GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

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INTRODUCTION

MARCH JOINT POWERS AUTHORITY: HISTORY

Located within the western Riverside County region of Southern California, March Air Force Base (AFB) encompassed approximately 6,500 acres. The March Joint Powers Authority (JPA) General Plan Planning Area is comprised entirely of the former March AFB. The Planning Area is bisected by Interstate 215 (Highway 395), approximately 3 miles south of State Highway 60. The surrounding communities include the cities of Moreno Valley, Perris and Riverside, and unincorporated areas of Riverside County. March AFB was first established as a military installation in 1918, and has operated almost continually since. In July of 1993, March AFB was selected to be realigned, and converted from an active duty to an air reserve base. March AFB realigned April 1, 1996 to March Air Reserve Base (ARB).

Pursuant to announcement of base realignment at March, the adjacent jurisdictions immediately formed a joint powers authority. March Joint Powers Authority (JPA) is a public entity created for the purpose of addressing the use, reuse, and joint use of realigned March AFB. The four individual public entities that cooperatively formed the JPA are the cities of Perris, Moreno Valley and Riverside and the County of Riverside. Realignment of March results in approximately 4,400 acres of property and facilities for disposal by the federal government, and creates an opportunity for joint use of the airfield for civilian aviation.

On March 11, 1997, land use authority was transferred to March JPA from the County of Riverside. The March JPA General Plan is designed to implement the March Air Force Base Master Reuse Plan, which includes the disposal and redevelopment of approximately 4,400 acres, of the 6,500 acres formerly known as March AFB.

PURPOSE OF GENERAL PLAN

Preparing, adopting, implementing, and maintaining a general plan serves to link community values to actual physical decisions. The plan identifies the community's land use, circulation, environmental, economic, and social goals and policies as they relate

to land use and development. The General Plan establishes goals and policies to reach long-term objectives, and establishes long-term policy for day-to-day decisions, based upon those objectives. The General Plan provides a basis for local government decision making, including a nexus to support development exactions.

In essence, a general plan serves as the blueprint for future growth and development. As a blueprint for the future, the plan must contain policies and programs designed to provide decision makers with a solid basis for land use related decisions. The general plan must address many issues which are directly related to and influence land use decisions.

In addition to land use, State law requires that the plan address circulation, housing, the conservation of natural resources, the preservation of open space, the noise environment and the protection of public safety (Section 65302 of the California Government Code). These issues are to be discussed to the extent that they apply to a particular jurisdiction. The general plan may also cover topics of special or unique interest to a local government, such as historic preservation or unique opportunities and resources.

MARCH JOINT POWERS AUTHORITY: GENERAL PLAN

The *March Joint Powers Authority General Plan* is a long range comprehensive plan designed to outline and delineate use and development of an area known formerly as March AFB, prior to the base realignment in April 1996 to March ARB.

The General Plan defines reuse and development opportunities of the area, while preserving the environmental quality. The General Plan contains goals, policies, and programs to guide future development and change in the Planning Area. The goals and policies of the General Plan serve as the constitutional framework for March JPA; provide planning direction for JPA operations and programs, and function as guidelines for all decision-making concerning use and development of the area.

The state statutes specify seven mandatory elements for general plans. *Section 63202 et seq. of the California Government Code* requires that a general plan contain seven mandatory elements: 1) Land Use, 2) Circulation, 3) Noise, 4) Housing, 5) Safety

6) Open Space, and 7) Conservation. Furthermore, optional elements may be included within a general plan to address specific components of the community. The March JPA General Plan contains these seven elements with the requirement for open space and conservation elements combined into the Resource Management Element. Aside from these elements, additional element components have been added as part of the General Plan. The following elements will comprise the March JPA General Plan in accordance with the State General Plan Guidelines:

Land Use Element - This element is based upon the March AFB Master Reuse Plan preferred land use pattern. This element delineates the general location and distribution, extent of existing and proposed land uses for March JPA, and development criteria for development intensity.

Transportation Element - This element identifies the multiple transportation and circulation components of the plan, inclusive of; roads, trails, rail, multi-modal, transit, aviation and goods movement services. The extent of necessary facilities, adequacy of service levels and transportation demand management measures, along with general location and infrastructure facilities are depicted.

Noise/Air Quality Element - This element addresses noise and air quality due to the nexus of generators and significance to the plan and region. This element examines the existing and future noise environment and noise generators of the area. The element contains both measures to reduce conflict and maintain a noise compatible environment. Although not a state requirement, the element addresses air quality, as it relates to the Air Quality Management Plan of the South Coast Air Basin. The element contains a discussion of local and regional air quality, stationary and mobile emission sources, and programs to reduce pollutant emissions generated.

Housing Element - The housing elements of each of the four member jurisdictions are incorporated by reference. The four member jurisdiction housing elements have previously been certified by the Department of Housing and Community Development (HCD). The land use plan identifies no new housing areas, and creates an employment center within the housing rich environment of western Riverside County.

Resource Management Element - The state mandated requirements of Conservation and Open Space Elements are integrated comprehensively into one, single element. The element provides for the conservation, development, and use of natural, historical and cultural resources. In addition, the element details plans and measures for the preservation of open space designed to promote the management of natural resources, outdoor recreation and public health and safety.

Safety/Risk Management Element - The Safety/Risk Management Element identifies and establishes standards and plans for the protection of the Planning Area from a variety of hazards including earthquakes, flooding, fire, geological, and airport compatibility conditions.

TABLE 1
RELATIONSHIP OF MARCH JPA GENERAL PLAN TO STATE-MANDATED ELEMENTS

MANDATORY ELEMENTS	MARCH JPA GENERAL PLAN ELEMENTS	ELEMENT COMPONENTS
LAND USE	LAND USE	Based upon reuse plan preferred pattern of federally prepared master reuse plan.
CIRCULATION	TRANSPORTATION	Circulation, aviation, transit, multi-modal, infrastructure, and goods-movement.
HOUSING	HOUSING	Adoption of the four member jurisdiction housing elements by reference.
NOISE	NOISE/AIR QUALITY	Noise and air quality due to nexus of generators (aviation) and significance to our region.
CONSERVATION	RESOURCE MANAGEMENT	Conservation, open space, natural resources, historical and cultural resources.
OPEN SPACE		
SAFETY	SAFETY/RISK MANAGEMENT	Airport compatibility, flooding, seismic, environmental conditions.

Table 1 illustrates the relationship between the March JPA General Plan's six elements and the seven State-mandated elements. The March JPA General Plan contains goals, policies and programs which are intended to guide land use and development decisions into and throughout the twenty-first century.

General Plan Organization

The General Plan for the March JPA consists of text, tables, maps and exhibits. Supporting documents prepared during the course of preparation of the General Plan include the Profile Reports and the General Plan Master Environmental Impact Report (MEIR). These documents provide substantial background for the General Plan. Additionally, previously prepared and published documents by the Department of Defense for the base reuse implementation process, such as the March Air Force Base Master Reuse Plan and associated Environmental Impact Statement and other required documents which were used for the base reuse implementation process, where used and referenced.

The General Plan provides direction for the Planning Area's growth and development. The preparation of each general plan element was preceded by the identification of issues and constraints which were used to guide the formulation of general plan policy. The Profile Reports describe the existing setting of the Planning Area, serves as a reference document for future development which occurs within the jurisdiction of March JPA. The General Plan MEIR analyzes the potential environmental impacts of the policies and programs contained in the General Plan.

Element Organization

Each of the General Plan elements consists of four sections -- the Introduction, the Goals and Policies, the Plan, and the Implementation Program. The Introduction describes the purpose and focus of the element and also introduces other plans and programs outside of the General Plan which may be used to achieve specific General Plan goals. The Goals and Policies section presents March JPA's long-term objectives for the subject area of each element. The goals and policies are arranged by issue or subject.

For general reference, goals and policies may be defined as follows:

GOAL: A goal is a broad statement of purpose and/or direction.

Policy: A policy describes a more definitive course of action supporting the achievement of a goal.

The third section of each element consists of the "plan," or the further definition of programs to be used to implement General Plan policy. For example, the Land Use Element contains a "Land Use Plan" which indicates the types and intensities of land use permitted Planning Area-wide. The "Transportation Plan" in the Transportation Element includes a Master Circulation Plan showing existing streets and intersections to be improved and new infrastructure provided to meet the circulation needs of those employed in or visiting the area. Wherever possible, each element contains maps, diagrams and tables to illustrate General Plan policy.

The Implementation Program is the final section of each element. This section identifies programs designed to achieve the goals and policies contained in each general plan element.

Planning Process

Development of the March JPA General Plan was coordinated with the member jurisdictions of the March JPA. A planning team was formed, consisting of a senior-level planning representative from each member jurisdiction, along with representation from Riverside County Transportation Department and Western Riverside Council of Governments. As milestones and draft plans were prepared, the Planning Team convened to review, discuss and amend where needed. The Transportation Team reviewed each step of analysis for the Transportation Element. The preparation of the General Plan was a cooperative process between March JPA and its member agencies.

Additionally, these milestones and recommendation were presented to the March JPA Technical Advisory Committee with reports and updates presented to the March Joint Powers Commission (JPC) for consideration. Public presentations were conducted with the member agency's respective planning commissions and legislative bodies.

Upon the completion of the March JPA General Plan, additional comments and input resulted from the California Environmental Quality Act, Environmental Impact Report process, prior to final adoption of the March JPA General Plan by the March JPC.

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GENERAL PLAN
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Land Use Element

SECTION 1: LAND USE ELEMENT

INTRODUCTION

Of the seven state mandated elements of the General Plan, the Land Use Element represents the graphic blueprint for the development and reuse of the March Joint Powers Authority (JPA) Planning Area. The Land Use Element sets forth goals, policies, and objectives for the long term physical development of the Planning Area. It addresses issues regarding existing facilities and base reuse, future development, land use compatibility, availability of public services and infrastructure, public safety, and the balance of resource conservation and urban development. The Land Use Element contains the Land Use Map which establishes a pattern for the orderly development of land and will be used to guide the development of the March JPA Planning Area.

Relationship to the General Plan

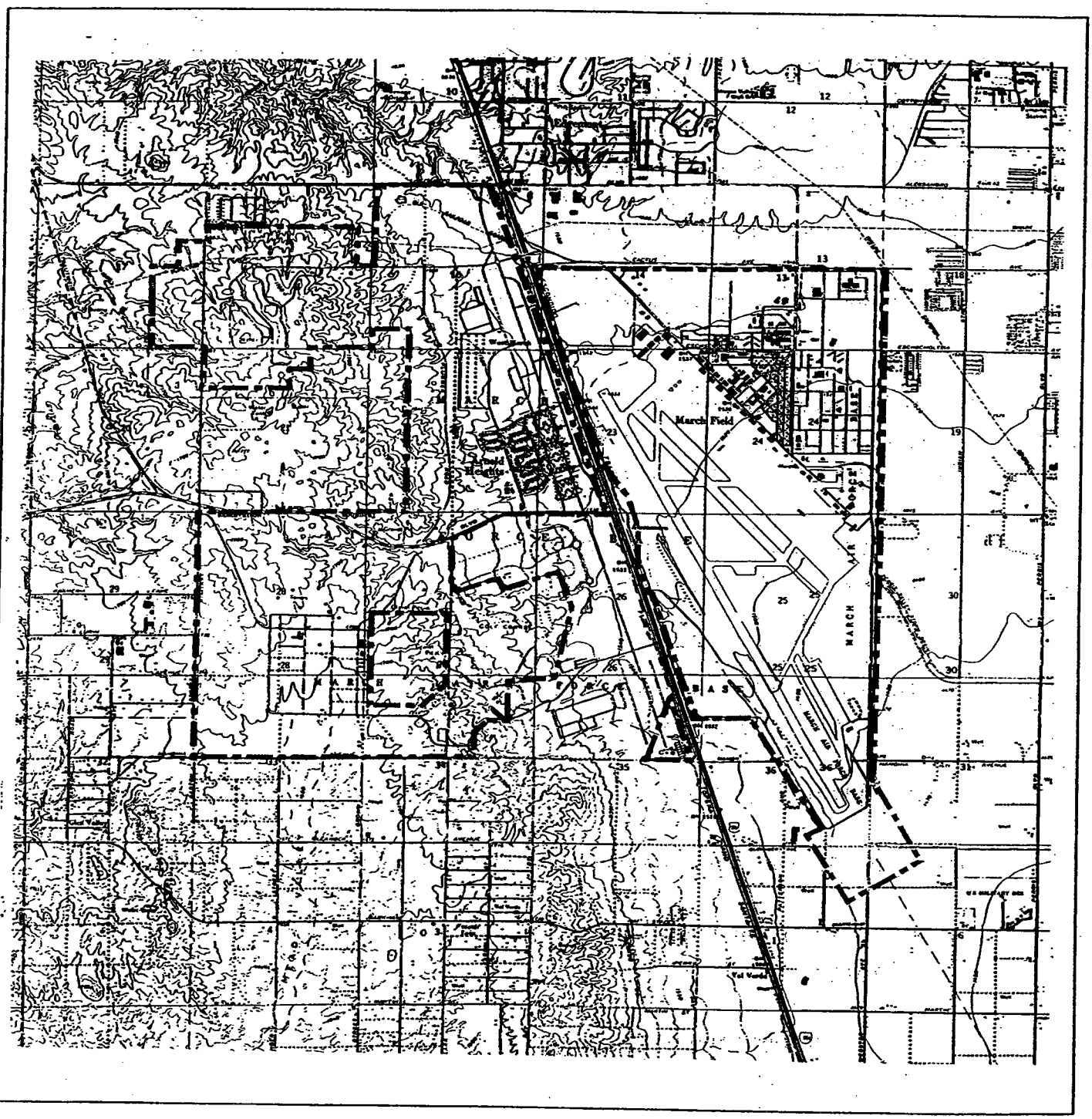
Section 65302(a) of the Government Code requires the Land Use Element to:

> Designate the proposed general distribution and general location and extent of land uses for business, industry, open space, natural resources, recreation, public facilities, and other categories of public and private land use;
>
> Include a statement establishing standards of density and building intensity for each land use category covered by the plan; and
>
> Identify land uses in those areas subject to flooding.

Additionally, the State General Plan Guidelines suggest that Land Use Elements should:

> "Promote a balanced and functional mix of land uses consistent with the March JPA values;
>
> Reflect the opportunities and constraints affecting land use identified in other elements of the General Plan; and

Exhibit 1-1
Planning Area Boundaries



Reduce the loss of life, injury, damage to property, and economic and social dislocation resulting from flooding."

This Element meets these requirements and will serve as a guide for decision-making on land use issues and future development. It responds to opportunities for growth and development in the planning area with respect to existing facilities, base reuse plans and resources. The goals of the Land Use Element addresses environmental and economic constraints related to topography, geology, flooding potential, availability of services and infrastructure, and other factors which may constrain future development and reuse of the former March Air Force Base (AFB). The Land Use Map provides the framework for development. The Map establishes classifications of land uses, designates the general location and distribution of these uses, and sets standards of density and development intensity for each identified land use type. The Map is designed to accommodate the economic and social activities of the community through the provision of areas for these activities.

Policies in the Land Use Element and the Land Use Map bring together the different elements of the General Plan and are consistent with them. The Transportation Element provides for the development of a transportation network that will support the ultimate land uses under the Land Use Map. The Safety/Risk Management Element identifies hazards that need to be considered in land use planning for the planning area. The Noise/Air Quality Element identifies areas where noise sensitive development should be avoided and generators concerning air quality. The March JPA General Plan Land Use Element addresses these issues, as well as concerns relating to growth, reuse of the realigned military installation, joint use of the airfield, public services, infrastructure, and economic development.

Planning Area

The March JPA General Plan Planning Area includes the entire boundaries of the former March AFB, prior to base realignment April 1996. This area incorporates approximately 6,500 acres total, inclusive of the "cantonment" area; an area retained by the Department of Defense (DOD) for the Air Force Reserves (AFRES). The "non-cantonment" area; or area no longer retained by the DOD, includes 4,400 acres of the

total planning area. Additionally, civilian aviation is incorporated through joint use of the airfield located within the cantonment area. The definitive boundary of the Planning Area is the entire former base area, inclusive of the Air Reserve Base (ARB) area which is a federal installation island retained for the Air Force Reserves (AFRES).

The non-cantonment area of the planning area can be easily divided into the subareas, each with distinct geographical characteristics. The most developed portion of the non-cantonment area is the *Main Base or Northeast Planning Subarea*, which is the part of the former main base, and immediately adjacent to the cantonment area. The *West March Planning Subarea* consists of the entire property west of Interstate 215. This area is primarily undeveloped, and contains various environmental elements and habitat. The prime area for civilian aviation use is the *Southeast Planning Subarea,* which is underutilize, and immediately adjacent to the aviation field cantonment area.

Relationship to March AFB Master Reuse Plan

Conversion of March AFB from an active duty military installation to an air reserve base, results in the disposal and reuse of approximately 4,400 acres of land. In accordance with federal requirements, *March AFB Master Reuse Plan* was developed by the March JPA for the DOD to identify means of revitalizing or redeveloping the realigned military installation in a beneficial manner. The Base Reuse Master Plan serves as the basis or premises of the March JPA General Plan. In summary, the General Plan is an implementation tool of the Base Master Reuse Plan, which realizes the requirements of California state law to facilitate base reuse and development. Furthermore, March AFB Disposal Final Environmental Impact Statement (FEIS), February 1996 was issued in accordance with the National Environmental Policy Act (NEPA).

Summary of Issues

Land use concerns in March JPA Planning Area deal with the economic reuse of the former base area, preservation of existing resources, and maximizing orderly growth and

development. Due to the economic loss to the region with realignment of March AFB to March ARB, capitalizing on the creation of an employment and economic center that will add to the Western Riverside County region and achieve an equitable balance between job availability and housing supply are primary goals. There are opportunities for enhancing the quality of life in the region of the March JPA Planning Area; while at the same time addressing the needs and issues of the March JPA for economic growth and development. These issues are summarized below:

Land Area: The March JPA Planning Area consists of approximately 6,500 acres of land or 10 square miles. Nearly two-thirds of the planning area is undeveloped or under utilized, with a significant portion of vacant land located within the West March Planning Subarea and the Southeast Planning Subarea.

March AFB Master Reuse Plan: With realignment of March AFB, a Base Reuse Master Plan was prepared. The Base Reuse Master Plan includes the following elements: land use, circulation/ transportation, homeless assistance plan, property disposition, environmental impact analysis, joint use aviation, and marketing strategy plan. The Base Master Reuse Plan identified through the solicitation process the property disposition for reuse, and generated a plan to implement the reuse and revitalization opportunity as identified by the local redevelopment agency (LRA). The Base Master Reuse Plan identifies and provides a means of revitalizing or redevelopment the realigned military installation in a beneficial manner or, of otherwise revitalizing community and the economies of said communities. The formulation of the March JPA General Plan, is an implementation tool of the March AFB Master Reuse Plan, and the Base Master Reuse Plan serves as the basis for the Land Use Element of the General Plan.

Compatibility with the Air Force Reserves: March converted April 1, 1996 from an active duty base to "March Air Reserve Base." Realignment changed the military mission at the March installation. A military mission for March ARB remains, with AFRES, Air National Guard (ANG) and other federal agency units remaining within a military cantonment area. The military cantonment area is approximately one-third of the Planning Area, and includes the airfield. It is

imperative that the General Plan and implementation thereof support the continued military mission at March.

Existing Facilities: The March JPA Planning Area is located in the subregion of Western Riverside County, amidst the communities of Moreno Valley, Perris and the City and County of Riverside. Existing buildings and facilities are concentrated in the Northeast Planning Subarea, which is adjacent to the Cantonment Area retained by the AFRES and the airfield. The Northeast Planning Subarea consists of several specific user type buildings and facilities for reuse, along with Green Acres, a historic district formerly used for base housing. The West March Planning Subarea is primarily undeveloped with limited existing facilities, inclusive of the former 15th Headquarters, and defunct housing project of Arnold Heights. Arnold Heights housing is unsuitable for habitation, and must be razed to permit new development. The Southeast Planning Subarea contains the former alert facility and tarmac, which is suitable for commencing air cargo operations with limited capital improvements. The March JPA Planning Area is surrounded by flat, semi-developed land within the respective adjacent communities.

Historic District: Green Acres Estates, part of the March Field Historic District located in the Northeast Planning Subarea of the Planning Area, has been nominated as a National Register Historic District. The Historic District is restricted to support the Air Force commitments to maintain the integrity of the March Field Historic District.

Joint Use of the Airfield for Civilian Aviation: Joint use of the airfield through a military/civilian joint use arrangement, is where civilian and military entities share essential aviation facilities such as the control tower and runways, as well as maintenance of facilities. Southern California Association of Governments (SCAG) conducted a Joint Use Feasibility Study which assessed the technical feasibility of joint use operations at March AFB, due to decreased military aviation operations attributed to base realignment. Additionally, March contains a runway with a length of 13,300 feet, which can technically, as well as market wise serve civilian aviation operations, both passenger and air cargo.

Airport Plan: With the establishment of a joint use airfield for civilian aviation, an airport layout plan (ALP) must be submitted to and approved by the Federation Aviation Administration (FAA). The ALP delineates FAA standards and requirements for civilian aviation to operate. These standards and provisions must be adhered.

Development Standards: Standards for development in the Planning Area must address the need to supply adequate sewer, water, and storm drain facilities to proposed development as well as meet the current need for existing development within the March JPA Planning Area. In addition, standards for the appearance of structures, retention of the Mission Revival character of base development, the relationship of one building to another, the buildings' relationship to the street, and buffering of land uses need to be considered.

Commercial, Business Park, and Industrial Uses: Commercial, business park and industrial development are needed to recapture the economic loss attributed to base realignment. The development and reuse within the March JPA Planning Area will further the economic recovery of the region, and will advance toward an equitable balance between jobs provided within the Western Riverside County subregion and the availability of housing. Land set aside at appropriate locations provide for commercial, industrial development, and job creating commerce. Development of business park and industrial land within the Planning Area should focus on commerce and industrial uses which provide employment opportunities, and capture upon the unique opportunities available at March.

Public Services: While there are public services and infrastructure in the developed areas of the Planning Area, the lack of availability of these services in outlying areas could lead to elevated development costs. Water and sewer capacities must be planned in concert with new development. Development within the Planning Area needs to be supported by adequate infrastructure and public services.

Infrastructure: Infrastructure must be supplied concurrent with development. Adequate levels of service need to be established for various areas of the Planning Area which meet service standards, and maintain the quality of life of the region, while providing necessary facilities for water, sewer, storm drain, police, fire, and access.

Parcelization & Division of Land: The Planning Area overall comprises a limited number of parcels. As land is conveyed from the federal government to other entities, parcels will need to be established and subdivision of land conducted. Legal parcels with legal descriptions will need to be created, with the conveyance of land to parties.

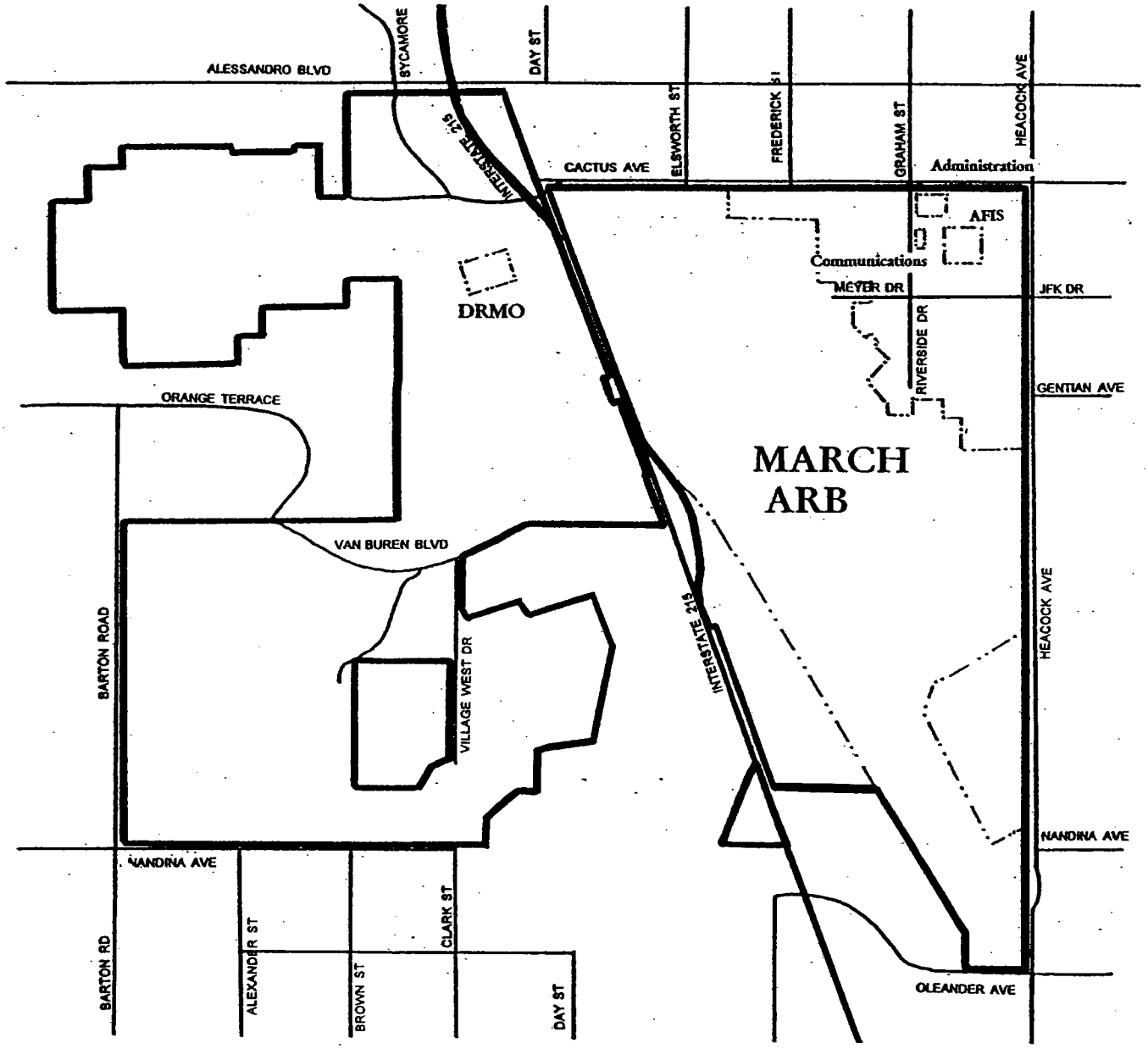
Development Constraints: Constraints to future development are posed by flood hazards, historic areas, and areas with sensitive biological resources. Timing of development and ultimate use of lands may be affected by the Installation Restoration Program (IRP) sites and their clean-up. Land use and development of areas with proximity to the airfield need to assure compatibility with FAA standards. These issues are further discussed in the Safety/Risk Management Element and Resource Management Element Profile Reports.

