OF IMPACTS TO USACE JURISDICTIONAL WETLANDS IN DEVELOPMENT AREAS BY HABITAT TYPE FOR ALTERNATIVES B-10 MODIFIED AND B-12

Habitat Type	B-10 Modified	B-12 [a]
Alkali Meadow (5.2)	0.56	0.44
Seasonal Pond (5.3)	0.75	0.76
Coastal Freshwater Marsh (6.4)	1.18	1.18
Riparian Herb (7.1)	0.02	0.03
Southern Willow Scrub (7.2)	0.82	1.16
Mulefat Scrub (7.3)	0.33	0.34
Sycamore Riparian Woodland (7.4)	0.00	0.0
Arroyo Willow Forest (7.6)	5.48	5.48
Total	**9.14**	**9.39**

Note: As previously discussed this represents an overstated impact analysis and ultimate impacts will be less due to the limitations on development in Planning Areas 4 and 8, and orchards in Planning Areas 6 and 7.

TABLE 8-6
SUMMARY OF INFRASTRUCTURE IMPACTS TO USACE WETLANDS AND NON-WETLAND WATERS BY INFRASTRUCTURE TYPE FOR ALTERNATIVES B-10 MODIFIED AND B-12[a.]

USACE Jurisdictional Areas						
	Wetlands (acres)		Non-Wetland Waters of the U.S. (acres)		Total USACE (acres)	
Alternative	**Temp.**	**Permanent**	**Temp.**	**Permanent**	**Temp.**	**Permanent**
B-12 Alternative[b.]						
Trails	5.11	2.30	5.32	2.63	10.43	4.93
Drainage Facilities[c.]	0.65	2.03	0.20	0.42	0.85	2.45
Water-Sewer[d.]	0.57	1.19	0.20	0.92	0.77	2.11
Road/Bridge Construction[e]	4.02	3.01	6.36	2.15	10.38	5.16
Maintenance of Existing RMV Planning Area Facilities	5.47	0.00	8.99	0.00	14.46	0.00
Total	**15.82**	**8.53**	**21.07**	**6.12**	**36.89**	**14.65**
B-10 Modified Alternative						
Trails	3.71	1.94	4.65	2.72	8.36	4.66
Drainage Facilities[c.]	0.15	1.66	0.01	0.14	0.16	1.80
Water-Sewer[d.]	1.61	3.51	1.59	3.25	3.20	6.76
Road/Bridge Construction[e]	5.17	1.91	6.08	1.77	11.25	3.68
Maintenance of Existing RMV Planning Area Facilities	5.55	0.00	8.75	0.00	14.30	0.00
Total	**16.19**	**9.02**	**21.08**	**7.88**	**37.27**	**16.90**

a. Jurisdictional areas falling outside of the GLA study area boundary are estimated using ERDC data.
b. As previously discussed this represents an overstated impact analysis and ultimate impacts will be less due to the limitations on development in Planning Areas 4 and 8, and orchards in Planning Areas 6 and 7
c. Includes culvert outfalls and Gobernadora Water Quality Basin
d. Includes non-domestic water, domestic water, and sewer.
e. Due to the lack of final design details on the location of road/bridge construction, a contingency of 50 percent of additional impact is assumed for both alternatives.

TABLE 8-7
SUMMARY OF INFRASTRUCTURE IMPACTS TO USACE JURISDICTIONAL WETLANDS BY HABITAT TYPE FOR ALTERNATIVE B-10 MODIFIED

Habitat Type	Trails		Drainage Facilities		Sewer/Water		Roads/Bridges		Existing RMV Planning Area Maintenance		Total	
	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp
Alkali Meadow (5.2)	–	0.04	–	–	0.12	0.06	0.11	0.13	–	0.01	0.23	0.23
Seasonal Pond (5.3)	–	–	–	–	–	–	–	–	–	–	–	–
Coastal Freshwater Marsh (6.4)	0.07	0.28	0.07	–	0.62	0.31	0.11	0.26	–	1.96	0.87	2.81
Riparian Herb (7.1)	–	–	–	–	–	–	–	–	–	–	–	–
Southern Willow Scrub (7.2)	–	0.02	1.25	–	0.45	0.19	1.11	0.26	–	0.32	2.81	0.79
Mulefat Scrub (7.3)	1.65	2.92	0.34	0.15	1.73	0.74	0.39	1.07	–	2.82	4.11	7.70
Sycamore Riparian Woodland (7.4)	–	–	–	–	–	–	–	–	–	–	–	–
Arroyo Willow Forest (7.6)	0.22	0.45	–	–	0.59	0.31	0.19	3.44	–	0.44	1.00	4.64
Spreading Grounds/Detention Basins (12.3)	–	–	–	–	–	–	–	–	–	–	–	–
Intermittent Rivers and Streams	–	–	–	–	–	–	–	0.01	–	–	–	–
Total	**1.94**	**3.71**	**1.66**	**0.15**	**3.51**	**1.61**	**1.90**	**5.17**	**0.00**	**5.55**	**9.02**	**16.17**

TABLE 8-8
SUMMARY OF INFRASTRUCTURE IMPACTS TO USACE JURISDICTIONAL WETLANDS BY HABITAT TYPE FOR ALTERNATIVE B-12

Habitat Type	Trails		Drainage Facilities		Sewer-Water		Roads/Bridges		Existing RMV Planning Area Maintenance		Total	
	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.
Alkali Meadow (5.2)	–	–	–	–	0.03	0.04	–	0.13	–	–	0.03	0.17
Seasonal Pond (5.3)	–	–	–	–	–	–	–	–	–	–	–	–
Coastal Freshwater Marsh (6.4)	0.08	0.31	0.09	0.04	0.14	0.14	1.22	1.06	–	1.96	1.53	3.51
Riparian Herb (7.1)	–	–	–	–	–	–	–	–	–	–	–	–
Southern Willow Scrub (7.2)	0.34	0.78	1.30	0.02	0.01	0.01	0.41	0.28	–	0.32	2.06	1.41
Mulefat Scrub (7.3)	1.78	3.71	0.49	0.39	0.96	0.31	0.71	0.40	–	2.75	3.94	7.56
Sycamore Riparian Woodland (7.4)	–	–	–	–	–	–	–	–	–	–	–	–
Arroyo Willow Forest (7.6)	0.10	0.31	0.08	0.04	0.05	0.07	0.43	2.14	–	0.44	0.66	3.00
Spreading Grounds/Detention Basins (12.3)	–	–	0.07	0.16	–	–	–	–	–	–	0.07	0.16
Intermittent Rivers and Streams	–	–	–	–	–	–	0.24	0.01	–	–	0.24	0.01
Total	**2.30**	**5.11**	**2.03**	**0.65**	**1.19**	**0.57**	**3.01**	**4.02**	**0.00**	**5.47**	**8.53**	**15.82**

As described in Chapters 4.0 and 6.0, a federal project-level jurisdictional delineation of areas under consideration for alteration in connection with RMV Proposed Project activities within the RMV Planning Area was prepared by GLA (2004) (Appendix E3). The delineation determined that the maximal extent of potential development areas contains 267.12 acres that are within the jurisdiction of the USACE, of which 158.92 acres are considered jurisdictional wetland.

Jurisdictional areas typically include all vegetation types listed in the table with the exception of isolated waters such as vernal pools and slope wetlands. Based on the USACE planning level Engineer Research and Development Center data for typical riparian vegetation communities, as noted in Chapter 4.0, existing setting for riparian and wetland resources, there are an estimated 9,287.6 acres of aquatic habitats in the SAMP Study Area of which there are an estimated 3,222.2 acres of probable USACE jurisdictional habitats. In the RMV Planning Area, there are 2,299.7 acres of aquatic habitats of which 857.1 acres are probable USACE jurisdictional habitats. Therefore, the delineated resources that may be affected by development represent a small portion of the resources within both the SAMP Study Area and the RMV Planning Area.

With regard to the B-12 Alternative, as reviewed in subchapter 8.1.1.1 the impacts analysis in this subchapter for several subareas assumes overall levels of impact considerably in excess of what is allowed under the proposed alternative. Within two of the B-12 planning areas, Planning Areas 4 and 8, the total combined acreage proposed for development (550 acres plus 500 acres plus 175 acres for the reservoir site, for a total of 1,225 acres) is substantially less than the size of the impact analysis area of 2,476 acres used for these planning areas. The siting of the development in these areas will require additional extensive geotechnical testing and other analyses that would be prepared prior to consideration of development in Planning Areas 4 and 8. Consequently, the impact analyses for Planning Areas 4 and 8 assume the complete disturbance of acres within both planning areas although the combined disturbance footprint cannot exceed 1,225 acres. With respect to Planning Areas 6 and 7, the impact analysis assumes impacts to approximately 249 acres and 182 acres, respectively, for a total EIS impact area of 431 acres, even though only a maximum 50 acres of orchards would be permitted.

Infrastructure impacts are addressed in two ways. All infrastructure located within planning areas is included in the “development” impacts for the particular planning area. However, of necessity, some infrastructure would be located within proposed open space and would cross Aquatic Resources Conservation Areas (Table 8-6). This latter type of infrastructure is identified separately (Tables 8-7 and 8-8).

Summary of Impacts to Jurisdictional Wetlands by Habitat Type

Chapter 6.0 contains a description of the jurisdictional wetland habitat type and impacts related to development for Alternatives B-10 Modified and B-12. The following is a summary of those development related impacts and those impacts related to infrastructure, as set forth in Tables 8–6, 8-7, and 8-8.

Development area impacts to USACE jurisdictional wetland alkali meadow are limited to 0.56 acre for the B-10 Modified and 0.44 acre for the B-12 Alternatives. Permanent infrastructure impacts to USACE jurisdictional wetland alkali meadow are 0.23 acre for the B-10 Modified Alternative and 0.03 acre for the B-12 Alternative.

Development area impacts to USACE jurisdictional seasonal pond are 0.75 acre and 0.76 acre for Alternatives B-10 Modified and B-12, respectively. There would be no infrastructure impacts

to USACE jurisdictional wetland seasonal pond habitat for either the B-10 Modified or B-12 Alternatives.

Development area impacts to USACE jurisdictional wetland freshwater marsh are 1.18 acres for both alternatives. Permanent infrastructure impacts to USACE jurisdictional wetland freshwater marsh are 0.87 acre for the B-10 Modified Alternative and 1.53 acres for the B-12 Alternative.

Development area impacts to USACE jurisdictional wetland riparian herb would be 0.03 acre for both alternatives. There would not be infrastructure impacts to USACE jurisdictional wetland riparian herb for the B-10 Modified and B-12 Alternatives.

Development area impacts to USACE jurisdictional wetland southern willow scrub would be 0.82 acre for Alternative B-10 Modified and 1.16 acres for Alternative B-12. Permanent infrastructure impacts to USACE jurisdictional southern willow scrub are 2.81 acres for the B-10 Modified Alternative and 2.06 acres for the B-12 Alternative.

Development area impacts to USACE jurisdictional mule fat scrub wetland total 0.33 acre for Alternative B-10 Modified and 0.34 acre for Alternative B-12. Permanent infrastructure impacts to USACE jurisdictional mule fat scrub are 4.1 acres for the B-10 Modified Alternative and 3.94 acres for the B-12 Alternative.

No development area or infrastructure impacts to USACE jurisdictional wetland sycamore riparian woodland would occur for both the B-10 Modified and B-12 Alternatives.

Development area impacts to USACE jurisdictional wetland arroyo willow riparian forest would be 5.48 acres for Alternative B-10 Modified and for Alternative B-12. Permanent infrastructure impacts to USACE jurisdictional arroyo willow forest are summarized in Tables 8-7 and 8-8 according type of infrastructure. Impacts would be 1.0 acre for the B-10 Modified Alternative and 0.66 acre for the B-12 Alternative.

In addition to the impacts noted above, the B-12 Alternative would also impact 0.24 acres of intermittent stream as a result of infrastructure.

Alternative A-4

As noted addressed, under the A-4 Alternative, Rancho Mission Viejo could request Section 404 permits on a planning area by planning area basis for the County-approved B-10 Modified Alternative. This alternative could achieve substantial aquatic resource protection through incremental permitting. However, this alternative would not provide for comprehensive aquatic resource restoration and management. Alternative A-4 provides no assurances of meaningful protection of Waters of the U.S. There is no guarantee that the permitting outcome of each individual project would achieve the same outcome as the B-10 Modified Alternative. There may be some development areas within the RMV Planning Area that would have more impacts and some areas of open space that would not be preserved. Therefore, permit-by-permit processing is not environmentally beneficial. This alternative would not meet the Purpose and Need as set forth in Chapters 1.0 and 3.0. This alternative is reviewed in this chapter only as a no SAMP alternative for comparison purposes. Therefore, the analysis set forth above for the B-10 Modified Alternative would apply to the A-4 Alternative.

Alternative A-5

As described in Chapter 5.0, the A-5 Alternative obviates the need for a SAMP and permits under Section 404 by avoiding regulated Waters of the U.S., including wetlands as required by Section 404 and NEPA. Alternative A-5 violates two SAMP tenets. One, is the lack of buffers, and two, is the lack of continuous wildlife corridors. Therefore, this alternative is not environmentally beneficial. This alternative would not meet the Purpose and Need as set forth in Chapters 1.0 and 3.0 of this EIS. Under this alternative, no impacts to regulated Waters would occur and, therefore, no further analysis is necessary.

8.4.1.2 Avoidance through Long-Term Protection of Wetlands and Riparian Habitats

This subsection reviews the proposed protection of wetlands/riparian habitats and associated aquatic species that comprise the aquatic ecosystem within the SAMP Study Area and within the RMV Planning Area. As a result of the proposed RGP outside of the RMV Planning Area under the B-10 Modified and B-12 Alternatives, there would be no permanent impacts. As a result of the proposed LOP procedures for future participants outside the RMV Planning Area under the B-10 Modified and B-12 Alternatives, the acreage of avoidance of permanent impacts from the proposed LOP process is not known in advance, but must be determined on a case-by-case basis. However, the proposed LOP process would provide protection through additional coordination and review, such that avoidance would be maximized.

Within the RMV Planning Area, the avoidance of impacts on aquatic resources reflected in the B-10 Modified and B-12 Alternatives reflects the comprehensive review of consistency with the SAMP Tenets and Watershed Planning Principles, as well as the Southern Planning Guidelines applicable to aquatic species, set forth in Chapter 6.0. Given the reliance of the ERDC planning-level delineation, the tables summarizing the proposed protection of aquatic resources combine jurisdictional wetlands and non-jurisdictional riparian habitat under “riparian” in order to provide an overview of avoidance of impacts on the aquatic ecosystem.

Under Alternative A-4, future projects would be authorized on a case-by-case basis through mostly existing NWPs and standard Individual Permits, preventing the advanced determination of avoidance. In addition, in situations where activities that would be reviewed under the proposed LOP procedures are authorized under the existing NWPs, there would be less upfront coordination and review and less assurance that all reasonable avoidance measures would occur.

Under Alternative A-5, no direct impacts to aquatic resources would be allowed. All wetland and riparian habitats would essentially be preserved. Whether a proposed project is in an area eligible or ineligible for abbreviated permitting, the project would most likely build as close to the USACOE jurisdictional feature as possible, resulting in isolation and encroachment of any buffers, resulting in an undeterminable amount of indirect impacts. However, protected wetland and riparian habitats would suffer from indirect effects caused by lack of ecologically meaningful buffers and from the lack of continuous corridors.

Summary of Protected Riparian Habitat

Using the USACE Engineer Research and Development Center database as the data source, Tables 8-9 and 8-10 set forth the protected riparian habitats within the SAMP Study Area and conserved riparian habitats in the RMV Planning Area, respectively, when permanent impacts related to development and infrastructure are considered. In contrast with the ARCA proposed to be “conserved” within the RMV Planning Area, riparian habitats in previously protected areas

are considered "protected" rather than "conserved" because these previously protected areas are not subject to management actions enforced through regulatory requirements.

TABLE 8-9
SUMMARY OF RIPARIAN AREAS PROTECTED[a.] IN SAMP STUDY AREA

Riparian Habitat	SAMP Study Area Total (Acres)	Protected by:	
		Alternative B-10 Modified	Alternative B-12
Bigcone Spruce-Canyon Live Oak Forest	477.7	477.7	477.7
Canyon Live Oak Forest	195.0	195.0	195.0
Canyon Live Oak Ravine Forest	243.9	243.9	243.9
Coast Live Oak Forest	239.5	163.3	168.7
Coast Live Oak Woodland	851.1	803.6	786.6
Coastal Freshwater Marsh	141.3	112.3	111.3
Intermittent Rivers and Streams	304.6	302.9	302.4
Mule fat Scrub	778.7	744.6	758.5
Open Water	345.0	306.4	307.5
Perennial Rivers and Streams	112.3	112.3	112.3
Riparian Herb	22.1	19.1	19.1
Salix exigua	1.9	1.9	1.9
Southern Arroyo Willow Forest	307.7	291.6	291.7
Southern Coast Live Oak Riparian Forest	3,018.6	2,761.2	2,778.8
Southern Coastal Salt Marsh	0.2	0.2	0.2
Southern Sycamore Riparian Woodland	619.9	608.0	605.1
Southern Willow Scrub	727.8	695.2	695.3
White Alder Riparian Forest	342.1	342.1	342.1
Total	**8,729.4**	**8,181.3**	**8,198.1**

Note: This is an understated analysis. The final protected acreage will increase because of limits on development (disturbance) in Planning Areas 4 and 8, and orchards in Planning Areas 6 and 7.

a. Protected habitat includes: (1) protected riparian vegetation in previously protected open space (e.g. County parks) and through alternative permitting mechanisms and (2) riparian vegetation that would be conserved within the RMV Planning Area under a particular alternative.

8.4.1.3 SAMP Tenets and Watershed Planning Principles Consistency Summary

Activities Outside of the RMV Planning Area Authorized by the RGP or Potentially Authorized by LOPs

Outside of the RMV Planning Area, only the SAMP Tenets apply. The Watershed Planning Principles were developed mainly for the RMV Planning Area and have little direct application outside the RMV Planning Area. Under Alternative B-10 Modified and Alternative B-12, implementation of the proposed RGP and LOP procedures outside of the RMV Planning Area is expected to be the same for each alternative. Future NEPA Section 404(b)(1) Guidelines review would be directed toward assuring consistency of future activities to be authorized outside the RMV Planning Area pursuant to the LOP procedures and SAMP Tenets.

TABLE 8-10
SUMMARY OF RIPARIAN AREAS CONSERVED IN RMV PLANNING AREA

Riparian Habitat	RMV Planning Area Total (Acres)	Conserved by:	
		Alternative B-10 Modified	Alternative B-12
Canyon Live Oak Ravine Forest	0.3	0.3	0.3
Coast Live Oak Forest	131.9	56.8	62.3
Coast Live Oak Woodland	160.3	113.1	96.1
Coastal Freshwater Marsh	104.2	75.2	74.2
Intermittent Rivers and Streams	92.0	90.3	89.8
Mule fat Scrub	410.4	376.8	390.2
Open Water	53.5	15.0	16.0
Perennial Rivers and Streams	0.8	0.8	0.8
Riparian Herb	8.0	5.0	5.0
Salix exigua	1.3	1.3	1.3
Southern Arroyo Willow Forest	144.8	128.6	128.7
Southern Coast Live Oak Riparian Forest	854.3	602.8	619.9
Southern Sycamore Riparian Woodland	125.8	114.0	110.9
Southern Willow Scrub	84.8	59.6	59.9
White Alder Riparian Forest	1.9	1.9	1.9
Total	**2174.3**	**1641.5**	**1657.3**

Note: This represents an understated analysis. The final conservation acreage will increase because of limits on development (disturbance) in Planning Areas 4 and 8, and orchards in Planning Areas 6 and 7.

Under Alternative B-10 Modified and Alternative B-12, the proposed RGP will not conflict with the SAMP Tenets. Eligible actions will have no more than 0.5 acre of temporary impact to USACE jurisdictional areas of which no more than 0.1 acre may be vegetated by native wetland vegetation. Because the proposed RGP would apply only to areas with low riparian integrity, little native vegetation is expected in such areas. Due to the temporary nature of the impact, the small extent, and low integrity of such areas, there would not be any conflict with the SAMP Tenets.

As noted above under Alternative B-10 Modified and Alternative B-12, the proposed LOPs would need to undergo future NEPA review and evaluation under the Section 404(b)(1) Guidelines to determine any likely conflicts with the SAMP Tenets. Within areas proposed to be ineligible for abbreviated permitting, impacts would be limited to 0.1 acre of permanent impacts to USACE jurisdictional areas. Subject to NEPA review and the maximum allowable impact allowed under the proposed LOPs for these areas, substantial conflicts with the SAMP Tenets would not be expected. Within areas proposed to be eligible for abbreviated permitting, there would be no limits on acreage of impacts. Impacts to native habitats within these areas proposed to be eligible for abbreviated permitting would be expected to be lower due to past degradation that had decreased the riparian integrity of such areas. In conjunction with future NEPA review, consistency with the SAMP Tenets is expected due to the requirement for upfront coordination with the agencies through the USACE, followed by the USACE formal notification to the other agencies for their comments.

Under Alternative A-4, project-by-project review would continue to occur outside of the RMV Planning Area under the current framework, resulting in the authorization of activities through mostly existing NWPs and standard Individual Permits. Temporary impacts that could be authorized by the proposed RGP would continue be authorized by existing NWPs. Due to the

lower quality conditions of aquatic areas that are proposed to be covered by the RGP, authorization using NWPs for these activities is not expected to conflict with the SAMP Tenets. Activities that could be authorized by the proposed LOPs would continue to be authorized by existing NWPs or by standard Individual Permits. Compared to the proposed LOPs, existing NWPs would require less upfront coordination with the USACE and with other resource agencies, resulting in more likelihood of conflicts with the SAMP Tenets. Compared to the proposed LOPs, the standard individual permits would involve the same level of participation by the resource agencies, resulting in similar outcomes.

Alternative A-5 obviates the need for a SAMP and permits under Section 404 by avoiding regulated Waters of the U.S, including wetlands. Whether a proposed project is in an area eligible or ineligible for abbreviated permitting, the project would most likely build as close to the USACOE jurisdictional feature as possible. SAMP Tenets maintaining adequate buffers and continuous riparian corridors would be violated on a regular basis.

Alternative B-10 Modified

The B-10 Modified Alternative is consistent with the SAMP Tenets and the Watershed Planning Principles, with the exception of the potential fragmentation caused by the two small development areas in Planning Area 6 (Cristianitos Meadows), the width of the San Juan Creek wildlife movement corridor, habitat linkage connectivity between the San Juan Creek Watershed and the San Mateo Creek Watershed (including both the presence of development in Planning Area 6 and the extent of development in Planning Area 4), and impacts to regulated wetlands and Waters of the U.S.

Although the B-10 Modified Alternative's proposed development areas in Planning Area 6 have been sited to allow wildlife movement areas between the two small development areas, the USACE raised questions on the GPA/ZC EIR 589 as to whether the width of these areas would functionally connect the San Juan Creek and San Mateo Creek Watersheds to allow for less mobile aquatic species such as the arroyo toad to interbreed among separated populations.

With regard to the San Juan Creek wildlife movement corridor, the USACE has stated a goal of achieving a minimum 1,312-foot-wide (400 meter) movement corridor for mountain lion movement between Planning Areas 3 and 4 located on the north and south side of San Juan Creek. Except for these two areas of concern, major tenet/guidelines/principles consistency would be achieved with respect to the protection of aquatic habitats planning species, wetlands/riparian vegetation communities, habitat blocks, connectivity, species diversity, significant hydrologic and geomorphic processes, and water quality.

Conclusion Regarding Potentially Significant Impacts of the B-10 Modified Alternative on the Aquatic Ecosystem

Alternative B-10 Modified generally meets the SAMP Goals and Purposes with regard to potentially significant impacts on the aquatic ecosystem. However, the analysis in this subchapter and in Chapter 6.0 notes areas of continuing aquatic ecosystem impacts concern raised by the USACE as noted below:

- adequacy of setbacks from San Juan Creek for protection large mammal movement, particularly where the San Juan Creek corridor is less than 1,312 feet in width (see discussion under SAMP Tenet 4)

- riparian/wildlife corridor in Cristianitos in proposed Planning Area 6 may not be sufficient to support the movement of less mobile aquatic species from the San Juan Creek watershed to the San Mateo Creek Watershed

- the small development proposed for Planning Area 6 also occurs within the headwaters of Cristianitos Creek and is in conflict with SAMP Tenet 3

The B-10 Modified Alternative's measures for avoiding impacts to the aquatic ecosystem are generally consistent with the SAMP Tenets, Southern Planning Guidelines, and the Watershed Planning Principles but with several significant exceptions noted immediately above. Taken together with already protected open space in the SAMP Study Area, the B-10 Modified Alternative's open space would protect a very large block of habitat containing sensitive aquatic species and would provide connectivity with large-scale protected habitat areas in close proximity to these lands both within the planning area and in adjoining areas such as the Cleveland National Forest, San Mateo Wilderness, and San Mateo Creek within MCB Camp Pendleton.

Alternative B-12

Alternative B-12's aquatic resources protection, restoration, and management features are consistent with the SAMP Tenets, as well as providing high levels of consistency with the watershed and sub-basin principles reviewed previously in this chapter. Major principles consistency is achieved with respect to the protection of aquatic resources, riparian corridors, listed and unlisted aquatic species, riparian ecosystem integrity, connectivity between watersheds, species diversity, significant hydrologic and geomorphic processes, and water quality. Impacts to regulated wetlands and Waters of the U.S. would occur with Alternative B-12, but would be less than when compared to the Alternatives B-10 Modified and A-4 (assuming planning area by planning area permitting of the B-10 Modified).

Conclusion Regarding Potentially Significant Impacts of the B-12 Alternative on the Aquatic Ecosystem

The key features of B-12 Alternative that address the aquatic ecosystem impacts issues raised by the USACE in reviewing the B-10 Modified Alternative are as follows:

- With the possible exception of up to 50 acres of new orchards (which would not be permitted in wetland areas), no development would occur in Planning Area 6 resulting in protection of the headwaters of Cristianitos Creek and protection of a 5,000-foot-wide movement corridor between the San Juan and San Mateo Watersheds (a smaller development envelope in Planning Area 4 under the B-12 Alternative compared with the B-10 Modified Alternative might further increase the dimension of this corridor);

- The width of the wildlife movement corridor along San Juan Creek would be a minimum of 1,312 feet between Planning Areas 3 and 4 (certain limited non-pervious uses would be allowed within the 1,312-foot-wide wildlife movement area); and

- No acquisition funding would be required under the B-12 Alternative, thereby assuring the long-term protection of Aquatic Resources Conservation Areas in the RMV Planning Area through a phased dedication program.

In addition to these considerations, this alternative would address concerns expressed by the environmental community and other members of the general public regarding development

within the RMV Planning Area, particularly those concerns related to the overall level of development within the San Mateo Watershed in Planning Areas 6, 7, and 8 potentially affecting aquatic ecosystems (including development adjacent or draining to Cristianitos Creek and the level of development within middle Chiquita Canyon draining to Chiquita Creek within the San Juan Creek Watershed). Alternative B-12 generally meets the SAMP Goals and Purposes with respect to aquatic resources through avoidance of impacts and assurances of long-term protection of aquatic ecosystems (Figure 5-13).

Alternative A-4

Although significant aquatic resource protection could be achieved on private lands through incremental USACE permitting (particularly if Rancho Mission Viejo were to request permits for the B-10 Modified Alternative on a planning area by planning area basis), the issues noted above for B-10 Modified would be applicable to the A-4 Alternative. In addition, permitting on an incremental planning area by planning area basis is unlikely to result in comprehensive aquatic resource restoration and protection. Some larger scale aquatic resource restoration could be undertaken in a phased fashion. However, some restoration actions involving a comprehensive watershed-wide approach to pre-existing conditions such as giant reed control in Arroyo Trabuco and in San Juan Creek would not have a mitigation nexus with incremental USACE Section 404 permits. The USACE could require project by project invasive species control as mitigation, as it has done in the past (e.g., Crown Valley Parkway Bridge widening and *Arundo* removal in Arroyo Trabuco). However, such efforts would be expected to have limited success because effective invasive species control generally requires comprehensive areawide efforts over a long time period in order to assure overall benefits to aquatic resources, in contrast with project-by-project invasive species control mitigation efforts that are often of small scale and very localized. Finally, long-term management commitments to comprehensive management and the funding for such commitments are generally lacking in incremental USACE Section 404 permits, including those subject to Section 7 consultations. Therefore, Alternative A-4 would not result in assurances of coordinated protection because the approach is incremental and does not address the entire watershed. As such, Alternative A-4 is included in this chapter for comparison purposes only.

Alternative A-5

Although Alternative A-5 may be economically feasible for Rancho Mission Viejo and potentially for landowners within the Foothill/Trabuco Specific Plan area, it does not meet the Purposes and goals identified in Chapters 1.0 and 3.0 of this EIS. Significant aquatic resource areas would be avoided. However, due to the absence of impacts creating a regulatory nexus justifying land and water areas dedications, open space areas outside of proposed development areas may not have permanent use restrictions. As a consequence, while these areas would be "avoided," they would not be protected because future land use entitlements could be requested by a private landowner. Given the low density of housing and the County's overall housing goals reflected in OCP 2004, such a scenario could occur. As previously noted, comprehensive aquatic resource restoration would not be undertaken. Additionally, two areas important to maintaining and restoring long-term hydrologic/terrains resources–the side canyons of middle Chiquita and the non-wetlands areas adjoining Gobernadora Creek–would not be protected under this alternative scenario. Finally, there would be no regulatory basis for establishing a comprehensive Aquatic Resources Adaptive Management Program (reviewed in Chapter 5.0). For these reasons, Alternative A-5 is included in this chapter only for comparison purposes.

8.4.1.4 Summary of Aquatic Species Impacts

Activities Outside of the RMV Planning Area Authorized by the RGP or Potentially Authorized by LOPs

Under Alternative B-10 Modified and Alternative B-12, implementation of the proposed RGP and LOP procedures outside of the RMV Planning Area is expected to be the same for each alternative. The proposed RGP would not be expected to have any impacts to sensitive aquatic species. Eligible actions will occur where there is low riparian integrity, with a small impact footprint in an area no greater than 0.5 acre of USACE jurisdictional areas with no more than 0.1 acre of native riparian vegetation, and will be temporary. Such areas are not expected to have sensitive aquatic species and there would not be a significant impact of the proposed RGP on sensitive aquatic species. The proposed RGP also has general conditions requiring applicable BMPs, avoidance of breeding season, and a Section 7 consultation if a threatened and/or endangered species is in the vicinity, which all help minimize impacts to sensitive aquatic species if they are in the vicinity.

Under Alternative B-10 Modified or Alternative B-12, the proposed LOP procedures would need to undergo future NEPA review and evaluation under the Section 404(b)(1) Guidelines to determine if there are extensive impacts to sensitive aquatic species. Within areas ineligible for abbreviated permitting, impacts are limited to 0.1 acre of permanent impacts to USACE jurisdictional areas with required coordination with the resource agencies. Consequently, large amount of impacts to sensitive aquatic species are not expected. Within areas eligible for abbreviated permitting, there would be no limits on acreage of impacts. Impacts to sensitive species are expected to be lower due to past degradation that had decreased the likelihood of the presence of sensitive aquatic species in the project area. In addition, impacts are expected to be minimized to the same degree as standard individual permits due to the requirement for upfront coordination with the agencies through the USACE, followed by the USACE formal notification to the other agencies for their comments. The proposed LOP also has general conditions requiring applicable BMPs, avoidance of breeding season, a Section 7 consultation if a threatened and/or endangered species is in the vicinity, and a requirement to make any culverts more amenable to fish passage.

Under Alternative A-4, project-by-project review would occur for those activities that are proposed to be processed as RGPs and LOPs outside of the RMV Planning Area. Temporary impacts that could be authorized by the proposed RGP would be authorized by NWPs. Due to the lower quality conditions of aquatic areas that are covered by the proposed RGP, authorization using NWPs for these types of activities are not expected to affect sensitive aquatic species. Activities that could be authorized by the LOPs would be authorized by NWPs or by standard individual permits. Compared to the proposed LOPs, the NWPs would require less upfront coordination with the USACE and with other resource agencies, resulting in less likelihood of improved project design that would minimize any impacts to sensitive species if they are in the project area. Compared to the proposed LOPs, the standard individual permits would involve the same level of participation by the resource agencies, resulting in similar outcomes.

Alternative A-5 obviates the need for a SAMP and permits under Section 404 by avoiding regulated Waters of the U.S, including wetlands. Whether a proposed project is in an area eligible or ineligible for abbreviated permitting, the project would most likely build as close to the USACOE jurisdictional feature as possible. Indirect impacts to sensitive aquatic species would occur through noise, encroachment by people and domestic animals, and emission of pollutants.

SMWD Proposed Project

Due to the lack of aquatic habitats present within the proposed Upper Chiquita Reservoir site, no impacts to listed aquatic species are anticipated. Similarly no impacts to listed aquatic species are anticipated as a result of SMWD maintenance of existing facilities.

Alternative B-10 Modified

Listed Aquatic Species

The sensitive aquatic species known or expected to occur within the SAMP Study Area are reviewed in Chapter 4.0 and include: (1) state- or federally-listed as Threatened or Endangered Aquatic Species and (2) special status aquatic species. Table 6-6 in Chapter 6.0 sets forth potential impacts to listed and special status aquatic (i.e., occupying wetland and/or riparian habitats) species associated with the B-10 Modified Alternative without consideration of impacts associated with infrastructure.

From the analysis in Chapter 6.0, the B-10 Modified Alternative was identified as having potentially significant indirect impacts (such as the generation of pollutants of concern) on the arroyo toad.

The following discussion focuses on how the B-10 Modified Alternative minimizes impacts to listed aquatic species through avoidance of Waters of the U.S. In addition, impacts attributable to infrastructure necessary to support implementation of the B-10 Modified Alternative are also discussed. Mitigation for impacts to listed species is discussed in subchapter 8.5.

San Diego and Riverside Fairy Shrimp. All vernal pool areas are located outside USACE jurisdiction. All the vernal pool complexes supporting San Diego fairy shrimp on Chiquita Ridge and along Radio Tower Road, including their contributing hydrological sources would be avoided per County GPA conditions. Infrastructure necessary to support implementation of the B-10 Modified Alternative would not result in additional impacts to the San Diego fairy shrimp.

Arroyo Toad. As described in Chapter 6.0, the B-10 Modified Alternative would retain all (100 percent) of the arroyo toad breeding sites along floodplains and creek bottoms, including major and important populations in key locations in San Juan Creek, lower Gabino Creek, lower Cristianitos Creek, and Talega Creek. In addition, the B-10 Modified Alternative protects upland habitats suitable for the toad through siting development based on guidelines contained in the critical habitat determination for the arroyo toad published by USFWS (Federal Register 70 19563). Within the SAMP Study Area, wetlands/riparian habitat is conserved in already protected open space within Arroyo Trabuco and Caspers Wilderness Park, the Donna O'Neill Land Conservancy, and the Upper Chiquita Land Conservancy. In comments on the GPA/ZC EIR 589 and as noted in Chapter 6.0, the USACE raised issues regarding the adequacy of development area setbacks from the center of the San Juan Creek relative to protection of the arroyo toad.

Implementation of infrastructure supporting the B-10 Modified Alternative may result in both temporary and small permanent impacts to suitable habitat for the toad. In particular, construction of the Avenida Pico bridges over Cristianitos Creek from the City of San Clemente, upgrade of Cristianitos Road through the Cristianitos Sub-basin, and the likely upgrade of the existing Gabino culvert crossing and Cristianitos Road over San Juan Creek, in addition to Cow Camp Road over San Juan Creek would result in temporary construction impacts and permanent impacts associated with the placement of bridge piers. In addition to the potential

direct impacts noted above, Chapter 6.0 noted that indirect impacts such as pollutants of concern, invasive species, and lighting may occur.

Least Bell's Vireo. All known breeding locations for the vireo are avoided by the B-10 Modified Alternative, including both key locations identified by the NCCP Southern Planning Guidelines in the Gobernadora Ecological Restoration Area and in the Arroyo Trabuco. In addition, as previously identified in Tables 8-9 and 8-10, this alternative would result in the protection of approximately 8,181.3 acres of riparian areas in the SAMP Study Area and 1,641.5 acres within the RMV Planning Area. Of the protected riparian areas, 1,002.4 acres in the SAMP Study Area and 470.2 acres in the RMV Planning Area are suitable willow scrub and riparian forest habitat for the least bell's vireo. Within the SAMP Study Area, wetlands/riparian habitat is conserved in already protected open space within Arroyo Trabuco and Caspers Wilderness Park, the Donna O'Neill Land Conservancy, and the Upper Chiquita Land Conservancy. Infrastructure to support the B-10 Modified Alternative would result in permanent impacts to one vireo location and temporary impacts to one location. This is a potentially significant impact.

Southern Steelhead. Chapter 6.0 identified that National Marine Fisheries Service determined that San Juan Creek within the RMV Planning Area is unoccupied by southern steelhead. Preservation of San Juan Creek and associated riparian habitat through the RMV Planning Area and beyond in Caspers Regional Park and the Cleveland National Forest within the larger SAMP Study Area would provide future opportunities for fish passage. Limited modifications to San Juan Creek in the form of bridge piers for four crossings would not impact occupied habitat or impede potential future fish passage.

Special Status Aquatic Species

***Western Spadefoot Toad*.** As noted in Chapter 6.0, the B-10 Modified Alternative would impact six of the 15 known locations of spadefoot toads on the RMV Planning Area. The impacted locations are within Planning Areas 1 (two locations), Planning Area (three locations) and Planning Area 4 (one location). Impacts to western spadefoot toad are considered significant.

***Southern Tarplant*.** As noted in Chapter 6.0, Alternative B-10 Modified would result in impacts to 11 locations and 23,726 individuals, impacts to southern tarplant are considered significant.

Arroyo Chub. Chapter 6.0 described that within the RMV Planning Area, San Juan Creek and Cañada Gobernadora would be subject to temporary alteration or diversion to accommodate grading and construction (temporary impacts) from the B-10 Modified Alternative's circulation system and indirect impacts associated with implementation of this alternative. However, suitable habitat for the arroyo chub in Cañada Gobernadora would not be affected by any such alterations or diversions; therefore, no significant impacts are anticipated. Additionally, the majority of high quality habitat in San Juan Creek is located upstream of the RMV Planning Area in Casper's Regional Park, extending into the Cleveland National Forest; therefore, no significant impacts are anticipated in this location either.

Salt Spring Checkerbloom. As noted in Chapter 6.0, Alternative B-10 Modified would impact all three locations on the RMV Planning Area and 532 individuals (one population would be partially impacted). Impacts to the single location in Gobernadora Canyon would be considered less than significant because of the limited number of individuals impacted. The B-10 Modified Alternative would result in significant impacts to this species.

Mud Nama. As noted in Chapter 6.0, two locations, containing a large number of this species (9,500 individuals) would be impacted by the B-10 Modified Alternative. This is considered a significant impact.

Common Aquatic Species

Mountain Lion. Although the mountain lion is not an aquatic species, it frequently uses riparian corridors for movement purposes and as a water source. As noted in Chapter 6.0, all important movement corridors for mountain lion identified in the SAMP Study Area (i.e., linkages C, D, G, H, I, J, L, M, O, P, and Q) as identified in the Southern Planning Guidelines and the Watershed Planning Principles would exceed standards recommended by Beier under the B-10 Modified Alternative, except for linkage J (San Juan Creek). The B-10 Modified Alternative includes a 300-foot-wide setback from the edge of the 100-year floodplain which provides a minimum 1,100-foot wide corridor for a distance of 5,150 linear feet. This corridor would not meet the standards recommended by Beier of a 1,312 feet corridor. This is a potentially significant impact.

Partially Armored Threespine Stickleback. Chapter 6.0 described that within the RMV Planning Area, San Juan Creek and Cañada Gobernadora would be subject to temporary alteration or diversion to accommodate grading and construction (temporary impacts) from the B-10 Modified Alternative's circulation system and indirect impacts associated with implementation of this alternative. Because substantial suitable habitat for the stickleback in Cañada Gobernadora would not be affected by any such alterations or diversions and the majority of high quality habitat in San Juan Creek is located upstream of the RMV Planning Area in Casper's Regional Park, extending into the Cleveland National Forest; therefore, no significant long-term impacts are anticipated.

Alternative B-1 Error! Bookmark not defined.**2**

Listed Aquatic Species

From the analysis in Chapter 6.0, the B-12 Alternative avoids impacts to the least Bell's vireo and southwestern willow flycatcher as a result of implementation of the developed proposed by this alternative. While the B-12 Alternative would avoid one vernal pool complex occupied by the San Diego fairy shrimp and two vernal pool complexes occupied by the Riverside fairy shrimp, based on the analysis in Chapter 6.0 (similar to B-10 Modified Alternative), the B-12 Alternative would have significant impacts on the San Diego fairy shrimp and Riverside fairy shrimp due to impacts to one San Diego and Riverside fairy shrimp occupied vernal pool. Alternative B-12 was identified as having potentially significant indirect impacts (such as the generation of pollutants of concern) on the arroyo toad.

The following discussion focuses on how the B-12 Alternative minimizes impacts to listed aquatic species through avoidance of Waters of the U.S and through other avoidance measures. In addition, impacts attributable to infrastructure necessary to support implementation of the B-12 Alternative are also discussed.

San Diego and Riverside Fairy Shrimp. All occupied vernal pools complexes located on Chiquita Ridge and Radio Tower Road and their supporting contributing hydrological sources would be avoided in accordance with the GPA/ZC EIR requirements. Infrastructure necessary to support implementation of the B-12 Alternative would not result in additional impacts to the San Diego fairy shrimp.

Arroyo Toad. As described in Chapter 6.0, the B-12 Alternative would retain all of the arroyo toad breeding sites along floodplains and creek bottoms, including major and important populations in key locations in San Juan Creek, lower Gabino Creek, lower Cristianitos Creek, and Talega Creek. Therefore, 100 percent of breeding sites would be protected. San Juan Creek breeding populations have been protected by a USACE required 400-meter setback between Planning Areas 3 and 4 in which no residential or commercial development can occur (certain limited infrastructure facilities are allowed). In the Talega Sub-basin, the impact analysis area for Planning Area 8 was established based on guidelines contained in the critical habitat determination for the arroyo toad published by USFWS (Federal Register 70 19563). Additionally, the B-12 Alternative requires five years of monitoring and telemetry studies of arroyo toad population, habitat, and home range which Rancho Mission Viejo is required to take into consideration in addressing the Special Condition requiring minimization of impacts on the arroyo toad in Planning Area 8 prior to a decision on siting and configuring the 500 acres of development allowed within the overall 1,349 acres of RMV Planning Area 8. Within the SAMP Study Area, wetlands/riparian habitat is conserved in already protected open space within Arroyo Trabuco and Caspers Wilderness Park, the Donna O'Neill Land Conservancy, and the Upper Chiquita Land Conservancy.

Implementation of infrastructure supporting the B-12 Alternative may result in both temporary and small permanent impacts to suitable habitat for the toad. In particular, construction of the bridges over Cristianitos Creek from San Clemente, Cristianitos Road, and Cow Camp Road over San Juan Creek would result in temporary construction impacts and permanent impacts associated with the placement of bridge piers. In addition to the potential direct impacts noted above, Chapter 6.0 noted that indirect impacts such as pollutants of concern, invasive species, and lighting may occur.

Least Bell's Vireo. All known breeding locations for the vireo are avoided by the B-12 Alternative including the key location identified by the NCCP Southern Planning Guidelines in the Gobernadora Ecological Restoration Area. In addition, this alternative, when including already protected open space, would result in the protection of approximately 8,198.1 acres of riparian areas in the SAMP Study Area and 1,657.3 acres within the RMV Planning Area (Tables 8-9 and 8-10). Of the protected riparian areas, 1,002.4 acres in the SAMP Study Area and 470.2 acres in the RMV Planning Area are suitable willow scrub and riparian forest habitat for the least bell's vireo. Within the SAMP Study Area, wetlands/riparian habitat is conserved in already protected open space within Arroyo Trabuco and Caspers Wilderness Park, the Donna O'Neill Land Conservancy, and the Upper Chiquita Land Conservancy. Infrastructure to support the B-12 Alternative would result in permanent impacts to one vireo location and temporary impacts to one vireo location. This is a potentially significant impact.

Southern Steelhead. Chapter 6.0 noted that National Marine Fisheries Service determined that San Juan Creek within the RMV Planning Area is unoccupied by southern steelhead. Preservation of San Juan Creek and associated riparian habitat through the RMV Planning Area and beyond in Caspers Regional Park and the Cleveland National Forest within the larger SAMP Study Area would provide future opportunities for fish passage. Limited modifications to San Juan Creek in the form of bridge piers for four crossings would not impact occupied habitat or impede potential future fish passage.

Special Status Aquatic Species

***Western Spadefoot Toad*.** As noted in Chapter 6.0, the B-12 Alternative would impact six of the 15 known locations of spadefoot toads on the RMV Planning Area. The impacted locations

are within Planning Areas 1 (two locations), Planning Area (three locations) and Planning Area 4 (one location). Impacts to western spadefoot toad are considered significant.

***Southern Tarplant*.** As noted in Chapter 6.0, Alternative B-12 would result in impacts to 11 locations and 2,311 individuals, impacts to southern tarplant are considered significant.

Arroyo Chub. Chapter 6.0 described that within the RMV Planning Area, San Juan Creek and Cañada Gobernadora would be subject to temporary alteration or diversion to accommodate grading and construction (temporary impacts) from the B-10 Modified Alternative's circulation system and indirect impacts associated with implementation of this alternative. However, suitable habitat for the arroyo chub in Cañada Gobernadora would not be affected by any such alterations or diversions; therefore, no significant impacts are anticipated. Further, the majority of high quality habitat in San Juan Creek is located upstream of the RMV Planning Area in Casper's Regional Park. Therefore, no significant impacts are anticipated in this location either.

Salt Spring Checkerbloom. As noted in Chapter 6.0, Alternative B-12 would impact all three locations on the RMV Planning Area and 532 individuals (one population would be partially impacted). Impacts to the single location in Gobernadora Canyon would be considered less than significant because of the limited number of individuals impacted. The B-12 Alternative would result in significant impacts to this species.

Mud Nama. As noted in Chapter 6.0, two locations containing a large number of this species (9,500 individuals) would be impacted by the B-12 Alternative. This is considered a significant impact.

Common Aquatic Species

Mountain Lion. Although the mountain lion is not an aquatic species, it frequently uses riparian corridors for movement purposes and as a water source. As noted in Chapter 6.0, all important movement corridors for mountain lion identified in the SAMP Study Area (i.e., linkages C, D, G, H, I, J, L, M, O, P, and Q), as identified in the Southern Planning Guidelines and the Watershed Planning Principles, would exceed the Beier standards under the B-12 Alternative. No significant impacts to mountain lions would occur under the B-12 Alternative.

Partially Armored Threespine Stickleback. Chapter 6.0 described that within the RMV Planning Area, San Juan Creek and Cañada Gobernadora would be subject to temporary alteration or diversion to accommodate grading and construction (temporary impacts) from the B-12 Alternative's circulation system and indirect impacts associated with implementation of this alternative. However, suitable habitat for the stickleback in Cañada Gobernadora would not be affected by any such alterations or diversions; therefore, no significant impacts are anticipated. Additionally, the majority of high quality habitat in San Juan Creek is located upstream of the RMV Planning Area in Casper's Regional Park; therefore, no significant impacts are anticipated in this location either.

Alternative A-4

As noted previously under the A-4 Alternative, for illustrative purposes, Rancho Mission Viejo could request Section 404 permits on a planning area by planning area basis for the County-approved B-10 Modified Alternative. Therefore, the analysis set forth above for the B-10 Modified Alternative would apply to the A-4 Alternative.

Alternative A-5

As described in Chapter 5.0, the A-5 Alternative obviates the need for a SAMP and permits under Section 404 by avoiding regulated Waters of the U.S., including wetlands as required by Section 404 and NEPA and all occupied habitat of listed species. Under this alternative, indirect impacts to species would occur from developments and roads because riparian corridors are not protected (SAMP Tenet 4) and buffers around avoided habitats are not maintained (SAMP Tenet 7).

8.5 FACTUAL DETERMINATIONS

In accordance with 40 CFR 230.11, the USACE must make factual determinations for several environmental endpoints related to the aquatic environment. These factual determinations are be used in determining compliance or non-compliance with the restrictions on discharge as described in 40 CFR 230.10. Factual determinations are made with respect to physical substrate; water circulation, fluctuation, and salinity; suspended particulates/turbidity; contaminants; aquatic ecosystem and organisms; and secondary effects on the aquatic ecosystem. Actions to minimize impacts (Subpart H) also need to be considered in the determination. A complete list of proposed actions to minimize impacts can be found in the special public notices located in Appendix A of this EIS.

8.5.1 PHYSICAL SUBSTRATE

As summarized in Chapter 4.0, there are about 3,222 acres of Waters of the U.S. in the SAMP Study Area, including 857 acres within the RMV Planning Area that are subject to Section 404 of the Clean Water Act. These Waters of the U.S. are for the most part intermittent and ephemeral streams, remaining dry for most parts of a typical year. The exceptions are certain portions of Arroyo Trabuco and San Juan Creek, which can have perennial flows through some years. According to the Balance Hydrologics Sediment Report, the physical substrate for the Chiquita and Gobernadora Sub-basins of the San Juan Creek Watershed is sandy with the upper portions of the San Juan Creek Watershed comprised primarily of crystalline terrains starting with the Verdugo and Bell Canyon Sub-basins. The physical substrate of western San Mateo Creek Watershed varies, ranging from clayey substrates within upper Gabino and Cristianitos subbasins to sandy substrates in portions of Talega and Blind Canyons to coarser crystalline substrates in middle Gabino, Talega, and La Paz Canyons.

8.5.1.1 Impacts

Outside the RMV Planning Area, the SAMP permitting procedures will have varying effects on substrate. The RGP will result in temporary impacts, such that no permanent loss of substrate would occur. The effect of individual LOP actions cannot be determined, due to the lack of individual project information. It is expected that the issuance of certain LOPs would result in permanent impacts to substrate. The LOPs, for the most part, would be confined to lower quality substrate areas that have been previously impacted.

Within the 857 acres of Waters of the U.S. within the RMV Planning Area, the SAMP Permitting procedures would result in permanent impacts to 55.46 acres of substrate and temporary impacts to 36.89 acres of substrate. Temporary impacts associated with SMWD infrastructure maintenance and other infrastructure maintenance would be restored on-site after activities have ceased.

8.5.1.2 Actions to Minimize Impacts

Outside the RMV Planning Area, program level safeguards for the RGP and the LOP process as well as general conditions for both the RGP and the LOP process would assist in minimizing impacts to substrate. These include geographic eligibility requirements, requirements for notification and coordination, and implementation of particular thresholds. The RGP and the LOP process would be used mostly for impacts in lower quality substrate areas. The use of these permit processes in pre-identified areas with lower ecological integrity allows for minimization of any potential impacts. After including general conditions for the RGP and the LOP process, actions would have further minimized impacts to substrate. Some of the general conditions to protect substrate include:

RGP GC6 When practicable, and if personnel would not be put into any additional potential hazard, heavy equipment working in or crossing wetlands must be placed on temporary construction mats (timber, steel, geotextile, rubber, etc.), or other measures must be taken to minimize soil disturbance such as using low pressure equipment. Temporary construction mats shall be removed promptly after construction.

RGP GC9 Any temporary fills must be removed in their entirety and the affected areas returned to their pre-existing conditions.

LOP GC4 Same as RGP GC6 for equipment soil disturbance

LOP GC7 Any temporary fills must be removed in their entirety and the affected areas returned to their pre-existing conditions, including any native riparian and/or wetland vegetation. If an area impacted by such temporary fill is considered likely to naturally reestablish native riparian and/or wetland vegetation within two years to a level similar to pre-project or pre-event conditions, the permittee will not be required to do restore the riparian and/or wetland vegetation.

Within the RMV Planning Area, substrate impacts are proposed to be confined to small area of impact, resulting in avoidance of most of the significant effects. In addition, the impacts have been confined to the smaller ephemeral streams throughout the RMV Planning Area. Except for limited impacts resulting from bridges required for circulation improvements, major streams such as San Juan Creek, Cristianitos Creek, and Gabino Creek will not be impacted. A comprehensive Water Quality Management Plan has been prepared with a broad range of measures directed toward managing post-development stormwater and urban runoff flows for purposes of protecting stream hydrology and geomorphology. Even with avoidance, additional special conditions for Rancho Mission Viejo (SC) and for the Santa Margarita Water District (SM SC) would be required to ensure proposed impacts are minimized to the maximum extent practicable, including complying with pre-identified impact limits (SC I.A.1 and SM SC I.1) and the restoration to compensate for lost substrate (SC III.2.a). The special conditions that protect substrate conditions include:

SC I.A1 The permittee shall confine development and supporting infrastructure to the footprint (including infrastructure alignments and facilities within designated open space) shown on Figures 8-1, 8-2, 8-3a, 8-3b, and 8-3c.

SC I.B.2 For any stream located outside the development footprint of Strahler 3rd order or greater receiving project discharges, the permittee shall undertake adaptive management measures to insure no change in channel geomorphology. Strahler

order may be determined from the Glenn Lukos Associates jurisdictional determination. The permittee shall provide a monitoring plan to the Corps explaining the protocol, standards constituting adverse impacts, and remedial measures should thresholds for adverse impacts be reached. The stream stabilization program required by Ranch Plan EIR Mitigation Measure 4.5-7 and the stream monitoring program required by Ranch Plan EIR Mitigation Measure 4.5-8 shall be submitted as part of the monitoring plan for review and approval.

SC I.B.3 The permittee shall not place water quality and/or water retention basins within the active channel of San Juan Creek, Chiquita Creek, Gobernadora Creek, Verdugo Creek, Cristianitos Creek, Gabino Creek, or Talega Creek.

SC II.4 The permittee shall place, heavy equipment working in or crossing wetlands on temporary construction mats (timber, steel, geotextile, rubber, etc.), or other measures must be taken to minimize soil disturbance such as using low pressure equipment, when practicable and if personnel would not be put into any additional potential hazard. Temporary construction mats shall be removed promptly after construction.

SC II.10 The permittee shall restore all temporarily impacted areas to pre-construction elevations within one month following completion of work. If wetlands or non-wetland waters of the U.S. vegetated with native wetland species were impacted, re-vegetation should commence within three months after restoration of pre-construction elevations and be completed within 1 growing season. If re-vegetation cannot start due to seasonal conflicts (e.g., impacts occurring in late fall/early winter should not be re-vegetated until seasonal conditions are conducive to re-vegetation), exposed earth surfaces should be stabilized immediately with jute-netting, straw matting, or other applicable best management practice to minimize any erosion from wind or water.

SC III.2.a The permittee shall compensate for all impacts to wetlands and non-wetland waters of the U.S. vegetated with native wetland plant species at a 1:1 ratio on an area basis. The permittee may use the 18 acres of credit already established at the Gobernadora Ecological Restoration Area to compensate for future impacts to any waters of the U.S. Compensatory mitigation for impacts to specified wetlands and non-wetland waters of the U.S. vegetated with native wetland plant species shall be initiated prior to impacts to the specified waters of the U.S. and achieve the success criteria prior to impacts to the specified waters of the U.S. The permittee shall provide the Corps, Department of Fish and Game, and the U.S. Fish and Wildlife Service with a habitat mitigation and monitoring plan consistent with the LAD Mitigation and Monitoring Guidelines for review and approval prior to implementation of the compensatory mitigation. The compensatory mitigation sites should be prioritized in consideration of the "San Juan Creek Watershed Riparian Ecosystem Restoration Plan: Site Selection and General Design Criteria" by Engineering Research and Development Center (ERDC) dated August 2004 and the Aquatic Resources Restoration Plan. Additional considerations include the proximity of impact site and mitigation site, impacts to other sensitive habits due to the potential mitigation site, site ownership, and other factors. Restoration design shall follow the principles of the ERDC restoration plan (Appendix F4 of the SAMP EIS).

SM SC I.1 The permittee shall confine infrastructure facilities to the footprint (including infrastructure alignments and facilities within designated open space) shown on Exhibits 8-3a, 8-3b, and 8-3c.

SM SC II.4 Same as SC II.4 for equipment soil disturbance.

SM SC II.9 Same as SC II.10 for temporary impact restoration.

8.5.2 WATER CIRCULATION, FLUCTUATION, AND SALINITY

Most of the hydrologic processes occur within the ephemeral, intermittent, and perennial streambeds within the SAMP Study Area. In water bodies such as the Arroyo Trabuco, San Juan Creek, and Cristianitos Creek, the water circulation and fluctuation is mostly unidirectional and gravity-driven, responding to precipitation events. Chapter 4.0 summarizes the hydrological data. Although there are a few non-riverine water bodies such as Lake Mission Viejo and several seep wetlands, most waterbodies within the SAMP Study Area are streams. Saline aquatic resources are also limited, confined to the mouth of San Juan Creek.

8.5.2.1 Impacts

Outside the RMV Planning Area, the SAMP permitting procedures will have varying effects on water circulation and fluctuation. The RGP would result in temporary impacts, such that no permanent to water circulation or fluctuation would occur. The effect of individual LOP actions cannot be determined, due to the lack of individual project information. It is expected that the issuance of certain LOPs would result in permanent impacts water circulation by either altering them or completely removing areas from receiving water circulation. In no event would any project affect salinity gradients within the SAMP due to the lack of impacts to salt water areas.

Within the RMV Planning Area, the SAMP permitting procedures have been designed to minimize impacts to water circulation and fluctuation. Within the RMV Planning Area, there are no salt water bodies whose salinity would be affected. Impacts have been directed to mostly ephemeral and some intermittent streams. These areas would have been completely impacted thereby preventing any hydrological processes from occurring. Areas downstream of the impact zone are not expected to have any substantial impacts due to requirements by the USACE and the County of Orange to minimize downstream changes in hydrology. For temporary impacts associated with infrastructure maintenance, there would be no permanent change in water circulation and fluctuation.

8.5.2.2 Actions to Minimize Impacts

Outside the RMV Planning Area, program-level safeguards for the RGP and the LOP process as well as general conditions for both the RGP and the LOP process would assist in minimizing impacts to water circulation and fluctuations. These include geographic eligibility requirements, requirements for notification and coordination, and implementation of particular thresholds. The RGP and the LOP process would be used mostly for impacts in lower quality areas. The use of these permit processes in pre-identified areas with lower ecological integrity allows for minimization of any potential impacts. After including general conditions for the RGP and the LOP process, actions would have further minimized impacts. Some of the general conditions to protect water circulation and fluctuations include:

RGP GC8 To the maximum extent practicable, the activity must be designed to maintain pre-project downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore,

the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill materials must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to pre-project conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond pre-project conditions.

LOP GC6 Same as RGP GC8 for in-stream water flow management

Within the RMV Planning Area, impacts to water circulation and fluctuation are proposed to be managed comprehensively through the WQMP, as reviewed in subchapter 8.6.1, resulting in avoidance, minimization, and mitigation of the significant effects. Major streams such as the San Juan Creek, Cristianitos Creek, and Gabino Creek would not be impacted. Even with avoidance/minimization through implementation of the WQMP, additional special conditions would be required to ensure proposed impacts are minimized to the maximum extent practicable. Most of this applies to controlling flood flows during more frequent events as part of the runoff management plan (SC I.B.1) that involves flow duration matching as described in subchapter 8.6.1. The special conditions that protect water circulation and fluctuation include:

SC I.A1 The permittee shall confine development and supporting infrastructure to the footprint (including infrastructure alignments and facilities within designated open space) shown on Figures 8-1, 9-2, 8-3a, 8-3b, 8-3c, and 8-4.

SC I.B.1 Outside the footprint shown in Figure 8-1, the permittee shall insure post-project surface water hydrology for any stream of Strahler 3rd order or greater shall not be substantially different from pre-project hydrology. Strahler order may be determined from the Glenn Lukos Association jurisdictional determination. For 24-hour precipitation events, flows in response to 100-year events shall not be substantially different between pre-project conditions and post-project conditions. The permittee shall use best management practices including and not limited to detention basins, retention basins, low-water irrigation, and increase in pervious surfaces to manage excessive storm runoff from developed areas. The runoff management plan required by Ranch Plan EIR Mitigation Measure 4.5-1(g) as amended by the Ranch Plan Development Agreement shall be submitted with each project application for review by the Corps. For 24-hour precipitation events, flows in response to 10-year events shall not different by more than 1% between pre-project conditions and post-project conditions. The permittee shall use best management practices including and not limited to detention basins, retention basins, low-water irrigation, and increase in pervious surfaces to manage excessive storm runoff from developed areas. The runoff management plan required by Ranch Plan EIR Mitigation Measure 4.5-1(g) as amended by the Ranch Plan Development Agreement shall be submitted with each project application for review by the Corps.

8.5.3 SUSPENDED PARTICULATES/TURBIDITY

Chapter 4.0 summarizes the current loadings of suspended particulates and turbidity in the RMV Planning Area. Some of these generalizations apply to the entire SAMP Study Area. For the most part, the bulk of the sediments are moved during a few extreme storms during the winter. Outside of those infrequent events, suspended particulates and turbidity are low.

Sensitive aquatic biota that could be affected by the suspended particulates/turbidity includes arroyo chub, the three-spined stickleback, the southern steelhead, and arroyo toad.

8.5.3.1 Impacts

Outside the RMV Planning Area, the SAMP permitting procedures would have varying effects on suspended particulates and turbidity. The RGP would result in temporary disturbance of sediments, resulting in short-term localized increases in turbidity. The effect of individual LOP actions cannot be determined, due to the lack of individual project information. It is expected that the issuance of certain LOPs would result in disturbance of sediments resulting in elevation of turbidity for short periods of time. If some of these increases in turbidity occur near sensitive endpoints, there can be adverse impacts.

Within the RMV Planning Area, the proposed projects would be designed to minimize impacts to post-construction turbidity through the implementation of the WQMP (Appendix D) as described in subchapter 8.6.1. Due to design features including infiltration basins and bioswales, post-project turbidity levels will not be substantially different from pre-project turbidity levels. During construction, there may be temporary disturbances that would increase turbidity in some areas after precipitation events. In the vicinity of sensitive aquatic receptors, there may be adverse impacts.

Within the RMV Planning Area, the RMV Proposed Project would be designed to minimize impacts to post-construction turbidity through the implementation of the WQMP (Appendix D) as described in subchapter 8.6.1. Due to design features including infiltration basins and bioswales and the avoidance of terrains that generate coarse sediments important to streamcourse geomorphological processes, post-project turbidity levels would not be substantially different from pre-project turbidity levels. During construction, there may be temporary disturbances that would increase turbidity in some areas after precipitation events. In the vicinity of sensitive aquatic receptors, there may be adverse impacts.

8.5.3.2 Actions to Minimize Impacts

Outside the RMV planning Area, program-level safeguards for the RGP and the LOP process would assist in minimizing suspended particulates and turbidity. These include geographic eligibility requirements, requirements for notification and coordination, and implementation of particular thresholds. The RGP and the LOP process will be used mostly for impacts in lower quality areas. The use of these permit processes in pre-identified areas with lower ecological integrity makes it less likely to have adverse effects on sensitive receptors. After including general conditions for the RGP and the LOP process, actions will have further minimized impacts. Some of the general conditions to minimize the release of suspended particulates and turbidity include:

RGP GC5 When feasible, erosion and siltation controls, such as siltation or turbidity curtains, sedimentation basins, and/or hay bales or other means designed to minimize exacerbating turbidity in the watercourse above background levels existing at the time of project implementation, shall be used and maintained in effective operating condition during project implementation unless conditions preclude their use, or if conditions are such that the proposed work would not increase turbidity levels above the background level existing at the time of the work. All exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be stabilized at the earliest practicable date to preclude additional damage to the project area through erosion or siltation and

no later than November of the year the work is conducted to avoid erosion from storm events.

RGP GC6 When practicable, and if personnel would not be put into any additional potential hazard, heavy equipment working in or crossing wetlands must be placed on temporary construction mats (timber, steel, geotextile, rubber, etc.), or other measures must be taken to minimize soil disturbance such as using low pressure equipment. Temporary construction mats shall be removed promptly after construction.

RGP GC9 Any temporary fills must be removed in their entirety and the affected areas returned to their pre-existing conditions.

RGP GC10 Measures must be adopted to prevent potential pollutants from entering the watercourse. Construction materials and debris, including fuels, oil, and other liquid substances, will not be stored in the project area in a manner as to prevent any runoff from entering jurisdictional areas.

RGP GC11 Staging, storage, fueling, and maintenance of equipment must be located outside of the waters in areas where potential spilled materials will not be able to enter any waterway or other body of water.

RGP GC16 An individual Section 401 water quality certification must be obtained unless a general Section 401 certification is issued or waived for this RGP (see 33 CFR 330.4(c)).

LOP GC3 Same as RGP GC5 for soil erosion and siltation controls

LOP GC4 Same as RGP GC6 for equipment soil disturbance

LOP GC7 Any temporary fills must be removed in their entirety and the affected areas returned to their pre-existing conditions, including any native riparian and/or wetland vegetation. If an area impacted by such temporary fill is considered likely to naturally reestablish native riparian and/or wetland vegetation within two years to a level similar to pre-project or pre-event conditions, the permittee will not be required to do restore the riparian and/or wetland vegetation.

LOP GC8 Same as RGP GC10 for implementation of pollution prevention

LOP GC9 Same as RGP GC11 for staging of equipment.

LOP GC16 Same as RGP GC16 for requirement for a Section 401 water quality certification.

Within the RMV Planning Area, impacts to suspended particulates and turbidity have been addressed, in part, by avoidance of terrains that generate coarse sediments project design features to control runoff as part of the WQMP (Appendix D). For more detailed discussion, see subchapter 8.6.1 below. During project construction, turbidity would be addressed through surveying nearby areas for the two resident species, the arroyo chub and the three-spined stickleback, and requiring the turbidity to not exceed background levels (SC II.9). The special conditions that reduce suspended particulates and turbidity include:

SC I.C.1 The permittee shall abide by all the terms and conditions of the applicable Section 401 certification.

SC I.C.2 The permittee shall develop and implement master area and sub-area water quality management plans for each Planning Area (Ranch Plan EIR Mitigation Measures 4.5-3 and 4.5-4). A copy of the plan shall be submitted to the Corps for review and approval for consistency with the Conceptual Water Quality Management Plan approved as part of the SAMP EIS. The Corps shall have 30-days to review and approve any submitted plan. If the Corps does not provide comments within 30 days, the submitted plan shall be deemed approved. In the event of a disagreement between the Corps requirements and those of the County of Orange, the permittee, Corps and County shall agree on a resolution of said disagreement within 15 days. Copies of the annual reports shall be provided to the Corps within 30 days of completion.

SC II.4 The permittee shall place, heavy equipment working in or crossing wetlands on temporary construction mats (timber, steel, geotextile, rubber, etc.), or other measures must be taken to minimize soil disturbance such as using low pressure equipment, when practicable and if personnel would not be put into any additional potential hazard. Temporary construction mats shall be removed promptly after construction.

SC II.8 The permittee shall implement best management practices to prevent the movement of sediment into Waters of U.S. Compliance with Ranch Plan EIR Standard Condition 4.5-11 (Erosion and Sediment Control Plan (ESCP) would satisfy this condition. The ESCP must be designed to minimize the mobilization of fine sediments into downstream waters. A copy of the current ESCP shall be provided to the Corps for each project application.

SC II.9 For each planning area within the San Juan Creek Watershed, the permittee shall survey streams 1000 feet downstream of each planning area for arroyo chub and three-spined stickleback prior to construction. If either species are found, downstream turbidity up to 300 feet from the planning area during construction shall not exceed more than 10 NTU over background when the background is less than 50 NTU or a 20 percent increase in turbidity when the background turbidity is more than 50 NTU. Background turbidity values can be obtained by measuring turbidity just upstream of the discharge point during construction. If the turbidity threshold is exceeded, the permittee shall implement additional turbidity control measures within 48 hours to reduce the turbidity to below threshold values.

SC II.10 The permittee shall restore all temporarily impacted areas to pre-construction elevations within one month following completion of work. If wetlands or non-wetland Waters of the U.S. vegetated with native wetland species were impacted, re-vegetation should commence within three months after restoration of pre-construction elevations and be completed within 1 growing season. If re-vegetation cannot start due to seasonal conflicts (e.g., impacts occurring in late fall/early winter should not be re-vegetated until seasonal conditions are conducive to re-vegetation), exposed earth surfaces should be stabilized immediately with jute-netting, straw matting, or other applicable best management practice to minimize any erosion from wind or water.

SM SC I.3 Same as SC I.C.1 for Section 401 certification.

SM SC II.4 Same as SC II.4 for equipment soil disturbance.

SM SC II.8. The permittee shall implement best management practices to prevent the movement of sediment into waters of U.S. The permittee shall develop a program-level plan to minimize the mobilization of fine sediments into downstream waters. A copy of the plan shall be provided to the Corps before issuance of the final permit.

SM SC II.9 Same as SC II.10 for temporary impact restoration.

8.5.4 CONTAMINANTS

The degree to which contaminants are introduced into the aquatic environment will depend on the material that is to be discharged, the receiving aquatic environment, and the availability of contaminants within the discharged materials. The SAMP Study Area is relatively free from human disturbances compared to other areas within southern California. Although the western portions of the SAMP Study Area are urbanized, vast portions to the east are still naturally vegetated or vegetated by grazing lands. An extensive analysis of avoidance and minimization measures for addressing "pollutants of concern" is set forth in the WQMP and summarized in subchapter 8.6.1. One notable potential source of contaminants in the eastern SAMP Study Area is the Northrop Grumman Space Technology TRW Capistrano Test Site within the Planning Area 8 boundaries, which has the potential to involve industrial solvents and other hazardous contaminants.

8.5.4.1 Impacts

Outside the RMV Planning Area, the SAMP permitting procedures would have varying effects on contaminants. The RGP would result in temporary impacts, such that no permanent discharge of fill materials and its associated contaminants would result. The effect of individual LOP actions cannot be determined, due to the lack of individual project information. It is expected that the issuance of certain LOPs would result in the release of contaminants into the aquatic environment. Only with further project review with each application can this issue be addressed more satisfactorily.

As reviewed extensively in the WQMP, within the RMV Planning Area, the RMV Proposed Project WQMP has addressed the release of contaminants into the aquatic ecosystem consistent with applicable water quality standards. The permanent impacts would result in the discharge of fill material from balanced cut and fill grading operations. Due to the history of the RMV Planning Area as a ranching and agricultural operation, most of the area is not expected to have any location with high levels of contaminants. Consequently, the discharge of fill materials through balanced cut and fill operations would not discharge contaminants into the aquatic ecosystem. The exception would be for Planning Area 8 with the TRW facility. Additional considerations need to be made for Planning Area 8.

8.5.4.2 Actions to Minimize Impacts

Outside the RMV planning Area, program level safeguards for the RGP and the LOP process as well as general conditions for both the RGP and the LOP process would assist in minimizing the release of contaminants. After including general conditions for the RGP and the LOP process,

actions would have further minimized impacts. Some of the general conditions to minimize the release of contaminants include:

RGP GC7 No discharge of dredged or fill materials may consist of unsuitable materials (e.g., trash, debris, car bodies, asphalt, etc.) and material discharged must be free from pollutants in toxic amounts (see Section 307 of the Clean Water Act).

RGP GC16 An individual Section 401 water quality certification must be obtained unless a general Section 401 certification is issued or waived for this RGP (see 33 CFR 330.4(c)).

LOP GC5 Same as RGP GC7

LOP GC16 Same as RGP GC16

Within the RMV planning Area, special conditions related to the release of toxic contaminants would address this issue. The special conditions that will prevent the release of contaminants include:

SC I.C.1 The permittee shall abide by all the terms and conditions of the applicable Section 401 certification.

SC II.5 The permittee shall only discharge dredged or fill materials into waters of the U.S. that is free from pollutants in toxic amounts (see Section 307 of the Clean Water Act). The permittee not place within Waters of the U.S. unsuitable materials (e.g., trash, debris, car bodies, asphalt, etc.). This condition is satisfied through the use of using on-site materials from balanced cut-and-fill grading operations for every Planning Area except for Planning Area 8. For Planning Area 8, the permittee shall prepare an updated Phase I Environmental Site Assessment (GPA EIR Mitigation Measure 4.14-13), prepare a comprehensive closure plan (GPA EIS Mitigation Measure 4.14-15), prepare a Health and Safety Contingency Plan (GPA EIR Mitigation Measure 4.14.1), remove all underground storage tanks (GPA EIR Mitigation Measure 4.l4-6), and in the event that toxic materials are discovered during construction, an in the field assessment (GPA EIR Mitigation Measure 4.14-2). Such assessments shall be provided to the Corps. The permittee shall not discharge fill materials associated with Planning Area 8 containing toxic amounts of pollutants.

SM SC I.3 Same as SC I.C.1 for Section 401 certification.

SM SC II.5 The permittee shall only discharge dredged or fill materials into waters of the U.S. that is free from pollutants in toxic amounts (see Section 307 of the Clean Water Act). The permittee shall not place within waters of the U.S. unsuitable materials (e.g., trash, debris, car bodies, asphalt, etc.).

8.5.5 AQUATIC ECOSYSTEM AND ORGANISMS

As summarized in Chapter 4.0, there are numerous aquatic habitats and organisms, including several threatened and/or endangered species, within the SAMP Study Area. Some of the more notable aquatic habitats include arroyo willow forest, alkali meadow, and southern willow scrub. Some of the more notable aquatic organisms include the arroyo toad, least Bell's vireo, southern steelhead, and Riverside fairy shrimp. In addition, the riparian and wetland areas

support many species not typically thought of as aquatic species, including the mountain lion, Cooper's hawk, and yellow warbler, all of which depend heavily on riparian habitats for survival.

8.5.5.1 Impacts

Outside the RMV Planning Area, the SAMP permitting procedures would have varying effects on the aquatic ecosystem and biota. The RGP will result in temporary impacts, such that there will be no permanent impacts to wetlands or species. Given that areas eligible for the RGP have little ecosystem value, adverse impacts are not expected. The effect of individual LOP actions cannot be determined, due to the lack of individual project information. It is expected that the issuance of certain LOPs would result in some impacts to the aquatic environment and species, but this must be determined on a case-by-case basis. Only with further project review with each application can this issue be addressed more satisfactorily.

Within the RMV Planning Area, potential impacts have been summarized and addressed already in Sections 6.0 and 8.4.1.

8.5.5.2 Actions to Minimize Impacts

Outside of the RMV Planning Area, program level safeguards for the RGP and the LOP process as well as general conditions for both the RGP and the LOP process would assist in minimizing adverse impacts on the aquatic ecosystem and biota. These include geographic eligibility requirements, requirements for notification and coordination, and implementation of particular thresholds. The RGP and the LOP process will be used mostly for impacts in lower quality habitat areas. The use of these permit processes in pre-identified areas with lower ecological integrity allows for minimization of any potential impacts. After including general conditions for the RGP and the LOP process, actions will have further minimized impacts. The general conditions that would benefit the general aquatic environment and organisms are the same RGP and LOP general conditions that address threatened and endangered species in subchapter 8.6.3.5.

Within the RMV Planning Area, impacts to the aquatic ecosystem and organisms have been minimized due to specific project design features including avoidance of about 90 percent of all Waters of the U.S. (SC I.A.1), implementation of sufficient buffers to create functional corridors (SC I.D.2), and development of a long-term aquatic resources adaptive conservation program involving preservation (SC III.1), compensatory mitigation (SC III.2 and SC III.3), and long-term management (SC III.4 and SC III.5). The special conditions that protect the aquatic ecosystem and organisms are for the most part the same ones that address threatened and/or endangered species in subchapter 8.6.3.5. Special conditions that address the general aquatic ecosystem and organisms not addressed in subchapter 8.6.3.5 include:

SC I.B.3 The permittee shall not place water quality and/or water retention basins within the active channel of San Juan Creek, Chiquita Creek, Gobernadora Creek, Verdugo Creek, Cristianitos Creek, Gabino Creek, or Talega Creek.

SC I.B.4 For any Corps jurisdictional feature vegetated with coast live oaks located outside of the development footprint that receive discharges, the permittee shall monitor the health of the oaks for five years after the start of the discharges. Any oaks greater than 6 feet in height that die of excessive inundation, shall be mitigated at a ratio of 1 10-gallon coast live oak for loss of 1 inch diameter at breast height. The permittee shall provide a monitoring plan to the Corps

explaining the monitoring protocol and the standards constituting adverse impacts.

SC I.D.1 The permittee shall design new arterial roads or existing arterials upgraded to serve Ranch Mission Viejo projects along San Juan Creek, Chiquita Creek, and Gobernadora Creek in order to protect wildlife. The bridge crossings shall provide a minimum of 20 feet of clearance from the stream bottom. Chain link fencing or functionally similar barrier of 10 feet in height (or as revised/determined through adaptive management) shall be installed on both sides of the approaches to the bridge for a distance of 100 feet away (or as revised/determined through adaptive management) from the stream to deter wildlife from entering the roadway.

SC II.9 For each planning area within the San Juan Creek Watershed, the permittee shall survey streams 1000 feet downstream of each planning area for arroyo chub and three-spined stickleback prior to construction. If either species are found, downstream turbidity up to 300 feet from the planning area during construction shall not exceed more than 10 NTU over background when the background is less than 50 NTU or a 20 percent increase in turbidity when the background turbidity is more than 50 NTU. Background turbidity values can be obtained by measuring turbidity just upstream of the discharge point during construction. If the turbidity threshold is exceeded, the permittee shall implement additional turbidity control measures within 48 hours to reduce the turbidity to below threshold values.

8.5.6 SECONDARY EFFECTS ON THE AQUATIC ECOSYSTEM

Secondary effects on the aquatic ecosystem occur at a more distant location and time compared to the site where discharge of fill materials occur. These may be considered the same as indirect impacts. These effects occur downstream of a project site where the discharge of fill materials occur as well as areas adjacent to a project site. Examples of such effects include runoff and noise.

8.5.6.1 Impacts

Outside of the RMV Planning Area, the SAMP permitting procedures would have varying secondary effects on the aquatic ecosystem. The RGP would result in temporary impacts that are localized. Most of the secondary effects relate to downstream erosion and any disturbance of biota adjacent to a project site such as breeding birds. The effect of individual LOP actions cannot be determined, due to the lack of individual project information. It is expected that the issuance of certain LOPs would result in some impacts to the aquatic environment and species, but this must be determined on a case-by-case basis.

Within the RMV Planning Area, the proposed projects would result in secondary effects related to changes in runoff, changes in downstream pollutant loadings, effects due to lighting, effects due to noise and human encroachment, and effects related to proliferation of exotic species. These impacts are what would be expected from development of up 14,000 dwelling units, including associated infrastructure such as roads and utilities.

8.5.6.2 Actions to Minimize Impacts

Outside of the RMV Planning Area, program-level safeguards for the RGP and the LOP process as well as general conditions for both the RGP and the LOP process would assist in minimizing secondary impacts on the aquatic environment. These include geographic eligibility requirements, requirements for notification and coordination, and implementation of particular thresholds. The use of these permit processes in pre-identified areas with lower ecological integrity allows for minimization of any potential secondary impacts. After including general conditions for the RGP and the LOP process, actions would have further minimized secondary impacts. The general conditions that would minimize secondary impacts to the aquatic environment have been summarized in previous chapters of this EIS as they relate to changes in water circulation (RGP GC8 and LOP GC6), increase in suspended particulates (RGP GC5 and LOP GC3), and effects on breeding birds (RGP GC13 and LOP GC11).

Within the RMV Planning Area, secondary impacts to the aquatic ecosystem and organisms have been minimized by requirements to implement the WQMP and special conditions summarized in previous and later sections of this EIS. These include those that address changes in water circulation, suspended particulates, and the aquatic environment. Such special conditions include those related to managing downstream hydrology (SC I.B.1 and SC I.B.2), managing downstream water quality (SC I.C.2 and SC II.9), and controlling invasive exotic species (SC I.D.5, SC I.D.7, and SC III.2.b).

8.6 COMPLIANCE WITH DISCHARGE PROHIBITIONS−40 CFR 230.10(B)

Section 230.10(b) of the Section 404(b)(1) Guidelines sets forth several prohibitions regarding discharge of dredged or fill material. These requirements are set forth in this subchapter.

8.6.1 POTENTIAL VIOLATION OF ANY APPLICABLE STATE WATER QUALITY STANDARDS

The functional assessments conducted by the USACE Engineer Research and Development Center for the SAMP address a wide range of water quality and hydrology considerations that relate to avoidance, minimization, and mitigation of potential impacts that could result from the implementation of the proposed permitting procedures for the RMV Planning Area. Considerable effort has been made to address these considerations by comprehensively applying the SAMP Tenets and the Watershed Planning Principles in Chapter 6.0 consistency reviews. The foregoing consistency reviews reflect the measures and analyses presented in (1) the draft WQMP and (2) the Balance Hydrologics Sediment Report (referred to as the Balance Sediment Report, cited below).

This section presents a focused analysis of the Section 404(b)(1) water quality guidelines and the related USACE Engineer Research and Development Center Water Quality Integrity and Hydrologic Integrity avoidance, minimization, and mitigation considerations. Specific aspects of the WQMP and related sediment management planning (as reviewed in the Balance Sediment Report) are discussed in assessing avoidance minimization and mitigation for potential impacts on water quality and hydrologic conditions.

8.6.1.1 SAMP Analyses of Water Quality Integrity and Hydrologic Integrity Considerations

The USACE (Smith 2000) conducted an assessment of the riparian ecosystems of the San Juan/San Mateo Creek watersheds. The assessments addressed three ecosystem integrity

attributes with regard to: (1) Hydrologic Integrity, (2) Water Quality Integrity, and (3) Habitat Integrity. As noted above, this chapter addresses Hydrologic Integrity and Water Quality Integrity, while Habitat Integrity is addressed in Chapter 6.0 analyses of the "B" Alternatives and the Aquatic Resources Restoration Plan.

The USACE study (Smith 2000) addressed four indicators of Water Quality Integrity (nutrient increase, pesticide increase, hydrocarbon increase, and sediment increase). An additional five indicators were selected to reflect the condition of the stream that transports pollutants and three indicators were employed to reflect the condition of a riparian ecosystem's ability to physically capture and biogeochemically process pollutants. With regard to Hydrologic Integrity, several factors were identified as influencing the frequency, magnitude, and temporal distribution of stream discharge; a second set of factors was identified as influencing the hydrologic linkage between the stream channel and the active floodplain and adjacent terraces. Chapter 6.0 contains a summary of the USACE Engineer Research and Development Center analyses of the "B" Alternatives with regard to Water Quality Integrity, Hydrologic Integrity, and Habitat Integrity.

8.6.1.2 Policy Guidance Employed in Addressing SAMP Water Quality and Hydrologic Integrity Considerations

As previously addressed, in conjunction with the review and approval of the GPA/ZC, a WQMP was prepared. An updated WQMP was prepared to reflect the adoption of the B-10 Modified Alternative by the County of Orange. Because the RMV Proposed Project (B-12 Alternative) contains less development than the B-10 Modified Alternative and does not include any development areas not analyzed in the WQMP for the B-10 Modified (and for the B-9 Alternative addressed by the GPA/ZC WQMP), the updated WQMP provides a full set of analyses applicable to the RMV Proposed Project (including an overstated scenario impact analyses for Planning Areas 4 and 8 under the B-12 Alternative). A technical memorandum prepared by GeoSyntec Consultants confirms the applicability of the previous analysis of the B-4 and B-9 Alternatives in the GPA/ZC WQMP to the RMV Proposed Project (GeoSyntec, August 2005).

The WQMP was prepared to address water quality/stormwater flow requirements established by the San Diego RWQCB and the County of Orange Municipal Stormwater Permit (MS 4 Permit). In meeting Clean Water Act/State of California water quality requirements in furtherance of the coordinated planning process, the WQMP addresses the substantive considerations identified in the Section 404(b)(1) Guidelines and the water quality integrity and hydrologic integrity considerations presented in the cited USACE Engineer Research and Development Center report prepared for the SAMP, as well as the Watershed Planning Principles, as further analyzed in this chapter.