Development & Building Codes: Existing buildings and facilities within the Planning Area were constructed under the auspices of the federal government; therefore, were constructed in accordance with federal codes and standards. The federal codes and standards in many ways are less comprehensive that the codes and standards adopted by the March JPA. Buildings and facilities will need to be upgraded to support use, and in many cases may hinder the ability to reuse the facility as originally intended.

Future Development: The unique opportunity of a joint use airfield with the AFRES will shape the type of industry and commerce attracted to the March JPA Planning Area. The current population and estimated population of the March JPA member jurisdictions, and replacement of jobs lost due to base realignment have a direct effect upon the kind of commerce and industrial development which the March JPA can expect to develop. The region in which the Planning Area is located, and the current state and pace of development will

also have a direct and indirect effect upon the kind and type of commerce and development which the March JPA can expect to draw.

Exhibit 1-2
Cantonment Boundaries



GOALS AND POLICIES

March JPA Planning Area consists entirely of the former March AFB, prior to base realignment to March ARB in April 1996. The Planning Area is characterized by limited development, an airfield, and large tracts of vacant land within the West March Planning Subarea. Land use issues facing the March JPA include the type and condition of existing facilities for reuse, joint use of the airfield for civilian aviation, regulation of development, provision of adequate infrastructure and services, and presence of natural and manmade constraints to urban development. The goals and policies of the Land Use Element address the March JPA's concerns regarding land use compatibility, orderly growth and development, capitalization upon unique and economic opportunities, and capturing unmet needs of the region.

The goals and policies contained within this element address the capitalization of the opportunities within the planning area, and the reuse and revitalization of existing facilities. The following goals and policies, and implementation measures focus on maintaining a balance between commerce, industry and aviation uses, while promoting high quality development with minimizing land use conflicts.

GOAL 1: **Land Use Plan provides for a balanced mix of land uses that contribute to the regional setting, and capitalize on the assets of the Planning Area, while insuring compatibility throughout the Planning Area and with regional plans.**

Policies:

1.1 Provide for a mix of land uses which implement the Base Master Reuse Plan for March AFB; offer a variety of employment opportunities; and capitalizes, enhances and expands upon existing physical and economic assets of the Planning Area.

1.2 Develop and maintain a system of land use designations and zoning districts which will provide locations for commercial,

business park, manufacturing, aviation, public, and open space uses, and which actuates compatible and synergistic land uses.

1.3 Provide for patterns of land use which can be supported by existing and planned circulation, public facilities, and infrastructure system improvements in a manner that will preserve the March JPA's fiscal capacity.

1.4 Use specific and/or master plan processes for the coordinated development of large properties to ensure cohesive, comprehensive development.

1.5 Provide for a variety of industrial uses, including heavy manufacturing, light manufacturing, warehousing and distribution, transportation-related, and research and development.

1.6 Locate and group commercial and industrial uses which are oriented toward regional service/market areas to promote utilization of regional transportation facilities and development-supporting infrastructure.

1.7 Develop active and passive open space areas that offer community recreational opportunities and open land areas for public enjoyment.

1.8 Retain the Gen. Archie Old, JR., Golf Course within the West March Planning Subarea as a public golf course, and facilitate land uses that will compliment the golf course.

1.9 Plan for compatible land uses within the aircraft noise impact contours depicted in the Air Installation Compatible Use Zones (AICUZ) Report for the airfield use.

GOAL 2: Locate land uses to minimize land use conflict or creating competing land uses, and achieve maximum land use compatibility while improving or maintaining the desired integrity of the Planning Area and subregion.

Policies:

2.1 Avoid conflicts and incompatibilities between land uses through the use of landscaped setbacks and buffers, site design, site orientation, architectural features, walls or fences, density/intensity reductions, reduced hours of operation for commercial and industrial uses, shielding of lighting, and the like.

2.2 Encourage and facilitate the transition of facility reuse and land uses to conforming land uses.

2.3 Support land uses that provide a balanced land use pattern of the Planning Area, and discourage land uses that conflict or compete with the services and/or plans of adjoining jurisdictions.

2.4 Protect the interests of, and existing commitments to adjacent residents, property owners, and local jurisdictions in planning land uses.

GOAL 3: Manage growth and development to avoid adverse environmental and fiscal effects.

Policies:

3.1 Manage growth so that its rate does not exceed the ability of March JPA or service districts to provide for an acceptable level of public facilities and services.

3.2 Manage the development and reuse of the Planning Area to maintain continuity with existing facilities and the operations of the AFRES; provide for orderly expansion of infrastructure and public services; and minimize impacts on natural environmental resources.

3.3 Use finance mechanisms such as benefit assessment districts, development fees, and maintenance districts to assure new development within the Planning Area constructs the public facilities and fiscally supports the public services necessitated by the development.

3.4 Assess the fiscal impacts (service costs and revenues) of proposed major development projects to determine the actual cost of providing services.

3.5 Permit the development of service facilities ancillary to primary development (i.e., child care, food service, etc.).

GOAL 4: Develop an identity and foster quality development within the Planning Area.

Policies:

4.1 Develop and maintain a land use plan for the Planning Area which proposes compatible land uses to create distinct, identifiable historic, commercial, industrial, public, and aviation areas.

4.2 Where practical, enhance and preserve natural and man-made features, such as major roadways, rail lines, drainage courses, utility corridors, groups of rock outcroppings, and tree rows to create boundaries, entryways, and separate entities for distinct geographic portions of the Planning Area.

4.3 Maintain the character of existing development having desirable image and design characteristics, such as historic significance, pedestrian scale and orientation, use of locally-occurring natural construction materials, unique architecture and native/indigenous landscaping.

4.4 Develop a distinctive community identity for commercial, business park and industrial developments that reflect the character and atmosphere of March JPA Planning Area through the use of good planning and design principals, and sound development practices which serve as guidelines for building materials, colors, site design and orientation, and landscaping.

4.5 Encourage development that creates a sense of place through a cohesive and well-balanced environment and setting.

4.6 Encourage the use of master plans and design guidelines to permit the clustering of development and creating a campus-like setting of large tracts of land, while capitalizing on areas with unique assets and opportunities.

4.7 Develop and enhance the economic climate and create a balanced business community to serve the work force, commerce and industry of the region.

4.8 Preserve a scenic corridor along Van Buren Boulevard and enhanced gateway treatment at the Riverside National Cemetery.

GOAL 5: Maximize and enhance the tax base and generation of jobs through new, reuse and joint use opportunities.

Policies:

5.1 Support the development and establishment of new employment centers and economic development activities that contribute to an improved tax base.

5.2 Encourage and facilitate the creation of public/private partnerships that will invest in, and further the implementation of the March AFB Master Reuse Plan.

5.3 Support the development of educational and specialized facilities that will train persons for new and improved employment opportunities.

5.4 Provide for compatible reuse and redevelopment of existing facilities.

5.5 Encourage the development of commercial, business park and industrial centers to expand the employment and fiscal base of the March JPA Planning Area and the western Riverside County Subregion.

5.6 Encourage employers in the March JPA Planning Area to hire from the local communities when seeking to fill employment positions.

GOAL 6: Support the continued Military Mission of March Air Reserve Base, and preservation of the airfield from incompatible land use encroachment.

Policies:

6.1 Plan for the economic use, reuse, and joint use of the airfield with AFRES.

6.2 Plan for compatible land uses within the Clear Zone, Accident Potential Zones I & II, as depicted in the Air Installation Compatible Use Zones (AICUZ) Report for the airfield use.

6.3 Ensure that plans and development do not interfere, conflict or degrade the military mission of March ARB.

6.4 Ensure that plans and development do not conflict with the long-term needs of the Air Force Reserve in terms of encroachment, noise, accident zone, constraints, etc.

6.5 Ensure that plans and development conform to the draft Comprehensive Land Use Plan for March AFB/March Inland Port.

6.6 Ensure that sensitive land uses (i.e., schools, high occupancy land uses, etc.) are discouraged from locating and operating in areas determined to be incompatible with airport operations.

6.7 Ensure that land uses adhere to floor area ratios applicable under Caltrans guidelines for airports.

6.8 Ensure that land uses adhere to both military and civilian Part 77 conical surface criteria, relative to height restrictions.

6.9 Support the Air Force commitments to maintain the integrity of the March Field Historic District.

GOAL 7: Maximize the development potential as a regional Intermodal Transportation facility to support both passenger and freight-related air services.

Policies:

7.1 Establish an air cargo operation and goods distribution center to serve local, regional, national and international needs.

7.2 Plan for a desirable and feasible site for an intermodal transportation center.

7.3 Create a goods movement system that meets the regional and sub-regional needs.

7.4 Accommodate the location and development of a Metrolink Station.

7.5 Facilitate development of aviation uses other than federal aviation, such as commercial passenger and/or freight carrier services.

7.6 Plan for compatible land uses within the aviation area.

7.7 Encourage commerce and industry that are complementary to joint use of the airfield.

7.8 Plan for uses which support and contribute to the establishment and development of commercial aviation.

GOAL 8: Preserve the natural beauty, minimize degradation of the March JPA Planning Area, and provide enhancement of environmental resources, and scenic vistas.

Policies:

8.1 Where practical, revegitate graded area with native plants compatible to the area to prevent erosion.

8.2 Sensitive biological resources and habitats, cultural resources, view shed areas shall be protected where practical.

8.3 Support the BRAC clean up to attain a clean environment at and around the Planning Area.

8.4 Implement federal, state, regional, and local requirements that apply to water and air quality, wetlands, endangered species, and other environmental considerations.

8.5 Pursue the release of lands designated as suitable endangered species habitat through a process of land trades for more and better habitat.

GOAL 9: **Preserve the integrity of the historic and cultural resources of the Planning Area and provide for their enhancement.**

Policies:

9.1 Support a coordinated approach to planning for the entire historic district.

9.2 Support the continued use of Green Acres Estates for housing or limited non-residential service-sector uses.

9.3 Support the retention and expansion of the March Field Museum.

9.4 Enhance and preserve the architectural character of the existing facilities, and complement the mission revival architectural of the March Field Historic District.

GOAL 10: Avoid undue burdening of infrastructure, public facilities, and services by requiring new development to contribute to the improvement and development of the March JPA Planning Area.

Policies:

10.1 Require new construction to pay its "fair share" of the cost of providing adequate public services, infrastructure, and facilities for the development.

10.2 Require new construction to provide adequate infrastructure to serve the development (i.e., curbs and gutters, sidewalks, street lights, water service, sewer service or septic systems, etc.) prior to initiation of use.

10.3 Locate commercial and industrial development in areas where street rights-of-way and capacity are available, as well as sufficient infrastructure and public services.

10.4 Facilitate the provision of public services, (i.e., sewer, water, streets, and public safety) to be provided in an efficient and cost-effective manner.

Public Services

GOAL 11: Plan for the location of convenient and adequate public services to serve the existing and future development of March JPA Planning Area.

Policies:

11.1 Preserve appropriate and adequate sites for public facilities.

11.2 Provide and maintain existing infrastructure and enhance service levels to meet the needs of March JPA Planning Area.

Infrastructure

GOAL 12: **Ensure, plan, and provide adequate infrastructure for all facility reuse and new development, including but not limited to, integrated infrastructure planning, financing and implementation.**

Policies:

12.1 Coordinate the provision of all public utilities and services to ensure a consistent, complete and efficient system of service to development.

12.2 Require new construction to pay its "fair share" for the regional infrastructure system by providing appropriate dedications, improvements and/or fee assessment districts or other financing mechanisms.

12.3 Require new development projects to provide for the extension of infrastructure to serve the development, including over-sizing facilities for future needs.

12.4 Preserve options and facilities to accommodate new and advanced technologies, inclusive of communication systems.

Water Services

GOAL 13: Secure adequate water supply system capable of meeting normal and emergency demands for existing and future land uses.

Policies:

13.1 Only approve development which can demonstrate an adequate and secure water supply for the proposed use.

13.2 Enhance local groundwater supplies through development designs which promote an on-site recharge and minimize impermeable ground coverage with landscaped areas, open space or recreation areas.

13.3 Design and operate March JPA facilities in compliance with established water conservation practices and programs.

Sewer Service

GOAL 14: Establish, extend, maintain and finance a safe and efficient wastewater collection, treatment and disposal system which maximizes treatment and water recharges, minimizes water use, and prevents groundwater contamination.

Policies:

14.1 Require all development to adequately collect, treat, and dispose of wastewater in accordance with the Santa Ana Regional Water Quality Control Board requirements.

14.2 Require connection to the sewer system for any development occurring on land formerly part of March AFB.

14.3 Encourage reuse of reclaimed and treated non-potable water for irrigation and maintenance of recreation areas, landscaping and open space preservation.

Solid Waste Disposal

GOAL 15: **In compliance with state law, ensure solid waste collection, siting and construction of transfer and/or disposal facilities, operation of waste reduction and recycling programs, and household hazardous waste disposal programs and education are consistent with the County Solid Waste Management Plan.**

Policies:

15.1 Ensure all hazardous materials are stored, treated, and disposed in accordance with state and federal law.

15.2 Support programs to promote greater awareness and involvement in waste reduction and recycling.

Utilities

GOAL 16: **Adequate supplies of natural gas and electricity from utility purveyors and the availability of communications services shall be provided within the March JPA Planning Area.**

Policies:

16.1 Where feasible, require new development to underground on-site telecommunication connections.

16.2 Encourage and support the under grounding of existing overhead utilities.

16.3 Accommodate advancing technologies with communication systems, inclusive of fiber-optics and high speed transmission lines.

16.4 Prepare a capital improvement program (CIP) which provides for the maintenance and upgrading of existing infrastructure to adequate levels of service and the installation of new facilities, as needed.

16.5 Encourage the preparation and adoption of CIPs for other agencies and districts responsible for the provision of infrastructure systems in the March JPA Planning Area.

Storm Drainage

GOAL 17: **Adequate flood control facilities shall be provided prior to, or concurrent with, development in order to protect the lives and property within the March JPA Planning Area.**

Policies:

17.1 Provide for the adequate drainage of storm runoff to protect the lives and property within the Planning Area.

17.2 Monitor and maintain drainage and flood control facilities to ensure adequate capacity to support the land use plan.

17.3 Require new development to construct new or upgrade existing drainage facilities to accommodate the additional storm runoff caused by the development.

17.4 Require all storm drain and flood control facilities to be approved and operational prior to the issuance of certificates of occupancy for the associated development.

17.5 Designate and preserve land for necessary flood control facilities, in accordance with a certified hydrology study and master plan for March JPA Planning Area.

17.6 Ensure development within the 100-year flood plain, as designated by the Federal Emergency Management Agency (FEMA), shall be consistent with the requirements established by FEMA.

17.7 Seek to preserve drainage courses in their natural condition, while providing adequate safety and protection of property.

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LAND USE PLAN

The Land Use Element describes the location and extent of future development in the Planning Area and identifies standards for development. The geographic location of land uses are presented on the Land Use Plan Map which is a part of this Element. The Land Use Plan of the March JPA identifies the types of land uses that are desired in the March JPA Planning Area, as well as the density and intensity of development for those land uses. The plan calls for the development of land uses which will support future growth and development in the area.

Land use designations are necessary to identify and indicate the type and nature of development that is permissible within a given location. While terms like "residential," "commercial," and "industrial" are generally understood, State general plan law requires a clear and concise description of the land use categories depicted on the land use map. Development within the March JPA Planning Area must comply with all laws relating to development, including but not limited to the goals, policies and objectives of this element and other elements of the General Plan. Requirements for development are within the purview of March JPA.

Planning Assumptions

The land use plan contains significant amounts of industrial, business park, aviation and office land uses. These designations are based on an assumption that growth trends in this region will continue to require additional industrial, business and office lands to meet long-term economic conditions and growth demands. As the currently housing-rich Inland Empire matures, it is assumed that additional job producing growth and job replacement will occur. This type of growth is not dependent on the same demographic characteristics that determines growth in retail commercial expansion.

1. Consistency with Base Master Reuse Plan. The actions of the Homeless Assistance Plan, Property Disposition, Land Use and other elements of the Base Master Reuse Plan prepared for March AFB have been recognized and utilized as a basic resource.

2. Compatibility With Adjacent Land Uses. The plan recognizes planned developments, redevelopment project areas, major regional commercial centers, residential communities, and other sensitive land uses surround the Planning Area; compatibility with these uses is considered, although it is recognized that general development standards will have to be formulated to specifically address land use compatibility issues.

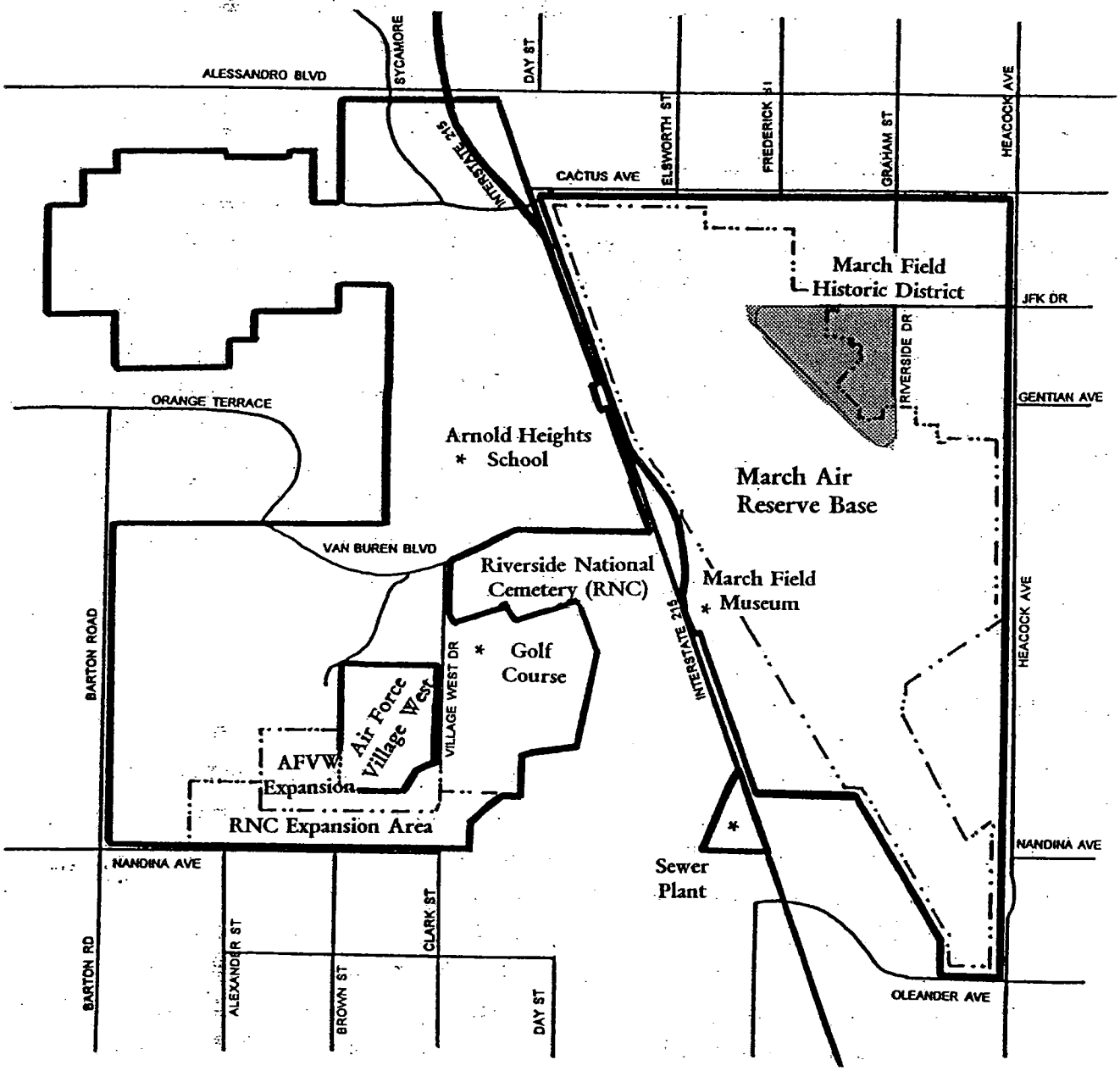
3. Compatibility With Continuing Military Operations. The land use plan was designed to create land use patterns that are compatible with March ARB operations and the continuing use of March ARB as a military base. To the extent possible, land use designations minimize the introduction of new residences, which is the use least compatible with aircraft operations. The plan accounts for the recommendations of the AICUZ for March which sets out guidelines to minimize conflicts between aircraft operations and surrounding development. Industrial and business park uses are generally considered compatible by the AICUZ.

4. Historic District. The Green Acres area of the March Field Historic District in the Northeast Planning Subarea has been nominated as a National Register Historic District. Uses within this area are subject to appropriate historic review processes and the maintenance manual for the district.

5. Existing Independent Facilities. Air Force Village West, Riverside National Cemetery, March Field Museum, and the Golf Course are existing uses within or adjacent to the Planning Area which are recognized for continued use and expansion. Each use is located in the West March Planning Subarea, south of Van Buren Boulevard. The one exception is the museum, which is located east of I-215, south side of Van Buren Boulevard.

6. Environmental Considerations. From Stephens' Kangaroo Rat to Installation Restoration Program (IRP) sites, the environmental condition of the Planning Area was considered. The Profile Report for the Land Use Element incorporates further discussion on the constraints and opportunities, as well as the Profile Report for Resource Management.

Exhibit 1-3
Existing Independent Facilities



1. Infrastructure Issues. From utilities to circulation and roadways, infrastructure needs and planning need to be assessed with development of the Planning Area. The land use plan provides for the allowance of right-of-way to provide facilities. The plan considers the economic balance necessary for planning development that can provide for the necessary infrastructure. Further discussion is found within the Profile Report for the Land Use Element.

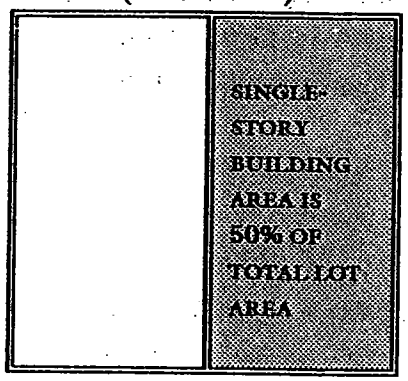
Land Use Intensity & Designations

Land use designations are established to fulfill the goals, policies and objectives of the Land Use Element and various other elements of the General Plan. The designations identify the land use, describe the type of development expected, and identify the allowable development intensity. In accordance with State general plan law, the maximum intensity permitted within a given Land Use designation is identified in this element and shown on the land use plan map. Table 1-1 lists each of the land use designations of the Planning Area and provides its corresponding measure of maximum and average intensity. The intensity listed represents the maximum allowable level of development on an individual parcel of land. Furthermore, the table denotes the anticipated average development levels within each land use category for the entire Planning Area.

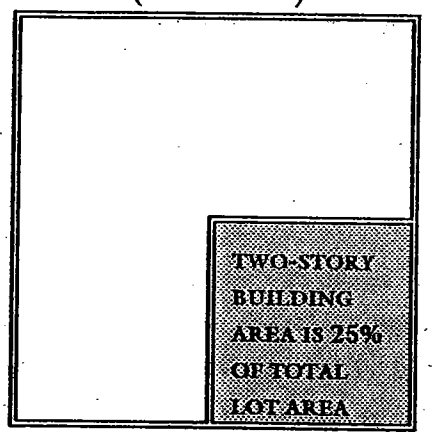
Development Intensity

Development intensity refers to the size or degree of development possible within a land use category. The term "intensity" refers to the physical characteristics of a building, such as height, bulk, floor area ratio and/or percent of lot coverage and its proportional relationship to the land on which it is situated. Intensity is most often used to describe non-residential development levels; but in a broader sense, is used to express overall levels of all development types within a Planning Area. Intensities of development of non-residential designations are expressed in the ratio of the building floor area to the total lot area (floor area ratio or FAR).

Floor Area Ratio 0.50:1
(FAR 0.50)



Floor Area Ratio 0.50:1
(FAR 0.50)



FAR is the relationship of total gross floor area, of all buildings on a parcel, to the total land area of a said lot. For example, a 21,780 square foot building on a 43,560 square foot lot (one net acre) yields a FAR of 0.50:1. A 0.50:1 FAR can yield a building of one story in height covering one-half of the total lot area, or a taller building which covers less of the lot but provides for more open space around the building. Non-residential intensity is based on the concept of net acreage, which is defined as that portion of gross acreage exclusive of street right-of-way

and other public lands. Net acreage is assumed to be at 70 percent of gross acreage on a Planning Area-wide basis. Therefore, the net acreage of land is assumed to equal 30,000 square feet for purposes of calculating density or intensity of General Plan land use. Additional restrictions may affect the floor area ratio on property within specific aviation safety zones.

Land Use Designations

The land use designations of the March JPA General Plan Land Use Plan are divided into four general classifications, with a total of 13 distinct land use designations:

Industry

Two industrial land use designations are established to complement the aviation and employment generating uses. Due to the location of the March JPA Planning Area within the region, available and planned street access, and availability of rail service to the area, industrial designations in the Land Use Plan include industrial businesses, and research and development companies as well as large scale manufacturing uses. The land use designations include Industrial and Business Park which will allow for both large and small scale businesses, light manufacturing and assembly, storage, warehousing, research and development and related uses.

Business Park (BP) ***(FAR 0.75)***

Business park uses include administrative, financial, commercial service, governmental, and community support services; research and development centers; light manufacturing; vocational education and training facilities; business and trade schools; and emergency services. Business Park areas are generally served by arterial roadways, providing automobile and public/mass transit access. These areas are characterized

as major employment concentrations. Development in this category, except for warehousing, is generally within a campus-like setting or cluster development pattern. Maximum FAR for land use in this category is 0.75:1, with an average development intensity of 0.20:1.

Industrial (I) ***(FAR 0.60)***

Industrial uses may support a wide range of manufacturing and non-manufacturing uses ranging from warehouse and distribution facilities to industrial activities. Uses supported include warehousing/distribution and assemblage of non-hazardous products and materials or retailing related to manufacturing activity. Uses may include open storage, fuel storage, office/industrial park; light industry; manufacturing; research and development centers; maintenance shops; emergency services center; solid/liquid waste facilities; vocational education and training facilities; and business and trade schools. The maximum FAR for land use in this category is 0.60:1, with an average development intensity of 0.15:1.

Commerce

Four commerce and service oriented land use designations are established to meet the Planning Areas limited need for retail establishments and professional services. FARs are provided for each category to regulate the intensity of structures that may be built on each site.

Office (O) ***(FAR 0.75)***

Office uses include business activities associated with professional or administrative services. Activities can consist of corporate offices, cultural and community facilities, financial institutions, legal and medical services, and other similar uses which together represent major concentrations of community and employment activities. Uses may include office parks,

office buildings, and educational and training facilities. Some limited retail and commercial service uses are permitted. Development in this category is generally within a campus-like setting. Office development is typically located on arterial roadways for convenient automobile access and public/mass transit service. The maximum FAR for land use in this category is 0.75:1, with an average development intensity of 0.30:1.

Mixed Use (MU) ***(FAR 0.6)***

Mixed uses include a variety of complementary land uses; including commercial, business park, office, medical, educational and vocational, research and development, and services. Industrial and major warehousing uses are excluded. The maximum FAR for land use in this category is 0.60:1, with an average development intensity of 0.25:1.

Commercial (C) ***(FAR 0.6)***

Commercial uses within this designation include retail and service-oriented business activities serving the Planning Area. Commercial uses include retail establishments, shopping centers, administrative, financial, service and government offices. Development in this category generally occurs at key intersections of major arterial roads or at major off-ramps from Interstate 215. In addition to being accessible to automobiles and pedestrians, commercial developments may also be served by public transit. The maximum FAR for land use in this category is 0.60:1, with an average development intensity of 0.30:1.

Destination Recreation (DR) ***(FAR 0.5)***

Destination Recreation provides for the unique opportunity to develop a commercial attraction that markets at a recreational regional basis. Uses include theme parks; amphitheaters; exposition centers; or other commercial-based attraction other than general retail services. The

maximum FAR for land use in this category is 0.50:1, with an average development intensity of 0.25:1.

Special

The following special designations are limited to specific opportunities that are found within the Planning Area. Additionally, these special designations implement the Base Master Reuse Plan, and are unique to the realignment of March AFB to March ARB.

Military Operations/Aviation (MARB)

March ARB holds a designation of Military Operations and Aviation. Uses within this designation include runways, taxiways and aprons for military and joint use aviation areas, inclusive of aviation safety lands. Military operations under March ARB are permitted within this designation. Designation includes lands within the cantonment area retained for military operations and the military mission of March ARB. Development is currently as such and controlled by the Federal DOD.

Aviation (AV) *(FAR 0.40)*

Through joint use of the aviation field, the unique opportunity to develop civilian aviation is presented. Land uses under this designation include flightline, hangers, aviation support services, inclusive of fuel systems and dispensing, air cargo storage, passenger and air cargo terminals, fixed base operations, aircraft maintenance and aviation operation services. The maximum FAR for land use in this category is 0.40:1, with an average development intensity of 0.15:1.

Historic District (HD) ***(2 dwelling units/acre)***

The historic district of Green Acres which was constructed as base housing holds a designation of Historic District. Uses within this designation are restricted to the continued use of the units as residences, or allowance of limited service/retail uses that maintain the historic integrity of the district and meets the requirements of Historic District use and design restrictions. The current density is 2 dwelling units per acre. No additional development is permissible.

Air Force Village West Expansion (AFVW) ***(FAR 0.60)***

This designation is specific to the expansion of Air Force Village West, a not-for-profit institution that developed and operates housing and managed care for retired military officers. Air Force Village West is an isolated parcel surrounded entirely by the Planning Area. This designation is limited to expansion of the Air Force Village West, and its permissible uses include plans for expansion to develop skilled nursing facilities and institutional residential care facilities, limited to two to three story structures. The maximum FAR for land use in this category is 0.60:1, with an average development intensity of 0.30:1.

Cemetery Expansion (CE) ***(FAR 0.10)***

This designation is specific to the expansion of Riverside National Cemetery, which is a veteran's cemetery, immediately adjacent to the Planning Area. This designation is limited to expansion of the cemetery, and its related uses including maintenance facilities and mausoleums. The maximum FAR for land use in this category is 0.10:1, with an average development intensity of 0.005:1.

Public

The Public category consists of land use classifications which can be defined as a resource or facility that serves the public. It consists of two categories. Development within these categories is limited and specific.

Park/Recreation/Open Space (P/R/OS) *(FAR 0.25)*

Parks/Recreation/Open Space land use designation applies to all passive and active park or recreation areas whether private or public in the March JPA Planning Area. Active recreation activities include recreation facilities, equestrian centers, golf courses/driving ranges, indoor/outdoor athletic facilities, and public parklands. Passive activities include natural preserves, along with designated and natural open space. The maximum FAR for land use in this category is .25:1, with an average development intensity of .025:1.

Public Facility (PF) *(FAR 0.50)*

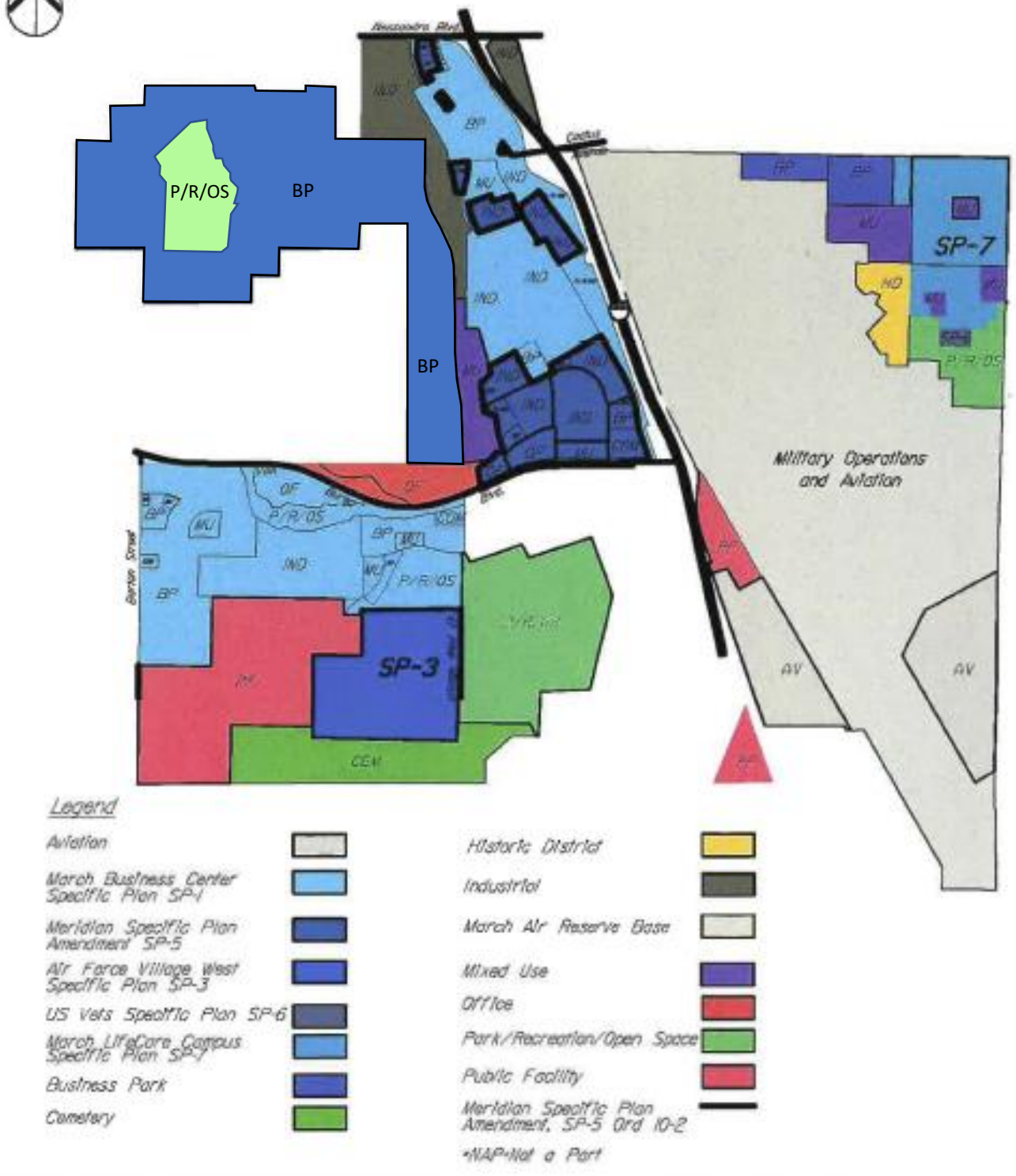
This designation includes a wide range of public, quasi-public, and private uses such as schools, public cultural and historical facilities, government administrative offices and facilities, public utilities, and major transportation corridors. However, land uses determined to be sensitive to, or incompatible with aviation operations shall be excluded. These land uses are distributed throughout the Planning Area. The maximum FAR for land use in this category is 0.50:1, with an average development intensity of 0.10:1.

Estimates for buildout of the March JPA Planning Area are provided in Table 1-1. It shows that approximately 21 million square feet of total structural area may exist within the planning area upon buildout. Buildout also reflects the preservation of the 111 units within the Historic District of Green Acres; however should the use of these structures change from residential to

office/services, the additional non-residential square footage would increase by approximately 200,000 square feet. The floor area buildout assumes average intensity development within the Planning Area. Lot coverage, setbacks, aviation restrictions, building heights, parking provisions, natural features, and other development standards are expected to reduce this average further upon full buildout.

AIRPORT PLANS

A set of five airport plans, meeting Federal Aviation Administration (FAA) criteria apply to the March Airfield and its use. The five plans include; the Airport Layout Plan (ALP), Terminal Area Plan, Airport Land Use Plan, Airport Airspace Plan and Approach Profiles and Plans. The FAA governs civilian aviation operations and uses at airports. The ALP denotes the major improvements to the facility and requirements for runway, protection zones, and access areas.



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GENERAL PLAN LAND USE PLAN

TABLE 1-1
BUILDOUT MARCH JPA PLANNING AREA

Land Use Designation	Acres GROSS	Density MAX.	Density AVG.	Buildout Capacity*
INDUSTRY				
Business Park	1278	.75	.20	7,793,755 sf
Industrial	433	.60	.15	1,980,455 sf
SUBTOTAL				9,774,210 sf
COMMERCE				
Office	104	.75	.30	951,350 sf
Mixed Use	360	.60	.25	2,744,280 sf
Commercial	45	.60	.30	411,642 sf
Destination Recreation	135	.50	.25	1,029,105 sf
SUBTOTAL				5,136,377 sf
PUBLIC				
Park/Recreation/ Open Space	777	.25	.025	592,307 sf
Public Facility	449	.50	.10	1,369,091 sf
SUBTOTAL				1,961,398 sf
SPECIAL				
Military Operations	2102	n/a	n/a	2,500,000 sf
Aviation	316	.40	.15	1,445,321 sf
Historic District	58	2 du/ac	2 du/ac	111 units
AFVW Expansion	75	.60	.30	686,070 sf
Cemetery Expansion	160	.10	.005	24,394 sf
SUBTOTAL				4,655,784 sf 111 units
TOTAL				21,527,769 sf 111 units

ac - acre sf - square feet du/ac - dwelling unit per acre
FAR - floor area ratio * based on average FAR, of net acre

IMPLEMENTATION PROGRAM

The following implementation elements support the March JPA's Land Use Plan and will facilitate the development of land uses as shown on the Land Use Plan Map. Other land use regulations that would achieve the land use goals and policies of the March JPA General Plan are also outlined below.

1. Development Code

The primary implementation mechanism for the Land Use Element is the March JPA Development Code, which provides for parcel-specific zone designations for all land within its jurisdiction and subdivision regulations. Section 65860 of the Government Code requires that a zoning ordinance be consistent with the General Plan once adopted. The March JPA will amend the Development Code, after adoption of the General Plan to promote consistency and develop requirements for development that would meet the goals and policies of this Land Use Element. All development proposals shall be reviewed for compliance with the March JPA's General Plan, Development Code inclusive of zoning map, and other land use regulations and ordinances.

2. Specific Plans

Specific plans allow flexibility in development that is often superior to what can be achieved through the strict application of conventional land use and development criteria. Greater design flexibility within a comprehensive planning framework allows for clustering of buildings, mixing of uses and building types, use of special development standards and criteria which can often respond better to the particular features of a site. This flexibility can be used to achieve the maximum building density for a given site while preserving open space and unique natural features. Natural features make March JPA Planning Area unique and should be preserved and enhanced, where possible. Greater flexibility can also mean more efficient infrastructure design through clustered development which can decrease the cost per facility for development projects.

3. Infrastructure Master Plans

The March JPA shall prepare master plans for infrastructure development to encourage coordinated development and infrastructure improvements. The plan shall coordinate the provision of utilities, infrastructure and public services for areas of development, and explore available funding mechanisms for these services. Criteria for evaluating the capacity of existing services shall be developed, so that development in outlying areas can be easily analyzed. This shall be coordinated with the various service agencies.

4. Capital Improvement Program

The March JPA shall prioritize the provision and maintenance of public facilities and infrastructure in the area through its Capital Improvement Program (CIP). The CIP provides a schedule of proposed and ongoing capital improvements, including the financial mechanisms to implement these projects. They would include the development and maintenance of drainage facilities, roadways, traffic and transportation facilities and other projects and structures. Priorities in the CIP shall be set for projects which will support existing facilities and encourage orderly growth in March JPA Planning Area. This will include, but not be limited to, street, sidewalk, and parkway development and maintenance.

The March JPA shall coordinate the CIP with the programs of other utility and infrastructure agencies serving the March JPA. This will allow the utilities and various agencies to provide concurrent services to the same area, as well as share rights-of-way and reduce costs for improvement or facility provision. It shall work with power, telephone and cable companies in the under grounding of existing overhead lines, as well as in providing underground lines to serve development.

5. Redevelopment Plan

The redevelopment branch of the March JPA, March Joint Powers Redevelopment Agency has an approved redevelopment area that consists of the entire Planning Area with additional acreage within the City of Moreno Valley. The March JPA shall work toward the redevelopment opportunities as identified within the approved plan.

The Redevelopment Agency shall encourage the reuse and development of former base facilities and promote economic development activities through promotional campaigns to major developer and investors. The attraction of larger, master development proposals and programs to finance infrastructure deficiencies shall be conducted. Commerce and industrial developments shall be explored and supported by market feasibility studies.

6. Area Design Plans

Aside from the land use categories, the March JPA may identify areas which require a focus of planning activity to center in on specific land development opportunities and regulate future development. The March JPA may develop plans for target areas in order to capitalize upon their assets, develop land uses which will serve and benefit the area and create synergistic opportunities, while capitalizing on the infrastructure standards developed for the area. The plans may include public improvements such as median enhancements, special landscaping, defined land use categories within the broader category, compatible architectural styles, and other features which will improve the physical and economic viability of development and use in these areas.

7. Design Review

The March JPA shall implement a design review process for development. Design review allows the March JPA to suggest and require changes to the external features of a development, in order to maintain and develop the area's character and identity. As part of the design review process, March JPA will evaluate a proposed project's compatibility with existing development and design standards. Buffers (setbacks, landscaping, walls, etc.) shall be provided in areas where land use conflicts or incompatibilities may arise.

8. Service Capacity Monitoring

The availability of public services to serve development must be assured before development takes place. The March JPA will review the availability of water, sewer, storm drainage, streets, fire and police services, and other utilities during development review. Service commitment shall be required from the pertinent utility purveyors. Riverside County Sheriff and Riverside County Fire Department review shall also be

solicited. Plan review may determine the need for upgrade or enhancement to the street system, storm drainage and other infrastructure. The March JPA shall monitor the capacity of existing services and infrastructure, in order to determine if future development can be served by these facilities.

9. Development Fees

Costs associated with a specific development should be borne by its users and not by all of the March JPA. The March JPA shall implement and regularly review a development impact fee program, to ensure that development pays its fair share of the cost to provide public services, infrastructure and facilities.

10. Utility and Public Service Providers

The March JPA shall coordinate with the utility purveyors and public service providers, and other public agencies that serve the March JPA for the provision of public services and the regulation of activities.

11. Comprehensive Land Use Plan

The County of Riverside Airport Land Use Commission (ALUC) is responsible for the development and maintenance of a comprehensive land use plan (CLUP) for the aviation field at March. The March JPA shall continue to work with the in preparing and adopting a CLUP for March that reflects the appropriate aviation standards to ensure compatible land use planning in and around the airport. The March JPA shall assure that the general plan and future general plan amendments are consistent with the CLUP, as well as zoning and land use actions.

12. Airport Layout & Development Plans

The Airport Layout Plan submitted to, and approved by FAA will be implemented through the development of a series of airport development plans. These plans will depict the necessary improvements to the flightline, runway and taxiways, as well as terminal areas to support civilian use of the airfield.

GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

Transportation Element

SECTION 2: TRANSPORTATION ELEMENT

INTRODUCTION

The Transportation Element of the March JPA General Plan is one of the most critical elements because it presents the plan for the overall transportation system in the planning area and its association to the sub-region. The relationship of the Transportation Element to the Land Use Element is critical since the two must be compatible, and support each other. The circulation system as presented in the Transportation Plan must be designed to adequately handle the forecasted travel demand based on the expected development as outlined in the Land Use Plan. In addition to roadway issues, the Transportation Element addresses airspace and air transportation, and railroads. The Transportation Element considers both the physical requirements of the transportation system (roadway facility type, number of lanes, etc.) and certain operational issues, such as provision of transit services and travel demand reduction programs/policies, additionally the establishment and development of civilian aviation and goods movement.

Relationship to the General Plan

According to California Government Code Section 65302(b), General Plan Circulation (Transportation) Elements shall include "the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals and other public utilities and facilities, all correlated with the Land Use Element of the Plan." The mandatory circulation element issues, or those which must be addressed within the General Plan, are as follows:

- Major thoroughfares
- Transportation routes
- Terminals
- Other local public utilities and facilities

Other specific items, which are not mandatory but may be covered within General Plan Transportation Elements, include:

- Streets and highways
- Civilian aviation, inclusive of airspace and air transportation
- Aviation terminals for air cargo and passenger services
- Public transit routes, stops and terminals
- Bicycle and pedestrian routes and facilities
- Truck routes and restrictions
- Railroad, multi-modal facilities and goods movement systems
- Transportation system management and transportation demand management

The March JPA Transportation Element covers many of the issues listed above. It describes existing circulation conditions in the March JPA Planning Area, establishes standards for planning improvements to the circulation system in coordination with planned growth in the planning area, and provides a basis for the measurement of circulation system performance in future years and for future updates of the Element.

Summary of Issues

The planned transportation system for March JPA Planning Area must be adequate to handle future forecast travel demand. Travel demand on the system includes trips to and from all existing and future land uses within the planning area, as well as from land uses outside the planning area. It is important to account for all potential sources of future trip-making when developing the Transportation Plan. Some of the major issues of importance to the March JPA Planning Area with respect to the future transportation system include:

Circulation/Roadways:

- On-site:
  1. Main Base Existing System/Base Reuse
  2. Establishment of a circulation system within an area previously precluded by its federal designation
  3. Ensuring sufficient site access for properties as they develop.

- Local-linkages: Providing adequate roadway capacity to maintain accessibility to the surrounding arterial streets and regional freeways.

- Regional System: Upgrading the capacity of adjacent interchanges with I-215 to ensure accessibility to/from the regional highway system.

Establishment of Civilian Aviation: The establishment and location of March Inland Port (MIP) the civilian aviation operation and terminal location at March. A Joint Use Agreement executed May 1997, permits the operation of civilian aviation by the March JPA, through joint use of the airfield, which is owned and operated by the Air Force Reserves.

Establishment of an Employment Center: The location of a major employment center in the March JPA Planning Area will make it possible for more residents of Western Riverside County to commute to jobs locally rather than to Orange or Los Angeles Counties. This will help to reduce peak hour traffic in the peak direction, thereby reducing peak congestion on regional roadways and balancing peak traffic flows to better utilize the roadway system's capacity.

Alternative Transportation Modes: Transit services will become increasingly important as the March JPA Planning Area grows. With the potential for commuter rail, express bus, and local bus service, the March JPA is ideally situated for attracting commuters via public transportation. The March JPA should work with regional transit providers to ensure that transit programming is oriented toward the March JPA Planning Area as the need for commuter and local transit services increases.

Multi-Modal Facility: Riverside County Transportation Commission's (RCTC) study of commuter rail on the San Jacinto Branch line identified a potential station at Van Buren/I-215. With the potential for commuter rail, express bus, local bus, and an area shuttle service, the JPA transportation plan should include development of a multimodal transportation center to serve and link these modes.

Goods Movement/Intermodal Facility: The location of the San Jacinto Branch Line through the March JPA, and especially the existing spur line south of Cactus Avenue, provides a unique opportunity for an intermodal facility in the March JPA Planning Area. This facility would provide a location for the transfer of goods between trucks and rail, and would enhance the attractiveness of this area to businesses which could benefit from convenient access to rail for shipping.

Transportation Demand Management: Transportation demand management (TDM) strategies may be effectively employed to help reduce traffic volumes and ease future congestion in the March JPA planning area. The large amount of relatively undeveloped land allows for an innovative strategy for trip reduction through land use planning and development agreements. Transit accessibility will be high if planned commuter rail, express bus, and local bus services are developed, and if the proposed multimodal transportation center is developed with a convenient shuttle service to link it with the employment areas. Short-distance local trips can be eliminated by planning master developments which contain an appropriate mix of uses.

GOALS AND POLICIES

With the development of vacant land, and reuse and intensification of existing facilities, traffic volumes in the March JPA Planning Area will increase to levels greater than its past use as an active duty base. March JPA General Plan Land Use Plan delineates a mixture of land uses that will create an employment center, within the housing rich environment of Western Riverside County. The March JPA Transportation Element and Plan focus on accommodating employment related circulation needs, reducing vehicle miles traveled generated within the subregion, and accommodating alternative transportation facilities such as multimodal and mass transit systems. The interior roadway system shall support the land use designations of the Land Use Plan, provide an appropriate link with adjacent jurisdiction transportation systems, and contribute to an overall improved sub-regional system.

It is imperative that the Transportation Plan is inclusive, by accounting for the opportunities of the Land Use Plan, particularly the establishment of joint use aviation. The Transportation Plan shall promote technological and sociological advances in achieving a balanced transportation system. The transportation system must be able to accommodate both local and regional demands, and facilitate the development and use of alternative transportation systems, and advancing transportation management systems.

Transportation System

GOAL 1 Establish and provide for a comprehensive transportation system that captures the assets and opportunities of the planning area, existing transportation facilities, and planned transportation facilities for the future growth and development of the planning area and sub-region.

Policies:

1.1 Plan for a mix of transportation modes aimed at effective use of resources, both physical infrastructure and natural energy resources.

1.2 Design transportation improvements which are compatible with the natural environment. Xeriscape and drought tolerant landscaping techniques should be used for all parkway and median plantings. Where feasible non-potable water should be used for irrigation purposes.