The draft WQMP is intended to address Water Quality Integrity and Hydrologic Integrity by managing post-development conditions in terms of the following three types of potential impacts:

- "Pollutants" generated by urban development with the potential to impact species and habitats;
- "Altered hydrology" due to urban development (including, in some cases, pre-existing conditions such as runoff from Coto de Caza); and
- "Altered geomorphic processes" with the potential to impact species and habitats

The SAMP Tenets set forth in Chapter 6.0 and in the Watershed Planning Principles provide the policy direction for addressing each of the above categories of potential development impacts. The SAMP Tenets policies include:

- Protect headwaters
- Maintain and/or restore floodplain connection
- Maintain and/or restore sediment sources and transport equilibrium

Similarly, the Watershed Planning Principles address the above three categories of potential impacts; Altered Hydrology is sub-divided into Changes in Surface Water Hydrology and Changes in Groundwater Hydrology.

8.6.1.3 The Role of the Water Quality Management Plan in Maintaining Water Quality Integrity and Hydrologic Integrity

The WQMP is set forth in Appendix D. Given the many elements of the WQMP, this chapter presents a summary of major aspects of the WQMP, with a more detailed consistency analysis provided in the appendix.

Clean Water Act Regulatory Requirements of the San Diego RWQCB and the County of Orange: "Pollutants of Concern" and "Hydrologic Conditions of Concern"

As noted above, the draft WQMP addresses the Water Quality Integrity and Hydrologic Integrity planning considerations identified in the USACE study (Smith 2000) and the SAMP Tenets and the Watershed Planning Principles guidance within the water quality management framework established by the County of Orange and the San Diego Regional Water Quality Control Board (San Diego RWQCB). The County and San Diego RWQCB require that potential development impacts are to be analyzed under two broad headings: (1) "Pollutants of Concern" and (2) "Hydrologic Conditions of Concern." These two broad categories for impact analysis and minimization/mitigation comprise the following:

- ***Pollutants of Concern*** addressed in the WQMP include:
  - Bacteria and viruses
  - Metals
  - Nutrients
  - Organic Compounds
  - Sediments (addressed functionally under Hydrologic Conditions of Concern)
  - Trash and Debris
  - Oxygen-Demanding Substances
  - Oil and Grease

  In conformance with the Orange County Drainage Area Management Plan (DAMP) and associated Orange County/San Diego RWQCB MS4 permit, the WQMP identifies

"pollutants of concern" that are anticipated or potentially could be generated in conjunction with the proposed permitting procedures (based on the proposed land uses and past land uses) and that have been identified by regulatory agencies as potentially impairing beneficial uses in the receiving water bodies or that could adversely affect receiving water quality or endangered species. These "pollutants of concern" are listed above. The WQMP reviews a combined control system that incorporates water quality elements required for each sub-basin where development is proposed. The WQMP discusses pre-and post-project pollutants loadings relative to the standards set forth in the San Diego Basin Plan and the California Toxics Rule, as applicable, or to provide effective performance standards (e.g., while not applicable to non-point stormwater flows, the California Toxics Rule standards are employed as a conservative performance standard for protecting aquatic species and habitats).

- ***Hydrologic Conditions of Concern*** include both hydrologic and geomorphic processes

  The WQMP analyses of Hydrologic Conditions of Concern specifically review hydrologic conditions with regard to: (1) potential increases in dry season streamflow and wet season baseflow between storms; (2) changes in the magnitude, frequency, and duration of annually expected flow events (1- and 2-year events); (3) changes in hydrologic response to major episodic storm events; (4) potential changes in sediment supply, with short-term increases related to construction and longer term reductions related to impervious/landscaped ground cover; and (5) potential changes in the infiltration of surface/soil water to groundwater.

  Potential changes in "Geomorphic Processes" affecting sediment generation and transport are addressed in the Balance Sediment Report (titled *Geomorphologic Factors Affecting Sediment Generation and Transport under Pre-and Post-Urbanization Conditions at Rancho Mission Viejo and in the San Juan and San Mateo Watersheds, Orange County, California* (Balance, June 2005)) reviewed in this chapter and in the Chapter 6.0 Watershed Planning Principles consistency review of the "B" Alternatives relating to Hydrologic Conditions of Concern (which includes sediment generation and sediment transport).

Impact Assessment and Management Measures for Addressing Water Quality Integrity and Hydrologic Integrity

WQMP Urban Runoff/Stormwater Management Strategies and Mitigation/Minimization Measures

With regard to stormwater discharges and the San Diego RWQCB's Stormwater Program, the Orange County MS/4 Permit/DAMP has incorporated the major provisions of the San Diego RWQCB's model SUSMP, including provisions for addressing "Pollutants of Concern" and "Hydrologic Conditions of Concern." In turn, the draft WQMP has framed its analysis around these requirements, along with addressing the Watershed Planning Principles. The draft WQMP presents and analyzes the elements of the draft WQMP that address these requirements with respect to RMV Proposed Project (through the Alternative B-10 Modified analyses above) and presents impact analyses of the RMV Proposed Project (through the Alternative B-10 Modified analyses discussed above) with respect to these requirements. Pollutants of Concern and Hydrologic Conditions of Concern considerations relating to aquatic habitats supporting sensitive species are specifically addressed in the draft WQMP, including findings of significance following the application of minimization and mitigation measures for direct and cumulative impacts, respectively.

The potential effects of development on modifying the hydrologic regime within the riparian corridors and the subsequent effect on sediment transport and habitat are "hydrologic conditions of concern." These potential effects were analyzed by comparing "pre" versus "post" development monthly "water balance" and "flow duration" management concepts as summarized below.

The ultimate goal of the WQMP is to manage the overall balance, termed "water balance," of all the hydrologic components of the water cycle. The water balance concept is a useful accounting tool for evaluating and controlling the effects of land use changes on hydrology. A water balance, like a checkbook balance, is intended to show the balance between the 'deposits,' which include precipitation and irrigation, and 'withdrawals' which include: (1) infiltration into the soils, (2) evapotranspiration, and (3) water which runs off the surface of the land. This latter withdrawal is called surface runoff and occurs during storm events or wet weather conditions. The water balance is a monthly accounting of how precipitation and irrigation water become distributed as: (a) surface runoff, (b) groundwater infiltration that contributes to baseflows in streams or deep groundwater recharge, and (c) evapotranspiration.

The impacts of urbanization on hydrology include increased runoff volumes, peak flow rates, and the duration of flows; especially modest flows less than the 10-year event. It is these more frequent, modest flows that can have the most effect on long-term channel morphology (Leopold 1997). The effect of changes in flow on stream geomorphology is a cumulative one. Therefore, the magnitude of flows (volume and flow rate), how often the flows occur (the frequency), and for how long (the duration) are all-important. Managing the frequency and duration of flows is referred to in the WQMP as 'flow duration matching" and refers to matching the post-development flow duration conditions with pre-development conditions. This matching is achieved through appropriate sizing of a flow duration basin and design of the outlet structure. In order to achieve flow duration matching, 'excess flows,' defined as the difference in runoff volume between the post-development "without controls" condition and the pre-development condition, must be captured and either infiltrated, stored, and recycled, or diverted to a less sensitive stream or stream reach. Within the RMV Planning Area, the flow duration analyses were conducted for the 53-year continuous rainfall record and the dry and wet cycles within that record.

As proposed in the WQMP, all developments would be designed to achieve flow duration matching, address the water balance, and provide for water quality treatment through a combined flow and water quality control system (termed "Combined Control System"). The proposed combined control system would include one or more of the following components as required for the particular drainage catchments served by the individual facilities, each of which provides an important function to the system:

- Flow Duration Control and Water Quality Treatment (FD/WQ) Basin
- Infiltration Basin
- Bioinfiltration Swale
- Storage Facility for Non-Potable Water Supply
- Diversion Conduit to Export Excess Flows out of the Sub-basin

All of the above facilities are proposed to be constructed within proposed development areas of the RMV Planning Area, not within Aquatic Resource Conservation Areas.

The flow duration control and water quality treatment basin provides the initial flow and water quality treatment control functions to the system. The remaining components address the "excess flows" (i.e., flows in excess of natural conditions), alone or in combination with each other, generated during wet weather. Additional water quality treatment control is also provided in the infiltration basin and bioinfiltration swale. The functions and management strategies for each of the components of the Combined Control System are detailed in the WQMP (Appendix D).

WQMP Measures for Addressing Geomorphic Processes

Potential changes in "Geomorphic Processes" are addressed in part through the Watershed Planning Principles consistency review of the RMV Proposed Project (B-12 Alternative; see Chapter 6.0) relating to Hydrologic Conditions of Concern (including sediment generation and sediment transport) and in part through specific restoration measures summarized in this subchapter and reviewed in the Aquatic Resources Adaptive Management Program (Appendix F3). To address inter-related considerations of terrains and hydrologic conditions of concern, the draft WQMP relies on and addresses information set forth in the Baseline Conditions Report (PCR et al. 2002) and the Watershed Planning Principles. The Geomorphology/Terrains; Hydrology; Sediment Sources, Storage and Transport; Groundwater Hydrology; and Water Quality principles from the Watershed Planning Principles have been used. Additionally, the sub-basin "Planning Considerations" and Planning Recommendations" have been addressed and employed in formulating flow control and water quality control strategies in response to the geographic-specific conditions found in each sub-basin. The sub-basin-specific elements include site assessment, planning considerations, and combined control system conceptual design, and are presented in the draft WQMP.

Within each sub-basin, the draft WQMP presents flow control strategies prepared both with respect to specific portions of the sub-basin using the "catchment" level of analysis and with respect to overall characteristics of the sub-basin (e.g., see the discussion of the proposed flow management planning for specific development areas). Sediment generation and sediment transport considerations are reviewed in *Geomorphology Factors Affecting Sediment Generation and Transport under Pre-and Post-Urbanization Conditions at Rancho Mission Viejo and in the San Juan And San Mateo Watersheds, Orange County California* (Balance Hydrologics 2004) (Appendix H); monitoring recommendations set forth in the Balance Sediment Report have been incorporated into the draft WQMP Adaptive Management Program.

The particular characteristics of each sub-basin's surface and sub-surface drainage systems have been taken into account in each strategy analysis and relate governing physical processes in the sub-basin, including terrains and groundwater, to channel form. For instance, the ground infiltration and surface flow management prescriptions for the Gobernadora Sub-basin differ considerably from those for the Chiquita Sub-basin even though the two sub-basins adjoin one another and both flow into San Juan Creek. Similarly, the management of "excess flows," takes into account the nature of San Juan Creek and overall goals of supplementing groundwater recharge in the San Juan Creek aquifers.

With regard to the contribution of enhancement and restoration to the management of geomorphic processes, habitat restoration and erosion control measures in clay soils would reduce the generation of fine sediments and improve stormwater infiltration/runoff, benefiting species and streamcourse processes. For the Gobernadora Creek Sub-basin, the sub-basin exhibiting existing conditions stressors due to prior upstream development in Coto de Caza, specific performance criteria for implementation of the Gobernadora Multipurpose Basin have been prepared to complement Gobernadora Sub-basin water management measures in the

draft WQMP and thereby increase habitat values and functions over existing conditions. The draft WQMP also provides opportunities to increase stormwater flows into San Juan Creek to further riparian enhancement and arroyo toad habitat enhancement resulting from control of *Arundo donax* reed to the extent considered desirable under the Aquatic Resources Adaptive Management Program. To the extent that restoration and management measures in the San Mateo Watershed reduce the generation of fine sediments, habitat conditions will be improved for the arroyo toad in the subregion and other aquatic species downstream in San Mateo Creek.

In these ways, the draft WQMP provides specific measures addressing three stressors–potential pollutants, changes in hydrologic processes, and changes in geomorphic processes–and, in so doing, helps assure that these three stressors do not significantly impact values and functions (basic development siting conditions also address potential changes in geomorphic processes; see Chapter 6.0*,* Watershed Planning Principles consistency review of the "B" Alternatives). Additionally, the draft WQMP, in conjunction with specific restoration/ enhancement measures reviewed in the Aquatic Resources Adaptive Management Program (e.g., Gobernadora multipurpose basin and San Juan Creek invasive species control measures) helps increase habitat values and functions in Gobernadora Creek and San Juan Creek.

San Diego Basin Plan Consistency Analysis

Pursuant to 40 CFR 230.10(b), no discharge of dredged or fill material shall be permitted if it "Causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard." The following section addresses potential impacts to "Beneficial Uses" as defined for all surface and ground waters in the San Diego Region. Beneficial uses form the cornerstone of water quality protection under the San Diego Basin Plan. Once beneficial uses are designated, appropriate water quality objectives can be established and programs that maintain or enhance water quality can be implemented to ensure the protection of beneficial uses. Page 2-1 of the San Diego Basin Plan states the following with respect to Beneficial Uses:

> *"Beneficial uses are defined as the uses of water necessary for the survival or well being of man, plants and wildlife. These uses of water serve to promote the tangible and intangible economic, social and environmental goals of mankind. Examples include drinking, swimming, industrial and agricultural water supply, and the support of fresh and saline aquatic habitats."*

The San Diego Basin Plan goes on to state:

> *"The Porter-Cologne Act establishes a comprehensive program for the protection of beneficial uses of the waters of the state. California Water Code Section 13050(f) describes the beneficial uses of surface and ground waters that may be designated by the State or Regional Board for protection as follows:*
>
> *"Beneficial uses of the waters of the state that may be protected against quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves."*

Significant considerations involved in the designation of beneficial uses are:

(1) Fish, plants, and other wildlife, as well as humans, use water beneficially. Designation of beneficial uses often includes subcategories of the above beneficial uses cited in California Water Code Section 13050(f).

(2) Water transport or waste assimilation in the state's surface and ground waters may not be designated as beneficial uses under the Porter-Cologne Act. The direction of the Porter-Cologne Act is to protect surface and ground waters against the adverse effects of waste constituents. (California Water Code §13000, §13241, and §13263). Surface or ground waters may be used for waste disposal or waste assimilation if designated beneficial uses are protected. In authorizing the discharge of waste, the Regional Board need not authorize utilization of the full waste assimilation capacities of the receiving waters [California Water Code §13263(d)]. All discharges of waste into waters of the state are privileges not rights [California Water Code §13263(g)].

(3) Designated beneficial uses may include potential beneficial uses if existing water quality would support the use or if the necessary level of water quality can reasonably be achieved. (Water Code §13241 [a] and [c]). Potential and existing uses are defined later in this chapter.

(4) An existing beneficial use ordinarily must be designated for protection unless another beneficial use requiring more stringent objectives is designated. The existing beneficial use designation is necessary to comply with the statutory policy in California Water Code Section 13000, which provides in part that *"…the quality of all waters in the state shall be protected for use and enjoyment by all the people of the state."*

(5) California Water Code Section 13000 provides in part that: *"The Legislature …finds and declares that activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest possible water quality that is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible."* This policy establishes a general principal of no degradation, with flexibility to allow some change in water quality, which is in the best interests of the state. Changes in water quality are allowed only where beneficial uses are not unreasonably affected.

(6) The designation of beneficial uses must take into account the constitutional prohibition of waste and unreasonable waste of water. Designation of beneficial use for protection should not require a waste of water pursuant to the California Constitution, Article X, Section 2.

(7) The protection and enhancement of beneficial uses require that certain quality and quantity objectives be met for surface and ground waters.

Table 8-11 provides a summary of the Beneficial Uses associated with the San Juan Creek and San Mateo Creek Watersheds.

Impacts to Beneficial Uses

As previously addressed, the combination of watershed-scale water quality planning principles and the sub-basin/catchment area approach to project design ensures that degradation of Beneficial Uses as defined in the San Diego Basin Plan would not occur. Table 8-11 summarizes the Designated Beneficial Uses within the SAMP Study Area that are addressed in this subchapter.

TABLE 8-11
SAN DIEGO BASIN PLAN DESIGNATED BENEFICIAL USES

Description of Use	San Juan Creek Watershed	San Mateo Creek Watershed
Municipal and Domestic Supply (MUN) – Includes uses of water for community, military, or individual water supply systems including, but not limited to drinking water supply.	Exempted	Exempted
Agricultural Supply (AGR)—Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.	Yes	
Industrial Service Supply (IND)—Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.	Yes	
Contact Water Recreation (REC-1)—Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.	Yes	
Non-Contact Water Recreation (REC-2)—Includes the uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.	Yes	Yes
Warm Freshwater Habitat (WARM)—Includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.	Yes	Yes
Cold Freshwater Habitat (COLD)—Includes uses of water that support cold water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.	Yes	
Wildlife Habitat (WILD)—Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.	Yes	Yes
Rare, Threatened, or Endangered Species (RARE)—Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.	a.	Yes

a. Although the San Juan Creek Watershed supports endangered species, such as the arroyo toad, the San Diego Water Board has not designated RARE as a beneficial use for this Watershed.

Source: San Diego Water Quality Control Board

Below is a summary of the potential adverse impacts to beneficial uses and measures identified in the WQMP, Aquatic Resources Adaptive Management Program, and Aquatic Resources Restoration Plan to ensure that degradation of Beneficial Uses associated with the Aquatic Resources Conservation Area is avoided or minimized in a manner consistent with state water quality standards.

Municipal and Domestic Supply (MUN). This Beneficial Use has been exempted for San Juan Creek and associated tributaries within the RMV Planning Area by the San Diego RWQCB from the municipal use designation under the terms and conditions of State Board Resolution No. 88-63 *Sources of Drinking Water* Policy.

Agricultural Supply (AGR). Rancho Mission Viejo uses water for citrus production and ranching operations. Essentially all of the water that is used for agricultural purposes is derived from groundwater wells. According to the WQMP, the proposed discharge would not adversely affect groundwater recharge rates or quality of groundwater. Therefore, there would be no potential degradation of agricultural supply associated with the proposed discharge of dredged or fill material.

Industrial Process Supply (IND). The Water Quality Management Plan did not identify any impacts to water quality that would adversely affect this Beneficial Use.

Contact Water Recreational (REC-1). According to the WQMP, pathogens represent a potential impact on REC-1 (body contact uses). The WQMP proposes to incorporate detention basins with associated wetland swales that would discharge into infiltration basins as major water quality treatment train features. In combination, these would be very effective in treating pathogens associated with dry weather flows, small storm flows, and the initial portion of large storm events. During large storm events, when large amounts of bacteria, viruses, and protozoans (some of which are pathogenic) are mobilized, flows would bypass the infiltration basin. During such periods, pathogen levels are not likely to meet the REC-1 standards for fecal coliform on a consistent basis.

The literature on the effectiveness of infiltration and filtration systems for treating pathogen indicators such as total and fecal coliform indicates that filtration as a treatment mechanism achieves removals in the range of 60 to 90 percent. This removal rate tends to be large relative to other stormwater treatment BMPs (e.g., extended detention basins) and therefore treatment trains which include a filtration component as provided for as a part of the RMV Proposed Project would provide effective removal of pathogen indicators. Since infiltration is an effective BMP up to the point of soil saturation, pathogens associated with dry weather flows, small storm flows and the initial portion of large storm events would be effectively treated in the combine control system. However, because there is no feasible method for infiltrating storm water flows from large storms due to saturated soils conditions and it is not economically feasible to construct storage and treatment facilities for the large volumes of stormwater generated by major storms, pathogen indicators cannot be removed to below a level of significance as defined by the REC-1 standard for such major storms. Through the use of source and treatment controls, the RMV Proposed Project would use BMPs that meet the “Maximum Extent Practicable (MEP) standard established by the State Water Resources Control Board and accordingly reduces impacts to the maximum extent practicable.

Non-Contact Water Recreational (REC-2). There would be no degradation of this Beneficial Use associated with the RMV Proposed Project. It should also be noted that the RMV Planning Area is in private ownership. The property is currently closed to the public, precluding the use of the area for such activities.

Warm Freshwater Habitat (WARM). As previously addressed, the WQMP evaluated Hydrologic Conditions of Concern (Increased Storm Runoff, Decreased Infiltration/Groundwater Recharge, and Changed Base Flows) and Pollutants of Concern (Sediments, Nutrients, and Trace Metals) by sub-basin on the RMV Planning Area. Each of these Hydrologic Conditions of Concern and Pollutants of Concern exhibits the potential for effects on warm freshwater habitat.

For example, changes in base flow could result in adverse impacts by creating habitat for invasive bullfrogs and crayfish that prey on native fish and amphibians while a decrease in base flow could decrease breeding opportunities for native amphibians such as the arroyo toad. Similarly, changed sediment regimes could affect breeding areas used by native amphibians such as the arroyo toad or western toad or native fish such as the arroyo chub. As addressed in Appendix F3, Aquatic Resources Conservation Areas would be adaptively managed over the long-term to maintain habitat functions, including implementation of an invasive species eradication program that targets bullfrogs and crayfish. Although the WQMP addresses areas located outside Aquatic Resources Conservation Areas, the WQMP would also be managed adaptively and will be coordinated with the management of Aquatic Resources Conservation Areas in order to assure that potential impacts involving Pollutants of Concern and Hydrologic Conditions of Concern are fully addressed through ongoing avoidance, minimization, and mitigation measures.

According to the WQMP, with implementation of the WQMP Project Design Features including detention basins, infiltration basins, bioswales, etc., there would be no significant impacts for any of the individual sub-basins associated with the Hydrologic Conditions of Concern or ***Pollutants of Concern.*** As reviewed previously, the WQMP proposes a comprehensive system for assuring that stormwater discharges do not substantially impact water circulation systems. Specifically, the Draft WQMP addresses the following elements:

a. ***Site-design BMPs.*** Site design BMPs have been selected to address the creation of a hydrologically functional project design that seeks to mimic the natural hydrologic regime.

b. ***Source Control BMPs.*** Source controls BMPs (routine non-structural BMPs, routine structural BMPs, and BMPs for individual categories/project features) have been selected, including a combined flow and water quality control system to address hydrologic water balance and water quality treatment.

c. ***Urban Runoff and Stormwater Control Elements.*** Water balance and flow duration analyses and conceptual combined flow and water quality control systems have been prepared for each sub-basin.

d. ***Stormwater BMP Operation and Maintenance Program.*** An operation and maintenance program has been developed to address the following elements: Maintenance Responsibility, General Operation and Maintenance Activities, Routine Operation and Maintenance Activities and Major Operation and Maintenance Activities.

e. ***Stormwater Monitoring Program.*** A stormwater monitoring program has been developed for the Water Quality BMPs.

For the Hydrologic Conditions of Concern, the WQMP notes that, in some instances (e.g., Cañada Chiquita Sub-basin), there is a slightly higher groundwater recharge and that an associated base flow in the Chiquita Sub-basin is expected to provide potential for enhancement of riparian habitat in Chiquita Canyon as well as enhanced habitat for the arroyo toad in San Juan Creek. Finally, as reviewed previously, it should also be noted that potential impacts associated with trace metals were evaluated using the California Toxics Rule and/or the National Ambient Water Quality Criteria and it was determined that there were no significant impacts associated with increased levels of trace metals. Implementation of the Ranch Plan would not result in degradation of this Beneficial Use.

Cold Freshwater Habitat (COLD). The WQMP evaluation of Hydrologic Conditions of Concern (Increased Storm Runoff, Decreased Infiltration/Groundwater Recharge, and Changed Base Flows) and Pollutants of Concern (Sediments, Nutrients, and Trace Metals) by sub-basin on the RMV Planning Area applies to potential for effects on cold freshwater habitat, as well as the potential Warm Freshwater Habitat impacts analyzed above. For example, as noted for warm freshwater habitat, changes in base flow could result in adverse impacts by creating habitat for invasive bullfrogs and crayfish that prey on native fish and amphibians while a decrease in base flow could decrease breeding opportunities for native amphibians such as the arroyo toad. Similarly, changed sediment regimes could affect breeding areas used by native amphibians such as the arroyo toad or western toad or native fish such as the arroyo chub. As noted for warm freshwater habitat above and reviewed in Appendix F3 with respect to the Aquatic Resources Adaptive Management Program, Aquatic Resources Conservation Areas would be adaptively managed over the long-term to maintain habitat functions, including implementation of an invasive species eradication program that targets bullfrogs and crayfish. As noted above for potential impacts on warm freshwater habitats, although the WQMP addresses areas located outside Aquatic Resources Conservation Areas, the WQMP would also be managed adaptively and coordinated with the management of Aquatic Resources Conservation Areas in order to assure that potential impacts involving Pollutants of Concern and Hydrologic Conditions of Concern are fully addressed through ongoing avoidance, minimization, and mitigation measures.

As reviewed under warm freshwater impacts, according to the WQMP, with implementation of the WQMP Project Design Features including detention basins, infiltration basins, bioswales, etc., there would be no significant impacts for any of the individual sub-basins associated with the Hydrologic Conditions of Concern or Pollutants of Concern. With regard to long-term management actions, the WQMP proposes a comprehensive system for assuring that stormwater discharges do not substantially impact water circulation systems. Finally, it should also be noted that potential impacts associated with trace metals were evaluated using the California Toxics Rule and/or the National Ambient Water Quality Criteria and it was determined that there were no significant impacts associated with increased levels of trace metals. Implementation of the Ranch Plan would not result in degradation of this Beneficial Use.

Wildlife Habitat (Wild). For the reasons discussed above for WARM and COLD Beneficial Uses, there would be no degradation of this Beneficial Use associated development of the RMV Proposed Project. Implementation of the Aquatic Resources Adaptive Management Program and the Aquatic Resources Restoration Plan would result in enhanced habitat values for a full suite of wildlife species as summarized below.

Rare, Threatened, or Endangered Species (RARE). RARE has not been designated for the San Juan Creek or San Mateo Creek watershed areas on the RMV Planning Area even though state and federally listed species are documented as using the associated aquatic resources (e.g., arroyo toad and least Bell's vireo) (Table 6-12). In the San Diego Basin Plan, it is asserted that in the absence of such site-specific designations, the San Diego RWQCB would rely on objectives for WARM and COLD to implement the RARE designation. The San Diego RWQCB states:

> *The existing WARM and COLD beneficial use designations are believed to be stringent enough to protect threatened or endangered species. If these issues arise in the future, they will be decided on a case-by-case basis, considering the most recent scientific data, site-specific factors, and other beneficial uses.*

Because there would be no degradation of the WARM and COLD Beneficial Uses under the proposed Aquatic Resources Adaptive Management Program and with the WQMP serving as a "coordinated management plan" to protect and manage the aquatic resources on the RMV Planning Area on a long-term basis, there would be no degradation of the RARE Beneficial Use associated with the RMV Proposed Project. Implementation of the Aquatic Resources Adaptive Management Program and the Aquatic Resources Restoration Plan would result in protected and enhanced habitat values for a full suite of wildlife species.

Long-Term Adaptive Management of the WQMP

As reviewed in the Aquatic Resources Adaptive Management Program (Appendix F3), Aquatic Resources Conservation Areas would be adaptively managed over the long-term to maintain net habitat value and functions. Although the WQMP addresses areas located outside Aquatic Resources Conservation Areas, the WQMP would also be managed adaptively and coordinated with the management of Aquatic Resources Conservation Areas in order to assure that potential impacts involving Pollutants of Concern and Hydrologic Conditions of Concern are fully addressed through ongoing avoidance, minimization, and mitigation measures.

This subchapter presents a brief summary of the WQMP adaptive management approach that is proposed to evaluate whether the WQMP elements are functioning as intended and to implement corrective procedures when needed. The issues addressed by this adaptive management approach are management considerations relating to "pollutants of concern" and "hydrologic conditions of concern."

The WQMP adaptive management plan proposes the following elements:

- *BMP Inspection and Performance Monitoring*
- *Hydrologic Monitoring*
- *WQMP Review and Evaluation*. Annual review of the inspection and monitoring data would be conducted to determine if there is a need for corrective action, to evaluate impacts due to changes in watershed conditions on the hydrologic regime or BMP performance, and in general to evaluate if the WQMP is effective in meeting the planning objectives.
- *Corrective Measures*. Corrective measures would be undertaken for specific problems or conditions of concern identified in the review and evaluation. Depending on the nature of the problem, corrective measures could involve modification of the BMP design, operation, or maintenance, and/or implementation of additional BMPs. The effectiveness of the corrective measures would also be evaluated through continued inspection and monitoring. Therefore, the management approach is adaptive to specific problems or conditions as they arise and are identified through ongoing inspection, monitoring, documentation, and evaluation.
- *Documentation and Reporting*

8.6.2 POTENTIAL VIOLATION OF ANY APPLICABLE TOXIC EFFLUENT STANDARD OR PROHIBITION UNDER SECTION 307 OF THE ACT

For activities outside the RMV Planning Area proposed to be authorized by RGPs or LOPs, the general conditions will prevent the violation of any applicable toxic effluent standards. These general conditions include:

RGP GC7 No discharge of dredged or fill materials may consist of unsuitable materials (e.g., trash, debris, car bodies, asphalt, etc.) and material discharged must be free from pollutants in toxic amounts (see Section 307 of the Clean Water Act).

RGP GC16 An individual Section 401 water quality certification must be obtained unless a general Section 401 certification is issued or waived for this RGP (see 33 CFR 330.4(c)).

LOP GC5 Same as RGP GC7

LOP GC16 Same as RGP GC16

Within the RMV Planning Area, all fill materials discharged into Waters of the U.S. would be the result of balanced cut and fill. For most RMV Proposed Project development planning areas, the primary existing land uses at the cut and fill sites are ranching, agriculture, nurseries, and/or gravel mining. None of these land uses are expected to have resulted in contaminations that would result in violation of toxic effluent standards. Planning Area 8 consists of the Northrop Grumman Space Technology TRW Capistrano Test Site which may have been contaminated by past activities. In consideration of these factors, special conditions include:

SC I.C.1 The permittee shall abide by all the terms and conditions of the applicable Section 401 certification.

SC II.5 The permittee shall only discharge dredged or fill materials into waters of the U.S. that is free from pollutants in toxic amounts (see Section 307 of the Clean Water Act). The permittee not place within Waters of the U.S. unsuitable materials (e.g., trash, debris, car bodies, asphalt, etc.). This condition is satisfied through the use of using on-site materials from balanced cut-and-fill grading operations for every Planning Area except for Planning Area 8. For Planning Area 8, the permittee shall prepare an updated Phase I Environmental Site Assessment (GPA EIR Mitigation Measure 4.14-13), prepare a comprehensive closure plan (GPA EIS Mitigation Measure 4.14-15), prepare a Health and Safety Contingency Plan (GPA EIR Mitigation Measure 4.14.1), remove all underground storage tanks (GPA EIR Mitigation Measure 4.l4-6), and in the event that toxic materials are discovered during construction, an in the field assessment (GPA EIR Mitigation Measure 4.14-2). Such assessments shall be provided to the Corps. The permittee shall not discharge fill materials associated with Planning Area 8 containing toxic amounts of pollutants.

SM SC I.3 Same as SC I.C.1 for Section 401 certification.

SM SC II.5 The permittee shall only discharge dredged or fill materials into waters of the U.S. that is free from pollutants in toxic amounts (see Section 307 of the Clean Water Act). The permittee shall not place within waters of the U.S. unsuitable materials (e.g., trash, debris, car bodies, asphalt, etc.).

8.6.3 POTENTIAL IMPACTS THAT WOULD JEOPARDIZE THE CONTINUED EXISTENCE OF SPECIES LISTED AS THREATENED OR ENDANGERED OR RESULT IN THE LIKELIHOOD OF DESTRUCTION OR ADVERSE MODIFICATION OF CRITICAL HABITAT UNDER FESA

For all activities under the proposed RGP, the proposed LOP outside of the RMV Planning Area, and the LOP inside of the RMV Planning Area, the general conditions prohibit impacts to federally-listed threatened and/or endangered species or adverse modification to their critical habitat without a consultation with the USFWS or NOAA Fisheries, where appropriate, pursuant to Section 7 of the ESA. For the proposed LOP inside of the RMV Planning Area, actions proposed to ensure that all appropriate efforts are made to avoid, minimize, and mitigate potential significant impacts to threatened and/or endangered species are reviewed in subchapter 8.5.3.

8.6.3.1 Overview

Under the Section 404(b)(1) Guidelines, the discharge of dredged or fill material is not permitted if it:

> *"Jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended or results in likelihood of the destruction or adverse modification of a habitat which is determined by the Secretary of Commerce, as appropriate, to be a critical habitat under the Endangered Species Act of 1973, as amended." (40 CFR 231.10 (b)(3))*

SAMP Tenet 8 provides:

> *"Protect riparian areas and associated habitats of listed and sensitive species."*

This subchapter addresses 40 CFR 230.10(b)(3), as well as Subpart D of the Section 404(b)(1) Guidelines (Potential Impacts on Biological Characteristics of the Aquatic Ecosystem) relating to threatened and endangered species, fish, crustaceans, and other aquatic organisms in the food web and other wildlife associated with aquatic ecosystems. Mitigation for potential impacts on special aquatic sites (subpart E of the Section 404[b][1] Guidelines) is addressed in the Aquatic Resources Restoration Program summarized in Chapter 5.0 and subchapter 8.8 of this EIS and provided in Appendix F2. Because of the extent of non-wetlands waters identified in uplands habitats, all listed species are addressed in this chapter.

Through the Coordinated Planning Process, all federally listed species have been addressed as "planning species" in analyzing avoidance, minimization, and mitigation under the different "B" Alternatives previously reviewed in Chapter 6.0 of this EIS. In particular, the NCCP Southern Planning Guidelines set forth criteria for maintaining "net habitat value" of habitat supporting planning species by identifying resource protection areas capable of sustaining Planning Species, both with respect to protecting *major populations* in *key locations* of occupied habitat and with respect to providing for "connectivity" through both occupied and unoccupied habitat, on a long-term basis (see Chapter 6.0 analyses of consistency with the watershed-scale and sub-basin-scale Southern Planning Guidelines and the Watershed Planning Principles). Although through the Coordinated Planning Process informal consultation with the USFWS through Section 7 of the ESA has led to some preliminary avoidance, minimization and mitigation determinations regarding consistency with the Southern Planning Guidelines addressing listed species and FESA Section 3/7 reviewed in this subchapter, formal satisfaction of all jeopardy and critical habitat standards would be obtained through the formal consultation

process pursuant to Section 7 of the FESA. For the SAMP Study Area outside of the RMV Planning Area, project-level determinations for consistency cannot be determined.

8.6.3.2 Jeopardy Standards under FESA Sections 7 and 10 for Listed Species Potentially Impacted under the Proposed Permitting Procedures

The NCCP Southern Planning Guidelines were formulated to address "jeopardy" standards for potential impacts to listed species under Sections 7 and 10 of FESA and for critical habitat determinations under Section 7 of FESA (see subchapter 8.6.3.3 below). The NCCP Southern Planning Guidelines identify *key locations* for all listed planning species" and most of the other "planning species. *Key locations* are defined as those locations that are deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat "essential to the conservation" of any such species (i.e., species for which *key location* determinations have been set forth in the Guidelines). These *key location* determinations, as well as specific connectivity, management, and restoration recommendations, are provided in the NCCP Southern Planning Guidelines and the Watershed Planning Principles for sub-basins located on the RMV Planning Area, as well as for the overall SAMP Study Area. The courts have held that the FESA Section 7 "jeopardy" standards under the Section 404(b)(1) Guidelines are substantively identical with the FESA Section 10(a)(1)(B) standard that "take" of listed species may not appreciably reduce the likelihood of survival and recovery of such species. Therefore, the above-referenced Southern Planning Guidelines and the Watershed Planning Principles applicable to listed species address "jeopardy" considerations under FESA, including listed plants as well as fish and wildlife species.

8.6.3.3 Critical Habitat Standards– FESA Section 3(5)(A)(i) and (ii) Substantive Criteria

Because the SAMP and NCCP/MSAA/HCP planning efforts focus on natural community reserve design, connectivity, and long-term management considerations in relation to listed species (as well as other species) found in the respective planning areas, it is appropriate to identify both occupied and unoccupied habitat essential to the conservation of listed species and any special management considerations or protection for such species. Likewise, the emphasis in the SAMP Tenets and NCCP Southern Planning Guidelines on long-term restoration and management would encompass any special management considerations for assuring long-term conservation of listed species. The SAMP and the NCCP/MSAA/HCP components of the "coordinated planning process" address protection and management considerations for listed species in terms of both survival and recovery of each listed species that inhabits the planning areas. Factors for identifying critical habitat, as set forth in FESA Section 3(5)(A) and 50 CFR 424.12 (b)-(12) and for making "adverse modification" determinations for proposed and final critical habitat pursuant to FESA Section 7, are specifically addressed below.

Identification, Management and Protection of Occupied Habitat Essential to the Conservation of the Species

FESA Section 3(5)(A)(i) contains three elements relating to the occupied habitat of listed species: (1) occupied habitat essential to the conservation of the species must be identified; (2) any special management considerations must be identified; and (3) any special protection must be identified.

Identify Habitat Essential to the Conservation of the Species

Regarding the first element of FESA Section 3(5)(A)(i), as noted above, the NCCP Southern Planning Guidelines identify *key locations* for all listed planning species" and most of the other

"planning species. *Key locations* are defined as those locations that are deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat "essential to the conservation" of any such species (i.e., species for which *key location* determinations have been set forth in Chapter 4.0). These *key location* determinations, as well as specific connectivity, management, and restoration recommendations, are provided for each planning area sub-basin, as well as for the overall SAMP and NCCP/MSAA/HCP planning areas.

Identify and Provide for the Implementation of Special Management Considerations

Regarding the second element of FESA Section 3(5)(A)(i), "special management considerations," including restoration recommendations, are included in the Southern Planning Guidelines and the Watershed Planning Principles sub-basin planning considerations and recommendations. Appendix F2 presents the Aquatic Resources Adaptive Management Program, including an adaptive management program, intended to be applied at a large-scale within the RMV Planning Area subject to the proposed permitting procedures. Additionally, the Water Quality Management Plan (Appendix D) has been prepared in support of the proposed permitting procedures and associated Aquatic Resources Adaptive Management Program. The Aquatic Resources Adaptive Management Program would be carried out at the landscape level, major vegetation community level and species-specific habitat levels, all of which constitute special management considerations supporting the survival and recovery of presently listed species or any unlisted species that may be listed in the future (e.g., invasive species control would remove a major threat to arroyo toad habitat, eliminate existing degradation, and allow for natural regeneration of arroyo toad habitat conditions). The contributions of the Aquatic Resources Adaptive Management Program to recovery of the listed species found on the RMV Planning Area are summarized below. Finally, until such time as the NCCP/MSAA/HCP is approved, Rancho Mission Viejo is required to implement an adaptive management program (GPA/ZC EIR 589 Adaptive Management Plan) addressing both uplands and aquatic species and habitats pursuant to requirements established in the GPA/ZC. If and when the NCCP/MSAA/HCP is approved, its Adaptive Management Plan would replace the GPA/ZC-approved Adaptive Management Plan as part of the coordination/consolidation of approvals for the RMV Planning Area discussed in Chapter 2.0.

Provide Special Protection for Species

Regarding the third element of FESA Section 3(5)(A)(i), "special…protection," the Aquatic Resources Conservation Areas on the RMV Planning Area, in addition to other lands to be dedicated to open space protection pursuant to the approved GPA/ZC project, would provide for "special protection" in the form of a "hard-line reserve" protection system encompassing all habitats constituting *key locations* for all listed species potentially impacted under the proposed permitting procedures.

Unoccupied Areas "Essential to the Conservation of the Species"

FESA Section 3(5)(A)(ii) requires the protection of unoccupied habitat essential to the conservation of listed species but does not identify what criteria are to be applied in determining which unoccupied habitat is "essential" to the conservation of the species. However, consistent with USFWS critical habitat regulations and the Southern Planning Guidelines and the Watershed Planning Principles, the protection of habitat essential for species dispersal and genetic interchange, as well as movement for foraging and other essential behavioral characteristics, and the enhancement and restoration of unoccupied habitat would appear to be central to identifying unoccupied areas essential to the conservation of species.

The Southern Planning Guidelines and the Watershed Planning Principles address unoccupied areas "essential to the conservation of the species" in terms of the concept of "*connectivity*" and in the context of identifying areas for *enhancement and restoration* (e.g., riparian habitat that could be rehabilitated through the control of giant reed) that are either presently unoccupied or that have impaired habitat functions. Habitat connectivity considerations and enhancement/ restoration features that are relevant to the unoccupied habitat criteria of FESA Section 3 are summarized below:

Habitat Connectivity

SAMP Tenet 4 provides:

> *"Maintain/protect/restore riparian corridors."*

SAMP Tenet 7 provides:

> *"Maintain adequate buffer for the protection of riparian corridors."*

Tenet 5 of the SRP Conservation Guidelines states:

> *"Link reserves with corridors: Interconnected blocks of habitat serve conservation purposes better than do isolated blocks of habitat. Corridors or linkages function better when the habitat within them resembles habitat that is preferred by target species."*

A discussion of the role of linkages and wildlife corridors is set forth in subchapter 2.3.4 of this EIS, including a review of the concept of "connectivity" both in terms of wildlife and habitat connectivity and analytic criteria for defining "habitat linkages" and "wildlife corridors." Further, subchapter 2.3.4 also provides a map and accompanying description of important linkages/corridors identified for the RMV Planning Area procedures area.

Habitat Enhancement/Restoration

The Aquatic Resources Adaptive Management Program, including the Aquatic Resources Restoration Plan, and the GPA/ZC Adaptive Management Program (Appendix F3) set forth overall and area-specific priorities for the enhancement and restoration of uplands and aquatics habitats. Benefits to individual listed species resulting from the enhancement/restoration plans and programs are reviewed in subchapter 8.5.3.4, below.

8.6.3.4 Consistency Review for Listed Species Found in the RMV Planning Area−FESA Section 7/10 Jeopardy Standards and FESA Section 3(5)(a)(i) and (ii) Critical Habitat Standards

As reviewed previously, the "jeopardy" standard under Section 7/10 of FESA requires a finding that impacts to listed species will "not appreciably reduce the likelihood of survival and recovery of the species in the wild." Because the critical habitat designation standards are broader than the "jeopardy" standards (Gifford Pinchot) and because the key location criteria under the NCCP Southern Planning Guidelines address "conservation," protection, and management measures that address the FESA Section 3(5)(a)(i) and (ii) criteria, the NCCP Southern Planning Guidelines subsume and fully address the "jeopardy" standards. For these reasons, the listed species analyses in this chapter focus on the FESA critical habitat designation criteria.

The following listed species has a critical habitat designations that are in effect over portions of the RMV Planning Area. The in-effect designation is depicted on Figure 8-6.

- California gnatcatcher

Two listed species found within the RMV Planning Area have final critical habitat designations that do not include the RMV Planning Area. They are:

- Arroyo toad
- Least Bell's vireo
- Riverside fairy shrimp
- Southwestern willow flycatcher

New and revised critical habitat designations are proposed for the following species over portions of the RMV Planning Area. They are:

- California gnatcatcher
- Thread-leaved brodiaea
- San Diego fairy shrimp

Although the RMV Planning Area was included in the proposed critical habitat designation for the arroyo toad, Riverside fairy shrimp, and Southern steelhead, these lands were excluded from the final designations. However, in order to fully address Section 7 consultation standards and Habitat Integrity considerations, all federally listed species are analyzed below under the FESA Section 3 critical habitat standards.

Consistency Review for the California Gnatcatcher

On October 24, 2000, the USFWS published a final rule designating 513,650 acres as critical habitat for the California gnatcatcher (USFWS October 24, 2000) in Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties in California (USFWS October 24, 2000). The USFWS subsequently published a revised proposed critical habitat designation on April 23, 2003. As of this date, this proposed rule has not been finalized and therefore the October 24, 2000 Final Rule remains in effect. The RMV Planning Area is within the in-effect designation and the proposed designation of critical habitat for the gnatcatcher.

Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species

The Southern Planning Guidelines and the Watershed Planning Principles identify *key locations* that are by definition deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat "essential to the conservation" of any such species (Figure 8-6). All *key locations* in the RMV Planning Area are protected. Together with areas already protected on County of Orange park lands and existing conservancies, the protection of gnatcatcher habitat on the RMV Planning Area meets the 80 percent protection requirement of the gnatcatcher guidelines for the Chiquita Canyon/Chiquadora *major population* (sites were considered protected if a territory of five acres is protected and the site is connected

with other contiguous or proximate habitat). Subject to the priorities for management and restoration measures recommended by the Science Advisory Panel and acted upon by the Rancho Mission Viejo Land Conservancy, as coastal sage scrub restoration sites identified in the Southern Planning Guidelines for Chiquita Canyon and Sulphur Canyon are restored over the lifetime of the GPA/ZC Adaptive Management Plan or the NCCP/MSAA/HCP Adaptive Management Plan whichever Is applicable, total protected/restored habitat for the Chiquita/Chiquadora *major population* would result in no net loss of occupied habitat within this *key location*.

With respect to "connectivity" considerations, the proposed protection areas on the RMV Planning Area encompass two major gnatcatcher movement corridors linking populations in the southern portion of the SAMP Study Area and MCB Camp Pendleton to populations in the eastern portion of the Southern Subregion (Bell Canyon, Lucas Canyon, Coto de Caza) and to the *major population* in Chiquita Canyon/Chiquadora Ridge. The *major population* is further connected with the Arroyo Trabuco population through the combination of prior Las Flores and Ladera open space dedication areas.

Special Management Considerations and Protections

The following is a summary of Rancho Mission Viejo actions that will contribute, over the lifetime of the GPA/ZC Adaptive Management Plan or the NCCP/MSAA/HCP Adaptive Management Plan, whichever is applicable, to the survival and recovery in the SAMP Study Area and contribute to recovery of the gnatcatcher on a range wide basis:

- Protection of gnatcatcher *key location* through the GPA/ZC Development Agreement open space phased dedication program for the RMV Planning Area;

- Protection of subregional connectivity and connectivity with adjoining subregions carried out through existing protection on County/conservancies lands and through the phased dedication program for the RMV Planning Area;

- GPA/ZC Adaptive Management Plan monitoring/adaptive management of "stressors" with the potential to impact habitat values over time;

- Subject to the priorities for management and restoration measures recommended by the Science Advisory Panel and acted upon by the Rancho Mission Viejo Land Conservancy, enhance/restore coastal sage scrub habitat and coastal sage scrub/native grassland areas in accordance with the restoration recommendations of the GPA/ZC Adaptive Management Plan or the NCCP/MSAA/HCP Adaptive Management Plan whichever is applicable. Enhancement/restoration of coastal sage scrub habitat in Chiquita Canyon and in Sulphur Canyon is proposed in areas that benefit the major Chiquita/Chiquadora population, resulting in likely occupied habitat comparable to existing conditions in this *key location*;

- Long-term fire management through the GPA/ZC Adaptive Management Plan or the NCCP/MSAA/HCP Adaptive Management Plan whichever is applicable to significantly reduce the likelihood of type conversion to annual grassland in contrast with existing conditions;

- Comparative analysis of fire regimes and grazing regimes over time within the sub region, and in relation to areas within the Central/Coastal Subregion, in order to better

understand the roles of fire and grazing in maintaining and enhancing occupied coastal sage scrub habitat; and

- Long-term control of invasive species through the GPA/ZC Adaptive Management Plan or the NCCP/MSAA/HCP Adaptive Management Plan, whichever is applicable, to help reduce the likelihood of type conversion to annual grassland and loss of habitat to species such as pampas grass, in contrast with existing conditions lacking an Adaptive Management Plan to assure the implementation of invasive species control measures.

Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species

The gnatcatcher is already at recovery levels within the SAMP Study Area and the species goal is to maintain net habitat value for the species both through ongoing management of stressors and through habitat enhancement/restoration within unoccupied habitat. Unoccupied habitat essential for the conservation of the gnatcatcher is identified in the Uplands Habitat Restoration Plan component of the GPA/ZC Adaptive Management Plan. These lands comprise areas identified for coastal sage scrub restoration or valley grasslands/coastal sage scrub restoration subject to the management and restoration priorities recommended by the Science Advisory Panel and acted upon by the Rancho Mission Viejo Land Conservancy. All coastal sage scrub restoration sites and valley grasslands/coastal sage scrub restoration areas are protected on the RMV Planning Area. The restoration of 375 acres of coastal sage scrub within the Chiquita Canyon/Chiquadora Ridge *major population* will provide for likely occupied habitat equivalent to currently occupied habitat within the San Juan Creek Watershed, thereby furthering recovery goals. Valley grasslands/coastal sage scrub restoration within the San Mateo Watershed should help increase gnatcatcher populations.

Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the California Gnatcatcher

Measures to be undertaken in conjunction with the proposed permitting procedures for the RMV Planning Area would contribute significantly to the survival and recovery of the gnatcatcher through the following: (1) identification of *key locations* that are by definition deemed necessary for the conservation of the species; (2) provisions for special management recommendations including restoration recommendations; (3) commitment of the RMV Planning Area dedication lands to provide “special protection” dedications encompassing habitats on the RMV Planning Area consistent with the NCCP Southern Planning Guidelines *key locations* recommendations; and (4) identification of unoccupied habitat for protection, restoration, and management within the RMV Planning Area protection areas pursuant to the GPA/ZC Adaptive Management Plan and the proposed Aquatic Resources Adaptive Management Program.

When combined with previously protected California gnatcatcher sites and the demonstrated ability of gnatcatchers to persist in proximity to developed areas such as Coto de Caza and the smaller Section 4(d) permit conservation easement areas (Dudek 2004), the proposed RMV Planning Area protection and management program is expected to provide for the survival and recovery of the coastal California gnatcatcher within the SAMP and NCCP planning areas.

Consistency Review for the Arroyo Toad

A new critical habitat designation was finalized on April 13, 2005 (the RMV Planning Area was excluded in accordance with FESA 4[b][2] findings). On August 23, 2005, the Center for Biological Diversity filed a Complaint in federal court challenging the final designation. For this reason and because the critical habitat standards fully encompass the Section 7/10 jeopardy

standard, the following analysis is applied as if there were no exclusion of the RMV Planning Area in effect.

Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species

All documented arroyo toad breeding sites and associated streamcourse habitat areas on the RMV Planning Area are identified as *key locations* (Figure 8-9). In the case of the Talega Creek population, approximately half of the creek is within the boundaries of MCB Camp Pendleton and therefore is within the control of the United States Department of Defense. In conjunction with protection of San Juan Creek provided through County of Orange and Forest Service ownership upstream of the RMV Planning Area, all streamcourse movement areas between *important* and *major populations* would be protected. With regard to San Mateo Creek, connectivity between populations on the RMV Planning Area and downstream populations is dependent on MCB Camp Pendleton and San Onofre State park measures.

Lateral setbacks from arroyo toad breeding areas have been identified on the basis of either: (1) the 80-foot contour line standard used in the court-vacated arroyo toad critical habitat designation and analyses of soils types on slopes adjoining arroyo toad breeding habitat, or (2) in the case of the Gobernadora Planning Area (Planning Area 3) and East Ortega Planning Area (Planning Area 4), a 1,312 foot total (200 meter from centerline) setback of pervious surface development from San Juan Creek per USACE requirements. The criteria included in the arroyo toad critical habitat designation have been used because the designation addressed the most recent studies of arroyo toad movement along streamcourses and lateral movement from streamcourses into adjacent alluvial terraces and foraging/estivation areas. According to the prior critical habitat designation for the arroyo toad (incorporated by reference into the new designation):

> *"The width of the upland component of critical habitat varies based on topography. The habitat widens in broad alluvial valleys and narrows in places where streams run through constricted canyons or between surrounding hills." (USFWS February 7, 2001)*
>
> *Although the upland habitat use patterns of this species are poorly understood, activity probably is concentrated in the alluvial flats (areas created when sediments from the stream are deposited) and sandy terraces found in valley bottoms of currently active drainages (USFWS 1999, Griffin et al. 1999, Sweet in litt., 1999, Ramirez 2000, Holland and Sisk 2000)." (USFWS February 7, 2001) (Ib. 9415)*

On the same page in the prior arroyo toad critical habitat designation, the USFWS examined the Holland and Sisk (2000) study of toad upland habitats and noted that 35 of the 466 toad captures were in upland habitats (7.5 percent) at distances ranging from 49 to 3,855 feet (15 to 1,175 meters) from the upland/riparian ecotone boundary. The USFWS concluded the following regarding the use of the 80-foot-wide (25 meter) upland limit standard employed in designating the upland extent of critical habitat:

> *"For the two areas sampled in this study, our modeled critical habitat boundaries encompassed 88 percent of the pitfall trapping stations where arroyo toads were detected." (Ib, p. 9420)*

Accordingly, the use of the 80 foot (25 meter) contour used in the vacated arroyo toad critical habitat designation is considered appropriate as a general standard in addressing the arroyo toad and sub-basin Protection Recommendation to "Protect breeding and foraging habitat and

movement opportunities within the streamcourse and adjacent alluvial terraces" because this criterion protects 88 percent of upland movements of the arroyo toad.

In terms of lateral setbacks beyond adjacent alluvial terraces, the 80 foot contour standard has also been supplemented with information on soils types in slopes adjacent to arroyo toad streamcourse habitats. According to the vacated critical habitat designation, arroyo toads "tend to utilize upland habitats that have sandy, friable (readily crumbled) soils." (Ib, p. 9,415) In the case of the RMV Proposed Project's Planning Area 8 impact analysis area, with respect to proximity to arroyo toad *key locations*, the terrains map indicates that underlying soils types on the slopes are primarily clays, which are not considered friable soils and thus not likely estivation habitat. Additionally, the B-12 Alternative requires five years of monitoring and telemetry studies of arroyo toad population, habitat, and home range which Rancho Mission Viejo is required to take into consideration in addressing the USACE Special Condition requiring minimization of impacts on the arroyo toad in Planning Area 8 prior to a decision on siting and configuring the 500 acres of development allowed within the overall 1,349 acres of RMV Planning Area 8. Similarly, the soils on the lower slopes of the Gobernadora development bubble in proximity to the arroyo toad *key location* south of the Bell Canyon/San Juan Creek confluence are also predominantly clay soils. Telemetry studies conducted for arroyo toad movement within San Juan Creek indicate very limited upland movement and overall impacts within the 80 foot contour in Planning Areas 3 and 4 are limited to approximately 400 acres (37 percent), with primary movement areas protected by the 400 meter movement corridor requirement.

Potential impacts of busy paved roads, noted in the final critical habitat designation for the arroyo toad, were considered a limiting factor impacting potential upland arroyo toad movement on the south side of San Juan Creek.

Provide for Special Management Considerations and Protections

Long-term management action elements of the GPA/ZC Adaptive Management Plan, including specific Adaptive Management Plan measures directed toward arroyo toad habitat, in conjunction with the protection of key locations, would contribute to the survival and recovery of the arroyo toad within the subregion. The following is a summary of actions that will provide for the survival and recovery of the arroyo toad in the planning area:

- ***Key Location* Protection.** The protection of the *key locations* of the arroyo toad in accordance with the recommendations of the Species Account.

- **San Juan Creek Restoration Actions.** The arroyo toad population downstream of the *key location* in San Juan Creek has been impacted by a major infestation of giant reed, bullfrog predation, and decreased water supplies cause by both giant reed water demands and groundwater pumping. Specific enhancement/restoration actions proposed by the GPA/ZC Adaptive Management Plan, the GP/ZC Water Quality Management Plan (WQMP), and the Aquatic Resources Adaptive Management Program intended to enhance and restore arroyo toad breeding habitat areas are: (1) control of giant reed to provide more area for riparian habitat and breeding pools and increase water supplies to help sustain such habitat; (2) control of bullfrog populations that presently have significant impacts on arroyo toad populations; (3) increased flows in San Juan Creek resulting from development stormwater flows that would be managed pursuant to the WQMP reviewed in subchapter 8.6); (4) the protection of upstream sources of coarse sediments and maintenance of episodic flood events are expected to help maintain natural succession for riparian habitat and the overall hydrologic/

geomorphic conditions identified in the *Geomorphic and Hydrologic Needs of Aquatic and Riparian Endangered Species* report; and (5) grazing management to protect arroyo toad habitat (following dedication) during the breeding season in accordance with the GPA/ZC Grazing Management Plan (source: GPA/ZC EIR 589 Appendix J-4).

- **San Mateo Watershed Protection and Enhancement Program.** The following management and enhancement/restoration actions are intended to help maintain and increase net habitat value for arroyo toad populations both within the RMV Planning Area and arroyo toad and other significant aquatic species in areas downstream: (1) protection of existing sources of coarse sediments; (2) reduction in the generation of fine sediments from areas with clay soils that will be achieved through remediation of the existing clay pits; (3) control of bullfrogs in ponds adjacent and proximate to arroyo toad populations in lower Gabino Creek; (4) control of invasive plants, particularly tamarisk and pampas grass; and (5) grazing management to protect arroyo toad breeding pools.

- Terrains and hydrology/geomorphology habitat protection and management considerations for the arroyo toad have been central planning precepts for the proposed RMV Planning Area procedures. Natural processes considered important to maintaining suitable habitat conditions for arroyo toads were reviewed in the report "Geomorphic and Hydrologic Needs of Aquatic and Riparian Endangered Species." These processes have been addressed and provided for in the Aquatic Resources Conservation Area design (see the Watershed Planning Principles Consistency Analysis in Chapter 6.0 and the WQMP/Sediment Report Summary [Appendix D]). Sources of coarse sediments and cobbles important for arroyo toad breeding and life cycle needs such as the creation of breeding pools and sediment sources for sandy benches have been protected (Verdugo Canyon, middle Gabino Canyon, and La Paz Canyon). The proposed WQMP includes provisions for assuring that flow duration under rainfall conditions and episodic events under post-development conditions mimic, to the extent feasible, pre-development conditions and that water quality protection for toad habitat is assured.

Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species

By requiring a 1,312-foot-wide (400 meter) movement corridor within San Juan Creek, arroyo toad movement from occupied toad habitat to currently unoccupied habitat subject to recovery actions reviewed above would be assured. Further, by eliminating development proposed by the B-10 Modified in Planning Areas 6 and 7, the B-12 Alternative provides for a 5,000-foot-wide movement corridor for aquatic species movement, including the arroyo toad, between the San Juan Creek and San Mateo Creek watersheds. Additionally, the proposed routing of traffic from existing Ortega Highway to the new Cow Camp Road may reduce existing and future traffic levels on Ortega Highway, thereby reducing vehicle impacts on species lateral movement from San Juan Creek to uplands areas within the 5,000 foot wide movement corridor.

As summarized above, a comprehensive Invasive Species Control Plan is included as part of the Aquatic Resources Adaptive Management Program and would, in combination with ongoing County giant reed eradication efforts upstream of the RMV Planning Area in San Juan Creek, help enhance/restore arroyo toad breeding habitat in portions of San Juan Creek that are presently unoccupied or have limited breeding areas. With respect to arroyo toad water supply considerations in San Juan Creek, the eradication of large areas of giant reed and contributions of developed areas to baseflow in San Juan Creek would improve water supplies to the portions of San Juan Creek where arroyo toad breeding appears to be limited, in part, by a lack of breeding pool water supply.

With respect to arroyo toad populations both within the San Mateo Creek Watershed portion of the SAMP Study Area and downstream of the SAMP Study Area, a similar effort would be undertaken in the San Mateo Creek Watershed, with particular emphasis on invasive plant species in lower Cristianitos Creek and on tamarisk and pampas grass removal in uplands areas. Bullfrog and crayfish control in areas potentially affecting arroyo toad populations would also be undertaken both to enhance existing breeding sites and to further the restoration of breeding opportunities in presently unoccupied areas.

Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the Arroyo Toad

The proposed permitting procedures protection and management measures would contribute significantly to the survival and recovery of the arroyo toad through the following: (1) identification of *key locations* that are by definition deemed necessary for the conservation of the species in the RMV Planning Area and, as a result, encompass all occupied habitat "essential to the conservation" of the species; (2) commitment of RMV Planning Area dedication lands as Aquatic Resources Conservation Areas in order to provide "special protection" by means of a specific phased dedication program encompassing all habitats constituting *key locations* for the arroyo toad on the RMV Planning Area; (3) provisions for special management recommendations including restoration recommendations; and (4) identification of unoccupied habitat for inclusion within the Aquatic Resources Conservation Area for purposes of restoration and management within the Aquatic Resources Conservation Area areas on the RMV Planning Area.

Consistency Review for the Least Bell's Vireo

Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species

According to the NCCP Southern Planning Guidelines Species Account for the least Bell's vireo, there are two *key locations* that must be protected to provide for conservation of the species within the subregion. As depicted on Figure 8-7, both areas are already protected pursuant to conservation easements.

Provide for Special Management Considerations and Protections

As noted, the two *key locations* for the least Bell's vireo are protected under existing conservation easements. However, both of the *key locations* for the least Bell's vireo are currently subject to significant stressors impacts. The Arroyo Trabuco population is being impacted by giant reed infestation while the Gobernadora Creek population is being impacted by erosion/sediment impacts resulting from excessive surface and subsurface flows emanating from upstream urban development. Smaller vireo populations in San Juan Creek and lower Cristianitos Creek also are being impacted by invasive plant species. Another population near the Prima Deshecha Landfill could be impacted by a future expansion of landfill operations. Specific habitat protection and GPA/ZC Adaptive Management Plan/Aquatic Resources Adaptive Management Program actions are intended to help increase habitat values and functions for the least Bell's vireo over time in the following ways:

- ***Conservation Easements.*** Habitat areas supporting the *key locations* of least Bell's vireo *important populations have* been protected through prior conservation easements in Arroyo Trabuco and GERA.

- ***Arroyo Trabuco Enhancement/Restoration.*** Invasive species control and natural restoration for the *key location* in Arroyo Trabuco would enhance and restore riparian habitat (see Aquatic Resources Adaptive Management Program Invasive Species Control Plan).

- ***Gobernadora Restoration Actions.*** (1) management of excessive surface and subsurface water flows from Coto de Caza through the construction of a multipurpose basin (see subchapter 8.1) that would help protect existing vireo habitat and potential new habitat upstream of the knickpoint; (2) management of GERA and implementation of additional restoration per the Aquatic Resources Restoration Plan would provide additional breeding habitat and sediment/streamflow management; and (3) invasive species control would remove an existing threat.

- ***San Juan Creek Restoration Actions*.** (1) control of giant reed would provide more area for riparian habitat and increase water supplies to help sustain such habitat (natural restoration of willow habitat is expected to occur in an area that presently supports a small population of vireo); (2) increased baseflow through WQMP stormwater control measures to help sustain existing and new riparian habitat; and (3) the protection of upstream sources of coarse sediments and maintenance of episodic flood events are expected to help maintain natural succession for willow habitat.

- ***Lower Cristianitos Creek.*** Invasive species control in lower Cristianitos Creek would protect habitat supporting existing populations and the reduction in fine sediments due to coastal sage scrub/valley grasslands restoration and landform restoration would correspondingly reduce adverse sediment impacts.

Additional management actions include control of Argentine ants and cowbird trapping, where needed, in accordance with the Invasive Species Control Plan. Implementation of the proposed WQMP would allow for further management of groundwater and surface flows in support of Gobernadora Creek restoration actions.

Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species

The coordinated San Juan Creek Invasive Species Control Plan would result in the removal of giant reed, thereby increasing the area of San Juan Creek available for natural riparian habitat restoration and increasing water flows and groundwater for sustaining such habitat in areas presently unoccupied by the species (two vireo sites are in nearby portions of San Juan Creek). Because this area is proximate to the *key location* in GERA in the Gobernadora Sub-basin, the creation of new habitat would likely allow for an expansion of the GERA population.

Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the Least Bell's Vireo

Proposed protection and management actions would substantially contribute to the region-wide recovery of the least Bell's vireo. The Draft Recovery Plan for the least Bell's vireo (USFWS 1998b) establishes criteria for down listing the species to threatened and for delisting the species. The down listing criterion is stable or increasing least Bell's vireo populations/ metapopulations for a period of five consecutive years in the following areas: Tijuana River, Dulzura Creek/Jamul Creek/Otay River, Sweetwater River, San Diego River, San Luis Rey River, MCB Camp Pendleton/Santa Margarita River, Santa Ana River, an Orange County/Los Angeles County metapopulation, Santa Clara River, Santa Ynez River, and an Anza Borrego

Desert metapopulation. Two additional criteria must be met for five consecutive years to consider delisting of the species:

1. *Stable or increasing least Bell's vireo populations/metapopulations, each consisting of several hundred or more breeding pairs, have become established and are protected and managed at the following sites: Salinas River, a San Joaquin Valley metapopulation, and a Sacramento Valley metapopulation.*

2. *Threats are reduced or eliminated so that least Bell's vireo populations/metapopulations listed above are capable of persisting without significant human intervention, or perpetual endowments are secured for cowbird trapping and exotic plant control in riparian habitat occupied by least Bell's vireo.* (USFWS 1998b, p. iv-v)

With regard to the criterion of protection of the Orange County/Los Angeles County metapopulation, the USFWS states:

> *Management planning should address the need to maintain the remaining patches of suitable, important least Bell's vireo habitat throughout the lower and middle elevations of both counties, and particularly, the closely spaced habitat patches that are likely important "stepping stones" to the continuing (northward) expansion and full recovery of the species.* (USFWS 1998b, p. 70-71)

Although the RMV Planning Area does not support a large breeding population of the least Bell's vireo (54 documented nest locations), implementation of the Aquatic Resources Adaptive Management Program would contribute to recovery of the species. Protection and management of the two *important populations* in *key locations* in the Arroyo Trabuco and in GERA in lower Gobernadora Creek, respectively, would contribute to the protection of the Orange County/Los Angeles County metapopulation. Furthermore, proposed permitting procedures measures would help meet the criterion for delisting the species of reducing or eliminating threats to the species (e.g., provide for cowbird trapping where needed and exotic plant species controls in Arroyo Trabuco and San Juan Creek, thus increasing the least Bell's vireo productivity in these areas).

Therefore, the proposed permitting procedures measures would contribute significantly to the survival and recovery of the least Bell's vireo through the following: (1) identification and protection of *key locations* that are by definition deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat "essential to the conservation" of the species; (2) provisions for special management recommendations, including restoration recommendations; and (3) identification of unoccupied habitat for protection, restoration, and management.

For the above reasons, the Aquatic Resources Conservation Program would further the survival and recovery of the species within the SAMP Study Area and contribute significantly to the recovery of the species on a subregional and regional basis.

Consistency Review for the Southwestern Willow Flycatcher

Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species

According to the Species Account for the southwestern willow flycatcher, there is one *key location* that must be protected to provide for conservation of the species within the RMV Planning Area as shown on Figure 8-8.

Provide for Special Management Considerations and Protections

The *key location* for the southwestern willow flycatcher is protected by conservation easements associated with GERA. Further protection is provided by the inclusion of this habitat area within the proposed Aquatic Resources Conservation Area on the RMV Planning Area.

The *key location* in the Gobernadora Sub-basin is currently subject to significant stressors impacts. The *key location* is being impacted by erosion/sediment impacts resulting from excessive surface and subsurface flows emanating from upstream urban development. These pre-existing, ongoing impacts would be addressed through the following element of the proposed Aquatic Resources Adaptive Management Program and the GPA/ZC Adaptive Management Plan:

- ***Gobernadora Restoration Actions*.** (1) management of excessive surface and subsurface water flows from Coto de Caza would help protect existing vireo habitat and potential new habitat upstream of the knickpoint; (2) restoration of the historic meander through the operation of the multipurpose basin and associated habitat above the knickpoint would provide additional breeding habitat; (3) management of GERA and implementation of additional restoration per the Aquatic Resources Restoration Plan would provide additional breeding habitat and sediment/streamflow management; and (4) invasive species control would remove an existing threat.

Additional management actions include control of Argentine ants and cowbird trapping where needed through implementation of the Aquatic Resources Adaptive Management Program Invasive Species Control Plan. Implementation of the proposed WQMP would allow for further management of groundwater and surface flows in support of the Gobernadora Creek Restoration Plan.

Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species

The proposed critical habitat designation for the southwestern willow flycatcher identifies potential future population expansion areas in lower Cristianitos Creek because it is located within 18 miles of a population outside the SAMP Study Area in downstream San Mateo Creek. Although habitat conditions in this area are unlikely to support the southwestern willow flycatcher, the following GPA/ZC Adaptive Management Plan/Aquatic Resources Adaptive Management Program measures would enhance habitat conditions in this presently unoccupied riparian area (i.e., lower Cristianitos Creek):

- ***Lower Cristianitos Creek***. Invasive species control in lower Cristianitos Creek would protect potential willow flycatcher habitat. Additionally, the reduction in fine sediments due to clay mine remediation would correspondingly reduce adverse sediment impacts on riparian habitat with the potential for supporting the willow flycatcher.

Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the Southwestern Willow Flycatcher

A recovery plan has not been completed by the USFWS for the southwestern willow flycatcher. However, the proposed protection/management measures would contribute to the future region-wide recovery of the southwestern willow flycatcher in combination with the other conservation planning efforts completed or underway in southern California. Within California, there are an estimated 121 breeding territories (Finch and Stoleson 2000), which appear to be scattered around southern California (recent estimates indicate 1,153 territories scattered throughout the southwestern states and California). The population size in the Santa Margarita River from MCB Camp Pendleton to the City of Fallbrook is an estimated 15 to 16 territories (San Diego Museum of Natural History 1995). Within western Riverside County, there are 15 to 20 estimated territories, including 3 to 5 territories in the Prado Basin, 3 to 5 territories in the Santa Ana River, 2 to 4 territories at Vail Lake, and 3 territories in Temecula Creek (Dudek 2002). The MCB Camp Pendleton population is on federal land and is addressed in the Biological Opinion (1-6-95-F-02) for Programmatic Activities and Conservation Plans in Riparian and Estuarine/Beach Ecosystems on MCB Camp Pendleton. The southwestern willow flycatcher is a Covered Species under the San Diego MSCP, a proposed Covered Species under the San Diego MHCP, and a proposed "Covered Species Adequately Conserved" under the Western Riverside County MSHCP.

The proposed permitting procedures protection and management measures would contribute significantly to the survival and recovery of the southwestern willow flycatcher through the following: (1) identification and protection of a *key location* that is by definition deemed necessary for the conservation of the species in the subregion and, as a result, encompasses all occupied habitat "essential to the conservation" of the species; (2) provisions for special management recommendations, including restoration recommendations; and (3) identification of unoccupied habitat preliminarily identified as a potential population expansion area (in the proposed critical habitat designation) for inclusion within the RMV Planning Area Aquatic Resources Conservation Area, including Aquatic Resources Adaptive Management Program management measures.

With an estimated 121 territories in California, the two general nesting areas in the RMV Planning Area in GERA and in the Talega development open space account for only a minor part of the population. However, protection and management of the GERA site where nesting by the willow flycatcher has consistently occurred in recent years would contribute to recovery of the species.

Consistency Review for the Riverside Fairy Shrimp

Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species

The three vernal pools supporting the Riverside fairy shrimp and their contributing hydrological resources on Chiquita Ridge and on Radio Tower mesa are identified as *key locations* in accordance with the Southern Planning Guidelines recommendations set forth in the Riverside fairy shrimp Species Accounts and are avoided through inclusion in the RMV Planning Area's open space (and as provided for as a part of the RMV Proposed Project).

Provide for Special Management Considerations and Protections

With regard to special protections, the vernal pool on Chiquita Ridge is already protected by a conservation easement as part of the Ladera Open Space. This vernal pool along with the two occupied vernal pools that together constitute the *key locations* for the Riverside fairy shrimp are avoided through inclusion in the RMV Planning Area's open space (and as provided as a part of the RMV Proposed Project).

Provisions for special management considerations include the following:

- Management of vernal pools located along Radio Tower Road primarily through implementation of timed grazing for exotic species control during the vernal pool dry period, and seasonal exclusion of grazing during the vernal pool wet period (following dedication of the vernal pool areas). Experimental prescribed burns may also be used as an exotics control technique.

- Management of vernal pools located on Chiquita Ridge in the Ladera Open Space primarily by implementation of exotics control through mowing and/or selective weeding (cattle are excluded from the Ladera Open Space and prescribed burns seem unlikely due to the proximity of developed areas).

The GPA/ZC Adaptive Management Plan would also include monitoring of the Radio Tower Road mesa and Chiquita Ride Vernal pools and San Diego fairy shrimp populations, managing hydrologic regimes by maintaining the existing local contributing hydrological sources, managing water quality to emulate baseline conditions (through and in coordination with the WQMP) and controlling public access (particularly during the rainy season).

Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species

AMP monitoring would include monitoring of the two small-protected vernal pools on Chiquita Ridge and the one pool on Radio Tower Road mesa lacking documented Riverside fairy shrimp. If the species is subsequently found present in any of these presently unoccupied vernal pools, the Adaptive Management Plan measures would be applied to any such vernal pool as specified above.

Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the Riverside Fairy Shrimp

GPA/ZC actions would contribute significantly to the survival and recovery of the Riverside fairy shrimp through the following: (1) identification of *key locations* that are by definition deemed necessary for the conservation of the species in the SAMP Study Area and, as a result, encompasses all occupied habitat "essential to the conservation" of the species; (2) provisions for special management recommendations including restoration recommendations; (3) an existing conservation easement covering one *key location* that provides "special protections," which is further augmented by including all of the remaining *key locations* within the GPA/ZC conservation easement phased dedication program; and (4) identification of unoccupied habitat in the Adaptive Management Plan monitoring program for potential future inclusion of unoccupied vernal pools for restoration and management.

Consistency Review for the San Diego Fairy Shrimp

Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species

All four vernal pools supporting the San Diego fairy shrimp and their contributing hydrological resources on Chiquita Ridge and on Radio Tower mesa are identified as *key locations* in accordance with the recommendations of the Southern Planning Guidelines San Diego fairy shrimp Species Accounts and are avoided through inclusion in the RMV Planning Area's open space (and as provided for as a part of the RMV Proposed Project).

Provide for Special Management Considerations and Protections

With regard to special protections, the vernal pool on Chiquita Ridge is already protected by a conservation easement as part of the Ladera Open Space. This vernal pool along with the three occupied vernal pools on Radio Tower mesa that together constitute the *key locations* for the San Diego fairy shrimp are included within the proposed Habitat Reserve.

Provisions for special management considerations include the following:

- Management of vernal pools located along Radio Tower Road primarily through implementation of timed grazing for exotic species control during the vernal pool dry period, and seasonal exclusion of grazing during the vernal pool wet period (following dedication of a conservation easement). Experimental prescribed burns may also be used as an exotics control technique.

- Management of vernal pools located on Chiquita Ridge within the Ladera Open Space primarily through implementation of exotics control through mowing and/or selective weeding (cattle are excluded from the Ladera Open Space and prescribed burns seem unlikely due to the proximity of developed areas).

The GPA/ZC Adaptive Management Plan would also include monitoring of the Radio Tower Road mesa and Chiquita Ridge Vernal pools and San Diego fairy shrimp populations, managing hydrologic regimes by maintaining the existing local contributing hydrological sources, managing water quality to emulate baseline conditions (through and in coordination with the WQMP), and controlling public access (particularly during the rainy season).

Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species

AMP monitoring would include monitoring of the two small-protected vernal pools on Chiquita Ridge lacking documented San Diego fairy shrimp. If the species is subsequently found present in any of these presently unoccupied vernal pools, the Adaptive Management Plan measures would be applied to any such vernal pool as specified above.

Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the San Diego Fairy Shrimp

GPA/ZC actions would contribute significantly to the survival and recovery of the San Diego fairy shrimp through the following: (1) identification of *key locations* that are by definition deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat "essential to the conservation" of the species; (2) provisions for special management considerations including restoration recommendations; (3) an existing

conservation easement covering one *key location* that provides "special protections," which is further augmented by including all of the *key locations* within the conservation easement phased dedication program encompassing all habitats constituting *key locations* for all listed species; and (4) identification of unoccupied habitat in the Adaptive Management Plan monitoring program for potential future restoration and management.

Consistency Review for the Thread-Leaved Brodiaea

Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species

The Species Account identifies a *major population* in a *key location* on Chiquadora Ridge and the second identified *major population* in a *key location* located on the hill outcrop adjacent to and within the clay mine pits in the southern portion of Cristianitos Canyon/lower Gabino Canyon.

Provide for Special Management Considerations and Protections

With regard to special protections, the two *key locations* included in the RMV Proposed Project's open space dedication program would be avoided and would be, with the Aliso/Wood Canyon population, the only major populations protected in place within the two Orange County NCCP subregions (tripling the size of the protected populations). Therefore, the proposed protection measures would contribute significantly to the survival and recovery of this plant species on a range-wide basis. Additionally, the *important populations* in Trampas Canyon and Arroyo Trabuco would be protected. Although distances between existing populations may exceed the apparent dispersal capability of the documented likely pollinators, habitat connectivity and contiguity allowing for potential genetic exchange between populations via pollinators and other localities would be maintained among the Arroyo Trabuco, Chiquadora Ridge, and Trampas Canyon populations. Protection of the *key locations* of the thread-leaved brodiaea in accordance with the recommendations of the NCCP Species Account*s* is in contrast with other major populations in the subregion where translocation has been permitted.

With regard to special management considerations, several proposed actions of the GPA/ZC Adaptive Management Plan would help further the recovery of this species within the SAMP Study Area. The following is a summary of Adaptive Management Plan actions that, together with open space protections, would provide for recovery of the thread-leaved brodiaea in the SAMP Study Area:

- Control of the main stressors, primarily non-native invasive species such as artichoke thistle, ryegrass, bromes, wild oats, and mustards; and restoration of native grasslands.

- The use of timed grazing in dedication areas in conjunction with fire management for exotics control, especially where non-native grasses are widespread and for which site-specific, selective manual treatments are not very effective.

- Fire management to reduce the likelihood of frequent fire that may exacerbate invasions of exotic plants.

- Translocation of smaller populations to areas with clay soils and without competing plants.

The Management Recommendations involving the control of non-native invasive species and the use of timed grazing are incorporated into the GPA/ZC Adaptive Management Plan and the Grazing Management Program for the RMV Planning Area. Management Recommendations for the protection of brodiaea populations from human disturbance (particularly potential edge effects from residential and golf course development) and data collection on pollinators would also be part of the GPA/ZC Adaptive Management Plan. Efforts to salvage and translocate the smaller populations located within development areas would enhance public understanding of the potential for translocation in other areas of the range of this species and thus further the recovery of the species.

Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species

Under the RMV Proposed Project development scenario, substantial areas with clay soils would be protected within close proximity to protected occupied sites and, with greater understanding of management and translocation/propagation over time, may allow for an expansion of existing populations into presently unoccupied areas.

Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the Thread-Leaved Brodiaea

The proposed open space protection and management program included in the RMV GPA/ZC amendment, and as reflected in the RMV Proposed Project, would contribute significantly to the survival and recovery of the thread-leaved brodiaea through the following: (1) identification of *key locations* that are by definition deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat "essential to the conservation" of the species; (2) provisions for special management recommendations, including experimental translocation recommendations; (3) commitment to the phased dedication of conservation easements over lands within the RMV Open Space to provide "special protection" encompassing all habitats constituting *key locations* for all listed species, and (4) identification of unoccupied habitat for inclusion within the GPA/ZC Adaptive Management Plan restoration and management program.

A recovery plan has not been completed for the thread-leaved brodiaea. GPA/ZC Adaptive Management Plan measures, in conjunction with RMV Proposed Project's open space protection, would substantially contribute to the future region-wide recovery of the thread-leaved brodiaea in combination with the other conservation planning efforts completed or underway in southern California. The planning area supports about 10,000+ counted flowering stalks, or about 2 to 4 percent of the estimated individuals region-wide. The thread-leaved brodiaea is addressed in the San Diego MSCP and MHCP as a "narrow endemic" that requires surveys for proposed projects. The MHCP area in particular, which includes the vast majority of thread-leaved brodiaea in San Diego County, has a conservation goal of 90 percent conservation of known locations and major populations and assumes that "critical locations" in the cities of Carlsbad and San Marcos would be 100 percent conserved. Similarly, the Western Riverside County MSHCP includes the brodiaea on the "Additional Survey Needs and Procedures" list and requires surveys within the "Criteria Area" where suitable habitat is present. Overall, under the MSCHP, approximately 83 percent of suitable habitat for the thread-leaved brodiaea in the plan area would be in the proposed Conservation Area, including 12 known occurrences along the San Jacinto River in Nuevo, Perris, and the San Jacinto Wildlife Area; on Salt Creek; on the Santa Rosa Plateau, and west of the Santa Rosa Plateau. The approximately 5,000 individuals on MCB Camp Pendleton and San Onofre State Park are provided federal and state protections. Outside of the Southern Subregion in Orange County, approximately 2,000 to 3,000 individuals occur in Aliso and Woods Canyon Regional Park.

The protection and management of approximately 9,600 individuals (96 percent) of the thread-leaved brodiaea on the RMV Planning Area, including the two *major populations in key locations* and *important populations* in middle and upper Cristianitos Canyon, the Talega Sub-basin, and Arroyo Trabuco area would substantially contribute to the recovery of the species.

Consistency Review for the Southern Steelhead

The potential presence of southern steelhead has been documented in the Arroyo Trabuco, outside the RMV Planning area, a tributary to San Juan Creek, south of the I-5 underpass, which is approximately 31,680 feet (six miles) from the SAMP Study Area boundary (CDFG, November 25, 2003, letter to the National Oceanic and Atmospheric Administration). The CDFG letter acknowledges the barrier of the I-5 underpass as a "complete barrier to upstream migration of steelhead" at this location. The USACE understands that genetic studies are currently underway to confirm the initial identification of steelhead in the Arroyo Trabuco; however, the results of these studies are not available. Steelhead have not been documented in San Juan Creek within the SAMP Study Area limits during decades of various biological surveys along San Juan Creek, including surveys specifically designed to detect fish species. In addition, there is no anecdotal information from fishing records within San Juan Creek in the RMV Planning Area for the steelhead.

On September 5, 2005, the National Oceanic and Atmospheric Administration published a final rule for the designation of critical habitat for seven Evolutionary Significant Units (ESUs) of Pacific Salmon and Steelhead in California (Federal Register 70 170). According to the final rule, several watershed units (490121, 490122, 490125, 490126, and 490128) including Trabuco, Upper Trabuco, Middle Trabuco, Upper San Juan, Mid upper San Juan and Middle San Juan "were determined to be unoccupied" (Federal Register 70 179) and as a result of this determination several miles of Trabuco and San Juan Creeks were removed from the proposed critical habitat designation. Therefore, no critical habitat for the steelhead is designated within the RMV Planning Area. However, critical habitat is designated in the SAMP Study Area on lower San Juan and lower Arroyo Trabuco.

The RMV Proposed project would not hinder the species survival and recovery in the southern portion of the ESUs range for steelhead and, as reviewed above under the arroyo toad consistency review, would provide streamcourse protection and management actions supportive of long-term steelhead recovery within the SAMP Study Area. The RMV Proposed Project proposes a circulation system that would result in bridge structures across San Juan Creek in three new locations. Limited modifications to San Juan Creek in the form of bridge piers for these crossings would occur; however, these modifications involve limited permanent impacts for bridge supports and, given the width of the streamcourse, are not anticipated to impede potential fish passage through the RMV Planning Area to the upper watershed where conditions for breeding habitat are found (National Marine Fisheries Service personal communication, August 16, 2005).

Fish passage downstream of the RMV Planning Area is questionable because, as noted above, CDFG regards the barrier of the I-5 underpass as a "complete barrier to upstream migration of steelhead." Therefore, this barrier (the I-5 underpass) would require modification to provide for potential fish passage. The USACE understands that Trout Unlimited has applied for a state grant to examine the feasibility of a fish ladder at the I-5 underpass.

The remaining potential issue with regard to fish passage is the existing RMV Planning Area earthen/pipe crossing of San Juan Creek (known as "Cow Camp Crossing"), which CDFG and the National Marine Fisheries Service (John O'Brien, CDFG and Stan Glowacki, National

Marine Fisheries Service, pers. comm.) have noted may pose difficulties for potential fish passage. A special condition is proposed for the proposed permitting procedures to address this potential Issue.

Potential benefits to steelhead, which would result from the Aquatic Resources Conservation Program, include proposed restoration/management actions in San Juan Creek identified above for the arroyo toad such as invasives species control including giant reed removal and bullfrog control. As reviewed in the Hydrologic and Geomorphic Needs of Listed Aquatic Species report, streamcourses within the San Mateo Watershed portion of the RMV Planning Area do not contain suitable steelhead breeding habitat. Potential downstream cumulative effects in both the San Juan Creek and San Mateo Creek Watersheds are reviewed in subchapter 8.7 of this EIS.

8.6.3.5 SAMP Program Level Conditions to Protect and Conserve Threathened or Endangered Species

In consideration of the analysis under subchapter 8.5.3.4, the SAMP permitting processes include general and special conditions to promote the protection and conservation of listed threatened and endangered species. Upon completion of consultation with the USFWS pursuant to Section 7 of the FESA, additional conditions may be added to enhance the protection and conservation of these species.

The RGP would, for the most part, not affect endangered species. Most of these areas that are eligible for the RGP are already degraded, and threatened and/or endangered species are not expected to occur within these areas. In the event that they occur within a proposed permit project area, the USACE would need to complete consultation with the USFWS, pursuant to Section 7 of the ESA, to address any potential take of the listed threatened and/or endangered species before issuing any authorization. The two general conditions that would address some of these issues up-front include:

RGP GC13 All work in waters must occur between September 15 and March 15. Work in waters may occur between March 15 and September 15 if bird surveys indicate the absence of any nesting birds within a 50-foot radius of the site. (Promotes conservation of least Bell's vireo and southern willow flycatcher)

RGP GC18 No activity is authorized which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act or which is likely to destroy or adversely modify the critical habitat of such species. Non-federal permittee shall not begin work on the activity until notified by the Corps that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized. Authorization of an activity under an LOP does not authorize the take of a threatened or endangered species as defined under the federal Endangered Species Act. In the absence of a separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with an incidental take provision, etc.) from the USFWS or NOAA Fisheries, both lethal and non-lethal "takes" of protected species are in violation of the Endangered Species Act. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the office of the U.S. Fish and Wildlife Service or their internet site at http://carslbad.usfws.gov or from NOAA Fisheries or their internet site at http://www.noaa.gov. (Promotes conservation of least Bell's vireo, southern steelhead, and southern willow flycatcher.)

For the LOP process outside of the RMV Planning Area, effects to listed threatened and/or endangered species will be addressed case-by-case. If listed threatened and/or endangered species are present, the USACE would complete consultation with the USFWS pursuant to Section 7 of the FESA before issuing an authorization. In the higher value aquatic areas, eligibility for the LOP is limited to small projects impacting less than 0.1 acre. Due to the small size of the impact, such a project is more likely to avoid all impacts to any threatened and/or endangered species that may be present after consultation with the USFWS. In the lower value aquatic areas, resident threatened and/or endangered species are not likely to be present. These lower value aquatic areas purposely excluded any critical habitat designated, which was mainly for the California gnatcatcher and the southern steelhead. Any listed threatened and/or endangered species would most likely be transient migratory birds such as the least Bell's vireo or southwestern willow flycatcher or the southern steelhead. In any event, general conditions will address some of the issues up-front. These general conditions include:

LOP GC1 The permit must comply with the SAMP compensatory mitigation framework established in conjunction with the proposed permitting procedures (see Appendix A). (Promotes conservation of least Bell's vireo, southern steelhead, and southern willow flycatcher)

LOP GC10 Prior to initiation of the project, the boundaries of the project's impact area must be delimited by the placement of temporary construction fencing, staking and/or signage. Any additional acreage impacted outside of the approved project footprint shall be mitigated at a 5:1 ratio. In the event that additional mitigation is required, the type of mitigation shall be determined by the Corps and may include wetland enhancement, restoration, creation, or preservation. (Promotes conservation of least Bell's vireo, southern steelhead, and southern willow flycatcher.)

LOP GC11 Initial vegetation clearing in waters of the U.S. must occur between September 15 and March 15. Work in waters may occur between March 15 and September 15 if bird surveys indicate the absence of any nesting birds within a 50-foot radius. (Promotes conservation of least Bell's vireo and southern willow flycatcher.)

LOP GC12 All giant reed (Arundo donax), salt cedar (Tamarix spp.), and castor bean (Ricinus communis) must be removed from the project site and ensure that the site remains free from these non-native species for a period of five years from completion of the project. (Promotes conservation of least Bell's vireo and southern willow flycatcher.)

LOP GC18 Same as RGP GC18.

LOP GC19 For projects resulting in construction or replacement of stream crossings in Arroyo Trabuco or San Juan Creek, the resulting structure must comply with NOAA-Fisheries and CDFG requirements for fish passage. (Promotes conservation of southern steelhead.)

For the RMV Proposed Project's long-term individual permit, the USACE has designed numerous special conditions to address impacts to listed threatened and/or endangered species. Additional consultation with the USFWS, pursuant to Section 7 of the FESA, would allow the development of additional conservation measure to protect these species. The special conditions are:

SC I.A.1 The permittee shall confine development and supporting infrastructure to the footprint (including infrastructure alignments and facilities within designated open space) shown on Figures 8-1, 8-2, 8-3a, 8-3b, 8-3c, and 8-4. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SC I.A.2 For the impact analysis areas, the permittee shall limit the size of the projects to 550 acres of development for Planning Area 4, 175 acres of reservoir for Planning Area 4, 500 acres of development for Planning Area 8, and 50 acres of orchards in Planning Areas 6 or 7. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SC I.A.3 The permittee shall avoid all impacts to the thread-leaved brodiaea (a threatened facultative wetland plant) in a major population in a key location (as described in Southern NCCP Planning Guidelines) on Chiquadora Ridge as part of construction for Planning Area 2. (Promotes conservation of thread-leaved brodiaea.)

SC I.D.2 The permittee shall provide wildlife movement corridors along San Juan Creek, Canada Chiquita, Canada Gobernadora, Cristianitos, Gabino, and Talega Creeks. Uses within these corridors shall provide a 400-meter wide corridor (200-meter setback off the centerline) except for the narrowing due to infrastructure facilities; exclude residential or commercial structures shall not be constructed within the 400-meter corridor; allow for limited fuel modification zones, trails, and related recreational facilities (i.e., interpretative signage, staging areas, picnic areas); and allow for infrastructure facilities including natural treatment systems for water quality treatment and related drainage facilities, outfalls that are located outside of the ordinary high water mark, approved bridge crossings, and water, sewer, and power facilities as set forth in Figures 8-3a, 8-3b, and 8-bc. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, southern steelhead, and southern willow flycatcher.)

SC I.D.3 The permittee shall retrofit the existing Cow Camp culvert crossing across San Juan Creek upon receiving authorization to discharge fill materials associated with Planning Area 3 to allow for fish passage. Alternatively, the crossing may be relocated to accomplish the same functional objectives as above and the current crossing may be removed and the disturbed area restored to provide a smooth, continuous longitudinal channel profile. The culverts shall comply with these following guidelines: the culvert shall be a minimum of 6 feet in width; the bottoms of the culverted crossings shall not be less than 25 percent of the culvert height; and retrofitted culverts shall be at grade. (Promotes conservation of arroyo toad and southern steelhead.)

SC I.D.4 The permittee shall use best management practices, including and not limited to detention basins, retention basins, low-water irrigation, increase in pervious surfaces, and/or diversion of runoff to a collection system for re-use for irrigation purposes to prevent dry season runoff from entering San Juan Creek (upstream of Trampas Canyon), Gabino Creek, and Talega Creek from September to mid-October. (Promotes conservation of arroyo toad.)

SC I.D.5 The permittee shall eradicate bullfrogs from any water quality treatment basin within 0.5 km of streams known to have arroyo toads. The eradication shall occur at the very least from September to mid-October to interrupt the annual breeding cycle. Permittee may use a variety of approaches to ensure compliance with this condition. Eradication efforts shall be monitored annually as part of the Aquatic Resources Adaptive Management Plan. If eradication efforts are not successful, the permittee shall cause the water quality treatment basin to be dry from September to mid-October by diverting dry season runoff to a collection system for re-use for irrigation purposes. (Promotes conservation of arroyo toad.)

SC I.D.6 The permittee shall minimize light-spillover associated with the development to minimize indirect impacts to wildlife. Lighting shall be directed away from habitat areas through the use of low-sodium or similar intensity lights, light shields, native shrubs, berms, placement low near the ground, or other shielding methods. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, southern steelhead, and southern willow flycatcher.)

SC I.D.7 The permittee shall refrain from using invasive exotic vegetation within fuel modification zones. Invasive exotic vegetation are those rated as medium or high by the California Invasive Plant Council in terms of their invasiveness. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, southern steelhead, and southern willow flycatcher.)

SC I.D.8 The permittee shall undertake telemetry monitoring studies for arroyo toad near Planning Area 8 for five years and submit the results to the Corps before submittal of an application for Planning Area 8. The results shall be used in designing appropriate measures to minimize impacts to the arroyo toad in Planning Area 8. (Promotes conservation of arroyo toad.)

SC I.D.9 Any additional conditions required by the U.S. Fish and Wildlife Service Biological Opinion.

SC II.1 The permittee shall implement a contractor education program to provide an overview and understanding of the project construction special conditions. A copy of the Special Conditions must be included in all bid packages for the project and be available at the work site at all times during periods of work and must be presented upon request by any Corps or other agency personnel with a reasonable reason for making such a request. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SC II.2 The permittee shall perform initial vegetation clearing in waters of the U.S. between September 15 and March 15. Work in waters may occur between March 15 and September 15 if breeding bird surveys indicate the absence of any nesting birds within a 50-foot radius. (Promotes conservation of California gnatcatcher, least Bell's vireo, and southern willow flycatcher.)

SC II.3 With each project LOP application, the permittee shall provide plans to the Corps showing the limits of grading, upland haul routes, fueling and storage areas for vehicles outside of Waters of the U.S., temporary impact areas, dewatering areas, and temporary access roads within Waters of the U.S. The permittee shall

conform the grading plans to pre-identified impacts. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea)

SC II.6 The permittee shall identify the limits of impacts in the field with brightly-colored flags, tape, or other marking to prevent unauthorized grading outside approved footprints. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SC II.7 The permittee shall install toad exclusion fencing for any work within 300 feet of a known population of the arroyo toad adjacent to San Juan Creek, Verdugo Creek, Gabino Creek, Cristianitos Creek, and Talega Creek for activities occurring outside of the estivation period. (Promotes conservation of arroyo toad.)

SC II.8 The permittee shall implement best management practices to prevent the movement of sediment into Waters of U.S. Compliance with Ranch Plan EIR Standard Condition 4.5-11 (Erosion and Sediment Control Plan (ESCP)) would satisfy this condition. The ESCP must be designed to minimize the mobilization of fine sediments into downstream waters. A copy of the current ESCP shall be provided to the Corps for each project application. (Promotes conservation of arroyo toad and southern steelhead.)

SC II.10 The permittee shall restore all temporarily impacted areas to pre-construction elevations within one month following completion of work. If wetlands or non-wetland Waters of the U.S. vegetated with native wetland species were impacted, re-vegetation should commence within three months after restoration of pre-construction elevations and be completed within 1 growing season. If re-vegetation cannot start due to seasonal conflicts (e.g., impacts occurring in late fall/early winter should not be re-vegetated until seasonal conditions are conducive to re-vegetation), exposed earth surfaces should be stabilized immediately with jute-netting, straw matting, or other applicable best management practice to minimize any erosion from wind or water. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, southern willow flycatcher, and thread-leaved brodiaea.)

SC II.12 During construction of each Planning Area or associated infrastructure, the permittee shall provide weekly construction reports via e-mail, fax, and/or mail demonstrating status of compliance with all project construction special conditions. Appropriate photos shall be submitted to show establishment of project construction minimization features. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SC II.13 The permittee shall allow the Corps to inspect the site at any time during and immediately after project implementation provided a 24-hour advance notice is given to the permittee. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SC II.14 Any additional conditions required by the U.S. Fish and Wildlife Service Biological Opinion.

SC III.1 The permittee shall protect avoided aquatic resources that are appropriately buffered (where feasible), by recording conservation easements. The conservation easements shall be recorded in phases in substantial conformance with the RMV Open Space and Phasing Plan shown as Exhibit B in the RMV Open Space Agreement, entered into by the permittee and County of Orange pursuant to the Ranch Plan Program EIR No. 589. The Corps acknowledges that the conservation easements will allow for passive recreation, agricultural uses by the O'Neill family and its successors in interest, if any, and for certain specified infrastructure facilities as illustrated in Figures 8-3a, 8-3b, 8-3c, and 8-4 of the EIS. The conservation easement template or form shall be approved by the Corps before recordation. Following the recordation of each conservation easement, the permittee shall provide to the Corps a copy of the conservation easement. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SC III.2.a The permittee shall compensate for all impacts to wetlands and non-wetland Waters of the U.S. vegetated with native wetland plant species at a 1:1 ratio on an area basis. The permittee may use the 18 acres of credit already established at the Gobernadora Ecological Restoration Area to compensate for future impacts to any Waters of the U.S. Compensatory mitigation for impacts to specified wetlands and non-wetland Waters of the U.S. vegetated with native wetland plant species shall be initiated prior to impacts to the specified Waters of the U.S. and achieve the success criteria prior to impacts to the specified Waters of the U.S. The permittee shall provide the Corps, Department of Fish and Game, and the U.S. Fish and Wildlife Service with a habitat mitigation and monitoring plan consistent with the LAD Mitigation and Monitoring Guidelines for review and approval prior to implementation of the compensatory mitigation. The compensatory mitigation sites should be prioritized in consideration of the "San Juan Creek Watershed Riparian Ecosystem Restoration Plan: Site Selection and General Design Criteria" by Engineering Research and Development Center (ERDC) dated August 2004 and the Aquatic Resources Restoration Plan. Additional considerations include the proximity of impact site and mitigation site, impacts to other sensitive habits due to the potential mitigation site, site ownership, and other factors. Restoration design shall follow the principles of the ERDC restoration plan (Appendix F4 of the SAMP EIS). (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, and southern willow flycatcher.)

SC III.2.b The permittee shall compensate for all impacts to non-wetland waters that are vegetated by upland species or unvegetated through the eradication of all arundo on the RMV Planning Area (about 90 acres) consistent with the Invasive Species Control Plan. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, and southern steelhead, southern willow flycatcher.)

SC III.2.c Temporary impacts to wetlands or naturally vegetated non-wetland waters of the U.S. will be compensated through the existing habitat values and functions provided by 18 acres of already existing created/restored wetlands within GERA that is already providing temporal gain and the habitat value and functional

enhancement provided through implementation of the ARAMP, including invasive species control such as the eradication of about 90 acres of giant reed on the RMV Planning Area. Temporary impacts to Waters of the U.S. unvegetated or vegetated by upland species does not require compensatory mitigation. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SC III.4 The permittee shall finalize the Adaptive Resources Management Plan for in perpetuity preservation of aquatic resource functions and values within one year of issuance of the long-term individual permit. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SC III.5 The permittee shall conduct an exotic aquatic animal removal program to remove cowbirds, bullfrogs, non-native fishes, etc., as set forth in the Invasive Species Control Plan (Appendix F4 to the SAMP EIS). (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SM SC I.1 The permittee shall confine infrastructure facilities to the footprint (including infrastructure alignments and facilities within designated open space) shown on Exhibits 8-3a, 8-3b, and 8-3c. (Promotes conservation of arroyo toad, California gnatcatcher, least Bell's vireo, Riverside fairy shrimp, San Diego fairy shrimp, southern steelhead, southern willow flycatcher, and thread-leaved brodiaea.)

SM SC II.2 Same as SC II.2 for breeding bird restrictions.

SM SC II.3 Same as SC II.3 for grading plans.

SM SC II.6 Same as SC II.6 for limits of grading.

SM SC II.7 Same as SC II.7 for arroyo toad exclusion fencing.

SM SC II.8 The permittee shall implement best management practices to prevent the movement of sediment into waters of U.S. The permittee shall develop a program-level plan to minimize the mobilization of fine sediments into downstream waters. A copy of the plan shall be provided to the Corps before issuance of the final permit. (Promotes conservation of arroyo toad and southern steelhead.)

SM SC II.9 Same as SC II.10 for temporary impact restoration.

SM SC II.13 Any additional condition required by the U.S. Fish and Wildlife Service Biological Opinion.

SM SC III.1 The permittee shall compensate for all permanent and temporary impacts by contributing $700,000 to the Adaptive Resources Management Plan. No further compensatory mitigation will be required for any impact as long as a proposed activity complies with the pre-identified impact footprint.

8.6.4 POTENTIAL TO VIOLATE MARINE SANCTUARIES DESIGNATED UNDER TITLE II OF THE MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT OF 1972

This requirement is not applicable to the proposed Regional General Permit and to the RMV proposed permitting procedures and associated activities.

8.7 PROHIBITIONS ON DISCHARGES CAUSING OR CONTRIBUTING TO SIGNIFICANT DEGRADATION−40 CFR 230.10(c)

According to Section 230.10 (c) of the Section 404(b)(1) Guidelines:

> *"Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of the waters of the United States. Findings of significant degradation related to the proposed discharge shall be based upon appropriate factual determinations, evaluations and test required by Subparts B and G, after consideration of Subparts C through F, with special emphasis on the persistence and permanence of the effects outlined in those subparts. Under these Guidelines, effects contributing to significant degradation considered individually or collectively, include:*
>
> *(1) Significantly adverse effects of the discharge of pollutants…including fish, shellfish, wildlife and special aquatic sites.*
>
> *(2) Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems…*
>
> *(3) Significantly adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity and stability…or*
>
> *(4) Significantly adverse effects of the discharge of pollutants on recreational, aesthetic and economic values.*

Upon implementation of all appropriate avoidance, minimization, and compensation measures as described in subchapter 8.5, there would not be any significant degradation to the aquatic environment as it relates to wildlife and special aquatic sites, aquatic life, ecosystem productivity, and other values.

8.8 CUMULATIVE EFFECTS ON THE AQUATIC ECOSYSTEM

Cumulative effects on the aquatic ecosystem are analyzed in this subchapter from two perspectives: (1) cumulative effects within the SAMP Study Area where the SAMP Study Area encompasses an entire watershed (i.e., the San Juan Creek watershed) and (2) cumulative effects on aquatic resources located downstream of the SAMP Study Area where the SAMP Study Area is only a portion of the watershed (i.e., the San Mateo Creek Watershed). In the first instance, the San Juan Creek Watershed, the SAMP Study Area is used as the basis for the analysis of cumulative effects on aquatic resources because this would encompass the entire area that would be affected by the proposed permitting procedures. Because the SAMP Study Area covers the entire San Juan Creek Watershed, the proposed permitting procedures and Aquatic Resources Conservation Program, would not alter the method by which aquatic resources located in other watersheds outside the SAMP Study Area are protected, restored, managed, or impacted. Since there would be no change in how these resources were treated

and there are other existing regulatory provisions (i.e., Section 404 of the Clean Water Act) that are in place to address aquatic resources in other watersheds, the SAMP regulatory framework would not contribute to cumulative impacts beyond the SAMP Study Area. In the second instance, the San Mateo Creek Watershed, the proposed permitting procedures through the projects that are permitted by the proposed permitting procedures have the potential to effect downstream aquatic resources; these potential effects in combination with potential affects from other actions within the San Mateo Creek Watershed are analyzed in this subchapter.

8.8.1 CUMULATIVE PROJECTS WITHIN THE SAMP STUDY AREA

The projects that have been considered for potential cumulative impacts on aquatic resources include those projects that are currently being evaluated or have recently been approved by local jurisdictions that are within the SAMP Study Area, that may have an impact on aquatic resources, and do not have USACE permits. It was determined that if a project already had Section 404 permits that appropriate actions had been incorporated to avoid, minimize or mitigate the impacts to aquatic resources. The Clean Water Act requires that there be no net loss to wetlands; therefore, if a Section 404 permit has been issued it can be assumed that the project would not result in a loss to wetlands.

The following provides a brief summary of the projects that have been identified as having a potential cumulative effect on aquatic resources. Chapter 9 provides an evaluation of cumulative impacts on other environmental effects. Figure 9-1 identifies the location for each of the projects discussed below. A summary of the projects identifies impacts that are known or are anticipated to occur with implementation of each project listed. This information is based on completed environmental documents or based on discussions with the applicable lead agency. In addition, the functional assessment and planning-level delineation discussed in subchapter 4.2.2 provide a general understanding of the potential quality of the aquatic values associated with each project site. Although each project would be required to document the actual extent, functions, and values of aquatic resources located on-site and subsequently, as applicable, to avoid, minimize, and mitigate the impacts associated with project implementation, a general understanding of the functional assessment indices and likely presence/absence of jurisdictional resources provides insight into the value of the site as it pertains to the overall aquatic value within the SAMP framework.

8.8.1.1 Foothill/Trabuco Specific Plan

The Foothill/Trabuco Specific Plan addresses approximately 6,500 acres in an area generally bounded by the Silverado/Modjeska Specific Plan area and the Cleveland National Forest to the north, the City of Rancho Santa Margarita to the south, the City of Lake Forest to the west, and the City of Rancho Santa Margarita and the Cleveland National Forest to the east. Three planning districts were formed based on proximity and availability of infrastructure and differing development opportunities and constraints.

The Foothill/Trabuco Specific Plan provides for a mix of residential, commercial recreation, community commercial, public/quasi-public facilities, and open space. For residential uses, the gross densities within the Foothill/Trabuco Specific Plan range from less than one acre per unit to 20 acres per dwelling unit. Clustering is allowed with minimum lot sizes as small as 4,000 square feet in certain areas. The Specific Plan has a range of goals and objectives that address the preservation of streams, creeks, wildlife movement corridors, and other sensitive biotic resources. A maximum of 2,775 dwelling units are allowed within the Specific Plan area. A majority of the developable land within the Foothill/Trabuco Specific Plan area is within the SAMP Study Area. The County General Plan Housing Element (May 8, 2001; technical

amendment updates April 2004) notes that for the Foothill/Trabuco Specific Plan area, there are 1,783.8 vacant developable acres.

Program EIR 531 was prepared in 1991 by the County of Orange to address the potential impacts associated with the development within the Foothill/Trabuco Specific Plan area. The evaluation focused on area-wide impacts and general site development standards. The Program EIR was not intended to evaluate project-specific impacts of development within the Specific Plan boundaries. The Final Program EIR identified significant, unavoidable impacts to water quality as a result of an increase in urban pollutants associated with future development with the Foothill/Trabuco Specific Plan area. Additionally, the implementation of the Specific Plan would result in the loss of habitat, including riparian habitat, and impacts to wildlife. These impacts could not be accurately quantified because specific development proposals are not known. The Specific Plan incorporates measures to avoid and minimize impacts, though development in the area would still result in impacts. The Final EIR found these impacts to be less than significant on a regional and area-wide scale, but significant on a local level.

Using the USACE Engineer Research and Development Center (ERDC) Integrity Indices, the Foothill/Trabuco Specific Plan area is generally ranked as high quality for water quality and hydrology. The habitat integrity indices rank this area slightly lower. Based on the Planning Level Delineation, USACE jurisdictional resources do occur within areas identified for potential development. As indicated above, the Foothill/Trabuco Specific Plan does not identify specific development projects, but provides a framework for implementing future projects in the Foothill/Trabuco Specific Plan area. Thus the exact nature of potential future impacts to hydrologic, habitat, and water quality integrity and specific quantifiable impacts to USACE jurisdiction are not determinable. However, the Final Program EIR for the Foothill Trabuco Specific Plan did identify potential impacts to aquatic resources as a result of increased pollutants and loss of habitat value. Based on the goals and objectives of the Specific Plan, there is an emphasis on the preservation of streams, creeks, wildlife movement corridors, and other sensitive biotic resources. Therefore, some level of protection, restoration, and management of aquatic resources would likely occur through the application of avoidance, minimization, and mitigation measures. However, prior to review of specific development plans, these impacts were identified as significant and unavoidable. Because the Program EIR was prepared in 1991, subsequent environmental regulatory requirements presently in place were not anticipated and thus not analyzed. Absent compliance with current state and federal water quality laws (e.g., the County of Orange DAMP pursuant to the MS-4 stormwater permit and Basin Plan requirements) and state and federal habitat protection laws (e.g., Fish and Game Code Section 1600, et seq., CESA/FESA compliance including the 4[d] permit program, and FESA Section 7 consultation requirements and USACE Section 404 permit requirements), development of the area within the Foothill/Trabuco Specific Plan would potentially contribute to cumulative impacts.

8.8.1.2 Caltrans Projects

Ortega Highway Interchange

This highway improvement project would modify the I-5/Ortega Highway interchange ramp configuration. Studies are in progress; however, there is no City Capital Improvement Project (CIP) funding and no Caltrans State Transportation Improvement Program (STIP) funding approved for construction of the improvements. Funding is committed for the design phase. Conceptual alternatives for interchange improvements have been identified. Alternatives range from the No-Project Alternative, constructing a round-about, or realigning the interchange and Del Obispo Avenue.

At present time, only a Preliminary Environmental Analysis Report (PEAR), not full NEPA/CEQA documentation, has been prepared. The PEAR identifies feasible alternatives, anticipated type of impacts associated with a proposed project, and order of magnitude of those impacts. It also recommends the type of environmental documentation required for the project. Based on an early assessment of the project a potential impact to riparian habitat and possibly jurisdictional areas was identified because of a small drainage north of the interchange. It is anticipated that the type of document ultimately prepared would be dependent on which alternatives advance to the next level of analysis.

The USACE Engineer Research and Development Center Functional Assessment Integrity Indices provide a ranking of the resources by reach. This results in a score for a larger area, whereas a project such as the Ortega Highway Interchange is located in a focused area. The USACE Engineer Research and Development Center Functional Assessment ranks the reach containing Ortega Highway relatively low for water quality and habitat and moderate for hydrology. The interchange improvements would not have any direct impacts on San Juan Creek. However, there is a drainage located to the northwest of the I-5/Ortega Highway interchange. It is concrete-lined in the vicinity of the interchange, but further north it has earthen banks and bottom.

Ortega Highway Widening

This project would widen Ortega Highway to four lanes from Antonio Parkway to the future SR-241. It is not possible to estimate the extent of the impacts without concept design plans for Ortega Highway and a selected alignment for the SR-241. However, given the proximity of the roadway to San Juan Creek, there is the potential for wetland impacts associated with this project. The roadway would traverse areas that the USACE Engineer Research and Development Center Functional Assessment ranked as moderate to moderate-high for habitat integrity and moderate to high for water quality and hydrology integrity. This project would traverse a portion of the area that would be affected by Alternative B-12, increasing the potential for cumulative impacts. However, the improvements would occur in area adjacent to the current roadway.

SR-241 SOCTIIP

In May 2004, the Transportation Corridor Agencies, Caltrans, and FHWA released for public review a Draft EIS/SEIR for the South Orange County Transportation Infrastructure Improvement Program (SOCTIIP). The purpose of SOCTIIP is to evaluate regional circulation needs in South Orange County. The potential extension of SR-241 south to I-5 and the County border is one component of the SOCTIIP. The extension of SR-241 would traverse the SAMP Study Area. The SOCTIPP EIS/EIR evaluates six corridor alternatives for SR-241, each of which would consist of four mixed-flow lanes initially and six mixed-flow plus two HOV lanes ultimately. In addition, SOCTIIP includes one alternative to improve existing and master planned arterial highways, and one alternative to widen I-5 from the County border north to the I-405 interchange. The alternatives being evaluated in the SOCTIIP are described in Chapter 2.0 (Figure 2-5). Based on information from the EIS/EIR, the impacts to wetlands for each alternative are shown in Table 8-12. In addition, the SOCTIIP alternatives, with the exception of the No Build Alternative, would have the potential of causing water quality impacts associated with pollutants in runoff from the roadway. However, current regulations state and federal water quality regulations, including the USACE Section 404(b)(1) Guidelines, require that the water be treated prior to release into downstream waters; therefore, potentially significant short-term adverse impacts to water quality would be mitigated to below a level of significance.

TABLE 8-12
PLANT COMMUNITY IMPACTS BY SOCTIIP ALTERNATIVE (ULTIMATE)[a.]

Community	Far East Corridor (FEC) Alignment		Central Corridor (CC) Alignment		Alignment 7 Corridor (A7C)		Arterial Improve-ments Only[b.]	I-5[b.]
	FEC-Modified	FEC-West	CC	CC-Avenida La Pata Variation	A7C-Avenida La Pata Variation	A7C-Far East Crossover-Modified		
Vernal Pools, Seeps, & Wet Meadows (5.0)	2.17 (0.88)	1.98 (0.80)	8.71 (3.52)	8.71 (3.52)	4.62 (1.87)	0.09 (0.04)	0.19 (0.08)	0.14 (0.06)
Marsh Communities (6.0)	5.20 (2.10)	4.61 (1.87)	11.51 (4.66)	9.59 (3.88)	10.00 (4.05)	4.38 (1.77)	0.00 0.00	0.44 (0.18)
Riparian Herb and Mule Fat Scrub (7.1, 7.3)	2.98 (1.21)	6.50 (2.63)	14.47 (5.86)	13.46 (5.45)	4.69 (1.90)	0.71 (0.29)	5.88 (2.38)	3.50 (1.42)
Other Riparian Communities (7.2, 7.4, 7.5, 7.6, 7.7, 7.8)	21.87 (8.85)	21.45 (8.68)	23.16 (9.37)	23.16 (9.37)	14.67 (5.94)	33.91 (13.72)	4.91 (1.99)	12.38 (5.01)
Lakes, Reservoirs, & Basins (12.0)	1.69 (0.68)	1.30 (0.53)	0.34 (0.14)	0.34 (0.14)	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
Water Courses (13.0)	7.07 (2.86)	1.25 (0.51)	19.23 (7.78)	17.73 (7.18)	3.00 (1.21)	1.83 (0.74)	1.51 (0.61)	9.48 (3.84)
Total	**40.98 (16.58)**	**37.09 (15.02)**	**77.42 (31.33)**	**72.99 (29.54)**	**36.98 (14.97)**	**40.92 (16.56)**	**12.49 (5.06)**	**25.94 (10.51)**

a. Data represent amount of plant community that will be impacted by each alternative. Units of measure are acres (hectares).
b. Data are the same for the initial and ultimate corridor for "Arterial Improvements Only" and "I-5."

The Functional Assessment ranking for the area traversed by the various alignments is very low to moderate for all three indices for the I-5 area. However, the easterly alignments traverse an area ranked relatively high for all three indices. The alternatives with the SR-241 extension would all extend through Alternative B-12. The SR-241 project is required to comply with all applicable state and federal regulations directed toward protecting aquatic resource habitats, as well as uplands habitats.

SR-241 Widening (Bake Parkway and Santa Margarita Parkway)

This highway improvement would widen the southbound SR-241 between Bake Parkway and Santa Margarita Parkway to provide four general-purpose lanes. Approximately one-half of the length of this project is within the SAMP Study Area. The project is consistent with the ultimate cross-section evaluated as part of the EIR completed in 1990 for SR-241. When the initial phase of SR-241 was constructed, the ultimate right-of-way was graded and mitigation implemented in the Gobernadora Ecological Restoration Area (GERA) in accordance with the Section 404 permit issued to the Transportation Corridor Agency.

SR-241 Widening (Oso Parkway to Santa Margarita Parkway)

This highway improvement would widen SR-241 between Oso Parkway and Santa Margarita Parkway to provide three general-purpose lanes in each direction to improve the circulation system. The project would be consistent with the ultimate cross-section evaluated as part of the EIR for SR-241. When the initial phase of SR-241 was constructed, the ultimate right-of-way

was graded and mitigation implemented in the GERA in accordance with the Section 404 permit issued to the Transportation Corridor Agency.

8.8.1.3 County of Orange Projects

La Pata Avenue Gap Closure and Del Rio Extension

An EIR is under preparation for this roadway project which includes the widening of La Pata Avenue from two lanes to four lanes from Ortega Highway to the Prima Deshecha Landfill and the extension of La Pata Avenue through the landfill to the existing terminus of Avenida La Pata at Calle Saluda in the City of San Clemente as a four-lane facility. The project also includes the extension of Del Rio as a four-lane facility from its existing terminus in the Forster Ranch community in the City of San Clemente to the proposed La Pata Avenue. The portion of the extension of La Pata Avenue within the SAMP Study Area is addressed as a component of the infrastructure supporting the B-12 Alternative, and impacts to potential USACE jurisdiction resulting from this portion of the project are discussed in subchapter 8.4.

Ortega Rock

This existing facility is located within the SAMP Study Area outside the RMV Planning Area. As noted previously, this facility has produced aggregate resources under a County of Orange Sand and Gravel Site Permit**.** Current production is deferred pending site maintenance and production studies, but is capable of resuming and increasing as development within the RMV Planning Area occurs. Subsequent EIR 539 prepared and certified by the County of Orange identified anticipated impacts to USACE jurisdiction as approximately four acres, of which less than one acre would be wetlands for the footprint of peak production.

8.8.1.4 City of San Juan Capistrano

San Juan Meadows

The project would construct 275 single-family detached dwellings and 165 senior housing units, and set aside a public use site and 72 acres of open area. EIR 92-02, San Juan Meadows (July 1992) identified a number of significant impacts. As a result of minor changes to the project, a Mitigated Negative Declaration was approved for the project on November 12, 1996. A Development Agreement, which would extend the time period for the tentative tract map, was being considered in August 2005.

The project would result in significant impacts to plant communities as a result of grading. All impacts would be reduced to less than significant levels via adherence to mitigation measures requiring the submission of grading and erosion control plans, a coastal sage scrub mitigation plan, a wetland mitigation plan, and a landscape plan.

The USACE Engineer Research and Development Center Functional Assessment categorized the reach that would contain this project as having moderate water quality and hydrology integrity indices and moderately-low habitat integrity indices.

La Novia Bridge

The project proposes to demolish, in phases, the existing two-lane bridge across San Juan Creek and replace it with a four-lane bridge. The three-span bridge would be approximately 260 feet long and 84 feet wide. In addition to the four lanes for vehicular traffic, the bridge would

provide equestrian and pedestrian lanes. The City of San Juan Capistrano is in the process of preparing an EIR for the project. Based on the NOP, the project has the potential to impact aquatic resources and sensitive species that exist or expected to existing within those habitats. Construction activities would have the potential to have short-term impacts to wildlife movement within the creek. Construction activities may require the diversion of flows in San Juan Creek and necessitate the placement of equipment in the streambed. The demolition and construction activities could result in additional pollutants being discharged into the Creek. Long-term the project would not be expected to affect the flows or water quality within the creek.

The USACE Engineer Research and Development Center Functional Assessment ranked the water quality and habitat integrity indices for the reach containing the La Novia Bridge as moderate and the hydrologic integrity indices as moderately low

8.8.1.5 Cleveland National Forest

Cleveland National Forest Land Management Plan

In September 2005, the Pacific Southwest Region of the U.S. Forest Service published for public review and comment, the draft revised Land Management Plans for the southern California National Forests (Angeles, Cleveland, Los Padres, and San Bernardino) and an accompanying Draft EIS. According to the U.S. Forest Service; the land management plans for each of the four forests are independent. The draft revised land management plans are based on the preferred alternative identified for each of the forests. Of relevance to the cumulative impact analysis for the SAMP, is the Cleveland National Forest revised draft Land Management Plan. The purpose of the revised land management plans for all four of the southern California National Forests is to:

1. guide all natural resource management activities on the forests,

2. address changed conditions and direction that have occurred since the original plans were adopted, and

3. meet the objectives of federal law, regulation, and policy.

The Preferred Alternative for addressing these purposes in the Cleveland National Forest is Alternative 2. According to the Draft EIS, Alternative 2 was originally developed as the "Proposed Action" for land management revisions and was available for public comment in 2001. Alternative 2 has been modified from earlier versions to provide additional protection for species-at-risk through species management strategies and land management plans design criteria (standards). The primary theme of the Preferred Alternative for the Cleveland National Forest is maintaining biological diversity and ecological integrity while providing a gradual increase in recreation opportunities. Compared to other alternatives, there is a higher level of investment in:

- Reconstruction of existing degraded facilities and the construction of new facilities to accommodate projected recreation demand in an environmentally sustainable way. More intensive user controls are employed that are designed to minimize conflicts with users and with sensitive environmental resources. Investment increase in mitigation that allows use levels to continue. The effective use of conservation education occurs, and Forest Staff would enlist the support of local communities, partners, and volunteers to promote a stewardship ethic and enhance visitor services.

- Avoiding and minimizing effects to species-at-risk with little focus on restoration of habitats. A conservation strategy is employed that focuses on using an adaptive management approach to meet conservation objectives in species-at-risk habitat.

The USACE Engineer Research and Development Center Functional Assessment ranked the majority of the Cleveland National Forest as having high integrity for all three indices.

This project includes acquisition of National Forest System lands through exchange, donation, or purchase. Generally, there are no effects from lands acquired, although lands acquired are occasionally in need of restoration, which could have a long-term beneficial effect on species, and may have short-term negative effects from resulting restoration work (i.e., erosion during restoration work, use of herbicides to control undesirable, non-native invasive species, or noxious weeds, use of equipment-direct mortality of animals or plants, noise). Lands acquired can increase the net habitat for species.

Regarding Invasive Species, the Draft EIS notes that: "Under alternatives 2 through 6, revised forest plan direction would provide a province-wide strategy for invasive species that includes objectives for education, prevention, control, restoration, and research. Revised forest plan standards would decrease the risk that invasive nonnative plants and animals become established on the National Forests of southern California. There would be less risk that seeds, mulches, or animal feed used on National Forest System land would be contaminated by weed seeds. There would be less risk that vehicles and machines authorized to travel off-road (such as fire engines) would introduce invasive nonnative plants. There would be less risk that special-use permittees would use or dispose of invasive nonnative plants and animals."

About 60 miles of stream would be treated annually for invasive nonnative species such as Arundo and tamarisk, and about 300 acres of uplands would be treated for a variety of invasive nonnative plants. The County of Orange, wildlife agencies, and local stakeholders have initiated discussions with the Cleveland National Forest regarding potential coordination of Arundo removal in San Juan Creek extending through Cleveland National Forest lands, County lands, and RMV Planning Area to the southern boundary of the RMV Planning Area.

In alternatives 2 through 6, invasive nonnative species would continue to persist at many current locations and may also increase in range and abundance. This is due to the current presence of numerous populations of invasive nonnative plants and animals on the forests, the presence of numerous vectors such as people and vehicles, and the continued disturbance of many acres of land. This would occur despite revised forest plan direction, concurrent efforts to control invasive nonnative plants and animals, and increased opportunities to implement control measures.

8.8.2 CUMULATIVE IMPACT ANALYSIS

8.8.2.1 Cumulative Impacts on Aquatic Resources in the San Juan Creek Watershed

Potential Cumulative Impacts Resulting from Activities Proposed to be Authorized Pursuant to the RMV Permitting Procedures

Prior to implementation of avoidance, minimization, and mitigation measures, Alternative B-12 and the SMWD Proposed Project would have potentially significant or significant impacts on riparian and wetland habitat. With implementation of the Aquatic Resources Conservation Program which includes three components (preservation, restoration and management described below), aquatic resources would be protected, restored and enhanced such that pre-

discharge/fill values and functions would be maintained, including "no net loss" of wetlands acreage.

- ***Preservation.*** Alternative B-12 would result in the preservation of a minimum of 1,693.7 acres of riparian areas out of 2,174.3 acres existing within the RMV Planning Area and a minimum of 755.6 acres of probable Waters of the U.S. out of 857.1 acres existing within the RMV Planning Area. As noted previously, the aquatic resources impact analyses for the B-12 Alternative address an overstated scenario for development impacts in Planning Areas 4 and 8 because actual development areas within those planning areas, although considerably smaller than the planning areas, have not been sited. Because only 1,225 acres of development (inclusive of the 175-acre reservoir site) are allowed within the overall 2,506 acres analyzed for Planning Areas 4 and 8, conservation of riparian areas is likely to increase based on the limited development that would be allowed to occur within these planning areas, and limited orchards (50 acres) that would be allowed to occur within Planning Areas 6 and/or 7. All significant sources of coarse sediments on RMV Planning Area land important to aquatic resources habitats would be protected.

- ***Restoration.*** The Aquatic Resources Restoration Plan identifies the location of potential restoration areas, methods of restoration, and performance standards to mitigate impacts to wetlands in keeping with the federal "no net loss" policy.

- ***Management.*** The Aquatic Resources Adaptive Management Program sets forth the conceptual models, goals, focal species, stressors, and objectives for the management of wetlands and riparian habitats.

The only impact that would remain a potentially significant unavoidable impact on riparian and wetland habitats is the impact to two slope wetlands located in the Chiquita Sub-basin which would not be replaced as slope wetlands. However, in keeping with the federal policy of "no net loss" of functions and values, impacts would be compensated for through the creation of wetlands providing functions and values comparable to the two slope wetlands.

Impacts to wetlands associated with the cumulative projects would not contribute to the cumulative loss of habitat throughout the SAMP Study Area as the "no net loss" policy applies to all projects subject to Section 404 of the Clean Water Act. Therefore, all impacts to jurisdictional wetlands and non-wetland waters are anticipated to be mitigated such that there would be no loss of wetlands' values, functions, and acreage. Additionally, the Aquatic Resources Conservation Program encompasses significant riparian habitat areas outside USACE jurisdiction and provides long-term management for these areas as well as portions of third order and above streams that would not be addressed under a USACE Section 404 permit-by-permit approach.

Future LOPs

Foothill/Trabuco Specific Plan Area

The proposed permitting procedures for future participants in the Foothill/Trabuco Specific Plan Area state that such participants would be required to undertake a permit application with the USACE and comply with the Section 404(b)(1) Guidelines. As a consequence, potential impacts to aquatic habitats under USACE jurisdiction identified in the 1991 Program EIR would have to be addressed through USACE regulatory requirements, as well as CESA/FESA and California

Fish and Game Code Section 1600 et seq. requirements. Potential water quality impacts are identified below in the section titled "Water Quality Impacts on Aquatic Ecosystems."

Ortega Rock

The proposed permitting procedures for future participants outside the RMV Planning state that such participants would be required to undertake a permit application with the USACE and comply with the Section 404(b)(1) Guidelines. As a consequence, potential impacts to aquatic habitats under USACE jurisdiction identified in the 1991 Program EIR would have to be addressed through USACE regulatory requirements, as well as CESA/FESA and California Fish and Game Code Section 1600 et seq. requirements. Furthermore, any potential water quality impacts would be mitigated by compliance with the Orange County DAMP.

SR-241: SOCTIIP

The proposed SR-241 southerly extension is currently under review by the USACE, USFWS, CDFG, and other agencies. It is expected that compliance with applicable state and federal environmental laws would reduce potential direct impacts to aquatic resources to below a level of significance.

8.8.2.2 Cumulative Water Quality Impacts on Aquatic Ecosystems in the San Juan Watershed

The County of Orange has adopted permitting procedures (2004 Drainage Area Management Plan) following the issuance of municipal NPDES Stormwater Permits from the Santa Ana and San Diego Regional Water Quality Control Boards. Section 402(p) of the Clean Water Act, as amended by the Water Quality Act of 1987 require that municipal NPDES permits include:

- A requirement to effectively prohibit non-storm water discharges into the storm sewer; and

- Controls to reduce the pollutants in storm water discharges to the maximum extent practicable

The objective of the DAMP is to satisfy the above requirements. In keeping with this objective, the DAMP includes requirements applicable to new development/significant redevelopment, and construction. Any new development or significant redevelopment project in the County of Orange must comply with the requirements set forth in the DAMP. Per the DAMP, new development projects and significant redevelopment projects are required to prepare a Water Quality Management Plan (WQMP) that includes Best Management Practices (BMPs). These may include site design BMPS, source control BMPs, project-based Treatment Control BMPs, or participation in an approved regional or watershed management program. To comply with these requirements, Rancho Mission Viejo has prepared a Water Quality Management Plan that identifies site design BMPs, source control BMPs, and treatment control BMPs (Appendix D) that was approved as part of the certification of the GPA/ZC EIR 589 for the B-10 Modified Alternative that would also apply to Alternative B-12 (Appendix D). Therefore, water quality impacts associated with the B-12 Alternative would be mitigated to a level of less than significant, with the exception of pathogens which is discussed further below. The cumulative projects noted above that would need discretionary approvals from the County of Orange would need to comply with the DAMP and meet the requirements of prohibiting non-storm waters discharges and reducing pollutants in stormwater discharges to the maximum extent practicable. Caltrans has its own NPDES permit. Therefore, the projects noted above would be

subject to this NPDES permit which has similar requirements regarding the control of discharges. All Caltrans projects, including SOCTIIP, would be subject to the requirements of the Caltrans NPDES Storm Water Permit (NPDES No. CAS000003) for the off-site impact areas within the state right-of-way.

It is expected that all future projects within the watersheds would implement BMPs that would reduce potential water quality impacts on aquatic resources to the maximum extent practicable.

As described Chapter 6.0, subchapter 8.6, and in the WQMP (Appendix D), potential pollutants impacts that could occur as a result of activities that would be authorized pursuant to the proposed permitting procedures have been reduced to below a level of significance in a manner fully in compliance with applicable water quality standards with the exception of pathogens. Pathogens would have no significant effects on aquatic species or habitats.

A TMDL for pathogens has been identified for the mouth of San Juan Creek; no such TMDL has been identified for the San Mateo Watershed. With regard to pathogens, the RMV Proposed Project may increase pathogens depending on the adequacy of source control BMPs. However, neither existing nor post-development levels are likely to meet REC-1 standards for fecal coliform consistently, other than for flows that are infiltrated (see WQMP). According to the WQMP, pathogens represent a potential impact on REC-1 (body contact uses). The WQMP proposes to incorporate detention basins with associated wetland swales that would discharge into infiltration basins as major water quality treatment train features. In combination, these would be very effective in treating pathogens associated with dry weather flows, small storm flows, and the initial portion of large storm events. During large storm events, when large amounts of bacteria, viruses, and protozoans (some of which are pathogenic) are mobilized, flows will bypass the infiltration basin. During such periods, pathogen levels are not likely to meet the REC-1 standards for fecal coliform on a consistent basis.

The literature on the effectiveness of infiltration and filtration systems for treating pathogen indicators such as total and fecal coliform indicates that filtration as a treatment mechanism achieves removals in the range of 60 to 90 percent. This removal rate tends to be large relative to other stormwater treatment BMPs (e.g., extended detention basins) and therefore treatment trains which include a filtration component as provided for in the B-12 Alternative would provide effective removal of pathogen indicators. Since infiltration is an effective BMP up to the point of soil saturation, pathogens associated with dry weather flows, small storm flows and the initial portion of large storm events would be effectively treated in the combined control system. However, because there is no feasible method for infiltrating storm water flows from large storms due to saturated soils conditions and it is not economically feasible to construct storage and treatment facilities for the large volumes of stormwater generated by major storms, pathogen indicators cannot be removed to below a level of significance as defined by the REC-1 standard for such major storms. Through the use of source and treatment controls, the B-10 Modified Alternative does employ BMPs meeting the “Maximum Extent Practicable (MEP) standard established by the State Water Resources Control Board and accordingly reduces impacts to the maximum extent practicable.

Due to the amount of development proposed within the San Juan Watershed, REC-1 standards are more likely to not be met in this watershed than in the San Mateo Watershed.

8.8.2.3 Cumulative Impacts on Aquatic Resources in the San Mateo Creek Watershed

Potential Cumulative Impacts Resulting from Activities Proposed to be Authorized Pursuant to the RMV Permitting Procedures

As described in previous chapters, proposed development in the portion of the San Mateo Watershed located in the SAMP Study Area is limited to 500 acres located in the Talega Sub-basin, the 25-acre Rancho Mission Viejo headquarters site, and an additional 50 acres of orchards. The 500-acre development area is focused on an area that has already been substantially altered by an existing industrial use. Total open space proposed to be protected within the San Mateo Creek Watershed portion of the SAMP Study Area is 8,694 acres, comprising 13 percent of this portion of the SAMP Study Area. Minimal wetlands would be impacted due to bridge pilings and would be fully mitigated; 100 percent of non-USACE jurisdiction riparian habitats in upper Cristianitos Creek, Gabino Creek, La Paz Creek, and the Rancho Mission Viejo's ownership in Talega Creek would be protected and included within the proposed Aquatic Resources Conservation Area. All arroyo toad breeding habitats would be protected. As noted previously, due to the worst-case analysis approach for analyzing impacts in Planning Area 8, additional riparian habitat may be protected when the future 500-acre development envelope is finalized.

The analysis of water quality requirements presented in the prior sub-section for the San Juan Creek Watershed is equally applicable to the portion of the SAMP Study Area located in the San Mateo Creek Watershed. With regard to the San Mateo Watershed, any increase in surface water flows would help offset the impacts of groundwater pumping in MCB Camp Pendleton identified by CDFG as a major impact on aquatic resources (see "Geomorphic and Hydrologic Needs" report at page 99). At present, there is no pathogen TMDL proposed for San Mateo Creek and no indication that pathogens are an issue for aquatic species. Development of seven percent of the portion of the SAMP Study Area within the San Mateo Creek Watershed is not likely to generate significant direct or cumulative pathogen impacts on aquatic resources.

As in the case of the invasive species control plan for the San Juan Creek Watershed, the invasive species control plan for the San Mateo Watershed within the SAMP Study Area would address tamarisk and other invasive species that would otherwise migrate downstream with potentially significant adverse impacts on aquatic/riparian habitat systems.

The Balance Sediment report cited in Chapter 8.0 reviews the manner in which the B-12 Alternative's open space/development configuration protects sources of coarse sands which, in combination with the protection of upstream sources of coarse sands under government ownership, would protect the types of sediments important to maintaining aquatic/riparian habitats downstream of the SAMP Study Area (see Balance Sediment report) and offshore marine life supported by sand supplies to the littoral cell.

8.8.2.4 Potential Cumulative Impacts from Proposed Projects on Areas Downstream from the SAMP Study Area

MCB Camp Pendleton

Potential impacts of groundwater pumping on the part of MCB Camp Pendleton and agricultural lessees on aquatic species such as steelhead and arroyo toad have been reviewed in reports prepared by various wildlife agencies. As noted above, because the activities authorized by the proposed permitting procedures would not cause a reduction in stormwater runoff due to the high percentage of protected open space and likely increases from future urbanized areas

within Planning Area 8, no cumulative adverse impacts would result on water flows within San Mateo Creek downstream of the SAMP Study Area.

SR-241: SOCTIIP

As noted above under the analysis of the proposed permitting procedures, no net unmitigated impacts would occur on aquatic resources, sources of coarse sediments would be protected, and existing stormwater volumes would be maintained and potentially increased (to the benefit of downstream aquatic habitats). As a consequence, any impacts caused by the proposed SR-241 southerly extension would not constitute cumulative impacts in relation to the proposed permitting procedures and would instead simply be direct impacts of the SR-241 to be addressed by the appropriate regulatory agencies.

8.9 APPROPRIATE AND PRACTICABLE STEPS TO MINIMIZE POTENTIAL ADVERSE EFFECTS OF PROPOSED DISCHARGES ON THE AQUATIC ECOSYSTEM–40 CFR 230.10(d) AND SUBPART H OF THE SECTION 404(b)(1) GUIDELINES

8.9.1 REGULATORY OVERVIEW

Section 230.10(d) of the Section 404(b)(1) Guidelines requires the following:

> "…*no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem. Subpart H identifies such possible steps."*

This subchapter addresses actions taken to avoid and minimize impacts on the aquatic ecosystem, including compensatory mitigation actions involving wetlands restoration and long-term management of the aquatic ecosystem pursuant to elements of the Aquatic Resources Conservation Program to be implemented on the RMV Planning Area under the RMV Proposed Project and proposed permitting procedures.

Provisions of Subpart H of the Section 404(b)(1) Guidelines addressed in this subchapter are the following:

- 230-70: Actions concerning the location of the discharge
- 230.71, 230.72, 230.73, and 230.74: Actions concerning the material to be discharged and controlling the material after discharge and method of dispersion, including equipment and road/bridge construction minimization measures
- 230.75: Actions affecting plant and animal populations
  - actions to avoid changes in water circulation patterns potentially interfering with movement of animals;
  - managing development sites to avoid creating invasive species presence;
  - avoiding sites having unique habitat or other value, including habitat of threatened or endangered species; and

- using planning and construction practices to institute habitat development and restoration to produce a new or modified environmental state of higher ecological value–compensatory mitigation.

Factual determinations regarding "Aquatic ecosystem and organism determinations" pursuant to Section 230.11(e) and "Determination of secondary effects on the aquatic ecosystem" pursuant to Section 230.11(h) are made in conjunction with the review of Subpart H provisions.

8.9.2 SUBPART H ANALYSIS

8.9.2.1 230-70: "Actions Concerning the Location of the Discharge"–Consistency Analyses for the SAMP Tenets and Watershed Planning Principles

Adverse impacts of discharges can be minimized through actions involving the location of the discharge. For the entire SAMP Study Area, the SAMP builds upon the USACE Engineer Research and Development Center (ERDC) analysis of hydrologic integrity, water quality integrity, and habitat integrity, to identify those areas that are of relatively poorer condition and more likely to be suitable for the discharge of fill materials. Impacts to areas of high ecosystem integrity would most likely be minimized through the implementation of the SAMP permitting procedures, which would require pre-application coordination, interagency coordination, and full review through the standard individual permit process for any direct impacts greater than 0.1 acre.

For the RMV Planning Area, additional studies have guided the siting of projects. The Baseline Conditions Report, the report addressing the hydrologic and geomorphic needs of listed aquatic species, and the Watershed Planning Principles constitute policy directions for locational decisions regarding discharges with potential effects on the aquatic ecosystem. Chapter 6.0 contains an extensive analysis of the consistency of the RMV Proposed Project with the SAMP Tenets and the Watershed Planning Principles and concludes that the RMV Proposed Project achieves a high degree of consistency with these conservation planning tenets directed toward protecting the aquatic ecosystem and associated organisms. Likewise, the WQMP applies the Watershed Planning Principles, including protection recommendations, in formulating strategies addressing hydrologic and water quality considerations in order to avoid secondary impacts on the aquatic ecosystem (see subchapter 8.6); the WQMP includes area-specific measures and a "combined control system" approach to assure that the impacts of future runoff from development areas into the aquatic ecosystem avoids and minimizes impacts to the maximum extent practicable.

8.9.2.2 230.71, 230.72, 230.73 And 230.74–Actions Concerning the Material to be Discharged and Controlling the Material After Discharge and Method of Dispersion, Including Equipment and Road/Bridge Construction Minimization Measures

The proposed SAMP permitting procedures have general conditions that would most likely minimize the discharge and control of materials after discharge for actions within the SAMP Study Area. These general conditions are summarized in Section 8.6.4 and shown in their full language in Appendix A. Such conditions include using appropriate erosion and siltation controls, implementation of pollution prevention measures, removal of temporary fills, and others.

Within the RMV Planning Area, additional special conditions for the proposed LOPs set forth specific measures to minimize the potential impacts of material to be discharged and for

controlling material after discharge and method of dispersion. See subchapter 8.5.2 for a further discussion on the types of fill material anticipated to be discharged. Additionally, the WQMP presents measures for addressing Clean Water Act Stormwater Pollution Prevention Permit requirements established by the SWRCB; the Combined Control System strategy tailored to specific catchments, and associated aquatic resources minimizes impacts resulting from the method of dispersion in accordance with the minimization criteria set forth in 40 CFR 230.73 (a) through (g). Further, as a part of the GPA/ZC project, the County of Orange required that a Biological Resources Construction Plan be developed to detail specific measures for avoiding and minimizing impacts in conjunction with construction of the circulation system and other infrastructure facilities proposed to be authorized pursuant to the RMV Planning Area procedures (GPA/ZC EIR 589 Mitigation Measure 4.9-30). Based on the foregoing measures and requirements, appropriate and practicable actions have been taken to avoid and minimize the potential impacts of material to be discharged and for controlling the material after discharge and the method of dispersion.

8.9.2.3 230.75–Actions Affecting Plant and Animal Populations

Actions to Avoid Changes in Water Circulation Patterns Potentially Interfering With Movement of Animals

For the entire SAMP Study Area, actions to avoid changes in water circulation patterns involve both locational decisions and general conditions of the proposed SAMP permitting systems. For aquatic resources that are of higher value where impacts to water circulation patterns are more likely to result in adverse impacts, full permit review will be required for any direct impacts greater than 0.1 acre of USACE jurisdiction. In addition, the proposed general conditions include the requirement to manage instream flows similar to pre-project levels and making any culvert within Arroyo Trabuco and San Juan Creek more passable to fish.

Within the RMV Planning Area, actions to avoid changes in water circulation patterns involve both locational decisions, general conditions and additional general conditions, and long-term management actions. Locational decisions involve actions taken to avoid sources of coarse sediments that are important to sustaining long-term water circulation patterns beneficial to the aquatic ecosystem. Locational decisions also involve actions taken to minimize the generation of fine sediments that cause turbidity by locating development in such areas or carrying out vegetation restoration. Locational decisions are reviewed in the Chapter 6.0 consistency review of the RMV Proposed Project in relation to the policies and principles set forth in the SAMP Tenets and in the Watershed Planning Principles.

General and special conditions for the proposed LOP process within the RMV Planning Area further minimize impacts to circulation. Special conditions include the requirement to upgrade or remove Cow Camp crossing, requirement of future road crossings to be either span crossings or large culvert crossings, and the prohibition of detention basins within the active channel of the major streams.

With regard to long-term management actions, the WQMP proposes a comprehensive system for assuring that stormwater discharges do not substantially impact water circulation systems. As proposed in the WQMP, all developments would be designed to achieve flow duration matching, address the water balance, and provide for water quality treatment through a combined flow and water quality control system (termed “Combined Control System”). The proposed combined control system would include one or more of the following components as required for the particular drainage catchments served by the individual facilities, each of which provides an important function to the system:

- Flow Duration Control and Water Quality Treatment (FD/WQ) Basin
- Infiltration Basin
- Bioinfiltration Swale
- Storage Facility for Non-Potable Water Supply
- Diversion Conduit to Export Excess Flows out of the Sub-basin

All of the above facilities would be constructed within the proposed development areas of the RMV Planning Area, not in Aquatic Resource Conservation Areas. The flow duration control and water quality treatment basin would provide the initial flow and water quality treatment control functions to the system. The remaining components address the "excess flows" (i.e., flows in excess of natural conditions), alone or in combination with each other, generated during wet weather.

As reviewed in the Aquatic Resources Adaptive Management Program (Appendix F3), Aquatic Resources Conservation Areas would be adaptively managed over the long-term to maintain habitat value and functions. Although the WQMP addresses areas located outside Aquatic Resources Conservation Areas, the WQMP would also be managed adaptively and coordinated with the management of Aquatic Resources Conservation Areas in order to assure that potential impacts involving Pollutants of Concern and Hydrologic Conditions of Concern are fully addressed through ongoing avoidance, minimization, and mitigation measures. Section 8.7 presents a summary of the WQMP Chapter 6.0 adaptive management approach that would be used to evaluate whether the WQMP elements are functioning as intended and to implement corrective procedures when needed.

For the above reasons, appropriate and practicable actions would be taken to avoid substantial changes to water circulation patterns.

Managing Development Sites to Avoid Creating Invasive Species Presence

For the entire SAMP Study Area, actions to avoid creating invasive species presence involve conditioning of the proposed permitting systems. The proposed RGP is not expected to result in any invasive species introductions. The proposed LOP requires the removal of invasive species on the project site.

For the RMV Planning Area, the Special Permit Conditions for the proposed RMV Planning Area procedures contain specific measures directed toward minimizing "edge effects" where development areas are in close proximity to Aquatic Resources Conservation Area lands, including measures addressing potentially invasive plant species, Argentine ants, etc. The County of Orange has also included a mitigation measure in its action to approve the GPA/ZC that prohibits the use of invasive species within development landscape areas (GPA/ZC EIR 589 Mitigation Measure 4.9-27). Additionally, the Aquatic Resources Adaptive Management Program provides for the implementation of ongoing invasive species control through the Invasive Species Control Plan (Appendix F4) that will address invasive species regardless of the origin of such species.

Avoiding Sites Having Unique Habitat or Other Value, Including Habitat of Threatened or Endangered Species

For the entire SAMP Study Area, riparian and wetland sites with higher habitat values have been identified. These include riparian areas with higher ecosystem integrity and aquatic areas that have been deemed critical habitat for threatened and/or endangered species, including the steelhead. Within these areas, abbreviated permitting will not be used and actions impacting greater than 0.1 acre of USACE jurisdiction will undergo full permit review. In the event that a listed and/or endangered species or their critical habitat may be affected within these higher value aquatic resources or outside, the proposed RGP and/or LOPs require consultation with the USFWS or NOAA Fisheries pursuant to Section 7 of the ESA. With regard to LOPs for the RMV Planning Area, a Section 7 consultation will be undertaken in conjunction with the proposed issuance of the individual long-term permit for activities that may affect listed species (see subchapter 8.5.3).

For the RMV Planning Area, as previously addressed in Chapters 1.0 and 6.0 and as depicted in Figure 8-10, Aquatic Resources Conservation Areas are areas designated by the Aquatic Resources Conservation Program based on the distribution of the wetland/riparian vegetation communities found within the RMV Planning Area that are set aside for preservation and long-term adaptive management. Aquatic Resource Conservation Areas are larger than the USACE jurisdictional area because they include some riparian habitat areas that are within the jurisdiction of the CDFG proximate to USACE jurisdictional wetlands but are not subject to USACE jurisdiction. Because of this more inclusive (i.e., inclusion of some non-jurisdiction areas), the Aquatic Resources Conservation Areas include some non-wetland/riparian lands that would serve to contribute to wildland movement and buffer the jurisdictional area. Wetland/riparian vegetation communities that support both listed and unlisted sensitive aquatic species (see Chapter 6 and Section 8.5.3) and that would be included within the Aquatic Resources Conservation Areas include:

- Wetland/riparian vegetation communities within open space previously protected through recorded conservation easements such as the Ladera Ranch Open Space, the Upper Chiquita Canyon Conservation Easement area, and Donna O'Neill Land Conservancy; and

- Wetland/riparian vegetation communities within the RMV Planning Area open space that would be dedicated by Rancho Mission Viejo in accordance with the proposed SAMP Phased Dedication Program.

First and second order tributaries and contributing uplands are included in the Aquatic Resources Conservation Area, but are protected through open space dedications associated with the County of Orange approvals.

Vegetation communities capable of supporting endangered and threatened species proposed to be protected under the B-12 Alternative are described in Section 8.5.3 and would be protected through phased dedications of conservation easements for the ARCA within the RMV Planning Area and the phased dedication of other open space as defined in the B-12 Alternative. Impacts to Special Status Aquatic Species including the western spadefoot toad, southern tarplant, salt spring checkerbloom (and associated non-jurisdictional slope wetlands) and mud nama would be addressed through (1) preservation of aquatic habitats through the ARCA, particularly San Juan Creek, wetlands in Cristianitos Creek and Jerome's Lake in Gabino Canyon for the spadefoot toad, (2) implementation of the ARAMP including invasive species control,

(3) implementation of the ARRP, and (4) implementation of GPA/ZC EIR 589 mitigation measures related to the Plant Translocation Plan.

Using Planning and Construction Practices to Institute Habitat Development and Restoration to Produce a New or Modified Environmental State of Higher Ecological Value–Compensatory Mitigation

For the entire SAMP Study Area, the proposed SAMP permitting procedures include elements that promote appropriate compensatory mitigation policies. Through the use of the report titled "San Juan Creek Watershed Riparian Ecosystem Restoration Plan: Site Selection and General Design Criteria" by Engineering Research and Development Center (ERDC), more effective compensatory mitigation sites can be identified and designed. In addition, the use of functional assessment methodologies allow for better determination of appropriate compensatory mitigation ratios. Lastly, for most activities excluding those covered by the proposed RGP, compensatory mitigation must comply with the SAMP compensatory mitigation framework.

For the RMV Planning Area, compensatory mitigation relies on the Aquatic Resources Restoration Plan to be implemented pursuant to the Aquatic Resources Adaptive Management Plan, as well as the habitat value and function benefits resulting from application of the Adaptive Management Program, discussed below.

Overview of Compensatory Mitigation Elements

Compensatory mitigation for the impacts of activities authorized pursuant to the proposed RMV Planning Area procedures has been formulated within the broad Aquatic Resources Conservation Program aquatic resource planning context provided by the SAMP. The Aquatic Resources Adaptive Management Program element of the Aquatic Resources Conservation Program (Appendix F3) provides for: a) mitigation of impacts on USACE jurisdictional wetlands and vegetated via wetland on a 1:1 acreage basis (including functions and values) through long-term implementation the Aquatic Resources Restoration Plan component of the Aquatic Resources Adaptive Management Program; and b) mitigation of impacts on non-wetlands waters through invasive species control within and adjacent to streamcourses) and long-term adaptive management and monitoring of aquatic vegetation communities and related species that are contained within the Aquatic Resources Conservation Area.

As explained in the Aquatic Resources Adaptive Management Program (Appendix F3), contemporary adaptive management science relies on monitoring and management of the species and associated habitats that are found within the vegetation communities that are being preserved and managed over the long-term in order to maintain and enhance habitat values and functions. Recognizing that the SAMP Tenets address habitats outside USACE jurisdiction and that the SAMP is part of a coordinated planning and regulatory process for southern Orange County, the Aquatic Resources Adaptive Management Program addresses riparian habitats found adjacent to wetlands found within the Aquatic Resources Conservation Area areas in the RMV Planning Area rather than solely areas within those portions the Aquatic Resources Conservation Areas subject to USACE jurisdiction.

Compensatory mitigation would be provided to address both impacts to jurisdictional wetlands and to non-wetland Waters of the U.S, as outlined below and as summarized in the following subsections:

Mitigation for Unavoidable Impacts to USACE Jurisdictional Wetlands and Non-Wetland Waters of the U.S. Vegetated with Aquatic Plant Species

- Mitigation for temporary impacts through:
  - Habitat values and functions provided by 18 acres of existing created/restored wetlands within GERA that is already providing temporal gain
  - Habitat value and functional enhancement provided through implementation of the ARAMP, including invasive species control such as the eradication of about 90 acres of giant reed on the RMV Planning Area
- Mitigation for permanent impacts through:
  - 1:1 restored wetlands acreage provided by 18 acres of existing created/restored within GERA
  - Additional wetlands and vegetated waters acreage, if required, through the successful creation/restoration of wetlands at a 1:1 ratio pursuant to the Aquatic Resources Restoration Plan (described in the following subsection) before impacts occur
  - Assurances of funding for the ARAMP and implementation of the ARAMP (as further described below) help assure that values and functions will be maintained and thereby support the use of a 1:1 ratio

Mitigation for Impacts to Unvegetated Non-Wetland Waters of the U.S. and to Non-Wetland Waters Vegetated by Upland Species

- Mitigation for temporary impacts:
  - Not required for impacts to Waters of the U.S. that are unvegetated, minimally vegetated by wetland species, or vegetated by upland species
- Mitigation for permanent impacts through:
  - Control of invasive species, including eradication of about 90 acres of giant reed on the RMV Planning Area
  - Implementation of the ARAMP (as further described below) help assure that values and functions will be maintained

Thus, the protection of existing habitat through long-term protection of the ARCA on RMV Planning Area and the enhancement of existing habitat and creation of new habitat helps maintain and enhance aquatic ecosystem values over the long-term. Aquatic Resources Adaptive Management Program management actions focusing on addressing stressors, including invasive species that would adversely impact the values and functions of the Aquatic Resources Conservation Area aquatic ecosystem and habitat restoration directed toward increasing aquatic species abundance and diversity, are central to the compensatory mitigation program described above. Given their importance to the overall compensatory mitigation program, the Aquatic Resources Restoration Plan and the Aquatic Resources Adaptive Management Program are described in the following two subsections.

Assurance of No Net Loss of Wetlands Values and Functions through Implementation of the Aquatic Resources Restoration Plan (ARRP)

The Aquatic Resources Restoration Plan provides for no net loss of wetlands acreage, functions, and values through a comprehensive compensatory mitigation program that considers multiple elements including restoration, arundo removal, long-term management, and minimization of indirect losses through BMPs. The Aquatic Resources Restoration Plan provides the restoration template for wetland and riparian resources within the Aquatic Resources Conservation Area consistent with the *Riparian Ecosystem Restoration Plan for San Juan and Western San Mateo Creek Watersheds: General Design Criteria and Site Selection*[3]. The Aquatic Resources Restoration Plan would be implemented as a component of the Aquatic Resources Adaptive Management Program and is discussed in Chapter 5.0 and Appendix F3 of this EIS.

As discussed above, the USACE and U.S. EPA regulations at 33 CFR 320-330 and 40 CFR 230 authorize the USACE to require compensatory mitigation for unavoidable impacts to Waters of the U.S., including wetlands. The Aquatic Resources Restoration Plan describes the compensatory mitigation plan for the creation, restoration, and/or enhancement of wetlands and non-wetland riparian habitats, as well as restoration of selected streams, in the proposed Aquatic Resources Conservation Areas on the RMV Planning Area intended to mitigate impacts on resources subject to USACE jurisdiction. The purpose of the Aquatic Resources Restoration Plan is to identify the potential restoration sites and potential aquatic functions, the approximate acreage that could be restored at each site, the types of habitat that could be incorporated into each site, the monitoring and maintenance procedures to be implemented, and the performance standards that would be used to determine success. It is expected that, to the extent feasible, restoration would be implemented in advance of impacts. However, an exact timetable has not yet been developed (e.g., 18 acres of highly functioning habitat marsh and riparian habitat have already been established in GERA and are presently available to offset RMV Proposed Project impacts). With regard to temporal impacts and permanent wetlands impacts, the Aquatic Resources Restoration Plan provides for low intensity monitoring and maintenance (as necessary) for approximately 18 acres of existing created alkali marsh, alkali meadow, and southern riparian scrub in the GERA. These 18 acres of existing wetland habitat were created in 1998 and 1999 as part of the Ladera Ranch wetland restoration program that, according to conditions in the Section 404 and Section 1603 Authorizations from the USACE and CDFG, included a sliding scale whereby excess creation areas (i.e., not specifically needed to offset impacts associated with Ladera Ranch) could be used for future projects within the RMV Planning Area. The 18 acres have achieved the five-year performance standards and would be subject to ongoing monitoring until such time as they are used to offset future impacts associated with LOP authorizations and future MSAA authorizations in conjunction with the NCCP/MSAA/HCP.

The term “restoration” is inclusive in the Aquatic Resources Restoration Plan as it addresses the spectrum of possible restoration activities within the Aquatic Resources Conservation Area. This ranges from creation of new habitats that in some instances may require substantial grading to the enhancement of existing degraded habitats that could include limited grading and other measures such as minor re-contouring, removal of invasive species, and/or some replanting that rely extensively on natural processes to enhance and restore aquatic values. The Aquatic Resources Restoration Plan is based upon substantial data collected on the aquatic ecosystems in support of the SAMP. These data, along with data collected during monitoring of

[3] Smith, Daniel, and C.V. Climas. 2003. *Riparian Ecosystem Restoration Plan for San Juan and Western San Mateo Creek Watersheds: General Design Criteria and Site Selection*. Prepared for the U.S. Army USACE of Engineers, Los Angeles District, Regulatory Branch, October 2003 Draft.

approximately 125 acres of created and restored wetland and riparian areas within the RMV Planning Area, provide an extensive data set that can be used to inform and guide the proposed restoration projects. Additionally, because of the importance of invasive species control in enhancing and restoring aquatic resources values and functions, the Aquatic Resources Restoration Plan includes a summary of the invasive exotic control program for San Juan and Trabuco creeks as set forth in greater detail in the Invasive Species Control Plan (Appendix F4).

Because the SAMP is a planning area-wide comprehensive program, the Aquatic Resources Restoration Plan summarizes the restoration program for several sub-basins and explains how these actions, as part of the Aquatic Resources Adaptive Management Program, could contribute to enhancement and restoration of values and functions of wetlands/riparian habitats. The restoration plan has been developed to ensure no-net-loss of either acreage or function associated with Waters of the U.S. subject to the jurisdiction of the USACE pursuant to Section 404 of the Clean Water Act and Waters of the State subject to the jurisdiction of the CDFG pursuant to Section 1600 of the Fish and Game Code. The approach taken in the Aquatic Resources Restoration Plan is intended to be consistent with recent Regulatory Guidance Letter No. 02-2, dated December 24, 2002, issued by the USACE regarding mitigation, which emphasizes watershed-wide and function-based programs where feasible. The Aquatic Resources Restoration Plan is also intended to be consistent with the Los Angeles District's Special Public Notice *Final Mitigation Guidelines and Monitoring Requirements* issued on April 19, 2004.[4] Finally, selection of restoration sites is consistent with the *Riparian Ecosystem Restoration Plan for San Juan and Western San Mateo Creek Watersheds: General Design Criteria and Site Selection,*[5] which was developed by the USACE to assist Rancho Mission Viejo in establishing priorities relative to potential mitigation/restoration sites.

The Aquatic Resources Restoration Plan addresses mitigation for impacts associated with activities that would be authorized pursuant to the proposed permitting procedures, including restoration site selection, site design, site preparation and site construction. Proposed plant palettes, short-term and long-term monitoring and maintenance measures to be implemented in accordance with the program are also included.

Under the proposed permitting procedures, at the time an LOP application is made for a particular development increment, the USACE would apply the appropriate area-specific mitigation requirements based on a number of factors including:

- The stage of development and level of function of the habitat proposed to offset impacts;
- Other mitigation measures, such as upland coastal sage scrub, or native grassland restoration that enhance the functions of adjacent wetland and/or riparian restoration sites;
- Other mitigation measures implemented to eliminate or minimize invasive species at the landscape level; and
- Implementation of water quality minimization and mitigation measures pursuant to the approved WQMP.

[4] U.S. Army Corps of Engineers. 2002. *Regulatory Guidance Letter No. 02-02: Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899*. December 24, 2002, 16 pp.

[5] Smith, Daniel, and C.V. Climas. 2003. *Riparian Ecosystem Restoration Plan for San Juan and Western San Mateo Creek Watersheds: General Design Criteria and Site Selection*. Prepared for the U.S. Army USACE of Engineers, Los Angeles District, Regulatory Branch, October 2003 Draft.

Protection of Habitat Values and Functions Over the Long-Term through Adaptive Management Actions Focusing on Addressing Stressors that Would Adversely Impact the Values and Functions of the Aquatic Resources Conservation Area Aquatic Ecosystem

Summary of the Adaptive Management Program. The prior subchapter has analyzed how the Aquatic Resources Restoration Plan is intended to mitigate for direct impacts to USACE wetlands and non-wetlands jurisdictional areas within the RMV Planning Area. The ARAMP is the program for both implementing the Aquatic Resources Restoration Program summarized above (including both wetlands and vegetated non-wetlands waters mitigation and invasive species controls for mitigating impacts to unvegetated non-wetlands waters), and for addressing stressors in support of the 1:1 mitigation ratio for impacts to Waters of the U.S. With regard to SMWD impacts, SMWD would mitigate temporary impacts to on-site wetlands to the extent feasible. Mitigation for impacts to non-wetland Waters would be addressed by the SWMD contribution to the ARAMP.

Aquatic Resources Conservation Area lands for third order and above streams would be monitored and managed in accordance with the Aquatic Resources Adaptive Management Program as an element of the mitigation program for impacts of authorized activities on USACE jurisdictional areas. The funding and implementation of long-term adaptive management pursuant to the Aquatic Resources Adaptive Management Program is a significant benefit of the SAMP mitigation program that, due to its scale and comprehensive approach, is not generally associated with individual permits.

Mitigation of impacts to non-wetland Waters of the U.S. pursuant to the Aquatic Resources Adaptive Management Program derives both from maintaining and enhancing habitat values and functions within the Aquatic Resources Conservation Area lands subject to the Aquatic Resources Adaptive Management Program by responding to stressors that have the potential to diminish habitat values and functions. For example, in the absence of an Adaptive Management Plan, anthropogenic influences such as the presence and expansion of invasive plant and animal species could severely impact habitat values (as evidenced by presently existing giant reed habitat impacts within San Juan Creek). In many cases, such stressors pre-exist future development proposed to be allowed pursuant to the proposed permitting procedures and would cause impacts to habitat values that otherwise could be addressed only with public funds. Invasive species control programs such as giant reed eradication efforts not only remove species that displace riparian plant species and use water flows otherwise needed by aquatic plant and animal species but also provide opportunities for natural succession of riparian species such as willows.

The Adaptive Management Plan provides an institutional mechanism, funded in accordance with the Special Terms and Conditions for the RMV Planning Area procedures, for responding to such stressors thereby helping mitigate the impacts of authorized activities, including the SMWD Proposed Project. In this context, the broad scale, long-term adaptive management program of the Aquatic Resources Adaptive Management Program helps maintain both: a) the values and functions of Aquatic Resources Restoration Plan mitigation actions described above that would create new habitat; and b) the values and functions of existing aquatic resources to be protected and enhanced as part of the Aquatic Resources Conservation Areas on the RMV Planning Area.

Environmental stressors may be natural or human-caused, and some may be both. For example, ignitions of wildfires can be both natural (lighting strikes) and human-caused (arson and accidental human-caused ignitions). Natural and human-caused stressors that significantly

affect vegetation communities and species in the SAMP Study Area include habitat loss and fragmentation, wildfires, exotic plants and animals, altered hydrology, altered geomorphic processes, human uses and recreation, and precipitation cycles.

The Aquatic Resources Adaptive Management Program would be implemented based on the assumption that practical management and monitoring should focus on the issues most relevant to maintaining the values and functions of resources protected within the managed system. The "environmental stressor" approach to monitoring and managing natural resources is receiving more attention in recent years because it provides a conceptual method more amenable to an enhanced understanding of causal relationships that can be addressed through management actions. Laying the foundation for the environmental stressor approach, Noon (2003a) states:

> *"To be most meaningful, a monitoring program should provide insights into cause-and-effect relations between environmental stressors or between specific management practices and anticipated ecosystem responses. Prior knowledge of the factors likely to stress an ecological system or the expected outcomes from management should be incorporated into the selection of variables to measure and the sampling design. Indicators should be chosen based on a conceptual model that clearly indicates stressors (e.g., pollutants, management practices) and indicators with pathways that lead to effects on the structure and function of the ecological system (NRC 1995, 2000). This process enables the monitoring program to investigate relations between anticipated stressors, or between management practices and environmental consequences, and provides the opportunity to develop predictive models."* (p. 34)

The emphasis on environmental stressors outlined above has increasingly become the central focus of adaptive management in large-scale ecosystem programs such as the Northwest Forest Plan.

It is important to understand that the vegetation communities and associated species in the Aquatic Resources Conservation Area are basically in good general health, but that certain known and potential stressors operate and can be identified (e.g., giant reed invasion of San Juan Creek). For this reason, the stressor approach is particularly appropriate and the basic management needs are to: (1) address existing stressors so that net habitat value can be increased; and (2) identify future stressors that could reduce or adversely alter long-term net habitat value.

The Aquatic Resources Adaptive Management Program Invasive Species Control Program as an Example of a Stressor-Focused Management Program. Perhaps the most significant stressor affecting natural vegetation communities in southern California is the presence of invasive species, both plant and animal species. Aquatic Resources Adaptive Management Program provisions for addressing invasive species are summarized to provide an example of how stressors would be addressed pursuant to the Aquatic Resources Adaptive Management Program.

An Invasive Species Control Plan has been prepared to address the existing and foreseeable impacts of invasive plant and animal species on the Aquatic Resources Conservation Area and would be implemented as a component of the Aquatic Resources Adaptive Management Program (Appendix F4). This Invasive Species Control Plan provides the long-term management guidelines for the control of invasive species on the RMV Planning Area. The objectives of the Invasive Species Control Plan are to:

- Census and map invasive plants and introduced vertebrate predators on Aquatic Resources Conservation Area lands.

- Review the ecology and habitat requirements of invasive species targeted control.

- Provide an overview of species-specific and density-dependent control methods.

- Analyze the impacts and benefits of the Invasive Species Control Plan on focal species and habitats.

The Invasive Species Control Plan is comprised of three main components: invasive plants, invasive invertebrates, and invasive vertebrates.

Invasive Plant Species. The invasive plant species currently targeted for specific controls include several riparian species. The riparian invasive plants along with their priority rankings are:

Riparian Species

- giant reed (*Arundo donax*)–Priority 1

- pampas grass (*Cortaderia selloana*)–Priority 2

- castor bean (*Ricinus communis*)–Priority 2

- tamarisk (*Tamarix ramosissima*)–Priority 3

- tree tobacco (*Nicotiana glauca*)–Priority 3

- Spanish sunflower (*Pulicaria paludosa*)–Priority 3

The Invasive Species Control Plan would, as are all aspects of the Aquatic Resources Adaptive Management Program, be a "living plan" that would be flexible and subject to revision over time to respond to new invasives and control methods. An important task of the Aquatic Resources Conservation Area Manager and Science Panel would be to keep informed on new developments in weed management and revise the Invasive Species Control Plan accordingly.

Invasive Invertebrate Species. Two invasive invertebrate species are targeted for control: Argentine ant (*Linepithema humile*) and red imported fire ant (*Solenopsis invicta*). Both species pose direct and indirect threats to native species, including direct predation of native vertebrates and competition/displacement of important invertebrate prey of native species.

The Invasive Species Control Plan acknowledges that eradication of either Argentine or red imported fire ants is not feasible or practical because of their ubiquity in southern California and their ability to colonize new areas. The goal of the program would be to control their populations and prevent their spread into new areas of the Aquatic Resources Conservation Area. Control methods are reviewed in the Aquatic Resources Adaptive Management Program.

Invasive Vertebrate Species. The vertebrate control component of the Invasive Species Control Plan targets four invasive species:

- bullfrog (*Rana catesbeiana*)

- crayfish (*Procambrus* spp.)
- brown-headed cowbird (*Molothrus ater*)
- European starling (*Sturnus vulgaris*)

As with plant invasive species, the Invasive Species Control Plan would need to be flexible in addressing new sources of vertebrate pests. For example, the non-native African clawed frog *Xenopus laevis*) may prey on native aquatic species and/or compete for resources and has been found throughout southern California.[6] While it does not appear to currently be a threat in the subregion, if the clawed frog appears in the future and becomes a threat to Covered Species such as the arroyo toad, control measures would be implemented. Suggested control methods for each of the above invasive vertebrate species are reviewed in the Invasive Species Control Plan (Appendix F4).

Conclusion Regarding Compensatory Mitigation in the RMV Planning Area

Compensatory mitigation for impacts of activities that would be authorized pursuant to the proposed RMV Planning Area procedures has been formulated within the framework of the SAMP Aquatic Resources Conservation Program. Given the extensive geographic and programmatic scale of the ARCP on RMV lands, compensatory mitigation elements can be implemented in ways that maintain and enhance aquatic ecosystem values and functions over the long-term in ways that cannot be undertaken on a project-by-project basis.

8.10 FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE–40 CFR 230.12

Section 230.12 requires findings of compliance with restrictions on discharge on the basis of Subparts C through G of the Section 404(b)(1) Guidelines. The findings involve a determination as to whether disposal sites for the discharge of dredged or fill material must be:

"(1) Specified as complying with the requirements of these Guidelines; or

(2) Specified as complying with the requirements of these Guidelines with the inclusion of appropriate and practicable discharge conditions (see Subpart H) to minimize pollution or adverse effects to the affected aquatic ecosystems; or

(3) Specified as failing to comply with the requirements of these Guidelines."

For the reasons set forth below, the USACE determines that the activities which would be authorized pursuant to the proposed permitting procedures (including the LOP procedures constituting actual discharge and fill authorization) are specified as complying with the requirements of these guidelines with the inclusion of appropriate and practicable discharge conditions to minimize pollution or adverse effects to the affected aquatic ecosystems.

8.10.1 LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE

In subchapter 8.4, the USACE has stated its reasoning, including factual findings, regarding its selection of the RMV Proposed Project (B-12 Alternative) as the "least environmentally

[6] Fisher, R.N. http://www.werc.usgs.gov/pubbriefs/fisherpbapr2005.pdf. Interestingly the clawed frog has apparently become a "novel" prey item for a sensitive snake – two-striped garter snake. Sometimes non-native species exert unexpected effects and even their control can have potentially undesirable consequences on native species.

damaging alternative." The USACE is proposing Alternative B-12 as the agency preferred alternative.