1.3 Develop a transportation system integrated with land use planning and responsive to the needs of the community.

1.4 Roadway system shall inter-relate with the components of the multi-faceted transportation system that will assist with the synergistic value of each element's effectiveness (i.e., bike lockers at the Metrolink station, with bike lanes emanating there from).

1.5 Develop a transportation plan and program which are financially, technically, and legally implementable, both at the local and regional level.

1.6 Maintain a transportation system which promotes access and mobility between employment centers, services and multi-modal facilities and terminals.

1.7 Coordinate the planning for March JPA's transportation needs with adjacent jurisdictions, public transit systems and regional highway facilities.

1.8 Promote the use and development of mass transit facilities, inclusive of Metrolink service along the San Jacinto Branchline, express bus system within the arterial highway roadways and other appropriate transportation facilities.

1.9 Coordinate the use and development of aviation facilities for the movement of both goods and persons into and out of the planning area.

1.10 Encourage RCTC and Caltrans to identify and implement improvements to address the roadway capacity deficiency of the I-215/SR-60 freeway between Riverside and Moreno Valley.

1.11 Support development of limited-access roadway facilities in the Cajalco and Ramona Corridors.

1.12 Work with the County of Riverside to identify and develop a north-south arterial roadway linking Van Buren Boulevard and the Cajalco Corridor on the west side of the March JPA Planning Area.

Transportation Planning

GOAL 2 Build and maintain a transportation system which capitalizes on the multi-faceted elements of transportation planning and systems, designed to meet the needs of the planning area, while minimizing negative effects on air quality, the environment and adjacent land uses and jurisdictions.

Policies:

2.1 March JPA shall balance the need for free traffic flow with economic realities and environmental and aesthetic consideration, such that transportation facilities are capable of normal patterns

and volume, with tolerance of peak and high level usage with minimal disruption, delays or impacts.

2.2 Traffic volumes and facility usage shall be monitored periodically by March JPA to assure that development, use patterns and volumes, and planned and improved facilities are adequate. Method of monitoring should be consistent with the general plan's associated environmental document (Master EIR), which requires re-certification no less than every five year period.

2.3 March JPA shall coordinate its local transportation planning with associated county, regional and state agencies, as well as adjoining jurisdictions.

2.4 March JPA shall support and participate in the creation of adequate regional, multi-modal transportation systems and linkages and promote mass transit and alternative transportation modes.

2.5 March JPA shall work with RCTC to minimize the safety concern and congestion effects of rail line crossings.

2.6 FAA standards, military AICUZ, and appropriate Comprehensive Land Use Plan for March Airfield shall be upheld and supported to encourage and realize a safe environment in and around the aviation field.

2.7 On-street parking shall be de-emphasized throughout the planning area to permit maximum capacity of roadways to be actuated by vehicular and bicycle transportation modes.

2.8 Street improvements shall be designed in a comprehensive manner to include parkway facilities, pedestrian walkways, commuter bike lanes, signing, lighting noise and air quality factors, as applicable.

GOAL 3 **Develop a transportation system that is safe, convenient, efficient and provides adequate capacity to meet local and regional demands.**

Policies:

3.1 Follow standards for transportation element roadways in designing and constructing street improvements.

3.2 Develop a circulation system of March JPA Planning Area streets that is capable of serving existing traffic and expected future increases in traffic.

3.3 Take a leadership role in the preparation of a regional traffic mitigation program designed to resolve regional traffic issues.

3.4 Logically relate local street patterns to the overall network of arterial and collector streets as provided for in the Transportation Plan.

3.5 Driveway entrances onto surrounding arterial highways, major and minor arterials streets should be restricted when practical, and through traffic on interior streets should be minimized.

3.6 Establish a coordinated signalized arterial street system that will provide an acceptable level of service during peak hours under build-out conditions.

3.7 Develop a program for general mitigation fees for roads and traffic signals.

Roadway System

GOAL 4 Provide a balanced transportation system that ensures the safe and efficient movement of people and goods throughout the planning area, while minimizing the use of land for transportation facilities.

Policies:

4.1 Provide a plan for a coordinated street system for the safe and efficient movement of people and goods.

4.2 All streets shall be constructed in accordance with planning area's standard street classifications. Modifications within the Northeast Planning Subarea to the standard street classifications may be allowed on a limited basis to preserve the integrity of the area and facilities

4.3 Arterial roads should carry both local and through traffic and be planned and improved to maintain a Level of Service "D" or better with limiting circumstances of Level of Service "E" to occur.

4.4 Through traffic planning, measures should be implemented to alleviate direct impacts to adjoining jurisdictions which decrease roadway function Level of Service below the jurisdiction's adopted acceptable Level of Service, as appropriate.

4.5 Require the dedication and improvement of arterial roadways prior to the issuance of certificates of occupancy.

4.6 Seek to design a system of arterials developed and connected to arterials in adjacent jurisdictions.

4.7 Work closely with Caltrans to implement freeway ramp/arterial roadway interchange improvements that promote the efficient flow of vehicular traffic to and from the March JPA Planning Area while minimizing potential impacts within March JPA Planning Area.

4.8 Develop and implement transportation programs which maximize the use of funding from local, state and federal funds.

4.9 Work with the Cities of Moreno Valley and Perris to plan and develop a heavy-duty truck access route between the air cargo facility and the I-215 interchange at Oleander Avenue.

4.10 Work with the City of Perris to plan for an arterial roadway on the east frontage of I-215 between Van Buren Boulevard and Oleander Avenue, in order to preserve future options for developing a passenger or air cargo terminal on the west side of the runway.

Land Use

GOAL 5 Plan and encourage land use patterns and designs which enhance opportunities for non-vehicular circulation and improve trip reduction strategies.

Policies:

5.1 Pursue developments with master developers as much as possible, to enhance opportunities for coordinated trip reduction programs and integrated land use designs.

5.2 Encourage development which includes a mixture of uses which can help to eliminate off-site trips by employees during the day.

5.3 Encourage site design and building orientation which is pedestrian-friendly and convenient to transit.

Access

GOAL 6 Establish vehicular access control policies in order to maintain and insure the effectiveness and capacity of arterial roadways.

Policies:

6.1 To the extent possible, access shall be provided on local or collector streets where the frontage is available on both local and arterial streets.

6.2 Access to an arterial road shall be limited to one point for every 300 feet of frontage or one point for parcels with less than 300 feet of frontage.

6.3 Combined and/or reciprocal access onto arterials shall be required between adjacent properties, wherever possible, to reduce vehicular access point and increase roadway efficiency.

6.4 For corner lots, whenever possible, vehicular access points on arterial roadways shall be located a minimum of 300 feet from the centerline of the intersection.

6.5 In order to minimize left-turn movements, vehicular access shall be located opposite an existing or planned access across the street, to the extent possible.

Transportation Management and Alternate Transportation

GOAL 7 Facilitate and develop transportation demand management and transportation systems management programs, and use of alternate transportation modes.

Policies:

7.1 Include transportation system management techniques, such as park-and-ride lots, traffic signal synchronization, carpool/vanpool programs, flexible work hours and the creation of Transportation Management Associations (TMA'S) as requirements of development by major employers.

7.2 Require major employers to prepare Transportation Management Plans with provisions for carpooling and vanpooling, flexible work hours or other techniques.

7.3 Cooperate with Caltrans and the County of Riverside in providing sites and improvements for park-and-ride facilities.

7.4 Take a leadership role in regional planning efforts to provide community rail service throughout the planning area, while protecting railroad right of way.

7.5 Provide a system of bicycle facilities (paths, lanes and routes) in conjunction with circulation system roadway improvements.

7.6 Develop a system of pedestrian/equestrian/bicycle trails within the planning area, to meet the community needs.

Mass Transit

GOAL 8 Adequate, affordable, equitably distributed and energy efficient public and mass transit services which promote the mobility to, from, and within the planning area shall be provided.

Policies:

8.1 Evaluate transportation alternatives with project design, development and implementation.

8.2 Work with RCTC to pursue the development of a commuter and/or light rail system that will serve as an intra- and inter-county public transportation system.

8.3 Support the expansion of public and mass transit systems and schedules to meet the needs of the planning area, development and uses herein.

8.4 Transit stations shall be accessible and designed to support multi-modal access.

8.5 Coordinate with RCTC and other governmental agencies to achieve an integrated and comprehensive transit system that will adequately serve the needs of the employment population of the planning area.

8.6 Development of trip reduction measures and systems shall be a priority to promote and expand the ability of mass transit to serve the planning area and sub-region.

8.7 Seek to provide public transit services which promote the mobility of March JPA community and provide a reasonable alternative to the personal automobile.

8.8 Require the installation of bus improvements such as bus turnouts, bus stops, and terminals as part of the conditions of development for employment centers and land uses that attract large numbers of persons, where appropriate.

8.9 Cooperate with the Riverside Transit Agency (RTA) for the provision of public bus service in the planning area, including development of a shuttle service to link the multi-modal transportation center with employment.

8.10 Establish bus shelters at RTA stops to increase public recognition and use of the local and regional transit system.

Trip Reduction/Transportation Demand Management

GOAL 9 **Develop measures which will reduce the number of vehicle-miles traveled during peak travel periods.**

Policies:

9.1 Provide incentives to employers who encourage carpooling and vanpooling for employees.

9.2 Provide preferential parking for carpools and vanpools, where appropriate.

9.3 Promote mass transit by requiring dedication of access routes, stations, and stops, as part of new development.

9.4 Develop a planning area wide transportation management program to apply to development and businesses, as appropriate.

9.5 Develop a scheduling system for goods movement, air cargo and trucking operations to minimize conflict with peak hour volumes, to reduce the taxation on the roadway system.

Truck Routes

GOAL 10 Regulate the travel of trucks on March JPA Planning Area streets.

Policies:

10.1 Establish a truck route system which designates truck and commercial vehicle routes and provides adequately sized and designed roadways to meet the needs of trucks and commercial vehicles. This will eliminate truck and commercial vehicle traffic through inappropriate areas of the March JPA Planning Area.

10.2 Clearly sign designated truck routes and identify maximum weight limitations on these routes.

Parking

GOAL 11 Adequate off-street parking for all land uses shall be provided which requires adequate on-site parking to prevent spill over on the adjacent street system.

Policies:

11.1 Provide for adequate parking facilities for all uses.

11.2 Seek to provide additional off-street parking in areas that have been identified as deficient.

11.3 Consider allowing reduced parking standards for mixed use projects where shared parking is likely to occur.

11.4 Require all new development to provide adequate off-street parking based on expected parking needs.

11.5 Provide adequate loading areas within off-street parking areas for all commercial and manufacturing land uses.

Bikeways and Pedestrian Access

GOAL 12 **Plan for and seek to establish an area-wide system of bicycling trails, with linkages within the planning area and with adjacent jurisdictions, and in compliance with sub-regional plans.**

Policies:

12.1 Plan for the location of bike lanes and pedestrian access points along logical traffic routes and linkages.

12.2 Plan for bikeways which provide bike paths and bike lanes to facilities, and employment centers from adjoining residential areas and mass transit services.

12.3 Define measures to ensure that trails are established, maintained and used in the safest manner possible.

12.4 Encourage the utilization of trails/bikeways for commuting, as well as recreational purposes.

12.5 Provide adequate right-of-way and improvements for bike lanes in accordance with the Transportation Plan.

12.6 Encourage pedestrian movement by providing pedestrian facilities that are direct and convenient.

12.7 Require sidewalks on both sides of all streets. The March JPA encourages alternate designs including parkways and meandering and enhanced paving.

Aviation

GOAL 13 Promote, preserve and protect the joint use of the aviation field by the Air Force Reserves and civilian aviation.

Policies:

13.1 Support activities that meet the demands of the region, relative to air cargo and passenger services.

13.2 Provide for improvements and programs that will promote the joint use aviation facility, and a supporting roadway, railway and airway system.

13.3 Promote and develop March Inland Port (MIP) to create a centralized "port" for the service of air cargo operations for centralized distribution and service within Southern California and the greater region, thereby alleviating congestion and over taxed air and roadway facilities within the greater region.

13.4 Pursue federal funds and programs to provide full operational capabilities to meet the needs of air cargo carrier operators.

13.5 Provide for development and protection of the aviation facilities

13.6 Protect flight paths from inappropriate development encroachment.

13.7 Develop and adopt an airport development plan to meet the projected needs of the region for civilian air services.

13.8 Adhere to approved airport layout plans approved by the Joint Powers Commission and recognized by the FAA.

13.9 Pursue the adoption of a Comprehensive Land Use Plan for March Airfield, and adhere to the regulations and criteria set forth within the plan.

Rail & Goods Movement

GOAL 14 **Goods movement through the San Jacinto Rail Branchline shall be capitalized.**

Policies:

14.1 Promote the use and development of Metrolink service along the San Jacinto Branchline.

14.2 Create and participate in the creation of adequate regional railway systems, inclusive of Metrolink commuter service, rail freight service and location of a goods movement, multi-modal facility along the San Jacinto Branchline.

14.3 March JPA shall work with RCTC to minimize the safety concern and congestion effects of rail line crossings.

14.4 Plan for community rail service throughout the planning area, and protect railroad right-of-way.

Disabled Access

GOAL 15 **In accordance with state and federal law, promote and provide mobility for the disabled.**

Policies:

15.1 Require that all development comply with the requirements of the state and federal law for the disabled. Requirements may include ramps at street corners, access to public buildings, traffic signal timing and the like.

15.2 March JPA should endeavor to improve transportation opportunities for the elderly and handicapped.

TRANSPORTATION ELEMENT TECHNICAL ANALYSIS

This section summarizes the technical analysis which identified roadway capacity improvements needed to serve long-range needs in the March JPA Planning Area.

Travel Demand Modeling

Traffic forecasts were developed to estimate future background traffic conditions (assuming no further development of the March JPA Planning Area) and future conditions with full build out of the March JPA Land Use Plan.

The traffic forecasts were based on the RIVSAN CTP subregional travel demand forecasting model developed and maintained by the Southern California Association of Governments (SCAG). The CTP model is consistent with the SCAG regional model, with greater detail focused in Riverside and San Bernardino Counties.

For the March JPA General Plan forecasts, the CTP model network and trip tables were obtained from SCAG. The model was refined for the March JPA to provide additional local detail for the purpose of analyzing intersection volumes and capacity in the JPA area.

Existing and Future Trip Generation

The projected volume of traffic which will be generated in the March JPA Planning Area was estimated based on expected land uses, intensities, and employment levels. Buildout of the proposed plan is estimated to generate a total of approximately 220,000 daily vehicle trips, compared with 37,000 daily trips generated by the former active duty March Air Force Base.

The traffic forecasting model was first used to identify roadway improvements needed to serve future traffic without development of planned uses in the March JPA Planning Area. The analysis determined that the following improvements will be needed even if no additional development occurs in the March JPA Planning Area:

- widening Alessandro Boulevard to six lanes west of I-215.
- widening Van Buren Boulevard to six lanes from Barton Street westerly.
- reconstructing the Van Buren Boulevard interchange with I-215.
- widening Barton Street south of Van Buren Boulevard.
- widening the intersection of Barton Street with Van Buren Boulevard.
- widening Nandina Avenue and extending it easterly to connect with the Oleander interchange of I-215.
- widening Oleander Avenue to four lanes east of I-215 and extending it easterly.
- constructing Indian Street north of Oleander Avenue.
- widening existing ramps in the I-215 interchanges with Alessandro Boulevard and Cactus Avenue.

In addition to these needed improvements in the vicinity of the March JPA Planning Area, I-215/SR-60 is projected to be significantly over capacity between Riverside and Moreno Valley, even with the HOV and truck climbing lane improvements being implemented as part of Measure A.

The traffic forecasting model was subsequently used to identify additional roadway improvements needed to accommodate the planned development of the March JPA Planning Area. The analysis determined that the following improvements would be needed in addition to those identified above:

- widening of Alessandro between Plummer and I-215;
- widening the bridge of Cactus Avenue across I-215, and widening the off-ramps;
- widening Cactus Avenue to six lanes from I-215 to Graham Street (consistent with the Moreno Valley General Plan);
- widening Van Buren to six lanes from I-215 to Barton Street;
- additional widening of the Van Buren bridge over I-215;
- construction or widening of internal March JPA Planning Area roads;
- widening of several key intersections to provide additional turn lanes;
- developing the roadway connection from the air cargo terminal to Indian Street.

With these improvements, roadways and intersections in the JPA area are projected to operate at Level of Service "D" or better with planned development.

The roadway functional classifications identified within the Transportation Plan provide sufficient capacity to accommodate the future circulation needs.

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TRANSPORTATION PLAN

Roadway Classification System

One of the principal elements of any Transportation Element is the definition of the planning area's roadway system in terms of designated functions. For example, local streets are designed to serve only short distance local trips, while arterial roadways are designed to serve longer distance trips and higher traffic volumes. The "functional classification system" defines each roadway in the March JPA Planning Area and provides guidelines for the level and type of traffic based on the type of roadway. The classification system also establishes the roadway curb-to-curb widths of each type of facility, as well as the amount of right-of-way to be preserved as development occurs adjacently to roadways. The March JPA Planning Area currently has no adopted functional classification system, therefore, one of the major purposes of the Transportation Element is to establish the planning area's roadway network definitions.

The functional classification system for March JPA Planning Area roadways is as delineate herein below to provide proper guidance as the planning area develops and base reuse occurs. As part of the development of the March JPA's General Plan, the roadway system provided in this Element encompasses the key roadways in the planning area, along with regional circulation system facilities of the respective jurisdictions. The following functional classification system categories are discussed below, with typical cross sections provided in Exhibit 2-2:

1. Arterial Highway. These roadways would provide a 102-foot roadway within a 120-foot right-of-way upon full buildout. This is sufficient width to provide three lanes in each direction plus raised median to accommodate controlled left turn lanes at intersections. The roadway without curbside parking, will accommodate a Class II commuter serving bike lane. Roadways designated as an arterial highway serve a sub-regional basis and are continued throughout the sub-region within the respective jurisdictions.

2. Major Arterial. These roadways would provide an 86-foot roadway within a 110-foot right-of-way upon full buildout. This is sufficient width to provide two lanes in each direction plus raised median to accommodate control left turn lanes at intersections. A Class II commuter serving bike lane can be accommodated if curbside parking is restricted.

3. Minor Arterial. These roadways would provide a 64-foot roadway within an 88-foot right-of-way. This is sufficient width to provide two through lanes in each direction, with a Class II bike lane, or curbside parking area. This roadway classification has no center median. Minor arterials function in a similar manner to major arterials, except that minor arterials carry less total traffic, less non-local through traffic and a relatively greater proportion of local traffic.

4. Industrial Collector. These roadways would provide a 56-foot roadway within a 78-foot right-of-way. This is sufficient to provide one lane in each direction with a Class II bike lane. Industrial Collector streets function as feeder routes to carry traffic from the arterial system to the local system, but should carry only very minimal levels of non-local through traffic.

5. Local Streets. All streets not designated as one of the facility types above is a local street. Local streets function purely to provide direct access to abutting land uses and should not serve any through traffic.

6. Service Streets. Service streets are purely rights-of-way designed to provide access to areas that need to be serviced, but does not carry standard "public" traffic. A service street is designed as a two-lane roadway without any additional right-of-way. The minimum standard for a service street shall be no less than 24 feet wide to accommodate two-way traffic. Use of service streets shall be limited to areas that require access for purely maintenance and servicing, and will not function as a "public" transportation facility in the general sense.

TABLE 2-1 ROADWAY CLASSIFICATION MARCH JPA GENERAL PLAN					
Roadway Classification	Number of Lanes	Right of Way	Roadway Cross-Section	Type of Median	Sidewalk /Parkway
Arterial Highway	6	120'	102'	14' Raised	6'/3'
Major Arterial	4	110'	86'	18' Raised	6'/6'
Minor Arterial	4	88'	64'	N/A	6'/6'
Industrial Collector	2	78'	56'	12' Painted	6'/5'
Local	2	60'	40'	N/A	6'/4'
Service	2	24' min	24' min	N/A	N/A

The functional classification of each street is determined based on several key factors including the following:

1. Future Traffic Volumes. The classification of each roadway should be designated so that the roadway capacity, once it is fully built out, will support the anticipated traffic volumes at an acceptable level of service (LOS) once the planning area's develop able parcels are also fully built out. Level of service is a qualitative measure describing operational conditions of a traffic stream or intersection, or intersection operations, it is usually based on a calculation of the average delay experienced by vehicles passing through the intersection during the peak hour. Service levels range from A to F, with A representing excellent operating conditions and free flow, while F represents extreme congestion and significant motorist delay. Peak hour LOS D is the desirable minimum

LOS for the JPA area, and LOS E is the minimum acceptable level of service in March JPA.

2. Adjacent Land Uses. Another important element in setting roadway functional classifications is adjacent land uses. Each classification is specified to carry certain types of traffic. For example, freeways are designed to carry relatively large volumes of long distance "through" traffic, while local streets represent the opposite end of the spectrum and are designed to carry only traffic destined for land uses along the street. Arterial and collector streets are designated to carry varying levels of local and through traffic.

Roadway/Street System

The planned roadway/street system for the JPA area is depicted in Exhibit 2-1.

Intersection Design Standards

In general, the greatest capacity constraints in a roadway system occur at signalized intersections. This is because the available capacity must be shared by two roadways, at the point of intersection. Therefore, it is sometimes desirable to provide additional capacity at intersection locations, particularly where there is a greater amount of turning movements. The additional capacity is provided in the form of additional lanes of traffic. The additional lanes usually serve traffic turning from one roadway to another, but additional through lanes can also be provided. The additional lanes generally extend from the intersection for approximately 300 feet, but shorter or longer distances can be provided dependent upon the conditions at each intersection.

The model identified the following intersections within the March JPA Planning Area to have specific intersection design standards to accommodate traffic upon full buildout of the planning area:

Exhibit 2-1
Transportation Plan (Planned Roadway/Street System)

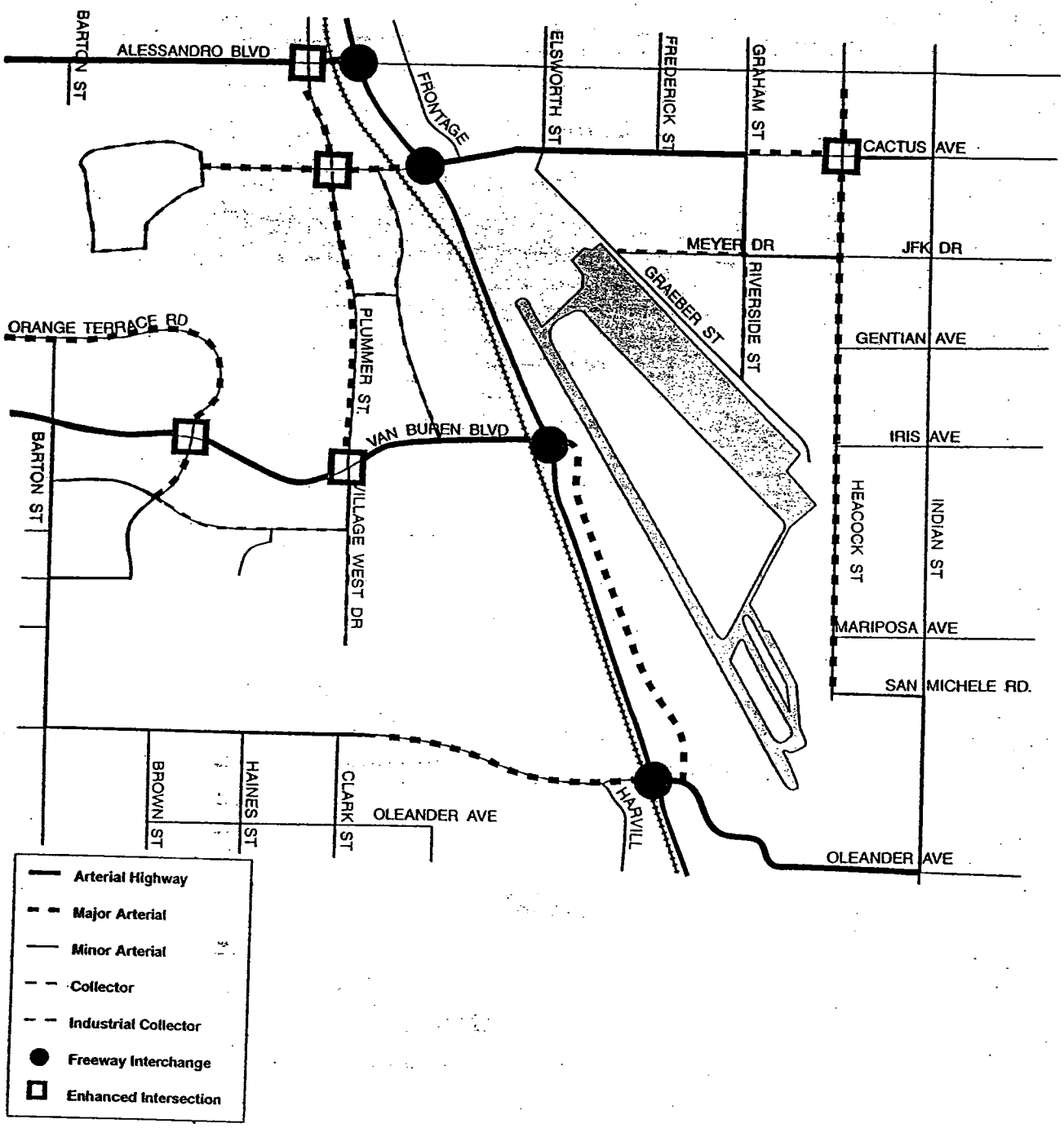
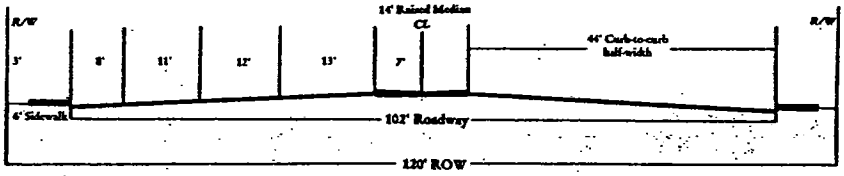
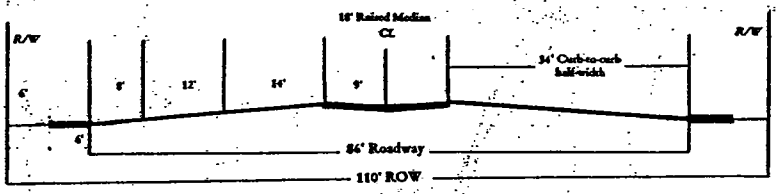


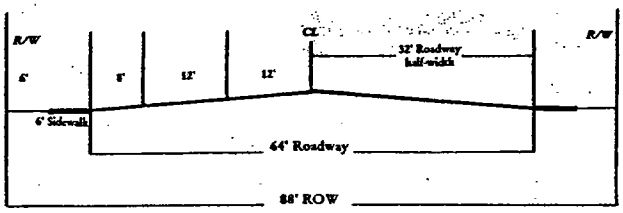
Exhibit 2-2
Roadway Classification Cross-Sections



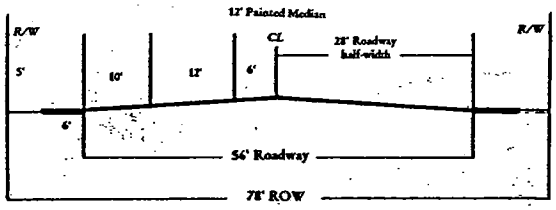
ARTERIAL HIGHWAY



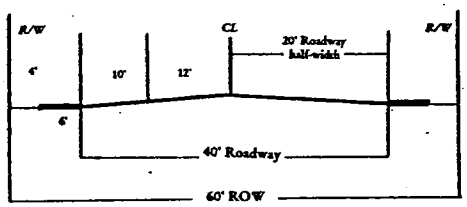
MAJOR ARTERIAL



MINOR ARTERIAL



INDUSTRIAL
COLLECTOR



LOCAL STREET

- Alessandro/I-125
- Alessandro/Plummer
- Cactus/I-215
- Cactus/Frederick
- Cactus/Heacock
- Van Buren/I-215
- Van Buren/Harmon
- Van Buren/Plummer-Village West
- Van Buren/Orange Terrace
- Van Buren/Barton

The Transportation Technical Report for the March JPA General Plan (Figure 9) graphically depicts the intersection design standards for each.

Bike Lanes/Pedestrian Access

Class II bike lanes for commuter purposes can be accommodated on most roadway classifications, so long as curbside parking is restricted. Commuter facility Class II bike lanes are designated on:

- Van Buren Boulevard (west of I-215)
- Alessandro Boulevard
- Plummer Road
- Cactus Avenue
- Orange Terrace Parkway extension
- Village West Drive
- Harmon Road
- Park Street
- Heacock Street

These roadways within the planning area will provide non-motorized alternative to employment centers from other alternative modes of transportation (such as Metrolink). Additionally, the bike lane facilities will provide linkages to adjacent jurisdiction bike routes, including a link to the Orangecrest residential community. All roadway cross-

sections recommend a six-foot wide sidewalk to facilitate and encourage the pedestrian access within the planning area.

Truck Routes

Within the March JPA area, all roadways identified as collector street level or higher in the functional classification scheme are designated as truck routes.

Scenic Corridors

Van Buren Boulevard is designated a scenic corridor with additional landscape easements, in addition to right-of-way requirements. Additionally the area from Interstate 215 and Harmon Street is designated as an enhanced gateway area, with general setback requirements and design criteria, to compliment the Riverside National Cemetery.

Rail Facilities

Riverside County Transportation Commission owns the San Jacinto Rail Branch Line which bisects the planning area. The railroad tracks are located adjacent to Interstate 215, on the west side. Metrolink stations are anticipated for the Alessandro Boulevard Area, Van Buren Boulevard and Oleander Avenue. A multi-modal/goods movement center is designated just south of Cactus Avenue, near the DRMO facility.

TABLE 2-2

ROADWAY SYSTEM FOR MARCH JPA PLANNING AREA

ROADWAY	CLASSIFICATION	BIKE LANE	TRUCK ROUTE	SPECIAL NOTES
REGIONAL SYSTEM				
Interstate 215	Interstate-Freeway			CALTRANS roadway
Alessandro Blvd.	Arterial Highway	Class II	Yes	Bike Lane west of I-215
Van Buren Blvd.	Arterial Highway	Class II	Yes	Scenic Corridor
NORTHEAST PLANNING SUBAREA+				
Meyer Drive*	Arterial		Yes	*Heacock to Riverside
Meyer Drive*	Collector			*West of Riverside
Riverside Drive*	Arterial		Yes	*Cactus to Meyer
Riverside Drive*	Collector			*South of Meyer
Heacock Street	Major Arterial	Class II	Yes	City of Moreno Valley
Cactus Avenue	Arterial Highway	Class II	Yes	City of Moreno Valley I-215 to Graham St (Class I - bike lane)
Cactus Avenue	Major Arterial	Class II	Yes	City of Moreno Valley Graham to Heacock (Class I - bike lane)

+NORTHEAST PLANNING SUBAREA: Roadway classification within the Northwest Subarea will focus on function and number of lanes, rather than specific cross-sections or roadway widths. Streets within the Northwest Subarea will be designed to utilize existing facilities where feasible, and/or create special cross-sections to utilize existing facilities and minimize intrusion into existing development. Bike lane facilities will be incorporated where feasibly safe to implement.

TABLE 2-2
ROADWAY SYSTEM FOR MARCH JPA PLANNING AREA

ROADWAY	CLASSIFICATION	BIKE LANE	TRUCK ROUTE	SPECIAL NOTES
SOUTHEAST PLANNING SUBAREA				
Heacock Street	Major Arterial	Class II	Yes	City of Moreno Valley
San Michele	Minor Arterial		Yes	City of Moreno Valley
Indian Avenue	Minor Arterial		Yes	Cities of Moreno Valley /Perris
Oleander Avenue	Primary Arterial		Yes	City of Perris
I-215 East Frontage	Major Arterial (modified)		Y-air cargo	Air cargo only > minor arterial
WEST MARCH PLANNING SUBAREA				
Plummer Road	Major Arterial	Class II	Yes	
Harmon/Arnold	Industrial Collector	Class II		
Village West Dr	Minor Arterial	Class II		Van Buren to Park Road
Village West Dr.	Collector	Class II		Park Road to AFVW
Orange Terrace	Major Arterial	Class II	Yes	Van Buren to Park Road
Lurin/Orange Terrace	Minor Arterial	Class II	Yes	Park Road to Lurin
Barton Road	Minor Arterial			County of Riverside
Cactus Avenue	Major Arterial	Class II	Yes	West of Interstate 215
WSA Circle	Industrial Collector	Class II		

TABLE 2-2

ROADWAY SYSTEM FOR MARCH JPA PLANNING AREA

ROADWAY	CLASSIFICATION	BIKE LANE	TRUCK ROUTE	SPECIAL NOTES
Connector	Industrial Collector	Class II		Plummer-Harmon
Park Road	Industrial Collector	Class II		Village West Dr to Orange Terrace Pkwy
Park Road	Minor Arterial	Class II		Orange Terrace Pkwy to Barton Road
Nandina Avenue	Minor Arterial			County of Riverside

Aviation Facilities

The airfield general lies along the east side of Interstate 215 and includes two runways and associated taxiways. The primary runway, Runway 14/32 is 13,300 feet long with a width of 300 feet, while Runway 12/30 is 6,980 feet long by 150 feet wide. Runway 12/30 is closed for Air Force use but supports U.S. Customs operations and Aero Club aviation activities. The glide slopes, radar facilities, and aircraft safety distances, clear zones, and APZs on base property extends northwest and southeast from Runway 14/32. The area along the southern portion of Runway 14/32 both east and west of the airfield is designated for civilian aviation facilities. Civilian terminals would include air cargo on the east and air cargo/passenger terminal on the west.

Aviation operations and facilities are governed by the FAA. March JPA has an approved Airport Layout Plan and technical documents for the joint use and operation of civilian aviation at March.

A convenient roadway linkage between the air cargo terminal and the freeway system is important for facilitating goods movement in and out of the terminal, and an accessible air cargo terminal will increase the area's marketability as an employment center. Therefore it is important that the roadway access between the terminal and the nearby interchange at I-215 and Oleander Avenue be as convenient as possible. The March JPA should work closely with the Cities of Moreno Valley and Perris to ensure that this roadway connection is provided in a way which facilitates the movement of large truck trailers between the air cargo terminal and the freeway.

Exhibit 2-3
Transportation Plan Systems

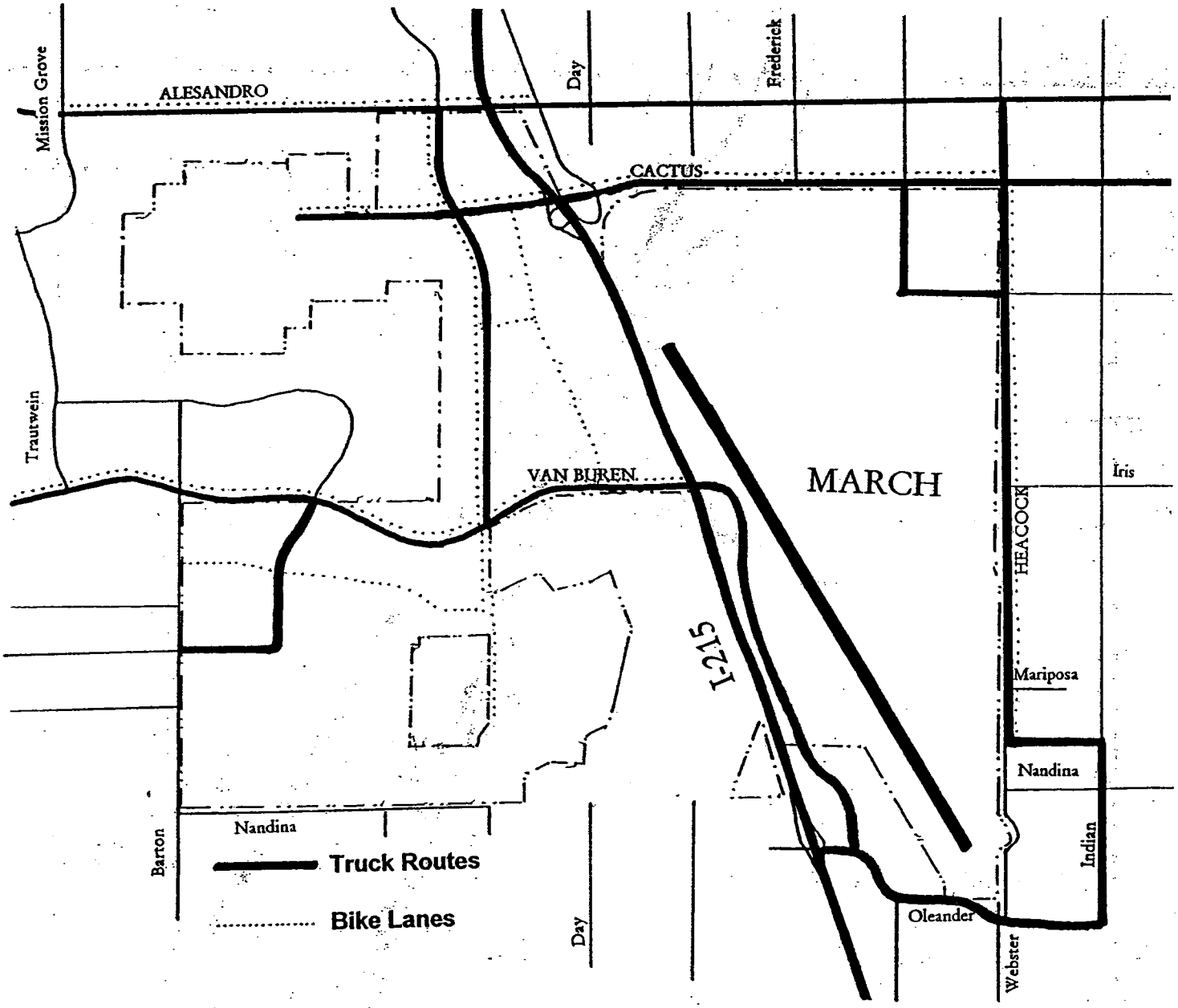
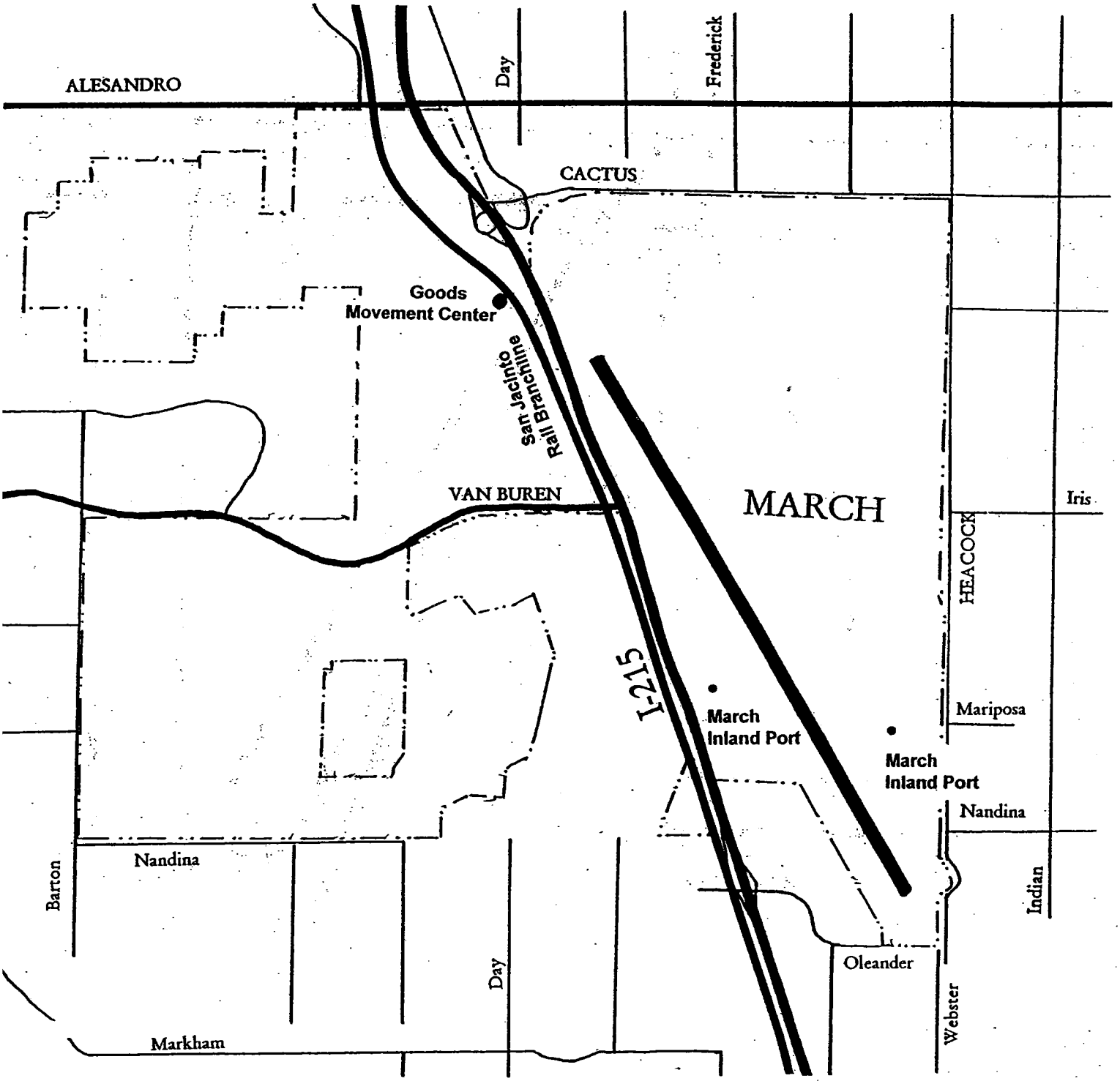


Exhibit 2-4
Non-Roadway Transportation Plan Systems



REGIONAL TRANSPORTATION SYSTEM

Highway System

Regional access to the March JPA area is provided by I-215, which has interchanges at Alessandro Boulevard, Cactus Avenue, Van Buren Boulevard, and Oleander Avenue. To ensure adequate long-term access between the freeway and the JPA area, the interchanges at Van Buren Boulevard and Cactus Avenue should be upgraded.

Regional access to/from the north is hampered by the constrained capacity of the I-215/SR-60 freeway between Riverside and Moreno Valley. Additional improvements will be needed to enhance the capacity of this bottleneck, or to provide an alternative which can relieve this facility. Regional access to/from the north depends significantly on this route, so it is vital that the March JPA encourage RCTC, Caltrans, and other responsible agencies to address this critical long-term deficiency.

Forecasts of future traffic south of the JPA area on I-215 indicate that ten lanes of capacity will be needed from Van Buren Boulevard to the Ramona/Cajalco interchange. The March JPA should work with RCTC and Caltrans to monitor this situation and evaluate future needs so that needed improvements can be implemented in a timely fashion.

The planned enhancements to the Ramona Expressway will ensure long-term access between the JPA area and the San Jacinto Valley. The JPA should support the planned future widening and upgrading of the Ramona Expressway as a limited access facility.

Regional access to/from the west primarily occurs via Van Buren Boulevard, Alessandro Boulevard, and the SR-60/I-215 freeway. The proposed upgrading of the Cajalco Corridor to a limited access expressway will significantly enhance regional access to/from the west, and should be supported by the JPA. In addition, the JPA should work with the County of Riverside to identify and implement a convenient north-south roadway connection linking the Cajalco Corridor with Van Buren Boulevard near the western side of the JPA area.

Metrolink

The planned Metrolink commuter rail extension along the San Jacinto Branch Line from downtown Riverside to Hemet and San Jacinto would primarily serve commuter trips. Initially, service would be operated from San Jacinto to Riverside in the morning peak, and back in the afternoon; ultimately two-way service may be considered. The JPA should support development of commuter rail in this corridor as one means of enhancing commuter access to the March JPA.

Bus Service

The Riverside Transit Agency (RTA) provides bus service within March JPA and other portions of Western Riverside County. Although bus route and transit stop planning generally responds to identified transit needs, the March JPA planning area can work with RTA to include public transportation consideration in land use planning decisions, and to encourage RTA to implement additional local and express bus service to the JPA area as development occurs and demand for transit increases.

Key to the attractiveness and success of the commuter rail and express bus services will be to have an effective, convenient system for collection and distribution in the JPA area. A local area shuttle service should be developed to link the employment centers within the JPA to the transportation center which will be served by the commuter rail and express bus service.

Multimodal Transportation Center

The RCTC study of commuter rail on the San Jacinto Branch line envisioned a commuter rail station in the northwest quadrant of Van Buren and I-215. The northwest quadrant was identified over the southwest quadrant because of preferable location and terrain. A station in this area was viewed as a destination station, so the study did not envision much parking adjacent to the station.

With the potential for commuter rail, express bus, local bus, and an area shuttle service, the JPA transportation plan should include development of a multimodal transportation center to serve and link these modes. The northwest quadrant of the I-215/Van Buren

interchange is the preferred location for this facility, because this location would provide good spacing with other planned Metrolink stations, would conveniently serve as a central point for bus transit oriented in all directions, and would not conflict with the planned intermodal terminal further to the north (see below). Since the JPA area is planned as a major employment destination, the multimodal center would not need to provide a large amount of parking.

Goods Movement

The location of the San Jacinto Branch Line through the March JPA, and especially the existing spur line south of Cactus Avenue, provide a unique opportunity for an intermodal facility in the JPA area. This facility would provide a location for the transfer of goods between trucks and rail, and would enhance the attractiveness of this area to businesses which could benefit from convenient access to rail for shipping.

The I-215 corridor is being considered as part of a potential high speed rail system in California. Location of the intermodal facility near the multimodal transportation center could provide a unique opportunity to have facilities which serve both the passenger and goods which could be moved via high speed rail. Plans for these two facilities and surrounding uses should preserve this opportunity, and the JPA should work with RCTC and the California High Speed Rail Authority to determine how to best serve both passenger and rail functions if this area becomes a candidate for a High Speed Rail station.

Transportation Demand Management/Transportation System Management

Transportation demand management (TDM) strategies may be effectively employed in the March JPA planning area. TDM strategies, if proposed now and integrated into the General Plan process and development agreements, can contribute to a reduction in trip generation within the JPA area.

Several factors contribute to the potential for a successful trip reduction strategy in the March JPA planning area. The large amount of relatively undeveloped land (about 6,450 acres) allows for an innovative strategy for trip reduction through land use planning and development agreements. Transit accessibility will be high if planned

commuter rail, express bus, and local bus services are developed, and if the proposed multimodal transportation center is developed with a convenient shuttle service to link it with the employment areas. Short-distance local trips can be eliminated by planning master developments which contain an appropriate mix of uses.

The recommended TDM elements for the March JPA Planning Area are identified below. This combination of strategies is estimated to achieve a six to nine percent reduction in trips compared to the estimates presented earlier in this report. The recommended TDM elements will be implemented by three different types of entities – the March JPA, potential developers in the planning area, and the individual employers.

March JPA-Implemented Measures

Encourage/require larger-scale development

- Appropriate Mix of Development

Developer-Implemented Measures

Compliance with SCAQMD Rule 2202
(Onsite Employee Transportation Coordinator)

- Transportation Management Association
- Passenger Loading/Drop-off Areas
- Bicycle/Pedestrian Paths
- Bicycle Storage Facilities
- Vanpool Service
- Shuttle to Multimodal Station
- Enhanced Transit Services

Employer-Implemented Measures

Guaranteed Ride Home

- Subsidized Transit Passes
- Flexible Work Hours
- Telecommuting
- Alternative Work Hours

IMPLEMENTATION PROGRAM

The following implementation elements support the March JPA's Transportation Plan and will facilitate good transportation planning and development.

1. Project Review

The project review process will be used to identify transportation improvements needed to maintain acceptable levels of service including traffic from the proposed project.

2. South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) is the agency responsible for monitoring air quality in the south coast region and enforcing regulations to achieve both national and state ambient air quality standards. Local transportation plans and programs must conform to the State Implementation Plan and the Air Quality Management Plan for the South Coast Air Basin. Because of the importance of motor vehicles as a pollution source, substantial emphasis has been placed on reducing motor vehicle travel and increasing vehicle ridership. This Element contains policies and implementation actions designed to reduce reliance on motor vehicle travel. The March JPA will continue to participate in the regional planning efforts being undertaken by SCAQMD and SCAG to develop and implement strategies which improve regional air quality.

3. Transportation Demand Management

The March JPA will develop an area-wide transportation management program which identifies the specific strategies and actions to be implemented to achieve the trip reduction objectives identified in this Element.

4. Riverside County Congestion Management Program

State legislation (AB 471 and AB 1791 amendments) require each metropolitan county in California, including Riverside, to designate a Congestion Management Agency

(CMA) and to prepare a Congestion Management Program (CMP). The designated CMP agency for Riverside County is the Riverside County Transportation Commission (RCTC) and the first CMP for the County was adopted by the Commission in September 1991. The second CMP was adopted on December 10, 1992. The purpose of the CMP legislation is to more directly link land use, transportation and air quality decisions. It has established a number of new requirements for regional and local agencies. The CMP system includes all state highways and selected non state highway principal arterials. Cities with non state highway principal arterials on the system within their boundaries are required to participate in a number of monitoring and reporting tasks related to the CMP. All state highways are monitored by RCTC. Since the planning area does not contain any CMP non state highway routes, March JPA has fewer CMP requirements than other jurisdictions. There are still, however, CMP requirements that March JPA must meet, including:

a. Coordinate with other jurisdictions regarding impacts of growth within the planning area on their CMP system roadways. This may include using a model (RIVSAN or other model as long as it is based on RIVSAN) to determine impacts of development and base reuse at March on local jurisdictions. March JPA should monitor CMP guidelines from RCTC and participate in regional forums regarding the Congestion Management Program.

b. March JPA is required to implement a Transportation Demand Ordinance.

c. March JPA must allow RCTC to review/analyze land use coordination records and other requirements, as necessary, to monitor the CMP implementation process.

5. Capital Improvement Program

The March JPA shall prioritize the provision and maintenance of transportation facilities and infrastructure in the area through its Capital Improvement Program (CIP). The CIP provides a schedule of proposed and ongoing capital improvements, including the financial mechanisms to implement these projects. They would include the development and maintenance of roadways, traffic and transportation facilities and other projects and structures. Priorities in the CIP shall be set for projects which will support

existing facilities and encourage orderly growth in March JPA Planning Area. This will include, but not be limited to, street, sidewalk, and parkway development and maintenance.