8.10.2 INCLUSION OF APPROPRIATE AND PRACTICABLE DISCHARGE CONDITIONS (SUBPART H)

In subchapter 8.8, the USACE has stated its reasoning, including factual findings, regarding requirements for appropriate and reasonable discharge conditions to minimize pollution or adverse effects to the affected aquatic ecosystems in accordance with Subpart H of these guidelines.

8.11 CONSISTENCY WITH FEDERAL AND STATE LAWS AND REGULATIONS

8.11.1 SECTION 401 OF THE CLEAN WATER ACT

The State Water Resources Control Board (SWRCB) has authority over wetlands through Section 401 of the Clean Water Act, as well as the Porter-Cologne Act, California Code of Regulations Section 3831, and California Wetlands Conservation Policy.

The Clean Water Act requires that an applicant for a Section 404 permit (to discharge dredged or fill material into Waters of the U.S.) first obtain a certificate from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to either grant certification or waver is submitted to the regional board at the same time that an application is filled with the USACE. The SWRCB has 60 days to review the application and act on it. Because no USACE permit is valid under the Clean Water Act unless "certified" by the state, these boards may effectively veto or add conditions to any USACE permit.

With regard to Section 401, the USACE is submitting all relevant documents to and coordinating with the San Diego San Diego RWQCB with respect to the development of the SAMP. Prior to permit authorization for individual projects, Section 401 of the Clean Water Act requires that any applicant requesting a Regional General Permit or LOP under Section 404 provide proof of water quality certifications to the USACE. After the USACE receives proof of a particular project, the USACE would be able to issue a permit decision. For the Regional General Permit, the USACE is applying to the San Diego RWQCB for Section 401 certification of the Regional General Permit.

Consistency Determination

This EIS contains some pre-certification conditions to provide thorough coordination between the USACE, CDFG, and the San Diego RWQCB. Subsequent projects will have to demonstrate compliance with Section 401 in order to qualify for the proposed SAMP permitting program.

The USACE is submitting all relevant documents to and coordinating with the San Diego RWQCB with respect to the development of the SAMP. Prior to permit authorizations for individual projects, Section 401 of the Clean Water Act requires that any applicant requesting a Regional General Permit or LOP under Section 404 provide proof of water quality certification to the USACE. After the USACE receives proof of water quality certification of a particular project, the agency would be able to issue a permit decision. For the Regional General Permit, the USACE is applying to the San Diego RWQCB for Section 401 certification of the Regional General Permit.

Required as a part of the Section 404(b)(1) Guidelines, the General Conditions for the proposed RMV permitting procedures contain provisions for further compliance with Section 401. These include provisions requiring that future activities authorized through the proposed permitting procedures, including future LOP authorizations, not violate any state water quality standards. No Section 404 authorization is valid without a Section 401 Certification, which demonstrates compliance with this section of the Clean Water Act.

Impaired Waters and TMDLs

The total maximum daily load (TMDL) program is required under Clean Water Act Section 303(d). Clean Water Act Section 303(d) addresses these waters by requiring states to identify waters (i.e., the "303[d] list") and develop TMDLs for them. A TMDL is a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect bodies of water. The TMDL approach does not replace existing water pollution control programs. It provides a framework for evaluating pollution control efforts and for coordination between federal, state, and local efforts to meet water quality standards. The water quality analysis in this EIS reviews the one impairment cited for San Juan Creek, pathogens, and discusses measures for addressing future discharges (the final TMDL has not yet been adopted).

8.11.2 ENDANGERED SPECIES ACT

The Federal Endangered Species Act (FESA) of the 1973 (16 USC 1531 et seq.) is administered by the USFWS and by the National Marine Fisheries Service in areas where marine habitat exist. Upon request, the USFWS would provide a 'species list' for a particular area including species that are listed, proposed, or are candidates for listing under FESA. Through the coordinated planning process, the USACE has been informally consulting with the USFWS and has discussed fish passage issues with National Marine Fisheries Service.

Section 7 of the ESA requires federal agencies to use their authorities to conserve threatened and endangered species. It also directs federal agencies to consult with USFWS or National Marine Fisheries Service if any action they authorize, fund, or carry out "may affect" in either a beneficial or adverse manner, any species that is listed or proposed for listing, or any designated or proposed critical habitat. For example, if it is determined that the issuance of a Clean Water Act Section 404 permit by the USACE for a private development project may affect a listed species, the USACE must consult with USFWS on the effects of the issuance of that permit. Species that are proposed for listing by the USFWS may also be addressed during federal interagency coordination. The USACE will initiate formal consultation with the USFWS pursuant to Section 7 of the FESA for the SAMP permitting procedures, including the RMV Planning Area long-term individual permit process.

Section 9 of FESA prohibits "take" (i.e., harassment, harm, pursuit, hunting, shooting, wounding, killing, trapping, capture, or collecting, or the attempt to engage in any such conduct) of threatened and endangered fish and wildlife species. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Section 9 also defines prohibitions related to listed plants.

Under Section 10 of FESA, non-federal entities can apply for a permit excepting them from the "take" prohibition for scientific purposes to aid the species recovery, or for "incidental take."

Consistency Determination

Subchapter 2.1.4 describes the "coordinated planning process" established in Southern Orange County for the purpose of coordinating land use, USACE Section 404, FESA, CESA, and California Fish and Game Code Section 1600 et seq. actions, a major purpose of which is to coordinate conservation planning involving state and federal listed species. Chapter 8.0 contains an extensive analysis of measures directed toward compliance with FESA requirements. The SAMP proposed individual permit conditions provide for a programmatic Section 7 consultation with USFWS in order to ensure compliance with FESA.

CHAPTER 9.0
GROWTH-INDUCING IMPACTS AND CUMULATIVE IMPACTS

9.1 GROWTH-INDUCING IMPACTS

9.1.1 INTRODUCTION

According to Section 1502.16 of the CEQ NEPA Regulations, an EIS is required to include discussions of both direct and indirect effects. Furthermore, Section 1508.8 of these regulations states that "effects" to be addressed include:

> *(a) Direct effects, which are caused by the action and occur at the same time and place.*
>
> *(b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and other related effects on air and water and other natural systems, including ecosystems.*

The purpose of the following analysis is to determine if the proposed action/project (i.e., the proposed permitting procedures) would encourage substantial economic or population growth, either directly or indirectly. Generally, growth is induced by lowering or removing barriers to growth, or by creating an amenity or facility that attracts new population or economic activity.

Growth inducement can be defined as the relationship between the proposed project and growth within the surrounding area. This relationship is often difficult to establish with any degree of precision and cannot be measured on a numerical scale because there are many social, economic, and political factors associated with the rate and location of development. This relationship is sometimes looked at as either one of facilitating planned growth or inducing unplanned growth.

A project can remove infrastructure constraints, provide access, or eliminate other constraints on development, and thereby encourage growth that has already been approved and anticipated through the General Plan process. This planned growth would be reflected in land use plans that have been developed and approved with the underlying assumption that an adequate supporting infrastructure ultimately would be constructed. This can be described as accommodating or facilitating growth. A project can also remove infrastructure constraints, provide new access, or otherwise encourage growth that is not assumed in General Plans or growth projections by the affected local jurisdictions. This could include areas that are currently designated for open space, agricultural uses, or other similar non-urban land uses. In such a case, the removal of infrastructure constraints or provision of access can trigger consideration of a change in land use designation to allow development at a higher level of intensity than originally anticipated.

Growth-inducing impacts may also be categorized as being either direct or indirect. Direct growth-inducing impacts occur when a project directly fosters growth. This may occur in a variety of ways, including, but not limited to, the construction of new homes and businesses and the extension of urban services, such as utilities and improved roads, to previously undeveloped areas. Indirect growth is induced by the demand for housing, goods, and services associated with a project.

There are many other factors that can affect the amount, location, and rate of growth in the region. These include the following:

- market demand for housing, employment, and commercial services;
- desirability of climate and living/working environment as reflected by market demand;
- strength of the local employment and commercial economy;
- availability of other roadway improvements (e.g., new and/or expanded arterial or highway capacity);
- availability of other services/infrastructure (e.g., wastewater treatment, water, schools, etc.; and
- land use and growth management policies of the counties and municipal jurisdictions.

9.1.2 SAMP STUDY AREA

As addressed in Chapter 4.1.11, Population, Housing, and Employment, the SAMP Study Area is within southeastern Orange County. It could be reasonably argued that the effects of the development that would be facilitated under the proposed permitting procedures would not extend beyond the SAMP boundaries because they would not apply to any project outside of the boundaries of the SAMP Study Area. Additionally, the proposed permitting procedures would only authorize discharge of dredged or fill material into Waters of the U.S. The proposed permitting procedures would not entail granting any local land use authority or approval. At the same time, approval of the proposed permitting procedures are part of a causal chain of governmental approvals that would enable the proposed permittees to undertake development activities otherwise authorized by local government approvals.

Accordingly, this chapter addresses potential growth-inducing effects at two scales: (a) potential direct and indirect effects of the proposed permitting procedures within the SAMP Study Area; and (b) potential direct and indirect effects of the proposed permitting procedures outside the SAMP Study Area. Within the SAMP Study Area, there are two categories of undeveloped private lands apart from RMV Planning Area that will be addressed in this chapter: (a) approximately 3,666 acres in the Foothill/Trabuco Specific Plan area, and (b) an additional approximately 494 acres in small landholdings. Outside the SAMP Study Area, potential growth-inducing impacts will be analyzed on a topical basis depending on the potential for impacts.

The SAMP Study Area is located predominately within Regional Statistical Area (RSA) 43 and a portion of RSA 40. In addition to looking at these two RSAs, this chapter looks at the potential growth-inducing impacts associated with: (a) specific projects, (b) Subregional Areas (SRA) 42, 43, and 55 in northwest San Diego County; and (c) the Elsinore and Southwest Planning Areas of western Riverside County. San Diego County borders the southern and eastern edges of the SAMP Study Area and Riverside County borders the SAMP Study Area on its eastern edge. This “growth inducement study area” is consistent with the boundaries evaluated as part of the GPA/ZC EIR 589 (Figure 4.1.11-1).

9.1.3 PATTERNS AND TRENDS

To understand the context in which potential growth inducing impacts of the proposed project may occur, it is helpful to review the historic and projected growth patterns of Orange, San Diego, and Riverside counties.

9.1.3.1 Orange County

Orange County has experienced significant growth in population over the past 40 years. Population in the County has increased from 216,200 in 1950 to slightly more than 2,864,000 in 2000. Concurrent with these substantial increases in population, the economic character of Orange County has dramatically changed over the past 50 years. The predominately rural/agricultural and residential economy of the 1950s has changed to a diversified commercial/industrial economy. Aviation/aerospace and other high technology industries, biomedical facilities, retail commercial, light manufacturing, administrative and financial services, and tourism have become major components of the economy.

In 1965, the employment to population ratio was 22 percent in Orange County. By 1980, the ratio increased to 40 percent. This ratio has subsequently increased to approximately 54 percent in 1990 and 53 percent in 2000. Not only has the proportion of jobs to residents increased, but it is also based on a dramatically larger population.

Future population is projected from assumptions regarding three major events: births, deaths, and migration. Historically, the growth in Orange County was predominately due to migration; however, now births contribute more residents. This trend is expected to continue. Migration patterns are changing as the level of migration declines. Previously, new residents came from other parts of California and the United States, while current trends indicate that the new residents are more likely to come from Asia or Latin America.

The Southern California Association of Governments (SCAG) has divided the County of Orange into ten RSAs for which data sets with population, housing, and employment projections have been developed. The SAMP Study Area is predominately within RSA 43, with a portion of it being within RSA 40. This area has large amounts of available land and many natural amenities. South Orange County has experienced, and will continue to experience, large increases in population, housing, and employment. According to OCP-2004, the population within the SAMP Study Area RSA 43 is projected to increase from 249,247 in 2000 to 372,086 in 2030, an increase of 49 percent. In RSA 40, the population is expected to increase 21 percent, from 290,163 to 351,254. For this same period, the Orange County is projected to experience a population increase of 24 percent. For housing in RSA 43, there would be a projected increase from 86,804 in 2000 to 121,902 in 2030, a 28 percent increase. There would be a nearly 10 percent increase within RSA 40 for this same period (from 124,573 to 136,662 units). In comparison, the County is projected to experience a 15 percent increase in this 30-year period. Lastly, employment in RSA 43 is projected to increase 91 percent from the 2000 count of 69,356 to 132,750 in 2030. The number of jobs in RSA 40 would increase 27 percent (122,211 to 155,691), similar to the county as a whole, which would also experience an approximately 27 percent increase.

9.1.3.2 San Diego County

San Diego County has experienced many of the same trends as Orange County. North San Diego County in particular has experienced substantial growth in population and change in economic character. Population in San Diego County has increased from 1,033,000 in 1960 to

2,813,833 in 2000. Northern San Diego County economic growth has experienced trends similar to Orange County's economy. The predominantly rural/agricultural and residential economy of the 1950s has changed to a well-diversified commercial/industrial economy. In 1970, the employment-to-population ratio was 32 percent in San Diego. By 1980 and 1990, the ratio increased to 41 and 48 percent, respectively. In 2000, the employment to population ratio increased to 49 percent.

For northern San Diego County, the SRAs nearest the SAMP Study Area are 43–Pendleton, 55–Fallbrook, and 42–Oceanside. SRA 43 is located in northwestern San Diego County and encompasses MCB Camp Pendleton. MCB Camp Pendleton covers over 250,000 acres and includes 17.5 miles of shoreline. It is the largest undeveloped portion of coastal area left in southern California. SRA 55 is located east of and inland from SRA 43 in northwestern San Diego County. SRA 55 covers the San Diego County portion of the 460,000-acre Cleveland National Forest, as well as the unincorporated areas of Fallbrook, Rainbow, and Bonsall. (The remaining areas of the Cleveland National Forest are located in Orange and Riverside counties.) SRA 42 is located south of SRA 43 on the western border of San Diego County and includes the City of Oceanside. Also included in SRA 42 are several pockets of unincorporated San Diego County.

The *SANDAG 2030 Cities/County Forecast* (SANDAG, 2002) provides population, housing, and employment projections through 2030. The projection forecast indicates that the population within SRA 55 is projected to increase from 43,952 in 2000, to 63,270 in 2030, an increase of 44 percent. SRA 42 is expected to increase from 151,545 to 205,857 during the same period, an increase of 36 percent. The SANDAG projections for SRA 43 (MCB Camp Pendleton) only shows a 2 percent increase (36,146 in 2000 to 37,030 in 2030); this minor change can be attributed to the relatively stable population of MCB Camp Pendleton. Countywide, the population is projected to increase from 2,813,833 in 2000 to 3,889,604 in 2030, an increase of 38 percent. SRAs 53 and 42 are anticipated to have similar increases in population to the county as a whole.

SRAs 43 and 55 have a large amount of vacant land. Because MCB Camp Pendleton encompasses all of SRA 43, development opportunities are exceptionally limited. SANDAG only anticipates the addition of 15 housing units between 2000 and 2030, and only two jobs during that same period. However, based on discussions with MCB Camp Pendleton (pers. comm. L Rannals, June 14, 2005), there is an anticipated increase between 500 and 700 housing units for married Marines being constructed through Private/Public Venture Housing by 2008. The amount of housing beyond 2008 is difficult to determine because the funding is done through Congressional appropriations. Though there may be additional housing built on the base, this would serve Marine Corps needs and would not facilitate growth beyond the base. The portion of SRA 55 nearest the SAMP Study Area site contains the Cleveland National Forest where development is also restricted. Despite the restriction in development within areas of the Cleveland National Forest, SRA 55 is projected to have a 40 percent increase in housing between 2000 and 2030, from 15,748 to 22,068. Additionally, a 68 percent increase in employment is projected for this area for the same period, with an increase from 11,774 to 19,748. However, because the Cleveland National Forest has no major roadways through which San Diego County residents can travel to gain access to Orange County, increases in population, housing, and employment in SRA 55 would have minimal interface with Orange County. However, SRA 42 has relatively easy access through MCB Camp Pendleton via I-5 to southern Orange County and the SAMP Study Area. This area is projected to have more than a 183 percent increase in housing units (55,193 in 2000 to 156,536 in 2030) and an 88 percent increase in employment (36,840 in 2000 to 69,437 in 2030).

Because of the projected increases in population, housing, and employment, SANDAG evaluated policies to slow growth within the region. Their report, entitled *Evaluation of Growth Slowing policies for the San Diego Region* (2001) quoted a study of the California Department of Housing and Community Development, which concluded that California "chronically under produces housing, especially in coastal markets." It further noted that:

> *…low vacancy rates and price increases from 1980 to 2000 indicate a relative shortage of housing supply compared to demand. Also, the ratio of job and population growth to housing unit growth has increased, as relatively fewer housing units are built for each job created. Rapid levels of residential growth in Baja California and Southwestern Riverside County also support the concept of a shortage of housing in the San Diego region.*

Because of historic trends, growth policies, and future projections in population, housing, and employment, and despite developable, vacant land in SRAs 43, 55, and 42, San Diego County is not expected to increase the rate of development within vacant lands beyond what is currently projected by the *SANDAG 2030 Cities/County Forecast*, with the exception of Camp Pendleton.

9.1.3.3 Riverside County

According to SCAG (2001), southern California has been growing eastward and is projected to continue to grow toward fringe areas. Riverside County has been a main recipient of this growth trend. The population in Riverside County increased from 660,000 in 1980 to 1.5 million in 2000 according to the U.S. Census Bureau (2000). By 2025, Riverside County's population is expected to be 2.84 million. With the increase in residential real estate prices in Orange County, Riverside County has become more attractive for many new homebuyers. Many people have moved from Los Angeles and Orange counties to Riverside County for its lower cost of housing. The new residential real estate business has been booming in Riverside County due to the demand for new housing, and the past growth trend is projected to continue. Total employment in Riverside County is projected to increase from 446,000 jobs in 1997 to over 1 million jobs in 2025, a 4.4 percent annual increase. This compares to the five percent annual growth rate that occurred in the Riverside-San Bernardino Standard Metropolitan Statistical Area (SMSA) during the 1972 to 1999 period.

For land use and policy analysis, Riverside County is divided into 19 area plans. Area 19–Southwest Area Plan (SWAP), as its name implies, is located in the southwestern portion of Riverside County. Area 19 encompasses the incorporated cities of Murrieta and Temecula; the unincorporated communities of Glen Oaks Hills and Pauba/Wolf Valley, Pechanga Indian Reservation; and unincorporated areas near the Santa Rosa Plateau Ecological Area, French Valley, and the Cleveland National Forest. Area 19 is bound on the west by the Orange County and the Santa Ana Mountains; by San Diego County, the Santa Margarita Mountains, and the Agua Tibia range to the south; and by the Black Hills to the east. The Elsinore Area Plan is located northwest of Area 19 and includes the cities of Lake Elsinore and Canyon Lake, as well as the unincorporated areas of El Cariso, Alberhill, Sedeco Hills, Wildomar, Gavilan Hills, and Meadowbrook. The Temescal Wash, which drains into Lake Elsinore, is located between the Santa Ana Mountains to the west and the Gavilan Hills to the east. The City of Riverside's Sphere of Influence extends into the Elsinore Area Plan. The Cleveland National Forest forms the western boundary of the area.

The *Riverside County Population and Employment Forecasts*[1] (Hoffman 2000), prepared for the *Riverside County General Plan Update* (County of Riverside 2002), provides population, household[2], and employment projections through the year 2020. The projection forecast indicates that the population within the SWAP will increase from 15,353 in 1994 to 79,656 in 2020, a 418.8 percent increase. The Elsinore Area Plan is projected to increase from 34,455 in 1994 to 72,067 in 2020, a 109.2 percent increase in population. Countywide, the population is projected to increase from 1,545,387 in 2000 to 2,874,277 in 2020, an increase of 86.0 percent.

The SWAP has large amounts of vacant land in both incorporated and unincorporated areas. According to the County of Riverside General Plan Southwest Area Plan (2003), approximately 89 percent of the Southwest planning area is devoted to open space, agricultural, and rural designations. The remaining 11 percent is devoted to a variety of urban uses with much of the development area focused in the cities of Temecula and Murrieta and in French Valley. According to the SWAP, "These Open Space, Agricultural, and Rural General Plan designations reflect the existing and intended long term land use patterns for these areas and help maintain the historic identity and character of the Southwest planning area." The SWAP states that significant watercourses in the valley are maintained in adopted and proposed specific plans through open space designations and a Land Use Plan Watercourse Overlay designation.

The Elsinore Area Plan has land use patterns similar to the SWAP; both areas have large areas of both incorporated and unincorporated land. Of the 126,307 acres within the Elsinore Area Plan, almost 67 percent, or 84,412 acres, of the area is designated by the Riverside County General Plan for open space or rural uses. There are no agricultural uses designated anywhere within the area. Approximately 11 percent, or 13,672 acres, are designated as community development.

9.1.4 EFFECTS OF THE PROPOSED PERMITTING PROCEDURES

The following evaluates the growth-inducing effects of the proposed permitting procedures in the context of the overall SAMP program, as well as the specific development projects (i.e., the RMV Proposed Project [Alternative B-12] and SMWD Proposed Project).

9.1.4.1 Overview of Potential Direct and Indirect Effects Within the SAMP Study Area with Regard to Undeveloped Private Lands

The proposed permitting procedures would not directly result in any development that would attract future growth because they would not provide any land use entitlements or regulatory approvals for future participants. As discussed below, the SAMP would also not result in the provision or extension of any infrastructure that would facilitate additional growth.

With regard to indirectly inducing growth, one issue is whether the SAMP, through its primary purpose (to provide a balance between reasonable economic development and aquatic resource conservation), would induce growth beyond that facilitated by the proposed permitting procedures because it would remove uncertainty associated with development permitting for

[1] The *Riverside County Population and Employment Forecasts* presents three sets of countywide projections, in order to test alternative scenarios for the Riverside County General Plan update. These projects are based in whole or in part on recent SCAG projections, WRCOG, and Coachella Valley Association of Governments (CVAG) projections and employment trend analysis. The projections presented in this section are for Scenario 1, which uses SCAG population and employment projections.

[2] The *Riverside County Population and Employment Forecasts* do not provide projections of the number of housing units; rather projections of the number of households are provided. According to the U.S. Census Bureau, "a household includes all of the people who occupy a housing unit" and a housing unit is "a house, an apartment, a mobile home, a group of rooms, or a single room…occupied as separate living quarters."

wetlands. In evaluating potential indirect growth, it is important to understand that the SAMP was undertaken because the region is under substantial development pressure as demonstrated by the discussion of growth trends.

Based on a GIS analysis and input from County of Orange staff (T. Neely., pers. com), areas where development may occur in the future are portions of the Foothill/Trabuco Specific Plan area (encompasses approximately 3,666 acres) and a further approximately 494 acres of land scattered throughout both unincorporated County jurisdiction and incorporated cities including 160 acres in the City of San Juan Capistrano and 14 acres in Live Oak Plaza (Figure 2-4). Landowners within these areas may identify potential projects in the future. It should be noted that these 494 acres do not represent all potentially available land within the SAMP Study Area, only those areas where development may affect natural resources. The amount and type of development for each of these areas are already governed by an existing program (e.g., the Foothill/Trabuco Specific Plan and the City of San Juan Capistrano General Plan) that would guide future development. This acreage is in addition to the 5,873 acres proposed for development within the RMV Planning Area and areas that would be disturbed for the construction of SMWD infrastructure.

USACE approval of the SAMP provisions addressing future LOP proposed permitting procedures for future applicants would only occur in the future following review for compliance with the USACE Section 404 (b)(1) Guidelines and would not alter the type of development entitlements or process for other entitlements (e.g., site development requirements, tract map approvals, and grading plans) in these areas. As indicated in Chapter 2.0, “Future participants have not identified potential projects and have yet to undergo pre-application review…and have yet to comply with the Section 404(b)(1) Guidelines.” Therefore, because are no commitments are made to future participants (other than through the limited RGP permitting process) and any permitted activities are subject to extensive future discretionary review by the USACE, the approval of the proposed permitting procedures would not constitute a growth-inducing effect.

9.1.4.2 Potential Growth-Inducing Impacts Associated With the Proposed Permitting Procedures Outside the SAMP Study Area

GPA/ZC EIR 589 evaluated the potential growth-inducing impacts associated with proposed development. The following analysis has been taken from GPA/ZC EIR 589.

Housing and economic growth in the study area is directed by the general plans for the County of Orange and adjacent cities. The adjacent cities include Dana Point, Rancho Santa Margarita, San Clemente, Laguna Niguel, Mission Viejo, and San Juan Capistrano. Indirectly, the development in any of the three counties of the growth inducement study area, Orange, San Diego, and Riverside, whether the development is housing, commercial, or industrial development, has the potential to affect the housing or economic growth in other portions of the growth-inducement study area because some residents in these counties commute to jobs in Orange County, while some residents of Orange County commute to jobs in northern San Diego and western Riverside counties. The City of Oceanside in San Diego County and the cities of Temecula, Murrieta, and Lake Elsinore in Riverside County are the jurisdictions that are most likely to be affected by housing or economic growth.

To assess potential growth-inducing impacts of the development proposed to be subject to the proposed permitting procedures, the development status of the growth inducement study area was evaluated. The area was divided into three major categories: (1) existing land uses; (2) planned land uses; and (3) unplanned lands. Existing land uses are those areas that are developed or dedicated as urban open space/recreational, public facilities, or transportation

uses. Planned land uses are undeveloped areas that are designated for urban development in general plans and have a zoning designation for specific urban uses. These areas may also have entitlement through either an approved specific plan or tentative tract map. Unplanned land areas are those lands that are not designated for urban uses or permanent open space, but are designated with land uses that could be considered transitional or holding designations (e.g., agricultural). Overall, the potential for growth-inducing impacts would be the greatest on the unplanned land uses.

Also, in assessing potential growth-inducing impacts of the proposed permitting procedures, the geographic range or extent of any possible growth-inducing impacts was evaluated. In general, the potential for growth-inducing impacts would be the greatest on land within Orange County. In San Diego County, the MCB Camp Pendleton and the Cleveland National Forest are natural boundaries that would discourage growth induced by the proposed permitting procedures. Although I-5 traverses MCB Camp Pendleton and some residents of San Diego County communities work in Orange County (and vice versa), the size of MCB Camp Pendleton is still a major impediment to commuters. Additionally, there are no opportunities to construct additional roadways that would directly connect to development areas in San Diego County, thereby facilitating growth to the south. Similarly, the Cleveland National Forest has no major roadways to San Diego County that a commuter could use and there are no plans, either real or insubstantial, to construct roads through the Cleveland National Forest to San Diego County. With the Metrolink, commuting to northern San Diego County from Orange County, and vice versa, is easier. However, high cost and commute time still prevents many commuters from taking advantage of this option. Lastly, according to SANDAG in its *Evaluation of Growth Slowing Policies for the San Diego Region* (2001), the entire San Diego region has and will continue to face a limited housing supply. The report notes that the region's housing growth did not keep pace with its job and population growth. As a result, San Diego County and its cities would be unlikely to promote or facilitate enough growth, both housing and economic, to serve not only its current and projected population, but also that of Orange County. As a result, development allowed by the proposed permitting procedures is not expected to have growth-inducing impacts in northern San Diego County.

Similarly, while western Riverside County does border Orange County to the northeast of the SAMP Study Area, commuting to southern Orange County from there (or the reverse commute) can be long and difficult due to the mountain range (Santa Ana Mountains), the long distance, amount of vehicular traffic, and lack of major highways. With the exception of Ortega Highway (SR-74), which is near capacity during commute hours and has safety problems, there are no other roads which commuters could use to travel easterly from southern Orange County to western Riverside County. All of these are obstacles to the inducement of housing or economic growth in western Riverside County. Additionally, Riverside County's General Plan Land Use Plan for both Area 19 and the Elsinore Area Plan generally reflects the predominantly rural character of the area by devoting approximately 80 percent of Area 19 and 67 percent of the Elsinore Area Plan to open space, agricultural, and rural designations. Only 18 percent of Area 19 and 11 percent of the Elsinore Area Plan are devoted to urban uses. While Riverside County has more unplanned land areas than either Orange or San Diego counties, current planning documents have placed limits on urban development by protecting the region's rural and agricultural areas. As a result, the proposed permitting procedures are unlikely to directly substantially induce housing or economic growth in western Riverside County.

Within Orange County, a number of factors would influence the location, intensity, and phasing of development. An adequate infrastructure base (i.e., water, sewer, drainage, fire protection, and schools) is necessary for urban development. If any of these services cannot be provided, development would be restricted or substantially slowed. Development allowed by the proposed

permitting procedures would provide a sufficient tie-in to existing utility systems to accommodate the demands of the RMV Proposed Project at full buildout. However, the RMV Proposed Project does not propose the construction of surplus capacity that would encourage urban development beyond what is proposed. While development allowed by the proposed permitting procedures does provide economic growth in an area currently undeveloped, it would not result in substantial growth on surrounding lands. Most of the surrounding areas are either already developed or are within public ownership, such as MCB Camp Pendleton, Caspers Wilderness Park, and the Cleveland National Forest. The surrounding developed areas are not of the age or nature where redevelopment would be likely in response to the RMV Proposed Project. The public ownership would eliminate the potential of future urban development. As a result, the proposed permitting procedures are not expected to induce housing or economic growth within southern Orange County.

In summary, the proposed permitting procedures would not remove obstacles to growth in the surrounding counties or areas within Orange County, induce unplanned growth, encourage economic activities that would result in adverse impacts to the environment, or require the expansion of one or more public services to areas which were not already planned to receive such services. All growth resulting from the RMV Proposed Project would be limited to the growth planned as part of the project.

9.1.4.3 Santa Margarita Water District Proposed Project

Projects identified by SMWD include operation and maintenance of existing facilities and construction and subsequent operation and maintenance of future facilities. An overview of both types of projects (referred to as the SMWD Proposed Project) is presented in Chapter 2.0.

The operation and maintenance of existing facilities would not have growth-inducing impacts. These facilities have been designed to serve existing development. The SAMP would not be factor in the ability of these facilities to accommodate additional development. If additional capacity were available, this would be true with or without the SAMP.

The key SMWD future facilities that may impact Waters of the U.S. in their initial construction, and then ongoing maintenance and operation, are the Gobernadora Multipurpose Basin and two of the proposed storage reservoirs (San Juan Creek East 3 Domestic Seasonal Water Storage Site and San Juan Creek East Non-Domestic Seasonal Water Storage Site). The other two proposed water reservoir sites, Upper Chiquita and Trampas Canyon would not impact Waters of the U.S.

The Gobernadora Multipurpose Basin is intended to respond to erosion and sedimentation along Gobernadora Creek, high storm flows, excessive surface and groundwater originating upstream, and high bacteria counts that currently degrade water quality. The Gobernadora Multipurpose Basin would provide water quality treatment and resource protection from existing development primarily in the community of Coto de Caza. With the exception of small amounts of new development permitted by the existing Coto de Caza Planned Community, the Basin would not allow either directly or indirectly new growth. The Basin project is proposed as a management measure to meet the recommendations contained in the Watershed Planning Principles. This facility would not be growth-inducing.

There are three water storage facilities proposed by SMWD to store domestic water for emergency use, two are to store domestic water for emergency use and one to store recycled water during the winter months when more supply is available and demands are low, then use the water during summer months when the demands are in excess of supply. The need for

these facilities was identified in the July 2003 report by Henry Miedema and Associates, titled *Future Seasonal and Emergency Water Storage Needs.* SMWD has adequate supplies to meet projected (2025) peak demand within SMWD. Therefore, storage is not required to serve existing and projected demand. However, there is concern about the reliability of imported water supply sources should there be temporary outages of the importation system. As a means of background, the Municipal Water District of Orange County prepared a *Phase I South County Water Reliability Study* (WRS) to address both system and supply reliability for south Orange County. The WRS evaluated the effects of a water importation pipeline outage or an outage of the Diemer Treatment Plant. The Miedema Study looked at the water needs for both existing and approved development, with and without the RMV Proposed Project (the study was conducted before the GPA/ZC Final EIR 589 was certified and the project was approved in 2004). The facilities are needed to allow the SMWD to be in a more secure position in case of outages. Although the facilities are required to provide service security for existing and approved development, the sizing would be a factor in determining if it would be considered growth-inducing. The Miedema Study identified a minimum of 1,200 acre-feet additional storage capacity for the domestic water storage requirements and a minimum of 2,800 acre-feet of additional storage for non-domestic water.

The proposed Upper Chiquita facility recommended in the Miedema Study would not meet the demand under the most catastrophic outage scenario addressed in the WRS. The Upper Chiquita site, which is being proposed for domestic water storage, would only provide 860 acre-feet. For domestic water storage, this facility would not induce growth beyond what is currently planned because it would not provide capacity beyond what is needed to serve currently existing and approved growth. This facility would not affect jurisdictional waters.

The San Juan Creek East 3 site is proposed for both domestic and non-domestic water storage facilities. The site is within the boundaries of the RMV Planning Area (Planning Area 4). With respect to the domestic water facility, it would have an estimated storage volume of 1,300 acre-feet. It may be argued that an increment of the facility, especially the San Juan Creek East 3 site which would meet the minimum requirements suggested by the Miedema Study, would be growth facilitating because it would serve already approved growth. It is possible that a site with capacity below the 1,200 acre-feet would be adequate without the future growth assumed for the RMV Proposed Project. However, it should also be noted, that the RMV Proposed Project would only provide 68 percent of the future growth assumed in regional planning documents. Given the limited ability for growth beyond what is provided for in the RMV Proposed Project and the fact that the larger of the two facilities would only meet the minimum requirements for seasonal and emergency storage, the potential for inducing growth beyond approved levels is limited as a result of these facilities.

With respect to non-domestic water storage, the San Juan Creek East 3 site would have an estimated storage volume of 4,600 acre-feet. Only the San Juan Creek East 3 non-domestic seasonal storage facility would meet the minimum storage capacity outlined in the Miedema Study.

The Trampas Canyon Pit Site is proposed as a non-domestic water facility with an estimated storage volume of 2,020 acre-feet. This is less than the 2,800 acre-feet identified as the minimum required level. It is within the RMV Planning Area (Planning Area 5).

As noted above, the San Juan Creek East 3 site would provide 4,600 acre-feet of storage, well beyond the minimum levels. Even with the excess capacity of the San Juan Creek East 3 site, it is unlikely that implementation of this facility would induce growth. Not only is there very limited capacity for induced growth (see discussion in subchapter 9.4.2), but also availability of recycled

non-domestic water is not a deciding factor on the location and amount of growth in an area. Therefore, even the San Juan Creek East 3 site would not be considered growth-inducing.

9.1.5 CONCLUSION

Based on the review of the proposed SAMP permitting procedures and the specific projects identified, the SAMP would not have growth-inducing impacts. Among other things, this conclusion takes into consideration the historical growth rates and trends, the level of future development that has been incorporated into local General Plans and regional growth projects, and natural constraints to development in the region.

9.2 CUMULATIVE IMPACTS

The evaluation of cumulative impacts generally means the consideration of the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (source: 40 CFR 1508.7)

To ensure the evaluation of cumulative impacts is comprehensive, the analysis considers not just specific projects that are currently being evaluated within the SAMP Study Area, but, where appropriate, the analysis considers development levels that are provided for in the adopted General Plans for the local jurisdictions. This approach is appropriate for certain topical areas, such as traffic, air quality, and noise, because it allows a comprehensive analysis consistent with growth projections even though a project design is not known at this time. For other topical areas, such as visual impacts, the potential impacts of future development would not be able to be determined without some level of concept design. Future projects would be required to assess their project-specific impacts, as well as cumulative impacts associated with their individual actions. The range of projects being considered is also broader for the NEPA Public Interest Issues because it is recognized that projects that may not involve the USACE would still contribute to cumulative impacts in non-wetland areas.

The emphasis of the cumulative impact analysis is focused on the contribution of those projects (i.e., RMV Proposed Project and the SMWD Proposed Project) that would actually be authorized by the SAMP for discharge or fill in Waters of the U.S., combined with other known projects or General Plan growth. While the proposed SAMP establishes a regulatory framework for implementing the Clean Water Act it should be remembered that the USACE does not have land use authority within the SAMP Study Area. Although impacts on resources other than wetlands are considered when determining a LEDPA, the regulation of other resources is outside of USACE's jurisdiction.

For the General Plan-level analysis, this evaluation looks at the land use designations outside the RMV Planning Area. While it is recognized that there will be numerous future small-scale projects, the majority of the potential larger-scale future developable acres are located in the City of San Juan Capistrano and the Foothill/Trabuco Specific Plan area. The RMV Proposed Project and the SMWD Proposed Project have been addressed as part of the SAMP. Therefore, these impacts are identified as project impacts and would not represent new cumulative impacts.

Specific projects that have been considered for potential cumulative impacts have been identified through several sources. In September and October 2003, as part of the GPA/ZC for

RMV Proposed Project, sources, such as www.CEQAnet.ca.gov, were used to identify projects that were being evaluated by agencies within south Orange County. This information was then sent to the jurisdictions with a request for confirmation that the list was comprehensive or, if it was found not to be comprehensive, with a request to identify projects that had not been included on the list. The jurisdictions contacted in September and October 2003 are listed in Table 9-1. Follow-up phone calls were made to obtain input. CDFG, the County of San Diego, the County of Riverside, and the cities of Laguna Niguel and Laguna Hills did not identify cumulative projects for consideration. While an extensive list of projects was identified, not all the cumulative projects identified for the GPA/ZC are applicable to the SAMP project because of: (1) their status (e.g., the distance of the project from the SAMP Study Area boundary; (2) the project identified in 2003 is no longer being pursued; (3) the limited scale of the project it would not contribute to cumulative impacts or the limited nature of the project; and (4) it has been completed and would not contribute to cumulative impacts. To update this listing developed as part of the GPA/ZC, key agencies were contacted by phone and www.CEQAnet.ca.gov was again used to identify projects that were being evaluated by agencies within south Orange County. Not all cities within the SAMP Study Area have relevant cumulative projects for the SAMP project For example, as part of the GPA/ZC, the City of Rancho Santa Margarita identified the construction of a City Hall and Community Center at 22112 and 22232 El Paseo. The Initial Study/Negative Declaration for the project did not identify any significant impacts associated with these facilities. Given the limited scale of the project, the lack of impacts, and the status of the project (the project is complete), this project was not carried forward.

TABLE 9-1
AGENCIES CONTACTED IN 2003 REGARDING CUMULATIVE PROJECTS

Federal Agencies		
MCB Camp Pendleton	USACE	USFWS
State Agencies		
CDFG	Caltrans	
County and Regional		
Transportation Corridor Agencies	Orange County Fire Authority	San Diego
Riverside		
Cities		
San Juan Capistrano	San Clemente	Mission Viejo
Rancho Santa Margarita	Laguna Niguel	Laguna Hills
Irvine	Lake Forest	Dana Point
Utilities		
Irvine Ranch Water District	Santa Margarita Water District	
Source: BonTerra Consulting, May 2004		

The following provides a brief summary of the projects that have been identified as potential cumulative projects. The summary of the projects identifies impacts that are known or are anticipated to occur with implementation of each project listed. This information is based on completed environmental documents or based on discussions with the lead agency. Not all projects would contribute to significant cumulative impacts for each topical area. For example, not all projects would have impacts on agricultural and aggregate resources. The evaluation is done by topical area consistent with those topics addressed in this EIS. Additional topics may have been addressed in the individual project's environmental documentation but are not applicable to this EIS.

9.2.1 GENERAL PLAN-LEVEL

The OCP-2004 projections have been adopted by the County Board of Supervisors, the local jurisdictions, and the regional planning agencies (e.g., SCAG and AQMD) as the official growth projections for the region. These projections are recognized as the uniform data set for use in local planning applications. The long-range socioeconomic projects, which are the basis for the traffic, air quality, and noise analysis, reflect the anticipated long-term development levels for unincorporated Orange County as well as the cities[3]. In addition to this broad based analysis, there are several areas within the SAMP Study Area that have been identified as areas of potential development. For these areas, the local General Plans or Specific Plans have been considered to determine the potential cumulative impacts.

9.2.1.1 Foothill/Trabuco Specific Plan

The Foothill/Trabuco Specific Plan addresses approximately 6,500 acres in an area generally bound by the Silverado/Modjeska Specific Plan area and the Cleveland National Forest to the north, the City of Rancho Santa Margarita to the south, the City of Lake Forest to the west, and the City of Rancho Santa Margarita and the Cleveland National Forest to the east. Three planning districts were formed based on proximity and availability of infrastructure and differing development opportunities and constraints. All or a portion of the three districts are within the SAMP Study Area.

The Foothill/Trabuco Specific Plan provides for a mix of residential, commercial recreation, community commercial, public/quasi-public facilities, and open space. For residential uses, the gross densities within the Foothill/Trabuco Specific Plan range from less than one acre per unit to 20 acres per dwelling unit. Clustering is allowed with minimum lot sizes as small as 4,000 square feet in certain areas. The Specific Plan has a range of goals and objectives that address the preservation of streams, creeks, wildlife movement corridors, and other sensitive biotic resources. A maximum of 2,775 dwelling units are allowed within the Specific Plan area. A majority of the developable land within the Foothill/Trabuco Specific Plan area is within the SAMP Study Area. The Foothill/Trabuco Specific Plan area contains approximately 3,666 acres of undeveloped area within the SAMP Study Area.

The Foothill/Trabuco Specific Plan Program EIR 531 was prepared in 1991 by the County of Orange to address the potential impacts associated with the development within the Foothill/Trabuco Specific Plan area. The evaluation focused areawide impacts and general site development standards. The Program EIR was not intended to evaluate project-specific impacts of development with the Specific Plan boundaries. The following potential impacts were identified in the Final Program EIR as being associated with future development with the Foothill/Trabuco Specific Plan area. Individual projects within the Foothill/Trabuco Specific Plan that may impact Waters of the U.S. would also be subject to NEPA evaluation by the USACE.

- ***Physical Processes and Conditions.*** Unavoidable impacts to water quality were identified as a result of an increase in urban pollutants.

[3] The traffic, air quality, and noise analysis were initiated prior to the adoption of the OCP-2004 data set. The technical studies used the OCP-2000M data set that was adopted at the time the studies were initiated. A sensitivity analysis was conducted to determine if there was substantial difference between the OCP-2000M and the OCP-2004 projections. Within the SAMP Study Area the projects were very similar. The differences reflect minor "clean ups," especially in built-out areas where densities are known. One difference is the horizon year. The OCP 2000M data set had a horizon year of 2025, whereas the OCP-2004 data set extends to 2030.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** Loss of habitat, including riparian habitat, and impact to wildlife were found to be less than significant on a regional and area-wide scale, but significant on a local level.

- ***Land Use.*** Potential impacts associated with loss of rural character and land use compatibility.

- ***Transportation and Circulation.*** With buildout of the improvements assumed as part of the Foothill/Trabuco Specific Plan, the Foothill Circulation Phasing Plan and the Foothill Transportation Corridor (SR-241) long-range circulation impacts were reduced to a level of less than significant. The Foothill/Trabuco Specific Plan Program EIR identified potential significant interim transportation impacts (i.e., impacts prior to implementation of the above-stated improvements).

- ***Air Quality.*** Cumulative air quality impacts were identified as a significant impact.

- ***Noise.*** Development pursuant to the Foothill/Trabuco Specific Plan would result in substantial noise impacts. Implementation of the mitigation measures to reduce the exterior living area to the 60 dBA CNEL level would reduce this impact; however, cumulative noise impacts would result.

- ***Visual Resources.*** On an area-wide basis, visual impacts were found not to be significant with the implementation of the Specific Plan measures. There would be local impacts within the Specific Plan area.

Additionally, there are several specific projects within the Foothill/Trabuco Specific Plan area where separate environmental documentation has been prepared. These projects and the associated impacts are listed below under Specific Projects.

9.2.1.2 San Juan Capistrano General Plan

Within the SAMP Study Area, over 160 acres have been identified as developable in the City of San Juan Capistrano, in addition to smaller infill projects. A review of these areas indicates that development projects, such as Honeyman Ranch and San Juan Meadows, have been identified for a portion of these areas. Both of these projects and the anticipated impacts associated with their development are discussed below. Although the specific impacts associated with development of these areas cannot be determined without a development proposal, the nature of the impacts would likely be traffic, air quality, noise, the change in visual character, and the loss of habitat. Future environmental documentation would be required to assess specific impacts, including potential impacts to jurisdictional wetlands.

9.2.2 SPECIFIC PROJECTS

As previously indicated, the cumulative analysis is evaluating potential relevant cumulative impacts associated with specific projects that have been identified by other agencies with jurisdiction in the SAMP Study Area, as well as applicable projects identified through www.CEQAnet.ca.gov (June 14, 2005).

9.2.2.1 United States Fish and Wildlife Service/California Department of Fish and Game

NCCP/MSAA/HCP. As discussed in Chapter 2.0 of this EIS, the Southern Subregion NCCP/MSAA/HCP is a planning effort that is underway by USFWS and CDFG that addresses the majority of the SAMP Study Area. This program seeks to protect natural resources, while allowing compatible land uses and appropriate development and growth. The alternatives that have been formulated as part of the NCCP/MSAA/HCP are the same as those evaluated in this EIS. The impacts associated with development of the land uses would not represent new cumulative impacts.

9.2.2.2 Caltrans Projects

During the preparation of GPA/ZC Final EIR 589, Caltrans identified 15 potential cumulative projects where the environmental documentation has not been approved. The majority of the projects was ramp improvements and would be expected to have limited environmental impacts. The types of impact associated with projects of this nature are generally construction-related impacts (e.g., short-term air quality and traffic delays), noise, and possible land use impacts if acquisition is necessary. The projects that would have the highest likelihood of contributing to cumulative impacts associated with the SAMP are two projects related to improvements to Ortega Highway (SR-74), improvements to SR-241, SR-73, and SOCTIIP. SOCTIIP, as well as improvements to SR-241 and SR-73 are being processed in conjunction with the Transportation Corridor Agencies.

***Ortega Highway/I-5 Interchange*.** This highway improvement project would modify the Ortega Highway/I-5 interchange ramp configuration (Project number 1 on Figure 9-1). The jurisdiction of the project is shared with the City of San Juan Capistrano. Conceptual studies are in progress; however, there is no City Capital Improvement Project funding and no Caltrans State Transportation Improvement Program funding approved for the improvements. Funding is committed for the design phase. Though the Project Study Report has not been finalized, conceptual alternatives for interchange improvements have been presented at public meetings. Alternatives range from the No Project Alternative, constructing a round-about, or realigning the interchange and Del Obispo Avenue.

At the Project Study Report phase of the project only a Preliminary Environmental Analysis Report, not full NEPA/CEQA documentation, is prepared. The Preliminary Environmental Analysis Report identifies feasible alternatives, anticipated type of impacts associated with a proposed project and order of magnitude of those impacts. It also recommends the type of environmental documentation required for the project. Preliminary assessment of the project indicates a potential impact to riparian habitat and possibly jurisdictional areas was identified because of a small drainage north of the interchange. It is anticipated that the type of document ultimately prepared would be dependent on which alternatives advance to the next level of analysis.

***Ortega Highway Widening*.** This proposed project would widen Ortega Highway to four lanes from Antonio Parkway to the future SR-241 (Project number 2 on Figure 9-1). This is consistent with the OCTA Master Plan of Arterial Highways although it is identified as being a future study. It is not possible to estimate the extent of the impacts without concept design plans for Ortega Highway and a selected alignment for the SR-241. However, given the location of the roadway and the characteristics of the area immediately adjacent to the roadway, it is anticipated that there would be potential impacts to: agricultural lands, including Prime Farmland; biotic resources including sensitive habitat and species; landforms, due to the grading; cultural

resources; land use; and aesthetics. Given the proximity of the roadway to San Juan Creek there is the potential for wetland impacts associated with this project. For wetlands, the Clean Water Act requires impacts be reduced to no net loss regardless of how the permits are processed. The project would be subject to NEPA evaluation by the USACE.

Ortega Highway (Calle Entradero to La Pata) Improvements. This highway improvement, located in the City of San Juan Capistrano and unincorporated Orange County, would widen Ortega Highway to four lanes from Calle Entradero to approximately a quarter mile east of La Pata Avenue. The Project Report is on hold to provide for the development of additional design concepts. No construction money has been programmed. The current schedule projects the environmental document to be approved in late 2006. Anticipated impacts associated with the project would include potential effects on farmland, noise impacts, cultural resources, and land use and construction-related effects, such as short-term noise and air quality impacts and traffic delays during construction. The impacts associated with the segment of roadway within the limits of the RMV Proposed Project were evaluated as part of the GPA/ZC project.

SR-241 SOCTIIP. In May 2004, the Transportation Corridor Agencies, Caltrans, and FHWA released for public review a Draft EIS/SEIR for the South Orange County Transportation Infrastructure Improvement Program (SOCTIIP). The purpose of SOCTIIP is to evaluate regional circulation needs in south Orange County. The potential extension of SR-241 south to I-5 and the Orange/San Diego county border is one component of the SOCTIIP. The extension of SR-241 would traverse the RMV Planning Area. The SOCTIPP EIS/EIR evaluates six corridor alternatives for SR-241, each of which would consist of four mixed-flow lanes initially and six mixed-flow plus two HOV lanes ultimately. SOCTIIP includes one alternative to improve existing and master planned arterial highways, one alternative to widen I-5 from the County border north to the I-405 interchange, and two No Action Alternatives (Figure 2-5). The alternatives being evaluated in the SOCTIIP are described below.

- ***Far East Corridor-West Alternative.*** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to connect with I-5 south near the Orange/San Diego County line in MCB Camp Pendleton. This alternative alignment would cross Ortega Highway approximately 5.2 miles inland of I-5 and would pass through the west side of the Donna O'Neill Land Conservancy. This is the alignment reflected on the County of Orange General Plan and Master Plan of Arterial Highways. At full buildout, this alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Far East Corridor-Modified Alternative.*** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to connect with I-5 at the Orange/San Diego County line in MCB Camp Pendleton. This alternative alignment would cross Ortega Highway approximately 6.1 miles inland of I-5 and would pass through the a portion of the east side of the Donna O'Neill Land Conservancy and the inland portion of the San Onofre State Beach Park. At full buildout, this alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Central Corridor Alignment.*** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to connect to I-5 at Avenida Pico in the City of San Clemente. This alternative alignment would cross Ortega Highway approximately 2.8 miles inland of I-5 and 0.25 miles east of Antonio Parkway. This alignment would run east of San Juan Capistrano city limits, and then enters the City of San Clemente to parallel Avenida Pico before connecting to I-5. Implementation of this alternative would displace existing residences and pass through the Prima Deshecha Landfill. At full

buildout, the Central Corridor Alignment Alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Central Corridor-Avenida La Pata Variation Alternative.*** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to Avenida La Pata in the City of San Clemente; it would not connect to I-5. Vehicles would use Avenida La Pata to reach I-5. This alternative alignment would cross Ortega Highway approximately 2.8 miles inland of I-5. This alternative would pass through the Prima Deshecha Landfill. At buildout, this toll road alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Alignment 7 Corridor-Far East Crossover-Modified Alternative.*** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to connect with I-5 at the Orange/San Diego County line. This alternative alignment would cross Ortega Highway approximately 4.0 miles inland of I-5 and 1 mile east of Antonio Parkway. It would pass through the west side of the Donna O'Neill Land Conservancy and the inland portion of the San Onofre State Beach Park. At buildout, this alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Alignment 7 Corridor-Avenida La Pata Variation Alternative.*** This toll road alternative would extend the existing SR-241 Toll Road south from Oso Parkway to Avenida La Pata in the City of San Clemente; it would not connect to I-5. Vehicles would use Avenida Pico to reach I-5. This alternative alignment would cross Ortega Highway approximately 3.7 miles inland of I-5. It would displace residences and would pass through the east side of the Prima Deshecha Landfill. At buildout, this toll road alternative would provide eight travel lanes: six mixed flow lanes and two high occupancy vehicle lanes.

- ***Arterial Improvements Only Alternative.*** This alternative would involve the widening of Antonio Parkway/Avenida La Pata between Oso Parkway and just south of Camino Las Ramblas to beyond its County Master Plan of Arterial Highways designation. One additional lane would be provided in each direction. Between San Juan Creek and Avenida Pico, six travel lanes would be provided. Between Oso Parkway and San Juan Creek Road, eight travel lanes would be provided. Smart Street/Transportation Systems Management improvements would be constructed in existing rights-of-way (to improve traffic flow) on Avenida Pico, Camino Las Ramblas, Ortega Highway between Antonio Parkway/Avenida La Pata and I-5, and Avenida la Pata between Avenida Pico and south of Camino Las Ramblas.

- ***HOV and Mixed Flow Lanes on I-5 Alternative.*** This alternative would widen I-5 from the I-405/I-5 confluence (El Toro "Y") to the Orange/San Diego County line. This alternative would add one additional high occupancy vehicle lane and one mixed flow lane in each direction between Cristianitos Road and Lake Forest Drive. Auxiliary lanes would be provided in some locations along this segment of I-5. The addition of lanes would require major reconstruction of bridges, interchanges, and other structures and the acquisition of property along I-5.

- ***No Action Alternative–OCP-2000.*** This No Action Alternative assumes the buildout of unincorporated Orange County and cities within the County consistent with their respective General Plans. It uses the demographic forecasts set forth in Orange County Projections-2000 (OCP-2000) which assumes 21,000 dwelling units on the RMV

Planning Area. All components of the County Master Plan of Arterial Highways would be implemented with the exception of the southerly extension of the SR-241 Toll Road from its existing terminus at Oso Parkway. The No Action Alternative also assumes the implementation of 2001 Regional Transportation Plan improvements for south Orange County.

- ***No Action Alternative−RVM Development Plan.*** This No Action Alternative is a variation of the No Action Alternative−OCP-2000. This alternative assumes the same background land use and circulation system conditions. The following differences are applicable to this alternative. This alternative uses OCP-2000 projections for the County except for the RMV Planning Area. For the RMV Planning Area, 14,000 dwelling units (instead of 21,000 dwelling units) are assumed, consistent with Rancho Mission Viejo's request to the County and subsequent approval by the County in GPA/ZC EIR 589. Circulation improvements associated with the RMV Planning Area project are also assumed.

The extent and type of impacts associated with SOCTIIIP would vary dependent on the alternative selected. For example, the selection of the I-5 Improvement Alternative would have limited impacts on biotic resources; however, it would result in the displacement of existing uses and have substantial construction-related impacts. The toll road alternatives would have substantial impacts on biotic resources. Alternatives that connect to I-5 in the vicinity of Avenida Pico would also have displacement impacts. The following summarizes potential impacts of the various SOCTIIP alternatives.

- ***Physical Processes and Conditions.*** The SOCTIIP Alternatives, with the exception of the No Build Alternative, would have the potential of having water quality impacts associated with pollutants in runoff from the roadway. However, current regulations require that the water be treated prior to release into downstream waters; therefore, potentially significant short-term adverse impacts to water quality would be mitigated to below a level of significance.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** Each of the build alternatives would result in unavoidable impacts to wildlife and vegetation as well as threatened and endangered species. Biological impacts are more fully addressed in subchapter 9.2.3.1 of this EIS.

- ***Land Use.*** By requiring the temporary use of land to accommodate construction-related activities, conflicting with adopted land use plans, and dividing existing communities, each of the SOCTIIP build alternatives would result in unavoidable adverse impacts with respect to land use.

  Three SOCTIIP alternatives, the Far East Corridor-West Alternative, Far East Corridor-Modified Alternative, and Alignment 7 Corridor-Far East Crossover-Modified Alternative, would result in unavoidable impacts on military operations on MCB Camp Pendleton. These alignments traverse San Onofre State Beach, which is leased from the Department of the Navy. The roadways would sever this acreage from the remainder of the base, which could result in limitations on the future effectiveness of those acres for military training operations.

- ***Agricultural and Aggregate Resources.*** By converting farmland to non-agricultural use and impacting certain lands subject to the Williamson Act, each of the six toll road alternatives would result in significant impacts to farmland, as would the arterial

improvements only alternative. Neither the I-5 Alternative nor either of the two No Build Alternatives would significantly impact farmland.

- ***Air Quality.*** Each of the build alternatives would result in significant hydrocarbon (HC), carbon monoxide (CO), nitrogen oxide (NO_X) and fine particulate matter (PM_{10}) air quality impacts during construction. Similarly, each of the build alternatives would result in significant CO and NO_X impacts during operations. The No Build Alternatives would not result in significant air quality impacts.

- ***Noise.*** Implementation of the mitigation measures identified in the SOCTIIP EIS/SEIR would reduce construction-related impacts for each of the build alternatives except I-5 to a level considered less than significant. The I-5 alternative would include nighttime demolition along I-5 and, therefore, result in significant noise impacts. All the long-term significant adverse noise impacts associated with the SOCTIIP build alternatives could be reduced to below a level of significance with implementation of the mitigation measures discussed in the SOCTIIP EIS/SEIR. However, if mitigation is not implemented at any location, there would be a significant adverse noise impact at that location.

- ***Visual Resources.*** All the SOCTIIP alternatives, except the No Build Alternative, would result in significant aesthetic impacts by altering the visual quality of the area. The I-5 alternative (arterial improvements only) and those SR-241 alternatives that connect with I-5 in the vicinity of Avenida Pico would result in impacts to the existing urban environment by removing buildings and landscaping. The level of impact and nature of the impact would be different than the impacts associated with the construction of SR-241 through undeveloped areas. The toll road alternatives would result in substantial amounts of grading, removal of vegetation, and construction of an urban component in areas that are currently undeveloped. This would change the visual character and setting of the area.

- ***Cultural Resources.*** Each of the build alternatives would have potentially significant adverse impacts on cultural resources. Because of the extensive amount of earthmoving activities that would be required for the construction, all of the build alternatives, including the Arterial Improvements Only Alternative, could result in potentially significant adverse impacts to archeological resources. Similarly disturbance of historic resources is possible with the I-5 and SR-241 alternatives.

- ***Population, Housing, and Employment.*** None of the SOCTIIIP alternatives would result in adverse impacts related to Environmental Justice, however, the Central Corridor Alignment, Alignment 7 Corridor-Avenida La Pata Variation Alternative, and I-5 alternatives would result in unavoidable impacts related to socioeconomics by displacing residential and/or commercial uses and inducing growth.

- ***Recreation.*** Each of the SOCTIIP would result in adverse impacts on one or more existing and/or planned recreation resources which cannot be mitigated to below a level of significance due to the fact that they would result visual, air quality, transportation or noise impacts that could reduce individuals' enjoyment of recreation facilities. In addition, the Far East Corridor-West Alternative, Far East Corridor-Modified Alternative, Central Corridor Alignment, Alignment 7 Corridor-Far East Crossover-Modified Alternative, and I-5 alternatives would result in the acquisition of recreation lands.

***SR-241 Widening*.** This highway improvement would widen the southbound SR-241 between Bake Parkway and Santa Margarita Parkway to provide four general-purpose lanes (Project number 3 on Figure 9-1). About half the length of this project is within the SAMP Study Area. The project is consistent with the ultimate cross-section evaluated as part of the EIR completed in 1990 for SR-241. When the initial phase of SR-241 was constructed, the ultimate right-of-way was graded and mitigation implemented. This phase of develop would also require a Nationwide Section 404 permit and Section 1600 agreement for improvements at stream crossings. Although the permit has not been issued, it is reasonable to assume that the nature of the impacts and mitigation would be the same as for the northbound improvements. The project would also be subject to NEPA evaluation by the USACE. Other impacts associated with this phase of construction would be limited to short-term construction impacts (i.e., construction related air quality and noise impacts and short-term traffic impacts).

***SR-73 (north of I-5)*.** This highway improvement would widen SR-73 north of I-5 to provide a fourth general-purpose lane in the northbound direction (Project number 4 on Figure 9-1). The project would be consistent with the ultimate cross-section evaluated as part of the EIS/EIR for SR-73. Because grading of the ultimate right-of-way was done as part of the initial phase of construction, the impacts associated with the widening would not be expected to be extensive. While the CEQA documentation is complete, permits from the regulatory and resource agencies may be required. While this proposed project has been identified in the Transportation Corridor Agencies Capital Improvement Program, there is no funding specifically identified for project implementation or is there a designated timeframe for its implementation. The project would likely result in short-term construction related traffic, air quality, and noise impacts and minor vegetation removal.

***SR-241 (Oso Parkway to Santa Margarita Parkway)*.** This highway improvement would widen SR-241 between Oso Parkway and Santa Margarita Parkway to provide three general-purpose lanes in each direction to improve the circulation system (Project number 5 on Figure 9-1). The jurisdiction of the project is shared with Caltrans. The proposed project would be consistent with the ultimate cross-section evaluated as part of the EIR for SR-241. When the initial phase of SR-241 was constructed, the ultimate right-of-way was graded and mitigation implemented. Since grading of the ultimate right-of-way was done as part of the initial phase of construction, the impacts associated with the widening would not be expected to be extensive. Although the CEQA documentation is complete, permits from the regulatory and resource agencies may be required, including NEPA evaluation by the USACE. Although this project has been identified in the Transportation Corridor Agencies Capital Improvement Program, there is no funding specifically identified for project implementation or is there a designated timeframe for its implementation. The project would likely result in short-term construction related traffic, air quality, and noise impacts and vegetation removal.

***Avenida Vista Hermosa (Calle Frontera to I-5)*.** The construction of this circulation system improvement project within the City of San Clemente has been completed. This improvement included the construction of a four-lane primary arterial with an interchange at I-5. The jurisdiction of the project was shared with the City of San Clemente (Project number 6 on Figure 9-1). A Finding of No Significant Impact/Mitigated Negative Declaration (FONSI/MND) was completed in August 1991. The following adverse impacts were identified in the environmental document, though all impacts were mitigated to a level of less than significant:

- ***Physical Processes and Conditions.*** The project would alter or affect the existing pond and downstream drainage course. This impact would be reduced to a level considered less than significant through the construction of a low retaining wall constructed near the top of the slope directly above the outlet of an existing eight-foot

concrete arch culvert. The project would result in contaminated runoff from street surfaces. This impact would be reduced to a level considered less than significant via compliance with erosion control measures and the utilization of grease traps at collection points.

- ***Riparian and Wetlands Habitat/Non-Aquatic Biological Resources.*** The project would have the potential of disturbing .01 acres of freshwater marsh habitat during heavy rains and the disturbance of .05 acres of wetland as a result of the alteration of the culvert. These impacts would be mitigated to a level considered less than significant.

- ***Transportation and Circulation.*** The project would result in impact to existing pedestrian and bicycle traffic using the Avenida Vista Hermosa as a result of an increase in traffic in the project vicinity, and create a need for signalization control. These impacts were mitigated by the incorporation of project design features for traffic signals, the restriction of pedestrian access to enhance safe movement, the addition of a fifth lane to provide for adequate length of weaving, and the construction of 15-foot wide right lanes for trucks on north and southbound loop on-ramps.

- ***Air Quality.*** The project would result in short-term construction impacts. Compliance with regulations requiring water for the control of dust, construction vehicles equipped with emission control equipment, as well as project phasing carefully planned to minimize disturbance to existing traffic patterns would reduce this impact to a level considered to be less than significant.

- ***Noise.*** The project would expose adjacent homes to short-term construction noise. This impact would be reduced to a less than significant level via compliance with the Noise Ordinance and the construction of noise barriers along residential areas.

- ***Cultural Resources.*** The project would affect archaeological resources. All impacts would be reduced to a level considered to be less than significant with implementation of Standard Conditions of Approval, compliance with existing regulations, and implementation of mitigation measures.

- ***Population, Housing, and Employment.*** The project would require the acquisition of approximately 0.08 acre of the rear yard of one adjacent residential property. This impact would be reduced to a level considered to be less than significant through compensation at fair market value

9.2.2.3 County of Orange Projects

The following projects in unincorporated Orange County have been identified as potential cumulative project for this analysis.

Ladera Ranch. The Ladera Ranch Planned Community project, evaluated in EIR 555 and currently under construction, is located south of the Las Flores Planned Community, west of Chiquita Ridge, and east of the Crown Valley Parkway Bridge (Project number 7 on Figure 9-1). The project is planned for 8,100 housing units, 25 acres of commercial and industrial uses, 1,600 acres of open space, 59 acres of parks and public facilities, and 11 acres of urban activity center. Currently, almost the entire project is built. All mass grading is complete. The EIR identified the following as significant impacts:

- ***Physical Processes and Conditions.*** Construction activities would increase the amount of erosion on the site thereby increasing sedimentation in Trabuco and San Juan Creeks. Construction equipment would also increase the chance of toxins entering the creeks. While compliance with the requirements of NPDES stormwater permits, the Orange County DAMP, and specific County requirements of the County's stormwater permits would be mandatory, the level of significance would remain potentially significant after mitigation. However, the project would be in full compliance with federal, state, and local water quality programs and an urban runoff management plan was prepared to reduce the impacts to the extent feasible.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** Project development would result in the loss of 2,244.40 acres of annual grassland and 61.44 acres of coastal sage scrub (39.83 acres attributed to the land development area and 21.61 acres as roadway impacts). This would substantially affect several sensitive raptor species, as well as several sensitive bird and reptile species. This change would remain a significant impact that can only be partially mitigated through the permanent preservation protection of an area of approximately 1,600 acres of natural habitat preserved in permanent open space. Impacts associated with the loss of natural habitat would include displacement of wildlife, habitat fragmentation, and the loss of habitats that support sensitive wildlife species.

- ***Land Use.*** Project implementation would result in the conversion of almost 50 percent of undeveloped and low intensity uses to high intensity urban uses. Although mitigation would provide for the preservation of approximately 1,600 acres for open space surrounding the development area, the level of significance after mitigation would remain significant.

- ***Transportation and Circulation.*** It was projected that up to 16 intersections would operate at a deficient level of service in the year 2020, 13 of which would be significant project-related impacts. In the year 2000, it was projected that there would be four project-related deficient intersections. The project applicant would pay a pro-rata share for improvements at intersections that would be deficient without the project and provide improvements to intersections that would experience unacceptable level of service due to project impacts. The level of significance after mitigation would remain significant. Subsequent to certification of the EIR, the project applicant entered into a Development Agreement with the County of Orange to provide funds for regional transportation improvements.

- ***Air Quality.*** Construction impacts for CO, NO_x, PM_{10}, and ROC would exceed SCAQMD thresholds. Regional mobile source emissions would result in significant increases in emissions for CO, NO_x, ROC, and PM_{10}. Implementation of measures in compliance with SCAQMD Rules 402 and 403 would reduce construction emissions and fugitive dust, and the implementation of a transportation demand management plan for the urban activity center would identify project trip reduction strategies thereby reducing employee-related trips by 15 percent. Impacts would continue to remain even after these measures are implemented.

- ***Noise.*** There would be short- and long-term noise impacts associated with project development. Compliance with the County Noise Ordinance and participation on a pro-rata share for a noise mitigation program would reduce the impacts to a level of less than significant.

- ***Visual Resources.*** Project implementation would alter the views of the surrounding areas during construction; however, the uses proposed would be a continuation of surrounding development. No significant impacts were identified.

- ***Cultural Resources.*** The project has the potential to directly affect 18 known cultural resource sites. There is also the potential of four sites to be indirectly affected. Impacts would be reduced to levels considered not significant through implementation of standard conditions of approval.

Antonio Parkway (Oso Parkway to southern boundary of Ladera Ranch). This project, which has been completed, widened Antonio Parkway from Oso Parkway to the southern boundary of Ladera Ranch to six lanes (Project number 8 on Figure 9-1). EIR 555 addressed the construction of Antonio Parkway to its ultimate six lane configuration in conjunction with the development of the Ladera Ranch Planned Community. A four-lane facility from Oso Parkway to Ortega Highway was constructed as part of the initial phase of the project. Grading for the ultimate facility was completed as part of the initial phase of construction. Impacts associated with the roadway are within the impacts identified as part of Ladera Ranch.

Arroyo Trabuco Golf Course. EIR 580, certified in 2002, evaluated environmental impacts of this project. The site is located west of Ladera Ranch (Project number 9 on Figure 9-1). The project site is approximately 230 acres; of this, 55 acres would remain as natural, ungraded land. Construction of this project is complete. The following potential environmental impacts were identified in the EIR:

- ***Physical Processes and Conditions.*** During construction, there would be a potential for soil erosion and water quality impacts. Project design features and Orange County Standard Conditions of Approval would reduce these impacts to a level considered less than significant via the implementation of a WQMP and use of BMPs.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The loss of 11.7 acres of coastal sage scrub, 36.2 acres of annual grassland, 15.1 acres of Valley needlegrass grassland, and 9.3 acres of disturbed Valley needlegrass grassland would be considered a significant impact. There would be the disturbance of 0.21 acres of freshwater marsh and 0.31 acres of disturbed wetlands, the loss of 12.41 acres of riparian habitats, the disturbance of 0.33 acres of sycamore trees, the temporary disturbance of 6.49 acres of open water, all of which would be considered a significant impact. The dedication of 359 acres of open space including natural habitats and other vegetative cover types in conjunction with the project applicant re-vegetating/restoring 3.0 acres of coastal sage scrub, 18.2 acres of native grassland, and 16.0 acres of wetland and riparian habitat within the limits of the project or in the dedicated open space would reduce these impacts to a less than significant level.

  The project could have a significant impact on the coastal California gnatcatcher and the least Bell's vireo due to direct and indirect impacts to the habitat for these species, coastal sage scrub (gnatcatcher) and southern willow scrub (vireo). The above-mentioned dedication, in addition to a construction monitoring program, project design features, and a 20-year cowbird trapping program would mitigate impacts to less than significant.

  The proposed project would impact 0.095 acres of USACE jurisdictional waters/wetlands and permanent impacts to CDFG jurisdictional total 2.065 acres. The Section 404 and Section 1603 Streambed Alteration Agreement, with conditions, and development of a

Resource Management Plan would reduce the impact to a level considered less than significant.

- ***Land Use.*** There were no significant land use impacts identified. However, in relation to the proposed Arroyo Trabuco Regional Riding and Hiking Trail, the applicant would be required to provide a recreation trail for riding and hiking purposes prior to the recordation of the applicable subdivision map and/or issuance of a building permit.

- ***Transportation and Circulation.*** The intersection capacity utilization increase at the intersection of Marguerite Parkway at Avery Parkway could be one percent or more, representing a significant impact if the proposed golf course banquet facilities were used for weekday, midday events. The installation of a signal at the intersection of Plata Place at Avery Parkway would reduce this impact to a level considered less than significant.

- ***Agricultural and Aggregate Resources.*** There would be a reduction in the availability of sand and gravel mineral resources. This would be considered an unavoidable impact of the proposed project.

- ***Air Quality.*** Construction of the project would result in significant short-term impacts from NO_x and PM_{10} during the peak day and in the peak quarter, and sensitive receptors would be exposed to substantial concentration of PM_{10} during construction. These impacts would remain significant, even with full compliance with SCAQMD regulations, including Rule 402, the Nuisance Rule, and Rule 403, Fugitive Dust.

- ***Noise.*** Surrounding sensitive receptors would be subjected to noise impacts. Compliance with the applicable noise ordinances and design of the public address system would reduce these impacts to less than significant.

- ***Cultural Resources.*** Grading and excavation activities could impact unknown archaeological resources and paleontological resources. The retention of a County-certified archaeologist and paleontologist to observe grading activities and to salvage and catalogue archaeological resources or fossils as well as create follow-up reports would reduce this impact to a level considered less than significant.

Crown Valley Parkway Bridge. The project is the phased construction of Crown Valley Parkway across the Arroyo Trabuco within the City of Mission Viejo and in unincorporated Orange County (Project number 10 on Figure 9-1). This roadway improvement project would widen Crown Valley Parkway to seven lanes. The initiation phase provided a four-lane bridge structure and was completed in 2001. Construction of the second phase, which provides widening to the full seven-lane width, has been completed. The following potential environmental impacts were identified in the EIR associated with construction of the project. Most of the impacts occurred within the first phase of construction because the abutments for the ultimate width were constructed at that time. The widening of the bridge would occur within the footprint of the impact area from the initial construction.

- ***Physical Processes and Conditions.*** The abutment for the bridge structure would be exposed to rainfall and possible erosion until the ultimate project is constructed. Mitigation would reduce these impacts to a level considered less than significant.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The removal of up to 11.8 acres of habitat, which included 2.83 acres of Venturan-Diegan Transition coastal sage scrub, 2.96 acres of annual and ruderal grasslands, 0.98 acres of Southern

Coastal Needlegrass Grassland, and 4.4 acres of riparian communities, would be a significant impact. Construction activities would have adverse impacts on water quality; affect four pairs of coastal California gnatcatcher's and two least Bell's vireo; and remove suitable habitat for nesting and foraging for a variety of raptor species. Mitigation would involve placing a conservation easement over coastal sage scrub occupied by the California gnatcatcher, reseeding the abutment slopes, the replacement of riparian habitat, the development of erosion and sediment control measures, and surveying the project site prior to construction for the presence of active nests. The level of significance after mitigation would be less than significant for all biological impacts.

- ***Land Use.*** The project would impact the slopes of the common property for the Cordova Canyon Homeowners Association and parcels owned by the Mission Viejo Company and Santa Margarita Company. Implementation of project-specific mitigation measures would reduce any impact to a level considered less than significant.

- ***Air Quality.*** The project would result in short term construction-related emissions that exceed SQAMD thresholds. The level of impact would remain significant after mitigation.

- ***Noise.*** The long-range traffic volumes associated with the project would result in noise levels in excess of County standards at the All Bright Preschool on Crown Valley Parkway. Mitigation would include provisions for an 8-foot-high wall near the daycare center to reduce impacts to a level considered less than significant.

- ***Visual Resources.*** The proposed project would alter viewsheds. Mitigation measures for biological resources would help to minimize visual intrusion of the project and reduce any impact to a level considered less than significant.

- ***Cultural Resources.*** The project would result in the possibility of impacts to archaeological and paleontological resources. Adherence to specific mitigation measures would reduce these impacts to a less than significant level.

Saddleback Meadows. This project would cover 222 acres, located east of El Toro Road and north of Upper Oso Reservoir (Project number 11 on Figure 9-1) and develop 283 new homes and 159 acres of open space. The Orange County Board of Supervisors certified the Subsequent EIR 566 in 2002. Development of the project was delayed due to litigation; however, this was resolved in May 2004. A Development Agreement, which would extend the time period for the tentative tract map, was approved on August 2, 2005. Permits from the resource agencies are still required. Based on the Subsequent EIR, the following potential impacts were identified:

- ***Physical Processes and Conditions.*** The project would result in increase impervious surface, resulting in an increase in storm flow runoff. Maintaining natural drainage patterns and revegetation of areas deemed to be over-grazed and subject to high runoff and erosion, as well as construction of structures designed to accommodate a 100-year storm event would reduce the impact to less than significant. Additionally, the implementation of BMPs would reduce pollutants that would be contained in the urban runoff to the maximum extent feasible. Standard County Conditions require a storm water permit to be issued before grading begins and a permit identifying all BMPs used on-site to control predictable pollutant runoff. The State Water Resources Control Board would require a SWPPP and WQMP.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources*.** Impacts would include habitat fragmentation, exotic species invasion, lighting, domestic pet intrusion/predation, and increased human intrusion. Approximately 1.45 acres of streambed would be impacted. Impacts to coastal sage scrub and coast live oak woodland would be mitigated for both on- and off-site, and a wildlife movement corridor would be incorporated into the tract map. Design features; and compliance with Standard County Conditions; CDFG Section 1600, USACE Section 404, and USFWS ESA requirements; and other mitigation measures were identified to reduce impacts to a less than significant level.

- ***Land Use.*** The residential use would be a potentially incompatible use with the Rama Krishna Monastery and St. Michael's Abbey. This impact was mitigated through the dedication of 83.25 acres to the County, which would provide a topographic and natural space buffer between uses.

- ***Transportation and Circulation.*** The project would generate increased traffic near the project site. Project design, signalization, and implementation of Standard County Conditions would result in a less than significant impact.

- ***Air Quality.*** Construction and operation of the project would generate pollutant emissions. Incorporation of a comprehensive dust control program would ensure that impacts would be less than significant. Long-term, project-specific operational impacts would be less than SCAQMD significance thresholds and would not be significant. The project site would be located within a non-attainment air basin and its contribution to cumulative impacts is considered a significant adverse air quality impact.

- ***Noise.*** The project would contribute to short-term noise impacts associated with construction activities. Intervening terrain, compliance with the Orange County Noise Ordinance, and implementation of Standard County Conditions would reduce the impact on noise sensitive uses to a less than significant level.

- ***Visual Resources.*** The project would alter existing landforms and involve substantial grading. However, the project's rural character and preservation of more than 70 percent of the property within natural open space result in a less than significant impact.

- ***Cultural Resources.*** The project would have an impact on potential archaeological resources. Compliance with Standard Conditions of Approval for cultural resources would reduce these impacts to a level considered less than significant.

- ***Recreation.*** The proposed project would result in significant impacts to existing local public recreational facilities. The dedication of a recreation easement to the County and the construction of improvements and a trail rest stop and trail rest area would reduce recreational impacts to below a level of significance.

La Pata Avenue Gap Closure and Del Rio Extension. The roadway project includes the widening of La Pata Avenue from two lanes to four lanes from Ortega Highway to the Prima Deshecha Landfill and the extension of La Pata Avenue through the landfill to the existing terminus of Avenida La Pata at Calle Saluda in the City of San Clemente as a four-lane facility. The project also includes the extension of Del Rio as a four-lane facility from its existing terminus in the Forster Ranch community in the City of San Clemente to the proposed La Pata Avenue. The proposed improvements will be for an approximately four-mile long segment of La Pata Avenue and an approximately one-quarter mile segment of Del Rio (Project number 12 on

Figure 9-1). The project site is within unincorporated Orange County and the cities of San Juan Capistrano and San Clemente.

The EIR is under preparation. In the Notice of Preparation issued by the County of Orange on May 13, 2005, the following adverse impacts are anticipated:

- ***Physical Processes and Conditions*.** Implementation of the project would increase runoff resulting in potential water quality impacts. The project would alter the drainage pattern in the Prima Deshecha Cañada Watershed.

- ***Riparian and Wetland Habitat/Non-Aquatic Biological Resources.*** Portions of the roadway would affect an existing wildlife corridor; as well as the loss of natural habitat including non-native and ruderal grasslands and coastal sage scrub. Potential impacts to sensitive wildlife and plant species will be evaluated. There is the potential for wetland impacts. The project may also be subject to NEPA evaluation by the USACE.

- ***Transportation and Circulation*.** The project would close two critical gaps on the Master Plan of Arterial Highways. Potential impacts to existing roadway and intersection capacities and levels of service due to the redistribution of traffic will be evaluated.

- ***Air Quality*.** Short-term air quality impacts related to temporary construction emissions would occur; however, the project may result in long-term air quality benefits by reducing the long-term operation emissions associated with congestion.

- ***Noise*.** There would be both short-term construction noise impacts and long-term noise impacts associated with increased vehicular traffic.

- ***Visual Resources*.** The project will require a substantial amount of grading resulting in potentially significant topographical modifications and impacts to scenic resources.

- ***Cultural Resources.*** Potential impacts to archaeological and historic paleontological resources could occur.

- ***Recreation.*** Project implementation may impact trail crossings along La Pata Avenue and proposed Class II bikeway on La Pata Avenue.

***Prima Deshecha Landfill*.** The County of Orange Integrated Waste Management Department prepared Final EIR 575 to address the potential impacts associated with the adopted 2001 Prima Deshecha Landfill General Development Plan (Project number 13 on Figure 9-1). The General Development Plan and associated EIR provided a programmatic evaluation for the full buildout of landfill operations through 2064, the end uses of the landfill property in the post-closure period, and construction activities at the site needed for landslide stabilization purposes in Zone 1. The County is currently preparing a second amendment to the General Development Plan and a Supplemental EIR 597 to address potential changes in the area of disturbance at the site associated with additional slope stabilization efforts; project features required for minimization of biological impacts associated with full buildout of Zone 4; development of a conceptual pre-mitigation plan to address all impacts through full buildout, and available project-level information for on-site features such as a desilting basin between Zones 1 and 4. These documents will also address project mitigation features associated with obtaining state and federal resource agency permits and authorizations needed for implementation of the approved 2001 General Development Plan.

The potential impacts associated with the 2001 General Development Plan are as follows:

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The project would result in the removal of coastal sage scrub, riparian resources, and potentially impact special status habitats and special status species. Vegetation removal and habitat disturbance impacts of landfilling uses could affect nesting sites for listed bird species and raptors, as well as dens for coyotes, bobcats, and mountain lions. Consultations and mitigation plans developed with the USFWS and CDFG are intended to reduce impacts considered to be less than significant.

- ***Land Use.*** The project would have the possibility to create impacts due to activities and operations at the site that might conflict with adjacent, existing, or planned land uses. Agency negotiated design modifications and mitigation measures would be incorporated, as needed, to ensure less than significant impact.

- ***Air Quality.*** Fugitive dust from construction, equipment operation, and vehicular traffic would continue on a localized and periodic basis and there may be a minor short-term increase associated with landslide remediation features. Measures to minimize short-term construction would be incorporated into project plans, thereby reducing any impacts to a less than significant level.

- ***Noise.*** There is the possibility of localized increases in noise due to on-site construction of landslide remediation measures. Project design features would reduce any impacts to a level considered to be less than significant.

- ***Visual Resources.*** Landfilling uses would be visible from off-site vantage points and from recreational areas around the landfill. Changes in topography would have the possibility of impacting the view from on- or off-site areas. These impacts would be reduced to a level considered less than significant via Memorandum of Understanding requirements, and viewshed protection measures to reduce the visibility of landfill operations to a minimum from viewpoints in adjacent housing developments.

  Implementation of the conceptual grading plan will result in significant topographic alteration of site. Incorporation of mitigation measures will ensure that site will not have a manufactured appearance and will be compatible with the existing natural terrain.

- ***Cultural Resources.*** The project will result in significant earth movement thereby having the potential to impact resources. Strict adherence to mitigation measures and Project Design Features would reduce any impacts to a less than significant level.

- ***Recreation.*** Impacts to hiking, riding, and biking trails in the area will be reduced below significance through the implementation of mitigation measures to maintain regional access.

The potential impacts associated with the Second Amendment to the 2001 General Development Plan are identified below:

- ***Physical Processes and Conditions.*** The project would have the possibility of depleting groundwater supplies as well as a subsurface source of spring flows for the Prima Deshecha Cañada watercourse. The impacts would be fully analyzed and design alternatives developed to reduce impacts. Landfill operations would necessitate

substantial movement of on-site material. Adherence to specific mitigation measures would reduce this impact to a level considered less than significant.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The second amendment would have the possibility to impact special status/State endangered species at the site (Brodiaea) as well as federally listed species at the site (least Bell's vireo and California gnatcatcher). The proposed action will impact Prima Deshecha Cañada stream and associated resources and, accordingly, will constitute an impact on Waters of the U.S. Consultation with the appropriate federal and state agencies and development of a comprehensive pre-mitigation plan was designed to reduce these impacts to below significance.

***Dana Point Harbor Revitalization Project*.** This project would refurbish and expand existing retail and restaurant buildings and would involve the construction of an additional 25,000 square feet of retail uses, reconfiguration of all existing surface parking areas to provide a total of 1,452 parking spaces, new boater loading and drop-off areas, approximately 800 dry stack boat storage spaces, and improvements to boater service and public restroom buildings (Project number 14 on Figure 9-1). It would also reserve opportunities for the future expansion and/or reconstruction of the Dana Point Marina Inn as well as provide for additional boat-trailer parking and new dry-stack boat storage spaces. An EIR is in progress. Based on the Notice of Preparation distributed in October 2003, the EIR will address the following potential impacts:

- ***Physical Processes and Conditions.*** The EIR would examine increases in pollutant loadings in drainages, storm water runoff, and the impact of the replacement and/or construction of impervious surfaces. Analysis regarding how the project would impact the water quality within Dana Point Harbor and its association with flood hazards would be included.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The EIR would examine on-site habitat areas as well as any impacts to local and regional resource management plans. The project may be subject to NEPA evaluation by the USACE.