The March JPA shall coordinate the CIP with the programs of other utility and infrastructure agencies serving the March JPA. This will allow the utilities and various agencies to provide concurrent services to the same area, as well as share rights-of-way and reduce costs for improvement or facility provision. It shall work with power, telephone and cable companies in the under grounding of existing overhead lines, as well as in providing underground lines to serve development.

6. Development Fees

Costs associated with a specific development should be borne by its users and not by all of the March JPA. The March JPA shall implement and regularly review a development impact fee program, to ensure that development pays its fair share of the cost to provide public services, infrastructure and facilities.

7. Airport Layout Plan & Development Plan

The March JPA has an approved airport layout plan for March Inland Port. The Airport Layout Plan was submitted to, and approved by FAA will be implemented through the development of a series of airport development plans. These plans will depict the necessary improvements to the flightline, runway and taxiways, as well as terminal areas to support civilian use of the airfield. The March JPA as the airport authority shall continue to work with the Federal Aviation Administration in retaining an approved ALP and pursuing its implementation.

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GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

Noise / Air Quality Element

SECTION 3: NOISE / AIR QUALITY ELEMENT

INTRODUCTION

Due to the inter-relationship nexus between noise and air emission sources, the March Joint Powers Authority (JPA) General Plan noise element incorporates an elective section concerning air quality. This combined element is an important element of the March JPA General Plan, particularly due to the regional location of the March JPA Planning Area, the joint use/civilian aviation, and the creation of an employment center within the housing rich environment of western Riverside County.

Noise

Excessive noise levels disturb and disrupt human activities and can affect the health of individuals. The Noise Section of this element provides measures to minimize noise problems in the March JPA Planning Area and to protect public health. With the majority of the planning area devoted to non-residential uses, it is important that noise sources are controlled at the source, are located away from the adjacent residential communities, or buffers are provided between the main sources of noise and sensitive land uses. The noise control plan in the Noise Element explores these options, along with noise insulation standards and land use compatibility along identified noise corridors.

Air Quality

Air pollution refers to the presence of emissions which adversely affects the health of humans and other living organisms. It is generated by vehicle exhaust, electrical and natural gas generation, construction equipment, and industrial activities. Air quality is measured by the amount of pollution as influenced by climatic factors such as sunlight and wind patterns. Southern California's air quality is severely degraded, despite 45 years of the most stringent pollution controls in the nation. State and federal air quality standards for many pollutants, which were established to protect public health, are violated more frequently in Southern California than in other portions of the United States or California.

The South Coast Air Basin of California (SCAB), which includes Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, has the most polluted air in the nation. It is the only area designated by the U.S. Environmental Protection Agency (EPA) as having "extreme" air pollution. Early efforts in air pollution control in the basin focused on reducing industrial emissions, and later expanded to include automobile emissions. Recent efforts have been directed at altering traditional commuting patterns, promoting mixed use developments which combine residential and commercial land uses and attract pedestrian activity, and reducing energy sources of emissions. In March JPA, vehicle emissions, aviation activities, and fugitive dust from wind-borne soil and construction activities are the major contributors to air pollution.

Relationship to the General Plan

As mandated by the *California Government Code Section 65302(f)*, the Noise Section of this element analyzes noise problems in the March JPA Planning Area and provides guidelines to limit community exposure to excessive noise levels. It follows the guidelines established by the *Office of Noise Control of the State Department of Health Services*. The Noise Section indicates noise levels from vehicular traffic along major roads and highways, and aviation noise. Noise contours are plotted to illustrate noise levels in areas adjacent to the airfield. The noise contour map identifies existing noise levels in the March JPA Planning Area.

The Air Quality portion of this element addresses local issues and programs to improve air quality. The Air Quality section is not a state-mandated element but is one of the recommended methods under the 1997 Air Quality Management Plan (AQMP) for the SCAB. The goals and policies of this element section correspond to, and meet the underlying goals and requirements of the 1997 Regional AQMP which apply to local governments. The AQMP emphasizes operations that March JPA shall assume and programs that will facilitate participation by local businesses in improving local and regional air quality. While March JPA does not regulate air quality in the area or the region, local actions are required in order to demonstrate conformity to the adopted regional air quality plan.

This Air Quality Section focuses on programs that will allow March JPA to contribute to the attainment of regional, state, and federal air quality standards. It includes land use, transportation and site development alternatives which reduce vehicle emissions and fugitive dust to achieve improved local air quality. Compliance with the Federal Clean Air Act (CAA) with Air Conformity Analysis for joint use aviation operations is also incorporated.

SUMMARY OF ISSUES

Noise

The March JPA Planning Area has an aviation related environment that reaches beyond the immediate Planning Area boundaries for both military and civilian aviation operations. The noise concerns within March JPA Planning Area are primarily associated with aviation facilities, railway facilities and vehicular noise. Noise issues are discussed in the Noise Profile Report. There are various federal and state regulations which control noise sources and levels, yet there continues to be noise from the following areas:

Aviation noise from military operations and civilian use: Military operations have been reduced in response to realignment of March Air Force Base (AFB) to an air reserve base (ARB). However, realignment of March permitted the establishment of joint use aviation at March ARB which allows civilian operations. These operations are both noise and air quality related, and within the levels historically generated by March AFB as reflected within the 1992 Air Installation Compatible Use Zone (AICUZ) Study. A new AICUZ was completed in mid-1998 that delineates noise contours reflecting the permissible aviation operations of AFRES and civilian aviation operations allowable under the joint use agreement. The land use pattern within the March JPA Planning Area for base reuse and development respects the existing noise contour levels within the AICUZ, as well as operations for civilian use complying with Air Conformity Analysis for Federal CAA requirements. Civilian operations primarily use Stage III aircraft or newer aircraft due to the operational needs of the users.

Vehicular noise from the Interstate 215 and major roadways: Because freeway noise cannot be controlled by the March JPA, noise barriers along the freeway may have to be provided to limit excessive noise. Land uses near the freeway shall be designed to be compatible with the noise levels generated.

Railroad train/rail activity: While no sensitive land uses are currently found in the Planning Area, future development could be exposed to intense noise from occasional trains, if located too close to the tracks without providing noise attenuation measures.

Stationary noise sources in the manufacturing and commercial areas: Industrial activities may result in high noise levels when machinery is in operation. Trucks serving industrial and commercial uses also create noise that could disrupt adjacent areas. Commercial and business activities, clients and patrons are the main sources of noise along the main arterials.

Noise issues that face March JPA includes noise from mobile sources and the noise compatibility of various land uses. The Noise Section of this element contains goals and policies that seek to prevent the adverse impacts of noise on noise-sensitive land uses and to reduce the disturbance created by vehicular and train noise.

Air Quality

The Air Quality section of this element summarizes the major issue areas according to local and regional context. More detailed information on these issues can be found in the Profile Reports.

State and Federal Regulations: The Federal CAA was enacted in 1977 and established ambient air quality standards. Because previous amendments and compliance mechanisms for the SCAB have not been effective, the 1990 Amendment to the Act outlines new ways of attaining federal air quality standards. The California Clean Air Act (CCAA) was enacted in 1988 and requires air pollution control districts to achieve and maintain state air quality standards. The CCAA has given authority to the South Coast Air Quality

Management District (SCAQMD) to regulate motor vehicle use with indirect source controls in areas that have not attained national or state ambient air quality standards. The 1990 Clean Air Act Amendments (CAAA) focus on reducing ozone and carbon monoxide violations by emphasizing strategies which reduce vehicle miles traveled (VMT). The plan also requires the adoption of transportation control strategies and measures to offset any increase in emissions or number of vehicle trips.

Climatic Effects on Air Quality: Abundant sunshine during the warmer months causes photochemical reactions between nitrogen oxides and reactive organic compounds to form ozone. Although some ozone is generated locally, much of the ozone formed within the Los Angeles Basin drifts inland with the predominant wind patterns causing an increase in local ozone concentrations. Climatic conditions and topographical relief features such as mountain ranges also aid in hindering air pollutant dispersal and increase concentrations. For these reasons, local ozone concentration levels are highest in the afternoon when there is full sunlight and reactive organic compounds have been carried from the Los Angeles basin. Carbon monoxide and nitrogen oxide levels are highest during the winter season when temperature inversions typically occur. Carbon monoxide, a chemical by-product of automobile exhaust, is concentrated at busy intersections and does not extend over great distances.

Measurement of Air Quality: The Perris and Metropolitan Riverside (MRIV) stations are approximately equidistant from March JPA, and air quality data from both stations is used to characterize air pollutants affecting the March JPA Planning Area. The MRIV stations monitor ozone, carbon monoxide, suspended particulates, nitrogen dioxide, sulfur dioxide, sulfate and lead. The Perris station monitors ozone. Ozone and suspended particulates levels have exceeded both state and federal standards, as measured in 1995. State standards for sulfate were also exceeded.

Suggested and Required Measures: Measures which may reduce air quality emissions in March JPA Planning Area and the western Riverside County subregion includes providing an employment center within the housing rich environment of western Riverside County thereby reducing work trips and VMT

to other communities; implementing dust control measures during construction; promoting fuel saving or alternative fuel vehicles; exploring public transit options; and waste reduction, water conservation, and recycling programs. Air quality programs are expected to lead to better air quality in the region. Also, development of new technology such as cleaner fuels, will create less emissions and reduce air pollution which affects the region.

Jobs/Housing Balance: March JPA, through implementation of the Land Use Plan of the General Plan, focuses on the creation of an employment center. The creation of an employment center within the housing rich environment of western Riverside County will attribute to an enhanced balanced environment within the subregion. The land use plan will assist with both the regional and sub-regional air quality issues relative to congestion management, reduction in VMT, and civilian aviation operations using cleaner and newer aircraft.

Implementation and Use of New and Developed Technologies: The opportunities being presented within the Planning Area as a result of base reuse at March, coupled with the implementation and establishment of new and innovative technologies, provides for an advantage of utilizing developed and new technologies. Many portions of the Planning Area will be developed as "anew" with the opportunity to readily establish development through new and developed technologies, and advancements; as opposed to "retrofitting" an urbanized pattern with previously developed systems. These opportunities may be presented within the realms of transportation, alternative fuels and dispensing, operational activities of end users and the use of newer or Stage III aircraft and operation facilities.

GOALS AND POLICIES

Noise

Noise goals and policies are divided into two areas; 1) Land Use Compatibility, and 2) Noise Control.

Land Use Compatibility

GOAL 1: Ensure that land uses are protected from excessive and unwanted noise.

Policies:

1.1 Establish acceptable limits of noise for various land uses throughout the March JPA Planning Area. Future development that could increase ambient noise levels shall be required to mitigate the anticipated noise increase, to the extent possible.

1.2 Noise sensitive uses (such as schools, libraries, hospitals, medical facilities, residential uses, etc.) shall be discouraged in areas where noise levels exceed acceptable limits.

1.3 Encourage good acoustical design in new construction.

1.4 Provide buffer areas between noise sources and other developments, where practical.

GOAL 2: Minimize incompatible noise level exposures throughout the Planning Area, and where possible, mitigate the effect of noise incompatibilities to provide a safe and healthy environment.

Policies:

2.1 Avoid placing noise sensitive land uses in proximity to areas devoted to noise generating facilities such as areas of aviation related activities, industrial parks, transportation facilities, and other noise generating land uses.

2.2 Noise generating facilities shall be located in areas with compatible noise generating land uses (i.e., airport noise contour areas) to minimize land use incompatibilities, noise abatement and mitigation measures needed.

2.3 Noise sensitive land uses shall not be located in areas influenced by noise generating land uses, in particular the noise contours associated with the joint use airfield, unless appropriate mitigation is utilized.

2.4 March JPA shall evaluate noise sensitivity and noise generation when considering land use projects and transportation improvement projects, and where appropriate mitigation measures shall be employed.

2.5 March JPA shall utilize and comply with the CALTRANS standards for noise compatibility for aviation generated noise to proposed land use development.

Noise Control

GOAL 3: Work toward the reduction of noise impacts from vehicular traffic, and aviation and rail operations.

Policies:

3.1 Include mitigating measures such as landscaping, berming and site orientation, in the design of projects located near noise generating sources such as arterial roadways.

3.2 Coordinate with adjacent cities and county agencies for noise abatement.

3.3 Adhere to the adopted AICUZ and Comprehensive Land Use Plan standards and promote the use of newer and quieter aircraft and support equipment.

3.4 Where appropriate, noise mitigation measures shall be incorporated in the design and approval of development on property located adjacent to aviation and rail facilities.

3.5 Where appropriate, development in areas adjacent to freeways, arterial streets, and other noise sources shall be designed to reduce the potential for noise impacts.

3.6 Regulate the use of local streets by trucks, trailers, and construction vehicles, to the extent possible.

3.7 Limit trucking operations to appropriate routes, times and speeds.

3.8 Appropriate muffling systems for construction equipment and operations shall be required, as necessary.

3.9 March JPA shall encourage and facilitate the use of mass transit services and alternative transportation systems to minimize dependence of the automobile within the Planning Area, thereby minimizing the level of noise generated by surface transportation.

Jobs/Housing Balance

GOAL 2: Reduce emissions associated with vehicle miles traveled by enhancing the jobs/housing balance of the subregion of western Riverside County.

Policies:

2.1 Create an employment center within the housing rich environment of the subregion.

2.2 Encourage a diverse range of employment opportunities within the planning area that best matches the labor force of the subregion.

2.3 Work cooperatively with adjacent and nearby housing-rich communities to improve overall job/housing balance in the subarea.

Land Use/Transportation Planning

GOAL 3: Reduce air pollution through proper land use, transportation, and energy use planning.

Policies:

3.1 Locate ancillary uses within business and employment centers to reduce the number of vehicle trips and lessen the vehicle miles traveled.

3.2 Locate service uses and facilities in convenient proximity to employment and business center areas to encourage pedestrian or alternative transit to reduce the number of vehicle trips.

3.3 Develop a bike lane network that will link the bike lanes to residential areas adjacent to the Planning Area and Metrolink Stations to encourage non-motorized travel within the planning area.

3.4 Encourage ride share programs.

3.5 Parking facilities shall be designed to safely accommodate and support alternative modes of transportation and preferential location of alternative fuel vehicles and mass transit services.

Advancement of Technologies

GOAL 4: **Pursue reduced emissions for stationary and mobile sources through the use and implementation of new and advancing technologies.**

Policies:

4.1 Pursue the use of equipment with reduced or zero emissions for stationary and mobile source equipment, such as an "electrified" aviation ramp.

4.2 Seek funds and grants to develop and implement reduced or zero emission equipment for aviation relative uses and major sources of emissions.

4.3 Where feasible, assist in providing mechanisms to support pilot and demonstration projects, for the use of equipment and technologies that have reduced or zero emissions.

4.4 Promote for all development and encourage end-users to employ emission reducing or zero source equipment and processes.

4.5 Promote the development and advancement of reduced and zero emission technologies through research and development.

Intergovernmental Cooperation

GOAL 5: Maximize the effectiveness of air quality control programs through coordination with other governmental entities.

Policies:

5.1 Require end-users to demonstrate that South Coast Air Quality Management District permits have been obtained.

5.2 Support state and federal legislation that results in improved air quality in the South Coast Air Basin.

5.3 Participate and cooperate with neighboring jurisdictions in efforts to improve regional and sub-regional transit, and design transit-oriented development within the planning area.

5.4 Provide assistance through the land use permitting process to help industries/businesses locating within the planning area in complying with South Coast Air Quality Management District rules and regulations.

5.5 Review development projects to determine the potential air quality impacts and provide appropriate mitigation, where necessary.

Vehicle (Engine) Emissions

GOAL 6: Reduce emissions associated with vehicle/engine use.

Policies:

6.1 Reduce idling emissions by increasing traffic flow through synchronized traffic signals.

6.2 Work with Riverside Transit Agency (RTA) to develop a local transit system and facilitate connections of the local transit system with regional transit systems.

6.3 Encourage diversion of peak hour truck traffic, whenever feasible, to off-peak periods to reduce roadway congestion and associated emissions.

6.4 Work with Caltrans and traffic engineers to insure that roadways and freeway on-ramps that are heavily utilized by trucks are designed to safely accommodate trucks.

6.5 Encourage trucks operating within March JPA Planning Area to maintain safety equipment and operate at safe speeds so as to reduce the potential for accidents which create congestion and related emissions.

6.6 Reduce vehicle emissions through improved parking design and management that provide for safe pedestrian access to and from various facilities.

6.7 Promote ancillary uses to be located with primary uses, such as child care, cafeterias and other supportive service uses, where appropriate.

6.8 Encourage the use of compressed natural gas, clean diesel and/or alternative fuels in engines through the adoption of a low emission vehicle ordinance.

Energy Consumption

GOAL 7: Reduce emissions associated with energy consumption.

Policies:

7.1 Support the use of energy-efficient equipment and design in the March JPA Planning Area for facilities and infrastructure.

7.2 Encourage incorporation of energy conservation features in development.

7.3 Support passive solar design in new construction.

7.4 Support recycling programs which reduce emissions associated with manufacturing and waste disposal.

7.5 Support drought-resistant vegetation in landscaping areas to reduce energy needed to pump water.

Building and Operational Emissions

GOAL 8: Reduce air pollution emissions and impacts through siting and building design.

Policies:

8.1 Support the use of low polluting construction materials and coatings.

8.2 Encourage the separation of sensitive receptors, such as schools and hospitals, from sources of toxic emissions.

8.3 Encourage the separation of sensitive receptors from potential carbon monoxide hotspots.

Particulate Emissions

GOAL 9: Reduce fugitive dust and particulate matter emissions.

Policies:

9.1 Require all feasible fugitive dust reduction techniques to be utilized during construction activities.

9.2 Support the use of efficient street cleaning equipment and practices.

9.3 Support land division design which minimizes grading and maintains the natural topography to the maximum extent feasible.

9.4 Create standards to implement rules governed through the South Coast Air Quality Management District, such as Rules 403 and 1186.

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NOISE PLAN

It is the goal of the March JPA to provide an environment within the planning area which is free of excessive and disruptive noise. The March JPA's Noise Compatibility & Control Plan outlines ways to achieve a noise compatible environment. The Plan calls for the reduction of exposure of excessive noise to land uses in areas currently subject to high levels of noise and the prevention of the creation of excessive noise in the future. It combines different approaches to noise mitigation, including:

Controlling noise at the source (mufflers, insulations, wall construction, seals, etc.);

Interrupting the noise path (through the use of barriers, buffers, site orientation, walls, landscaped areas, berms, trees, hedges, buildings, etc.);

Separation of noise sources and sensitive uses by distance;

Blocking the noise at the receptor (insulation, smaller openings, air conditioning, thick or double glazing, fixed panes, etc.); and

Use of more pleasant sounds to mask the intrusive noise (water, rustling leaves, music, etc.).

Controlling noise at the source and siting compatible land uses within noise contours are the most effective ways of preventing noise problems. Since this is not always possible (as with vehicle, truck and train noises, existing "noisy" uses, and activities involving a large group of people), interrupting the noise path is the most common noise reduction measure. When noise barriers are not effective, separating the use or blocking the noise at the receptor may be necessary. The March JPA will implement various methods for noise control, choosing measures which are feasible, appropriate, and effective, according to the prevailing conditions.

Compatibility between noise and land use is achieved through the separation of noise sensitive uses and noise sources in the planning area. Guidelines for compatibility deal with the general distribution, location, and intensity of land uses in order to alleviate

and prevent noise problems. This may include locating noise sensitive uses away from the aviation field, streets carrying high traffic volumes and locating noise sensitive uses away from major sources of stationary noise (industrial areas, intensive commercial developments). The development of highways and major arterial and intensive land uses (industrial and commercial uses) should be located away from noise sensitive land uses. Where these measures are not possible, sound barriers, buffers, landscaping, and other noise attenuation measures shall be provided. The March JPA should adopt the Noise Compatibility Criteria established by the State Office of Noise Control.

Land near the railroad tracks is currently vacant and has been designated as Commercial and Industrial uses, in order to lessen or prevent noise problems. Planned land uses along the freeway are primarily commercial and industrial. These uses are compatible with a high noise environment created by the freeway and use of the railroad. State and federal governments preempt local governments on the control of noise from vehicles. Future noise problems are identified through estimates of traffic and their associated noise on major roadways. Noise levels at build out of the Land Use Plan were estimated using the projected traffic volumes on March JPA Planning Area roadways. The California Department of Transportation, SOUND 32, Highway Traffic Noise Model (release 1.41, 1991) was used to estimate the roadway noise levels. Table 3-1 provides the distance of the 70, 65, and 60 dB CNEL noise contours from the roadway centerline.

The estimates in Table 3-1 are calculated on the basis of no noise buffers and/or barriers within each development or street segment, therefore attenuated noise will be lower than indicated. Generally, uses within the 65 dB CNEL contour will be subject to high noise levels. The March JPA should require noise mitigation for noise-sensitive uses starting at the 60 dB CNEL contour. These mitigation measures may include, but not be limited to, site planning techniques which minimize noise transmission (such as locating driveways, loading areas, machinery, and other noisy areas farthest from a noise sensitive use); and acoustical design to achieve acceptable noise levels.

As with noise generated from vehicles, federal and state governments preempts local control of noise from aircraft operation and federally funded projects, such as airports regulated by the Federal Aviation Administration (FAA). In 1992, prior to base realignment, the Air Force conducted an aviation study known as the AICUZ Study.

The study analyzed the operations of the airfield and the associated noise generation; from which noise contours were identified. Along with the noise contours, land use compatibility standards were established to assure that the airfield remains operational by minimizing the threat of encroachment of incompatible land uses. With base realignment, a new AICUZ study was completed in 1998. The 1998 AICUZ Study was updated to reflect the aviation operations permissible under the Joint Use Agreement, as well as the continued military operations at March. Furthermore, a comprehensive land use plan (CLUP) for March ARB/March Inland Port is being developed by the County of Riverside Airport Land Use Commission. This draft document provides noise standards and criteria for land uses within aviation operation areas and pursuant to Caltrans criteria. Land use decisions and regulations by the March JPA shall adhere to the standards of both the AICUZ and CLUP.

TABLE 3-1
CALCULATED FUTURE ROADWAY NOISE LEVELS

Roadway Segment	Distance From Roadway Centerline to CNEL (in feet)			CNEL 50 ft. from Centerline of Near Travel Lane (dBA)
	70 CNEL	65 CNEL	60 CNEL	
ALESSANDRO BOULEVARD				
Trautwein - Barton	80	310	640	72.7
Barton - Frontage Rd	80	320	670	73
Frontage Rd - Elsworth	80	315	650	72.8
CACTUS AVENUE				
'Loop' Rd - Plummer	35	120	255	67.3
Plummer - Harmon	35	110	235	66.8
Harmon - Elsworth	75	265	556	72.5
Elsworth - Frederick	55	190	395	70.3
VAN BUREN BOULEVARD				

TABLE 3-1
CALCULATED FUTURE ROADWAY NOISE LEVELS

Roadway Segment	Distance From Roadway Centerline to CNEL (in feet)			CNEL 50 ft. from Centerline of Near Travel Lane (dBA)
	70 CNEL	65 CNEL	60 CNEL	
East of Trautwein	75	295	610	72.4
Trautwein - Orange Terrace	80	320	670	73
Orange Terrace - Village West	80	315	660	72.8
Village West - I 215	95	390	805	74.2
TRAUTWEIN ROAD				
North of Alessandro	75	260	540	72.4
South of Alessandro	50	157	375	69.6
ORANGE TERRACE PARKWAY				
Trautwein - Van Buren	35	115	250	67.2
Van Buren - Barton	20	70	150	63.7
BARTON ROAD				
Orange Terrace - Krameria	20	70	150	63.7
PLUMMER ROAD / VILLAGE WEST DRIVE				
Alessandro - 'Connector' Rd	35	130	270	67.7
'Connector' Rd - Van Buren	30	110	235	66.7
South of Van Buren	20	60	125	62.7
HARMON				
'Connector' Rd - Van Buren	20	75	155	64
Cactus - 'Connector' Rd	25	90	190	65.3

AIR QUALITY PLAN

Air quality affects health and influences the quality of the environment. In the planning area, local air quality can be positively affected by altering traditional commuting patterns and construction practices. The March JPA Air Quality Section focuses on reducing air quality impacts associated with the generation of emissions and fugitive dust. Implementation measures are identified to promote a more efficient land use mix, reduce VMT, and practical methods of site development to be sensitive to natural topography and adjacent land uses.

Local air quality is also influenced by the predominant transportation modes. Creating a land use pattern which provides for employer needs and encourages non-motorized and mass transit facilities are an important element in improving local air quality. Supporting transportation alternatives to the single occupant vehicle is another component in attaining improved air quality. The Federal CAA and the CCAA have devised federal and state air quality standards and require areas in violation to prepare and implement compliance measures. The AQMP prepared by SCAQMD addresses the CCAA requirements and identifies local measures on mobile and stationary sources of pollution. The Growth Management Plan prepared by SCAG identifies measures to assist subregions in achieving a more balanced jobs/housing ratio.

Ozone generated by urban activities within the Los Angeles Basin is carried by the predominant wind patterns and contributes to ozone concentrations in the March JPA Planning Area. March JPA has little control on these pollutants and those from nearby communities. Suspended particulates, which are less likely to be transported over long distances, are generated by local winds carrying dust from grading and construction activities, and uncultivated land in the area. In the March JPA Planning Area, air quality concerns focus on cleaner aviation operations, reduction in VMT, congestion management and implementing construction and grading practices which reduce the amount of fugitive dust generated.

Reducing VMT is strongly attached to creating an increased number of jobs within the housing rich environment of the western Riverside County Subregion. Additionally, with the creation of an employment center, the need to provide for alternative transportation operations is essential. Because Southern California has been particularly

slow to adopting alternative transportation modes, a variety of incentives need to be given to riders in the initial stages of operation. These may include promotions and discounts available to transit riders, bicycle riders, and walkers. Developing the employment base of the planning area to include goods and services, generate additional employment opportunities, and fulfilling a greater portion of the employer's service needs will help meet this objective.

Limiting the number of available parking spaces and offering incentives to employees who use alternate transit modes have also proven effective in reducing the number of vehicle trips. March JPA should explore smaller scale transit options including vanpool, shuttle, and employer shuttle operations which could provide service from mass transit facilities and residential areas within the sub-region to the March JPA's employment district. Additional mechanisms resulting in reduced vehicle miles traveled include: teleconferencing and flexible work schedules. The March JPA can assist this process by encouraging employees and visitors to utilize new transit alternatives, and assist employers and RTA to formulate transit schedules throughout the subregion that best serve employees in providing mass transit services to employers.

Uncultivated land and land undergoing grading and construction activities result in soil disturbance and fugitive dust. Wind-borne dust is carried to surrounding areas by the predominant wind pattern. Although fugitive dust is not harmful to human health, it settles on unenclosed objects including cars, windows, and structural appurtenances and is generally a nuisance. Local winds also transport fugitive dust.

The application of soil stabilizers to uncultivated land and site development activities is effective in preventing the generation and spread of fugitive dust. Planning and situating development to follow the natural contours of the land minimizes the extent of grading necessary. Implementing street cleaning practices and discouraging the use of leaf blowers also prevents the transport of fugitive dust.

The SCAQMD has developed a number of ordinances to improve air quality in the SCAB. New development is subject to controls on the amount of vehicle trips, congestion and air pollutants they generate, and must comply with the adopted measures or face penalties. Because the SCAQMD measures focus on modifying traditional practices, as well as developing or applying advanced technological controls,

employers are given control and responsibility for positively influencing local air quality. March JPA is committed to achieving reduced ozone and suspended particulate concentrations and improving local air quality.

Unimpeded vehicle flow along arterial corridors and reductions in the amount of waste can effectively decrease air pollutant emissions. Synchronizing traffic signals and diverting peak hour truck traffic, for example, improves vehicle flow. Waste recycling programs reduce the need for composting and landfill space. A corresponding reduction in truck trips is also achieved. The use of energy conservation measures at establishments can reduce operational costs and power generation plant emissions.

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NOISE IMPLEMENTATION PROGRAMS

Implementation of the Noise Compatibility & Control Plan is proposed through the adoption, realignment or compliance with local laws such as noise ordinances, requirements for acoustical analyses, and compliance with state and federal legislation.

1. Noise Standards

The March JPA shall review development projects based upon 1) compatibility with existing noise contours, and 2) identification of noise level generated from noise sources to actuate compatible land uses within these areas. Development shall be in compliance with state and federal standards, which establish thresholds for noise abatement and attenuation in order to reduce the potential for health hazards as associated with high levels of noise. Furthermore establishments shall provide measures to control noise at the source and control its intrusion into adjacent properties. This may include:

Adherence to noise and land use compatibility standards;

Acceptable noise levels at the boundaries of the property;

Requirement for buffers, sound barriers, landscaping, and other measures for incompatible land uses where unavoidable;

Restrictions of operating hours and length of operation for construction activities and equipment, power mowers, garbage collections, street sweeping, truck deliveries, leaf blowers;

Restriction on truck routes, vehicle speeds and regulation of traffic flow;

Periodic investigation of problem noise sources;

Controls on vibration effects that accompany or result from loud noise.

2. Aviation Noise and other Noise Sources

The federal government preempts local control of noise from aircraft operations, railroads, freeways, occupational noise, and federally-funded projects. The State controls vehicular noise at the time of manufacture and during operation on public roads, as well as noise in the workplace, classrooms, libraries, motels and hotels.

The March JPA shall coordinate with federal, state and county agencies on noise control programs and legislation, where necessary or required by law. These agencies include the Department of the Air Force, Federal Aviation Administration, Department of Housing and Urban Development, Department of Labor, the Environmental Protection Agency, the Federal Highway Administration, State Department of Health, State Department of Transportation (Caltrans), County of Riverside, and the State Department of Motor Vehicles. These agencies are involved in one or more of the following noise concerns: aviation noise, airport compatibility, industrial noise, highway and freeway noise, occupational noise, construction noise, land use compatibility, building siting and noise, product noise, and vehicular noise. March JPA shall work with the Department of the Air Force for continued coordination and control of aviation related noise and land use compatibility programs through general updates to the AICUZ study and CLUP as necessary, the movement toward quieter airplanes within the civilian sector of aviation.

AIR QUALITY IMPLEMENTATION PROGRAMS

The Air Quality Element addresses local issues and programs to improve air quality. The Element emphasizes actions that the March JPA should take, as well as programs that will facilitate participation by local employers and residents in efforts to improve local and regional air quality. These are discussed below:

1. Public Transit Program

March JPA shall explore the options of providing smaller scale transit including vanpool, shuttle, and employer shuttle operations which could provide service between the March JPA's employment and commercial areas to the residential areas of the subregion, and to Metrolink and other mass transit stations. March JPA shall also examine routes which would provide the most efficient transit service.

If one or more transit options are selected and implemented, transit information and schedules should be made available at bus stops and shelters, and at larger commercial and industrial developments in the March JPA Planning Area. The March JPA shall promote the use of local transit, through the most effective means possible.

2. South Coast Air Quality Management District (SCAQMD) Funds

The SCAQMD has established a fund for education programs on public transit and innovative demonstration programs that reduce individual passenger vehicle use. The SCAQMD also has funds for innovative projects which encourage alternate modes of travel and reduce the need for parking. March JPA should seek funding from the SCAQMD Mobile Source Discretionary Fund and Vehicle License Fund for local programs.

3. Flextime Work Schedules

March JPA should work with employers in providing trip reduction programs and work schedules that reduce peak hour volumes.

4. Bicycle and Pedestrian Facilities

March JPA shall plan and provide for facilities to serve commuter bicyclist and pedestrian access into and within the planning area. March JPA should encourage employers to provide amenities such as lockers and showers to employees that use non-motorized transportation facilities. Furthermore, March JPA should actively pursue funding sources for said facilities and coordinate with sub-regional agencies to complete a system of facilities.

5. Bicycle Facilities

The March JPA should develop regulations for secure parking areas for bicycles and showers and locker facilities at commercial and industrial facilities. This will encourage bicycle use for local employees.

6. Teleconferencing

March JPA shall promote teleconferencing activities for businesses. It should examine the feasibility of an ordinance requiring professional office developments to establish teleconferencing spaces.

7. Traffic Safety Programs

The March JPA shall coordinate traffic safety programs with adjacent cities and communities. It shall coordinate with Caltrans on the design and maintenance of Interstate 215, to facilitate access and minimize accidents and congestion.

8. Traffic Signals

The March JPA shall routinely evaluate the need for traffic signals and signs, and install and remove them as required. The March JPA will identify those intersections where traffic controls may be added to enhance the roadway level of service.

9. March JPA Vehicles and Equipment

March JPA should purchase vehicles and other equipment for public use that use low-emissions fuel that are cost effective to purchase, use and maintain. It should require that vehicles purchased for the March JPA's vehicle fleet complies with SCAQMD's existing and proposed regulations, as required by the California Clean Air Act.

10. Relationship of Jobs to Housing

March JPA shall assist with efforts to achieve a greater jobs/housing balance within the sub-region. March JPA shall evaluate the impacts on jobs/housing balance of new commercial and industrial development, and cumulatively address these impacts by encouraging increased employment opportunities for the Western Riverside County subregion and the communities thereof.

11. Civilian Aviation

March JPA shall assure that aviation operations receive the appropriate reviews and approvals, such as the Air Quality Conformity Analysis for Joint Use Aviation Operations. This includes compliance with the State Implementation Plan.

12. Energy Conservation

Title 24 of the California Administrative Code outlines insulation and energy conservation standards for new development. A number of other energy conservation practices and design features are recommended by state and local agencies and utility companies. The March JPA should enforce state laws on energy conservation design and appliances.

Natural gas and power purveyors develop energy conservation designs and measures and offer consultation services to developers and users. March JPA can take advantage of these services by initiating contact between utility companies and developers during the review process. It shall encourage developers to consult with utility companies on possible energy conservation measures to incorporate into new developments.

There are brochures available and informational materials from utility companies that explain the need for energy conservation and the different ways this may be achieved. Copies of energy conservation brochures should be made available at the offices of the March JPA for developers. The March JPA should also encourage the use of passive solar design systems.

13. Source Reduction and Recycling Element

The California Integrated Waste Management Act of 1989 addresses the need for the reduction of solid wastes. It requires counties and cities to achieve a 25 percent waste reduction by 1995 and a 50 percent reduction by the year 2000. These cuts may be implemented by recycling programs, composting, source reduction or other means. March JPA shall comply with the County of Riverside's Source Reduction and Recycling Element.

14. Construction-Related Emissions

The March JPA should develop a program, in cooperation with existing SCAQMD regulations, which will be effective in controlling short-term construction related emissions. The existing SCAQMD regulations focusing on fugitive dust control will serve as the framework for the March JPA's program. They include:

1. Use low emission mobile construction equipment (e.g., tractor, scraper, dozer etc.).
2. Water site and clean equipment morning and evening.
3. Spread soil binders on site, unpaved roads and parking areas.
4. Apply approved chemical soil stabilizers according to manufacturers' specifications, to all inactive construction areas (previously graded areas which remain inactive for 96 hours).
5. Reestablish ground cover on construction sites through seeding and watering.
6. Employ construction activity management techniques, such as: extending the construction period; reducing the number of pieces of equipment used simultaneously; increasing the distance between the emission

sources; reducing or changing the hours of construction; and scheduling activity during off-peak-hours.

7. Pave construction roads, and sweep streets if silt is carried over to adjacent public thoroughfares.
8. Reduce traffic speeds on all unpaved road surfaces to 15 miles per hour or less.
9. Require a phased-schedule for construction activities to minimize emissions.
10. Suspend grading operations during first and second stage smog alerts.
11. Suspend all grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour.
12. Wash off trucks leaving the site.
13. Maintain construction equipment engines by keeping them tuned.
14. Use low sulfur fuel for stationary construction equipment.
15. Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
16. Use low emission on-site stationary equipment.

15. Low-Polluting Materials

The March JPA shall explore available information on low polluting construction materials and coatings which can be made available for developers and interested persons. It shall consider the air pollution impacts of coatings in the environmental review of proposed projects and credit the use of low polluting materials as mitigation measures. The March JPA shall also encourage best available control technology in commercial and industrial operations to reduce pollutant emissions.

16. Toxic Emissions

The March JPA shall evaluate all new industrial development to ascertain if any toxic compounds are used in the operation and require that they comply with all equipment, risk assessment, and notification requirements of the SCAQMD prior to being issued a building permit. It shall actively discourage industrial development that may release toxic emissions from locating near sensitive receptors (schools, medical facilities, and residences).

17. Air Quality Coordinator

The March JPA shall keep track of the SCAQMD rule development process and compliance with the AQMP. A March JPA shall be responsible for coordinating with the SCAQMD, SCAG and WRCOG in monitoring the implementation of air quality programs and regulations in the March JPA Planning Area. The air quality coordinating programs would express the March JPA's position on state and federal air quality regulations.

18. SCAQMD Permits

The March JPA should provide a summary of SCAQMD regulations for local use or obtain information brochures from the SCAQMD, and provide assistance for compliance with SCAQMD rules. March JPA shall maintain information on current and proposed SCAQMD regulations and work with the SCAQMD to assist industries locating in the March JPA Planning Area in complying with SCAQMD regulations. Prior to issuing occupancy permits, the March JPA shall require written proof that the applicant has obtained all required SCAQMD permits and is in compliance with SCAQMD rules.

GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

Housing Element

SECTION 4: HOUSING ELEMENT

SUMMARY

A Housing Element is a required element of a general plan. State Planning and Zoning Law and the regulations of *Section 65580-65589.5 of the California Government Code* specify the requirements for housing elements. The Housing Element of the March Joint Powers Authority General Plan incorporates the four housing elements of each member jurisdiction of the March Joint Powers Authority (JPA), by reference; each which are certified by the Department of Housing and Community Development.

March JPA is the local redevelopment agency under the Department of Defense base reuse process. A base master reuse plan was prepared for March Air Force Base (AFB), which realigned to March Air Reserve Base (ARB) April 1, 1996. The master base reuse plan for March does not create additional housing opportunities within the planning area due to incompatible land uses with the airfield, the need to focus on the reestablishment of the numerous jobs lost due to base realignment, and the housing rich environment of Western Riverside County. The general plan of the March JPA is an implementation tool of the Master Base Reuse Plan prepared for March AFB for realignment.

Therefore, incorporation of the four member jurisdictions' housing elements by reference is consistent with the goals and policies of the Joint Powers Commission (JPC) and the base reuse process. The Department of Housing and Community Development (HCD), in recognition of the unique governance and responsibilities of March JPA and the adequacy of housing sites within the member jurisdictions, has resolved that incorporation by reference of the four housing elements complies with the guidelines and requirements of a Housing Element. Furthermore, the March JPA Housing Element is consistent with the enabling legislation for March AFB Redevelopment Project Area to utilize the 20% housing set-aside funds within the member jurisdictions.

HOUSING ELEMENT

The following four certified housing elements are incorporated herein by reference:

City of Perris:
Resolution Number 2398
October 31, 1994

City of Moreno Valley:
Resolution Number 88-75
September 20, 1988
Resolution Number 91-64
May 14, 1991
Resolution Number 92-130
December 8, 1992

City of Riverside:
Resolution Number 17172
June 20, 1989
Resolution Number 18226
April 27, 1993

County of Riverside:
Resolution Number 91-036
June 4, 1991

A copy of each Housing Element is on file with the March Joint Powers Authority.

GENERAL PLAN

of the

MARCH JOINT POWERS AUTHORITY

Resource Management Element

SECTION 5: RESOURCE MANAGEMENT ELEMENT

INTRODUCTION

Natural resources within the March Joint Powers Authority (JPA) Planning Area includes land and water resources, plant and animal life, cultural resources, and open space. Cultural and historical resources include historic structures and facilities, and archaeological and paleontological artifacts in the planning area. Open space refers to land or water which is unimproved and devoted to the preservation of natural resources, and includes vacant land, parks, and recreational facilities. Within the March JPA Planning Area, open space includes rock outcropping hillside areas which limit development, and undeveloped areas which comply with existing land use controls such as building setback areas, aviation restriction and utility easements. Open space and recreational facilities include the Lt. Gen. Old Golf Course, March Field Museum, miscellaneous recreational facilities located in the Northeast Planning Subarea, riparian and open space habitat areas, and the expansion area for the Riverside National Cemetery.

Natural and cultural resources are limited, often non-renewable and need to be carefully preserved and managed. This will prevent potential misuse and ensure their future availability. The March JPA has identified important local resources and the necessary preservation programs to prevent their destruction and exploitation and to ensure that conservation efforts are consistent and equitable. The March JPA General Plan Resource Management Element (RME) outlines conservation programs that deal with resource utilization, preservation techniques and the regulation of activities which affect or preclude the utilization of resources. It includes the maintenance of open space areas and the provision of parks and recreational facilities.

Relationship to the General Plan

The Resource Management Element of the March JPA General Plan combines the mandated Conservation and Open Space Elements. The RME complies with regulations in *Sections 65302(d) and 65302(e) of the California Government Code* and the *State Mining and Reclamation Act*. According to these requirements, this element must contain goals and policies that further the protection and maintenance of the State's

natural resources, such as water, soils, wildlife, minerals, and other natural resources, and prevents their wasteful exploitation, degradation, and destruction. This element must contain goals and policies concerned with managing all open space areas, including undeveloped lands and outdoor recreation areas. Specifically, open space includes that which is used for the preservation and managed production of natural resources, that which is used for outdoor recreation, and that which is left undeveloped for public health and safety reasons. The RME identifies significant resources within the planning area and establishes a plan for their conservation, management, or preservation.

The March JPA RME addresses conservation issues to increase awareness of the presence and condition of natural and cultural resources and to promote the advantages of conservation and management. The Resource Management (conservation) Plan of this element consists of independent programs for the management of soil resources, the conservation of groundwater resources, the protection of plant and animal life, the preservation of visual qualities, and cultural and historic resources. The plan will help maintain an ecological balance and improve the quality of the community in the March JPA Planning Area.

The RME also fulfills the requirements of *Section 65560 to 65570 of the California Government Code* regarding the preparation of an open space plan for March JPA Planning Area. The Element contains an Open Space and Recreation Plan for the comprehensive conservation of the planning area's open space land. Specific action-oriented programs serve as the primary implementation tool of the Open Space and Recreation Plan. All projects, including the conservation and disposal of open space lands, shall be consistent with the plan. In addition, Public Resources Code Section 5076 requires the open space element to consider demands for trail-oriented recreational use and develop specific open space programs which respond to these demands. The feasibility of integrating trail routes or "links" within the appropriate segments of the county and state trail system is considered in this Element.

Open space and recreation issues are brought together because areas preserved as open space are valuable resources for both outdoor recreation and scenic enjoyment. Also, the major open space areas in the March JPA Planning Area present opportunities for the conservation of existing natural resources. The goals and policies of this Element build upon those in other components of the General Plan. The Land Use Element

designates specific areas for open space and conservation areas. The Risk Management Element identifies areas with constraints that should be preserved in open space for public health and safety reasons.

Summary of Issues

Conservation, open space, and recreation issues that effect the March JPA Planning Area is summarized below. More detailed information on these topics can be found in the Resource Management Profile Report.

Water Resources: The planning area is dependent upon imported water supplied through Western Municipal Water District. This includes use of water from the Colorado River's resources. Drainage courses also support riparian habitats and provides flood control. Areas defined as "wetlands" are located along the Heacock and Cactus Channels (Exhibit 5-2). The preservation of groundwater and local streams secures the upgrading of quality groundwater supply, serves flood control purposes, and maintains the area's riparian areas.

Soils: Soils within the planning area are generally suitable for development purposes. Soil resources within the West March Planning Subarea have large areas of rock outcroppings, and the Air Force in prior years permitted two, limited scale gravel pits to be operated. These pits have been closed for greater than a decade. No sand, rock and gravel resources have been identified in the planning area by the Division of Mines and Geology.

Biologic Resources: The occurrence of both wetland and vegetation, and species demonstrates biological resources within the planning area. The habitat and biological species correlate with riparian areas and other natural elements. Within the March JPA Planning Area, the importance and value of habitats is strengthened where two or more habitats and vegetative types converge. There are sensitive plant and animal species within the March JPA Planning Area.

Historic District: Within the Northeast Planning Subarea is the "original" military base area. Officially declared by the War Department in 1918, the one

square mile base was named Alessandro Aviation Field and later changed to March Air Field. Construction of permanent facilities included; 129 military family housing units (Green Acres), commanding officers' residence, hospital, administration building, barracks, hangars and other support facilities. These facilities built between 1927 and 1943 were constructed within a distinctive triangular area northeast of the flightline. The March Field Historic District was nominated for listing on the National Register of Historic Places (NRHP) with the concurrence of the California State Historic Preservation Officer (SHPO) (Exhibit 5-6).

The District is significant for a number of reasons, including the continuity and integrity of architectural style and technological construction within a planned community environment. The sheer number and scale of hollow wall concrete buildings at March ranks amongst the most significant examples. Additionally, the unity of design encompasses residential, administrative and industrial buildings.

Cultural Resources: The planning area has been surveyed for cultural resources relative to archeological and paleontological resources. The conclusions of these surveys have determined that no sites or artifacts are eligible for inclusion within the National Register. Grinding slicks within the rock outcroppings within the West March Planning Subarea have been found, and concluded by Office of Historic Preservation as sites that (1) cannot be temporally placed within a regional chronology because they lack associated artifacts, and (2) lack midden (an indication of the presence of subsurface deposits) that would indicate long-term use or occupation.

Riparian & Habitat Resources: The open areas of the planning area mainly consist of grasslands containing non-native species of European origin, isolated costal sage scrub remnants, and localized riparian habitats along draws and depressions. Both flora and fauna exist within the March JPA Planning Area, including habitat for the federally listed endangered Stephens' Kangaroo Rat (SKR), of which Section 7 is conducted between the U.S. Air Force and U.S. Fish & Wildlife Service (Exhibit 5-1).

Scenic Corridors/Vistas: The gently sloping hill tops within the West March Planning Subarea are prominent scenic characteristic of the planning area; along with the scenic Van Buren Boulevard corridor, which commences at Riverside National Cemetery near Interstate 215 and extends to the City of Riverside (Exhibit 5-4). Van Buren Boulevard bisects the West March Planning Subarea and provides uninterrupted views of the surrounding gentle rolling terrain, valley floors, and panoramic vistas of the more distant San Bernardino and San Jacinto Mountains. Within the planning area, these visual units combine diverse landscape types with topographical features. Conservation of these viewsheds and scenic vistas ensures preservation of the area's scenic qualities.

Open Space Lands: A greater portion of the planning area is undeveloped, with the West March Planning Subarea primarily vacant and undeveloped. The West March Planning Subarea also contains the golf course, installation restoration program (IRP) clean up sites (Exhibit 5-5), the airfield and aviation related clear zones, and expansion areas for the adjacent Riverside National Cemetery.

Recreation Facilities: Recreational facilities in the planning area consist of a golf course, March Air Field Museum, former recreation and equestrian grounds, with future recreation facilities for a regional park within a former installation restoration site (Exhibit 5-3).

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GOALS AND POLICIES

The goals and policies of this Element address the various conservation and open space issues of the March JPA Planning Area, as identified in the RME Profile Report. They include natural resources, water resources, geologic resources, biological resources, historical and cultural resources, energy resources, and open space areas and recreational facilities. Resources within the planning area can become strained as development creates a greater demand on non-renewable energy sources, existing facilities and services, and significant natural features. Development can take advantage of the planning area's features such as its natural land forms to provide for visual relief, recreational uses, and community identity. The March JPA has identified these issues as important to preserving the planning area's natural resources while accommodating growth and development. The RME goals and policies addressing these issues will provide a firm direction for the preservation, use, protection, management, and improvement of existing resources in the March JPA Planning Area.

Water Resources

GOAL 1: **Conserve and protect surface water, groundwater, and imported water resources.**

Policies:

1.1 Where possible, retain local drainage courses, channels and creeks in their natural condition.

1.2 Protect groundwater and surface water resources from depletion and sources of pollution.

1.3 Cooperate with federal, state and County governments and other agencies on the maintenance and improvement of the quality and quantity of local and regional groundwater resources.

1.4 Require development to conserve water resources, including the use of water-efficient plumbing fixtures and irrigation systems.

1.5 Conserve imported water by requiring water conservation techniques, water-conserving and recycling processes, drought-resistant landscaping, and reclaimed water for irrigation, when available and appropriate.

1.6 Promote the use of drought tolerant landscaping in development, and encourage the use of reclaimed water for irrigation in parks, golf courses, and industrial uses, as well as for other urban uses, whenever feasible and where legally permitted.

1.7 Assist responsible public agencies in eliminating the discharge of toxic materials and untreated sewage into the March JPA drainage and groundwater system.

1.8 Assure that development projects comply with regulatory agency requirements, including federal, state and regional regulations.

Minimize Flood Hazards

GOAL 2: Control flooding to reduce major losses of life and property.

Policies:

2.1 Require development within identified flood hazard areas to comply with Floodplain Management Regulations and criteria for the Federal Flood Insurance Program.

2.2 Ensure all proposed divisions of land divisions contain adequate building sites located outside of any natural drainage course.

2.3 Ensure that development does not divert storm water run off onto adjacent properties, or cause alterations of natural drainage courses that cannot be adequately handled by flood control improvements installed coincident with the development.

2.4 Cooperate with the Riverside County Flood Control and Water Conservation District and the Federal Emergency Management Agency (FEMA) to ensure that land uses and development proposed within major floodplain areas is consistent with planned improvements and the timing of their installation.

2.5 To the greatest extent possible, require development to use master flood control facilities and limit use of interim drainage facilities or open channels.

2.6 Open channels shall be encouraged, as appropriate, to maintain or enhance riparian habitat areas.

Earth Resource Conservation and Protection

GOAL 3: Conserve and protect significant land forms, important watershed areas, mineral resources and soil conditions.

Policies:

3.1 Conserve hillsides and rock outcroppings in the planning area through the use of master-planned developments which create a "campus-like" setting, and encourage the creative siting of building areas as a means of retaining natural areas and open space.

3.2 Encourage the use of contour grading methods when grading of hillsides.

3.3 Conserve mineral resources, if any are identified by the State Mining and Geology Board, by limiting or phasing development in the areas of the most desirable mineral extraction sites.