- ***Land Use.*** The EIR would examine the compatibility of the project with existing and planned surrounding land uses. Amendments to the existing Dana Point Harbor Planned Community Project as well as to the General Plan, Municipal Zoning Code, and Local Coastal Plan are expected to be required.

- ***Transportation and Circulation.*** The EIR would examine potential transportation, traffic, and parking impacts as well as existing conditions and the analysis of the vehicular and pedestrian circulation.

- ***Air Quality.*** The EIR would examine baseline air quality and assess traffic and construction impacts, as well as operational impacts for consistency with SCAQMD guidelines.

- ***Noise.*** The EIR would examine the baseline noise levels and assess the impact of traffic and operation noise generated by the land uses as well as its compliance with noise regulations. Short-term construction related noise would also be examined.

- ***Visual Resources.*** The EIR would examine the impact of the proposed change in views as well as potential lighting impacts.

- ***Cultural Resources.*** The EIR would examine the project's potential to disturb unknown archaeological resources.

- ***Recreation.*** The EIR would examine the renovation of existing recreational facilities as well as the reconfiguration of parking and park and picnic areas.

Robinson Ridge Development Project. EIR 594 is being prepared and will evaluate the potential impacts associated with the proposed Robinson Ridge project, located east of the Trabuco Canyon Road/Plano Trabuco Road intersection in the Foothill/Trabuco Specific Plan area of unincorporated Orange County (Project number 15 on Figure 9-1). The 89.4-acre project includes a maximum of 206 single-family residential lots, a bluff top park, a neighborhood park, trails, and open space. Based on the Notice of Preparation, the following potential environmental impacts will be addressed in the EIR:

- ***Physical Processes and Conditions.*** The project would result in a net increase in irrigation water required for yards. Portions of the site lie down slope from a retention basin with the Robinson Ranch. While unlikely, failure of the retention basin could release stored water onto the project site. The extreme northwest corner of the bluff face area has the potential to be impacted by flooding in a 100-year flood event as it is located adjacent to Trabuco Creek. These impacts would be mitigated via mitigation measures (which would include the non-development of the northwest corner of the bluff face area) that would reduce potential impacts to less than significant levels.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** Some clearing of natural vegetation within the existing commercial nursery would be required. This would include the possible removal of eucalyptus windrows. Some clearing of vegetation with the wash area would also be required. A Tree Management and Preservation Plan would be prepared as part of the Area Plan. Further, natural communities such as coastal sage scrub and southern coast live oak riparian forest could potentially be impacted by project development. Mitigation measures were set forth in the EIR to reduce potential project-related impacts to less than significant levels. The project may be subject to NEPA evaluation by the USACE.

- ***Land Use.*** The proposed project is consistent with the policies of the Orange County General Plan and the Foothill/Trabuco Specific Plan. However, a technical amendment to the Foothill/Trabuco Specific Plan will be required to make the Specific Plan consistent with the General Plans of the City of Rancho Santa Margarita and the County of Orange. The potential for significant impact exists.

- ***Transportation and Circulation.*** A technical amendment to the Foothill/Trabuco Specific Plan would be required to make it consistent with the General Plans of the City of Rancho Santa Margarita and the County of Orange as there is the potential for significant impact. EIR 594 would include a traffic study and appropriate Project Design Features and mitigation measures that would avoid or reduce potential projects impacts.

- ***Agricultural and Aggregate Resources.*** The proposed project would convert the existing 89.4-acre container stock nursery usage on the project site to residential and public uses. Approximately 60 acres of farmland would be removed. This would be considered a potentially significant impact.

The extreme northwest portion of the site has the potential for mineral resources. This area is not proposed for development and is designated for open space. Less than significant impacts are expected.

- ***Air Quality.*** The project site is located with a non-attainment air basin and there is the potential for significant impact. During grading and construction activities, impacts would be elevated. The project would also affect air quality during the occupancy phase. The EIR would include an Air Quality Technical Report based upon the standards of the SCAQMD and mitigation measures that avoid or reduce potential impacts.

- ***Noise.*** Site grading and construction would result in short-term noise impacts to adjacent residential neighborhoods. There is the potential for significant impact; mitigation is expected to avoid or reduce potential project-related noise impacts.

- ***Visual Resources.*** Conceptual plans for the proposed project indicate the future development would not substantially alter existing gradients on the project site, with the exception of certain areas adjacent to the surrounding existing residences to maintain their existing view opportunities. Mitigation measures would reduce impacts to less than significant levels.

- ***Cultural Resources.*** The area in which the project is located is known to contain archaeological resources. Mitigation measures would reduce potential project-related impacts to below a level of significance.

- ***Population, Housing, and Employment.*** The project proposes a maximum of 203 single-family residential units which is less than the maximum 314 dwelling units allowed by the Foothill/Trabuco Specific Plan. Less than significant impacts are expected.

- ***Recreation.*** The proposed project includes several acres of recreation and open space, which includes a portion of the Plano Trabuco Bluff Top Linear Park, open space, and a landscape buffer. The project would avoid or reduce project impacts on recreation and open space.

***Ortega Rock*.** Ortega Rock is an existing aggregate resource production facility. The County Sand and Gravel Site Permit for this facility covers approximately 126 acres of the 343 acres zoned for sand and gravel extraction. While current production has been deferred pending site maintenance and production studies, the operational lifespan of the quarry is anticipated to extend from 35 to 75 years based on the volume of available material and the estimated rate of extraction (between 400,000 to 1,000,000 tons annually). Ortega Rock is subject to the State Mining and Reclamation Act (SMARA) and the Reclamation Plan for the facility includes a revegetation program that outlines the measures and monitoring strategy to be employed to return the site to a more natural appearance following extraction activities. The ultimate disposition of the site has been predetermined in accordance with the adoption of the Rancho Santa Margarita Planned Community in 1982. The 343 acres that are zoned for sand and gravel extraction would become a part of Caspers Wilderness Park upon depletion of the mined resource, cessation of mining operations, and implementation of the Reclamation Plan per SMARA. An irrevocable offer of dedication was tendered and agreed to for this purpose by the County of Orange Board of Supervisors in 1982.

Subsequent EIR 539 was prepared and certified by the County of Orange to document the potential environmental impacts associated with operation of the extraction facility. The following is a summary of the findings of this EIR:

- ***Physical Processes and Conditions*.** The project has the potential to introduce silt, sediment, and hazardous substances into water courses. Mitigation measures, including submittal of a Stormwater Pollution Prevention Plan, were identified to reduce this impact to a level of insignificance.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources*.** The project would result in the loss of coastal sage scrub and associated wildlife including the cactus wren, less than an acre of jurisdictional wetlands, impacts to the wildlife corridor in Lucas Canyon and loss of a limited number of oak trees (five). Measures were identified to mitigate impacts to biological resources except for impacts to the Lucas Canyon wildlife movement corridor and five cactus wren territories. The later impacts were identified as unavoidable adverse impacts. Any potential impact to Waters of the U.S. would be subject to NEPA evaluation by the USACE.

- ***Land Use*.** An existing slough slope extends within the 50-foot-wide buffer required by the Sand, Gravel and Mineral Extraction Code. Mitigation measures were identified to reduce this impact to a level of insignificance.

- ***Transportation and Circulation*.** The proposed facility operations will generate approximately 1,550 trip-ends and 18,600 vehicle miles traveled. Mitigation measures were identified to reduce this impact to a level of insignificance.

- ***Air Quality*.** The project emissions would exceed the AQMD thresholds of significance for total suspended particles and PM_{10}. Mitigation measures were identified to reduce this impact to a level of insignificance.

- ***Noise*.** No significant noise impacts were identified for the operation of the facility.

- ***Visual Resources*.** Portions of the site would be visible from Ortega Highway and Caspers Regional Park. Implementation of the post-extraction reclamation plan would reduce these identified impacts over the long term, however, in the short- and mid-term these impacts were considered unavoidable.

- ***Cultural Resources*.** No cultural resources were identified for the project site; nevertheless, standard conditions were placed on the project in the event of a discovery during operation of the facility.

- ***Recreation*.** Quarry operation may restrict implementation of the County segment of the Lucas Canyon Trail. A mitigation measure was identified to reduce this impact to a level of insignificance through submittal of a plan for an alternate location for the Lucas Canyon Trail alignment.

9.2.2.4 City of San Juan Capistrano

The following projects have been identified in the City of San Juan Capistrano as potential cumulative projects:

***San Juan Meadows*.** The project would construct 275 single-family detached dwellings and 165 senior housing units, a public use site and 72 acres of open area (Project number 16 on Figure 9-1). EIR 92-02, San Juan Meadows (July 1992) identified a number of significant impacts. As a result of minor changes to the project, a Mitigated Negative Declaration was approved for the project on November 12, 1996. A Development Agreement, which would extend the time period for the tentative tract map, was approved on August 2, 2005. Permits from the resource agencies are still required. The impacts are as follows:

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The project would result in significant impacts to plant communities as a result of grading and development as well as the potential to disturb existing gnatcatcher populations on the project site. The mitigation program set forth in the EIR is intended to reduce all impacts to less than significant level via adherence to mitigation measures requiring the submission of grading and erosion control plans, a coastal sage scrub mitigation plan, a wetland mitigation plan, and a landscape plan. The project would also be subject to NEPA evaluation by the USACE should it affect Waters of the U.S.

- ***Transportation and Circulation.*** The existing-plus-project levels of service at Camino Capistrano/San Juan Creek Road and at Valle Road/La Novia Avenue-I5 northbound ramps would be at unacceptable levels and would not satisfy signal warrants at any unsignalized intersection. Adherence with mitigation requiring the widening of La Novia Avenue, the inclusion of improvement plans for La Novia for adequate sight distance ensuring acceptable design techniques, and the project's contribution of its fair share of the total intersection and roadway improvements would reduce impacts to less than significant levels.

- ***Air Quality.*** The project would result in impacts to air quality as a result of construction equipment operations during grading and development, automobile traffic to and from the site after development and gas flare emissions associated with the landfill closure. Compliance with mitigation measures requiring adherence to traffic control measures and construction-related air quality impacts would reduce these impacts to less than significant levels. However, cumulative regional air quality impacts would remain unavoidable.

- ***Noise.*** The project would result in potentially significant noise impacts to future residents associated with increased traffic level. Compliance with mitigation measures requiring the preparation and submission of an acoustical analysis would reduce this impact to less than significant levels.

- ***Visual Resources.*** The project would result in significant impacts to area viewsheds. These impacts can be reduced to levels considered to be less than significant via compliance with mitigation measures requiring contour grading, the incorporation of horizontal architectural elements for senior housing, a landscaping easement, and colors complimenting the ambience of the proposed project site.

***Honeyman Ranch*.** The Honeyman Ranch, located north of the intersection of Ortega Highway on Rancho Viejo Road, proposed the subdivision of the 78.6-acre property into 129 single-family residential lots and open space (Project number 17 on Figure 9-1). Discretionary actions would include a zone change, hillside management regulations, and approval of a tentative tract map. Impacts are as follows:

- ***Physical Processes and Conditions.*** The project would result in increased runoff volume, changes the hydrology of the site, increase the potential for erosion and siltation, and creation of more impervious surface area than currently exists. These impacts can be reduced to less than significant levels with implementation of mitigation requiring the construction of a stormwater detention basin, compliance with hydraulic analysis recommendations, submission and approval of a WQMP, and the construction of a grassy swale bio-filter. The potential short-term impact of siltation and construction-related pollutants is considered a significant impact.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The project would result in impacts to sensitive plant species, tree resources, nesting birds, and sensitive wildlife. The impacts would be reduced to levels considered to be insignificant as a result of compliance with mitigation requiring spring focus surveys, the surveying of trees to determine if they meet the City's heritage tree criteria, a nesting survey, a trapping program, and the installation of fencing along the common boundary between homes abutting the adjacent open space to control domestic pet predation. Should the project impact Waters of the U.S., it would also be subject to NEPA evaluation by the USACE.

- ***Transportation and Circulation.*** The project would result in impacts to several intersections, including Ortega Highway/I-5 southbound ramps, Ortega Highway/I-5 northbound ramps, Ortega Highway/Del Obispo, and Ortega Highway/Rancho Viejo Road. These impacts would be reduced via compliance with mitigation requiring intersection-specific improvements.

- ***Air Quality.*** The project would result in short-term impacts as a result of PM_{10} generated during grading. This impact would be reduced to a level considered less than significant with mitigation compliance requiring the use of low emissions mobile construction equipment, the encouragement of rideshare and transit programs, the watering of active grading sites at least twice a day, cleaning of the tires leaving the site to reduce particular matter transfer to paved streets, and a limitation of traffic speeds on unpaved roads.

- ***Noise.*** Vehicular noise generated along Rancho Viejo Road would impact proposed residences. This impact can be reduced to a level considered less than significant via mitigation requiring the construction of a noise wall up to eight feet in height within the property line of the project site along the frontage of Rancho Viejo Road.

- ***Cultural Resources.*** There would be unavoidable impacts to the Ardley Leck House, a historical resource. The home would be demolished. A mitigation measure requiring advertisement for a period of 60 days in the Orange County Register and the National Trust for Historic Preservation magazine stating the house is available for relocation would partially reduce this impact. However, if at the end of the advertisement period there is no person willing to relocate the building, it will be demolished. As such, this would continue to be considered an unavoidable impact.

La Novia Bridge. The project proposes to demolish, in phases, the existing two-lane bridge across San Juan Creek and replace it with a four-lane bridge (Project number 18 on Figure 9-1). The three-span bridge would be approximately 260 feet long and 84 feet wide. In addition to the four lanes for vehicular traffic, the bridge would provide equestrian and pedestrian lanes. The City of San Juan Capistrano is in the process of preparing an EIR for the project. Based on the Notice of Preparation, the anticipated impacts associated with the project are:

- ***Physical Processes and Conditions.*** During construction activities the project may require the diversion of flows in San Juan Creek and necessitate the placement of equipment in the streambed. The demolition and construction activities could result in additional pollutants being discharged into San Juan Creek. Long-term, the project would not be expected to affect the flows or water quality within the creek.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The project has the potential to impact aquatic resources and sensitive species that exist or expected to exist within those habitats. Construction activities would have the potential to have short-term impact to wildlife movement within San Juan Creek. The projects would also be subject to NEPA evaluation by the USACE.

- ***Transportation and Circulation.*** The project may result in short-term construction traffic impacts as a result of traffic being redirected during construction. The EIR prepared for the La Novia Bridge will also evaluate the long-term impacts on other arterial highways and intersections.

- ***Air Quality.*** The project may result in short-term impacts associated with demolition and construction activities. The Notice of Preparation identified the potential for long-term operational impacts but indicated that the project would widen the roadway to General Plan standard and would not generate additional trips because no modification to land uses is proposed.

- ***Noise.*** Project construction would result in short-term noise and ground borne vibration impacts. The project may also result in incrementally greater operational noise impacts.

- ***Visual Resources.*** The project crosses San Juan Creek, a sensitive aesthetic resource. The wider bridge would be more visible to surrounding uses and construction activities would result in short-term visual impacts.

- ***Cultural Resources.*** Based on information in the General Plan, the area surrounding the La Novia Bridge is located in an area identified as a location of prehistoric and historic archaeological resources.

***Pacifica San Juan*.** The 256.7-acre Pacifica San Juan site comprises the southern two-thirds of the 391.6-acre Forster Canyon Planned Community, which is located in the southern portion of the City of San Juan Capistrano (Project number 19 on Figure 9-1). The Pacifica San Juan Final Supplemental EIR (September 2, 2003) identifies the impacts of the proposed revisions to the Pacifica San Juan portion of the Forster Canyon Comprehensive Development Plan. The revised land plan and grading concept was developed to address several changes in circumstances since the original project approval. In addition to the grading related changes, an increase of 68 dwelling units, for a total of 418 units is requested. The Supplemental EIR identified the following impacts:

- ***Transportation and Circulation.*** The project would increase traffic volume in the area. This impact can be reduced to a level considered less than significant with mitigation requiring the installation of applicable signage, the addition of applicable roadway and turning lanes, and the re-striping of roads as necessary.

- ***Air Quality.*** The project would contribute to emissions of ROG and NO_x, and would continue to exceed the SCAQMD thresholds. While mitigation measures can partially reduce these impacts, they would continue to be unavoidable.

- ***Noise.*** The project would increase noise levels in the area as a result of construction. These impacts can be reduced via compliance with the Noise Ordinance and construction of a temporary noise barrier to shield stationary construction equipment.

JSerra High School (South Campus). This project, located between Junipero Serra Road and I-5 west of Camino Capistrano, would develop an approximately 29.2-acre vacant site to provide recreational amenities to support the North Campus of the private high school, which is located across the street in three converted office buildings (Project number 20 on Figure 9-1). The campuses would be connected with a pedestrian bridge. The high school would serve grades 9 through 12 and would have capacity of 2,200 students. The following impacts were identified in the Draft EIR:

- ***Physical Processes and Conditions.*** The project would result in an increase in impervious surface, potential for siltation and discharge of construction-related pollutants, as well as the possibility of common urban pollutants infiltrating groundwater. These impacts would be reduced to levels considered less than significant with implementation of mitigation measures requiring compliance with a hydrology analysis, the approval of an Erosion Control Plan, Water Quality Management Plan and a SWPPP, as well as a post-construction stormwater management plan.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The project would remove portions of southern arroyo willow riparian forest and a "blue line stream," introduce invasive plant species, and remove nesting habitat for raptors and the burrowing owl. These impacts would be reduced to levels considered to be less than significant with mitigation requiring the creation of a wetlands mitigation plan, precluding the use of invasive and non-native plant species, and requiring a raptor nest survey and a burrowing owl survey. The project may also be subject to NEPA evaluation by the USACE.

- ***Transportation and Circulation.*** Five intersections would be impacted by the project. Implementation of the recommended mitigation measures would result in less than significant impacts to all impacted intersections. However, mitigation for addition of a second northbound left-turn lane to reduce impacts at northbound I-5 and Junipero Serra Road would require Caltrans approval. Since the approval and timing are uncertain, this impact would remain unavoidable.

- ***Air Quality.*** The project would result in short-term construction-related emissions of criteria pollutants NO_2 and ROG in excess of SCAQMD thresholds. These impacts would be reduced to a level considered less than significant with mitigation.

- ***Noise.*** The project would have potential impacts on nearby residences. This impact would be considered less than significant after mitigation requiring the redesign of the site plan incorporating a minimum six-foot-high masonry wall near the Casitas Capistrano townhomes.

- ***Visual Resources.*** The apparent building height, scale, and massing of the proposed performing arts complex and gymnasium may constitute visually obstructive structures. Athletic field lighting poles would break General Plan-designated ridgelines from various viewing points on and off the project site, be visually offensive structures within view of two General Plan designated Scenic Highways and also result in a substantial increase in the ambient lighting level in the community. These impacts would be partially mitigated via the revision of the project landscape plan, submission of a revised lighting

and photometric plan and conformance with City and Industrial and Systems Engineering standards. However, each of these impacts would be unavoidable.

- ***Cultural Resources.*** An archaeological site is located in the northwestern portion of the project site. The project has the potential to impact this cultural site from future maintenance of school facilities.

Whispering Hills. The project proposes a General Plan amendment, zone change, development agreement, vesting tentative tract map, and Comprehensive Development Plan for the construction of 155 single-family dwelling units on the eastern edge of the City by La Pata Avenue (Project number 21 on Figure 9-1). The City of San Juan Capistrano certified an EIR for a larger project in 2002. An addendum to a prior EIR has been prepared addressing the current proposal. The following areas of impact were identified:

- ***Physical Processes and Conditions.*** Water resource impacts would be associated with increased runoff. Compliance with the DAMP and conditions of approval would reduce impacts.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** Biological resources associated with habitat removal. However, resource and regulatory permits have been approved which incorporate mitigation that reduces the impact to less than significant.

- ***Air Quality.*** Air quality impact from construction activities were identified as significant.

- ***Visual Resources.*** Aesthetic impacts associated with grading.

9.2.2.5 City of San Clemente

The following projects have been identified in the City of San Clemente as potential cumulative projects:

Talega Valley Specific Plan. The Talega Specific Plan Area is 3,510 acres straddling the jurisdictional boundaries of the City of San Clemente and the Talega Joint Planning Authority for the County of Orange. The project provides for approximately 3,800 dwelling units; 112.3 acres for business uses, including business park, commercial, sports complex, hotel, and institutional uses; 1,978.8 acres for open space, including conservancy lands; 271.9 acres for a golf course and parklands; and 152.9 acres for miscellaneous uses (e.g., an elementary school and roads) (Project number 22 on Figure 9-1). Potential impacts from this project were evaluated in a Final Supplemental EIR, which determined that the following impacts would occur:

- ***Physical Processes and Conditions.*** The proposed project would increase the amount of surface runoff, and would increase levels of urban pollutants carried in surface water. As a result, the developer would construct drainage improvements necessary to accommodate post-development runoff within the site boundaries. Additionally, BMPs would be implemented. Mitigation would reduce impacts to less than significant levels.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The proposed project would alter drainages and affect wetland habitat, result in habitat fragmentation, and remove native vegetation that supports sensitive species. Erosion and sedimentation would increase. Mitigation measures include adherence to CDFG and USACE permit requirements, retention and creation of natural open space areas, a

network of contiguous corridors, and pre-construction raptor surveys. In addition, landscape plans would exclude invasive species and would include setbacks, dense edge screening/buffers, and guidelines for preserving stands of oak woodland resources. An erosion and sedimentation control plan, revegetation, and implementation of BMPs and NPDES requirements would reduce erosion and sedimentation. The mitigation program set forth in the EIR is intended to mitigate impacts to a less than significant level. The project may also be subject to NEPA evaluation by the USACE.

- ***Land Use.*** The proposed development would potentially affect open space areas, including the Mission Rancho Viejo Land Conservancy; could disrupt the planned foothill transportation corridor; and would potentially conflict with the city's open space requirements, regional Master Plan of Arterial Highways, existing development in Rancho San Clemente, and Forster Specific Plan. In addition, the proposed structures could potentially intrude into the line-of-sight of surrounding ridgelines. Mitigation measures would reduce impacts to less than significant levels.

- ***Traffic and Circulation.*** The proposed project would contribute to congestion on roadway segments and at intersections. Implementation of various roadway improvements would reduce impacts to less than significant levels.

- ***Air Quality.*** The project would contribute to long-term air quality impacts resulting from an increase in vehicular trips, as well as short-term impacts from dust associated with construction. The project would develop bikeway, walkway, carpool, and bus facilities, and suppress dust during construction. After mitigation, impacts would be less than significant.

- ***Noise.*** Future noise sensitive uses would be exposed to unacceptable traffic noise levels, and construction noise could impact adjacent noise sensitive uses. Residential lots and dwellings would be attenuated against existing and projected noise, and compliance with the City's Noise Ordinance would reduce impacts to less than significant levels.

- ***Visual Resources.*** The project would alter the rural, natural character of the site to an urban and suburban manmade landscape, and grading associated with the project would result in substantial landform alteration. A landscape plan would be developed that conforms to the City's Conservation/Open Space Element, Scenic Highways Element, and Parks and Recreation Element. Additionally, development would conform to guidelines in the Specific Plan amendment related to ridgeline silhouettes. After mitigation, impacts would remain unavoidable.

- ***Cultural Resources.*** If the project requires excavation for utilities and/or building foundations, or scarification and compaction for fill, the project could intrude into an archaeological site. Preservation *in situ* and protection from permanent structures and plantings would reduce impacts to levels that would be less than significant.

- ***Recreation.*** The project would create two neighborhood parks which do not meet the City's design criteria. Developer fees would also reduce police and fire service, school, and park impacts. After mitigation, impacts would be less than significant.

Forster Ranch Specific Plan Amendment. Development planning and processing for Forster Ranch has been in progress since 1974. The Final EIR for the Forster Ranch Specific Plan, certified by the City of San Clemente on February 18, 1998, evaluates an amendment to the

Forster Ranch Specific Plan. The principal elements of the amendment include a redistribution and reduction in dwelling units, provision for 192 acres of public institutional uses east of the Primary Ridgeline, the realignment of Avenida La Pata to the east, and the extension of Camino Vera Cruz (Project number 23 on Figure 9-1). The EIR identified the following impacts:

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** The project would impact the local thread-leaved Brodiaea population.

- ***Land Use.*** Alteration of land uses planned east of the ridgeline would result in a significant decrease in diversity of uses and potential inconsistency with City directives for the Town Center Area, and would fail to meet minimum open space requirements for the Specific Plan area. These impacts would be reduced to levels considered to be less than significant with mitigation requiring a finding by the City that land uses would be consistent with overall objectives for the Town Center Area Plan and the project modified to provide additional acres of open space to meet the General Plan open space requirement.

- ***Transportation and Circulation.*** The project would impact traffic circulation. This impact would be reduced to less than significant levels with mitigation requiring an ultimate intersection and access concept plan.

- ***Noise.*** The project would add to noise levels in the project vicinity. This impact would be reduced to less than significant levels via compliance with mitigation requiring a detailed site-specific acoustical analysis be performed prior to grading, the submission of building specifications describing acoustical design features of the structures, the limitation of construction hours, and compliance with California standards for noise attenuation.

- ***Visual Resources.*** There would be visual impacts resulting from grading within the 200-foot-wide setback area of the Primary Ridgeline. This impact would be partially mitigated by recontouring of the graded area within the setback zone and revegetation of the graded area with drought tolerant native species.

- ***Cultural Resources.*** There would be the potential for adverse impacts on archaeological sites. This impact would be reduced to a level considered to be less than significant with adherence to mitigation requiring a certified archaeologist to be present to monitor initial grading.

- ***Population. Housing, and Employment.*** The project does not include affordable housing. This impact would be reduced to less than significant levels through an agreement with the City to meet affordable housing requirements established in the City's Housing Element.

Marblehead Coastal. On August 5, 1998, the San Clemente City Council certified the Marblehead Coastal Final EIR 95-01 (SCH No. 95091037) and was approved by the California Coastal Commission. The development plan included 436 residential units, 60.4 acres of regional serving commercial uses, 1.0 acre of coastal commercial uses, 9.4 acres of pubic open space, 49.5 acres of private open space, and 13.6 acres of circulation facilities (Project number 24 on Figure 9-1). Subsequent to certification of EIR 95-01, the City Council recommended modifications that have resulted in four Addendums to EIR 95-01. Addendum No. 4 to Final EIR 95-01 was approved by the City Council on December 9, 2003.

The EIR determined that no impacts would result in the following impact areas: San Onofre Emergency Evacuation Plan, solid waste facilities, and fire protection/emergency medical services. The following environmental impacts were identified in the EIR:

- ***Physical Processes and Conditions.*** Pollutants could accumulate in detention basins; therefore, periodic removal is necessary. Compliance with the Stormwater Management Plan, basin maintenance plan, and completion of project-level engineering and hydraulic studies would result in impacts that would be less than significant.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** Removal of vegetation and disruption of plant communities and habitats would result in remnant habitat fragments that would be isolated islands of low habitat value. On-site mitigation measures would preserve or restore wetlands, sage scrub, needlegrass grasslands, and Blockman's dudleya habitat. Off-site mitigation measures would restore wetlands and would enable the Southern Subregion NCCP habitat reserve system (through funding contributions) to restore/enhance a portion of the NCCP reserve.

- ***Transportation and Circulation.*** The proposed project would result in a capacity deficiency at Avenida Pico west of I-5 and cumulative level of service impacts at several intersections. Improvements targeted with the City's Regional Circulation Financing and Phasing Program, and contribution to a fair share basis for arterial improvements would reduce impacts to a level that would be less than significant.

- ***Air Quality.*** The proposed project would create project-related source emissions that would exceed SCAQMD thresholds for CO, ROC, and NOx, which cumulatively exacerbate the existing adverse ambient condition within the South Coast Air Basin. Grading for and construction of the proposed project would also result in significant quantities of fugitive dust and other pollutant emissions. Mitigation would be implemented to reduce these impacts. However, short- and long-term emissions would remain unavoidable.

- ***Noise.*** Exterior noise levels at nearby houses could exceed 65 dB CNEL both during and after construction of the proposed project. Standard construction mitigation measures, construction of a six-foot-high subdivision perimeter wall, and inclusion of structural components for some two-story developments would mitigate these impacts to a level that would be less than significant.

- ***Visual Resources.*** Potential park improvements and ball field lighting could result in intrusive ambient light conditions during nighttime periods. Pre-notification of all prospective home buyers would reduce this impact to a level that would be less than significant.

- ***Cultural Resources.*** The potential destruction of archaeological and paleontological resources by grading and/or excavation is considered a significant impact. Standard cultural resource mitigation measures would reduce these site-specific impacts to a level that would be less than significant.

- ***Population, Housing, and Employment.*** The proposed project would not result in significant adverse population and housing impacts.

- ***Recreation.*** The proposed payment of in-lieu park fees and dedication of parkland in excess of the City's Park Acquisition and Development Code would render the increased demand for parks and recreational facilities less than significant.

9.2.2.6 City of Dana Point

The following project has been identified in the City of Dana Point as potential cumulative project:

Dana Point Headlands Development and Conservation Plan. The City of Dana Point released the Final EIR (SCH No. 98051062) for this project in March 1999. The project would develop a maximum of 185 residential units and a 150-room hotel upon 48.6 acres of the Headlands property, and 9 acres of visitor/recreation/commercial land uses (Project number 25 on Figure 9-1). The project would amend the Dana Point General Plan and Local Coastal Plan. The following potential environmental impacts were identified in the Final EIR:

- ***Physical Processes and Conditions.*** The project would alter existing drainage patterns and the amount of impervious soils and affect the quantity and quality of the runoff. However, impacts would not be considered significant due to existing standard conditions of approval, compliance with General Plan policies, and implementation of mitigation measures.

- ***Riparian and Wetland Habitats/Non-Aquatic Biological Resources.*** Project development would impact grading, inter-tidal resources, shoreline construction, the Californian grunion, onshore storm drain construction, sand bottom habitat, reef habitat and sensitive species, recreation activities), visitor use, contribute to beach erosion, and impact salinity, spills, and storm drains. Compliance with General Plan policies, mitigation measures, and BMPs would serve to reduce these impacts to less than significant levels. If the project would impact Waters of the U.S., it would be subject to NEPA evaluation by the USACE.

  The project would impact coastal sage scrub, wildlife, depredation by feral or domestic cats, night lighting, and noise. These impacts would be reduced to levels considered less than significant via the implementation of BMPs, mitigation measures, standard conditions of approval, and compliance with General Plan policies.

- ***Transportation and Circulation.*** The project would have a potentially significant impact on the intersection of Del Obispo Street/Dana Point Harbor Drive and Pacific Coast Highway under existing and summer conditions. The impacts would be reduced to a level considered less than significant with the implementation of mitigation measures, standard conditions of approval, and compliance with General Plan policies.

- ***Air Quality.*** The project would not allow land uses that would generate any changes in climate or atmospheric conditions. Construction operations would result in short-term objectionable odors. Short-term construction impacts would be considered less than significant as a result of compliance with mitigation measures.

- ***Noise.*** The project would create short-term construction noise and long-term operational noise. These impacts would be reduced to a level considered less than significant with mitigation measures and standard conditions of approval.

- ***Visual Resources.*** The project would have adverse effect on scenic vistas and alter the existing visual character of the site and its surroundings. Compliance with standard conditions of approval and General Plan policies would reduce impacts to a level considered less than significant.

- ***Cultural Resources.*** The project would impact fine-grained facies of the San Onofre Breccia, the Monterey Formation, CA-Ora-12, CA-Ora-75, and Native American cultural values. All impacts would be reduced to a level considered to be less than significant with the implementation of standard conditions of approval, compliance with General Plan policies, and mitigation measures.

9.2.2.7 Capistrano Unified School District

The following project by the Capistrano Unified School District has been identified as potential cumulative project:

San Juan Hills High School. The Initial Study and Addendum to Final Revised and Recirculated EIR Whispering Hills Estates for San Juan Hills High School was prepared on September 26, 2002. The Final EIR was certified on December 2, 2002 by the Capistrano Unified School District Board. The Capistrano Unified School District is constructing a sixth high school in the District serving 1,600 students estimated for San Juan Capistrano, as well as the 400 students committed from the second phase of the Ladera project. The high school, which is under construction, is located in the southeastern portion of the City on 72.77 graded acres with a useable area of approximately 43.18 acres (Project number 26 on Figure 9-1). The school is expected to open in August 2006. The impacts associated with this project are as follows:

- ***Physical Processes and Conditions.*** The high school project would modify the existing "blueline" stream in the East Canyon. Mitigation would include the preparation of a detailed stream impact analysis and incorporation of permit requirements, including BMPs, into the final project design.

- ***Riparian and Wetland Habitats/Biological Resources.*** The project would result in impacts to wildlife and habitat removal. The project would remove 5.48 acres of riparian vegetation, of which 2.84 acres are under USACE jurisdiction and 3.81 acres are under CDFG jurisdiction. Construction would also impact approximately 70 acres of coastal sage scrub habitat and less than 2 acres of native grassland. Project design features developed as a result of consultation with USFWS resulted in changes in the project design to further avoid, reduce, and mitigate impacts to sensitive biological habitat areas. No changes have occurred to biological resources from the analysis provided in the Final EIR.

- ***Land Use.*** The project would encroach upon the City's designated setback of 200 feet from major ridgelines. This would not be considered an impact because Capistrano Unified School District is not bound under state law by Ridgeline Protection Ordinance.

- ***Transportation and Circulation.*** The project would cause an increase in traffic. Mitigation requiring the Capistrano Unified School District to enter into a license agreement including indemnification of the County of Orange for the use of La Pata Avenue for school access until such time as it is fully improved to its Master Plan of Arterial Highways designation, the construction of road improvements by the school district, and the assignment of a proctor or security guard near the terminus of Camino

Lacouague and the School to prevent cars from using the Camino Lacouague cul-de-sac as a drop off location, would reduce this impact to less than significant.

- ***Air Quality.*** The project would degrade existing air quality standards and expose sensitive receptors to substantial pollutant concentrations. As stated in the Final EIR, the Capistrano Unified School District would be required to consult with the SCAQMD to ensure schools are not sited in direct proximity to facilities emitting hazardous air emissions. No changes from the Final EIR were identified in the Initial Study and Addendum.

- ***Visual Resources.*** The project would degrade the existing visual character or quality of the site and its surroundings. As noted in the Final EIR, the high school site would include park buffering and landscape improvements to reduce impacts to a less than significant level.

- ***Cultural Resources.*** The project could result in impacts to cultural resources. Mitigation measures were designed in the Final EIR to minimize potential impacts to cultural resources in the event any are discovered during construction.

9.2.2.8 Cleveland National Forest

Cleveland National Forest Land Management Plan. The Pacific Southwest Region of the U.S. Forest Service recently published for public review and comment draft revised *Land Management Plans for the Southern California National Forests (Angeles, Cleveland, Los Padres and San Bernardino)* and an accompanying Draft EIS. According to the U.S. Forest Service; the land management plans for each of the four forests are independent. The draft revised land management plans are based on the preferred alternative identified for each of the Forests. Because a portion of the Cleveland National Forest is located within the SAMP Study Area, the revised draft Land Management Plan is relevant to the cumulative analysis. The purpose of the revised land management plans for all four of the southern California National Forests is to:

1. guide all natural resource management activities on the forests,

2. address changed conditions and direction that have occurred since the original plans were adopted, and

3. meet the objectives of federal law, regulation, and policy.

The Preferred Alternative for addressing these purposes in the Cleveland National Forest is Alternative 2. According to the Draft EIS, Alternative 2 was originally developed as the "Proposed Action" for land management revisions and was available for public comment in 2001. Alternative 2 has been modified from earlier versions to provide additional protection for species-at-risk through species management strategies and land management plans design criteria (standards). The primary theme of the Preferred Alternative for the Cleveland National Forest is maintaining biological diversity and ecological integrity while providing a gradual increase in recreation opportunities. Compared to other alternatives, there is a higher level of investment in:

- Reconstruction of existing degraded facilities and the construction of new facilities to accommodate projected recreation demand in an environmentally sustainable way. More intensive user controls are employed that are designed to minimize conflicts with users

and with sensitive environmental resources. Investment increase in mitigation that allows use levels to continue. The effective use of conservation education occurs and Forest Staff would enlist the support of local communities, partners, and volunteers to promote a stewardship ethic and enhance visitor services.

- Avoiding and minimizing effects to species-at-risk with little focus on restoration of habitats. A conservation strategy is employed that focuses on using an adaptive management approach to meet conservation objectives in species-at-risk habitat.

9.2.3 CUMULATIVE IMPACT ANALYSIS

This section analyzes potential cumulative impacts to the environment that could be associated with implementation of the SAMP in concert with the cumulative projects and General Plan development, including the above-listed probable future projects.

The thresholds of significance used in each of the sections to evaluate project-specific impacts would also be applicable to the cumulative evaluation. For the cumulative evaluation, these thresholds would be used to evaluate whether the cumulative projects considered would create a significant impact on the environment.

It is important to note that a quantification of cumulative impacts is not feasible for some impact topics and would be speculative. As identified above, in some cases no environmental document has been prepared and impacts are unknown. Therefore, much of the cumulative evaluation is a qualitative judgment regarding the combined effects of the above-listed projects.

In some cases, application of the identified project mitigation program may reduce the significance of cumulative impacts as well as the project impacts.

The SAMP processing procedures and programs, in and of themselves, would not contribute to cumulative impacts. Therefore, this section evaluates the impacts associated with the cumulative projects in combination with impacts associated with implementation of the RMV Proposed Project and SMWD Proposed Project (Proposed Projects).

9.2.3.1 Physical Processes and Conditions

Hydrology

In the absence of mitigation measures, future development and increases in impervious surface areas within the watersheds could produce adverse cumulative impacts on the hydrologic processes operating within the SAMP Study Area including increases in runoff volume, velocity, and peak discharge rates, and erosion and sedimentation impacts. However, as discussed in Chapter 6.0, the RMV Proposed Project is fully consistent with the watershed-scale Watershed Planning Principles pertaining to physical processes and conditions. This is due in part to the project's WQMP, which is designed to maintain hydrologic integrity. The WQMP is required pursuant to the Orange County DAMP and the Orange County/SDRWQCB MS4 permit. Thus, surface runoff generated by the RMV Proposed Project would be mitigated so that releases to the downstream creeks would correspond to existing peak flow rates and runoff volumes. Specific mitigation would be accomplished through the use of flow duration and water quality basins for the flow control system. It is assumed/anticipated that other proposed future projects within the regional watersheds would be required to incorporate similar hydrologic facilities/flow control programs in order to mitigate these impacts. With implementation of similar flow control

programs, no substantial adverse cumulative impacts should occur with respect to hydrology within the watersheds.

Water Quality

As noted above, the WQMP for the RMV Proposed Project incorporates programs and processes that would be implemented to collect and treat runoff generated within the RMV Planning Area. The individual treatment regimes include a variety of BMPs, including the use of wetlands and detention ponds which would reduce water quality impacts to a level of less than significant. Nevertheless, the RMV Proposed Project may result in increases in pathogen levels (i.e., bacteria counts) above target limits during large storm events. When combined with the discharges of pathogens from other proposed projects in the watershed, the potential exists for a cumulative increase in pathogen levels that may exceed acceptable thresholds.

Geology

The geological/geotechnical constraints that the RMV Proposed Project would encounter pertain to (a) seismic activity, (b) on-site landslides, (c) compressible and expansive soils, (d) erosion and (e) liquefaction.

While geological/geotechnical impacts may be associated with the foreseeable projects, by the very nature of the impacts (i.e., landslides and expansive and compressible soils) the constraints are site specific. The RMV Proposed Project, as well as the other foreseeable projects, would be required to comply with the applicable state and local requirements, including, but not limited to the Uniform Building Code and the Grading Code. As such, project-specific impacts, as well as the impacts associated with other projects, would be reduced to a less than significant level. Seismic impacts are also addressed through compliance with applicable codes and design standards. For these reasons, the contribution to cumulative geotechnical impacts is less than significant.

9.2.3.2 Non-Aquatic Biological Resources

As discussed in Chapter 6.0, prior to implementation of avoidance, minimization, and mitigation measures, the proposed projects would have potentially significant or significant impacts on various biological resources. With implementation of the mitigation program adopted in conjunction with the proposed projects, only the following would remain as unavoidable impacts on biological resources: Linkage K and G; and Cumulative pathogens.

Most of the cumulative projects identified would contribute to cumulative impacts at some level because they would result in the removal of habitat. However, many of the projects that have been identified are either constructed or are near completion. These projects have been required to implement mitigation measures and comply with regulatory permits that have reduced their contribution to cumulative impacts to a level of less than significant. Also, because of their development status, these projects have been considered as part of the baseline for the SAMP, as well as the proposed NCCP/MSAA/HCP. Therefore, the focus of the following analysis is on projects that are currently being considered that would not have been included in the baseline conditions and have not received regulatory permits (i.e., Section 404, Section 7, Section 10(a), and Section 1600 permits). It should be noted that these projects would also be required to obtain applicable permits and implement mitigation measures and conditions of approval that may reduce their contribution to less than significant, including NEPA evaluation by the USACE. This would include the following projects:

SOCTIIP. The EIS/EIR prepared for the SOCTIIP project identified that all of the alternative alignments would result in the removal of natural habitat including, but not limited to, natural grasslands, coastal sage scrub, woodlands, riparian and wetlands, and chaparral. Impacts to sensitive, threatened and endangered plant and wildlife species would also result from implementation of SOCTIIP. According to the Draft SOCTIIP EIS/EIR, Far East Corridor-West Alternative, Far East Corridor-Modified Alternative, and Alignment 7 Corridor-Far East Crossover-Modified Alternative would result in the greatest fragmentation effects of the alternatives examined and would result in cumulative adverse impacts. Tables 9-2 through 9-5 (excerpted from the SOCTIIP DEIS/SEIR) sets forth the impacts by vegetation and species for these alternative alignments.

These three alternatives are the focus of the cumulative impact analysis because they were identified as the likely worst-case scenarios when combined with the Proposed Projects based on their locations relative to existing biological resources. In addition, as noted in the SOCTIIP EIS/EIR, these alternatives "traverse the greatest amount of relatively undisturbed open space" and are likely to have the greatest impact on biological resources.

It should be noted that impacts resulting from implementation of any of the SOCTIIP alternatives may or may not be additive with those of the Proposed Projects. In instances where the impacts of the Proposed Projects and the SOCTIIP overlap (e.g., in Planning Area 3), impacts to species and vegetation are not additive; the same impact would not be counted twice. However, in areas where impacts are different (e.g., different bridge locations for the SOCTIIP crossing and the Cristianitos Road crossing of San Juan Creek), these impacts would be additive.

Ladera Ranch. Development of Ladera Ranch would result in the loss of 2,244.40 acres of annual grassland and 61.44 acres of coastal sage scrub. This loss would substantially affect several sensitive raptor species, as well as several sensitive bird and reptile species. This would remain a significant impact that can only be partially mitigated through the permanent protection and preservation of approximately 1,600 acres of open space including approximately 334 acres of coastal sage scrub, 1,214 acres of grasslands, 7 acres of chaparral, and 28 acres of riparian. The Chiquita Ridge vernal pool also lies within and is preserved by the Ladera Open Space.

Saddleback Meadows. Impacts would include habitat fragmentation, exotic species invasion, lighting, domestic pet intrusion/predation, and increased human intrusion. Impacts to wetlands, coastal sage scrub, and coast live oak woodland would be mitigated for both on- and off-site impacts; a wildlife movement corridor would be incorporated into the tract map. The EIR found that through design features, Standard County Conditions, compliance with CDFG Section 1600, USACE Section 404, USFWS ESA requirements, and other mitigation measures, the impacts would be reduced to a less than significant level. However, any potential impacts to Waters of the U.S. would require NEPA evaluation by the USACE.

TABLE 9-2
PLANT COMMUNITY IMPACTS BY PROJECT ALTERNATIVE (ULTIMATE)[a.]

Community	FEC		CC		A7C		AIO[b.]	I-5[c.]
	FEC-M	FEC-W	CC	CC-ALPV	A7C-ALPV	A7C-FEC-M		
Venturan-Diegan Coastal Sage Scrub (2.3)	443.86	422.72	202.45	188.21	216.69	391.02	74.43	21.35
	(179.63)	(171.07)	(81.93)	(76.17)	(87.69)	(158.25)	(30.12)	(8.64)
Other Scrub (2.1, 2.4, 2.7)	0.83	0.83	3.57	0.00	0.38	0.83	0.00	2.94
	(0.34)	(0.34)	(1.45)	0.00	(0.16)	(0.34)	0.00	(1.19)
Coastal Sage Scrub/ Grassland Ecotone (2.8)	20.30	16.02	38.83	32.46	23.21	8.67	23.45	0.00
	(8.22)	(6.48)	(15.71)	(13.14)	(9.39)	(3.51)	(9.49)	0.00
Chaparral/sage Scrub Ecotone (3.1)	20.40	9.88	8.13	8.13	0.18	9.88	5.13	0.00
	(8.26)	(4.00)	(3.29)	(3.29)	(0.07)	(4.00)	(2.08)	0.00
Chaparral Communities (3.2, 3.3, 3.7, 3.12)	96.72	141.89	48.50	48.50	69.15	158.93	4.86	0.74
	(39.14)	(57.42)	(19.63)	(19.63)	(27.99)	(64.32)	(1.97)	(0.30)
Native Grassland (4.2, 4.3, 4.4)	98.04	34.99	10.18	10.18	6.15	23.55	0.36	0.00
	(39.68)	(14.16)	(4.12)	(4.12)	(2.49)	(9.53)	(0.14)	0.00
Annual Grassland (4.1)	228.48	193.47	525.97	326.14	316.72	172.50	342.27	0.00
	(92.47)	(78.30)	(212.86)	(131.99)	(128.18)	(69.81)	(138.52)	0.00
Ruderal Grassland (4.6)	43.40	33.67	16.29	6.49	2.16	28.03	27.22	49.25
	(17.56)	(13.63)	(6.59)	(2.63)	(0.87)	(11.34)	(11.02)	(19.93)
Vernal Pools, Seeps, and Wet Meadows (5.0)	2.17	1.98	8.71	8.71	4.62	0.09	0.19	0.14
	(0.88)	(0.80)	(3.52)	(3.52)	(1.87)	(0.04)	(0.08)	(0.06)
Marsh Communities (6.0)	5.20	4.61	11.51	9.59	10.00	4.38	0.00	0.44
	(2.10)	(1.87)	(4.66)	(3.88)	(4.05)	(1.77)	0.00	(0.18)
Riparian Herb and Mule Fat Scrub (7.1, 7.3)	2.98	6.50	14.47	13.46	4.69	0.71	5.88	3.50
	(1.21)	(2.63)	(5.86)	(5.45)	(1.90)	(0.29)	(2.38)	(1.42)
Other Riparian Communities (7.2, 7.4, 7.5, 7.6, 7.7, 7.8)	21.87	21.45	23.16	23.16	14.67	33.91	4.91	12.38
	(8.85)	(8.68)	(9.37)	(9.37)	(5.94)	(13.72)	(1.99)	(5.01)
Coast Live Oak Woodland (8.1)	27.31	98.34	24.67	24.67	33.77	118.59	0.50	0.05
	(11.05)	(39.80)	(9.99)	(9.99)	(13.67)	(47.99)	(0.20)	(0.02)
Blue Elderberry Woodland 98.4)	0.37	0.37	0.01	0.01	0.00	0.37	0.72	0.00
	(0.15)	(0.15)	(0.00)	(0.00)	0.00	(0.15)	(0.29)	0.00
Lakes, Reservoirs, and Basins (12.0)	1.69	1.30	0.34	0.34	0.00	0.00	0.00	0.00
	(0.68)	(0.53)	(0.14)	(0.14)	0.00	0.00	0.00	0.00
Water Courses (13.0)	7.07	1.25	19.23	17.73	3.00	1.83	1.51	9.48
	(2.86)	(0.51)	(7.78)	(7.18)	(1.21)	(0.74)	(0.61)	(3.84)
Cliff and Rock Communities (10.3)	5.41	5.54	2.49	2.49	0.00	3.98	0.00	0.00
	(2.19)	(2.24)	(1.01)	(1.01)	0.00	(1.61)	0.00	0.00
Agriculture (14.0)	125.50	150.06	141.44	141.44	257.82	182.84	9.36	2.62
	(50.79)	(60.73)	(57.24)	(57.24)	(104.34)	(74.00)	(3.79)	(1.06)
Developed, Disturbed, Graded (15.0, 16.0)	122.73	115.42	354.20	105.22	116.75	107.47	202.35	1,171.68
	(49.67)	(46.71)	(143.34)	(42.58)	(47.25)	(43.49)	(81.89)	(474.18)
Total	**1,274.33**	**1,260.29**	**1,454.15**	**966.92**	**1,079.96**	**1,247.58**	**703.14**	**1,274.56**
	(515.72)	**(510.04)**	**(588.49)**	**(391.31)**	**(437.06)**	**(504.90)**	**(284.56)**	**(515.82)**

FEC Far East Corridor FEC-M Far East Corridor-Modified CC Central Corridor
FEC-W Far East Corridor-West A7C Alignment 7 Corridor
CC-ALPV Central Corridor-Avenida La Pata Variation
A7C-FEC-M Alignment 7 Corridor-Far East Crossover-Modified
A-10 Arterial Improvements Only I-5 HOV and Mixed Flow Lanes on I-5

a. Data represent amount of plant community that will be impacted by each alternative. Units of measure are acres (hectares).
b. Data are the same for the initial and ultimate corridor for "AIO" and "i-5". Numbers shown in both Tables 9-2 and -4 for comparison.

TABLE 9-3
SENSITIVE PLANT SPECIES IMPACTS BY PROJECT ALTERNATIVE (INITIAL AND ULTIMATE)[a.]

Species[b.]	FEC				CC				A7C				AIO	
	FEC-M (No. of populations)	FEC-M (No. of Plants)	FEC-W (No. of populations)	FEC-W (No. of Plants)	CC (No. of populations)	CC (No. of Plants)	CC-ALPV (No. of populations)	CC-ALPV (No. of Plants)	A7C-ALPV (No. of populations)	A7C-ALPV (No. of Plants)	A7C-FEC-M (No. of populations)	A7C-FEC-M (No. of Plants)	AIO (No. of populations)	AIO (No. of Plants)
Coulter's saltbush	2	*9*	1	*6*	12	*483*	12	*483*	1	*6*	–	–	–	–
(*Atriplex coulteri*)	2	*9*	1	*6*	16	*1223*	16	*1,223*	1	*6*				
Thread-leaved brodiaea	5	*54*	3	*23*	–	–	–	–	2	*76*	3	*23*	–	–
(*Brodiaea filifolia*)	6	*94*	3	*56*					2	*76*	3	*56*		
Catalina mariposa lily	4	*63*	4	*63*	11	*259*	11	*259*	29	*2,501*	2	*14*	–	–
(*Calochortus catalinae*)	4	*79*	4	*79*	11	*266*	11	*266*	29	*2,501*	2	*14*		
Intermediate mariposa lily	8	*272*	6	*192*	4	*732*	4	*732*	9	*553*	9	*587*	–	–
(*Calochortus weedii* var. *intermedius*)	10	*323*	6	*199*	4	*737*	4	*737*	9	*833*	9	*621*		
Southern tarplant	1	*338*	1	*338*	14	*29,887*	14	*29,887*	1	*736*	1	*389*	–	–
(*Centromadia* [*Hemizonia*] *parryi* spp. *australis)*	1	*338*	1	*338*	15	*37,484*	15	*37,484*	1	*750*	1	*415*		
Many-stemmed dudleya	24	*2,724*	19	*1,659*	15	*1,122*	15	*1,122*	28	*6,055*	15	*1,196*	–	–
(*Dudleya multicaulis*)	26	*2967*	19	*1,659*	15	*1,122*	15	*1,122*	28	*,6211*	16	*1,228*		
Beaked spikerush	–	–	–	–	1	*1,500*	1	*1,500*	–	–	–	–	–	–
(*Eleocharis rostellata*)					1	*1,500*	1	*1,500*						
Palmer's grapplinghook	6	*1,820*	3	*102*	–	–	–	–	17	*19,785*	1	*42*	–	–
(*Harpagonella palmeri*)	6	*1,820*	3	*102*	–	–	–	–	17	*19,785*	1	*42*		
California juniper	–	–	–	–	1	*1*	1	*1*	2	*2*	1	*1*	–	–
(*Juniperus californica*)					1	*1*	1	*1*	2	*2*	1	*1*		
Small-flowered microseris	8	*1,702*	–	–	–	–	–	–	–	–	–	–	–	–
(*Microseris douglasii* var. *platycarpha*)	8	*1,828*												
Salt spring checkerbloom	–	–	–	–	–	–	–	–	1	*940*	–	–	–	–
(*Sidalcea neomexicana*)									1	*1195*				
Total	**58**	***6,982***	**37**	***2,383***	**58**	***33,984***	**58**	***33,984***	**90**	***30,654***	**32**	***2,252***	**-**	**-**
	63	***7,458***	**37**	***2,439***	**63**	***42,333***	**63**	***42,333***	**90**	***31,359***	**33**	***2,377***		

a. Impacts for the initial project alignments are located on top of each cell and for the ultimate impacts are located on the bottom of each cell. The numbers of plants in italics represent the amount of each plant species that will be impacted from each alternative.

b. Number of populations and estimate of number of individuals of sensitive species located within the footprint. Numbers should be used for comparing alternatives, because population numbers will change annually due to climatic changes.

FEC	Far East Corridor	FEC-M	Far East Corridor-Modified	CC	Central Corridor
FEC-W	Far East Corridor-West	A7C	Alignment 7 Corridor	CC-ALPV	Central Corridor-Avenida La Pata Variation
A7C-FEC-M	Alignment 7 Corridor-Far East Crossover-Modified	A-10	Arterial Improvements Only	I-5	HOV and Mixed Flow Lanes on I-5

TABLE 9-4
SENSITIVE WILDLIFE IMPACT BY ALTERNATIVE[a.]

Species	Scientific Name	FEC				A7C	
		FEC-M-Init	FECT-M-Ult	FEC-W-Init	FEC-W-Ult	A7C-FEC-M-Init	A7C-FEC-M-Ult
Fish							
Arroyo chub[b.]	*Gila orcutti*	x	x	x	x	x	x
Reptiles/Amphibians							
Coastal rosy boa[c.]	*Lichonura trivirgata rosefusca*	x	x	x	x		
Coastal western whiptail[c.]	*Cnemidophorus tigris multiscutantus*	x	x	x	x	x	x
Coast patch-nosed snake[c.]	*Salvadora hexalepis virgultea*	x	x	x	x		
Coronado Island skink[c.]	*Eumeces skilktonianus interparietalis*	x	x	x	x	x	x
Orange-throated whiptail[c.]	*Cnemidophorus hyperythrus beldingi*	x	x	x	x	x	x
Red diamond rattlesnake[c.]	*Crotalus exsul*	x	x	x	x	x	x
San Bernardino ringneck snake[c.]	*Diadophis punctatus*	x	x	x	x	x	x
San Diego banded gecko[c.]	*Coleonyx variegatus abbotti*	x	x	x	X		
San Diego horned lizard[c.]	*Phrynosoma coronatum blainvillei*	x	x	x	x	x	x
Silvery legless lizard[c.]	*Aniella pulchra*	x	x	x	X		
Southwestern pond turtle[c.]	*Clemmys marmorata pallida*	x	x	1	1		
Two-striped garter snake[c.]	*Thamnophis hammondii*	x	x	1	1	x	x
Western spadefoot toad[c.]	*Scaphiopus hammondii*	x	x	x	x	x	x
Birds[d.]							
Common barn owl[e.]	*Tyto alba*					1	1
Cooper's hawk[e.]	*Accipiter cooperi*	2	1	1	1	1	1
Ferruginous hawk	*Buteo regalis*						
Grasshopper sparrow	*Ammodramus savannarum*	10	10	6	6	10	10
Horned lark	*Eremiphila alpestris*					1	1
Loggerhead shrike	*Lanius ludovicianus*						
Prairie falcon	*Falco mexicanus*	1	1	1	1		
Red-shouldered hawk[e.]	*Buteo lineatus*	1	1	2	2		
Red-tailed hawk[e.]	*Buteo jamaicensis*	3	3	2	2	2	2
Rufous-crowned sparrow	*Aimophila ruficeps*	15	16	11	12	10	12
San Diego cactus wren	*Campylorhynchus brunneicapillus couesi*	8	8	5	5	7	7
Yellow-breasted chat	*Icteria virens*						
Yellow warbler	*Dendroica petechia*						
Mammals							
Pallid bat[c.]	*Antrozous pallidus*						
Pocketed free-tailed bat[c.]	*Nyctinomops femorosaccus*						
Western mastiff bat[c.]	*Eumops perotis*	x	x	x	x		

a. Data represents certain species or amount of species that will be impacted from each alternative.
b. Potential impacts to these fish species (marked with an "x") have been determined likely (but not quantified) if occupied drainages are crossed at any point by a project alternative.
c. These species' presence (marked with an "x") is determined likely (but not quantified) based on the habitats present and data collected from transect/pitfall studies.
d. Impacts to bird species (other that raptors) are represented as the number of observed use areas affected.
e. Refers to the presence of an active nest of the species.

FEC	Far East Corridor	FEC-M	Far East Corridor-Modified	FEC-W	Far East Corridor-West
A7C	Alignment 7 Corridor	7C-FEC-M	Alignment 7 Corridor-Far East Crossover-Modified	A-10	Arterial Improvements Only

TABLE 9-5
SUMMARY OF DIRECT IMPACTS TO THREATENED AND ENDANGERED SPECIES

Species[(2)]	FEC				CC				A7C				AIO	
	FEC-M Initial	FEC-M Ultimate	FEC-W Initial	FEC-W Ultimate	CC Initial	CC Ultimate	CC-ALPV Initial	CC-ALPV Ultimate	A7C-ALPV Initial	A7C-ALPV Ultimate	A7C-FEC-M Initial	A7C-FEC-M Ultimate	AIO Initial	AIO Ultimate
Thread-leaved brodiaea[a.] (*Brodiaea filifolia*)	5 54	6 94	3 23	3 56	–	–	–	–	2 76	2 76	3 23	3 56	–	–
Tidewater goby[b.] (*Eucyclogobius newberryi*)	x	x	X	x	–	–	–	–	–	–	x	x	–	–
Southern steelhead trout[b.] (*Onchorhynchus mykiss*)	x	x	X	x	–	–	–	–	–	–	x	x	–	–
Arroyo toad[c.] (*Bufo californicus)*	1	2	1	2	–	–	–	–	–	–	1	2	–	1
Peregrine falcon[c.] (*Falco peregrinus*)	–	–	–	–	1	1	1	1	–	–	–	–	–	–
Coastal California gnatcatcher[d.] (*Polioptila californica californica*)	13	13	12	12	10	11	7	8	11	13	15	16	6	1
Least Bell's vireo[d.] (*Vireo bellii pusillus*)	–	–	–	–	1	1	1	1	1	1	–	–	2	–

a. Number of populations (top) and number of individuals (bottom), respectively.
b. Potential impacts to these fish species (mark with an "x" have been determined likely (but not qualified) if occupied drainages are crossed at any point by a project alternative.
c. Impacts are represented as the number of individuals affected.
d. Impacts are represented as the number of observed use areas affected.

La Pata Avenue Gap Closure and Del Rio Extension. The extension of La Pata Avenue would be within and in the vicinity of the eastern portion of the Prima Deshecha Landfill, which is considered to be protected open space and is included within the Lower Chiquita habitat block. The extension of La Pata may fragment the lower portion of this habitat block. Within this area, habitat linkage/wildlife movement corridor K is identified by the Draft Southern Subregion NCCP/HCP Planning Guidelines as providing dispersal opportunities for California gnatcatchers and other species between Chiquita Ridge and gnatcatcher populations in the cities of San Juan Capistrano and San Clemente, as well as eastward dispersal between Trampas Canyon and the Talega development to the Donna O'Neill Conservancy, Cristianitos Canyon, and MCB Camp Pendleton. While gnatcatchers are known to travel distances and will cross roadways, the extension of La Pata could affect this habitat linkage/wildlife movement corridor. Revegetation of the roadway slopes with coastal sage scrub and elimination of lighting will facilitate the continued function of this linkage and could reduce the cumulative impacts.

Ortega Rock. The project would result in the loss of coastal sage scrub and associated wildlife including the cactus wren, less than one acre of jurisdictional wetlands, impacts to the wildlife corridor in Lucas Canyon, and loss of limited number of oak trees (five). Measures were identified to mitigate impacts to biological resources except for impacts to the Lucas Canyon wildlife movement corridor and five cactus wren territories. The latter impacts were identified as unavoidable impacts. Any potential impacts to Waters of the U.S. would require NEPA evaluation by the USACE.

Prima Deshecha Landfill. The County is currently preparing a second amendment to the General Development Plan and a Supplemental EIR to address potential changes in the area of disturbance at the site associated with slope stabilization efforts; project features required for minimization of biological impacts associated with full buildout; development of a conceptual pre-mitigation plan to address all impacts through full buildout; and available project-level information for on-site features such as a desilting basin between Zones 1 and 4. It is anticipated that development of a comprehensive pre-mitigation plan will reduce any identified impacts to a level of less than significance, particularly in the event that such mitigation programs can be complimentary to the Adaptive Management Plan adopted in conjunction with the RMV Proposed Project. No impacts to the major population, important population or *key locations* of gnatcatchers, least Bell's vireo or thread-leaved brodiaea are anticipated to result from the second amendment to the General Development Plan, although impacts to individuals may occur. Upon closure of the landfill, Prima will contribute natural open space and restored habitats to the Lower Chiquita habitat block and contribute to the habitat linkage/wildlife movement corridor K which is identified by the Draft Southern Subregion NCCP/HCP Planning Guidelines as providing dispersal opportunities for California gnatcatchers and other species between Chiquita Ridge and gnatcatcher populations in San Juan Capistrano and San Clemente, as well as eastward dispersal between Trampas Canyon and the Talega development to the Donna O'Neill Conservancy, Cristianitos Canyon, and MCB Camp Pendleton. Any potential impacts to Waters of the U.S. would require NEPA evaluation by the USACE.

San Juan Meadows. The project would result in significant impacts to plant communities as a result of grading and development as well as the potential to disturb existing gnatcatcher populations on the project site. All impacts would be reduced to less than significant levels via adherence to mitigation measures requiring the submission of grading and erosion control plans, a coastal sage scrub mitigation plan, a wetland mitigation plan, and a landscape plan. Any potential impacts to Waters of the U.S. would require NEPA evaluation by the USACE.

Honeyman Ranch. The project would result in impacts to sensitive plant species, tree resources, nesting birds, and sensitive wildlife. The impacts would be reduced to levels considered to be insignificant as a result of compliance with mitigation measures requiring spring focus surveys, the surveying of trees to determine if they meet the City's heritage tree criteria, a nesting survey, a trapping program, and the installation of fencing along the common boundary between homes abutting the adjacent open space to control domestic pet predation. Any potential impacts to Waters of the U.S. would require NEPA evaluation by the USACE.

La Novia Bridge. Construction activities would have the potential to have short-term impact to wildlife movement within San Juan Creek. It is expected that these impacts would be relative minor, short-term in nature, and site-specific. Any potential impacts to Waters of the U.S. would require NEPA evaluation by the USACE.

Cleveland National Forest Land Management Plan. Regarding the Cleveland National Forest revised draft management plan, of particular relevance to the Proposed Projects and associated Adaptive Management Plan are the proposals concerning Wildlife Movement/Landscape Corridors and Invasive Species. The RMV Proposed Project provides protection of identified wildlife movement corridors/habitat linkages. To assure an interconnected landscape from the RMV Planning Area open space to the Cleveland National Forest, the protection of off-site wildlife movement/landscape corridors within Cleveland National Forest is necessary. According to the Draft EIS, Cleveland National Forest activities effecting landscape connectivity are transportation routes and associated functions and lands activities such as changes in land holdings through acquisition, exchange, donation, or conveyance, or purchase exchanges.

Activities associated with lands primarily include acquisition of National Forest System lands. Acquisition of lands occurs through exchange, donation, or purchase. Generally there are no effects from lands acquired, although lands acquired are occasionally in need of restoration, which could have a long-term beneficial effect on species, and may have short-term negative effects from resulting restoration work (i.e., erosion during restoration work, use of herbicides to control undesirable, non-native invasive species, or noxious weeds, use of equipment─ direct mortality of animals or plants, and noise). Lands acquired can increase the net habitat for species, but conveyance of land can result in loss of habitat in parcels disposed of, loss of corridors used for migration and dispersal and less ability to manage surrounding National Forest System lands effectively by isolating parts of the National Forest from the rest. Any potential impacts to Waters of the U.S. would require NEPA evaluation by the USACE.

The following effects to landscape connectivity may be associated with transportation corridors (roads) and may cause loss of individuals or habitat: habitat fragmentation, loss of habitat from transportation construction activities: sedimentation, loss of vegetated habitat. (mowing and/or clearing), loss/injury due hazard material spills from equipment, (oil, gas, or chemicals), increased risk of Hazmat spills along transportation corridors, train derailments and truck crashes, increased risk of species removal by forest users via transportation corridors, species disturbance and displacement due to noise, crushing by vehicles, equipment, trucks, and trains, introduction of non-native species (revegetation plantings, domestic animal abandonment, exotic weed seeds transferred by motorized/mechanized vehicles) and increased risk of wildfires and associated loss of habitat and individuals.

Regarding Invasive Species, the Draft EIS notes states:

> *"Under alternatives 2 through 6, revised forest plan direction would provide a province-wide strategy for invasive species that includes objectives for education, prevention, control, restoration, and research. Revised forest plan standards would decrease the risk*

that invasive nonnative plants and animals become established on the National Forests of southern California. There would be less risk that seeds, mulches, or animal feed used on National Forest System land would be contaminated by weed seeds. There would be less risk that vehicles and machines authorized to travel off-road (such as fire engines) would introduce invasive nonnative plants. There would be less risk that special-use permittees would use or dispose of invasive nonnative plants and animals.

In alternatives 2 through 6, invasive nonnative species would continue to persist at many current locations and may also increase in range and abundance. This is due to the current presence of numerous populations of invasive nonnative plants and animals on the forests, the presence of numerous vectors such as people and vehicles, and the continued disturbance of many acres of land. This would occur despite revised forest plan direction, concurrent efforts to control invasive nonnative plants and animals, and increased opportunities to implement control measures. About 60 miles of stream would be treated annually for invasive nonnative species such as arundo and tamarisk, and about 300 acres of uplands would be treated for a variety of invasive nonnative plants."

Conclusion

Although the individual projects would have varying effects on biological resources as in the case of the SOCTIIP alternative, the combined effects of all the projects together with the SMWD Proposed Project and RMV Proposed Project would result in the following cumulative impacts: (1) reduced connectivity between proposed habitat blocks, (2) more pronounced internal fragmentation of habitat blocks, (3) greater impacts to key locations of planning species, and (4) reduced ability to fully implement the recommendations of the Adaptive Management Plan regarding restoration of coastal sage scrub/valley grassland. Depending on the alternative selected, particularly which SOCTIIP alternative, unavoidable cumulative non-aquatic biological impacts could occur.

9.2.3.3 Land Use

The two potential land use and planning impacts associated with the RMV Proposed Project include (1) potential for residential uses in Planning Area 8 to experience disturbance associated with military operations on MCB Camp Pendleton and (2) the amount of housing provided would be less than what was assumed in regional planning documents and may contribute to a long-term regional housing deficit. A review of the specific cumulative projects, as well as the General Plans, indicates that there would not be any other projects that would result in similar type impacts that, when combined with the Proposed Projects, would result in significant cumulative impacts. Though the Far East Alignment Alternative for SOCTIIP has the potential to impact military operations, the nature of the effects of the RMV Proposed Project on training operations would be of a different nature because there would not be a direct encroachment on MCB Camp Pendleton.

9.2.3.4 Transportation and Circulation

The long-range traffic analysis (year 2025) contained in Chapter 7.3, Transportation and Circulation, of this EIS presents the cumulative traffic conditions because it uses 2025 demographic data. These projections are the basis for long-range transportation planning in Orange County and provide an appropriate cumulative database for long-range analysis purposes.

As identified in Chapter 7.3, Transportation and Circulation, the RMV Proposed Project has the potential for significant project-specific and cumulative impacts to the roadway network. These impacts were fully addressed in the GPA/ZC EIR 589 and supplemented by documentation provided in this EIS. As previously noted, the long-range traffic analyses uses the 2025 demographic data, which includes the cumulative projects identified above, as well as additional development provided for in the local General Plans. Up to 20 intersections, dependent on the scenario, would be cumulatively impacted. The RMV Proposed Project would contribute to these cumulative impacts.

9.2.3.5 Agricultural and Aggregate Resources

Agricultural Resources

The RMV Proposed Project would have impacts on agricultural resources. It would result in the removal of up to 939 acres of Important Farmland. If the San Juan Creek East 3 reservoir site were implemented prior to the December 31, 2008, there would an impact associated with the removal of land from Williamson Act contracts.

A review of the cumulative projects indicates SOCTIIP, Ladera Ranch, and Robinson Ridge would have the potential to contribute to a cumulative loss of agricultural resources. The SOCTIIP draft EIS/EIR identified conversion of Important Farmland with seven of the ten alternatives being evaluated. Only the I-5 Improvements and the two No Action alternatives would not result in impacts to Important Farmland. The impact ranged from 53 acres with the Arterial Improvements Only Alternative to 424 acres with the Alignment 7 Corridor-Avenida La Pata Variation Alternative. Ladera Ranch resulted in the loss of eight acres of Prime Farmland and if Robinson Ridge is developed as discussed in the Notice of Preparation, the project would convert approximately 60 acres of Important Farmland. Although the RMV Proposed Project and the above listed projects are consistent with respective jurisdictional planning efforts, cumulatively they contribute to a loss of Important Farmland and therefore, a significant cumulative impact on agricultural resources.

Aggregate Resources

As discussed in Chapter 7.4, indirectly, the RMV Proposed Project would have the potential to have an impact on aggregate resources recovery because the area along San Juan Creek, which has been identified by the California Geologic Survey as a mineral resource zone, also supports aquatic resources. The GPA/ZC for the RMV Proposed Project removed the sand and gravel extraction zoning along San Juan Creek. Additionally, implementation of the RMV Proposed Project would result in the loss of aggregate resources at the ONIS site. The RMV Proposed Project would have no effect on aggregate resources associated with the Ortega Rock facility. Implementation of the RMV Proposed project would not preclude operation of this facility. The only other cumulative project identified that would preclude mining operations or result in the loss of availability of a known mineral resource that would be of value to the region is the Arroyo Trabuco Golf Course project, which has been constructed. The golf course project precludes the extraction of certain mineral resources in the Arroyo Trabuco. The resources in the Arroyo Trabuco were also identified in the General Plan and by the California Geologic Survey as a locally important mineral resource zone. Therefore, the RMV Proposed Project, combined with the Arroyo Trabuco Golf Course, would contribute to a cumulative impact on mineral resources in the region. There are no effective and feasible mitigation measures to reduce this cumulative impact.

9.2.3.6 Air Quality

Chapter 7.5 provides an air quality analysis assuming the development of the long-range socioeconomic projections for Orange County. The specific projects being evaluated as part of the SAMP, as well as all of the cumulative projects and the General Plan development, are within the OCP projections. As such, this analysis provides a cumulative analysis. Development associated with the RMV Proposed Project would have significant project-related and cumulative long-range air quality impacts.

9.2.3.7 Noise Conditions

Similar to traffic and air quality, the noise analysis contained in Chapter 7.6 evaluates the long-range development projections. Therefore, long-range project analysis addresses the noise-related cumulative impacts. The RMV Proposed Project would contribute to cumulative noise impacts along the Camino Capistrano, north of Junipero Serra.

9.2.3.8 Visual Resources

The RMV Proposed Project would change visual characteristics and topography of the RMV Planning Area, views from some recreational area vantage points within wilderness parks could be significantly impacted, and there would be an introduction of new sources of nighttime lighting and the potential for glare.

When evaluating cumulative aesthetic impacts a number of factors must be considered. In order for a cumulative aesthetic impact to occur, the proposed elements of the cumulative projects would need to be seen together or in proximity to each other. If the projects were not proximate to each other, the viewer would not perceive them in the same scene. Therefore, even though multiple projects may both be identified as changing the visual character of their project areas, if they are not in close proximity they would not contribute to a cumulative aesthetic impact. The Prima Deshecha Landfill, though in close proximity to the Proposed Projects, would not be visible from the same locations. The landfill is separated from adjacent sensitive views by ridgelines.

The context in which a project is being viewed will also influence the significance of the aesthetic impact. The contrast a project has with its surrounding environment may actually be reduced by the presence of other cumulative projects. If most of an area becomes urbanized, the contrast of the project with the natural surrounding may be less since it would not stand out in contrast as much. However, the community character can become dramatically changed if cumulative projects are added to the visual environment. This also applies to landform impacts.

Four projects have been identified that, when combined with the Proposed Projects, would have the potential for cumulative aesthetic impacts. These are SOCTIIP, Talega Valley Specific Plan, Ladera Ranch, and the San Juan Hills High School. Each of these projects has or would require substantial landform alteration. These projects would contribute to many of the same types of visual impacts as the proposed project.

The SOCTIIP build alternatives, combined with Proposed Projects, would contribute to cumulative visual impacts. SOCTIIP would require substantial landform alteration through an area that is undeveloped or developing. Specific visual impacts, as presented in the SOCTIIP Draft EIS/SEIR, are summarized below:

- The Far East Corridor-Modified Alternative would result in the removal of oak trees in the area encompassing the east hills of Canada Gobernadora, San Juan Creek, Cristianitos Canyon, and the southeast part of the Donna O'Neill Land Conservancy.

- With alternatives Far East Corridor-West, Far East Corridor-Modified, and Alignment 7 Corridor-Far East Crossover-Modified Alternative, a soundwall would be constructed adjacent to the residences in the Talega Planned Community closest to the Avenida Pico access ramps; the soundwall would block views to the east. In addition, these alternatives would result in a significant reduction in visual quality for users of San Onofre State Beach and residents in the San Onofre 1 and San Mateo Point housing areas of Camp Pendleton. In addition, the three alternatives would block views of the ocean at San Onofre Beach and conflict with County of San Diego policies related to scenic highways.

- The Central Corridor Alternative would result in substantially adverse visual impacts for residents to the south and east of San Clemente High School , east of I-5, and in the east part of the Marblehead Inland community as well as motorists on I-5. In addition, this alternative would conflict with policies of the City of San Clemente related to scenic corridors and aesthetic resources (especially hillsides), physically divide the Talega community from the rest of the City of San Clemente, and conflict with policies of the County of Orange related to scenic highways.

When considering the Proposed Projects together with SOCTIIP, there would be a cumulative impact associated with the change in the character of the study area and its surroundings. Combined, the setting will be substantially transformed from a rural, natural area to a suburban environment. The Talega Valley Specific Plan and Ladera Ranch Planned Community are currently under construction. Ladera Ranch is within the SAMP Study Area and north of the development proposed as part of the RMV Proposed Project. Talega Valley Specific Plan is west of the project site. Both of these projects provide a similar type development as what is proposed in the RMV Proposed Project. These projects have also altered the rural, natural character of the area, transforming it into a suburban manmade landscape. These projects extended the urban boundary out to the RMV Proposed Project development area. Consistent in nature with the planned communities is the San Juan Hills High School being constructed immediately adjacent to the project in the City of San Juan Capistrano. The extensive grading associated with the projects has resulted in substantial landform alteration. These projects also introduced lighting into an area that previously had no lighting.

When evaluating these changes to the thresholds of significance, there would be a cumulative significant impact associated with degrading the existing visual character, substantial landform alteration that would adversely affect the visual quality of the area, and the creation of light or glare that extends beyond the physical limits of the project site.

9.2.3.9 Cultural Resources

Impacts associated with the development of the RMV Proposed Project included potential impacts to 16 NRHP-eligible/potentially eligible archaeological sites and 5 historic sites that have been determined to be eligible or potentially eligible for the NRHP. Although the development within the SAMP Study Area, in conjunction with the effects of past projects, other current projects, and probable future projects would result in the disturbance of prehistoric archaeological resource sites and historic sites throughout the region, standard conditions of approval and mitigation measures required for each project would reduce the impacts to less than significant. Testing and data recovery is routinely required of projects prior to and during

grading activities. The site-specific nature of the resources reduces the potential for cumulative impacts. It is through the data recovery process that many artifacts have been discovered. As a result, anticipated development in the SAMP Study Area would not contribute to a significant cumulative impact on cultural resources or result in a significant cumulative loss in regional history or prehistory.

9.2.3.10 Population, Housing, and Employment

As discussed in Chapter 7.9, the Proposed Projects would not have any adverse impacts in this topical area; therefore, it would not contribute to cumulative population, employment, or housing impacts.

9.2.3.11 Recreation

As discussed in Chapter 7.10, the RMV Proposed Project would not have any direct adverse physical impact on recreational facilities due to increased demand on facilities because recreational facilities would be provided as part of the proposed development. As development is implemented, parks would be provided consistent with County of Orange requirements. The cumulative projects, as well as the growth associated with the adopted projections, would result in increased demand for recreational facilities. All of the projects that propose development of new residential units are required by law to either provide parkland or pay fees toward parklands. This would reduce the potential cumulative impact associated with demand for and increased usage of the park system.

Direct or indirect impacts to specific recreational facilities must also be considered. This would be site-specific and only consider cumulative impacts that have the potential to impact the same recreational facilities. Both the RMV Proposed Project and these alternatives would have an effect on the inland portion of San Onofre State Beach. Development of Planning Area 8 would be visible from the inland portion of San Onofre State Beach, although it would have no direct impacts related to physical deterioration of the park. Although only 500 acres of development are proposed in this area, the RMV Proposed Project would extend the edge of urban development closer to the park. This was determined to be a less than significant impact because of the distance of development from the park facilities and because of other urban components in the area (development in the City of San Clemente and I-5). The nature of the impacts associated with the toll road alternatives would be very different because they would have a direct impact on San Onofre State Beach. Considering the difference in the nature of the impacts associated with SOCTIIP and the RMV Proposed Project there would not be a significant cumulative impact on the inland portion of San Onofre State Beach.

CHAPTER 10.0
CONSISTENCY WITH FEDERAL, REGIONAL, AND LOCAL PLANS AND PROGRAMS

10.1 FEDERAL PLANNING PROGRAMS

10.1.1 CLEAN AIR ACT

The Clean Air Act is a comprehensive federal law that regulates air emissions from area, stationary, and mobile resources. This law authorizes the U.S. EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. The goal of the Clean Air Act was to set and achieve NAAQS in every state by 1975. The setting of maximum pollutant standards was coupled with directing the states to develop State Implementation Plans applicable to appropriate industrial sources in the state. The Clean Air Act was amended in 1977 primarily to set new goals (dates) for achieving attainment of NAAQS because many areas of the country had failed to meet the deadlines. The 1990 amendments of the Clean Air Act were mainly intended to address additional issues such as compliance, acid rain, ground-level ozone, stratospheric ozone depletion, and air toxics.

One of the major requirements on the 1990 Clean Air Act is an operating permit program for larger sources that release pollutants into the air. Under the program, permits are issued primarily by states. When a state fails to carry out the Clean Air Act satisfactorily, the U.S. EPA will take over the program. This operating permit (called Title V Operating Permit) is issued to most large sources and some smaller sources of air pollution. The requirement comes from Title V of the Clean Air Act. Operating permits are legally enforceable documents that permitting authorities issue to air pollution sources after such as the SAQMWD issues Title V permits in California. These permits are often called Part 70 permits because the regulations that establish minimum standards for state permit programs are found in the Code of Federal Regulations at 40 CFR, Part 70. The purpose of Title V permits is to identify and monitor major facilities' compliance with federal regulations and to provide effective enforcement capabilities to the regulatory agency.

Consistency Determination

The proposed permits authorizing the discharge of dredged and/or fill materials into Waters of the U.S., permitting procedures, and mitigation program have been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the discharge of dredged and/or fill materials into Waters of the U.S. proposed under these permits are exempted by 40 CFR Part 93.153. A project would normally be considered to have a significant impact on air quality if its implementation would violate any AAQS, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with the adopted environmental plans and goals of the local community. Specific criteria for determining whether the air quality impacts from a project operation are significant are set forth in the South Coast Air Quality Management District's *CEQA Air Quality Handbook.* The criteria include emissions thresholds, compliance with state and national air quality standards, and consistency with the current Air Quality Management Plan. Any later indirect emissions from operations of any of the facilities expected to be constructed are outside the USACE's continuing program responsibility and generally cannot be practicably controlled by the USACE.

Section 176(c) of the Federal Clean Air Act Amendments of 1990 requires each federal agency to assure that its actions conform to the applicable State Implementation Plan developed

pursuant to Section 110 of the Clean Air Act. The federal government recognizes the SCAG as the region's Metropolitan Planning Organization (MPO). As the designated MPO and regional transportation agency, SCAG is responsible for preparing the Regional Transportation Plan and Regional Transportation Improvement Program (23 U.S.C. Section 134 [g]-[h] et seq. 23 CFR Section 450, and CFR Section 613), and developing the demographic projections and integrated land use, housing, employment, and transportation strategies that are used to estimate future emissions in the South Coast Air Quality Management Plans and that form the basis of conformity analyses under the Clean Air Act (42 U.S.C. Section 7506).

10.1.2 NATIONAL HISTORIC PRESERVATION ACT

The National Historic Preservation Act (NHPA), Title 16, United States Code, Section 470, establishes a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States. The NHPA created the Advisory Council on Historic Preservation, an independent federal agency, to advise the President and Congress on matters involving historic preservation. The Advisory Council on Historic Preservation is authorized to review and comment on all actions licensed by the federal government which will have an effect on properties listed in the National Register of Historic Places, or eligible for such listing. Specifically, Section 106 of the Act (16 U.S.C. 470[f]) requires that a federal agency involved in a proposed project of activity is responsible for initiating and completing the review process. The agency must confer with the State Historic Preservation Officer (an official appointed in each state or territory to administer the National Historic Program) and the NHPA.

The National Register is an inventory of the United States' historic resources and is maintained by the National Park Service. The inventory includes buildings, structures, objects, sites, districts, and archaeological resources. The listed properties are not necessarily nationally; rather most are significant primarily at the state or local level. As mentioned above, Section 106 also encompasses significant properties which have not yet been listed or formally determined to be eligible for listing.

Federal actions include, but are not limited to, construction, rehabilitation, and repair projects, demolition, licenses, permits (e.g., Clean Water Act Section 404 permits), loans, loan guarantees, grants, and federal property transfers. The agency sponsoring of one of these activities is obligated to seek Advisory Council on Historic Preservation comments.

Consistency Determination

Within the SAMP Study Area, there are known prehistoric and historic archaeological sites. Implementation of regulated activities under the SAMP would impact these resources and will need to be protected by the NHPA. If cultural resources are discovered on a particular site requiring a USACE authorization and within the USACE area of potential effect, the USACE, in coordination with the State Historic Preservation Office (SHPO), would evaluate the cultural resource for eligibility for listing in the National Register of Historic Places pursuant to the NHPA. Therefore, the SAMP is consistent with the NHPA because cultural resources discovered in the SAMP Study Area would be protected/mitigated as required by the NHPA.

10.1.3 ENVIRONMENTAL JUSTICE

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President Clinton on February 11, 1994. This Executive

Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2005, this was $19,350 for a family of four in the 48 contiguous states and Washington D.C.[1]

Consistency Determination

The SAMP would not disproportionately affect the health or environment of any minority or disadvantaged group. The proposed permitting procedures would not change existing conditions or allow additional development that would have impacts to the health and environment of any population. The individual applications being evaluated would also not pose a disproportionate impact on a minority or disadvantaged group. Alternative B-12 would not result in a substantial number of displacements. Those residential units that are being displaced are owned by Rancho Mission Viejo and the RMV Proposed Project incorporates provisions for on-site replacement housing. New development proposed by Alternative B-12 would also not result in health or environmental impacts that would be borne by groups covered by EO 12898. Currently, the area is undeveloped. As new development is proposed, current standards for environmental protection (e.g., sound walls, compatibility of uses, and hazardous materials) would be applicable to all development regardless of whether it is part of low income development.

10.1.4 FLOODPLAIN EXECUTIVE ORDER

Executive Order 11988 was signed by President Carter on May 27, 1977 to "avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development where there is a practicable alternative." This EO directs federal agencies "to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore the preserve the natural and beneficial uses of floodplains."

Consistency Determination

With or without the SAMP, future permit applicants may propose activities within floodplains. Such activities include roads, developments, utilities, and other structures. Like the existing Section 404 permitting framework, the SAMP permitting procedures influence these activities within the context of its statutory authority and responsibilities as defined by the scope of analysis for each permit action.

Within the SAMP Study Area under the new proposed permitting procedures, only issuance of LOPs or standard Individual Permits would result in permanent structures within the floodplains with potential effects on floodplain values and possible adverse impacts to human safety, health, and welfare. The Regional General Permits only authorize temporary impacts and would not result in any permanent structures that would affect floodplain values or result in adverse impacts to human safety, health, and welfare. Prior to issuance of each LOPs and standard Individual Permits outside of the RMV Planning Area, each environmental assessment will need to examine the effect of the permitted activity on floodplain executive order. For the projects within the RMV Planning Area, all developments will be located outside the floodplain. The only structures within the floodplain would be roads, utilities, and stormwater management facilities, because these facilities either require crossing a floodplain or siting within the floodplain.

[1] http://aspe.hhs.gov United States Department of Health and Human Services, accessed September 22, 2005.

10.1.5 WETLAND EXECUTIVE ORDER

Executive Order 11990 was signed by President Carter on May 27, 1977 to "avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." This EO directs federal agencies "to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands." Although EO 11990 "does not apply to the issuance by federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-federal property," it does show the consideration each agency must give to wetland protection within each agency's responsibilities.

Consistency Determination

The SAMP takes into consideration the functions and values of wetlands espoused by EO 11990 and the duty to fully consider the need to avoid and minimize the loss of these aquatic resources. Because the Section 404 program involves issuance of federal permits on non-federal property, EO 11990 does not strictly apply. However, the SAMP contains policies and conditions that are consistent with EO 11990 for the protection of wetlands that fulfills the spirit of the EO 11990.

The SAMP complies with the spirit of EO 11990 through compliance with the Section 404(b)(1) Guidelines as they apply to avoidance, minimization, and compensation of unavoidable impacts. The SAMP involves establishing an alternative permitting system that considers the quality of wetlands and other aquatic resources in determining the appropriate amount of review of permit actions. Higher quality aquatic resources including wetlands would receive additional review through the individual permit process, which involves public notice, explicit consideration of alternatives, and completion of an environmental assessment. The SAMP uses a landscape-level functional assessment (LLFA) methodology for riparian ecosystems to identify those aquatic resources that warrant additional review. The increased review insures that all necessary steps are taken to protect wetlands. Although the LLFA is not able to precisely determine the amounts of wetlands within the study area, the effects of the SAMP program on waters of the U.S. provide insight in the consideration given to wetlands.

In terms of avoidance, the SAMP has identified higher quality waters of the U.S. throughout the SAMP Study Area and the Ranch Plan that warrants conservation or protection through full permit review. As a result, about 3,274 acres out of 3,274 acres within the entire SAMP Study Area will receive the fullest review possible under the Section 404 permit program, resulting in 78 percent of waters of the U.S. receiving full review. In terms of avoidance within the RMV Planning Area portion of the SAMP Study Area, about 755.6 acres out of 857.1 acres would be conserved, resulting in about 90 percent receiving long-term protection.

In terms of minimization within the SAMP Study Area, the SAMP has used the SAMP tenets to design projects to minimize for any indirect impacts to wetlands. The SAMP has considered the instream transport of sediments, avoidance of floodplains, and indirect impacts to sensitive species such as the arroyo toad and the southern steelhead. Within the SAMP Study Area, the proposed permitting procedures will include general conditions to address such as on-site management practices, avoidance of breeding season, and application of state water quality standards to minimize impacts. Within the RMV Planning Area, all major waterways within the study area have been designed with appropriate buffers, resulting in minimization of indirect impacts to wetlands and continued use of these wetland corridors by local wildlife.

In terms of compensation, the SAMP has developed compensatory mitigation policies that would promote replacement of lost functions and values from unavoidable impacts. The compensatory mitigation would be prioritized based on landscape considerations derived from the riparian ecosystem restoration plan that focused on site selection and general design (Smith and Klimas, 2004). All compensatory mitigation would have to comply with the USACE, Los Angeles District, mitigation and monitoring guidelines. Compensatory mitigation sites would also have to include provisions for long-term management with adequate funding.

In light of all these measures, the spirit of EO 11990 was met, even though EO 11990 had provisions exempting federal permit processes on private lands. The vast majority of wetlands would be avoided. For any wetlands proposed to be impacted, full review will insure that all impacts are unavoidable and minimized. Best available science was also invoked to ensure all indirect impacts are minimized to prevent degradation of avoided wetlands. Compensatory mitigation involves careful consideration that would allow for success.

10.1.6 RIVERS AND HARBORS ACT

Section 10 of the Rivers and Harbors Act regulates activities in navigable Waters of the U.S. The term “navigable Waters of the U.S.” as defined in the Code of Federal Regulation (33 CFR 329.4) includes those areas subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for uses to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the water body, and is not extinguished by later action or events which impede or destroy navigable capacity including filled, drained, or diked, or developed lands that at one time were navigable.

A water body that was navigable in its natural or improved state, or that was susceptible to reasonable improvement, retains its character as “navigable by law” even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions. Non-use in the past does not prevent recognition of the potential for future use. Once having attained the character “navigable in law,” the federal authority remains in existence, and cannot be abandoned by administrative officers or court action. Any change to navigable waters, or changes to the surrounding environment that may alter the navigability of these waters (including aerial transmission lines over waterways) are regulated by the USACE.

Consistency Determination

Navigable waters within the SAMP Study Area are limited to the mouth of the San Juan Creek, which experiences ebb and flow of the tide to a limited extent. Because the Rivers and Harbors Act regulates a broad suite of activities not limited to the discharge of dredged and/or fill materials, the SAMP permitting procedures are expected to cover additional categories of activities at the mouth of the San Juan Creek. Analysis of the program’s consistency with Section 10 of the RHA will be performed on a case-by-case basis.

10.1.7 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265, as amended (Magnuson-Stevens Act), provides for the conservation and management of fishery resources within the U.S. Exclusive Economic Zone. It was adopted to extend control of U.S. waters to 200 nautical miles in the ocean; to phase out fishing activities within this zone; to

prevent over fishing, especially by foreign fleets; to allow over fished stocks to recover; and to conserve and manage fishery resources.

Congress passed the original Magnuson Act in 1976; it has since been amended several times. Among other things, the Magnuson Act explains the role of regional fishery management councils and describes their functions and operating procedures. The Magnuson Act includes national standards for management and outlines the contents of fishery management plans. In addition, it gives the Secretary of Commerce power to review, approve, and implement fishery management plans and other recommendations developed by the councils. National Marine Fisheries Service provides guidance for applying the National Standards of the Magnuson Act (Pacific Fishery Management Council, 2004).

The Magnuson Act became law in 1976 and was re-authorized by the 104th Congress as the "Magnuson-Stevens Act" on October 11, 1996 to become Public Law 104-297. At present, the Magnuson Act states in its "National Standards" that conservation and management measures shall:

- Prevent over fishing while achieving optimum yield.
- Not discriminate between residents of different states; any allocation of privileges must be fair and equitable.
- Where practicable, promote efficiency, except that no such measure shall have economic allocation as its sole purpose.
- Take into account and allow for variations among and contingencies in fisheries, fishery resources, and catches.
- Minimize costs and avoid duplications, where practicable.
- To the extent practicable, an individual stock shall be managed as a unit throughout its range; interrelated stocks shall be managed as a unit or in close coordination.
- Take into account the importance of fishery resources to fishing communities, consistent with conservation requirements, including prevention of over fishing and rebuilding of over fished stocks.
- Minimize by catch or mortality from by catch.
- Promote safety of human life at sea.

Consistency Determination

This EIS and subsequent public notice initiates the Endangered Fish Habitats consultation requirements of the Act. Due to the inland location of most of the SAMP Study Area, regulated activities as well as the limited extent of the predicted project activity impacts on Endangered Fish Habitats, it is initially determined that implementation of the proposed SAMP would not have a substantial adverse impact on Endangered Fish Habitats or federally managed fisheries in California waters. The USACE will send a forthcoming letter to NOAA Fisheries requesting concurrence that the Regional General Permit and the LOP process outside of the RMV Planning Area would not affect Essential Fish Habitat.

10.1.8 COASTAL ZONE MANAGEMENT ACT

The Coastal Zone Management Act of 1972 was enacted by Congress to encourage states to preserve, protect, develop, and, where possible, to restore or enhance valuable natural resources such as wetlands, flood plains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife using those habitats. Administration of the Coastal Zone Management Act was delegated to the National Oceanic and Atmospheric Administration (NOAA). A state with an approved coastal protection program, such as California, can be delegated the authority to implement the provisions of the Coastal Zone Management Act. The Office of Ocean and Coastal Resource Management (OCRM) administers the individual state programs. The California Coastal Commission was established in 1976 (as the successor to the California Coastal Zone Conservation Commission created as a result of the passage of Proposition 20 in 1972) as the primary lead agency responsible for implementing California's federally approved coastal management program. California's coastal management program is carried out through a partnership between state and local governments. The California Coastal Commission certifies Local Coastal Programs and approves coastal development permits pursuant to requirements set forth in the California Coastal Act of 1976. Pursuant to California's federally approved coastal management program, the California Coastal Commission and the San Francisco Bay Conservation and Development Commission make consistency determinations pursuant to the provisions of the Coastal Zone Management Act and the approved coastal management program.

Amendments to the Coastal Zone Management Act in 1990 entitled Coastal Zone Act Reauthorization Amendments required coastal states to enhance cooperation between land and water use management agencies, identify management measures to prevent and control polluted runoff, and ensure that enforceable mechanisms were in place where voluntary efforts were determined to be insufficient to restore and protect state waters. In response to the new provisions of the Coastal Zone Management Act, the California Coastal Commission entered into a partnership with the State Water Resources Control Board to implement a statewide plan that would address both the Coastal Zone Management Act and Clean Water Act requirements regarding coastal waters. The State Water Resources Control Board has subsequently updated the State Nonpoint Source Control Plan to address the provisions of the Coastal Zone Management Act. The U.S. EPA and NOAA approved the revised California Nonpoint Source Pollution Control Program (NPS Program) in 2000. The NPS Program identifies activities to be completed by State Water Resources Control Board in implementing Coastal Zone Management Act requirements in the regional basin plans and storm water permit programs. To date, many of the basin plans and MS4 NPDES permits, such as SDRWQCB MS4 and County of Orange DAMP, have been revised to carry out the NPS Program. Additional information regarding the State NPS Program can be viewed at www.swrcb.ca.gov/nps.

For projects in or affecting the coastal zone, the federal Coastal Zone Management Act requires the applicant to obtain concurrence from the California Coastal Commission that the project is consistent with the State's Coastal Zone Management Plan prior to issuing the USACE authorization for the project. Although the majority of the SAMP Study Area is outside the coastal zone, certain areas in the City of Dana Point are within the coastal zone.

Consistency Determination

The USACE has adopted regulations addressing Coastal Zone Management Act consistency requirements at 33 CFR 325. As indicated, the proposed RMV permitting procedures involve activities located substantially outside the coastal zone and future RMV LOP authorizations

would not require Coastal Zone Management Act determinations.[2] With regard to the proposed Regional General Permit, some activities employing the Regional General Permit may occur within the coastal zone and may require Coastal Zone Management Act consistency determinations if so required by the California coastal management program. Additionally, future LOP applicants may propose activities within the coastal zone and could be subject to Coastal Zone Management Act consistency requirements. However, as indicated in the review of the proposed RMV permitting procedures, the USACE authorization to impact USACE jurisdictional areas is not final until such time as the permit applicant complies with LOP procedures applicable to future individual actions and thus, for any activities within the coastal zone, such potential future applicants would assure Coastal Zone Management Act compliance at such time as full compliance with LOP procedures is achieved.

Therefore, in cases where specific projects that would undertake activities impacting aquatic resources located within the coastal zone are considered for permitting under Section 404 for Clean Water Act, project-specific Coastal Development Permits or concurrence on federal consistency will be sought.

10.1.9 CALIFORNIA WATER CODE

10.1.9.1 Waters of the State

The California Water Code is the principal state law regulating water quality in California. Waters of the State include "any surface water or groundwater, including saline waters, within the boundaries of the state" (Section 13050[e]). This includes tributaries to waters listed above, isolated waters (e.g., vernal pools, groundwater-supplied wetlands), and vegetated swales with no apparent OHWM). All of these water bodies contain/convey flows during and after precipitation events.

California Water Code contains provisions regulating water and its use. This portion of the California Water Code, Division 7 (Porter-Cologne Act), establishes a program to protect water quality and beneficial uses of the state water resources including groundwater and surface water. The State Water Resources Control Board and the RWQCBs are the principal state agencies responsible for control of water quality. They establish waste discharge requirements, water quality control planning and monitoring, enforcement of discharge permits, and ground and surface water quality objectives.

The RWQCBs are responsible for the administration of Section 401 of the Clean Water Act. Depending on the permitting requirements of the USACE, a water quality certification issued by the RWQCBs may be necessary. If the USACE deems a particular aquatic resource to be "isolated" (and is therefore not regulated by the USACE Regulatory Program per *SWANCC*), the RWQCB would regulate the isolated resource through the State Porter-Cologne Act. A Waste Discharge Requirement may be issued for any activities affecting the isolated resource. For example, many vernal pools are "isolated" and may be regulated through Porter-Cologne rather than the USACE.

[2] See *Sierra Club v. California Coastal Commission* rejecting the Sierra Club challenge that "the Commission's refusal to base its permit decision solely on the impacts within the coastal zone of the proposed activities outside the coastal zone is inconsistent with Coastal Zone Management Act and 'creates an issue of conflict preemption'" and holding that the Court of Appeal "correctly declined to deny the permit request solely on the basis of the impacts within the coastal zone that Sierra Club alleges will result from the proposed development outside the coastal zone." 35 Cal.4th 839 *Sierra Club v. California Coastal Com* (2005)

Consistency Determination

Consistency with Section 401 of the Clean Water Act has been reviewed previously. Additionally, the SWRCB and the RWQCBs carry out comprehensive programs for implementing state and federal water quality laws, including requirements for Stormwater Pollution Prevention Plans for construction sites and MS4 stormwater plans addressing nonpoint sources. The WQMP (Appendix D) contains an extensive analysis of the manner in which the water quality program for the proposed RMV permitting procedures addresses all applicable state and federal regulatory requirements, the primary elements of which are summarized in subchapter 8.6.

10.1.10 CALIFORNIA COASTAL ACT

The California Coastal Act of 1976 requires any applicant proposing to undertake development in the Coastal Zone to obtain a Coastal Development Permit. The Coastal Zone is mapped and extends inland anywhere from several hundred yards in developed urban areas to a maximum five miles in undeveloped areas.

Consistency Determination

For those projects with activities that would take place within the coastal zone, any activities requiring a coastal development permit from the California Coastal Commission or other authorization pursuant to a certified Local Coastal Program, will be required to obtain such authorization in addition to any Regional General Permit or LOP authorization prior to commencing any activities within the coastal zone.

10.2 REGIONAL PLANNING PROGRAMS

10.2.1 SCAG REGIONAL COMPREHENSIVE PLAN AND GUIDE

The Southern California Association of Governments (SCAG) is the Metropolitan Planning Organization (MPO) for six counties: Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The region encompasses a population exceeding 15 million persons in an area of more than 38,000 square miles. As the designated MPO, the SCAG is mandated by the federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality. Among the leading activities that SCAG undertakes are:

- Maintenance of a continuous, comprehensive, and coordinated planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program.

- Development of demographic projections plus the integrated land use, housing, employment, transportation programs, measures, and strategies portions of the South Coast Air Quality Management Plan, as well as serving as co-lead agency for air quality planning for the Central Coast and Southeast Desert air basin districts.

- Responsibility under the federal Clean Air Act for determining conformity to the Air Plan of projects, plans, and programs.

- Review of environmental impact reports for projects having regional significance for consistency with regional plans.

- Pursuant to federal water pollution control statutes, SCAG functions as the authorized areawide waste treatment management planning agency.

- Responsibility under state law for preparation of the Regional Housing Needs Assessment.

SCAG has developed a number of programs and plans to achieve the regional objectives which are designed to meet the comprehensive planning needs for the region. The most applicable to the SAMP is the Regional Comprehensive Plan and Guide (RCPG). SCAG is in the process of updating the RCPG; the updated RCPG has not been adopted. Projects are reviewed by SCAG for consistency with the RCPG's core and ancillary policies that apply to a specific project being reviewed. Projects are reviewed and an assessment is made on whether the project is consistent with or supports those specific policies. Some of the policies within these plans are advisory in nature. The RCPG includes chapters on Growth Management (June 1994); Regional Mobility (June 1994); Air Quality (October 1995); Housing (June 1994); Open Space and Conservation (April 1995); Water Resources (December 1994); Water Quality (January 1995); Hazardous Waste Management (November 1994); Integrated Solid Waste (November 1994); Energy (2002); and Economy (2000).

The following discussion evaluates the consistency of the project with this planning program. Inconsistency with the planning program is identified as an impact because these planning programs are designed as tools to help the region achieve environmental standards in areas such as air quality and traffic. If the programs are not implemented, or appropriately revised to reflect modifications made by local jurisdictions, it may lead to a physical impact.

10.2.1.1 Open Space and Conservation Chapter

The purpose of the Open Space and Conservation Chapter is to assist local governments in planning for local and regional open space. The chapter is intended to provide:

- An inventory of some regionally-significant open space resources and an assessment of their continued viability in view of the potential impacts of future growth and development;

- A framework for resolving potential conflicts between development and open space needs;

- Strategies for better coordination of open space and land-use planning; and,

- An assessment of potential institutional and funding options for the planning and acquisition management of open space resources.

This chapter includes the following goal that is applicable to the SAMP:

Resource Production

- Develop well-managed viable ecosystems or known habitats of rare, threatened and endangered species, including wetlands.

Consistency Determination

With respect to the consistency of the proposed permitting procedures with the goals of the Open Space and Conservation Chapter, the SAMP will facilitate the purposes of the chapter. The SAMP process has resulted in an inventory of regionally significant open space resources. In this specific case, the resources are waters and wetlands of the U.S. and riparian habitat. These resources are discussed in Chapter 4.0 of this EIS. As described in Chapter 3.0, the SAMP is an evaluation tool for assessing the potential impacts of future growth and development within the SAMP Study Area on the inventoried aquatic resources. In particular, the permitting procedures as described in Chapter 8.0 of this EIS are intended to protect inventoried aquatic resources of higher value while allowing impacts to lower value aquatic resources. The SAMP is a strategy for better coordination of open space and land use planning. This can be seen in the range of alternatives reviewed in Chapter 6.0 of this EIS and particularly in those alternatives carried forward for further review under the Clean Water Act Section 404 (b)(1) Guidelines (Chapter 8.0 of this EIS). The management of aquatic resources identified for protection (i.e., ARCAs) would be accomplished through an Aquatic Resources Adaptive Management Program discussed in Chapter 5.0, Chapter 8.0, and Appendix G2, and is summarized here.

The Aquatic Resources Adaptive Management Program identifies specific policies, management recommendations, and restoration strategies for maintaining and enhancing the long-term value of protected aquatic habitats contained within the RMV Planning Area. The three primary goals for the Aquatic Resources Adaptive Management Program, each of which is related to the objective of maintaining and, where feasible, increasing net habitat value of open space within the RMV Planning Area over the long term; are:

- Ensure the persistence of the native-dominated vegetation mosaic in the RMV Planning Area
- Restore the quality of degraded vegetation communities and other habitat types
- Maintain and restore biotic and abiotic natural processes, at all identified scales

In addition to the management of wetland/riparian habitats and coast live oak riparian woodlands, specific elements of the Aquatic Resources Adaptive Management Program have been designed to contribute to the recovery of listed aquatic species within the SAMP Study Area (i.e., least Bell's vireo, southwester willow flycatcher, arroyo toad). The plan also provides a comprehensive monitoring program for assessing the function and benefit of the individual plan elements, which will assist in the refinement of the Aquatic Resources Adaptive Management Plan to ensure that species and habitat maintenance/enhancement objectives are being met. Therefore, the SAMP is consistent with the goals of the RCPG Open Space and Conservation Chapter.

10.2.1.2 Water Quality Chapter

The Water Quality Chapter is intended to provide a regional perspective on current water quality issues and the plans and programs for addressing these issues, and to better clarify the relationship between water quality and other regional concerns. The chapter is intended to accomplish the following:

- Identify the current water quality goals and objectives for the region as established under existing law.

- Provide an inventory of current water quality problem areas in the region.

- Identify and describe the various plans and programs affecting water quality in southern California.

- Raise some regional issues associated with maintaining and improving water quality in the region including issues in which water quality goals and policies interact with other regional goals and policies.

- Provide a framework for ensuring that growth in wastewater treatment capacity is consistent with regional growth projections.

- Provide recommendations and policy options for improving the region's water quality and the current system for managing water quality.

To improve the planning and management of water quality in the SCAG region, this chapter includes recommendations that can be undertaken by regional entities, such as SCAG, as well as policies and programs that can be explored by other agencies, particularly at the state and federal level. Recommendations applicable to the SAMP are as follows:

- Encourage "watershed management" programs and strategies, recognizing the primary role of local governments in such efforts.

- Coordinate watershed management planning at the subregional level by (1) providing consistent regional data; (2) serving as a liaison between affected local, state, and federal watershed management agencies; and (3) ensuring that watershed planning is consistent with other planning objectives (e.g., transportation, air quality, water supply).

- Support regional efforts to identify and cooperatively plan for wetlands to facilitate both sustaining the amount and quality of wetlands in the region and expediting the process for obtaining wetlands permits.

Consistency Determination

As described in Chapter 1.0, a SAMP is a voluntary watershed-level planning and permitting process involving local landowners and public agencies that seek permit coverage under the federal Clean Water Act Section 404 for future actions affecting jurisdictional Waters of the U.S. Local, state, and federal agencies, in cooperation with local landowners, have coordinated land use and natural resource conservation planning efforts to address future economic development in a portion of south Orange County within the San Juan Creek and western San Mateo Creek Watersheds. This “coordinated planning process” consists of three separate planning processes which are underway and/or completed: (1) an amendment to Orange County’s General Plan and Zone Change (GPA/ZC) (completed), (2) development of a Special Area Management Plan (SAMP), and (3) development of a Natural Community Conservation Plan/Master Streambed Alteration Agreement/Habitat Conservation Plan (NCCP/MSAA/HCP) (under preparation). The SAMP thus addresses the first recommendation above dealing with “watershed management” and also the second recommendation of coordination at the subregional level.

The purpose of a SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated under the SAMP. The intent of the proposed San

Juan Creek and western San Mateo Creek Watersheds SAMP is to provide permit coverage under the federal Clean Water Act Section 404 for future actions affecting jurisdictional Waters of the US in these watersheds. In particular, the permitting procedures as described in Chapter 8.0 of this EIS are intended to protect aquatic resources of higher value while allowing impacts to lower value aquatic resources through an abbreviated Individual Permit/Letter of Permission permitting process for current participants in the SAMP or through the proposed Regional General Permit. In addition, the protection of water quality is accomplished though implementation of a Water Quality Management Plan (WQMP) that supports the SAMP process. This WQMP is discussed further in Chapter 6.0 and extensively in Chapter 8.0 of this EIS. Therefore, the SAMP is consistent with the third recommendation of the RCPG Water Quality Chapter.

10.2.2 COUNTY OF ORANGE GENERAL PLAN

The County of Orange General Plan contains the following elements: Land Use Element; Transportation Element, Public Services and Facilities Element, Resources Element, Recreation Element, Noise Element, Safety Element, Housing Element; and Growth Management Element. The County of Orange General Plan defines a goal as a "general expression of community values and is abstract in nature. It looks to an ideal future of about twenty years." An objective is defined as "an intermediate step toward attaining a goal and is relatively more specific." A policy is defined as "a specific statement that guides decision-making." Goals, objectives, and policies of the General Plan, relevant to the goals of the SAMP, are addressed in this chapter.

10.2.2.1 Land Use Element

The County of Orange General Plan Land Use Element (adopted February 2000, as amended April 20, 2004) "…contains official County policies on the location and character of land uses necessary for orderly growth and development." The Land Use Element identifies policies and programs in other General Plan elements that affect land use and provide guidance for future land use planning studies for the unincorporated portion of the County. The Land Use Element discusses the planning constraints and deficiencies affecting development in Orange County: environmental, fiscal, economic and market, and governmental.

Three purposes are set forth in the Land Use Element. One, the Land Use Element provides policies, and land use patterns for unincorporated Orange County and establishes development criteria and standards, including population density and building intensity. In accomplishing this primary purpose, the Land Use Element fulfills the requirements of California Government Code §65302(a), which establishes it as a mandated element of a general plan. Two, the Land Use Element's policies provide a basis for the evaluation of physical development and growth trends in order to achieve General Plan goals. Three, the policies determine land use capacities and the appropriate level of public services and infrastructure necessary to support these capacities.

The Land Use Element identifies 13 major land use policies applicable to all geographic areas of unincorporated Orange County. These policies were adopted by the County for the purpose of guiding the planning and development of unincorporated areas in the short- and long-term.

The County General Plan Land Use Element establishes eight land use programs to implement the policies of the element. "These programs are necessary to effectuate the intent and purpose of the Land Use Element policies. Future development in the County will be reviewed for compliance with the Land Use Element policies through the following programs."

- Growth Management Program

- Housing Density Bonus Program
- Community Planning Program
- Environmental Review Process
- Natural Communities Conservation Planning Program
- Annual Land Use Element Review Program
- Childcare Improvement Program
- Recycling/Materials Recovery Program

The Land Use Element identifies policies, rather than goals. There are 12 policies that could be potentially applicable to the SAMP, but only two have been determined to be applicable, Policy 8–Enhancement of the Environment and Policy 13–Urban and Storm Water Runoff Regulations. There are also two applicable land use programs, the Environmental Review Process and the Natural Community Conservation Planning Program.

Policy 8: Enhancement of Environment–To guide development so that the quality of the physical environment is enhanced.

Consistency Determination

With respect to the potential activities proposed to be authorized by the permitting procedures (i.e., the alternatives carried forward for review in Chapter 8.0), these alternatives have been selected because they do enhance the quality of the physical environmental through the preservation of high value aquatic resources, such as San Juan Creek, La Paz Creek, and Talega Creek. Further development has been concentrated in areas of lower habitat, hydrologic, and water quality integrity as described in Chapter 6.0 of this EIS. Development land uses have been designated with the intent of minimizing potential land use conflicts, both internal to the RMV Planning Area and with existing uses adjacent to the RMV Planning Area. Use of the natural ridgelines for buffering, placement of similar development types adjacent to existing uses, and preservation of over 74 percent (16,942 acres) of the RMV Planning Area in open space enhances compatibility with the surrounding protected open space (e.g., Caspers Regional Park, Cleveland National Forest, and the San Mateo Wilderness).

Policy 13: Urban and Storm Water Runoff Regulations− Establishes framework for the reduction of water pollution. Policies for meeting updated objectives for permits in the San Diego RWQCB include:

a. Look for opportunities to minimize the amount of impervious surfaces in areas of new development and redevelopment; and where feasible, identify the need to slow runoff and maximize on-site infiltration runoff.

b. Implement appropriate pollution prevention methods supplemented by pollutant source controls and treatment, as needed. Encourage the use of small collection strategies located at, or close to as possible to, the source runoff and pollutants offsite and into MS4.

c. Look for opportunities to preserve, and where possible, create or restore areas that provide, create, or restore areas that provide important benefits, such as riparian corridors, wetlands, and buffer zones. Encourage land acquisition of such areas.

d. Seek to limit disturbances of natural drainage systems caused by development including roads, highways, and bridges.

e. Prior to making land use decisions, look for opportunities to utilize methods available to estimate the increase in pollutant loads and flows resulting from projected future development. Require incorporation of structural and non-structural BMPs to mitigate the projected increases in pollutant loads and flows.

f. Identify and seek to avoid development of areas that are particularly susceptible to erosion and sediment loss; or establish development guidance that identifies these areas and protects them from erosion and sediment loss.

g. Look for the opportunities to reduce pollutants with vehicles and increasing traffic resulting from development. Coordinate local traffic management reduction efforts with Orange County Transportation Authority's Congestion Management Plan.

h. Look for design opportunities to manage post-development runoff from a site in such a manner that, to the maximum extent practicable, it shall not contain pollutant loads that cause or contribute to exceedances of receiving water quality objectives.

Consistency Determination

Chapter 6.0 of this EIS contains an evaluation of the proposed alternatives on the physical processes and conditions of the SAMP Study Area, including the SAMP Tenets, Watershed Planning Principles, and sub-basin recommendations which specifically address such topics as storm water runoff. An example of how the SAMP process addresses the policies noted above is Watershed Planning Principle 1, which states an intent to "*Recognize and account for the hydrologic response of different terrains at the sub-basin and watershed scale*", which would address policies a, e, and f. The Water Quality Management Plan (WQMP) prepared to support the SAMP describes pre- and post-project pollutant loading for the alternatives under consideration, and where necessary, proposes measures to offset projected increases through the use of structural and non-structural Best Management Practices, including a combined control system to affect a water balance such that the post-project flow duration is equal to that of the pre-project flow duration. The WQMP is discussed in Chapters 6.0 and 8.0 of this EIS (Appendix D). Therefore, the SAMP addresses policies b, g, and h above. Finally, as a management plan designed to protect aquatic resources, the SAMP addresses policies c and d through the development of alternatives that achieve consistency with the SAMP Tenets of:

a) No net loss of acreage and functions of Waters of the U.S. and Waters of the State

b) Maintain/restore riparian ecosystem integrity

c) Protect headwaters

d) Maintain/protect/restore riparian corridors

e) Maintain and/or restore floodplain connection

f) Maintain and/or restore sediment sources and transport equilibrium

g) Maintain adequate buffer for the protection of riparian corridors

h) Protect riparian areas and associated habitats of listed and sensitive species

As previously noted, the Land Use Element has eight programs to facilitate the implementation of the land use policies: Growth Management Program, Housing Density Bonus Program,

Community Planning Program, Environmental Review Process, Natural Community Conservation Planning Program, Annual Land Use Element Review Program, Childcare Improvement Program, and Recycling/Materials Recovery Program.

With respect to the SAMP, the Environmental Review Process and the Natural Community Conservation Planning Program are applicable. These are summarized below, with an evaluation of the SAMP's consistency with these programs.

Environmental Review Process

The Orange County Environmental Review Process "minimizes environmental impacts of development through the County's environmental review procedure. This program implements state and federal environmental protection laws in Orange County." Chapter 1.0 describes how the SAMP process will result in new permitting procedures within the SAMP Study Area, including Individual Permits/Letters of Permission for current and potential future participants and a potential Regional General Permit. Therefore, projects located in unincorporated Orange County, that impact USACE jurisdiction, including the RMV Proposed Project, would be subject to new permitting procedures. Proposed projects are also subject to review by the County and are processed pursuant to the County's environmental procedures. As such, the proposed permitting procedures will be consistent with the Orange County environmental review process.

Natural Community Conservation Planning Program (NCCP)

An NCCP establishes a habitat reserve system for native habitat. The focus of the NCCP Program is to protect target sensitive species, such as the coastal California gnatcatcher. A small portion of the SAMP Study Area is located within the Orange County Central-Coastal NCCP (this subregional NCCP, approved in July 1996, established a 37,380 acre reserve system in a 208,000 acre planning area). The majority of the SAMP Study Area is located within the Southern Subregion Sub-region NCCP boundaries. The RMV Planning Area is located entirely within the Southern Sub-region NCCP boundaries. As described in Chapter 2.0 of this EIS, the SAMP is part of a coordinated planning process that includes preparation of an NCCP/MSAA/HCP for the Southern Subregion and a General Plan Amendment/zone change for the RMV Planning Area.

10.2.2.2 Resources Element

The County of Orange Resources Element (adopted February 2000, as amended April 20, 2004) "…contains official County policies on the conservation and management of resources." The Resources Element has six components: Natural Resources, Energy Resources, Water Resources, Air Resources, Open Space, and Cultural-Historical.

The goals of the Resources Element are consistent with state requirements and are primarily based on quantified objectives, an assessment of resource needs, and identification of problems that impede the development, management, preservation, or conservation of County resources. The Resources Element serves to guide and direct local government decision-making in resource-related matters and also facilitates coordination with regional, state, and federal policies and programs.

Urbanization affects agriculture, parkland, wildlife habitat, and natural vegetation most directly, since these resources often compete with development for the same land. All resources will experience increasing demand as the urbanized area expands, but the methods employed to meet these demands will vary. One of the major purposes of the Resources Element is to

provide a clear statement of County policy so that timely steps can be taken to ensure than an adequate supply of all necessary resources will be available to meet the County's growth needs.

The policy applicable to the SAMP is Policy 5 which deals with the protection of water quality.

Policy 5: Water Quality–To protect water quality through management and enforcement efforts.

Consistency Determination

As previously noted in this chapter, discussed in Chapter 6.0, and addressed extensively in Chapter 8.0, a Water Quality Management Plan (WQMP) has been prepared to support the SAMP process. The WQMP conducted hydrologic modeling for the alternatives based on a 53-year rainfall record. The WQMP further conducted a water balance and flow duration analysis. To achieve pre- and post-project flow duration matching the WQMP proposes a combined control system consisting of the following elements: flow duration control and water quality treatment basin, infiltration basin, bioinfiltration swale, storage facility for non-potable water supply, and diversion conduit to export excess flows out of the sub-basin. In addition to these structural BMPs, the WQMP also addressed non-structural BMP's and adaptive management of water quality. Thus the WQMP prepared to support the SAMP will enable the alternatives to protect and manage water quality and thus be consistent with Policy 5 above.

10.2.2.3 County Of Orange Specific Plans

Foothill/Trabuco Specific Plan

The Foothill/Trabuco Specific Plan (adopted in December 1991, as amended August 21, 2001) sets forth goals, policies, land use district regulations, development guidelines, and implementation programs to preserve the area's rural character and guide future development in the Foothill/Trabuco area. The Foothill/Trabuco Specific Plan area is approximately 6,500 acres and is located in the foothills of the Santa Ana Mountains in unincorporated Orange County. The Specific Plan area is generally bound on the north by the Silverado/Modjeska Specific Plan area and the Cleveland National Forest; to the south by O'Neill Regional Park, the Trabuco and Robinson Ranch Planned Communities, and the City of Rancho Santa Margarita; to the east by the Cleveland National Forest; and to the west by the Santiago Ranch project and the Foothill Ranch and Portola Hills Planned Communities.

The Specific Plan includes six components. The Land Use Plan Component identifies the permitted uses in the Foothill/Trabuco Specific Plan Area. The Circulation Plan Component identifies existing and private roads in the Specific Plan area, as well as road improvements necessary to support permitted development. The purpose and intent of the Resources Overlay Component is to preserve and minimize impacts on significant regional resources (i.e., wildlife corridors, oak woodlands, and stream beds). The Public Facilities Component addresses the adequacy of existing public facilities to meet the level of permitted development in the Specific Plan area. The public facilities and services addressed in this section are circulation, water distribution, wastewater disposal, school facilities, sheriff and fire service, and library service. The Recreation Component includes an inventory and description of existing and proposed recreational facilities in the Specific Plan area. These include the Cleveland National Forest, regional and local parks, regional and local riding and hiking trails, and bikeways. The Phasing Component addresses circulation phasing, wastewater treatment phasing, school facilities phasing, and traffic safety programs.

The Foothill/Trabuco Specific Plan area is divided into three planning areas based on road access, proximity to and availability of infrastructure, and differing development opportunities and constraints. The three planning area are the Upper Aliso Planning Area, Trabuco Canyon Planning Area, and Plano Trabuco Planning Area. Table 10-1 summarizes the existing and permitted land uses in the Specific Plan Area by planning area. The County General Plan Housing Element (May 8, 2001; technical amendment updates April 2004) notes that for the Foothill/Trabuco Specific Plan area, there are 1,783.8 vacant developable acres.

TABLE 10-1
FOOTHILL/TRABUCO SPECIFIC PLAN LAND USE SUMMARY

Existing/Proposed Land Use	Maximum Dwelling Units/Square Feet	Approximate Acreage
Upper Aliso Planning Area		
Residential (SFD)	1,137 du	1,261.9
Open Space	0	160.7
Restaurant and/or Existing Tavern/Home Improvement Center	19,000 sq.ft.	12.2
Special Use	Existing use	Not stated
Public/Quasi-Public Facility	Existing uses	34.1
Retail Nursery	5,000 sq.ft.	2.0
Subtotal Acreage		**1,470.9 ac.**
Trabuco Canyon Planning Area		
Residential (SFD)	1,016 du	2,561.4
Open Space	0	934.8
Commercial	Existing uses	Not stated
Commercial/Office	Existing use	4.0
Public/Quasi-Public Facility	Existing uses	376.2
Regional Park	0	400.0
Sand and Gravel Extraction	Existing use	Not stated
Subtotal Acreage		**4,276.4 ac.**
Plano Trabuco Planning Area		
Residential (SFD)	612 du	209.1
Open Space	0	Not stated
Wholesale Nursery	Existing (interim use)	See residential
Public/Quasi-Public Facility	Existing uses	3.0
Subtotal Acreage		**212.1 ac.**
Total Residential	**2,675 du**	**4,032.4 ac.**
Total Open Space	**0**	**1,095.5 ac.**
Total Public/Quasi-Public Facility	**Existing uses**	**413.3 ac.**
Total Commercial, Commercial/Office	**Existing use**	**4.0 ac.**
Retail Nursery	**5,000 sq.ft.**	**2.0 ac.**
Regional Park	**0**	**400.0 ac.**
Sand and Gravel Extraction	**Existing use**	**Not stated**
Restaurant and/or Existing Tavern/Home Improvement Center	**19,000 sq.ft.**	**12.2 ac.**
TOTAL ACRES		**5,959.4 ac.**

Source: Foothill/Trabuco Specific Plan Appendix B, Statistical Summary by Planning Area, December 1991, as amended August 21, 2001.

Upper Aliso Planning Area

The Upper Aliso Planning Area includes properties adjacent to Santiago Canyon Road/El Toro Road and along Live Oak Canyon Road west of Harris Grade. The planning area is generally bound on the north by the major ridgeline which separates the Foothill/Trabuco Specific Plan Area from the Silverado/Modjeska Specific Plan Area; to the south by O'Neill Regional Park; to the east by the Cleveland National Forest and the Trabuco Canyon Planning Area; and to the west by Whiting Ranch Wilderness Park, Foothill Ranch Planned Community, Santiago Ranch, and Portola Hills Planned Community. Portions of the Cleveland National Forest are within the boundaries of the planning area. The planning area contains a series of major ridgelines and wooded canyons.

Trabuco Canyon Planning Area

The Trabuco Canyon Planning Area is bound on the north by the Silverado/Modjeska Specific Plan Area; to the south by the Plano Trabuco Specific Plan Area; and to the east by the Cleveland National Forest. The planning area includes O'Neill Regional Park and portions of the Cleveland Nation Forest. The majority of existing development is accessed from Trabuco Oaks Drive and Mountain View Road. The planning area contains major and minor ridgelines with intervening wooded canyons.

Plano Trabuco Planning Area

The Plano Trabuco Planning Area is located south of Trabuco Creek and adjacent to existing development in the City of Rancho Santa Margarita and in Robinson Ranch. The planning area is predominately flat with limited native vegetation because of agricultural activities.

The goals and objectives of the Foothill/Trabuco Specific Plan Area, as applicable to the SAMP, are as follows:

Goals

a. **Rural Character/Forest Buffer:** To preserve the rural character of the area and provide a buffer between urban development and the Cleveland National Forest.

b. **Resource Preservation:** To preserve significant landform, biological, and scenic resources.

c. **Development Potential:** To ensure at least some development potential on each individual property.

d. **Circulation/Infrastructure:** To provide for a circulation system and other infrastructure adequate to serve the ultimate level of development permitted.

e. **Equestrian/Recreational Opportunities:** To provide equestrian and other recreational opportunities.

Area-wide Objectives

Resource Preservation

a. Preserve significant biological resources, including oak woodlands, riparian areas, and wildlife mobility corridors.

b. Preserve the Arroyo Trabuco/Trabuco Creek as permanent open space to ensure the preservation of the wildlife mobility corridor present in the creek and ensure consistency with the Resources Element of the County's General Plan which designates the creek as an Open Space, Conservation, and Scenic Corridor.

Consistency Determination

As described in Chapter 1.0, the three main goals of the SAMP process are to:

- Allow reasonable economic development through one or more permitting procedures that provide regulatory predictability and incentives for comprehensive resource protection, management, and restoration over the long term.

- Establish an aquatic resources conservation program that includes preservation, restoration, and management of aquatic resources referred to hereafter as the "Aquatic Resources Conservation Program" or "ARCP."

- Minimize individual and cumulative impacts of future projects within the SAMP watersheds by relating permitting for future activities to the SAMP ARCP, including studies prepared for the SAMP and the Southern Subregion Coordinated Planning Process.

Projects in the SAMP Study Area would be subject to one of two proposed permitting procedures for projects outside of the RMV Planning Area:

- Proposed use of Letter of Permission (LOP) Procedures for other future qualifying permit applicants whose potential impacts on the Waters of the U.S. would be assessed through reliance on the SAMP at future points in time. Figure 1-3 in Chapter 1.0 identifies the areas where LOP procedures may be used for qualifying applicants.

- Proposed Regional General Permit (RGP) for certain limited activities and the suspension of selected Nationwide Permits (NWP) for small-scale activities and ongoing maintenance activities within the SAMP Study Area but outside of the RMV Planning Area (see Figure 1-4 of Chapter 1.0).

As described in Chapter 2.0, future projects within the Foothill/Trabuco Specific Plan area that impact jurisdictional Waters of the U.S. are eligible to participate in the SAMP through the permitting procedures noted above. These permitting procedures are consistent with the applicable goals of the Foothill/Trabuco Specific Plan. Permitting actions within the RMV Planning Area would not affect the Foothill/Trabuco Specific Plan.

Coto De Caza Specific Plan

The Coto de Caza Specific Plan (as amended August 8, 1995) specifies the distribution, location, and extent of the existing and proposed use of land within the boundaries of the Coto de Caza Specific Plan site. The 4,929-acre Specific Plan site is located in southeastern unincorporated Orange County. The Specific Plan Area is generally bound to the north by the City of Rancho Santa Margarita; to the south by the RMV Planning Area in unincorporated Orange County; to the east by the City of Rancho Santa Margarita, Dove Canyon Planned Community in unincorporated Orange County, and the National Audubon Society Starr Ranch Sanctuary; and to the west by the City of Rancho Santa Margarita and the General Thomas F. Riley County Wilderness Park.

Existing development includes estate and custom lot residences, condominium developments, and single-family residences, an equestrian center, and two golf courses. As identified in Table 10-2, the County General Plan Housing Element notes that Coto de Caza is entitled for 6,268 dwelling units. Based on the development potential of the planned community, including the history of development patterns on the site, the County has estimated its development potential to be 4,558 units. As of 2004, 4,311 units have been constructed in Coto de Caza.

TABLE 10-2
COTO DE CAZA SPECIFIC PLAN LAND USE SUMMARY

Land Use	Dwelling Units	Acreage
Rural Residential	424	896
Low Density Residential	669	325
Medium Density Residential	4,141	1,008
High Density Residential	978	128
Commercial	56	117
Open Space	0	2,290
Roads	0	165
Total Dwelling Units	**6,268**	
Total Acreage		**4,929**
Source: Coto de Caza Specific Plan as amended August 8, 1995..		

The development regulations and standards set forth in the Coto de Caza Specific Plan are intended to achieve the following goals:

- Implement the policies and objectives of the Orange County General Plan;
- Provide, in conjunction with the land uses proposed and other development policies, guide for the orderly growth and development of the community;
- Establish conditions which will allow the land uses authorized to exist in harmony within the community and the environmental resources therein;
- Protect and enhance real property values of the overall community while providing a variety of housing opportunities; and
- Promote the stability of existing land uses where they are intended to remain and protect them from incompatible and harmful intrusions.

Consistency Determination

As noted above, future participants in the SAMP (including projects within the Coto de Caza Specific Plan that would impact USACE jurisdiction) would be subject to one of two proposed permitting procedures for projects outside of the RMV Planning Area:

- Proposed use of Letter of Permission (LOP) Procedures for other future qualifying permit applicants whose potential impacts on the Waters of the U.S. would be assessed through reliance on the SAMP at future points in time. Figure 1-3 in Chapter 1.0 identified the areas where LOP procedures may be used for qualifying applicants.

- Proposed Regional General Permit (RGP) for certain limited activities and the suspension of selected Nationwide Permits (NWP) for small-scale activities and ongoing maintenance activities within the SAMP Study Area but outside of the RMV Planning Area (see Figure 1-4of Chapter 1.0).

Implementation of the proposed SAMP permitting procedures for projects within the Coto de Caza Specific Plan area affecting jurisdictional Waters of the U.S. would not adversely affect the goals of the Specific Plan. Permitting actions within the RMV Planning Area would not affect the Coto de Caza Specific Plan area.

10.2.3 CITY OF DANA POINT GENERAL PLAN

The City of Dana Point General Plan (adopted 1991, as amended) contains the following elements: Land Use; Urban Design, Housing, Circulation, Noise, Public Safety, Conservation/Open Space, Public Facilities/Growth Management, and Economic Development. Goals and policies of the General Plan, relevant to the proposed SAMP, are as follows:

10.2.3.1 Land Use Element

The City of Dana Point General Plan Land Use Element (July 9, 1991) serves as a guide for the allocation of land use in the City. The Land Use Element discusses that the City represents the "unification of three distinct pre-incorporation communities− Dana Point, Monarch Beach, and Capistrano Beach." Implementation of the policies of the Land Use Element will be used to maintain and improve the quality of the City of Dana Point.

Goal 4: Encourage the preservation of the natural environmental resources of the City of Dana Point.

Policy 4.2: Consider the constraints of natural and man-made hazards in determining the location, type and intensities of new development. (Coastal Act/30240, 30253)

Policy 4.5: Consider the environmental impacts of development decisions. (Coastal Act/30240, 30241, 30242, 30243, 30244)

Policy 4.9: Encourage the preservation of significant natural areas as cohesive open space.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of Dana Point that would affect jurisdictional Waters of the U.S. would be required to comply with the provisions of the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP. Implementation of the proposed SAMP permitting procedures (see above) for projects in the City of Dana Point affecting jurisdictional Waters of the U.S. would not adversely affect the applicable Dana Point General Plan Land Use Element goal related to the preservation of natural environmental resources. The purpose of a SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated under the SAMP.

10.2.3.2 Conservation and Open Space Element

The City of Dana Point General Plan Conservation and Open Space Element (July 9, 1991) addresses the preservation and use of the City's important natural resources and open space

areas. The element notes that a substantial portion of the City's natural open space and biological habitat has been replaced with urban development, but that there are significant areas that remain in a natural state. The conservation of open space and natural landforms can help to preserve the character of the area; future development should respect these natural features.

Goal 1: Conserve and protect surface water, groundwater and imported water resources.

Policy 1.1: Retain, protect and enhance local drainage courses, channels, and creeks in their natural condition, where feasible and desirable, in order to maximize their natural hydrologic functioning so as to minimize adverse impacts from polluted storm water run-off. (Coastal Act/30231)

Policy 1.2: Protect groundwater resources from depletion and sources of pollution.

Policy 1.4: Protect water quality by seeking strict quality standards and enforcement with regard to water imported into the County, and the preservation of the quality of water in the groundwater basin, streams, estuaries, and the ocean. (Coastal Act/30231)

Policy 1.5: Retain, maintain, protect, and enhance existing riparian habitat adjacent to drainage courses, channels, and creeks through methods such as, but not limited to, the establishment of buffer areas adjacent to such habitats. (Coastal Act/30231)

Policy 1.6: Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible to mitigate the loss of any riparian habitat and any downstream impacts, and shall be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat. (Coastal Act/30236)

Policy 1.7: Maintain and, where feasible, restore the biological productivity and the quality of coastal waters, creeks, and groundwater, appropriate to maintain optimum populations of marine organisms and to protect human health. Measures including, but not limited to, minimizing the adverse effects of waste water discharges, controlling runoff, preventing the depletion of ground water supplies, preventing substantial interference with surface water flow, maintaining vegetation buffer areas protecting riparian habitats, minimizing alteration of natural streams, and street sweeping, shall be encouraged. (Coastal Act/30231)

Policy 1.8: Coordinate with the appropriate Regional Water Quality Control Board, the County of Orange and other agencies and organizations in the implementation of the National Pollution Discharge Elimination System Permits (NPDES) regulations to minimize adverse impacts on the quality of coastal waters. (Coastal Act/30231)

Goal 2: Conserve significant topographical features, important watershed areas, resources, soils and beaches.

Policy 2.1: Place restrictions on the development of floodplain areas, beaches, sea cliffs, ecologically sensitive areas and potentially hazardous areas. (Coastal Act/30235, 30236, 30240, 30253)

Policy 2.3: Control erosion during and following construction through proper grading techniques, vegetation replanting, and the installation of proper drainage, and erosion control improvements. (Coastal Act/30243)

Policy 2.4: Require the practice of proper soil management techniques to reduce erosion, sedimentation, and other soil-related problems. (Coastal Act/30243)

Policy 2.5: Lessen beach erosion by minimizing any natural changes or man-caused activities which would reduce the replenishment of sand to the beaches. (Coastal Act/30235)

Policy 2.6: Encourage public acquisition of significant land resources for open space when funds or opportunities are available. (Coastal Act/30240)

Policy 2.8: Minimize risks to life and property, and preserve the natural environment, by siting and clustering new development away from areas which have physical constraints associated with steep topography and unstable slopes; and where such areas are designated as Recreation/Open Space or include bluffs, beaches, or wetlands, exclude such areas from the calculation of net acreage available for determining development intensity or density potential. (Coastal Act/30233, 30253)

Goal 3: Conserve significant natural plant and animal communities.

Policy 3.1: Environmentally sensitive habitat areas, including important plant communities, wildlife habitats, marine refuge areas, riparian areas, wildlife movement corridors, wetlands, and significant tree stands, such as those generally depicted on Figure COS-1 (of the City of Dana Point General Plan Conservation/Open Space Element) shall be preserved. Development in areas adjacent to environmentally sensitive habitat areas shall be sited and designed to prevent impacts which would significantly degrade those areas through such methods as, the practice of creative site planning, revegetation, and open space easement/dedications, and shall be compatible with the continuance of those habitat areas. A definitive determination of the existence of environmentally sensitive habitat areas on a specific site shall be made through the coastal development permitting process. (Coastal Act/30230, 30240)

Policy 3.2: Require development proposals in areas expected to contain important plant and animal communities and environmentally sensitive habitat areas, such as but not limited to marine refuge areas, riparian areas, wildlife movement corridors, wetlands, and significant tree stands, to include biological assessments and identify affected habitats. (Coastal Act/30230, 30240)

Policy 3.3: Encourage retention of natural vegetation and require revegetation of graded areas.

Policy 3.6: The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall only be permitted in accordance with Section 30233 of the Coastal Act. (Coastal Act/30233)

Policy 3.7: Environmentally sensitive habitat areas (ESHA) shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. (Coastal Act/30240)

Goal 6: Encourage open space areas to preserve natural resources.

Policy 6.1: Mitigate the impacts of development on sensitive lands such as, but not limited to, steep slopes, wetlands, cultural resources, and environmentally sensitive habitat areas through the development review process. (Coastal Act/30233, 30240, 30244, 30253)

Consistency Determination

Proposed projects within the SAMP Study Area in the City of Dana Point that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures for projects in the City of Dana Point affecting jurisdictional Waters of the U.S. would not adversely affect the applicable Dana Point General Plan Conservation/Open Space Element goals related to the conservation and protection of water resources, conservation of watersheds, conservation of significant plant and wildlife resources, and preservation of natural resources. The USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters. The Section 404 (b)(1) Guidelines (40 CFR 230) stipulate that the USACE only authorize the least environmentally damaging practicable alternative. According to 40 CFR Part 230.10 Subpart B, an alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose. The purpose of a SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated under the SAMP.

10.2.4 CITY OF LAGUNA HILLS GENERAL PLAN

The City of Laguna Hills General Plan (adopted June 28, 1994) has been organized into "chapters." These chapters are: Community Development and Design, Fiscal Management, Municipal Facilities and Services, Environmental Resources, Environmental Hazards and Implementation and Monitoring Programs. State-mandated issues that are required to be addressed are included in within each chapter as separate elements.

10.2.4.1 Environmental Resources

The City of Laguna Hills Environmental Resources chapter of the City of Laguna Hills General Plan states that as development of Laguna Hills approaches buildout, the role of environmental management will change from an emphasis on balancing the need to preserve significant environmental features and the benefits of growth and development to the need to wisely manage the ongoing use of resources. State mandated elements included in this chapter of the City of Laguna Hills General Plan are: Open Space; Air Quality; Biological Resources; Energy Resources; Water Resources; Mineral Resources; and Historic Resources.

Open Space Goal: Maintain an open space system that will conserve remaining natural resources.

Strategy A.2 (The Role of Open Space): Recognize Aliso Creek and Veeh Reservoir as important open space resources and coordinate with County Agencies to enhance their conservation value.

Strategy A.4 (Establishing Open Space Responsibility and Liability): Develop an Open Space Management Plan that provides a detailed inventory of all open space lands in the General Plan study area; an analysis of the physical and environmental opportunities and constraints for the development of individual sites; and conceptual plans for their ultimate use along with a comprehensive implementation plan of development and conservation.

Biological Resources Goal: Preserve critical biotic resources in place and work to maintain habitat values and biotic diversity within the Laguna Hills study area.

Strategy C.7 (Wetlands Alteration): Work with Federal, State, and regional agencies in an effort to comply with the requirements of the Federal and State Endangered Species Acts and Federal Clean Water Act in areas determined to be environmental sensitive.

Strategy C.8 (Aliso Creek Corridor): In coordination with strategies in the Open Space Element, recognize Aliso Creek and Veeh Reservoir as important biological resources and coordinate with County Agencies and adjacent property owners to enhance their conservation value.

Water Resources Goal: Availability of water to support the residents and businesses within the General Plan study area through a combination of water conservation, water reuse, and protection of groundwater quality.

Strategy E.1 (Protection of Water Resources): Continue to coordinate with the County of Orange in following the requirements of the County's National Pollutant Discharge Elimination System (NPDES) permit and implementation programs.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of Laguna Hills that would affect jurisdictional Waters of the U.S. would be required to comply with the provisions of the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP. Implementation of the proposed SAMP permitting procedures (see above) for projects in the City affecting jurisdictional Waters of the U.S. would not adversely affect the applicable General Plan Environmental Resources Chapter goal related to the conservation of natural resources. The purpose of a SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated under the SAMP.

The USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters. The Section 404 (b)(1) Guidelines (40 CFR 230) stipulate that the USACE only authorize the least environmentally damaging practicable alternative. The purpose of a SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated under the SAMP.

10.2.5 CITY OF LAGUNA NIGUEL GENERAL PLAN

The City of Laguna Niguel General Plan (adopted August 4, 1992, as amended) contains the following elements: Land Use; Open Space/Parks/Conservation, Circulation, Public Facilities, Noise, Seismic/Public Safety, Housing, and Growth Management. Goals and policies of the General Plan, relevant to the proposed SAMP, are as follows:

10.2.5.1 Land Use Element

The City of Laguna Niguel General Plan Land Use Element (August 4, 1992) establishes goals, policies, and actions that give direction to land use development in the City of Laguna Niguel.

The General Plan notes that it is through the realization of the goals, policies, and corresponding implementation actions that the future land use pattern of Laguna Niguel will continue to be shaped.

Goal 5: Preservation and enhancement of the natural setting of the City.

Policy 5.3: Strive to maintain or improve the City's existing environmental quality.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of Laguna Niguel that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures for projects in the City affecting jurisdictional Waters of the U.S. would not adversely affect the applicable General Plan Land Use Element goal to preserve and enhance the natural setting of the City. The purpose of a SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated under the SAMP.

10.2.5.2 Open Space/Parks/Conservation Element

The purpose of the City of Laguna Niguel Open Space/Parks/Conservation Element (August 4, 1992) is to (1) assure the continued availability of predominately open land for the enjoyment of scenic beauty, for recreation, and for conserving natural resources; (2) guide development in order to make wise and prudent use of the City's natural, environmental, and cultural resources; (3) maintain and promote the cultural and archaeological heritage of the City; (4) maintain and enhance designated resource areas; (5) provide the foundation for a comprehensive open space management system involving all categories of open space; and (6) establish the basis for City collaboration with adjacent jurisdictions in broader open space and environmental resource management, including establishment of linkages with adjoining open space and trail systems.

Goal 5: Conservation of natural resource areas of community and regional significance.

Policy 5.1: Conserve sensitive species and plant communities and wildlife habitats to the maximum extent feasible through open space dedication and easements, creative site design, and other workable mitigation actions.

Policy 5.2: Recognize Aliso Creek, Sulphur Creek, and Salt Creek as important open space resources and cooperate where feasible to enhance their conservation value.

Goal 8: Conservation and enhancement of the Aliso Creek Corridor.

Policy 8.1: Cooperate with the County of Orange to maintain ecological balance by protecting infringement on those areas in and along Aliso Creek which have significant environmental value.

Policy 8.2: Cooperate with the County of Orange to conserve, and expand where possible riparian areas in the Aliso Creek area as sources of shelter and water for wildlife.

Policy 8.3: Cooperate with the County of Orange to conserve a continuous open space corridor along the Aliso Creek corridor in order to maintain animal migration opportunities and conserve natural and recreational resource values.

Goal 9: Conservation and enhancement of the Salt Creek Corridor.

Policy 9.2: Protect sensitive wildlife and plant life communities.

Policy 9.3: Retain appropriate portions, including wetland areas, of Salt Creek as a sustainable natural habitat.

Policy 9.4: Enhance wildlife habitat areas, where feasible.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of Laguna Niguel that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures would not adversely affect the applicable General Plan Open Space/Parks/Conservation goals related to the conservation of natural resources, particularly wetland resources. The USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters. The Section 404 (b)(1) Guidelines (40 CFR 230) stipulate that the USACE only authorize the least environmentally damaging practicable alternative. According to 40 CFR Part 230.10 Subpart B, an alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose. The Section 404 (b)(1) Guidelines make a specific distinction between the basic and overall project purpose (40 CFR Part 230.10[a]). The broad objectives of the SAMP are to allow for comprehensive management of aquatic resources and to increase regulatory predictability for development and infrastructure projects that would impact aquatic resources. The specific SAMP Tenets provide a framework for aquatic resource conservation planning and the assessment of avoidance and minimization of impacts to aquatic resources.

10.2.6 CITY OF MISSION VIEJO GENERAL PLAN

The City of Mission Viejo General Plan (adopted October 8, 1990, as amended) contains the following elements: Land Use; Housing, Circulation, Conservation/Open Space, Public Safety, Noise, Public Facilities, Economic Development, and Growth Management. Goals and policies of the General Plan, relevant to the proposed SAMP, are as follows:

10.2.6.1 Land Use Element

The City of Mission Viejo General Plan Land Use Element (June 15, 1998) serves as a guide for future development in the City.

Goal 2.0: Establish a growth management and development program which avoids adverse public service, environmental or fiscal effects.

Policy 2.9: Designate compatible land uses for environmentally sensitive land areas.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of Mission Viejo that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures for such projects in the City would not adversely affect the applicable Mission Viejo General Plan Land Use Element goal related to the avoidance of environmental effects. The purpose of a SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated under the SAMP.

10.2.6.2 Conservation and Open Space Element

The City of Mission Viejo General Plan Conservation and Open Space Element (December 6, 1999) addresses the preservation and use of the City's important natural resources and open space areas.

Goal 1.0: Conserve the City's natural resources.

Policy 1.1: Protect groundwater and surface water quality by minimizing urban runoff and sedimentation into drainage courses.

Policy 1.2: Ensure compliance with the City's Master Plan of Drainage, requiring developers to comply with Non Point Discharge Elimination System runoff standards.

Policy 1.6: Utilize a development proposal review process to mitigate the impacts of development on sensitive lands such as steep slopes, wetlands, cultural resources, oak woodlands, and sensitive habitats.

Policy 1.9: Preserve sensitive plant and animal species, and their associated habitats.

Policy 1.10: Establish and manage wildlife habitat corridors within public parks and natural resource protection areas where appropriate to allow for wildlife use.

Goal 2.0: Protect open space areas to preserve natural resources.

Policy 2.2: Support preservation of portions of the Arroyo Trabuco as a prime bird nesting/foraging habitat and major wildlife movement corridor.

Policy 2.3: Support the preservation of the remaining prime bird nesting/foraging habitats in the City, particularly in the canyon areas and ridgelines.

Policy 2.4: Protect environmental sensitive buffering areas such as the area between Upper Oso Reservoir and O'Neill Regional Park.

Policy 2.5: Support the efforts of other agencies to preserve undisturbed portions of the O'Neill Regional Park identified as a sensitive habitat.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of Mission Viejo that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures would not adversely affect the applicable General Plan Conservation and Open Space Element goals related to the conservation of natural resources, particularly wetland resources, and the protection of open space. The USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters. The Section 404 (b)(1) Guidelines (40 CFR 230) stipulate that the USACE only authorize the least environmentally damaging practicable alternative. According to 40 CFR Part 230.10 Subpart B, an alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose. The Section 404 (b)(1) Guidelines make a specific distinction between the basic and overall project purpose (40 CFR Part 230.10[a]). The broad objectives of the SAMP are to allow for comprehensive management of aquatic resources and to increase regulatory predictability for development and infrastructure projects that would impact aquatic resources. The specific SAMP Tenets provide a framework for aquatic resource conservation planning and the assessment of avoidance and minimization of impacts to aquatic resources.

10.2.7 CITY OF RANCHO SANTA MARGARITA GENERAL PLAN

The City of Rancho Santa Margarita General Plan (adopted December 2002) contains the following elements: Land Use; Economic Development, Circulation, Housing, Conservation/ Open Space, Safety, and Noise. Goals and policies of the General Plan, relevant to the proposed SAMP, are as follows:

10.2.7.1 Land Use Element

The City of Rancho Santa Margarita General Plan Land Use Element (December 2002) is a guide to land use planning in the City. The element identifies the type and location of existing and future land uses in the City. The four major issues addressed by the goals, policies, and implementing actions of the City's Land Use Element are: balancing the mix of land use to ensure that revenue generation matches service provision responsibilities; controlling and directly future land use to complement and protect the quality of the existing community; ensuring that the reuse of U.S. Marine Corps Air Station El Toro is environmentally compatible with the existing community; and providing adequate public services and facilities for existing and future needs.

Goal 4: To the maximum extent practicable, reduce the discharge of pollutants and runoff flow from urban development.

Policy 4.1: To the maximum extent practicable, cause property owners or developers to minimize pollutant loading and flow velocity from new development projects and redevelopment projects during and after construction.

Policy 4.2: To the maximum extent practicable, limit development that disturbs natural water bodies and natural drainage systems.

Policy 4.3: To the maximum extent practicable, educate all who live, work and shop in the City to minimize activities that pollute urban runoff.

Policy 4.4: Post-development runoff from a site shall not contain pollutant loads that cause or contribute to exceedances of receiving water quality objectives and which have not been reduced to the maximum extent practicable.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of Rancho Santa Margarita that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures would not adversely affect the applicable General Plan Land Use Element goal related to the reduction of discharge of pollutants and runoff flow from urban development.

10.2.7.2 Conservation and Open Space Element

The Rancho Santa Margarita Conservation/Open Space Element (adopted December 8, 2002) contain goals and policies to protect and maintain natural resources such as water, soils, wildlife, and minerals, and prevent wasteful resource exploitation and destruction. The Open Space element must address several open space categories, such as those used for the preservation of natural resources, outdoor recreation, as well as open space maintained for public health and safety. This last category of open space is addressed in the General Plan Safety Element.

Goal 1: Protect and enhance the significant ecological and biological resources within and surrounding the community.

Policy 1.1: Preserve ecological and biological resources by maintaining these resources as open space.

Policy 1.2: Continue to preserve the coast live oak woodlands in the City by retaining the habitat as open space.

Policy 1.3: Protect and enhance the creeks, lakes and adjacent wetlands for their value in providing visual amenity, habitat for wildlife and recreational opportunities.

Policy 1.4: Through land use planning, environmental review, and conditions placed on development projects, reduce the impact of urban development on important ecological and biological resources, including the beneficial uses of receiving waters.

Goal 2: Maintain community character and identity by protecting the City's scenic resources and vistas.

Policy 2.1: Maintain scenic resources, such as the City's hillsides, ridgelines and surface water resources as open space.

Goal 4: Promote a safe supply of potable water for community uses.

Policy 4.1: Coordinate water quality programs with responsible local, regional, state and federal agencies.

Policy 4.2: Participate in applicable and enforceable local, regional, state, and federal efforts to protect and enhance potable water quality.

Policy 4.3: Encourage the development of new water sources, and encourage efforts for development of new water sources by the Santa Margarita and Trabuco Canyon Water Districts.

Goal 5: Protect the beneficial uses of ground and surface waters.

Policy 5.1: To the maximum extent practicable, adopt and enforce regulations and engage in educational efforts to eliminate pollution from urban runoff.

Policy 5.2: Preserve, and where possible, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands, and buffer zones.

Policy 5.3: Limit disturbances of natural water bodies and natural drainage systems caused by development including roads, highways, and bridges.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of Rancho Santa Margarita that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures would not adversely affect the applicable General Plan Conservation/Open Space Element goals related to the protection and enhancement of ecological, biological, and natural visual resources, and the protection of water resources. The USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters. The Section 404 (b)(1) Guidelines (40 CFR 230) stipulate that the USACE only authorize the least environmentally damaging practicable alternative. The broad objectives of the SAMP are to allow for comprehensive management of aquatic resources and to increase regulatory predictability for development and infrastructure projects that would impact aquatic resources. The specific SAMP Tenets provide a framework for aquatic resource conservation planning and the assessment of avoidance and minimization of impacts to aquatic resources.

10.2.7.3 Safety Element

The City of Rancho Santa Margarita Safety Element (December 2002) establishes goals, policies, and a plan to ensure that there is an adequate, coordinate, and expedient response to public safety concerns.

Goal 1: Reduce the risk to the community from hazards related to geologic conditions, seismic activity, wildfires, structural fires, and flooding.

Policy 1.6: Avoid development of areas that are particularly susceptible to erosion and sediment loss.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of Rancho Santa Margarita that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures would not adversely affect the applicable General Plan Safety Element goal, particularly related to erosion and sediment loss. The USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters and takes into consideration sediment processes and transport, as addressed in this SAMP EIS.

10.2.8 CITY OF SAN CLEMENTE GENERAL PLAN

The City of San Clemente General Plan (adopted May 6, 1993) contains the following elements: Land Use, Urban Design, Economic Development, Circulation, Scenic Highways, Utilities, Public Facilities and Services, Parks and Recreation, Growth Management, Natural and Historic/Cultural Resources, Energy Conservation, Geologic, Seismic, and Soils Hazards, Natural Hazards, Noise, Hazardous Materials and Uses, and Nuclear. Goals and policies of the General Plan, relevant to the proposed SAMP, are as follows:

10.2.8.1 Land Use Element

The City of San Clemente General Plan Land Use Element (adopted May 6, 1993, as amended) identifies goals, objectives, and policies to authorize the type and mix of land uses which are to be permitted in the City and its Sphere of Influence and establish the framework for the City's urban form and development pattern in which the land uses will be developed.

Goal: Provide for the appropriate mix and type of land uses which serve the needs of existing and future residents and achieve a pattern and distribution of land uses which:

a. retain and enhance established residential neighborhoods, commercial and industrial districts, recreational resources, community-activity areas and amenities, and open spaces;

b. provide for the revitalization, adaptive re-use, and upgrade of deteriorated neighborhoods and districts;

c. allow for the intensification of commercial and industrial districts to maintain economic stability;

d. provide opportunities for new residential, commercial, and employee generating uses in undeveloped areas within the capacities of infrastructure and public services;

e. preserve and enhance coastal recreation, resources, and amenities;

f. protect and maintain significant environmental resources;

g. provide distinctive residential neighborhoods and commercial and industrial districts;

h. provide a diversity of areas characterized by differing functional activities and scales and intensity of use;

i. locate commercial, public services, recreation, and jobs in proximity to residents and businesses; and

j. maintain San Clemente as a unique and distinctive place in southern Orange County and the greater region.

Objective 1.1: Ensure that lands are designated to accommodate a balance of uses which provide for the housing, commercial, employment, educational, recreational, cultural, social, and esthetic needs of the residents; and to maintain the City's significant environmental resources.

Objective 1.9: Preserve open spaces for the City's residents which provide visual relief, amenity, and recreational opportunities, protect environmental resources, protect the population from environmental hazards, and are in balance with new development.

Goal: Ensure the protection and maintenance of environmental resources.

Objective 1.31: Provide that the new development is sited and designed to protect significant environmental resources and that impacts are adequately mitigated.

Objective 1.32: Ensure that localized conditions which contribute to regional environmental impacts are adequately regulated.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of San Clemente that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures would not adversely affect the applicable General Plan Land Use Element goals related to the protection and maintenance significant environmental resources. The USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters. The Section 404 (b)(1) Guidelines (40 CFR 230) stipulate that the USACE only authorize the least environmentally damaging practicable alternative. The broad objectives of the SAMP are to allow for comprehensive management of aquatic resources and to increase regulatory predictability for development and infrastructure projects that would impact aquatic resources. The specific SAMP Tenets provide a framework for aquatic resource conservation planning and the assessment of avoidance and minimization of impacts to aquatic resources.

10.2.8.2 Growth Management Element

The City of San Clemente Growth Management Element considers the significant growth management opportunities and constraints affecting the City of San Clemente.

Goal: Provide the appropriate amount of designated open space within the City, both active and passive, as identified and required through the General Plan, specific plans and other applicable documents. To minimize the impact of development on existing ridgelines and designated natural open space areas in order to provide for the open space needs of the residents and community.

Policy 9.5.1: Incorporate text with the Conservation/Open Space element of the General Plan and Specific Plans and apply conditions through discretionary actions ensuring that the existing 4,227 acres of designated open space be maintained.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of San Clemente that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures would not adversely affect the applicable General Plan Growth Management Element goals related to the minimization of impacts of development on existing ridgelines and designated natural open space areas. The USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters. The Section 404 (b)(1) Guidelines (40 CFR 230) stipulate that the USACE

only authorize the least environmentally damaging practicable alternative. The broad objectives of the SAMP are to allow for comprehensive management of aquatic resources and to increase regulatory predictability for development and infrastructure projects that would impact aquatic resources. The specific SAMP Tenets provide a framework for aquatic resource conservation planning and the assessment of avoidance and minimization of impacts to aquatic resources.

10.2.8.3 Natural and Historic/Cultural Resources

The City of San Clemente's Natural and Historic/Cultural Resources Element addresses the protection and preserving of significant plant and wildlife; the preservation of coastal bluffs, ridgelines, canyons and significant public views; and ensures that historically and archaeologically significant resources are protected to preserve its inherent historic value(s).

Goal: Protect and preserve significant plant and wildlife species, which exist in the City and sphere of influence, where possible.

Objective 10.1: Balance the preservation of the City's habitat areas with new development.

Consistency Determination

As previously addressed, the USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters. The Section 404 (b)(1) Guidelines (40 CFR 230) stipulate that the USACE only authorize the least environmentally damaging practicable alternative. The broad objectives of the SAMP are to allow for comprehensive management of aquatic resources and to increase regulatory predictability for development and infrastructure projects that would impact aquatic resources. The specific SAMP Tenets provide a framework for aquatic resource conservation planning and the assessment of avoidance and minimization of impacts to aquatic resources. The SAMP would not preclude the City of San Clemente from implementing the goals and objectives of the General Plan Natural and Historic/Cultural Resources Element.

10.2.9 CITY OF SAN JUAN CAPISTRANO GENERAL PLAN

The City of San Juan Capistrano General Plan (adopted May 7, 2002) contains the following elements: Land Use; Housing, Circulation, Safety, Conservation & Open Space, Noise, Cultural Resources, Community Design, Growth Management, Parks & Recreation, Public Services & Utilities, and Floodplain. Goals and policies of the General Plan, relevant to the proposed SAMP, are as follows:

10.2.9.1 Conservation and Open Space Element

The San Juan Capistrano Conservation and Open Space Element (adopted May 7, 2002) contain goals and policies to protect and maintain natural resources such as water, soils, wildlife and minerals, and prevent wasteful resource exploitation, degradation and destruction, as well as open space goals and policies to manage open space areas, including undeveloped lands and outdoor recreation areas. It must address several open space categories such as those used for the preservation of natural resources and managed production of resources, as well as open space maintained for public health and safety reasons. The Conservation and Open Space Element expresses community goals to protect environmental resources and open space.

Goal 2: Protect and preserve important ecological and biological resources.

Policy 2.1: Use proper land use planning to reduce the impact of urban development on important ecological and biological resources.

Policy 2.2: Preserve important ecological and biological resources as open space.

Policy 2.3: Develop open space uses in an ecologically sensitive manner.

Goal 7: Protect water quality.

Policy 7.3: Conserve and protect watershed areas.

Consistency Determination

Proposed projects within the SAMP Study Area in the City of San Juan Capistrano that would affect jurisdictional Waters of the U.S. would be required to comply with the proposed San Juan Creek and Western San Mateo Creek Watersheds SAMP permitting procedures. Implementation of the proposed SAMP permitting procedures for projects in the City affecting jurisdictional Waters of the U.S. would not adversely affect the applicable General Plan Conservation & Open Space Element goals related to the protection and preservation of ecological and biological resources and water quality. The purpose of a SAMP is to provide for reasonable economic development and the protection and long-term management of sensitive aquatic resources (biological and hydrological). To the extent feasible, federal Waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated under the SAMP.

10.2.9.2 Floodplain Management Element

The Floodplain Management Element (December 14, 1999) identifies the existing creeks and floodplains within the City, recreational opportunities within the floodplains, and recommendations for improvements to the channels and creek beds to protect life and property from floodwaters. The element contains specific goals and standards to guide the preservation of the floodplains and the provision and management of recreational opportunities within them for the current and future residents of San Juan Capistrano.

Goal 2: Preserve and enhance the natural character of the creeks and their floodplains.

Policy 2.1: Use environmentally sensitive treatments where creek improvements are necessary to preserve wetlands.

Policy 2.2: Enhance and/or restore the creeks and their floodplains as part of private development projects and public works projects.

Consistency Determination

Implementation of the proposed SAMP permitting procedures would not adversely affect the applicable General Plan Floodplain Management Element goal to preserve and enhance the natural character of creeks and related floodplains. The USACE's mandate under the Clean Water Act is to maintain and restore the physical, chemical, and biological integrity of the nation's waters. The Section 404(b)(1) Guidelines (40 CFR 230) stipulate that the USACE only authorize the least environmentally damaging practicable alternative. The broad objectives of the SAMP are to allow for comprehensive management of aquatic resources and to increase

regulatory predictability for development and infrastructure projects that would impact aquatic resources. The specific SAMP Tenets provide a framework for aquatic resource conservation planning and the assessment of avoidance and minimization of impacts to aquatic resources.

CHAPTER 11.0
AGENCIES AND PERSONS CONSULTED

FEDERAL AGENCIES

U.S. Army Corps of Engineers ..... Jae Chung

STATE OF CALIFORNIA

Department of Parks and Recreation
State Parks Division, San Diego Region
Manager ..... Richard Rozelle

Planning Division
Southern Service Center
Administrative Assistant ..... CeCe Valdez

Santiago Canyon College
Earth and Space Sciences, Astronomy Department
Professor ..... Morrie Barembaum

University of California, Irvine
Astronomy Department
Graduate Student ..... Tammie Bosler

LOCAL GOVERNMENT

County of Orange
Resources and Development Management Department (RDMD)
Director ..... Bryan Speegle

RDMD, Planning and Development Services
Director ..... Tim Neely
Senior Planner ..... Chuck Shoemaker
Planner IV ..... Richard Sherry
Planner IV ..... William Melton
Planner III ..... William Grieman

RDMD, Harbors, Beaches, and Parks
Regional Trails Implementation Chief ..... Jeff Dickman
Natural Resources Manager ..... Cathy Nowak
Supervising Planner ..... Wayne Johnson
Acquisition Coordinator ..... Harry Huggins
Riding & Hiking Coordinator ..... Lonnie Bubert
Bikeway Coordinator ..... Sherri Miller
Parks District Supervisor ..... Bruce Buchman
Planner III, Historical Programs ..... Marlene Brajdic

RDMD, Flood Control Division
Manager, Flood Program ..... Sara Bavan
Senior Civil Engineer ..... Mehdi Sobhani
Engineering Technician ..... John Honsberger

RDMD, Watershed Group
Manager ..... Chris Crompton
Environmental Resource Specialist III ..... Amanda Carr

RDMD, Roads Division
Senior Planner ..... Harry Persaud

City of San Juan Capistrano
Engineering
Engineering Assistant ..... Tony Foster

Planning Services
Principal Planner ..... William Ramsey

UTILITY COMPANIES

Santa Margarita Water District
Engineering
Chief Engineer ..... Dan Ferons

Operations
Operations Manager ..... Dave Seymour

Administration
General Manager ..... John Schatz

COMPANIES AND INDIVIDUALS

Rancho Mission Viejo
Senior Vice President, Planning and Entitlement ..... Richard Broming
Vice President, Development ..... Thomas Staley
Director, Planning and Entitlement ..... Laura Coley Eisenberg
Director, Planning and Entitlement ..... Sam Couch
Director, Development and Engineering ..... Jeff Thompson

Morgan, Lewis and Bockius, LLP
Of Counsel ..... C. Jeff Brinton
Attorney ..... Robin Martindale

CHAPTER 12.0
PREPARERS AND CONTRIBUTORS

U.S. Army Corps of Engineers
SAMP Director ..... Jae Chung

BonTerra Consulting
Associate Principal, Planning and Environmental Services .. Dana C. Privitt, AICP
Principal of Technical Services ..... Kathleen Brady, AICP
Environmental Planner ..... Sam Stewart
Environmental Planner ..... Diane Barrett
GIS Specialist ..... Jenni Gómez
GIS Specialist ..... Chris Starbird
Word Processor ..... Kathy Linklater
Word Processor ..... Heidi Hollstein

ARMC Archaeology Resource Management Corporation
Registered Professional Archaeologist ..... Carol R. Demcak
Ethnographic Consultant ..... Nancy H. Evans
Historical Consultant ..... Stephen R. Van Worker

Austin-Foust Associates, Inc.
Principal ..... Terry Austin
Associate ..... Kendall Elmer
Analyst ..... Cassandra Carlin
Analyst ..... Phong Le
Analyst ..... Ida Chan

Balance Hydrologics, Inc.
Principal Hydrologist/Hydrogeologist ..... Barry Hecht
Geochemist/Water Quality Specialist ..... Bonnie Mallory
Geomorphologist ..... Scott Brown

CADRE Environmental
President ..... Ruben Ramirez

Dudek & Associates, Inc.
Senior Zoologist ..... Phil Behrends
GIS Technician ..... Mark McGinnis

EDAW, Inc.
Principal, Senior Vice President ..... Donald Smith
Principal, Vice President ..... Steve Kellenberg
Associate ..... Susan Davison
Planner ..... Ryan Boomsma
Planner ..... Michelle St. Thomas

GeoSyntec Consultants
Associate ..... Peter Mangarella
Associate ..... Eric Strecker
Senior Water Resources Engineer ..... Lisa Austin

Glenn Lukos & Associates
Principal.....Glenn Lukos
Senior Biologist .....Tony Bomkamp
Project Manager .....Ingrid Chlup

Goffman, McCormick & Urban, Inc.
Engineering Geologist, Project Manager.....Patrick J. Jenks
President .....Gary K. Urban

Huitt-Zollars, Inc.
Vice President .....James F. Gillen

JHA Environmental Consultants, LLC
Principal.....Jo Anne Aplet

Mestre Greve Associates
Professional Engineer .....Fred Greve
Professional Engineer ..... Mathew B. Jones

Pacific Advanced Civil Engineering, Inc.
Sr. Vice President, Stormwater Division..... Bruce M. Phillips

PBS&J
Geologist ..... John Lowe*

PCR Services Corporation
Senior Biologist/GIS Coordinator .....Ryan Henry
Biologist..... Elizabeth Fetscher

Peter H. Bloom

Philip Williams & Associates, Ltd. (PWA)
Principal in Charge, Vice President.....Jeffrey Haltiner
Associate.....Amy Stewart
GIS Operations, Hydrology ..... Adam Parris
GIS Operations, Sediment Transport Analysis.....Setenay Bozkurt
Graphics ..... Brad Evans

R.J. Mead Consulting
President ..... Rod Meade

Tetra Tech, Inc. Infrastructure Services Group
Project Manager .....Robert Brandom

University of Nevada, Reno
Director Ecology, Evolution and Conservation Biology ..... Dennis D. Murphy

URS
Manager of Environmental Services..... John Gray
Senior Project Manager..... Jennifer Ziv
Senior Ecologist .....Erik Larsen

Wildermuth Environmental, Inc.
President, Principal Engineer .....Mark Wildermuth

William Boyd, Esq.
Attorney at Law ..... William Boyd

CHAPTER 13.0
ACRONYMS, ABBREVIATIONS, AND GLOSSARY OF TERMS

13.1 ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Description
A	
AAQS	ambient air quality standards
AAM	Annual Arithmetic Mean
ADT	average daily traffic (or average daily trips) made by vehicles or persons in a 24-hour period
AGM	Annual Geometric Mean
AICP	American Institute of Certified Planners
a.m.	morning (before noon)
asl or amsl	above sea level or above mean sea level
APCD	Air Pollution Control District
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	Air Resources Board
ARAMP	Aquatic Resources Adaptive Management Program
ARCA	Aquatic Resources Conservation Areas
ARCP	Aquatic Resources Conservation Program
ARMC	Archaeological Resource Management Corporation
ARMR	Archaeological Resource Management Report (state guidelines)
ARRP	Aquatic Resources Restoration Plan
ASBS	Area of Special Biological Significance
ASR	Archaeological Survey Report
AST	above-ground storage tank
AVR	Average Vehicle Ridership
B	
BACT	Best Available Control Technology
BCC	Birds of Conservation Concern (USFWS)
BEPA	Bald Eagle Protection Act
BMPs	Best Management Practices (or Programs)
B.P.	before present
C	
°C	Degrees Celsius
CAA	Clean Air Act (federal)
CAA	Community Analysis Areas
CAAQS	California Ambient Air Quality Standards
CAD	Computer Aided Design
CalEPA	California Environmental Protection Agency
Cal EPPC	California Exotic Pest Plant Council
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCC	California Coastal Commission
CCR	California Code of Regulations
CDC	California Department of Conservation

Acronym/Abbreviation	Description
CDFG	California Department of Fish and Game
CDMG	California Department of Mines and Geology
CDP	Coastal Development Permit
CDR	Center for Demographic Research
CE	California Endangered species
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act of 1970
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
Cfs	cubic feet per second
CIP	Capital Improvement Program (or Plan)
cm	Centimeter
CMP	Congestion Management Plan (or Program)
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNF	Cleveland National Forest
CNPS	California Native Plant Society
CO	carbon monoxide
CofA	Condition of Approval
Corps	U.S. Army Corps of Engineers
CPP	Comprehensive Phasing Plan
CRHR	California Register of Historic Resources
CRREL	Cold Regions Research and Engineering Laboratory
CRRL	Cold Regions Research Laboratory
CRWQCB	California Regional Water Quality Control Boards
CSC	California Special Concern Species
CSS	Coastal Sage Scrub
CSUF	California State University, Fullerton
CTC	California Transportation Commission
CWA	Clean Water Act, Federal (1977)
cy	cubic yards
D	
DA	Development Agreement
DAMP	Drainage Area Management Plan
dB	Decibel
dBA	decibel, A-weighted
DHS	Department of Health Services
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DON	U.S. Department of the Navy
DOT	U.S. Department of Transportation
DPR	Department of Parks and Recreation, State of California
DSOD	Division of Safety of Dams, State of California
du	dwelling unit
du/ac	dwelling units per acre
DWR	California Department of Water Resources
E	
EA	Environmental Assessment (NEPA)
EB	Eastbound

Acronym/Abbreviation	Description
EDD	Employment Development Department, State of California
EDR	Environmental Data Resources, Inc.
EIR	Environmental Impact Report (CEQA)
EIS	Environmental Impact Statement (NEPA)
EMA	Environmental Management Agency
EMFAC7D	Emission Factor Model
EPA	U.S. Environmental Protection Agency
ERDC	U.S. Army Engineer Research Development Center
ESA	Endangered Species Act (or FESA, Federal Endangered Species Act)
ESC	Evolutionary Significant Units
F	
F	Degrees Fahrenheit
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetlands
FC	Federal Candidate Species
FCAA	Federal Clean Air Act
FCCP	Foothill Corridor Circulation Plan
FCDM	Flood Control Design Manual
FD/WQ	Flow Duration/Water Quality
FE	Federally endangered species (USFWS)
FEIR	Final Environmental Impact Report
FESA	Federal Endangered Species Act
FMMP	Farmland Mapping and Monitoring Program
FONSI	Finding of No Significance
fp	fully protected
FSC	Federal Species of Concern
FT	Federally Listed Threatened Species
FTC-S	Foothill Transportation Corridor-South
G	
gal	Gallons
GDP	General Development Plan
GERA	Gobernadora Ecological Restoration Area
GIS	Geographic Information Systems
GM	Growth Management
GMA	Growth Management Area
GMP	Growth Management Plan
GP	General Plan
GPA	General Plan Amendment
GPS	Global Positioning System
H	
HBP	Department of Harbors, Beaches, and Parks, County of Orange
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
HNL	hourly noise level
HOV	high-occupancy vehicle lane
hr.	Hour

Acronym/Abbreviation	Description
I	
I	Interstate
ICU	Intersection Capacity Utilization
IS	Initial Study (CEQA)
ITE	Institute of Transportation Engineers
K	
km	Kilometer
L	
LCP	Local Coastal Program or Plan
Ldn	Day-Night Average Sound Level
LEDPA	Least Environmentally Damaging Practicable Alternative
Leq	Sound Energy Equivalent Noise Level
Lmax	maximum noise level
LOP	Letter of Permission
LOS	Level of Service (traffic flow rating)
M	
m	Meter
M^3	cubic meters
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCBCP	Marine Corps Base Camp Pendleton
mcy	million cubic yards
MEP	Maximum Extent Practicable
MFR	Multiple Family Residential
mg/l	milligrams per liter
mgd	million gallons per day
mi	mile
ml	Milliliters
mg/m^3	milligrams per cubic meter
MM	mitigation measure
MMP or MMRP	Mitigation Monitoring Program or Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration (CEQA)
MOU	Memorandum of Understanding
MPAH	Master Plan of Arterial Highways
mph	miles per hour
MPO	Metropolitan Planning Organization
MRF	Materials Recovery Facility
MRZ	Mineral Resource Zone
MS4	Municipal Separate Storm Sewer System
MSAA	Master Streambed Alteration Agreement
MSCP	Multiple Species Conservation Plan
msf	million square feet
msl	mean sea level
MUSLE	Modified Universal Soil Loss Equation

Acronym/Abbreviation	Description
N	
N	Nitrogen
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAP	not a part
NB	Northbound
NCCP Act	Natural Community Conservation Planning Act
NCCP/HCP	Natural Community Conservation Plan/Habitat Conservation Plan
ND	Negative Declaration (CEQA)
NEPA	National Environmental Policy Act (of 1969)
NHPA	National Historic Preservation Act (1966)
NI	Neutral Indicator
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen (nitric oxide and nitrogen dioxide)
NOA	Notice of Availability (CEQA)
NOAA	National Oceanic and Atmospheric Administration
NOC	Notice of Completion (CEQA)
NOD	Notice of Determination (CEQA)
NOI	Notice of Intent (NEPA)
NOP	Notice of Preparation (CEQA)
NPDES	National Pollutant Discharge Elimination System
NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
NRHP	National Register of Historic Preservation
NROC	Nature Reserve of Orange County
NWP	Nationwide Permit
O	
O_3	Ozone
OBL	Obligate Wetland
O&M	Operations and Maintenance
OCCOG	Orange County Council of Governments
OCFA	Orange County Fire Authority
OCFCD	Orange County Flood Control District
OCHM	Orange County Hydrology Manual
OHWM	Ordinary High Water Mark
OCIWMD	Orange County Integrated Waste Management Department
OCP	Orange County Projections
OCTA	Orange County Transportation Authority
OCTAM	Orange County Transportation Analysis Model
OHP	Office of Historic Preservation, State of California
ONIS	Oglebay Norton Industrial Sands
OPR	Office of Planning and Research, State of California
OSR	Open Space Reserve
P	
P	Phosphorus or phosphate
PA	Planning Area
Pb	Lead
PC	Planned Community

Acronym/Abbreviation	Description
PC	proposed candidate for state (CDFG) protection
PDF	Project Design Feature
PDS	Planning and Development Services, County of Orange
PFRD	Public Facilities and Resources Department, County of Orange
PID	Planned Industrial Development
p.m.	evening (after noon)
$PM_{2.5}$	respirable particulate matter less than 2.5 micrometers in diameter
PM_{10}	respirable particulate matter less than 10 micrometers in diameter
ppb	parts per billion
ppm	parts per million; used interchangeably with mg/L (milligrams per liter)
ppt	parts per trillion; used interchangeably with ng/L (nanograms per liter)
PR	Project Report
PRC	Public Resources Code
PSA	Project Study Area
PSR	Project Study Report
PUD	Planned Unit Development
PWA	Philip Williams & Associates, Ltd.
R	
RCPG	Regional Comprehensive Plan and Guide, Southern California Association of Governments
RCUZ	Range Compatibility Use Zone
RDM	Residual Dry Matter
RDMD	Resources Development and Management Department, County of Orange
RGP	Regional General Permit
RHNA	Regional Housing Needs Assessment
RMV	Rancho Mission Viejo
ROC	reactive organic compounds
ROD	Record of Decision (NEPA)
ROG	reactive organic gases
ROW	right-of-way
RSA	Regional Statistical Area
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
S	
SAA	Streambed Alteration Agreement
SAMP	Special Area Management Plan
SANDAG	San Diego Association of Governments
SB	Senate Bill
SB	Southbound
SC	standard condition
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCAQMP	South Coast Air Quality Management Plan
SCCIC	South Central Coastal Information Center
SCH	State Clearinghouse, State of California
SCORE	South County Outreach and Review Effort

Acronym/Abbreviation	Description
SCS	Soil Conservation Service
SCSAM	South (Orange) County Sub-Area Model
San Diego RWQCB	San Diego Regional Water Quality Control Board
SEIR	Supplemental Environmental Impact Report
SENEL	Single Event Noise Equivalent Level
sf	square foot (or feet)
SFP	State Fully Protected Species
SFPP	Santa Fe Petroleum Pipeline
SFR	Single-family residential
SG or S&G	Sand and Gravel
SHP	Scenic Highways Plan
SHPO	State Historic Preservation Officer, State of California
SIP	State Implementation Plan
SMWD	Santa Margarita Water District
SO_2	sulfur dioxide
SO_4	Sulfates
SO_x	sulfur oxides
SOC	Species of Concern
SOCTIIP	South Orange County Transportation Infrastructure Improvement Project
sq.ft.	square feet
SR	State Route
SRA	Source Receptor Area
ST	State Threatened Species
STIP	Statewide Transportation Improvement Program
STP	Surface Transportation Program
STPP	Surface Transportation Policy Project
SWANCC	*Solid Waste Agency of Northern Cook County V. U.S. Army Corps of Engineers*
SWMM	Storm Water Management Model
SWMP	Storm Water Management Plan
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T	
TAC	toxic air contaminant
TAZ	Traffic Analysis Zone
TCA	Transportation Corridor Agencies (Orange County)
TCM	transportation control measure
TDM	Transportation Demand Management
TEA	Transportation Equity Act for the 21st Century (TEA-21)
TIA	Traffic Impact Analysis
TMA	Transportation Management Associations
TMDL	Total Maximum Daily Load
TOD	Transit-oriented Development
TOG	total organic gases
TRO	Trip Reduction Ordinance
TRW	Northrop Grumman Space Technology
TSF	Thousand Square Feet
TSM	Transportation System Management

Acronym/Abbreviation	Description
U	
UAC	Urban Activity Center (County of Orange General Plan designation)
UBC	Uniform Building Code
UPL	Obligate Upland
U.S.	United States of America
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
V	
V/C	Volume-to-capacity ratio
VMT	vehicle miles traveled
VOC	volatile organic compounds
vpd	vehicles per day
vph	vehicles per hour
vphpl	vehicles per hour per lane
W	
WDR	Waste Discharge Requirements
WES	Waterways Experiment Station
WQMP	Water Quality Management Plan
Z	
ZC	Zone Change
Symbols	
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter

13.2 GLOSSARY OF TERMS

A-Weighted Decibel Sound Level (dBA): (See decibel, A-Weighted)

Acoustics: (1) The science of sound, including the generation, transmission, and effects of sound waves, both audible and inaudible. (2) The physical qualities of a room or other enclosure (such as size, shape, amount of noise) that determine the audibility and perception of speech and music.

Acre: A unit of land equal to 43,560 square feet.

Acre-Foot: The amount of water needed to cover an acre (approximate a football field) to a depth of one foot, or 325,900 gallons. One acre-foot can support the annual indoor and outdoor needs of between one and two households per year and, on average, three acre-feet are needed to irrigate one acre of farmland.

Acre, Gross: The total area within the lot lines of a lot of land before public streets, easements or other areas to be dedicated or reserved for public use are deducted from such lot, and not including adjacent lands already dedicated for such purposes. Most communities calculate gross acreage to the centerline of proposed bounding streets and to the edge of the right-of-way of existing or dedicated streets.

Acre, Net: The portion of a site that can actually be built upon. The following generally are not included in the net acreage of a site: public or private road right-of-ways, public open space, and flood ways.

Addendum: A lead agency or responsible agency can prepare an addendum to a previously certified EIR or an addendum to an adopted negative declaration/mitigated negative declaration if some changes or additions are necessary but none of the conditions described in CEQA Guidelines §15162 calling for preparation of a subsequent EIR have occurred. An Addendum does not need to be circulated for public review (source: *CEQA Guidelines §15164*).

Adverse Impact: A term used to describe unfavorable, harmful, or detrimental environmental changes. Adverse impacts may be significant or not significant. (See Significant Impact)

Advisory Council on Historic Preservation (ACHP): Independent federal agency responsible for implementing the Section 106 review process.

Agricultural Land Use: The use of land primarily for farming, ranching, horse breeding, dairy farming and other forms of food and crop production. From a planning perspective, agricultural land use connotes primary economic use of the property.

Agricultural Preserve: Land designated for agriculture or conservation. (See Williamson Act.)

Agriculture: Use of land for the production of food and fiber, including the growing of crops and/or the grazing of animals on natural prime or improved pasture land.

Air Basin: An area of the state designated by the Air Resources Board pursuant to Subdivision (a) of §39606 of the California Health and Safety Code for air quality planning purposes.

Air District: A political body responsible for managing air quality on a regional or county basis. California is currently divided into 35 air districts.

Air Monitoring: The periodic or continuous sampling and analysis of air pollutants in ambient air or from individual pollutant sources.

Air Pollution/Pollutants: Substances that are foreign to the atmosphere or are present in the natural atmosphere to the extent that they may result in adverse effects on humans, animals, vegetation, and materials. Common air pollutants are ozone, nitrogen dioxide, particular matter, and carbon monoxide. Air pollution is defined in the California Heath and Safety Code as any discharge, release, or other propagation into the atmosphere and includes, but is not limited to, smoke, charred paper, dust, soot, grime, carbon, fumes, gases, odors, particulate matter, acids, or any combination thereof.

Air Pollution Control District (APCD): A local agency with authority to regulate stationary sources of air pollution (such as refineries, manufacturing facilities, and power plants) within a given county, and governed by a District Air Pollution Control Board composed of elected county supervisors and city representatives.

Air Quality Index (AQI): A numerical index used for reporting severity of air pollution levels to the public. It replaces the formerly used Pollutant Standards Index (PSI). Like the PSI, the AQI incorporates five criteria pollutants−ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide−into a single index. The new index also incorporates the 8-hour ozone standard and the 24-hour PM2.5 standard into the index calculation. AQI levels range from 0 (Good air quality) to 500 (Hazardous air quality). The higher the index, the higher the level of pollutants and the greater the likelihood of health effects. The AQI incorporates an additional index category−unhealthy for sensitive groups−that ranges from 101 to 150. In addition, the AQI comes with more detailed cautions.

Air Quality Management District (AQMD): A group of counties or portions of counties, or an individual county specified in law with authority to regulate stationary, indirect, and area sources of air pollution within the region and governed by a regional air pollution control board comprised mostly of elected officials from within the region.

Air Quality Management Plan (AQMP): A plan prepared by an air pollution control district or air quality management district for a county or region designated as a non-attainment area, for the purpose of bringing the area into compliance with the requirements of the federal Clean Air Act and/or the California Clean Air Act. An AQMP contains measures that will be taken to attain and maintain federal and state ambient air quality standards. In California, air districts prepare air quality management plans that are included in the state's State Implementation Plan (SIP) that is required by the federal Clean Air Act. Such plans are also referred to as Clean Air Plans or Clean Air Attainment Plans.

Air Quality Model: An algorithmic relationship between pollutant emissions and pollutant concentrations used in the prediction of a project's pollutant impact.

Air Quality Standards: Standards promulgated by state or federal pollution control districts. The specified average concentration of an air pollutant in ambient air during a specified time period at or above which undesirable effects may be produced. The prescribed level of a pollutant in the outside air that should not be exceeded during a specific time period to protect public health. Established by both federal and state governments.

Airshed: A subset of an air basin, the term denotes a geographical area that shares the same air because of topography, meteorology, and climate.

Air Toxics: Any air pollutant for which a national ambient air quality standard (NAAQS) does not exist (i.e., excluding ozone, carbon monoxide, PM_{10}, sulfur dioxide, nitrogen dioxide) that may reasonably be anticipated to cause cancer, developmental effects, reproductive dysfunctions, neurological disorders, heritable gene mutations, or other serious or irreversible chronic or acute health effects in humans. Substances that are especially harmful to health, such as those considered under U.S. EPA's hazardous air pollutant program or California's AB 1807 and/or AB 2588 air toxics programs, are considered to be air toxics. Technically, any compound that is in the air and has the potential to produce adverse health effects is an air toxic.

Alluvial: Sediment (gravel, sand, silt, soil, etc.) deposited by stream action.

Alquist-Priolo Special Study Zone: In 1972, the State of California began delineating Special Studies Zones around active and potentially active faults in the State. The zones extend about 660 feet on either side of identified fault traces. No structures for human occupancy may be built across an identified fault trace. An area of 50 feet on either side of an active fault trace is assumed to be underlain by the fault unless proven otherwise. Proposed construction within the Special Studies Zone can take place only following completion of a geotechnical report prepared by a California Registered Geologist or Certified Engineering Geologist.

Alternative Fuels: Fuels such as methanol, ethanol, natural gas, and liquid petroleum gas that are cleaner burning with lower air emissions and help to meet the Air Resources Board's mobile and stationary emission standards. These fuels may be used in place of less clean fuels for powering motor vehicles.

Ambient Air: The air occurring at a particular time and place outside of structures. Often used interchangeably with "outdoor air."

Ambient Air Quality Standards (AAQS): Health- and welfare-based standards for outdoor air which identify the maximum acceptable average concentrations of air pollutants during a specified period of time.

Ambient Conditions: Initial background concentration sensed/measured at a monitoring/ sampling site, as in air quality or noise.

Ambient Noise: The background noise associated with a given environment, usually a composite of sounds from many sources near and far. The ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Applicant: Applicant means a person who proposes to carry out a project which needs a lease, permit, license, certificate, or other entitlement for use or financial assistance from one or more public agencies when that person applies for the governmental approval or assistance (source: CEQA Guidelines §15351).

Approval: Approval means the decision by a public agency which commits the agency to a definite course of action in regard to a project intended to be carried out by any person. The exact date of approval of any project is a matter determined by each public agency according to its rules, regulations, and ordinances. Legislative action in regard to a project often constitutes approval. With private projects, approval occurs upon the earliest commitment to issue or the issuance by the public agency of a discretionary contract, grant, subsidy, loan, or other form of financial assistance, lease, permit, license, certificate, or other entitlement for use of the project (source: CEQA Guidelines §15352).

Aquatic: General reference to various water-oriented habitats such as rivers, streams, creeks, ponds, lakes, etc. These resources may be perennial, intermittent, or ephemeral in nature.

Aquifer: A natural underground formation that is saturated with water, and from which water can be withdrawn. A geologic formation of sand, rock, and gravel through which water can pass and which can store, transmit, and yield significant quantities of water to wells and springs. Aquifers generally hold sufficient water to be used as a water supply.

Archeological Site: The location of past focused human activities, defined in close proximity of continuous distribution of artifacts.

Area; Area Median Income: As used in State of California housing law with respect to income eligibility limits established by the U.S. Department of Housing and Urban Development (HUD), "area" means metropolitan area or non-metropolitan county. In non-metropolitan areas, the "area median income" is the higher of the county median family income or the statewide non-metropolitan median family income.

Area Sources: Those sources for which a methodology is used to estimate emissions. This can include areawide, mobile, and natural sources, and also groups of stationary sources (such as dry cleaners and gas stations). The California Clean Air Act requires air districts to include area sources in the development and implementation of the Air Quality Management Plan. In the California emission inventory, all sources which are not reported as individual point sources are included as area sources. The federal air toxics program defines a source that emits less than 10 tons per year of a single hazardous air pollutant or 25 tons per year of all hazardous air pollutants as an area source.

Area-Wide Sources: Sources of pollution where the emissions are spread over a wide area, such as consumer products, fireplaces, road dust and farming operations. Area-wide sources do not include mobile sources or stationary sources.

Arterial Road: A vehicular right-of-way whose primary function is to carry through traffic in a continuous route across an urban area while also providing some access to abutting land. Medium-speed (30-40 mph), medium-capacity (10,000-35,000 average daily trips) roadway that provides intra-community travel and access to the county-wide highway system. Access to community arterials should be provided at collector roads and local streets, but direct access from parcels to existing arterials is common.

Artifact: An object (tool or ornament) showing human workmanship or modification.

Assemblage: The complete inventory of artifacts from a single, defined archaeological unit (such as a stratum or component).

Asthma: A chronic inflammatory disorder of the lungs characterized by wheezing, breathlessness, chest tightness, and cough.

Atmosphere: The gaseous mass or envelope of air surrounding the Earth. From ground-level up, the atmosphere is further subdivided into the troposphere, stratosphere, mesosphere, and the thermosphere.

Atmospheric Stability: The resistance to or enhancement of vertical air movement related to the vertical temperature profile.

Attainment: Achieving and maintaining the air quality standards (both state and federal) for a given air pollutant.

Attainment Area: A geographical area considered to have air quality as good as or better than the National Ambient Air Quality Standard as defined in the Clean Air Act or California ambient air quality standards. An area may be an attainment area for one pollutant and a non-attainment area for others.

Average Daily Traffic (ADT): The number of vehicles (trips) passing a given point on a road going in a direction during a 24-hour period.

Background Concentration: Air pollutant concentration due to natural sources and distant unidentified man-made sources.

Background Noise: See Ambient Noise.

Background View: View beginning at a distance from the observer and extending as far toward the horizon as the eye can detect the presence of objects. Skylines or ridge lines against other land surfaces are the strongest visual elements of the "background."

Base Flood: In any given year, a 100-year flood that has a one percent likelihood of occurring, and is recognized as a standard for acceptable risk.

Base Flow: River surface flow, not counting storm flow and/or purchased imported water.

Basin Plan: A water quality control plan developed by a Regional Water Quality Control Board (RWQCB) for a specific geographic area. The Basin Plan identifies beneficial uses of waters, the water quality objectives needed to maintain these beneficial uses, and an implementation plan.

Bedrock Mortar: A mortar cup in a bedrock outcrop.

Beneficial Uses: The resources, services, and qualities of state waters that may be protected against quality degradation. The uses include, but are not limited to, domestic, municipal, agricultural and industrial supply, power generation, recreation, aesthetic enjoyment, navigation, and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. The specific uses such as “cold freshwater habitat” and “water contact recreation” are defined in Section 2 of the Regional Water Quality Control Boards’ Basin Plans. Beneficial Uses are defined in California Water Code Section 13050.

Berm: An embankment, usually extended in a linear alignment. Berms can function as visual screens, noise attenuators, and surface water diverters.

Best Available Control Measure (BACM): A term used to describe the "best" measures (according to U.S. EPA guidance) for controlling small or dispersed sources of particulate matter and other emissions from sources such as roadway dust, woodstoves, and open burning.

Best Available Control Technology (BACT): Under the South Coast Air Quality Management District (SCAQMD) rules, for example, BACT is defined as the most stringent emissions control which for a given air emission source has been 1) achieved in practice; 2) is identified in a State Implementation Plan; or 3) has been found by the SCAQMD to be technologically achievable and cost-effective.

Best Management Practice (BMP): A BMP is any program, technology, process, siting criteria, operating method, measure, or device which controls, prevents, removes, or reduces pollution.

Bicycle Lane (Class II facility): A corridor expressly reserved for bicycles, existing on a street or roadway in addition to any lanes for use by motorized vehicles.

Bicycle Path/Trail (Class I facility): A paved route not on a street or roadway and expressly reserved for bicycles traversing an otherwise unpaved area. Bicycle trails may parallel roads, but typically are separated from them by landscaping.

Bicycle Route (Class III facility): A facility shared by motorists and identified only by signs, a bicycle route has not pavement markings or lane stripes.

Biface: A tool that has been worked on both sides.

Bike Lane: A lane devoted to non-motorized bicycles.

Bikeway: A term that encompasses bicycle lanes, bicycle paths, and bicycle routes.

Biological Diversity: The variety of life forms and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.

Biotic Community: A group of living organisms characterized by a distinctive combination of both animal and plant species in a particular habitat.

Building: Any structure having a roof supported by columns or walls and intended for the shelter, housing, or enclosure of persons, animals, or property of any kind.

Building Height: The vertical distance from the average contact ground level of a building to the highest point of the coping of a flat roof or to the deck line of a mansard roof or to the mean height level between eaves and ridge for a gable, hip, or gambrel roof. The exact definition varies by community. For example, in some communities building height is measured to the highest point of the roof, not including elevator and cooling towers.

Buildout: Development of land to its full potential or theoretical capacity as permitted under current or proposed planning or zoning designations. The year in which project construction has been completed.

Bulk: The mass or volume of buildings.

California Air Resources Board (CARB): California's lead air quality agency, consisting of an 11-member Governor-appointed board, responsible for motor vehicle air pollution control, and having oversight over California's air pollution management program. CARB is responsible for attainment and maintenance of the state and federal air quality standards, and is fully responsible for motor vehicle pollution control. It oversees county and regional air pollution management programs.

California Ambient Air Quality Standards (CAAQS): A legal limit that specifies the maximum level and time of exposure in the outdoor air for a given air pollutant and which is protective of human health and public welfare (Health and Safety Code section 39606b). CAAQSs are recommended by the California Office of Environmental Health Hazard Assessment and

adopted into regulation by the CARB. CAAQSs are the standards which must be met per the requirements of the California Clean Air Act (CCAA).

California Clean Air Act (CCAA): A California law passed in 1998 the provides the basis for air quality planning and regulation independent of federal regulations, and which establishes new authority for attaining and maintaining California's air quality standards by the earliest practicable date. A major element of the CCAA is the requirement that local Air Pollution Control Districts in violation of the California Ambient Air Quality Standards must prepare attainment plans that identify air quality problems, causes, trends, and actions to be taken for attainment.

California Coastal Commission: The lead agency responsible for carrying out California's federally-approved coastal management program. The Coastal Commission plans for and regulates land and water uses in the coastal zone consistent with policies of the Coastal Act.

California Code of Regulations (CCR): The regulations that implement California laws.

California Department of Transportation (Caltrans): The state government agency responsible for the construction, maintenance, and operation of state and federal highways in California.

California Environmental Protection Agency (Cal EPA): The state agency established in 1991 for unifying environmental activities related to public health protection in the State of California. There are six boards, departments, and offices under the organization of Cal/EPA including the California Air Resources Board (ARB), California Integrated Waste Management Board (IWMB), State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCB), Department of Pesticide Regulation (DPR), Department of Toxic Substances Control (DTSC), and Office of Environmental Health Hazard Assessment (OEHHA). The Cal EPA boards, departments, and offices are directly responsible for implementing California environmental laws, or play a cooperative role with other regulatory agencies at regional, local, state, and federal levels.

California Environmental Quality Act (CEQA): The California Environmental Quality Act, California Public Resources Code Sections 21000 et seq (Source: CEQA Guidelines §15353).

Candlepower: The total light output expressed in candelas.

Capital Improvements: The building of infrastructure or public works projects.

Capital Improvements Program (CIP): A program established by a city or county government which schedules infrastructure improvements necessary to accommodate existing and anticipated future development. Most CIPs are for a minimum of five years into the future, and include a financing mechanism, to fit the projected fiscal capability of the local jurisdiction. The program generally is reviewed annually for conformance to and consistency with the general plan.

Carbon Dioxide (CO_2): A colorless gas that enters the atmosphere as the result of natural and artificial combustion processes. Significant quantities are also emitted into the air by fossil fuel combustion. It is also a normal part of the ambient air.

Carbon Monoxide (CO): A colorless, odorless gas resulting from the incomplete combustion of fossil fuels. CO interferes with the blood's ability to carry oxygen to the body's tissues and can result in adverse health effects. CO is a criteria air pollutant.

Carrying Capacity: Used in determining the potential of an area to absorb development: (1) The level of land use, human activity, or development for a specific area that can be accommodated permanently without an irreversible change in the quality of air, water, land, or plant and animal habitats; (2) The upper limits of development beyond which the quality of human life, health, welfare, safety or community character within an area will be impaired; or (3) The maximum level of development allowable under current zoning.

Catch Basin: A storm drain inlet having a sump below the outlet to capture settled solids.

Categorical Exclusion: Categorical exclusion, under NEPA, covers various categories of actions which do not individually or cumulatively have a significant effect on the human environment and are exempt from the requirement to prepare an Environmental Assessment or an Environmental Impact Statement. This replaces the federal term "non-major action." The federal term refers to the action as a whole having no significant impact on the environment. It does not refer to categories of project types.

Categorical Exemption: Categorical exemption means an exemption from CEQA for a class of projects based on a finding by the Secretary for Resources that the class of projects does not have a significant effect on the environment unless exceptions to the exemption apply (source: CEQA Guidelines §15354). A Categorical Exemption does not apply in the following situations: 1) a reasonable possibility exists that the activity may have a significant environmental impact because of unusual circumstances; 2) the cumulative impacts of the project would be considerable and therefore significant; 3) the project occurs within specified sensitive environments, 4) a project affects scenic resources within official state scenic highways, 5) a project is located on a toxic site that is listed by the California Environmental Protection Agency, or 6) a project causes substantial adverse changes in a significant historic resource. (CEQA Guidelines §15300.2)

Census: The official United States decennial enumeration of the population conducted by the federal government.

Channel: A water course with a definite bed and banks which confine and conduct the normal continuous or intermittent flow of water.

Channelization: (1) The straightening and/or deepening of a watercourse for purposes of storm runoff control or ease of navigation. Channelization often includes lining of stream banks with a retaining material such as concrete. (2) At the intersection of roadways, the directional separation of traffic lanes through the use of curbs or raised islands that limit the paths that vehicles may take through the intersection.

Chert: Crypto-Crystalline Silicate. A flint-like rock, commonly selected as a raw material for flaked-stone tools.

Chlorofluorocarbons (CFC): A family of inert, nontoxic, and easily-liquefied chemicals used in refrigeration, air conditioning, packaging, insulation, or as solvents or aerosol propellants. Because CFCs are not destroyed in the lower atmosphere, they drift into the upper atmosphere where the chlorine is released and destroys ozone.

Circulation Element: One of the seven state-mandated elements of a general plan, it contains adopted goals, policies, and implementation programs for the planning and management of existing and proposed thoroughfares, transportation routes, and terminals, as well as local public utilities and facilities, all correlated with the land use element of the general plan.

Circulation System: A network of transit, automobile, bicycle, and pedestrian rights-of-way that connect origins and destinations.

Clean Air Act (CAA): A federal law passed in 1970 and amended in 1977 and 1990 that sets primary and secondary National Ambient Air Quality Standards for major air pollutants and forms the basis for the national air pollution control effort.

Clean Fuels: Blends and/or substitutes for gasoline fuels. These include compressed natural gas, methanol, ethanol, and others.

Code of Federal Regulations (CFR): The document that codifies all rules of the executive departments and agencies of the federal government. It is divided into 50 volumes, known as titles. Title 40 of the CFR (referenced as 40 CFR) lists all the environmental regulations.

Cohensionless Soil: A soil that when confined has little or no strength when air-dried, and that has little or no cohesion when submerged.

Collector: Relatively low speed (25-30 mph), relatively low volume (5,000-20,000 average daily trips) street that provides circulation within and between neighborhoods. Collectors usually serve short trips and are intended for collecting trips from local streets and distributing them to the arterial network.

Commercial: A land use classification that permits facilities for the buying and selling of commodities and services.

Community Noise Equivalent Level (CNEL): A noise compatibility level established by California Administrative Code, Title 21, Section 5000. Represents a time-weighted 24-hour average noise level based on the A-weighted decibel. The CNEL scale includes an additional 5 dB adjustment to sounds occurring in the evening (7 p.m. to 10 p.m.) and a 10 dB adjustment to sound occurring in the late evening and early morning between (10 p.m. and 7 a.m.).

Conditional Use: A land use which is not permitted by right, but which may be appropriate in a given zoning district under certain circumstances. The use may occur only upon approval of a conditional use permit.

Conditional Use Permit (CUP): A permit based on a discretionary decision required prior to initiation of particular uses not allowed as a matter of right. The use may be desirable under appropriate circumstances, but are not permitted by right in the applicable zone. The purpose of the CUP process is to determine whether, and under what conditions, a specific use may be appropriate in a given location. Further, the intent is that each use be developed so as to fully protect the public health, safety, and welfare of the community. To provide this protection, conditions may be applied to address potential adverse effects associated with the proposed use.

Conformity: A demonstration of whether a federally-supported activity is consistent with the State Implementation Plan (SIP)−per Section 176 (c) of the Clean Air Act. Transportation conformity refers to plans, programs, and projects approved or funded by the Federal Highway Administration or the Federal Transit Administration. General conformity refers to projects approved or funded by other federal agencies.

Congestion Management Plan/Program (CMP): A state-mandated program (California Government Code Section 65089a) that requires each county to prepare a plan to relieve

congestion and reduce air pollution. Growth management techniques include traffic level of service requirements, standards for public transit, trip reduction programs involving transportation systems management and jobs/housing balance strategies, and capital improvement programming, for the purpose of controlling and/or reducing the cumulative regional traffic impacts of development.

Conjunctive Use: The planned use of groundwater in conjunction with surface water in overall management to optimize total water resources.

Conservation Agreement: A formal signed agreement between the U.S. Fish and Wildlife Service or National Marine Fisheries Service and other parties that implements specific actions, activities, or programs designed to eliminate or reduce threats or otherwise improve the status of a species. Conservation Agreements can be developed at a state, regional, or national level and generally include multiple agencies at both the state and federal level, as well as tribes.

Conservation Element: One of the seven State-mandated elements of a local general plan, it contains adopted goals, policies, and implementation programs for the conservation, development, and use of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources.

Conservation Strategy: A strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or threats. Conservation strategies are generally developed for species of plants and animals that are designated or that have been determined by the U.S. Fish and Wildlife Service or National Marine Fisheries Service to be federal candidates under the Endangered Species Act.

Consistency, Consistent With: Free from significant variation or contradiction. The various diagrams, text, goals, policies, and programs in the general plan must be consistent with each other, not contradictory or preferential. The term "consistent with" is used interchangeably with "conformity with." The courts have held that the phrase "consistent with" means "agreement with; harmonious with." Webster defines "conformity with" as meaning harmony, agreement when used with "with." The term "conformity" means in harmony therewith or agreeable to (Sec 58 Ops.Cal.Atty.Gen. 21, 25 [1975]). California State law also requires that a general plan be internally consistent and also requires consistency between a general plan and implementation measures such as the zoning ordinance.

Consistent: Free from variation or contradiction. Programs in the general plan are to be consistent, not contradictory or preferential. State law requires consistency between a general plan and implementation measures such as the zoning ordinance.

Construction: Any site preparation, assembly, erection, substantial repair, alteration, or similar action for or of public or private rights-of-way, structures, utilities, or similar property.

Contiguous: Lands or legal subdivisions having a common boundary; lands having only a common corner are generally not contiguous.

Contour Grading: A grading technique which uses curvilinear, horizontal, and vertical undulations in order to simulate the characteristics of natural topography.

Cooperating Agency: “Under NEPA, any agency other than the lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a

proposal for any action significantly affecting the human environment. Under CEQA, the term "responsible agency" is used.

Co-Permittee: A permittee to an NPDES permit that is only responsible for permit conditions relating to the discharges from its area of jurisdiction.

Core: A cobble or small rock from which flakes or blades are removed. The core may be used as a tool as well as a source of flakes.

Council of Governments (COG): An association of cities and counties that often acts as a regional planning agency with some power under state and federal law.

Covenants, Conditions, and Restrictions (CC&Rs): A term used to describe restrictive limitations that may be placed on property and its use, and which usually are made a condition of holding title or lease.

Criteria Air Pollutant: An air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set in order to protect public health. Examples include zone, carbon monoxide, nitrogen dioxide, sulfur dioxide, PM_{10}, and $PM_{2.5}$. The term "criteria air pollutants" derives from the requirement that the U.S. EPA must describe the characteristics and potential health and welfare effects of these pollutants. The U.S. EPA and CARB periodically review new scientific data and may propose revisions to the standards as a result.

Cumulative Impact: A cumulative impact refers to two or more individual affects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (source: CEQA Guidelines §15355).

Data Recovery: The act of excavating with the intent of answering specific research questions.

Datum: A stationary control point from which all other features or artifacts are mapped from.

Day-Night Average Sound Level (Ldn): The A-weighted average sound level in decibels during a 24-hour period with a 10 dB weighing applied to nighttime sound levels (10 p.m. to 7 a.m.). This exposure method is similar to the CNEL, but deletes the evening time period (7 p.m. to 10 p.m.) as a separate factor.

Debitage: Debris; waste products or by-products of the flaked-stone tool manufacturing process. Lithic debitage would include unused flakes, exhausted cores, and broken artifacts.

Depression: A large or small circular or rectangular area where cultural activity took place (e.g., depressed area of a roundhouse or longhouse).

Decibel (dB): A unit for expressing the relative intensity (loudness) of sounds. The decibel is the logarithm of the ratio of the intensity of a given sound to the faintest sound discernible by the human ear.

Decibel, A-Weighted (dBA): The "A-weighted" scale for measuring sound in decibels; weighs or reduces the effects of low and high frequencies in order to simulate human hearing. Every increase of 10 dBA doubles the perceived loudness though the noise is actually ten times more intense.

Decision Making Authority: Decision-making authority means any person or body vested with the authority to make recommendations or act on application requests. The final decision-making authority is the one which has the authority to act on a request by approving or denying the request. This may include the Community Development Director or his/her designee, Planning Commission, or the City Council.

Decision Making Body: Any person or group of people within a public agency permitted by law to approve or disapprove the project at issue (source: CEQA Guidelines §15356).

Dedication: The turning over by an owner or developer of private land for public use, and the acceptance of land for such use by the governmental agency having jurisdiction over the public function for which it will be used. Dedications for roads, parks, school sites, or other public uses often are made conditions for approval of a development by a city or county.

Dedication, In lieu of: Cash payments that may be required of an owner or developer as a substitute for a dedication of land, usually calculated in dollars per lot, and referred to as in lieu fees or in lieu contributions.

Density: The gross site area which shall include local roadways, slopes, and open space areas, unless otherwise specified. Density is usually expressed “per acre.” For example, a development with 100 dwelling units located on 20 acres has a density of 5 units per acre.

Density, Residential: The number of permanent residential dwelling units per acre of land. Densities specified in a general plan may be expressed in units per gross acre or per net developable acre.

Desilting: The physical process of removing suspended particles from water.

Detention Dam/Basin/Pond: Dams may be classified according to the broad function they serve, such as storage, diversion, or detention. Detention dams are constructed to retard flood runoff and minimize the effect of sudden floods. Detention dams fall into two main types. In one type, the water is temporarily stored, and released through an outlet structure at a rate which will not exceed the carrying capacity of the channel downstream. Often, the basins are planted with grass and used for open space or recreation in periods of dry weather. The other type, most often called a Retention Pond, allows for water to be held as long as possible and may or may not allow for the controlled release of water. In some cases, the water is allowed to seep into the permeable banks or gravel strata in the foundation. This latter type is sometimes called a Water-Spreading Dam or Dike because its main purpose is to recharge the underground water supply. Detention dams are also constructed to trap sediment. These are often called Debris Dams.

Detention Device: Facilities designed to collect and temporarily detain the initial volume of storm water runoff for a specified period of time to permit settlement of particulate pollutions.

Developable Acres, Net: The portion of a site that can be used for density calculations. Some communities calculate density based on gross acreage. Public or private road rights-of-way are not included in the net developable acreage of a site.

Developable Land: Land that is suitable as a location for structures and that can be developed free of hazards to, and without disruption of, or significant impact on, natural resource areas.

Developer: An individual who or business that prepares raw land for the construction of buildings or causes to be built physical building space for use primarily by others, and in which the preparation of the land or the creation of the building space is in itself a business and is not incidental to another business or activity.

Development: The physical extension and/or construction of land uses. Development activities include: subdivision of land; construction or alteration of structures, roads, utilities, and other facilities; installation of septic systems; grading; deposit of refuse, debris, or fill materials; and clearing of natural vegetative cover (with the exception of agricultural activities)

Development Agreement: A legislatively-approved contract between a jurisdiction and a person having legal or equitable interest in real property within the jurisdiction (California Government Code §65865 *et seq*.) that "freezes" certain rules, regulations, and polices applicable to development of a property for a specified period of time, usually in exchange for certain concessions by the owner.

Development Impact Fees: A fee or tax imposed on developers to pay for the costs to the community of providing services to a new development. It is a means of providing a fund for financing new improvements without resorting to deficit financing.

Development Rights: The right to develop land by a land owner who maintains fee-simple ownership over the land or by a party other than the owner who has obtained the rights to develop. Such rights usually are expressed in terms of density allowed under existing zoning. For example, one development right may equal one unit of housing or may equal a specific number of square feet of gross floor area in one or more specified zone districts.

Dewatering Device: The removal of groundwater resulting from excavations activities.

Direct Effects: Effects which are caused by an action and occur at the same time and place.

Discoidal: Stone artifact having a circular shape. Specific to earlier periods of prehistory. Actual function uncertain.

Discretionary Approval/Decision: A decision requiring the exercise of judgment, deliberation, or decision on the part of the decision-making authority in the process of approving or disapproving a particular activity, as distinguished from situations where the decision-making authority merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations. An approval by a decision-making body which has the legal discretion to approve or deny a project or action.

Discretionary Project: A project which requires the exercise of judgment or deliberation when the public agency or body decides to approve or disapprove a particular activity, as distinguished from situations where the public agency or body merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations(source: CEQA Guidelines §15357).

Dispersion: The process by which atmospheric pollutants disseminate due to wind and vertical stability.

District: (1) An area of a city or county that has a unique character identifiable as different from surrounding areas because of distinctive architecture, streets, geographic features, culture, landmarks, activities, or land uses. (2) A portion of the territory of a city or county within which uniform zoning regulations and requirements apply; a zone.

Diversion: The direction of water in a stream away from its natural course (i.e., as in a diversion that removes water from a stream for human use).

Drainage: An area that collects and diverts rain water and urban runoff down slope.

Drainage Area: The portion of the earth's surface from which precipitation or other runoff flows to a given location. With respect to a highway, this location may be a culvert, the farthest point of a channel, or an inlet to a roadway drainage system.

Drainage Swale: A storm drainage conveyance structure designed to intercept, divert, and convey surface runoff (generally sheet flow) to prevent erosion and reduce pollution loading.

Dwelling, Single-Family: A detached building constructed in conformance with the Uniform Building Code or a mobile home constructed on or after June 15, 1976.

Dwelling, Two-Family: A building containing two separate dwelling units.

Dwelling Unit: A room or group of rooms (including sleeping, eating, cooking, and sanitation facilities, but not more than one kitchen), which constitutes an independent housekeeping unit, occupied or intended for occupancy by one household on a long-term basis.

Easement (preservation or conservation): A right given by the owner of land to another party for specific limited use of that land. An easement may be acquired by a government through dedication when the purchase of an entire interest in the property may be too expensive or unnecessary.

Effects: "Effects" and "impacts" as used in the CEQA Guidelines are synonymous. Effects include: (a) Direct or primary effects which are caused by the project and occur at the same time and place; (b) Indirect or secondary effects which are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems. Effects analyzed under CEQA must be related to a physical change (source: CEQA Guidelines §15358).

Effluent: Wastewater or other liquid, partially or completely treated or in its natural state, flowing from a treatment plant.

Eligible property: Property that meets the criteria for inclusion in the National Register of Historic Places but is not formally listed.

Emergency: Emergency means a sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to life, health, property, or essential public services. Emergency includes such occurrences as fire, flood, earthquake, or other soil or geologic movements, as well as such occurrences as riot, accident, or sabotage (CEQA Guidelines §15359)

Eminent Domain: The legal right of government to acquire or "take" private property for public use or public purpose upon paying just compensation to the owner.

Emission: An air contaminant released to the atmosphere. The act of passing into the atmosphere of air contaminant or a gas stream that may or may not contain an air contaminant or the material so passed into the atmosphere.

Emission Factor: For stationary sources, the relationship between the amount of pollution produced and the amount of raw material processed or burned. For mobile sources, the relationship between the amount of pollution produced and the number of vehicle miles traveled. By using the emission factor of a pollutant and specific data regarding quantities of materials used by a given source, it is possible to compute emissions for the source. This approach is used in preparing an emissions inventory.

Emission Inventory: An estimate of the amount of pollutants emitted into the atmosphere from major mobile, stationary, area-wide, and natural source categories over a specific period of time such as a day or a year.

Emission Offsets (**Emissions Trading):** A rule-making concept whereby approval of a new or modified stationary source of air pollution is conditional on the reduction of emissions from other existing stationary sources of air pollution. These reductions are required in addition to reductions required by best available control technology.

Emission Rate: The weight of a pollutant emitted per unit of time (e.g., tons/year).

Emission Standards: The federal Environmental Protection Agency (EPA), California Air Resources Board (ARB), or air district standards or limits for air contaminant emissions. The maximum amount of a pollutant that is allowed to be discharged from a polluting source such as an automobile or smoke stack

Encroachment: The occupancy of project right-of-way by non-project structures or objects of any kind or character; also, activities of other parties within the operating right-of-way.

Endangered Species: In accordance with CEQA, “Species” means a species or subspecies of animal or plant or a variety of plant. A species of animal or plant is: “Endangered” when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. A species of animal or plant shall be presumed to be endangered, rare or threatened, as it is listed in: (1) Sections 670.2 or 670.5, Title 14, California; (2) Title 50, Code of Federal Regulations Section 17.11 or 17.12 pursuant to the Federal Endangered Species Act as rare, threatened, or endangered. A species not included in any listing identified in subsection (c) shall nevertheless be considered to be endangered, rare or threatened, if the species can be shown to meet specified criteria. This definition shall not include any species of the Class Insecta which is a pest whose protection under the provisions of CEQA would present an overwhelming and overriding risk to man as determined by: The Director of Food and Agriculture with regard to economic pests; or The Director of Health Services with regard to health risks (source: CEQA Guidelines §15380).

Environment: The physical conditions which exist within the area which will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved shall be the area in which significant

effects would occur either directly or indirectly as a result of the project. The "environment" includes both natural and man-made conditions (source: CEQA Guidelines §15360).

Environmental Assessment: A concise public document for which a federal agency is responsible that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact. It is the federal equivalent of the CEQA term “initial study.”

Environmental Documents: Environmental documents means Initial Studies, Negative Declarations, draft and final EIRs, documents prepared as substitutes for EIRs and Negative Declarations under a program certified pursuant to Public Resources Code Section 21080.5, and documents prepared under NEPA and used by a state or local agency in the place of an Initial Study, Negative Declaration, or an EIR (source: CEQA Guidelines §15361).

Environmental Impact Report: A detailed statement prepared under the California Environmental Quality Act (CEQA) describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid the effects. The term “EIR” may mean either a draft or a final EIR depending on the context. A Draft EIR means an EIR containing the information specified in CEQA Guidelines §§15122 through 15131. A Final EIR means an EIR containing the information contained in the draft EIR, comments either verbatim or in summary received in the review process, a list of persons commenting, and the response of the Lead Agency to the comments received (source: CEQA Guidelines §15362).

Environmental Impact Statement: An environmental impact document prepared pursuant to the National Environmental Policy Act (NEPA). NEPA uses the term EIS in the place of the term EIR which is used in CEQA (source: CEQA Guidelines §15363).

Environmental Justice: The fair treatment of people of all races and incomes with respect to development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no person or group of people should shoulder a disproportionate share of negative environmental and economic impacts resulting from the execution of environmental programs.

Equivalent Noise Level (Leq): A single-number representation of the fluctuating sound level in decibels over a specified period of time. It is a sound-energy average of the fluctuating level.

Erosion: The process by which material is removed from the earth's surface (including weathering, dissolution, abrasion, and transportation), most commonly by wind or water.

Erosion Control: The stabilization of cut and fill slopes and other areas.

Ethnography: The study of a culture to obtain information on past and present ways of life.

Evapotranspiration: The quantity of water transpired (given off), retained in plant tissues, and evaporated from plant tissues and surrounding soil surface. Quantitatively, it is expressed in terms of depth of water per unit area during a specified period of time.

Exaction: A contribution or payment required as an authorized precondition for receiving a development permit. It usually refers to a mandatory dedication or fee in lieu of dedication requirements found in many subdivision regulations and may apply to land for parks or other public facilities.

Excavation: A systematic process of digging archaeological sites, removing the soil and observing the provenience and context of the finds (both cultural and non-cultural) contained within, and recording them in a three-dimensional way.

Exceedance: A measured level of an air pollutant higher than the national or state ambient air quality standards.

Expansive Soils: Soils that swell when they absorb water and shrink as they dry.

Extirpation: The local extinction of a species that is no longer found in a locality or country, but exists elsewhere in the world.

Facultative: Plants with similar likelihood (estimated 33 percent to 67 percent) of occurring in both wetlands and non-wetlands (i.e., valley oak).

Facultative Upland: Plants that occur sometimes (estimated 1 percent to less than 33 percent) in wetlands, but occur more often (estimated greater than 99 percent) in non-wetlands (i.e., giant rye).

Facultative Wetlands: Plants that occur usually (estimated 67 percent to 99 percent) in wetlands, but also occur (estimated 1 percent to 33 percent) in non-wetlands (i.e., mule fat or willow).

Fall: A fall is a movement of unattached soil or rock from a steep slope along a surface on which little or no shear displacement takes place. The material descends mainly through the air by falling.

Farmland: Refers to eight classifications of land mapped by the U.S. Department of Agriculture Soil Conservation Service. The five agricultural classifications, except Grazing Land, do not include publicly owned lands for which there is an adopted policy preventing agricultural use. They are: ***Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance,*** and ***Grazing Land***.

Farmland of Local Importance: Lands of importance to the local agricultural economy, as determined by each county's board of supervisors and local advisory committee. Each county has developed its own definition of Farmland of Local Importance. (Source: Natural Resource Conservation Service)

Farmland of Statewide Importance: Lands similar to Prime Farmland but with minor shortcomings, such as greater slopes or with less ability to hold and store moisture. These lands have the same reliable source of adequate quality irrigation water available during the growing season as required for Prime Farmland. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date. (Source: U.S. Department of Agriculture Soil Conservation Service)

Fault: A fracture in the earth's crust forming a boundary between rock masses that have shifted. An active fault is a fault that has moved recently and which is likely to again. An inactive fault is a fault which shows no evidence of movement in recent geologic time and no potential for movement in the relatively near future.

Feasible: Feasible means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (source: CEQA Guidelines §15364).

Feature: A large, complex artifact or part of a site such as a hearth, cairn, house pit, rock alignment, or activity area.

Federal Clean Air Act (FCAA): A federal law passed in 1970 and amended in 1974, 1977, and 1990 which forms the basis for the national air pollution control effort. Basic elements of the act include national ambient air quality standards for major air pollutants, mobile and stationary control measures, air toxics standards, acid rain control measures, and enforcement provisions.

Federal Emergency Management Agency (FEMA): The federal agency under which the National Flood Insurance Program is administered.

Federal Implementation Plan (FIP): In the absence of an approved State Implementation Plan (SIP), a plan prepared by the U.S. EPA which provides measures that non-attainment areas must take to meet the requirements of the Federal Clean Air Act.

Filtration: The mechanical process that removes particulate matter from water by passing through sand or other media.

Final Map: A map of an approved subdivision filed in the county recorder's office. It shows surveyed lot lines, street rights-of-way, easements, monuments, and distances, angles, and bearings, pertaining to the exact dimensions of all parcels, street lines, and so forth.

Findings of Fact: Findings required by CEQA are the conclusions made regarding the significance of a project in light of its environmental impacts. A public agency cannot approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding (source: CEQA Guidelines §15091).

Finding of No Significant Impact (FONSI): A document by a federal agency briefly presenting the reasons why an action, not otherwise categorically excluded, will not have a significant effect on the human environment and therefore does not require the preparation of an EIS. A FONSI is the federal equivalent of a Negative Declaration.

Fine Particulate Matter (PM_{10}): PM_{10} causes a greater health risk than larger-sized particles, since these fine particles can be inhaled more easily and irritate the lungs by themselves and in combination with gases.

Fire-Cracked Rock: Burned rocks, typically fracture during intense hearing in a fire hearth or remnants of rocks associated with cooking. Fairly common to prehistoric archaeological sites.

Fire Hazard Zone: An area where, due to slope, fuel, weather, or other fire-related conditions, the potential loss of life and property from a fire necessitates special fire protection measures and planning before development occurs.

Fixed Noise Source: A stationary device which creates sounds while fixed or motionless, including but not limited to, residential, agricultural, industrial, and commercial machinery and equipment, pumps, fans, compressors, air conditioners, and refrigeration equipment.

Flake: A thin, flattened piece of chip of stone intentionally removed from the core rock by chipping with either a stone or bone hammer.

Flood: A general and temporary condition of partial or complete inundation of normally dry land areas from: (1) overflow of inland or tidal waters; (2) the unusual and rapid accumulation or runoff of surface waters from any source; (3) mudslides (i.e. mudflows) which are proximately caused by flood, and are akin to a river of liquid and flowing mud on the surface of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current; and (4) the collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding the cyclical levels which result in flood.

Flood, 100-Year: The magnitude of a flood expected to occur on the average every 100 years, based on historical data. The 100-year flood has a 1/100, or one percent, chance of occurring in any given year.

Floodplain: Any land area susceptible to being inundated by flood waters from any source. The relatively level land area on either side of the banks of a stream regularly subject to flooding. That part of the floodplain subject to a one percent chance of flooding in any given year is designated as an “area of special flood hazard” by the Federal Insurance Administration.

Floodplain Management: The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to, emergency preparedness plans, flood control works, and floodplain management regulations.

Floodway: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the “base flood” without cumulatively increasing the water surface elevation more than one foot. No development is allowed in floodways.

Floor Area Ratio: The ratio of gross floor area of all buildings permitted on a site divided by the total net area of the site, expressed in decimals to one or two places. For example, on a site with 10,000 net square feet of land area, a Floor Area Ratio of 1.0 will allow a maximum of 10,000 gross square feet of building floor area to be built. On the same site, an FAR of 1.5 would allow 15,000 square feet of floor area; an FAR of 2.0 would allow 20,000 square feet; and an FAR of 0.5 would allow only 5,000 square feet. Also commonly used in zoning, FARs typically are applied on a parcel-by-parcel basis as opposed to an average FAR for an entire land use or zoning district.

Flow: A flow is a sudden movement of a soil mass in which individual particles travel separately in a fluid motion. Debris and mudflows are rapid and can be related to excess rainfall on slopes often where vegetation has been removed. Debris flows often have the consistency of cement and can result in catastrophic effects to structures.

Freeway: A high-speed, high-capacity, limited-access road serving regional and county-wide travel. Such roads are free of tolls, as contrasted with “turnpikes” or other “toll roads” now being introduced into southern California. Freeways generally are used for long trips between major land use generators. At Level of Service “E,” they carry approximately 1,875 vehicles per lane per hour, in both directions. Major streets cross at a different grade level.

Fugitive Dust: Dust particles that are introduced into the air through certain activities such as soil cultivation, or vehicles operating on open fields or dirt roadways. A subset of fugitive emissions.

Fugitive Emissions: Emissions not caught by a capture system which are often due to equipment leaks, evaporative processes, and windblown disturbances.

General Plan: A compendium of city or county policies regarding long-term development, in the form of maps and accompanying text. A General Plan is a legal document required of each local agency by the State of California Government Code Section 65301 and adopted by a city council or board of supervisors. California law requires the preparation of seven elements or chapters in a General Plan: Land Use, Housing, Circulation, Conservation, Open Space, Noise, and Safety. Additional elements are permitted.

General Plan Amendment: A change or addition to a community's general plan. A general plan can be amended up to four times a year.

General Plan Consistency: Compatibility and agreement with a general plan. Consistency exists when the standards and criteria of a general plan are met or exceeded.

Geographic Information System (GIS): A computer system capable of storing, analyzing, and displaying data and describing places on the earth's surface.

Geological: Pertaining to rock or solid matter.

Geometric Improvements: Improvements to roads such as widening, adding signals to intersections, or adding turning lanes. These are required to mitigate traffic impacts and maintain a required level of service (LOS).

Geomorphic: Relating to the form or surface features of the earth.

Glare: A light source, either reflected or direct, that is annoying or distracting. The effect produced by lighting sufficient to cause annoyance, discomfort, or loss of visual performance and visibility. Glare can occur when the luminaire or associated lens of a light fixture is directly viewable from a location off the property that it serves.

Grade: Adjacent ground level. For purposes of building height measurement, grade is the average of the finished ground level at the center of all walls of a building or other datum point established by the division of building and safety.

Grading: Alteration of existing slope and shape of the ground surface.

Grazing Land: Lands on which the existing vegetation is suited to the grazing of livestock. (Source: Natural Resource Conservation Service)

Ground Failure: Ground movement or rupture caused by strong shaking during an earthquake. Includes landslide, lateral spreading, liquefaction, and subsidence.

Ground Shaking: Ground movement resulting from the transmission of seismic waves during an earthquake.

Groundwater: The term usually refers to the "saturated" zone in the ground where all the pore space between the soil particles is occupied by water. Water under the earth's surface, often confined to aquifers capable of supplying wells and springs. Does not include water which is being produced with oil in the production of oil and gas or in a bona fide mining operation.

Groundwater Basin: A groundwater reservoir defined by the entire overlying land surface and the underlying aquifers that contain water stored in the reservoir. Boundaries of successively deeper aquifers may differ and make it difficult to define the limits of the basin.

Groundwater Table: The upper surface of the zone of saturation (all pores of subsoil filled with water), except where the surface if formed by an impermeable body.

Growth Management: The use by a community of a wide range of techniques in combination to determine the amount, type, and rate of development desired by the community and to channel that growth into designated areas. Growth management policies can be implemented through growth rates, zoning, capital improvement programs, public facilities ordinances, urban limit lines, standards for levels of service, and other programs.

Growth Management Plan (GMP): A plan developed for a given geographical region (e.g., by the Southern California Association of Governments [SCAG]) that contains demographic projections (i.e., housing units, employment, and population for the region. The plan provides recommendations for local governments to better accommodate the growth projected by occur and reduce environmental impacts.

Habitat: A place where a plant or animal naturally or normally lives or grows.

Habitat Conservation Plan (HCP): A plan required in support of a federal Section 10(a) permit under the federal Endangered Species Act.

Height: The vertical distance from the adjacent grade to the highest point of that which is being measured.

Heliport: An identifiable area on land or water, including any building or facilities thereon, used or intended to be used for the landing and takeoff of helicopters. Does not include temporary landing and takeoff sites. Refueling and overnight maintenance are permitted.

Helistop: An identifiable area on land or water, including any building or facilities thereon, used or intended for the landing and takeoff of helicopters. Does not include temporary landing and takeoff sites. Refueling and overnight maintenance are not permitted.

Hertz: Unit of measurement of frequency, numerically equal to cycles per second.

High-Occupancy Vehicle (HOV): A motor vehicle that is carrying at least a minimum specified number of passengers (normally at least two or more, sometimes three or more). It can be a bus, a taxi with passengers, or a car or van used for carpooling.

Historic Preservation: The preservation of historically significant structures and neighborhoods until such time as, and in order to facilitate, restoration and rehabilitation of the building(s) to a former condition.

Highway: High-speed, high-capacity, limited-access transportation facility serving regional and county-wide travel. Highways may cross at a different grade level.

Historic Preservation: The preservation of historically significant structures and neighborhoods until such time as, and in order to facilitate, restoration and rehabilitation of the building(s) to a former condition.

Hot Spot: A localized concentration of an air pollutant associated with restricted dispersion conditions, often occurring in such places as street intersections or close to the source of emissions.

Household: The U.S. Census Bureau defines a household as all persons living in a housing unit whether or not they are related. A single person living in an apartment as well as a family living in a house is considered a household. Household does not include individuals in dormitories, prisons, convalescent homes, or other group quarters.

Household Income: The total income of all the persons living in a household. A household is usually described as very low income, low income, moderate income, and upper income based upon household size and income, relative to the regional median income.

Households, Market Rate: Households who, as determined by the county or county, have the financial capability to meet their housing needs without sacrificing other essential needs.

Households, Non-Market-Rate: Households who, as determined by the city or county, do not have the financial capability to meet their housing needs without sacrificing other essential needs.

Housing and Community Development, California Department of (HCD): The department of the California State Government which has responsibility for housing policy and programs. HCD establishes the guidelines for preparation of local housing elements, prepares the statewide housing element, and offers technical assistance to local jurisdictions.

Housing Element: One of the seven state-mandated elements of a local general plan, it assesses the existing and projected housing needs of all economic segments of the community, identifies potential sites adequate to provide the amount and kind of housing needed, and contains adopted goals, policies, and implementation programs for the preservation, improvement, and development of housing. Under State law, a housing element must be updated every five years.

Hydrocarbons (HC): Compounds containing various combinations of hydrogen and carbon atoms. They may be emitted into the air by natural sources (e.g., trees) and as a result of fossil and vegetative fuel combustion, fuel volatilization, and solvent use. Hydrocarbons are a major contributor to smog.

Hydrogen Sulfide (H_2S): A colorless, flammable, poisonous compound having a characteristic rotten-egg odor. It is used in industrial processes and may be emitted into the air.

Hydrology: The study of the water cycle.

Impact: The effect, influence, or imprint of an activity or the environment. Impacts include: direct or primary effects which are caused by the project and occur at the same time and place; indirect or secondary effects which are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate and related effects on air and water and other natural systems, including ecosystems.

Impact Fee: A fee, also called a development fee, levied on the developer of a project by a city, county, or public agency as compensation for otherwise-unmitigated impacts the project will

produce. California Government Code Section 66000 *et seq.* specifies that development fees shall not exceed the estimated reasonable cost of providing the service for which the fee is charged. To lawfully impose a development fee, the public agency must verify its method of calculation and document proper restrictions of use of the fund.

Impervious Surface: Ground surface that cannot be penetrated by water. Includes paved and compacted surfaces, as well as those covered by buildings.

Important Farmlands: Important farmlands include prime farmlands, farmlands of statewide importance, unique farmlands, and farmlands of local importance as defined and mapped by the California Department of Conservation (source: *Advisory Guidelines for the Farmland Mapping and Monitoring Program*, California Department of Conservation-Division of Land Resource Protection, 1984)

Impoundment: A body of water, such as a pond, confined by a dam, dike, floodgate, or other barrier.

Income Categories/Levels: Four categories are used to classify a household according to the median income for the county. Under state housing statutes, these categories are as follows: Very Low (0 to 50 percent of county median); Low (50 percent to 80 percent of county median); Moderate (80 percent to 120 percent of county median); and Upper (over 120 percent of county median). Four levels are included relating to the Orange County HUD median income: Income I is defined as households earning 0-30 percent of the HUD county median income. Income II is defined as households earning 30-50 percent of the HUD county median income. Income III is defined as households earning 50-80 percent of the HUD county median income. Income IV is defined as households earning 80-120 percent of the HUD county median income.

Incorporation by Reference: Reliance on a previous environmental document for some portion of the environmental analysis of a project. An EIR or Negative Declaration may incorporate by reference all or portions of another document which is a matter of public record or is generally available to the public. Where all or part of another document is incorporated by reference, the incorporated language shall be considered to be set forth in full as part of the text of the EIR or Negative Declaration. Source: CEQA Guidelines §15150.

Indirect Impact: Effects caused by an action that are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Indirect Source: Any facility, building, structure, or installation, or combination thereof, which generates or attracts mobile source activity that results in emissions of any pollutant (or precursor) for which there is a state ambient air quality standard. Examples of indirect sources include employment sites, shopping centers, sports facilities, housing developments, airports, commercial and industrial development, and parking lots and garages.

Indirect Source Control Program: Rules, regulations, local ordinances and land use controls, and other regulatory strategies of air pollution control districts or local governments used to control or reduce emissions associated with new and existing indirect sources. Indirect source control programs include regulatory strategies such as transportation control measures (e.g., South Coast's Regulation XV for employer-based trip reduction); parking charges; land

use controls that reduce the need for vehicle travel and increase transit, bicycle, and pedestrian access; and source-specific regulations such as truck idling and travel schedule requirements.

Infiltration: The introduction of underground water, such as groundwater, into wastewater collection systems. Infiltration results in increased wastewater flow levels.

Infiltration System: An infiltration basin designed to capture runoff volume from the water quality design storm and infiltrate it to the soil.

Inflow: Surface water, such as rainfall runoff, that enters a wastewater collection system through manhole covers and joints or cracks in pipes. Inflow results in increased wastewater flow levels.

Infrastructure: Permanent utility installations, including roads, water supply lines, sewage collection pipes, and power and communications lines.

Initial Study: Under CEQA, a preliminary analysis prepared by the Lead Agency to determine whether an EIR, a Negative Declaration, or Mitigated Negative Declaration must be prepared, or to identify the significant environmental effects to be analyzed in an EIR (source: CEQA Guidelines §15365).

In situ: In place. Applied to archaeological remains found in their original, undisturbed location or position.

Institute of Transportation Engineers (ITE): Organization for professional transportation engineers. ITE publishes the Trip Generation Manual, which provides information on trip generation for land uses and building types. For instance, if an individual needs to know the number of trip ends produced by an industrial park, the report provides a trip rate based upon the size of the building. The report also divides the trip rate into peak hour rates, weekday rates, etc.

Intensity, Building: For residential uses, the actual number or the allowable range of dwelling units per net or gross acre. For non-residential uses, the actual or the maximum permitted floor area ratios (FARs).

Inter-agency: Indicates cooperation between or among two or more discrete agencies in regard to a specific program.

Inter Alia: Latin: "among other things," "for example," or "including." Legal drafters would use it to precede a list of examples or samples covered by a more general

Intermittent Stream: A stream that normally flows for at least 30 days after the last major rain of the season and is dry a large part of the year.

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA): This Congressional act requires states to develop a Statewide Transportation Plan and a Statewide Transportation Improvements Program (STIP) that identifies short-term project needs and priorities. It has also been a major source of funding for transportation planning and encourages the linking of transportation and community planning.

Intersection Capacity: The maximum number of vehicles that has a reasonable expectation of passing through an intersection in one direction during a given time period under prevailing roadway and traffic conditions.

Intersection Capacity Utilization Method (ICU): A method of analyzing intersection level of service by calculating a volume-to-capacity (V/C) ratio for each governing "critical" movement during a traffic signal phase. The V/C ratio for each phase is summed with the others at the intersection to produce an overall V/C ratio for the intersection as a whole. The ICU is usually expressed as a percent. The percent represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity. The V/C ratio represents the percent of intersection capacity used. For example, a V/C ratio of 0.85 indicates that 85 percent of capacity is being used.

Intrusive Noise: Noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or information content as well as the prevailing ambient noise level.

Inversion Layer: A condition in the atmosphere through which the temperature increases with altitude, holding cooler surface air down along with its pollutants.

Jobs/Housing Balance or Jobs/Housing Ratio: The jobs/housing ratio divides the number of jobs in an area by the number of employed residents. A ratio of 1.0 typically indicates a balance. A ratio greater than 1.0 indicates a net in-commute; less than 1.0 indicates a net out-commute.

Joint EIR/EIS: A joint environmental document prepared for a project meeting the requirements of both CEQA and NEPA. (See CEQA Guidelines §15170).

Joint Powers Authority (JPA): A legal arrangement that enables two or more units of government to share authority in order to plan and carry out a specific program or set of programs that serves both units.

Jurisdiction by Law: Jurisdiction by law means the authority of any public agency: (a) To grant a permit or other entitlement for use; (b) To provide funding for the project in question; or (c) To exercise authority over resources which may be affected by the project. A city or county will have jurisdiction by law with respect to a project when the city or county having primary jurisdiction over the area involved is: (a) The site of the project; (b) The area in which the major environmental effects will occur; and/or (c) The area in which reside those citizens most directly concerned by any such environmental effects. Where an agency having jurisdiction by law must exercise discretionary authority over a project in order for the project to proceed, it is also a Responsible Agency (source: CEQA Guidelines §15366).

Landfill: An area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

Landslide: Down slope movement of soil and/or rock, which typically occurs during an earthquake or following heavy rainfall.

Landslide Complex: The association of geologic structure and deep-seated landsliding.

Land Use: The purpose or activity for which a piece of land or its buildings is designed, arranged, or intended, or for which it is occupied or maintained.

Land Use Classification: A system for classifying and designating the appropriate use of properties.

Land Use Element: A required element of the General Plan that uses text and maps to designate the future use or reuse of land within a given jurisdiction's planning area. The land use element serves as a guide to the structuring of zoning and subdivision controls, urban renewal, and capital improvements programs, and to official decisions regarding the distribution and intensity of development and the location of public facilities and open space. Designates the general location and intensity of housing, business, industry, open space, education, public buildings and grounds, waste disposal facilities, and other land uses.

Land Use Plan: An adopted map depicting the approximate location of residential, commercial, public, semi-public, and private uses, open space, and road systems with a statistical summary of areas and densities for these land uses.

Land Use Regulation: A term encompassing the regulation of land in general and often used to mean those regulations incorporated in the General Plan, as distinct from zoning regulations (which are more specific).

Lateral Spreading: Lateral movement of soil, often as a result of liquefaction during an earthquake.

L*dn:* Day-Night Average Sound Level. The A-weighted average sound level for a given area (measured in decibels) during a 24-hour period with a 10 dB weighting applied to night-time sound levels. The Ldn is approximately numerically equal to the CNEL for most environmental settings.

Lead: A gray-white metal that is soft, malleable, ductile, and resistant to corrosion. Sources of lead resulting in concentrations in the air include industrial sources and crustal weathering of soils followed by fugitive dust emissions. Health effects from exposure to lead include brain and kidney damage and learning disabilities. Lead is the only substance which is currently listed as both a criteria air pollutant and a toxic air contaminant.

Lead Agency: The public agency which has the principal responsibility for carrying out or approving a project. The Lead Agency will decide whether an EIR or Negative Declaration will be required for the project and will cause the document to be prepared (source: CEQA Guidelines §15367).

Lease: A contractual agreement by which an owner of real property (the lessor) gives the right of possession to another (a lessee) for a specified period of time (term) and for a specified consideration (rent).

L*eq:* The energy equivalent level, defined as the average sound level on the basis of sound energy (or sound pressure squared). The L*eq* is a "dosage" type measure and is the basis for the descriptors used in current standards, such as the 24-hour CNEL used by the State of California.

Level of Service (LOS): LOS is the qualitative measure that incorporates the collective factors of speed, travel time, traffic interruption, freedom to maneuver, safety, driving comfort and convenience, and operating costs provided by a highway facility under a particular volume condition.

Level of Service A: Indicates a relatively free flow of traffic, with little or no limitation on vehicle movement or speed.

Level of Service B: Describes a steady flow of traffic, with only slight delays in vehicle movement and speed. All queues clear in a single signal cycle.

Level of Service C: Denotes a reasonably steady, high-volume flow of traffic, with some limitations on movement and speed, and occasional backups on critical approaches.

Level of Service D: Designates the level where traffic nears an unstable flow. Intersections still function, but short queues develop and cars may have to wait through one cycle during short peaks.

Level of Service E: Represents traffic characterized by slow movement and frequent (although momentary) stoppages. This type of congestion is considered severe, but is not uncommon at peak traffic hours, with frequent stopping, long-standing queues, and blocked intersections.

Level of Service F: Describes unsatisfactory stop-and-go traffic characterized by "traffic jams" and stoppages of long duration. Vehicles at signalized intersections usually have to wait through one or more signal changes, and "upstream" intersections may be blocked by the long queues.

Lithic: Of and pertaining to a stone (obsidian, chert, basalt, etc.), as "lithic artifacts."

Local Agency: Local agency means any public agency other than a state agency, board, or commission. Local agency includes but is not limited to cities, counties, charter cities and counties, districts, school districts, special districts, redevelopment agencies, local agency formation commissions, and any board, commission, or organizational subdivision of a local agency when so designated by order or resolution of the governing legislative body of the local agency (source: CEQA Guidelines §15368).

Local Agency Formation Commission (LAFCO): A five- or seven-member commission within each county that reviews and evaluates all proposals for formation of special districts, incorporation of cities, annexation to special districts or cities, consolidation of districts, and merger of districts with cities. Each county's LAFCO is empowered to approve, disapprove, or conditionally approve such proposals. The five LAFCO members generally include two county supervisors, two city council members, and one member representing the general public. Some LAFCOs include two representatives of special districts.

Local Coastal Program (LCP): A combination of a local governments land use plans, zoning ordinances, zoning district maps, and (within sensitive coastal resources areas) other implementing actions that together meet the local requirements of, and implement the provisions and policies of, the California Coastal Act of 1976.

Local Coastal Program Land Use Plan: The relevant portion of a local government general plan or coastal element that details type, location, and intensity of land use, applicable resource protection and development policies, and, where necessary, implementation actions.

Lot: An area of land created or established for purposes of sale, lease, finance, or division of interest or separate use, separated from other lands by description on a final map or parcel map.

Low-income Household: A household with an annual income usually no greater than 80 percent of the area median family income adjusted by household size, as determined by a survey of incomes conducted by a city or a county, or in the absence of such a survey, based on the latest available eligibility limits established by the U.S. Department of Housing and Urban Development (HUD) for the Section 8 housing program.

Luminaire or Luminary: The light-producing element of a light fixture. Examples are bulbs and tubes. Direct viewing of luminaries of greater than 1,000 lumens per fixture is undesirable.

Mano: A loaf-shaped handstone used for grinding seeds, pigments, and so forth, a metate or millingstone.

Manufactured Slope: A slope crated by grading that consists of cut and fill material.

Mass Grading: A grading technique in which all lots, building pads, and streets are generally graded over the entire area resulting in the disruption of the majority of the onsite natural grade and vegetation and/often resulting in, but not required to result in, a successive pad/terrace configuration.

Master Environmental Assessment: A Master Environmental Assessment may contain an inventory of the physical and biological characteristics of the area for which it is prepared and may contain such additional data and information as the public agency determines is useful or necessary to describe environmental characteristics of the area. It may include identification of existing levels of quality and supply of air and water, capacities and levels of use of existing services and facilities, and generalized incremental effects of different categories of development projects by type, scale, and location. A public agency may prepare a Master Environmental Assessment, inventory, or data base for all, or a portion of, the territory subject to its control in order to provide information which may be used or referenced in EIRs or Negative Declarations. (See CEQA Guidelines §15169).

Master EIR: An EIR that is intended to provide a detailed environmental review of plans and programs upon which the approval of subsequent related development proposals can be based. For example, a master EIR may be prepared for projects consisting of smaller individual projects to be implemented in phases, such as staged projects (See CEQA Guidelines Section 15175).

Master Plan of Arterial Highways (MPAH): A diagram in the Circulation Element which illustrates the arterial designation of roadways. Each arterial designation defines the number of ultimate lanes planned for a given roadway. Arterial designations include: Freeway, Transportation Corridor, Expressway, Major Highway, Primary Highway, Secondary Highway, and Commuter Highway.

Materials Recovery Facility (MRF): An intermediate processing facility designed to remove recyclables and other valuable materials from the waste stream for purposes of recycling or composting. A "dirty MRF" removes reusable materials from unseparated trash. A "clean MRF" separates materials from commingled recyclables, typically collected from residential or commercial curbside programs.

May: In accordance with CEQA Guidelines §15005, “may” identifies a permissive element which is left fully to the discretion of the public agencies involved.

Maximum Achievable Control Technology (MACT): Federal emissions limitations based on the best demonstrated control technology or practices in similar sources to be applied to major sources emitting one or more federal hazardous air pollutants.

Maximum Extent Practicable (MEP): The extent to which storm water management practices are required to be implemented to reduce storm water pollution. All management practices that are effective at reducing storm water pollution are required to be implemented, except when any of the following conditions are met: (1) other effective management practices would achieve greater or substantially the same pollution control benefits; (2) the management practices would not be technically feasible; (3) the cost of management practice implementation would greatly outweigh pollution control benefits; or, (4) implementation of the management practice would compromise other legal or institutional constraints, expectations, and obligations imposed by federal or state statute or case law.

Mean Sea Level: The average altitude of the sea surface for all tidal stages.

Memorandum of Understanding (MOU): A common form of formal agreement between government agencies.

Mercalli Intensity Scale: A subjective measure of the observed effects (human reactions, structural damage, geologic effects) of an earthquake. Expressed in Roman numerals from I to XII.

Metate: A portable stone slab upon which seeds and other grains are milled with a mano (worked with a push-pull motion).

Metropolitan Planning Organization (MPO): The regional agency which administers the federally required transportation planning processes in a metropolitan area. An MPO must be in place in every urbanized area with a population over 50,000, and is responsible for the 20-year long-range plan and the Transportation Improvement Program (TIP). The MPO is the coordinating agency for grants, billings, and policy-making for transportation. The MPO is often, but not always, the COG.

Median: A physical divider separating lanes of traffic that typically are traveling in opposite directions. A median is often installed to prohibit unsafe turning movements. It can also be used to beautify a streetscape.

Median Income: The annual income of each household size within a region which is defined annually by HUD. Half of the households in the region have incomes above the median and half have incomes below the median.

Millingstone: A roughly shaped stone slab upon which seeds and other plant products are ground with the aid of a mano. The milling basin of the slab may be ovoid to round, depending on the rotary motion of the handstone.

Mineral Resource: Land on which known deposits of commercially viable mineral or aggregate deposits exist. This designation is applied to sites determined by the State Division of Mines and Geology as being a resource of regional significance, and is intended to help maintain the quarrying operations and protect them from encroachment of incompatible land uses.

Mineral Resource Zones: Zones that have been identified as having potential mineral and aggregate resources. The State Mining and Geology Board recommends that these lands be preserved as open space or used for interim uses to allow for future extraction.

Ministerial (Administrative) Decision: Describes a governmental decision involving little or no personal judgment by the public official as to the wisdom or manner of carrying out the project. The public official merely applies the law to the facts as presented, but uses no special discretion or judgment in reaching a decision. A ministerial decision involves only the use of fixed standards or objective measurements, and the public official cannot use personal, subjective judgment in deciding whether or how the project should be carried out. Common examples of ministerial permits include automobile registrations, dog licenses, and marriage licenses. A building permit is ministerial if the ordinance requiring the permit limits the public official to determining whether the zoning allows the structure to be built in the requested location, the structure would meet the strength requirements in the Uniform Building Code, and the applicant has paid his fee (source: CEQA Guidelines §15369).

Mitigated Negative Declaration: Mitigated negative declaration means a negative declaration prepared for a project when the Initial Study has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration and Initial Study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment (source: CEQA Guidelines §15369.5).

Mitigation: Mitigation refers to (1) avoiding the impact altogether by not taking a certain action or parts of an action; (2) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (3) rectifying the impact by repairing, rehabilitating, or restoring the impacted environment; (4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or, (5) compensating for the impact by replacing or providing substitute resources or environments (source: CEQA Guidelines §15370).

Mitigation Measure: Action taken to reduce or eliminate environmental impacts. Mitigation includes: avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance during the life of the action; and compensating for the impact by replacing or providing substitute resources or environments.

Mitigation Monitoring Program: When a lead agency adopts a mitigated negative declaration or an EIR, it must adopt a program of monitoring or reporting which will ensure that mitigation measures are implemented. (See CEQA Statute Section 21081.6[a] and CEQA Guidelines Sections 15091[d] and 15097.)

Mixed Use: Properties on which various uses, such as office, commercial, institutional, and residential, are combined in a single building or on a single site in an integrated development project with significant functional interrelationships and a coherent physical design. A “single site” may include contiguous properties.

Mobile Sources: A source of air pollution that is related to transportation vehicles, such as automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes.

Moderate Income Household: A household with an annual income between the lower income eligibility limits and 120 percent of the area median family income adjusted by household size, usually as established by the U.S. Department of Housing and Urban Development (HUD) for the Section 8 housing program.

Mortar: A stone or wooden bowl-like artifact in which sees, berries, meat, and other products are ground or pulverized with a pestle. Mortars occur in bedrock outcrops and as portable items.

Motor Vehicle: A motor vehicle shall include any and all self-propelled vehicles as defined in the California Motor Vehicle Code including all on-highway type motor vehicles subject to registration under said code and all off-highway type motor vehicles subject to identification under said code.

Mudflow (Mudslide): A river flow or inundation of liquid mud down a hillside, usually as a result of a dual condition of loss of brush cover and the subsequent accumulation of water on or under the ground, preceded by a period of unusually heavy or sustained rain.

Multiple-Family (Multi-Family) Dwelling Unit: A building or portion of a building containing two or more dwelling units with each dwelling unit occupied by only one household.

Multiple Species Conservation Program (MSCP): A cooperative, long-term habitat conservation planning program for southwestern San Diego County, as authorized under the federal and California Endangered Species Acts and the California Natural Communities Conservation Planning Act. The MSCP is designed to preserve an interconnected system of viable native habitat for the protection of multiple sensitive species by identifying priority conservation areas, Multiple-Habitat Planning Areas (MHPA), where development will be restricted and areas outside the MHPA where future development will be directed.

Must: In accordance with CEQA Guidelines §15005, “must” or “shall” identifies a mandatory element which all public agencies are required to follow.

National Ambient Air Quality Standards (NAAQS): Standards set by the U.S. Environmental Protection Agency for the maximum levels of air pollutants that can exist in the ambient air without unacceptable effects on human health or public welfare. There are two types of NAAQS. Primary standards set limits to protect public health and secondary standards set limits to protect public welfare.

National Environmental Policy Act (NEPA): In 1969, the National Environmental Policy Act was enacted establishing a national environmental policy and the Council on Environmental Quality (CEQ) to advise the President on environmental issues. NEPA requires the preparation of environmental impact statements (EIS) for all major federal actions which would have a significant effect on the environment. NEPA served as a model for the California Environmental Quality Act (CEQA) enacted in 1970.

National Flood Insurance Program: A federal program that authorizes the sale of federally subsidized flood insurance in communities where such flood insurance is not available privately.

National Historic Landmark (NHL): Property included in the National Register of Historic Places that has been judged by the Secretary of the. Interior to have "national significance in American history, archeology, architecture, engineering and culture."

National Historic Preservation Act: A 1966 federal law that established a National Register of Historic Places and the Advisory Council on Historic Preservation, and that authorized grants-in-aid for preserving historic properties.

National Pollutant Discharge Elimination System (NPDES) Permits: Under the NPDES Program (Federal Clean Water Act), any person responsible for the discharge of a pollutant or pollutants into any waters of the United States from any point source must apply for and obtain a permit. According to Section 402 of the Clean Water Act, the Environmental Protection Agency is the issuing authority for all NPDES permits in a state until such time as the state elects to take over the administration and obtains EPA approval of its programs. (The State Water Resources Control Board (SWRCB) has this authority in California.) Dischargers are required to disclose the volume and nature of their discharges. Further, the EPA or equivalent State Agency has the authority to specify limitations to be imposed on discharges and to require monitoring and reporting as to compliance or non-compliance.

National Register of Historic Places: The official inventory established by the National Historic Preservation Act of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering and culture."

Natural Community Conservation Plan (NCCP): NCCP generally refers to a plan authorized pursuant to the Natural Communities Conservation Planning Act.

Natural Grade: The grade unaffected by construction techniques such as fill, landscaping, or berming.

Navigable Waters: The “waters of the United States” that are currently used, where used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; interstate waters; and intrastate lakes, rivers, streams, mudflats, sandflats, and wetlands.

Negative Declaration: Negative Declaration means a written statement by the Lead Agency briefly describing the reasons that a proposed project, not exempt from CEQA, will not have a significant effect on the environment and therefore does not require the preparation of an EIR. The contents of a Negative Declaration are described in CEQA Guidelines §15071 (source: CEQA Guidelines §15371).

Neutral Indicator: Plant species that is found in both upland and wetland conditions may be considered an indicator plant species through a FAC-Neutral vegetation test option. This plant species must also include greater than 50 percent FAC, FACW, and or OBL species. This option is sued when a plant species is questioned or when FAC dominated community is present.

New Source Review (NSR): A Clean Air Act requirement that State Implementation Plans must include a permit review, which applies to the construction and operation of new and modified stationary sources in non-attainment areas, to ensure attainment of national ambient air quality standards. The two major requirements of NSR are Best Available Control Technology and Emission Offsets.

Nitric Oxide (NO): Precursor of ozone, NO2, and nitrate; nitric oxide is usually emitted from combustion processes. Nitric oxide is converted to nitrogen dioxide (NO2) in the atmosphere, and then becomes involved in the photochemical processes and/or particulate formation.)

Nitrogen Dioxide (NO_2): A secondary contaminant formed through a reaction between nitric oxide (NO) and atmospheric oxygen, irritates the lungs at high concentrations and contributes to ozone formation.

Nitrogen Oxides (NO_X): Chemical compounds containing nitric oxide (NO), nitrogen dioxide (NO_2), and oxygen; reacts with volatile organic compounds, in the presence of heat and sunlight to form ozone. It is also a major precursor to acid rain. A reddish brown gas that is a byproduct of combustion and ozone formation processes. Often referred to as NO_X, this gas gives smog its "dirty air" appearance. NO_2 is a criteria air pollutant, and may result in numerous adverse health effects.

Noise: Any sound that is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. Noise is unwanted sound.

Noise Attenuation: Reduction of the level of a noise source using a substance, material, or surface, such as earth berms and/or solid concrete walls.

Noise Barrier: A wall or other solid structure constructed with the objective of attenuating (i.e., reducing) noise behind the barrier; commonly, a noise wall along a roadway.

Noise Contour: A line connecting points of equal noise level as measured on the same scale. Noise levels greater than the 60 Ldn contour (measured in dBA) require noise attenuation in residential development.

Noise Element: One of the seven state-mandated elements of a local general plan. It assesses noise levels of highways and freeways, local arterials, railroads, airports, local industrial plants, and other ground stationary sources, and adopts goals, policies, and implementation programs to reduce the community's exposure to noise.

Noise Sensitive Land Use: Any land use (i.e., residential development) or designated geographic area (i.e., hospital complex) where “intrusive noise” is incompatible with the conduct of the noise sensitive uses or constitutes a “noise disturbance” for residents or works.

Non-attainment: The condition of not achieving a desired or required level of performance. Frequently used in reference to air quality. A geographic area identified by the U.S. EPA and/or the California Air Resources Board as not meeting either National or California Ambient Air Quality standards for a given pollutant.

Non-conforming Use: A use that was valid when brought into existence, but by subsequent regulation becomes no longer conforming. "Non-conforming use" is a generic term and includes (1) non-conforming structures (by virtue of size, type of construction, location on land, or proximity to other structures), (2) non-conforming use of a conforming building, (3) non-conforming use of a non-conforming building, and (4) non-conforming use of land. Thus, any use lawfully existing on any piece of property that is inconsistent with a new or amended General Plan, and that in turn is a violation of a zoning ordinance amendment subsequently adopted in conformance with the General Plan, will be a non-conforming use. Typically, non-conforming uses are permitted to continue for a designated period of time, subject to certain restrictions.

Non-Point Source: Air pollution sources that are not at individual, stationary locations (i.e., mobile source or area source).

Non-Point Source Discharge: Discharge from a diffuse pollution source (i.e., without a single point of origin or not introduced into a receiving stream from a specific outlet).

Non-Storm Water Discharge: Any discharge to a storm drain system or receiving water that is not composed entirely of storm water.

Notice of Completion: A brief notice filed with the Office of Planning and Research (OPR) by a Lead Agency as soon as it has completed a draft EIR, and is prepared to send out copies for review (source: CEQA Guidelines §15372).

Notice of Determination: A brief notice to be filed by a public agency after it approves or determines to carry out a project which is subject to the requirements of CEQA (source: CEQA Guidelines §15373). The filing of the NOD starts the statute of limitations period.

Notice of Exemption: A brief notice which may be filed by a public agency after it has decided to carry out or approve a project and has determined that the project is exempt from CEQA as being ministerial, categorically exempt, an emergency, or subject to another exemption from CEQA. Such a notice may also be filed by an applicant where such a determination has been made by a public agency which must approve the project (CEQA Guidelines §15374).

Notice of Intent to Adopt a Negative Declaration (NOI): A notice provided to the public, responsible agencies and trustee agencies that the lead agency plans to adopt a Negative Declaration or Mitigated Negative Declaration based upon the attached environmental document. The filing of the Notice with the State Clearinghouse starts the public review period (See CEQA Guidelines §Section 15072).

Notice of Preparation: A brief notice sent by a Lead Agency to notify responsible agencies, trustee agencies, and involved federal agencies that the Lead Agency plans to prepare an EIR for the project. The purpose of the notice is to solicit guidance from those agencies as to the scope and content of the environmental information to be included in the EIR. Public agencies are free to develop their own formats for this notice (source: CEQA Guidelines §15375).

Objective: A description of a desired condition for a resource. A specific statement of desired future condition toward which the City or County will expend effort in the context of striving to achieve a broader goal. An objective should be achievable and, where possible, should be measurable and time-specific. The State Government Code (Section 65302) requires that general plans spell out the "objectives," principles, standards, and proposals of the general plan. "The addition of 100 units of affordable housing by 1995" is an example of an objective.

Obligate Upland: Plants that occur rarely (estimated 1 percent) in wetlands, but occur almost always (estimated greater than 99 percent) in non-wetlands under natural conditions.

Obligate Wetland: Plants that occur almost always (estimated to be 99 percent) in wetlands under natural conditions, but which may also occur rarely (estimated to be 1 percent) in non-wetlands (i.e., cattails or common water hyacinth).

Oblique: A fault with both strike-slip and dip-slip components.

Open Space: Land that has been left in its natural state and has not been developed with primary or accessory structures.

Open Space Element: One of the seven state-mandated elements of a local general plan. It contains an inventory of privately and publicly owned open-space lands, and adopted goals, policies, and implementation programs for the preservation, protection, and management of open space lands.

Ordinance: A law or regulation set forth and adopted by a governmental authority, usually a city or county.

Other Land: Lands which do not meet the criteria of any other category. (Source: Natural Resource Conservation Service)

Overlay: A land use designation on the land use map, or a zoning designation on a zoning map, that modifies the basic underlying designation in some specific manner.

Oxides of Nitrogen: A reddish-brown gas with an odor similar to bleach. The major source of this pollutant is the high temperature combustion of fossil fuels. Health effects include irritation and damage to lungs and lower resistance to respiratory infections.

Ozone (O_3): A compound consisting of three oxygen atoms that is the primary constituent of smog. It is formed through chemical reactions in the atmosphere involving volatile organic compounds, nitrogen oxides, and sunlight. Ozone can irritate the lungs as well as damage to trees, crops, and materials. There is a natural layer of ozone in the upper atmosphere which shields the earth from harmful ultraviolet radiation. Ozone is a criteria pollutant.

Ozone Precursors: Chemicals such as non-methane hydrocarbons and oxides of nitrogen, occurring either naturally or as a result of human activities, which contribute to the formation of ozone, a major component of smog.

PM_{10}: (See Fine Particulate Matter).

Parcel Map: A map depicting the establishment of up to four new lots by splitting a recorded lot. Parcel maps are subject to the California Subdivision Map Act and a city's subdivision regulations.

Parks, Park Land, Parkland: Open space lands whose primary purpose is recreation. Land that is publicly owned or controlled for the purpose of providing parks, recreation, or open space for public use.

Particulate Matter: Any material except uncombined water which exists in a finely divided form and is a liquid or solid at standard conditions. The size of particulate matter can vary from coarse, wind-blown dust particles to fine particle combustion products.

Particulate Matter-Fine ($PM_{2.5}$): $PM_{2.5}$ is a mixture of very small particulates with an aerodynamic diameter equal to or less than 2.5 microns. $PM_{2.5}$ consists of particles directly emitted into the air and particulates formed in the air from the chemical transformation of gaseous pollutants. $PM_{2.5}$ particulates are emitted from activities such as industrial and residential combustion, and from vehicle exhaust. Particles 2.5 microns or smaller infiltrate the deepest portions of the lungs, increasing the risks of long-term disease, including chronic respiratory disease, cancer, and increased and premature death.

Particulate Matter (PM_{10}): PM_{10} is any particulate matter with an aerodynamic diameter equal to or less than 10 microns (about 1/7 the diameter of a single human hair). PM_{10} consists of

particles directly emitted into the air and particulates formed in the air from the chemical transformation of gaseous pollutants. PM_{10} particulates are emitted from activities such as industrial and residential combustion, and from vehicle exhaust. PM_{10} causes adverse health effects, atmospheric visibility reduction. It is a criteria pollutant.

Parts Per Million (ppm): The number of weight or volume units of a minor constituent present within each one million units of the major constituent of a solution or mixture, such as salts in water.

Peak Hour or Peak Period: The one hour period during which the roadway carries the greatest number of vehicles. Traffic volumes are not constant throughout the day. Peak hours are the times during which volumes are significantly higher than others. Most areas have two peak hours–morning while people travel to work and late afternoon or evening as they leave work and return home. In some cases as third, though usually smaller, peak occurs during the middle of the day. As development intensifies and traffic volumes increase, the durations of the peaks are extended until eventually the peak hour becomes a peak period which may last for two or three hours. Peak period volumes are important as these are the times of day when the most severe congestion occurs, and intersections must be designed to accommodate these volumes if smooth traffic flow is to be maintained. The peak hour refers to the one-hour period during the a.m. peak period (typically 7 a.m. to 9 a.m.) and the one-hour period during the p.m. peak period (typically 3 p.m. to 6 p.m.) in which the greatest number of vehicle trips are generated by a given land use or are traveling on a given roadway.

Percent Slope: A common way of expressing the steepness of the slope of terrain, which is derived by dividing the change in elevation by the horizontal distance traversed. An increase of 20 feet elevation over a 100 foot distance is a 20 percent slope.

Permeability (soil): That quality of the soil or other geologic formations that enables it to transmit water or air.

Permit: The possession of a permit issued by the city, or where no permits are issued, the sanctioning of the activity by the jurisdiction as noted in a public record.

Person: Person includes any person, firm, association, organization, partnership, business, trust, corporation, limited liability company, company, district, city, county, city and county, town, the state, and any of the agencies or political subdivisions of such entities (source: CEQA Guidelines §15376).

Person Trips: Indicates the number of people, and are of interest in situations where there may be opportunities to accomplish more one-person trips with less vehicle trips–such as a carpool.

Pestle: An elongated, often cylindrical, stone used to pulverize food products and other cultural products in a mortar.

Phase I: For cultural resources, generally consists of a records search, a pedestrian field survey, and a written report.

Phase II: Usually will include test excavation pits. The goals are to determine the site's boundaries, an assessment of the site's integrity, and evaluation of the site's importance or significance through a study of its features and artifacts.

Phase III: Total data recovery.

Photochemical Smog: The atmospheric condition that results when reactive organic gases and nitrogen oxides emitted into the atmosphere react in the presence of sunlight to form other pollutants, such as oxidants.

Physiographic: Physical geography of the earth.

Planned Community: A large-scale development whose essential features are a definable boundary; a consistent, but not necessarily uniform, character; overall control during the development process by a single development entity; private ownership of recreation amenities; and enforcement of covenants, conditions, and restrictions by a master community association.

Planned Unit Development (PUD): A description of a proposed unified development, consisting at a minimum of a map and adopted ordinance setting forth the regulations governing, and the location and phasing of all proposed uses and improvements to be included in the development.

Planning and Research, Governor's Office of (OPR): A division of the State of California Governor's Office responsible for coordinating state, regional, and local planning in California, including publishing guidelines for the preparation and content of city and county general plans.

Planning Area: The area directly addressed by the general plan. A city's planning area typically encompasses the city limits and potentially annexable land within its sphere of influence.

Planning Commission: A body, usually having five or seven members, created by a city or county in compliance with California law (Section 65100) that requires the assignment of the planning functions of the city or county to a planning department, planning commission, hearing officers, and/or the legislative body itself, as deemed appropriate by the legislative body.

Plant Community: A group of plant species commonly occurring together in roughly similar proportions.

Point Source: Specific points of origin where pollutants are emitted into the atmosphere such as factory smokestacks.

Police Power: The inherent right of a government to restrict an individual's conduct or use of his/her property in order to protect the health, safety, welfare, and morals of the community.

Policy: A specific statement of principle or of guiding actions that implies clear commitment but is not mandatory. A general direction that a governmental agency sets to follow, in order to meet its goals and objectives before undertaking an action program.

Pollutant: Any introduced gas, liquid, or solid that makes a resource unfit for its normal or usual purpose.

Pollution: The presence of matter or energy whose nature, location, or quantity produces undesired environmental effects.

Pollution, Non-Point: Sources for pollution that are less definable and usually cover broad areas of land, such as agricultural land with fertilizers that are carried from the land by runoff, or automobiles.

Pollution, Point: In reference to water quality, a discrete source from which pollution is generated before it enters receiving waters, such as a sewer outfall, a smokestack, or an industrial waste pipe.

Potable Water: Suitable and safe for drinking.

Precursor: A chemical compound that leads to the formation of a pollutant. Reactive organic gases and nitrogen oxides are precursors of photochemical oxidants.

Preservation: As used in historic preservation, the process of sustaining the form and extent of a structure essentially as it exists. Preservation aims at halting further deterioration and providing structural stability but does not contemplate significant rebuilding.

Preserve: An area in which beneficial uses in their present condition are protected; for example, a nature preserve or an agricultural preserve. To keep safe from destruction or decay; to maintain or keep intact.

Prime Agricultural Land: (1) Land used actively in the production of food, fiber, or livestock. (2) All land which qualifies for rating as Class I or Class II in the Soil Conservation Service land use compatibility classifications. (3) Land which qualifies for rating 80 through 100 in the Storie Index Rating. (See Prime Farmland.)

Prime Farmland: Lands with the best combination of physical and chemical features able to sustain long-term production of agricultural crops. The land must be supported by a developed irrigation water supply that is dependable and of adequate quality during growing season. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date (source: Natural Resource Conservation Service).

Private Project: A “private project” means a project which will be carried out by a person other than a governmental agency, but the project will need a discretionary approval from one or more governmental agencies for: (a) a contract or financial assistance, or (b) a ease, permit, license, certificate, or other entitlement for use (source: CEQA Guidelines §15377).

Private Road/Private Street: Privately owned (and usually privately maintained) motor vehicle access that is not dedicated as a public street. Typically the owner posts a sign indicating that the street is private property and limits traffic in some fashion. For density calculation purposes, some jurisdictions exclude private roads when establishing the total acreage of the site; however, aisles within and driveways serving private parking lots are not considered private roads.

Program: An action, activity, or strategy carried out in response to adopted policy to achieve a specific goal or objective. Policies and programs establish the "who," "how" and "when" for carrying out the "what" and "where" of goals and objectives.

Program EIR: An EIR prepared on a series of actions that can be characterized as one large project. A program EIR generally establishes a framework for tiered or project-level environmental documents that are prepared in accordance with the overall program (See CEQA Guidelines §15168[a]).

Project: Project means the whole of an action which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and that is any of the following: (a) an activity directly undertaken by any

public agency including but not limited to public works construction and related activities clearing or grading of land, improvements to existing public structures, enactment and amendment of zoning ordinances, and the adoption and amendment of local General Plans or elements thereof pursuant to Government Code Sections 65100-65700; (b) an activity undertaken by a person which is supported in whole or in part through public agency contacts, grants, subsidies, loans, or other forms of assistance from one or more public agencies; (c) an activity involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies. Project does not include: (a) Proposals for legislation to be enacted by the State Legislature; (b) Continuing administrative or maintenance activities, such as purchases for supplies, personnel-related actions, general policy and procedure making (except as they are applied to specific instances covered above); (c) The submittal of proposals to a vote of the people of the state or of a particular community; (d) The creation of government funding mechanisms or other government fiscal activities, which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment. The term "project" refers to the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies. The term "project" does not mean each separate governmental approval. Where the Lead Agency could describe the project as either the adoption of a particular regulation under subsection (a)(1) or as a development proposal which will be subject to several governmental approvals under subsections (a)(2) or (a)(3), the Lead Agency shall describe the project as the development proposal for the purpose of environmental analysis. This approach will implement the Lead Agency principle as described in Article 4 (source: CEQA Guidelines §15378).

Project Description: Describes the basic characteristics of the project including location, need for the project, project objectives, technical and environmental characteristics, project size and design, project phasing, and required permits. The level of detail provided in the project description varies according to the type of environmental document prepared.

Project EIR: An EIR that examines the impacts that would result from development of a specific project (See CEQA Guidelines §15161).

Projectile Point: A sharp tip (usually stone) affixed to the end of a spear, lance, dart, or arrow.

Project Lot Area: The total land area of a project after all required dedications or reservations for public improvements, including, but not limited to, streets, parks, schools, flood control channels, etc.

Property Line: Boundary line between two or more adjacent legal lots.

Pro Rata: Refers to the proportionate distribution of the cost of something to something else or to some group, such as the cost of infrastructure improvements associated with new development apportioned to the users of the infrastructure on the basis of projected use.

Public Agency: Public agency includes any state agency, board, or commission and any local or regional agency, as defined in these Guidelines. It does not include the courts of the state. This term does not include agencies of the federal government (source: CEQA Guidelines §15379).

Public Right-of-Way: Any street, avenue, boulevard, highway, sidewalk, or alley or similar place which is owned or controlled by a governmental entity.

Pump Station: A complete pumping installation, including a storage box, pump or pumps, standby pumps, connecting pipes, electrical equipment, pump house, and outlet chamber.

Pyroclastic: Formed by or involving fragmentation as a result of volcanic or igneous action.

Quasi-public: A use owned or operated by a non-profit, religious or charitable institution and providing educational, cultural, recreational, religious, or similar types of public programs.

Rare Species: In accordance with the CEQA Guidelines, a "Species" means a species or subspecies of animal or plant or a variety of plant. A species of animal or plant is: "Rare" when either: (a) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or (b) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act. A species of animal or plant shall be presumed to be endangered, rare or threatened, as it is listed in: (1) Sections 670.2 or 670.5, Title 14, California; (2) Title 50, Code of Federal Regulations Section 17.11 or 17.12 pursuant to the Federal Endangered Species Act as rare, threatened, or endangered. A species not included in any listing shall nevertheless be considered to be endangered, rare or threatened, if the species can be shown to meet specific criteria. This definition shall not include any species of the Class Insecta which is a pest whose protection under the provisions of CEQA would present an overwhelming and overriding risk to man as determined by: The Director of Food and Agriculture with regard to economic pests; or The Director of Health Services with regard to health risks (source: CEQA Guidelines §15380).

Reactive Organic Compound (ROC)/Reactive Organic Gases (ROG): A photochemically reactive chemical gas, composed of non-methane hydrocarbons, which may contribute to the formation of smog. Also sometimes referred to as Non-Methane Organic Gases (NMOGs).

Recharge: The physical process where water naturally percolates or sinks into a groundwater basin.

Recharge Basin: A surface facility, often a large pond, used to increase the infiltration of surface water into a groundwater basin.

Reclamation: The reuse of resources, usually those present in solid wastes or sewage.

Record of Decision (ROD): The Record of Decision is a formal written statement, required under NEPA, wherein a federal lead agency must present the basis for its decision to approve a selected project alternative, summarize mitigation measures incorporated into the project an document any required Section 4(f) approval.

Recreation, Active: A type of recreation or activity that requires the use of organized play areas including, but not limited to, softball, baseball, football and soccer fields, tennis and basketball courts, and various forms of children's play equipment.

Recreation, Passive: Type of recreation or activity that does not require the use of organized play areas.

Recycle: Per Public Resources Code Section 40180, the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid waste, and

returning them to the economic mainstream in the form of raw material for new, reused, or reconstituted products that meet the quality standards necessary to be used in the marketplace.

Regional: Pertaining to activities or economies at a scale greater than that of a single jurisdiction, and affecting a broad geographic area.

Regional Housing Needs Assessment (RHNA): The Regional Housing Needs Assessment (RHNA) is based on state projections of population growth and housing unit demand and assigns a share of the region's future housing need to each jurisdiction within the SCAG region. These housing need numbers serve as the basis for the update of each California city and county Housing Element.

Regional Park: A park typically 150-500 acres in size focusing on activities and natural features not included in most other types of parks and often based on a specific scenic or recreational opportunity.

Regional Transportation Plan (RTP): The official intermodal metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area, developed pursuant to 23 CFR part 450.

Regulation: A rule or order prescribed for managing government.

Reservoir: A pond, lake, tank, basin, or other space either natural or created in whole or in part by the building of engineering structures.

Residential Land Use: Land designated in the city or county general plan and zoning ordinance for buildings consisting only of dwelling units. May be improved, vacant, or unimproved. Any parcel or area of land devoted to housing and ancillary uses.

Residential, Multiple Family: Usually three or more dwelling units on a single site, which may be in the same or separate buildings.

Residential, Single-family: A single dwelling unit on a building site.

Resources, Non-renewable: Refers to natural resources, such as fossil fuels and natural gas, which, once used, cannot be replaced and used again.

Resource Sector: An area judged to contain a significant deposit of construction-quality aggregate.

Responsible Agency: A public agency which proposes to carry out or approve a project, for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration. For the purposes of CEQA, the term "Responsible Agency" includes all public agencies other than the Lead Agency which have discretionary approval power over the project (source: CEQA Guidelines §15381).

Reviewing Agencies: Local, state, and federal agencies with jurisdiction over the project area or resources potentially affected by the project. Cities and counties are also considered reviewing agencies.

Rezoning: An amendment to the map and/or text of a zoning ordinance to effect a change in the nature, density, or intensity of uses allowed in a zoning district and/or on a designated parcel or land area.

Ridgeline: A line connecting the highest points along a ridge and separating drainage basins or small-scale drainage systems from one another.

Right-of-Way (ROW): That portion of property which is dedicated or over which an easement is granted for public streets, utilities, or alleys.

Riparian: Term used for areas within and adjacent to rivers, streams, and creeks. These areas typically support plant species adapted to (or can tolerate) occasional or permanent flooding and/or saturated soils.

Riparian Ecosystem: An ecosystem defined by linear corridors of variable width occurring along rivers, streams, and creeks. Hydrologic interaction (with a river, stream, or creek) and distinct geomorphic features are two unique components of this ecosystem.

Riparian Habitat: Refers to habitat found in a riparian setting, and includes areas within the jurisdiction of the U.S. Army Corps of Engineers. Riparian habitat would contain the applicable river, stream, or creek (within an Ordinary High Water Mark). Riparian habitat may contain three-parameter wetlands (Federal definition), but usually does not.

Runoff: That portion of rain or snow that does not percolate into the ground and is discharged into streams instead.

Sacred Objects: Ceremonial objects which are used by traditional Native American religious leaders in the practice of traditional Native American religions.

Safety Element: One of the seven state-mandated elements of the general plan. It establishes the policies and programs to protect the community from risks associated with seismic, geologic, flood, and wildfire hazards.

SANDAG: San Diego Association of Governments (SANDAG): San Diego's Council of Government.

Scale: Refers to the geographic area and data resolution under examination in an assessment or planning effort.

Scenic Highway Corridor: The area outside a highway right-of-way that is generally visible to persons traveling on the highway.

Scenic Highway/Scenic Route: A highway, road, drive, or street that, in addition to its transportation function, provides opportunities for the enjoyment of natural and man-made scenic resources and access or direct views to areas or scenes of exceptional beauty or historic or cultural interest. The aesthetic values of scenic routes often are protected and enhanced by regulations governing the development of property or the placement of outdoor advertising.

Section 106: Provision in National Historic Preservation Act that requires federal agencies to consider effects of proposed undertakings on properties listed or eligible for listing in the National Register of Historic Places.

Section 4(d): A section of the federal Endangered Species Act (ESA) that allows special rules to apply to a species listed as threatened. Can specify the conditions allowing incidental take.

Section 2081: A section of the California Endangered Species Act (CESA) that governs the take of listed endangered species.

Section 4(f): Provision in U.S. Department of Transportation Act that prohibits federal approval or funding of transportation projects that require "use" of any historic site unless (1) there is "no feasible and prudent alternative to the project," and (2) the project includes "all possible planning to minimize harm."

Section 10(a): A section of the federal ESA that governs issuance of a permit to allow incidental take of a listed endangered species.

Sediment: Organic or inorganic material that is carried by or is suspended in water and that settles out to form deposits in the storm drain system or receiving waters.

Sedimentation: Process by which material suspended in water is deposited in a body of water.

Seismic: Caused by or subject to earthquakes or earth vibrations.

Sensitive Receptors: Sensitive receptors are people or institutions with people that are particularly susceptible to illness from environmental pollution, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise.

Setback: The horizontal distance between the property line and any structure.

Settlement: (1) The drop in elevation of a ground surface caused by settling or compacting. (2) The gradual downward movement of an engineered structure due to compaction. Differential settlement is uneven settlement, where one part of a structure settles more or at a different rate than another part.

Shall: In accordance with CEQA Guidelines §15005, “shall” or “must” identifies a mandatory element which all public agencies are required to follow.

Should: In accordance with CEQA Guidelines §15005, “should” identifies guidance provided by the Secretary for Resources based on policy considerations contained in CEQA, in the legislative history of the statute, or in federal court decisions which California courts can be expected to follow. Public agencies are advised to follow this guidance in the absence of compelling, countervailing considerations.

Significance (**NEPA):** NEPA requires that an EIS is required when the proposed federal action has the potential to “significantly affect the quality of the human environment.” To determine that potential, one must consider both the context in which the action takes place and the intensity of its effect. Section 1508.27 of the CEQ regulations define the term “significantly” as:

> Significantly as used in NEPA requires considerations of both context and intensity:
>
> (a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For

instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

(1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

(2) The degree to which the proposed action affects public health or safety.

(3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

(4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

(5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

(6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

(7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

(8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

(9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

(10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. (43 FR 56003, Nov. 29, 1978; 44 FR 874, Jan. 3, 1979)

Significant Impact or Significant Effect on the Environment: As defined by the CEQA Guidelines, a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant. The lead agency will determine whether a project may have a

significant effect on the environment based on substantial evidence in light of the whole record (source: CEQA Guidelines §15382).

Siltation: The accumulating deposition of eroded material; the gradual filling in of streams and other bodies of water with sand, silt, and clay.

Single Event Noise Exposure Level (SENEL): SENEL is the single event aircraft noise descriptor commonly used in California as a result of regulatory requirements by the California Department of Transportation, Division of Aeronautics. It is essentially identical to the equivalent federal descriptor known as "SEL." In decibels, SENEL shall mean the sound exposure level of a single event, such as an aircraft fly-by, measured over the time interval between the initial and final times for which the sound level of a single event exceeds the threshold sound level. SENEL is an A-weighted measure of an individual flyover, which time integrates the level accumulated during this event with reference to a duration of one second. Because of the integration process, SENEL takes into consideration both the duration and the magnitude of the noise signal.

Single-family Dwelling, Attached: A dwelling unit occupied or intended for occupancy by only one household that is structurally connected with at least one other such dwelling unit.

Single-family Dwelling, Detached: A dwelling unit occupied or intended for occupancy by only one household that is structurally independent from any other such dwelling unit or structure intended for residential or other use.

Single-Family Housing: A conventionally built house consisting of a single dwelling unit occupied by one household.

Single Occupant Vehicle (SOV): One person per vehicle.

Site: A parcel of land used or intended for one use or a group of uses and having frontage on a public or an approved private street. A lot.

Slide: A slide is a down slope movement of a soil or rock mass occurring dominantly on shallower slopes at surfaces of rupture or on relatively thin zones of intense shear strain. The displaced mass often slides beyond the toe of the surface rupture covering the original ground surface of the slope. Slides consist of two main types: rotational and translational. Rotational slides move along a surface of rupture that is curved and concave. Translational slides move along a planar or undulating surface of rupture

Slope: Land gradient described as the vertical rise divided by the horizontal run, and expressed in percent.

Slope Face: The slopes located directly below, or leading up to, the crest of a significant ridgeline or prominent landform.

Slope Steepness: The relationship (the ratio) between the change in elevation (rise) and the horizontal distance (run) over which that change in elevation occurs. The percent of steepness of any given slope is determined by dividing the rise by the run on the natural slope of land, multiplied by 100.

Smog: A combination of smoke and other particulates, ozone, hydrocarbons, nitrogen oxides, and other chemically reactive compounds which, under certain conditions of weather and

sunlight, may result in a murky brown haze that causes adverse health effects. The primary source of smog in California is motor vehicles.

South Coast Air Basin (SCAB): A geographic area defined by the San Jacinto Mountains to the east, the San Bernardino Mountains to the north, and the Pacific Ocean to the west and south. The SCAB is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

South Coast Air Quality Management District (SCAQMD): The agency responsible for protecting public health and welfare through the administration of federal and state air quality laws, regulations, and policies in the South Coast Air Basin.

Southern California Association of Governments (SCAG): The organization, known in federal law as a Council of Governments or Metropolitan Planning Organization. As the designated Metropolitan Planning Organization, Southern California Association of Governments (SCAG) represents the counties of Imperial, Riverside, San Bernardino, Orange, Los Angeles, and Ventura, and the cities within these six counties. SCAG is mandated by the federal government to research and prepare plans for transportation, growth management, hazardous waste management, and air quality. Additional mandates exist at the state level.

Specific Plan: A legal tool authorized by Government Code §65450 *et seq.* for the systematic implementation of the general plan for a defined portion of a community's planning area. A specific plan must specify in detail the land uses, public and private facilities needed to support the land uses, phasing of development, standards for the conservation, development, and use of natural resources, and a program of implementation measures, including financing measures.

Spread: A spread is a sudden lateral movement of a cohesive rock or soil mass along softer underlying material generally composed of homogenous clays or cohesionless fill. Spread includes a general subsidence of fractures of the mass of cohesive material into the softer underlying material. This type of landslide is often triggered by seismic activity.

State Agency: State agency means a governmental agency in the executive branch of the State Government or an entity which operates under the direction and control of an agency in the executive branch of State Government and is funded primarily by the State Treasury (source: CEQA Guidelines §15383).

State Historic Preservation Officer (SHPO): Official appointed or designated, pursuant to the National Historic Preservation Act, to administer a state's historic preservation program.

State Implementation Plan (SIP): A plan prepared by each state, and subject to U.S. Environmental Protection Agency (EPA) approval, which describes existing air quality conditions and identifies actions and programs to be undertaken by the state and its subdivisions to attain and maintain National Ambient Air Quality Standards. A SIP is a compilation of all of a state's air quality plans and rules that have been approved by the federal EPA. In California, air districts prepare non-attainment plans that are included in the state's SIP.

Statement of Overriding Considerations: A statement indicating that even though a project would result in one or more unavoidable adverse impacts, specific economic, social or other stated benefits are sufficient to warrant project approval.

State Transportation Improvement Plan (STIP): A staged, multi-year statewide capital improvement program of Intermodal transportation projects funded with revenues from the State Highway Account and other sources.

State Water Project (SWP): An aqueduct system that delivers water from northern California to central and southern California.

Stationary Source: A source of air pollution that is not mobile. Any building, structure, facility, or installation which emits or may emit any affected pollutant directly or as a fugitive emission. Building, structure, facility, or installation means any pollutant emitting activities, including activities located in California coastal waters adjacent to the District boundaries, which (a) belong to the same industrial grouping, (b) are located on one or more contiguous or adjacent properties (except for activities located in coastal waters, and (c) are under the same or common ownership, operation, or control or which are owned or operated by entities which are under common control.

Statute of Limitations: The time period within which a lawsuit may be filed or other legal action to challenge a CEQA document and approval.

Statutory Exemptions: Exemptions from CEQA granted by the Legislature (See CEQA Guidelines §§ 15260-15285).

Sterile Soil: The layer of soil that contains no presence of cultural material.

Storie Index: A numerical system (0þ100) rating, the degree to which a particular soil can grow plants or produce crops, based on four factors: soil profile, surface texture, slope, and soil limitations.

Storm Runoff: Surplus surface water generated by rainfall that does not seep into the earth but flows overland to flowing or stagnant bodies of water.

Storm Water: Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm Water Drainage System: Streets, gutters, inlets, conduits, natural or artificial drains, channels and watercourses, or other facilities that are owned, operated, maintained, and used for the purpose of collecting, storing, transporting, or disposing of storm water.

Stratum: A layer of material deposited by cultural or geological processes.

Structure: Anything, including a building, located on the ground in a permanent location or attached to something having a permanent location on the ground.

Strike-Slip: a fault in which the primary displacement is horizontal and parallel to the direction of the fault plane.

Structure: Anything constructed or erected on the ground, or that requires location on the ground, or is attached to something having a location on or in the ground. Structure does not include fences or walls used as fences less than fix feet in height, or plant materials.

Subdivision: The division of a lot, tract, or parcel of land into two or more lots, tracts, parcels, or other division of land for lease, sale, or financing, in accordance with the Subdivision Map Act

(California Government Code Section 66410 *et seq.*). The lots can either improved or unimproved, and be separately conveyed by sale or lease, and which can be altered or developed.

Subdivision Map Act: Division 2 (Sections 66410 *et seq.*) of the California Government Code, this act vests in local legislative bodies the regulation and control of the design and improvement of subdivisions, including the requirement for tentative and final maps.

Subregional: Pertaining to a portion of a region.

Subsequent EIR: An EIR prepared for projects that change substantially due to new information, a changed project description, or changed circumstances within which the project would take place. Generally, new information requiring a subsequent EIR would pertain to significant effects that were not previously analyzed. A subsequent EIR must receive the same circulation and review as the previous EIR (See CEQA Guidelines §15162).

Subsidence: Sinking of the land surface due to a number of factors, of which groundwater extraction is one; the gradual settling or sinking of an area with little or no horizontal motion.

Sulfur Dioxide (SO_2): A strong smelling, colorless gas that is formed by the combustion of fossil fuels. Power plants, which may use coal or oil high in sulfur content, can be major sources of SO_2. SO_2 and other sulfur oxides contribute to the problem of acid deposition. SO_2 is a criteria air pollutant.

Sulfur Oxides: Pungent, colorless gases (sulfates are solids) formed primarily by the combustion of sulfur-containing fossil fuels, especially coal and oil. Considered major air pollutants, sulfur oxides may impact human health and damage vegetation.

Supplement to an EIR: An EIR prepared for projects in which only minor changes would be necessary to make the previous EIR adequate for the project as revised. A Supplement to an EIR may be circulated by itself without recirculating the previous Draft or Final EIR, but the Supplement must receive the same circulation and review as the previous EIR (See CEQA Guidelines §15163).

Substantial Evidence: Substantial evidence as used in these guidelines means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. Whether a fair argument can be made that the project may have a significant effect on the environment is to be determined by examining the whole record before the lead agency. Argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, or evidence of social or economic impacts which do not contribute to or are not caused by physical impacts on the environment does not constitute substantial evidence. Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts (source: CEQA Guidelines §15384).

Sulfur Dioxide (SO_2): A colorless, extremely irritating gas or liquid. Sulfur dioxide enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. There are National Ambient Air Quality Standards and California Air Quality Standards for sulfur dioxide.

Sump: In drainage, any low area that does not permit the escape of water by gravity flow.

Surface Survey: A reconnaissance or on-foot examination of an area to determine its archeological potential, and usually, to formally locate and record archaeological sites.

Surface Water: Water in lakes, streams or rivers, as distinct from subsurface groundwater.

Surface Water Runoff: Precipitation, snow melt, or irrigation water in excess of what can infiltrate the soil surface and be stored in small surface depressions.

Swale: An elongated or depressed landform within a landscaped area, which is designed to carry storm or other runoff.

Taking: A real estate term traditionally used to mean acquisition by eminent domain but broadened by the U.S. Supreme Court to mean any government action that denies economically viable use of property.

Tentative Map: The initial map setting forth in detail a proposed land subdivision, which must comply with the city's or county's subdivision and zoning regulations and the state Subdivision Map Act. The subdivision of land depicted on the tentative map does not take effect until approval and recordation of the Final Map.

Threatened Species: A species of animal or plant is endangered when its survival and reproduction in the wild are in immediate jeopardy form one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors. Although when not presently threatened with extinction, the species exists in such small numbers that it may become endangered if its environment worsens. A species of animal or plant shall be presumed to be rare or endangered as it is listed in: Sections 670.2 or 670.5, Title 14, California Code of Regulations; or Title 50, Code of Federal Regulations Sections 17.11 or 17.12 pursuant to the Federal Endangered Species Act as rare, threatened, or endangered.

Threshold of Significance: Criteria for each environmental issue area to assist with determinations of significance of project impacts.

Tiered EIR: An EIR that evaluates a specific project that is covered by a certified Program EIR. General information from the Program EIR is summarized or incorporated by reference so that the tiered EIR can focus on project-specific issues (See CEQA Guidelines §15385). A Tiered EIR is required when the Initial Study or other analysis finds that the later project may cause significant effects on the environment that were not adequately addressed in the prior EIR.

Tiered Mitigated Negative Declaration: A Tiered Mitigated Negative Declaration evaluates a specific project or later development action that is covered by a Program EIR. General information from the Program EIR is summarized or incorporated by reference so that the Tiered Mitigated Negative Declaration can focus on project-specific issues. A Tiered Mitigated Negative Declaration is used where project revisions or mitigations reduce all significant impacts to a less than significant level (See CEQA Guidelines §§15070-15075).

Tiered Negative Declaration: A Negative Declaration evaluates a specific project or later development action that has already been covered by a certified Program EIR. General information from the Program EIR is summarized or incorporated by reference so that the tiered Negative Declaration can focus on project specific issues. A Tiered Negative Declaration is used where there is no substantial evidence that the project may have a significant impact not previously analyzed and mitigated.

Tiered Project: A specific project evaluated in a project EIR, Negative Declaration, or Mitigated Negative Declaration that is covered by a certified Program EIR.

Tiering: Tiering refers to the coverage of general matters in broader EIRs (such as on general plans or policy statements) with subsequent narrower EIRs or ultimately site-specific EIRs incorporating by reference the general discussions and concentrating solely on the issues specific to the EIR subsequently prepared. Tiering is appropriate when the sequence of EIRs is: (a) from a general plan, policy, or program EIR to a program, plan, or policy EIR of lesser scope or to a site-specific EIR; or (b) from an EIR on a specific action at an early stage to a subsequent EIR or a supplement to an EIR at a later stage. Tiering in such cases is appropriate when it helps the Lead Agency to focus on the issues which are ripe for decision and exclude from consideration issues already decided or not yet ripe (source: CEQA Guidelines §15385).

Title 24 of the California Code of Regulations: Title 24 is part of the California Buildings Standards Code, the building regulations of California. Part 6 is the Energy Code.

Topographic Map: A map showing the various topographic features of a given area, such as hills, valleys, mountains, slope of land surfaces, usually by means of contours or lines connecting points of equal elevation.

Topography: The physical shape of the ground surface. Configuration of a surface, including its relief and the position of natural and man-made features.

Topple: A topple is a forward rotation of a mass of soil or rock out of a steep slope at a hinge or pivot point below the center of gravity of the displaced mass. Topples usually involve the overturn of interacting columns or blocks at or near a vertical face and may lead to falls or slides of the displaced mass. Movement of material during a topple ranges from extremely slow to extremely rapid.

Total Dissolved Solids (TDS): A quantitative measure of the residual minerals dissolved in water that remains after evaporation of a solution. Usually expressed in milligrams per liter or parts per million.

Total Maximum Daily Load (TMDL): An estimate of the total quantity of pollutants (from all sources: point, non-point, and natural) that may be allowed into waters without exceeding applicable water quality criteria.

Total Organic Gases (TOG): Gaseous organic compounds, including reactive organic gases and the relatively unreactive organic gases such as methane.

Total Suspended Particulate (TSP): Particles of solid or liquid matter−such as soot, dust, aerosols, fumes, and mist−up to approximately 30 microns in size.

Toxic Air Contaminant (TACs): Airborne chemical compounds determined by the U.S. Environmental Protection Agency (EPA) and the California EPA, including the Office of Environmental Health Hazard Assessment and the California Air Resources Board, to pose a present or potential threat to public health. Air pollutants (excluding ozone, carbon monoxide, PM_{10}, sulfur dioxide, and nitrogen dioxide) that may reasonably be anticipated to cause cancer, developmental effects, reproductive dysfunctions, neurological disorders, heritable gene mutations, or other serious or irreversible acute or chronic health effects in humans. Toxic air pollutants are considered under a different regulatory process (California Health and Safety Code section 39650 *et seq*.) than pollutants subject to California Ambient Air Quality Standards.

Health effects to TACs may occur at extremely low levels, and it is typically difficult to identify levels of exposure which do not produce adverse health effects.

Traffic Model: A mathematical representation of traffic movement within an area or region based on observed relationships between the kind and intensity of development in specific areas. Many traffic models operate on the theory that trips are produced by persons living in residential areas and are attracted by various non-residential land uses.

Transect: A survey conducted by persons walking a study area which has been mentally divided into subareas, in order to systematically locate artifacts exposed on the ground. A series or transects, or passes, are walked by one or more persons in a parallel fashion to inventory an area.

Transit: The conveyance of persons or goods from one place to another by means of a local, public transportation system.

Transportation Analysis Zone (TAZ): A geographic area that identifies land uses and associated trips that is used for making land use projections and performing traffic modeling.

Transportation Control Measures (TCMs): Air pollution control measures in the Air Quality Management Plan that are directed to reducing air emissions by reducing vehicle miles traveled, vehicle idling, or traffic congestion. Federal and state law specifies requirements for TCMs. Steps taken by a locality to adjust traffic patterns (e.g., bus lanes, right turn on red) or reduce vehicle use (ridesharing, high-occupancy vehicle lanes) to reduce vehicular emissions of air pollutants.

Transportation Demand Management (TDM): A strategy for reducing demand on the road system by reducing the number of vehicles using the roadways and/or increasing the number of persons per vehicle. TDM attempts to reduce the number of persons who drive alone on the roadway during the commute period and to increase the number in carpools, vanpools, buses and trains, walking, and biking. TDM can be an element of Transportation Systems Management.

Transportation Equity Act of the 21st Century (TEA 21): TEA 21 was enacted June 9, 1998, as Public Law 105-178. TEA-21 authorizes and funds the federal surface transportation programs for highways, highway safety, and transit for the 6-year period of 1998-2003. The TEA 21 Restoration Act, enacted July 22, 1998, provided technical corrections to the original law.

Transportation Improvement Plan (TIP): A staged, multi-year, intermodal program of transportation projects which is consistent with the metropolitan transportation plan. It is a federal term.

Transportation Systems Management (TSM): A comprehensive strategy developed to address the problems caused by additional development, increasing trips, and a shortfall in transportation capacity. Transportation Systems Management focuses on more efficiently utilizing existing highway and transit systems rather than expanding them. TSM measures are characterized by their low cost and quick implementation time frame, such as computerized traffic signals, metered freeway ramps, and one-way streets.

Trip: The trip is the basic measurement used to describe transportation volumes. A one-way journey that proceeds from an origin to a destination via a single mode of transportation; the

smallest unit of movement considered in transportation studies. Each trip has one "production end," (or origin, often from home, but not always), and one "attraction end," (destination).

Trip Assignment: The allocation of vehicle trips to available routes between locations in a traffic study area.

Trip End: Every trip has two ends–an origin and a destination. Conversely, every origin or destination generates two trip ends–one arriving and one leaving. For example, traveling from home to work and back involves two trips–home to work and work to home, and four trip ends–home as the origin and home as the destination. Quantification of trip ends is useful in describing the contribution of specific land uses to traffic volumes.

Trip Generation: The number of vehicle trip ends associated with (i.e., produced by) a particular land use or traffic study site. A trip end is defined as a single vehicle movement. Roundtrips consist of two trip ends.

Trustee Agency: A state agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the state of California. Trustee agencies include the California Department of Fish and Game, State Lands Commission, the State Department of Parks and Recreation, and the University of California (with regard to sites within the Natural Land and Water Reserves System) (source: CEQA Guidelines §15386).

Turn Lane: A lane devoted to vehicles making a turning movement to go in a different direction. Turn lanes are necessary to ensure the free-flow of traffic in the through lanes by providing a separate area/lane for turning traffic to slow down and complete the turning maneuver without impeding the through traffic.

Uniface: A tool that has been worked only on one side.

Uniform Building Code (UBC): A national, standard building code that sets forth minimum standards for construction, published by the International Conference of Building Officials (ICBO).

United States Environmental Protection Agency (EPA): The federal agency with primary responsibility setting of policy and guidelines and carrying out legal mandates for the protection of natural interests in environmental resources, including the Clean Water Act, Clean Air Act, Safe Drinking Water Act, and the Resource Conservation and Recovery Act. California is included within EPA Region IX, headquartered in San Francisco.

Unique Farmland: Lands of lesser quality soils used for the production of the state's leading agricultural cash crops. These lands are usually irrigated but may include non-irrigated orchards or vineyards as found in some climate zones in California (Source: Natural Resource Conservation Service).

Urban: Of, relating to, characteristic of, or constituting a city. Urban areas are generally characterized by moderate and higher density residential development *(*i.e., three or more dwelling units per acre), commercial development, and industrial development, and the availability of public services required for that development, specifically central water and sewer, an extensive road network, public transit, and other such services (e.g., safety and emergency response). Development not providing such services may be “non-urban” or “rural.” CEQA defines “urbanized area” as an area that has a population density of at least 1,000 persons per square mile (Public Resources Code 21080.14[b]).

Urban and Built-Up Land: Lands occupied by structures with a building density of at least one unit to one and one-half acres, or approximately six structures to a 10-acre parcel (Source: Natural Resource Conservation Service).

Urbanized Area: Urbanized area means a central city or a group of contiguous cities with a population of 50,000 or more, together with adjacent densely populated areas having a population density of at least 1,000 persons per square mile. A Lead Agency shall determine whether a particular area meets the criteria in this section either by examining the area or by referring to a map prepared by the U.S. Bureau of the Census which designates the area as urbanized. Use of the term "urbanized area" in Section 15182 is limited to areas mapped and designated as urbanized by the U.S. Bureau of the Census. (Source: CEQA Guidelines §15387).

Use Permit: The discretionary and conditional review of an activity or function or operation on a site or in a building or facility.

Variance: An adjustment in regulations. Variances are based on discretionary decisions and may be granted to allow deviations from ordinance regulations governing such development factors such as set backs, height, lot coverage, lot area and width, signs, off-street parking, landscaping, and wall, fencing, and screening standards. Variances may not be granted to authorize a use or activity which is not otherwise expressly authorized by the zone regulations governing the property. A variance usually is granted only upon demonstration of hardship based on the peculiarity of the property in relation to other properties in the same zone district.

Vehicle Miles Traveled (VMT): The total number of vehicle miles traveled over a specified length of time (e.g., daily, monthly, or yearly) or over a specified road or transportation corridor.

Vehicle Trip: Vehicle trip describes the number of vehicles traveling from point to point.

Vehicle Trip Ends: A single or one-direction vehicle movement with either the origin or destination inside a traffic study site.

Very Low Income Household: A household with an annual income usually no greater than 50 percent of the area median family income adjusted by household size, as determined by a survey of incomes conducted by a city or a county, or in the absence of such a survey, based on the latest available eligibility limits established by the U.S. Department of Housing and Urban Development (HUD) for the Section 8 housing program.

Vesting Map: A map which meets the requirements of subdivision (a) and Section 66452 of the California Government Code.

View Point: A location from which a site is visible.

Viewshed: The surface area that is visible from a given viewpoint or series of viewpoints. It is also the area from which that viewpoint or series of viewpoints may be seen (a collection of viewpoints). The viewshed aids in identifying the views that could be affected by the proposed action.

Volatile: Any substance that evaporates readily.

Volatile Organic Compound (VOC): Carbon-containing compounds that evaporate into the air, except for specific exempt compounds found to be non-photochemically reactive and thus not

participating in smog formation. VOCs contribute to the formation of smog and/or may themselves be toxic. VOCs often have an odor; some examples include gasoline, alcohol, and solvents used in paints. VOC is synonymous with reactive organic gases and reactive organic compounds.

Volume-to-Capacity Ratio (V/C): In reference to public services or transportation, ratio of peak hour use to capacity. A measure of the operating capacity of a roadway or intersection, in terms of the number of vehicles passing through, divided by the number of vehicles that theoretically could pass through when the roadway or intersection is operating at its designed capacity. Abbreviated as "v/c." At a v/c ratio of 1.0, the roadway or intersection is operating at capacity. If the ratio is less than 1.0, the traffic facility has additional capacity. Although ratios slightly greater than 1.0 are possible, it is more likely that the peak hour will elongate into a "peak period." In evaluating the performance of a roadway, v/c ratios should be considered together with the letter grade system, which is more of a qualitative assessment based heavily on speeds and travel time.

Wastewater: Water that has been previously used by a municipality, industry, or agriculture and has suffered a loss of quality as a result of use.

Wastewater Reclamation: Treatment and management of municipal, industrial, or agricultural wastewater to produce water of suitable quality for additional beneficial uses.

Watercourse: Natural or once natural flowing (perennially or intermittently) water including rivers, streams, and creeks. Includes natural waterways that have been channelized, but does not include manmade channels, ditches, and underground drainage and sewage systems.

Watershed: The total area above a given point on a watercourse that contributes water to its flow; the entire region drained by a waterway or watercourse that drains into a lake, or reservoir.

Waters of the United States: Refers to federally regulated streams classified as non-wetlands, as well as wetlands, bordered by an Ordinary High Water Mark. Waters of the United States are regulated by the U.S. Army Corps of Engineers.

Weaving: The process of exiting a site and merging across multiple lanes "with traffic" to reach an intersection and go in a different direction.

Weekday: Any day, Monday through Friday, which is not a legal holiday.

Wetland: Refers to the federal definition, and requires three parameters to be present: hydrologic indicators, hydric soil, and hydrophytic vegetation. Wetlands are a subset of Waters of United States. Wetlands in a riparian contact are regulated by the U.S. Army Corps of Engineers.

Whole of an Action: An action that may result in either a direct or reasonably foreseeable indirect physical change in the environment. (See CEQA Guidelines §15378)

Wildlife Corridor: A natural corridor, such as an undeveloped ravine, that is frequently used by wildlife to travel from one area to another.

Williamson Act: Known formally as the *California Land Conservation Act of 1965*, it was designed as an incentive to retain prime agricultural land and open space in agricultural use, thereby slowing its conversion to urban and suburban development. The program entails a 10-

year contract between the city or county and an owner of land whereby the land is taxed on the basis of its agricultural use rather than the market value. The land becomes subject to certain enforceable restrictions, and certain conditions need to be met prior to approval of an agreement.

Williamson Act Lands: Lands preserved for agricultural production. Lands under Williamson Act contracts are assessed according to their agricultural use value rather than as potentially developable lands.

Zone: A specifically delineated area or district in a municipality within which regulations and requirements uniformly govern the use, placement, spacing and size of land and buildings.

Zoning: The division of a municipality by legislative regulations into areas or zones for the purpose of regulating land use, types of buildings, required yards and setbacks, parking, and other prerequisites to development. Zones are generally shown on a map and the text of the zoning ordinance specifies requirements for each zoning category. A program that implements policies of the General Plan.

Zoning Map: Government Code Section 65851 permits a legislative body to divide a county, a city, or portions thereof, into zones of the number, shape, and area it deems best suited to carry out the purposes of the zoning ordinance. These zones are delineated on a map or maps, called the Zoning Map.

Zoning Ordinance: A law dividing all land in the city into zones that specifies uses permitted and standards required in each zone.

CHAPTER 14.0
REFERENCES

Allen, E.B., S.A. Eliason, V.J. Marquez, G.P. Schultz, N.K. Storms, C.D. Stylinski, T.A. Zink and M.F. Allen. *What Are the Limits to Restoration of Coastal Sage Scrub in Southern California?* Second Interface between Ecology and Land Development in California. Ed. J.E. Keeley, M.B. Keeley, and C.J. Fotheringham. International Association of Wildland Fire: Fairfield, Washington. 1999.

Anderson, A.H. and A. Anderson. *The Cactus Wren*. The University of Arizona Press: Tucson, Arizona. 1973.

Axelrod, D. *The Origin of Coastal Sage Vegetation, Alta and Baja California*. American Journal of Botany. 65. 1978.

Baicich, P.J., and C.J.O. Harrison. *A Guide to the Nests, Eggs, and Nestlings of North American Birds*. Second Edition. Academic Press: San Diego, California. 1997.

Barbour, M.J. and J. Major. *Terrestrial Vegetation of California*. Wiley Press: New York, New York. 1977.

Barrett, R.H. *Mammals of California Oak Habitats - Management Implications*. Proceedings of the Symposium on the Ecology, Management, and Utilization of California Oaks. Ed. T. R. Plumb, Tech. Coord., Gen. Tech. Report PSW-44. USDA Forest Service: Albany, California. 1980.

Bechard, M.J., and J.K. Schmutz. *Ferruginous Hawk* (*Buteo regalis*). The Birds of North America, No. 172. Ed. A. Poole and F. Gill. The Academy of Natural Sciences: Philadelphia, Pennsylvania and The American Ornithologists' Union: Washington, D.C. 1995.

Beedy, E.C., S.D. Sanders, D.A. Bloom. *Breeding Status, Distribution, and Habitat Associations of the Tricolored Blackbird* (*Agelaius tricolor*)*, 1850-1889*. Prepared for the U.S. Fish and Wildlife Service, Sacramento, California. June 21, 1991.

Beier, P. and R.H. Barrett. *The Cougar in the Santa Ana Mountain Range, California: Final Report, Orange County Cooperative Mountain Lion Study.* 1993.

Bloom, P. *Cumulative Database for Raptors, Amphibians, and Reptiles for the NCCP Planning Area: 1900 to present*. No date.

Bomkamp, Tony. Personal observation of distribution of vernal barley during 2003 Botanical Surveys in support of NCCP. 2003.

BonTerra Consulting. *The Ranch Plan Final EIR 589*. Prepared for the County of Orange. 2004.

Bontrager, D.R. *Habitat Requirements, Home Range, and Breeding Biology of the California Gnatcatcher (Polioptila Californica) in South Orange County, California*. Prepared for Santa Margarita Company. 1991.

Boyd, S. *Chorizanthe Parryi* var. *Fernanadina*: *Noteworthy Collections*, California. Madrono. 48(2):78. 2001.

——. Telephone communication (BY/WITH WHOM?) regarding San Fernando Valley Spineflower. 1999.

Bubert, Lonnie (Riding and Hiking Coordinator, County of Orange, Harbors, Beaches & Parks Department). Telephone communication with Diane Barrett. January 5 and 6, 2004.

Buchman, Bruce (Parks District Supervisor, County of Orange, Harbors Beaches & Parks Department). Telephone communication with Diane Barrett. November 19 and 20, 2003.

Brown, Chad (Chief, County of Orange, Department of Planning and Development Services). Correspondence with Diane Barrett. November 19, 2003.

Brown, D.E. *Californian Evergreen Forest and Woodland*. Desert Plants. 4:66-69. 1982.

——. *Selected District Level Data*. <http://data1.cde.ca.gov/dataquest/Cbeds3.asp>. Last accessed on March 22, 2004.

Brown, H.A. 1966. *Temperature Adaptation and Evolutionary Divergence in Allopatric Populations of the Spadefoot Toad, Scaphiopus Hammondii*. Ph.D. Dissertation, University of California, Riverside, California.

California Department of Fish and Game, Natural Heritage Division. *California Wildlife Habitat Relationships Database System.* Sacramento, California. (CDFG 2002c). 2002.

——. *List of Special Plants*. (CDFG 2002a). 2002.

——. Natural Diversity Database. *California Wildlife Habitat Relationships Database System.* Sacramento, California. 1991.

——. Natural Diversity Database. *Special Vascular Plants, Bryophytes, and Lichens List*. (CDFG January 2004a). 2004.

——. NCCP Scientific Review Panel. *Conservation Guidelines for Coastal Sage Scrub*. 1993.

——. *Special Animals List.* Sacramento, California. (CDFG 2004b). 2004.

——. *Special Animals List–Threatened and Endangered Mammals.* Sacramento, California. (CDFG 2002b). 2002.

California Farm Bureau Federation. <www.cfbf.com>. Last accessed on October 24, 2003.

California Native Plant Society. *Electronic Inventory of Rare and Endangered Plants of California.* Sacramento, California. 2004.

Center for Demographic Research. *Orange County City Demographics*. <http://www.fullerton.edu/cdr/city.asp>. No date.

——. *Orange County Projections 2000, Development Process*. 2000.

——. *Orange County Projections 2000, OCTAM Variables: Methodology*. 2000.

——. *Orange County Projections 2004*. 2004.

Dana Point, City of. *Final Program Environmental Impact Report for the Dana Point Headlands General Plan Amendment & Local Coastal Program Amendment*. State Clearinghouse Number 98051062. Prepared by EIP Associates. March 1999.

——. *General Plan Conservation/Open Space Element.* July 9, 1991.

——. *General Plan Economic Development Element.* July 9, 1991.

——. *General Plan Housing Element.* No date.

——. *General Plan Land Use Element.* August 26, 1997.

——. *General Plan Noise Element.* July 9, 1991.

——. *General Plan Public Facilities/Growth Management Element.* 1994.

——. *General Plan Public Safety Element.* June 27, 1995.

——. *General Plan Urban Design Element.* July 9, 1991.

Dixon, J.R. *Species Description of the Banded Gecko.* Catalogue of American Amphibians and Reptiles. American Society of Ichthyologist and Herpetologist. 1970.

Dudek & Associates, Inc. *Biological Constraints Report for the Proposed Middle Chiquita Golf Course*. Prepared for Rancho Mission Viejo. 1997.

——. *Biological Resources Report and Impact Assessment for the Arroyo Trabuco Golf Course*. Prepared for DMB San Juan Golf Associates, LLC. 2001.

——. *Southern Orange County California Gnatcatcher Study: Selected Comparison of 1994 and 2001 Populations*. Prepared for Rancho Mission Viejo. 2004.

——. *Southern Subregion NCCP Wildlife Corridor Survey*. Prepared for the Santa Margarita Company. 1995.

——. *Surveys for Coastal California Gnatcatcher and Cactus Wren, Orange County Southern Subregion Natural Communities Conservation Plan and Habitat Conservation Plan Study Area*. Prepared for County of Orange Environmental Management Agency. 1994.

Ehrlich, P., D. Dobkin, and D. Wheye. *The Birder's Handbook: A Field Guide to the Natural History of North American Birds.* Simon and Schuster, Inc.: New York, New York. 1988.

Emmel, T.C. and J.F. Emmel. *The Butterflies of Southern California.* Natural History Museum of Los Angeles County, Science Series 26:1-148. 1973.

Eng, L. L., D. Belk and C. H. Eriksen. *California Anostraca: Distribution, Habitat, and Status.* Journal of Crustacean Biology. 10:247-277. 1990.

England, A.S., M.J. Bechard, and C.S. Houston. *Swainson's Hawk (Buteo swainsoni)*. The Birds of North America, No. 265 Ed. A. Poole and F. Gill. The Academy of Natural Sciences: Philadelphia, Pennsylvania and The American Ornithologists' Union: Washington, D.C. 1997.

Eriksen, C. and D. Belk. *Fairy Shrimps of California's Puddles, Pools and Playas*. Mad River Press, Inc.: Eureka, CA. 1999.

Faber, P.A., E. Keller, A. Sands, and B.M. Massey. *The Ecology of Riparian Habitat of the Southern California Coastal Region: A Community Profile*. USFWS Biology Report. 85(7.27). 1989.

Faber, P.M. and E. Keller. *The Ecology of Riparian Habitats of the Southern California Coastal Region: A Community Profile*. U.S. Department of the Interior, Fish and Wildlife Service Biological Report. 1985.

Feaver, P.E. *Breeding Pool Selection and Larval Mortality of Three California Amphibians: Ambystoma Tigrinum Californiense* (Gray), *Hyla Regilla* (Baird and Girard), *and Scaphiopus hammondii* (Girard). M.A. Thesis, Fresno State College. Fresno, California. 1971.

Fisher, Robert N. and T.J. Case. *A Field Guide to the Reptiles and Amphibians of Coastal Southern California*. Lazer Touch: San Mateo, California. 1997.

Foster, Tony (Community Services, City of San Juan Capistrano). Telephone communication with Diane Barrett. January 26, 2004.

Gallagher, Sylvia Ranney. *Atlas of Breeding Birds, Orange County, California.* 1997.

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

Glenn Lukos Associates (GLA). *Memorandum RE: Intermediate Mariposa Lily*. March 26, 2004.

——. *Graphical Peak Discharge Report, Trampas Dam Watershed, Rancho Mission Viejo, Orange County, California*. Letter Report to Laura Coley Eisenberg of Rancho Mission Viejo. 2003.

——. Jurisdictional Delineation of Areas Subject to the Jurisdiction of the U.S. Army Corps of Engineers Pursuant to Section 404 of the Clean Water Act. November 2003.

Goffman, McCormick & Urban, Inc. *Draft Geotechnical Studies to Support Ranch Plan EIR.* January 2004.

Gray, J. and D. Bramlet. *Habitat Classification System Natural Resources Geographic Information System (GIS) Project*. Prepared for the Orange County Environmental Management Agency. 1992.

Grenfell, W.E. *Lacustrine*. A Guide to Wildlife Habitats of California. California Department of Forestry and Fire Protection. 1988.

Griffin, J.R. *Oak Woodland*. Terrestrial Vegetation of California. Ed. M.G. Barbour and J. Major. John Wiley and Sons: New York, New York. 1977.

Grinnell, J., and A.H. Miller. *The Distribution of the Birds of California*. Pacific Coast Avifauna No. 27. 1944.

Hall, E R. *The Mammals of North America, Second Edition*. John Wiley and Sons: New York, New York. 1981.

Hamilton, R.A. and D.R. Willick. *Birds of Orange County, California: Status and Distribution*. Sea & Sage Press, Sea & Sage Audubon Society: Irvine, California. 1996.

Hatch, J.J., and D V. Weseloh. *Double-crested Cormorant (Phalacrocorax auritus)*. The Birds of North America, No. 441. Ed. A. Poole and F. Gill. The Birds of North American, Inc.: Philadelphia, Pennsylvania. 1999.

Haug, E.A., B A. Millsap, and M.S. Martell. *Burrowing Owl* (*Speotyto cunicularia*). The Birds of North America. Ed. A. Poole and F. Gill. Philadelphia: The Academy of Natural Sciences; Washington D.C. No. 61. The American Ornithologists' Union: Washington, D.C. 1993.

Hix, A.B. *Sensitivity of San Diego's Biological Resources: An Informational Report.* Prepared for the City of San Diego Planning Department, Development and Environmental Planning Division. 1990.

Holland, R.F. *Preliminary Descriptions of the Terrestrial Communities of California*. California Department of Fish and Game, Non-game Heritage Program, Sacramento, California. 1986.

Holland, V.L. *Coastal Oak Woodland*. A Guide to Wildlife Habitats of California. Ed. K.E. Mayer and W.F. Laudenslayer. California Department of Forestry and Fire Protection: Sacramento, California. 1988.

Holland, V.L. and D.J. Keil. *California Vegetation*. Kendall/Hunt Publishing Company: Dubuque, Iowa. 1995.

Holland, D.C. and R.H. Goodman. *A Guide to the Amphibians and Reptiles of MCB Camp Pendleton, San Diego County, California*. Report submitted to AC/S Environmental Security, Resource Management Division, MCB Camp Pendleton. 1998.

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

Holt, D.W., and S.M. Leasure. *Short-eared Owl* (*Asio Flammeus)*. The Birds of North America. Ed. A. Poole and F. Gill. No. 62. Philadelphia: The Academy of Natural Sciences: Washington D.C. and The American Ornithologists' Union: Washington, D.C. 1993.

Huggins, Harry (Acquisition Coordinator, County of Orange, Public Facilities and Resources Department). Telephone communication with Diane Barrett. November 19, 2003.

International Dark Sky Association. *The IDA Outdoor Lighting Code Handbook, Version 1.14*. September 2002.

Irvine Ranch Water District. *Natural Treatment Systems Project EIR*. Prepared by BonTerra Consulting. March 2004.

Jenks, Pat. Personal observation regarding distribution of granite sandstone bedrock overlain by carbonate soils within the study area. 2004.

Jennings, M.R. and Hayes, M.P. *Amphibian and Reptile Species of Special Concern in California.* Prepared for the California Department of Fish and Game. 1994.

Kaufman, K. *Lives of North American Birds*. Houghton Mifflin Company, Boston, Massachusetts. 1996.

Kramer, G. *Fresh Emergent Wetland*. A Guide to Wildlife Habitats of California. California Department of Forestry and Fire Protection. 1988.

Laguna Niguel, City. *City of Laguna Niguel General Plan*. Prepared by The Planning Center.

——. *General Plan Circulation Element.* August 4, 1992.

——. *General Plan Growth Management Element.* August 4, 1992.

——. *General Plan Housing Element.* June 20, 2000.

——. *General Plan Land Use Element.* August 1999.

——. *General Plan Noise Element.* August 4, 1992.

——. *General Plan Open Space/Parks Conservation Element.* August 4, 1992.

——. *General Plan Public Facilities Element.* August 4, 1992.

Lehman, P.E. *The Birds of Santa Barbara County, California*. Vertebrate Museum, University of California, Santa Barbara. 1994.

Marbella Golf Course and Country Club. <www.orangecounty.net/marbella>. Last accessed on November 25, 2003.

Michael Brandman Associates (MBA). *Draft Natural Environmental Study for Foothill Transportation Corridor-South.* Prepared for the Orange County Foothill Transportation Corridor Agency. 1996.

Miller, L. and A.H. Miller. *The Northern Occurrence of Bufo Californicus in California. Copeia*. 176. 1936.

Miller, Sherri (Bikeway Coordinator, County of Orange, Harbors, Beaches & Parks Department). Telephone communication with Diane Barrett. December 12, 2003 and January 5, 2004.

Mission Viejo, City of. *Environmental Factors Potentially Affected, Initial Study, Environmental Checklist, Crown Valley Parkway Widening Project.* August 20, 2001.

——. *General Plan Circulation Element.* October 8, 1990.

——. *General Plan Conservation/Open Space Element.* December 6, 1999.

——. *General Plan Economic Development Element.* February 4, 2002.

——. *General Plan Growth Management Element.* February 2, 2004.

——. *General Plan Housing Element.* December 4, 2000.

——. *General Plan Land Use Element.* June 15, 1998.

——. *General Plan Noise Element.* October 8, 1990.

——. *General Plan Public Facilities Element.* November 17, 2003.

——. *General Plan Public Safety Element.* January 20, 2003.

——. <http://www.cmvl.org/>. Last accessed on June 1, 2004.

Mission Viejo Golf Course. <www.goodtime.net/mvi/lomvi120.htm>. Last accessed on November 25, 2003.

Mistretta, O. *Species Management Guide for Mahonia Nevinii (Gray) Fedde*. Unpublished report prepared for Angeles National Forest. Available at Rancho Santa Ana Botanic Garden. 1989.

Moore, Iocafano and Goltsman, Inc. *SCORE Phase II Report*. September 2003.

Municipal Water District of Orange County. *The Regional Urban Water Management Plan for the Metropolitan Water District of Southern California.* December, 2000.

——. *2000 Regional Urban Water Management Plan.* December 20, 2000.

Noon, B.R. *Conceptual Issues in Monitoring Ecological Resources*. Monitoring Ecosystems, Interdisciplinary Approaches for Evaluating Ecoregional Initiatives. Ed. D.E. Bausch and J.C. Trexler. Island Press: Washington, DC. 2003.

Noss, R.F. and R.L. Peters. *Endangered Ecosystems: A Status Report on America's Vanishing Habitat and Wildlife.* Defenders of Wildlife: Washington, D.C. 1995.

O'Leary, J.F. *Californian Coastal Sage Scrub: General Characteristics and Considerations for Biological Conservation*. Endangered Plant Communities of Southern California. Southern California Botanists Special Publication Number 3. Ed. A. Schoenherr. 1990.

——. *Coastal Sage Scrub: Threats and Current Status*. Fremontia. 23:27-31. 1995.

Orange, County of. *Saddleback Meadows Mitigation Monitoring Program, Final Environmental Impact Report 566*. State Clearinghouse No. 1996121072. Prepared by HDR. August 2002.

Orange, County of, Integrated Waste Management Department. *Final Program Environmental Impact Report, 2001 Prima Deshecha General Development Plan.* November 6, 2001.

——. *Prima Deshecha Landfill*. <www.ocgov.com/iwmd/landfill_prima.html>. Last accessed on February 2, 2004.

Orange, County of, Public Facilities and Resources Department and Harbors, Beaches & Parks Department. <www.ocparks.com/home.asp>. Last accessed on November 24, 2003.

Orange, County of, Resources & Development Management Department. *Revised Notice of Preparation: Robinson Ridge Development Project.* May 12, 2004.

——. *Tonner Hills Planned Community. Draft Environmental Impact Report*. EIR No. 581, SCH No. 2001031137. April 2002.

Pacific Golf and Country Club. <www.pacificgc.com>. Last accessed on November 25, 2003.

Padley, D. *County of Orange Deer Telemetry Study*. Prepared for County of Orange Environmental Management Agency and Transportation Corridor Agency. 1992.

PCR Services Corporation. *Agency Review Draft: Slope Wetland Functional Assessment–Characterization and Functional Assessment of Slope Wetlands within the San Juan/San Mateo Special Area Management Plan, Orange County, California.* Prepared for Rancho Mission Viejo. May 2003.

PCR Services Corporation, PWA Ltd. & Balance Hydrologics, Inc. *Baseline Geomorphic and Hydrologic Conditions, Rancho Mission Viejo: Portions of the San Juan and Western San Mateo Watersheds*, Orange County, California. Prepared for Rancho Mission Viejo. 2002.

Planners' Annex. *Coto de Caza Specific Plan Amendment 3.* Prepared for County of Orange Environmental Management Agency and Coto de Caza, Ltd. August 1995.

Ramsey, William (Principal Planner, City of San Juan Capistrano, Planning Department). Telephone communication with Diane Barrett. November 24, 2003.

Rancho Santa Margarita, City of. *City of Rancho Santa Margarita General Plan.* December 19, 2002.

Rea, A.M., and K.L. Weaver. *The Taxonomy, Distribution, and Status of the Coastal California Cactus Wrens.* Western Birds. 21:81-126. 1990.

Remington, S. *The Distribution and Diversity of Bats in Orange County, California*. Masters Thesis, California Polytechnic University, Pomona. 2000.

Remsen, J.V., Jr. *Bird Species of Special Concern in California.* California Department of Fish and Game, Non-game Investigations, Report 78-1. Sacramento, California. 1978.

——. *The Physical Environment: An Introduction to Physical Geography.* <http:// www.uwsp.edu/geo/faculty/ritter/geog101/textbook/climate_systems/mediterranean. html>. 2003.

Riverside, County of. *County of Riverside General Plan, Elsinore Area Plan*. Adopted October 7, 2003.

——. *County of Riverside General Plan. Population and Employment Forecasts: Appendix E: Socioeconomic Build-Out Projections Assumptions & Methodology.* Adopted October 7, 2004.

——. *County of Riverside General Plan. Southwest Area Plan*. Adopted October 7, 2003.

Roberts, F.M. and D. Bramlet. *A Botanical Assessment of the Donna O'Neill Land Conservancy, Rancho Mission Viejo, California: Sensitive, Rare and Endangered Plants*. Prepared for Glenn Lukos Associates and Donna O'Neill Land Conservancy. February 2004.

Rozelle, Richard (State of California, Department of Parks and Recreation, State Parks Division, San Diego Region). Telephone communication with Diane Barrett. January 7, 2004.

Ryder, R.A., and D.E. Manry. *White-faced Ibis* (*Plegadis Chihi*). The Birds of North America. Ed. A. Poole and F. Gill. No. 62. The Academy of Natural Sciences; Washington, D.C.: The American Ornithologists' Union: Philadelphia. 1994.

San Clemente, City of. *Addendum to the Previously Certified Final Subsequent Environmental Impact Report for Forster Ranch Specific Plan Amendment, EIR 94-01*. State Clearinghouse Number 94051067. September 11, 2001.

——. *Final Supplemental Environmental Impact Report for the Talega SPA/GPA, SPA 98-05, GPA 9805*. State Clearinghouse Number 99031048. Prepared by Project Design Consultants. October 2001.

——. <http://ci.san-clemente.ca.us>. Last accessed on November 25, 2003.

San Diego Association of Governments (SANDAG). *Evaluation of Growth Slowing Policies for the San Diego Region.* October 2, 2001.

——. *Preliminary 2030 Cities/County Forecast*. February 2003.

——. *Map 14 – 2000 Census Tracts*. March 2002.

——. Population, Housing, and Employment Projections by Subregional Area and Major Statistical Area. <http://www.sandag.cog.ca.us/resources/demographics_and_other_data/demographics/forecasts/index.asp>. Last accessed on February 2, 2004.

——. *Preliminary 2030 Cities/County Forecast*. February 2003.

——. *Regional Comprehensive Plan for the San Diego Region – Draft for Public Comment*. Accepted by the SANDAG Board of Directors on December 19, 2003.

——. *SANDAG Info – Geographic Areas Help Define the San Diego Region. No. 3.* September 2002.

——. *SANDAG Info–The Dynamics of Vital Events in the San Diego Region, Components of Population Change by Major Statistical Area, 1990 - 2000*. No. 4. September 2002.

San Juan Capistrano, City of. *Draft Environmental Impact Report, Volume I, JSerra High School (South Campus)*. State Clearinghouse Number 2003081002. Prepared by Cotton/ Bridges Associates. March 2004.

——. *Draft Supplemental Environmental Impact Report, Volume I, Pacifica San Juan*. State Clearinghouse Number 2001061018. Prepared by Impact Sciences, Inc. May 2003.

——. *Executive Summary, Pacifica San Juan Final SEIR.* September 2, 2003.

——. *Executive Summary, Serra Plaza Final Environmental Impact Report.* July 1, 2002.

——. *Findings of Fact and Statement of Overriding Considerations for the Final Environmental Impact Report (FEIR 566), Draft.* 2002.

——. *General Plan*. General Plan Modernization adopted by Board of Supervisors Resolution No. 00-59. February 5, 2000.

——. *General Plan, Growth Management Element*. February 2000.

——. *General Plan, Housing Element*. July 2003.

——. *General Plan, Land Use Element*. February 2000.

——. *General Plan, Noise Element*. February 2000.

——. *General Plan, Public Services & Facilities Element*. February 2000.

——. *General Plan, Recreation Element*. Adopted December 14, 1999. Amended May 7, 2002.

——. *General Plan, Resources Element*. February 2000.

——. *General Plan, Safety Element*. February 2000.

——. *General Plan, Transportation Element*. February 2000.

——. *Honeyman Ranch FEIR.* May 2003.

——. *J. Serra High School, Executive Summary, J. Serra High School DEIR*. March 2004.

——. *San Juan Hills High School, Initial Study and Addendum to Final Revised and Recirculated Environmental Impact Report.* State Clearinghouse Number 1998-031150. Prepared by Culbertson, Adams & Associates. September 26, 2002.

——. *San Juan Meadows, Mitigated Negative Declaration, General Plan Amendment 95-02, Zone Change 9601, Revised TTM 14343.* November 12, 1996.

——. *Whispering Hills Estates, Draft Revised and Recirculated Environmental Impact Report.* State Clearinghouse Number: 1998-031150. Prepared by David Evans and Associates, Inc. November 2001.

San Juan Hills Golf Course. <www.orangecountygolfcourses.com/sanjuan.html>. Last accessed on November 25, 2003.

Santa Margarita Water District. *Chiquita Water Reclamation Plant Phase III (Mitigated Negative Declaration).* Prepared by Dudek & Associates, Inc. May 2001.

——. *Comparison of Project Water Demand for Normal Years and Dry Years (Year 2025).* 2003.

——. *Long-Term SMWD Water-Demand and Supply with Supplemental Supplies (Year 2025).* 2003.

——. *Long-Term SMWD Water Demand and Supply (Year 2025).* 2003.

——. *Normal Year Projected Water Demand (Year 2025).* 2003.

——. *Santa Margarita Water District Urban Water Management Plan Year 2000 (2000 UWMP).* December 20, 2000.

Sawyer, J.O. and T. Keeler-Wolf. *A Manual of California Vegetation*. California Native Plant Society: Sacramento. 1995.

Science Advisors. *Principles of Reserve Design, Species Conservation, and Adaptive Management for the Proposed Southern Orange County NCCP*. 1998.

Sedgwick, J.A., and F.L. Knopf. *Describing Willow Flycatcher Habitats: Scale Perspectives and Gender Differences*. Condor. 94:720-733. 1992.

Sentianin, Bernard (Principal Geologist, EEI). Correspondence with Diane Barrett. December 1, 2003.

Sherry, Richard (Planner IV, County of Orange, Department of Planning and Development Services). Telephone communication with Diane Barrett. December 1, 2003.

Shoemaker, Charles, Senior Planner. Orange County Department of Planning and Development Services. Correspondence with Diane Barrett. December 2, 2003.

Shorecliffs Golf Course. <www.playocgolf.com/shorecliffs.htm>. Last accessed on November 25, 2003.

Skinner, M. *Rare Plants of California: Braunton's Milk Vetch.* Fremontia. 19(3):6-7. 1991.

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

Soulé, M.E. and J. Terbough. 1999. *Conserving Nature at Regional and Continental Scales - A Scientific Program for North America*. Bioscience. 49:809-817

South Coast Air Quality Management District. *CEQA Air Quality Handbook*. April 1993.

Southern California Association of Governments. *The New Economy and Jobs/Housing Balance in Southern California.* April 2001.

——. *Regional Housing Needs Assessment.* <http://api.ucla.edu/rhna/index.cfm>. No date.

State of California. *California Code of Regulations*. <http://ccr.oal.ca.gov>. No date.

——. *Public Resources Code (PRC), Division 5, Chapter 1, Article 1.7, Section 5019.56d*. 1978.

State of California, Employment Development Department, Labor Market Information Division. *Monthly Labor Force Data for Counties, October 2003 (Preliminary*). <www.calmis.cahwnet.gov/file/1fmonth/0310pcou.txt>. Last accessed on November 14, 2003.

——. *Monthly Labor Force Data for Counties, March 2004 (Preliminary).* <www.calmis.cahwnet.gov/file/1fmonth/0403pcou.txt>. Last accessed on April 9, 2004.

State of California, Energy Commission. *2002-2012 Electricity Outlook Report*. February 2002.

State of California, California Department of Conservation, Office of Land Conservation. *A Guide to the Farmland Mapping and Monitoring Program, 1992*. Publication Number FM-92-01. 1992.

State of California, Department of Transportation and U.S. Department of Transportation. *Avenida Vista Hermosa/Interstate 5 Interchange, Initial Study/Environmental Assessment*. State Clearing House Number 91034018. Mitigated Negative Declaration prepared by STA, Inc. August 30, 1991.

State of California, Geologic Survey. *Seismic Hazard Zones Maps*. 2003.

State of California, Office of Historic Preservation. *California Register of Historic Resources*. 2003.

——. *San Onofre State Beach, Revised General Plan*. June 1984.

Stebbins, R. C. *A Field Guide to Western Reptiles and Amphibians*. Houghton Mifflin Co., Boston, MA. 1985.

Stephenson, J. R. and G. M. Calcarone. *Southern California Mountains and Foothills Assessment: Habitat and Species Conservation Issues*. General Technical Report GTR-PSW-172. Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture, Albany, California. 1999.

Swift, C. S., T. R. Haglund, M. Ruiz, and R. N. Fisher. *The Status and Distribution of Freshwater Fishes of Southern California. Bulletin of the Southern California Academy of Sciences*. 9:101-167. 1993.

Talega Golf Club. <www.playocgolf.com/talega.htm>. Last accessed on November 25, 2003.

Tanner, W. W. *Eumeces skitonianus. California of American Amphibians and Reptiles*. 447-1-447.4. 1988.

Tijeras Creek Golf Club. <www.tijerascreek.com>. Last accessed on November 25, 2003.

Transportation Corridor Agencies. <www.thetollroads.com>. Last accessed on August 3, 2005.

United States, Department of the Interior. *National Historic Preservation Act, Section 106*. 1966, as amended 2000.

United States, Geological Survey, Biological Resources Division. <http://biology.usgs.gov>. 2004.

United States, Environmental Protection Agency. *Indoor Radon Abatement Act of 1999. Map of Radon Zones. EPA-402-R-93-071.* 1988.

——. <http://www.epa.gov>.

United States, Geological Survey. *USGS 7.5' Quadrangle Maps: Canada Gobernadora, Santiago Peak, San Juan Capistrano, and San Clemente Quadrangles. 2003.*

——. <http://biology.usgs.gov>.

United States Air Force. *Final Environmental Impact Statement: Evolved Expendable Launch Vehicle Program.* April 1998.

Unitt, P. *The Birds of San Diego County*. San Diego Society of Natural History, San Diego, CA. 1984.

U.S. Department of Agriculture (USDA). *Soil Survey of Orange County and Western Part of Riverside County, California*. U. S. Government Printing Office, Washington, D. C. 1978.

U.S. Fish and Wildlife Service (USFWS). *Recovery Plan for Six Plants from the Mountains Surrounding the Los Angeles Basin*. Portland, Oregon. 1999.

——. *Arroyo Southwestern Toad (Bufo microscaphus californicus) Recovery Plan*. U.S. Fish and Wildlife Service, Portland, Oregon. 1999.

——. *Draft Recovery Plan for the Quino Checkerspot Butterfly* (*Euphydryas editha quino*). Portland, OR. 2001b.

——. *Endangered and Threatened Wildlife and Plants; Threatened Coastal California Gnatcatcher; Final Rule and Proposed Special Rule*. Federal Register 58: 16742-16753. March 30, 1993.

——. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Least Bell's Vireo*. Federal Register Vol. 59: 4845-4867. February 2, 1994.

——. *Endangered and Threatened Wildlife and Plants; Determination of Whether Designation of Critical Habitat for the Coastal California Gnatcatcher is Prudent*. Federal Register 64:5957-5963. 1999b.

——. *Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Arroyo Toad; Final Rule*. Federal Register 66:9413-9474. February 7, 2001.

——. *Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for the Coastal California Gnatcatcher; Final Rule*. Federal Register 65:63380-63743. October 24, 2000.

——. *Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Riverside Fairy Shrimp; Final Rule*. Federal Register 66:29384-29414. May 30, 2001.

——. *Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for the Arroyo Toad (Bufo californicus); Proposed Rule*. Federal Register 69:23253-23328. April 28, 2004.

——. *Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for the Riverside Fairy Shrimp (Streptocephalus woottoni); Proposed Rule*. Federal Register 69:23023-23049. April 27, 2004.

——. *Reinitiation of Intra-Service Consultation on Implementation of the Special Rule for the Coastal California Gnatcatcher (10-17-99).* 1999a.

——. *Vernal Pools of Southern California Draft Recovery Plan*. U.S. Fish and Wildlife Service, Portland, Oregon. 1997.

Valdez, CeCe, Southern Service Center, State of California Planning Division. Telephone communication with Diane Barrett. November 24, 2003.

Verner, J. *Birds of California Oak Habitats–Management Implications*. T.R. Plumb, Tech. Coord., Proceedings of the Symposium on the Ecology, Management, and Utilization of California Oaks. Gen. Tech. Report PSW-44. USDA Forest Service, Albany, California. 1980.

Vickery, P. D. *Grasshopper Sparrow (Ammodramus savannarum)*. The Birds of North America, No. 239 (A. Poole and F. Gill, eds.) The Academy of Natural Sciences, Philadelphia, PA and The American Ornithologists' Union, Washington D.C. 1996.

Warner, R.E. and K.M. Hendrix. *California Riparian Systems: Ecology, Conservation and Productive Management*. University of California Press, Berkeley, California. 1984.

Western Riverside Council of Governments. *SCAG 2001 RTP Baseline Projections, Riverside County, Sub-Regions*. 2001.

Whitaker, Jr., J. O. *The Audubon Society Field Guide to North American Mammals*. Alfred A. Knopf, Inc., New York, NY. 1980.

White, S.D. *Disturbance and Dynamics in Coastal Sage Scrub*. Fremontia. 23:9-16. 1995.

Wilcove, D. S., C. H. McLellan and A. P. Dobson. *Habitat Fragmentation in the Temperate Zone*. M. E. Soulé, editor Conservation Biology: The Science of Scarcity and Diversity. Sinauer Associates, Inc., Sunderland, MA. 1986.

Wilcox, B. and D. Murphy. *Conservation Strategy: The Effects of Fragmentation on Extinction.* The American Naturalist. 125:8789-997. 1985.

Williams, D. F. *Mammalian Species of Special Concern in California*. California Department of Fish and Game, Sacramento, CA. Admin. Rep. 86-1. 1986.

Western Riverside Council of Governments. *Workers Ahead: The Balance Between Jobs and Housing in Western Riverside County. Appendix E, WRCOG Jobs-Housing Balance Study: Socioeconomic Build-out Projections, Assumptions & Methodology*. 2001.

Brigham Young University. World Climate. <http://pas.byu.edu/AgHrt100/mediterranean_climate.htm>. 2003.

Yosef, R. *Loggerhead Shrike* (*Lanius ludovicianus*). The Birds of North America, No. 231. (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, DC. 1996.

Zeiner, D. C., W. F. Laudenslayer, Jr., K. E. Mayer, M. White, editors. *California's Wildlife, Volume 1: Birds.* State of California, Department of Fish and Game. Sacramento, California. 1988.

——. *California's Wildlife, Volume 2: Birds.* State of California, Department of Fish and Game. Sacramento, California. 1990.

CHAPTER 15.0
INDEX