3.4 Reclaimed land impacted by mining shall be in accordance with the State Surface Mining and Reclamation Act.

3.5 Require and practice proper soil management techniques to reduce erosion, sedimentation and other soil-related problems.

3.6 Control erosion during and following construction through proper grading techniques, vegetation replanting, and the installation of proper drainage control improvements.

3.7 Require erosion control measures such as binders, revegetation, slope covers, and other practices which reduce soil erosion due to wind and water.

3.8 Protect important mineral resources, prominent and geological features by maintaining their locations in open space or through a protected status.

Energy Resources Conservation

GOAL 4: Conserve energy resources through use of available energy technology and conservation practices.

Policies:

4.1 Implement energy performance requirements established under the California Administration Code Title 24 Energy Conservation and Insulation Regulations.

4.2 Encourage innovative building, site design and orientation techniques which minimize energy use by taking advantage of sun/shade patterns, prevailing winds, landscaping, and building materials available to control energy usage.

4.3 Encourage the use and development of alternative and innovative energy resources and energy conservation techniques, where practical.

Flora and Fauna Resources

GOAL 5: **Conserve and protect significant stands of mature trees, native vegetation, and habitat within the planning area.**

Policies:

5.1 Where practical, conserve important plant communities and habitats such as riparian areas, wetlands, significant tree stands, and species by using buffers, creative site planning, revegetation and open space easements/dedications.

5.2 Encourage the planting of native species of trees and other drought-tolerant vegetation.

5.3 In conjunction with the Air Force, complete Section 7 consultation wit the U.S. Fish and Wildlife Service, and release lands designated as suitable for endangered species habitat through land trades or other acceptable means of mitigation.

5.4 In areas that may contain important plant and animal communities, require development to prepare biological assessments identifying species types and locations and develop measures to preserve recognized sensitive species, as appropriate.

5.5 Where practical, allow development to remove only the minimum natural vegetation and encourage the revegetation of graded areas with native plant species.

5.6 Work with state, federal and local agencies in the preservation and/or mitigation of recognized sensitive vegetation and wildlife in March JPA Planning Area.

Waste Management

GOAL 6: Provide an effective and efficient waste management system for solid and hazardous wastes that is financially and environmentally responsible.

Policies:

6.1 Either alone or with the County of Riverside Waste Management District, develop and adopt a Source Reduction and Recycling Element which comply with the State Solid Waste Reduction Act (AB 939).

6.2 Establish programs to minimize the volume and impact of solid waste generated by existing and future development.

6.3 Establish a program for the recycling and recovery of materials from demolition and reconstruction projects to lessen the impact to the landfills.

6.4 Coordinate with regulatory agencies in assuring that future development handles and disposes of hazardous materials in compliance with applicable regulations.

Historic and Cultural Resources

GOAL 7: Promote cultural awareness through preservation of the planning area's historic, archaeological and paleontological resources.

Policies:

7.1 Implement the approved Cultural Resource Management Plan prepared by the U.S. Air Force including the Maintenance Manual.

7.2 Preserve the Historic District through reuse of the area and comply with the requirements associated with the district as mandated by the Office of Historic Preservation and the requirement of the National Register of Historic Places.

7.3 Encourage the reuse of significant historic sites or structures, identified in the March JPA General Plan Profile Reports to maintain their historic significance and integrity.

7.4 Maintain the planning area's historic military past by preserving and enhancing the historic features with development and reuse and corresponding development and landscape patterns.

7.5 Require development proposals that are located on or near archaeological or paleontological resources to provide a cultural resources study that assesses potential impacts to the resource as a result of the proposed development. The report will include measures to avoid destruction of any significant cultural resources.

7.6 Require the preservation of identified cultural resources to the extent possible, prior to development, through dedication, removal, transfer, reuse, or other means.

Recreational Facilities

GOAL 8: Develop and maintain recreational facilities as economically feasible, and that meet the needs of the community for recreational activities, relaxation and social interaction.

Policies:

8.1 Provide active and passive park and recreational facilities, based on reasonable service areas within the planning area, to serve the unmet needs of the community and sub-region.

8.2 Encourage involvement of private investment in the development of recreational facilities, when appropriate, to increase the recreational opportunities of the area.

8.3 Seek out and pursue all forms of federal, state, local, private foundation and endowment support to assist in the development and programming of park and recreation resources in March JPA Planning Area.

8.4 Coordinate with the other recreational programs and agencies in providing regional recreational facilities in the area.

Protect and Provide for Open Space Areas

GOAL 9: Create a network of open space areas and linkages throughout the Planning Area that serves to preserve natural resources, protect health and safety, contributes to the character of the community, provide active and passive recreational use, as well as visual and physical relief from urban development.

Policies:

9.1 Encourage a "link" system of open space land to intermix with development providing both visual buffers and relief, as well as preservation and connectivity of the natural environment.

9.2 Seek funding sources for the preservation and maintenance of open space areas in the March JPA Planning Area.

9.3 Allow recreational uses on designated open space lands.

9.4 Manage passive recreational open spaces to optimize use while avoiding environmental disruption.

9.5 Link open space areas and trails with adjacent regional and local open space and trails networks.

9.6 Establish an open space conservation program that identifies areas of open space retention based upon capital costs, operation and maintenance costs, accessibility, needs, resource preservation, ability to complete or enhance the existing open space linkage system and natural environment.

9.7 As appropriate, designate washes, channels, utility corridors and transportation rights-of-way as major linkages of the open space network.

9.8 Enforce the standards of the military and FAA relative to aviation hazard areas to protect the use of the aviation field, and use of property within its vicinity.

9.9 Support the expansion of the Riverside National Cemetery.

Scenic Corridors and Vistas

GOAL 10: Establish standards for scenic corridors, trails and vistas that contribute to the quality of the planning area.

Policies:

10.1 Encourage the preservation of natural open space areas and scenic vistas.

10.2 Designate scenic corridors and vistas, and develop guidelines for development along or within these areas.

10.3 Consider designating open space corridors which include routes and trails of historic, scenic, or aesthetic value and include landscape and landform types.

10.4 Use design standards for transportation facilities that include street trees, pedestrian walkways, bicycle lanes, signing, lighting and setbacks to compliment and enhance the character of the planning area.

10.5 Develop design guidelines for streetscape, fencing, signage and project architecture to create a gateway area at the intersection of Van Buren Boulevard and Interstate 215.

RESOURCE MANAGEMENT PLAN

The earth's resources are limited and many of these resources are non-renewable. Conservation of important natural resources must be considered when accommodating and directing growth within a community. The proper conservation and managed use of these resources allow for their maximum utilization and continued availability for the future. Water, soil, and historic resources are limited in supply and conservation practices are necessary to ensure their availability. Plant and animal communities and their habitats need to be protected to maintain ecological balance. The Resource Management (conservation) Plan also identifies ways in which the March JPA Planning Area will conserve its water and energy resources while allowing the March JPA Planning Area to develop in a controlled manner.

Open space areas once developed, cannot be returned to their natural condition and thus, must be preserved. Parks and recreational facilities provide opportunities for leisure, enjoyment and relaxation, and visual relief. The scenic qualities of the planning area are often provided by viewsheds to natural landform and open spaces. The Resource Management Plan is concerned with the protection of the area's resources from neglect, destruction, depletion or obstruction. At the same time, it affords March JPA the maximum benefit from the presence of natural resources in the area.

The vast, undeveloped portions of the March JPA Planning Area offer opportunities for both preservation and use. Some of these lands contain natural resources, some have constraints that make them difficult to develop, and others provide potential connections to regionally significant open space uses. The Resource Management Plan identifies those lands that either contain natural resources to be conserved and managed, or open space that should be preserved to protect the public health and safety. The goals and policies contained in this Element reflect ways in which these lands can benefit the March JPA Planning Area.

The Resource Management Plan of the March JPA General Plan contains three major components: 1) the conservation of natural resources (Conservation Plan), 2) the provision of open spaces and recreation facilities (Open Space and Recreation Plan), and 3) the conservation of the historic district (Historic Preservation Plan). The Conservation Plan addresses soil resources, groundwater resources, vegetation and

wildlife, visual resources, and cultural resources. March JPA's Conservation Plan provides an area-wide approach to the utilization, conservation and management of these resources. It includes a program for the preservation of significant resources and standards for development in areas with identified resources. The Open Space and Recreation Plan addresses parks and recreation facilities, scenic areas, trails and multi-purpose open space areas, conservation of open space for public health and safety, and park and recreation development. Guidelines for development and master planning of facilities, including; the fostering of a "campus-like" setting through the clustering of development, inclusion of common areas, linkages and trails, buffer and open space areas, and preservation of environmentally sensitive areas including riparian areas, installation restoration program (IRP) sites and aviation restricted areas are outlined in the Open Space and Recreation Plan.

The historic preservation plan stems from a detailed inventory conducted in 1985 which evaluated the historical buildings at (then known as) March Air Force Base. The establishment of an historic district was recommended for nomination. The historic district proposed included the original one square mile and adjacent buildings constructed between 1928-1943. The March Field Historic District is located within a triangular area of about 158 acres, and consists of essentially all buildings and structures constructed between 1928 and 1943 as "part of the second generation of March Field" and one building from the original 1918 March Field. The March Field Historic District was nominated for listing on the NRHP with the concurrence of the California SHPO. A Historic Preservation Plan prepared by JRP Historical Consulting Services and Brian F. Mooney in 1994 addresses the treatment and long-term management of all formerly revaluated historical properties within the planning area. This plan was finalized by the U.S. Air Force as the Cultural Resource Management Plan and Maintenance Manual. This Plan was finalized prior to the March JPA retaining land use authority over the planning area.

Conservation Plan

The Conservation Plan portion of the Resource Management Plan is concerned with the preservation and utilization of natural resources within the March JPA Planning Area. The conservation of important natural resources must be considered when

accommodating and directing growth within a planning area. New growth can encroach upon and disturb environmentally sensitive areas, and economic growth represents additional demands for facilities. As the March JPA Planning Area develops, the need to carefully plan for and preserve its undeveloped lands containing natural resources becomes increasingly important and necessary to achieve a balance between urban development and the environment.

The March JPA Planning Area includes environmentally sensitive lands such as Stephens' Kangaroo Rat (SKR) habitat, wetlands, riparian areas, natural resources such as rock outcroppings, and archaeological and cultural resources. These lands are identified within the General Plan Profile Reports, and incorporated into the March JPA Planning Area's overall land use plan so that potential impacts to these resources can be minimized or avoided. Other natural resources important to the March JPA Planning Area include air, water, soil, and energy resources. Proper land use practices, including conservation measures, ensure that these resources are not degraded or misused. As increasing demands are placed on the March JPA Planning Area's resources, their long-term viability must be maintained.

The conservation of natural resources in the March JPA Planning Area includes identification of significant resources, development of conservation programs and establishment of standards for conservation or protection. Conservation of valuable resources can be achieved through responsible planning that balances the environment of the planning area with development. The identification of resources in the planning area generally corresponds with those areas where development has not disturbed or obstructed access to the resources.

Soils/Topography

Most of the March JPA Planning Area is topographically level although the western portion gently slopes upward toward the hillsides at and beyond the planning area boundary. A rolling hill within the northwest area exists in an area historically known as the Weapons Storage Area (WSA). Because of the planning area's relatively flat terrain, the hillsides in the northwest offer a scenic vista and backdrop for the planning area.

Development within the hillside area should be approached sensitively so as not to adversely disturb the hilltop in this area. Rock outcroppings in the March JPA Planning Area which represent an aesthetic characteristic of the planning areas' landscape. These rock outcroppings are especially prevalent in the western portion of the planning area as boulders erupting from the level grassy terrain and along riparian areas. The policies contained within this Element serve to protect the planning area's significant rock outcroppings by requiring development to integrate them into development design plans rather than destroying or ignoring this aesthetic resource.

Mineral Resources

Mineral resources within the March JPA Planning Area include rock resources as identified by the California Department of Conservation, Division of Mines and Geology. The Division of Mines and Geology also identifies Mineral Resource Zones (MRZ) within Riverside County, although none of these mineral zones currently exist in the March JPA Planning Area. March JPA recognizes and will conserve mineral resources that are identified by the State Department of Conservation.

Water Resources & Hydrology

The hydrology of the March JPA Planning Area is described in the March JPA General Plan Profile Reports. The profile reports also contain a description of the March JPA Planning Area's potable water distribution system. The March JPA is committed to protect water resources. The planning area derives its water supply from imported water, because of the poor ground water quality.

Local groundwater resources cannot serve March JPA Planning Area's water needs. However, conservation programs and measures will alleviate water demands and excessive water waste. Water conservation programs need to be developed in the planning area to promote the use of reclaimed water for landscaping and irrigation of public facilities and rights-of-way.

Groundwater in the March JPA Planning Area is no longer used as a potable water source due to the high level of total dissolved solids (TDS) and volatile organic compounds (VOCs) present in the water from past military usage, and over drafting of the ground water basin by surrounding agricultural users. The March JPA General Plan Profile Report describes the content of dissolved solids in the local groundwater basins representing the degradation of water quality. As remediation activities continue, the ground water quality and cleanup of the contaminated plume in the Northeast Planning Subarea will be enhanced.

The March JPA is also concerned with protecting water resources from contamination and other forms of destruction which will prevent their availability for use. Contamination from former military use is being addressed through the military's IRP site clean up program. Programs to protect the groundwater supply from future contamination need to be established.

Flora & Fauna

The protection of plant and animal communities in March JPA Planning Area applies to undeveloped areas where sensitive biotic communities and viable habitats exist. Open space refers to areas left vacant and undeveloped to allow biological resources to exist and thrive. March JPA Planning Area can closely regulate the type and amount of development which can occur. March JPA shall promote the preservation or replanting of native vegetation. Riparian areas, major drainage channels, and open space areas which may contain sensitive biological resources may remain undisturbed and in a natural setting.

The biological setting of the March JPA Planning Area is described in detail in the March JPA General Plan Profile Report. The sensitive habitat in the March JPA Planning Area consists of riparian areas as linear strips or stands of willows. This vegetation type can be found along the Van Buren Boulevard, water courses and ephemeral streams within the western hillsides. Riparian habitat support the sensitive plant species. Birds and wildlife rely on the riparian areas as a food and water source.

Exhibit 5-1
SKR Management & Open Space Areas

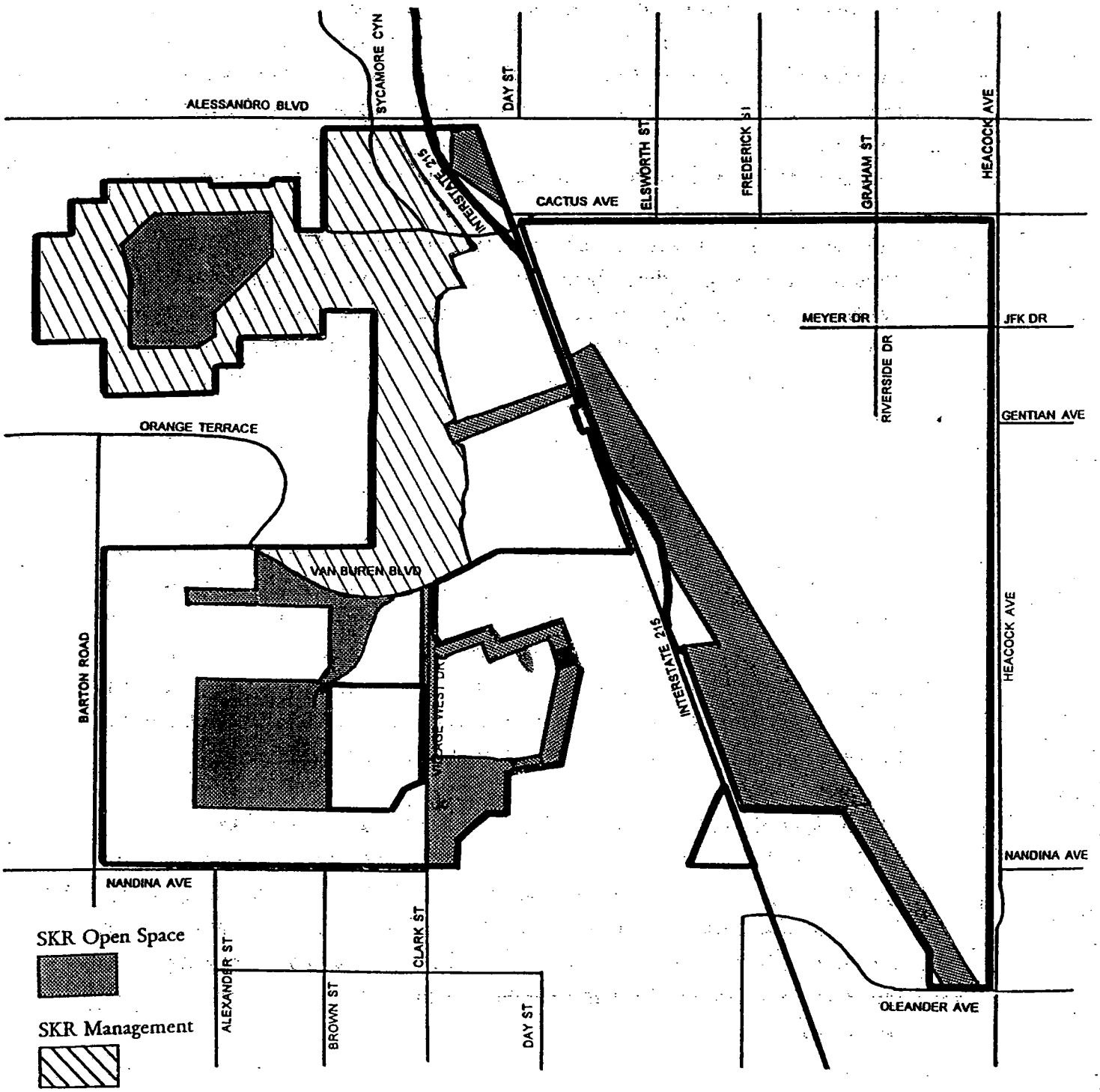
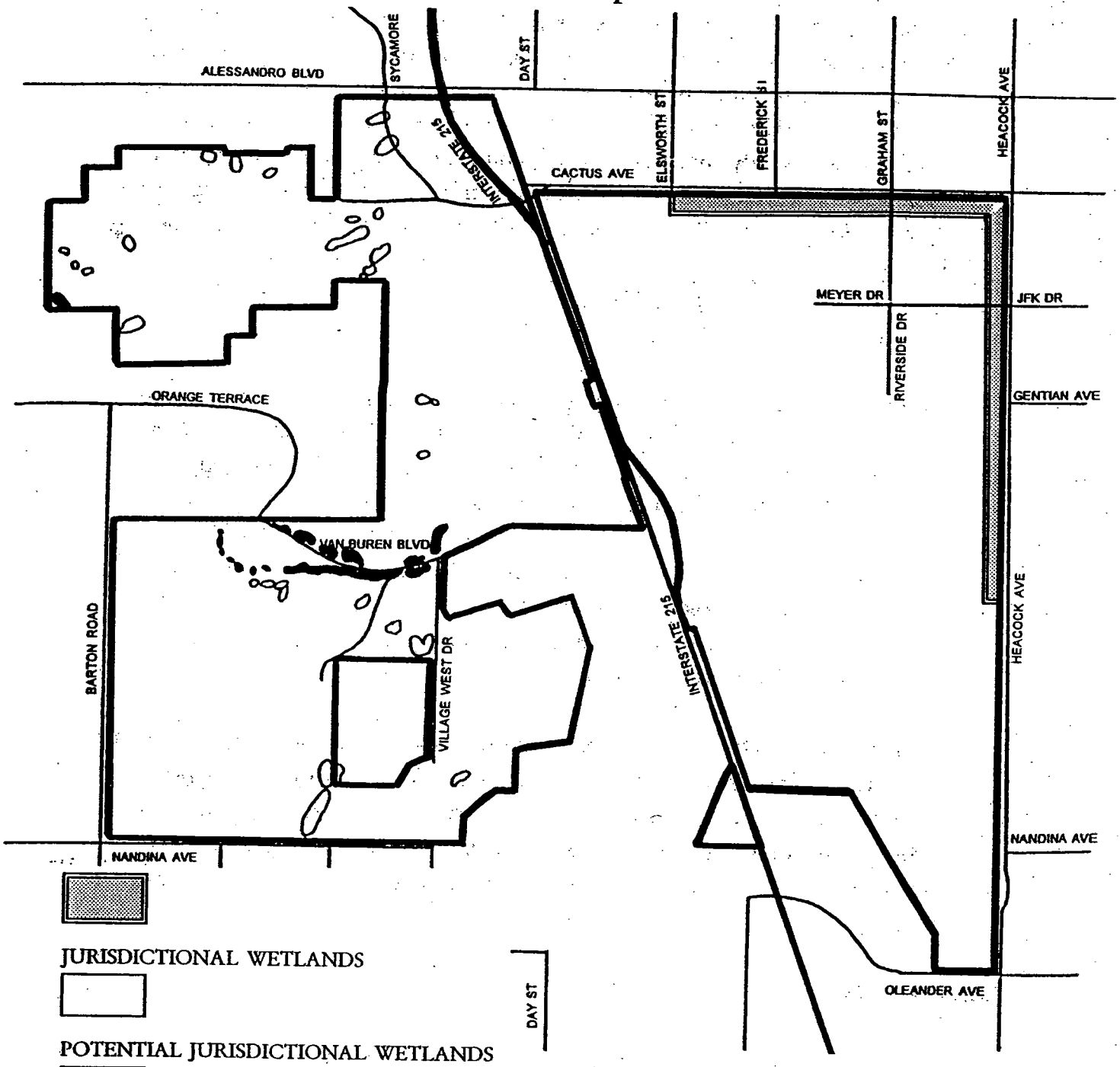


Exhibit 5-2
Wetlands and Riparian Areas



Grasslands within the March JPA Planning Area support other animal species such as the Ferruginous hawk and other raptors. The species of greatest concern is the Stephen's Kangaroo Rat or SKR *(Dipodomys stephensi)*. The SKR is designated as endangered by the U.S. Fish and Wildlife Service. These lands contain grassland and sparse, remnant stands of coastal sage scrub that provides habitat for the SKR. March JPA is actively seeking to trade this habitat area, which is increasingly threatened by adjoining urbanization for better, more suitable habitat, which will further the goals and objectives of the sub-regional Habitat Conservation Plan of the Riverside County Habitat Conservation Agency.

Cultural Resources

Cultural resources within the planning area include archaeological resources, and these are primarily in the form of grinding slicks. The majority of these archaeological resources are concentrated within sections of rock outcroppings. Records indicate that archeological surveys have been conducted, with no sites or artifacts determined to be eligible for inclusion within the National Register. Surveys of undeveloped land found that sites (1) cannot be temporally placed within a regional chronology because they lack associated artifacts, and (2) lack midden (an indication of the presence of subsurface deposits) that would indicate long-term use or occupation.

Given the location of grinding slicks within the major rock outcropping, these resources may be preserved through the conservation of rock outcroppings, riparian areas, and other natural resource conservation measures. Development within the planning area shall comply with all applicable laws and statutes for conservation and preservation, as appropriate cultural resource survey findings are made.

Development Standards

In working toward the conservation of natural resources and the preservation of areas with significant resources, conservation efforts will be made according to

the sensitivity of identified resources. They will be focused on areas with high sensitivity and where programs will have the greatest impact on the conservation of natural resources. The Resource Management Profile Report identifies known significant resource areas in the planning area where implementation measures to promote preservation and the continued availability of resources will be focused. Proposed development within these areas shall include additional resource evaluation during project review. Identified resources shall be preserved to the extent possible. The degree of evaluation will depend upon the sensitivity of the area as discussed below.

Low Sensitivity. Development in areas with low sensitivity is not required to provide special studies to ascertain the presence of a significant resource. In March JPA Planning Area, areas with no significant resources or where past development has destroyed or significantly altered the presence or availability of resources are considered to have low sensitivity. They also include areas where past investigations have uncovered no important resources. The developed areas are concentrated in the Northeast Planing Subarea and portions of West March near I-215 are considered to have low sensitivity.

Moderate Sensitivity. Areas with low density developments where natural resources may still be present or may be utilized and areas adjacent to identified cultural and ecological resources are considered to have moderate sensitivity. Areas which have not been subject to past studies and where sensitivity is unknown shall also be considered to have moderate sensitivity, until more information is available to classify these sites. Increases in human activities or additional development intensity in these areas can disturb or destroy existing natural resources or prevent future access and use of these resources. Areas with moderate sensitivity include the areas surrounding the Ben Clark Public Safety Training Center and other undeveloped land serving as natural open space, and areas within proximity of the flood control channels and riparian areas. Development in areas with moderate sensitivity shall be subject to detailed analysis and shall incorporate measures to prevent resource destruction when they are discovered during grading, excavation and

construction activities. According to the findings of the analysis and site preparation activities, the area shall be reclassified as either having low or high sensitivity.

High Sensitivity. Areas with ecologically sensitive resources are those where studies or activities have identified the presence of a significant amount or important natural resource; or represent undisturbed areas that have a very high potential for the presence of natural resources. These areas have high sensitivity and are the primary targets for conservation and preservation. They may include the riparian areas, areas of large outcroppings, and areas of riparian habitats where sensitive plant and animal communities exist; cultural resources identified within the historic district, and resources are likely to be uncovered in the future. Development in these areas shall be subject to an in depth review through the provision of special studies focusing on the resource sensitivity. The studies shall be required prior to development and shall include feasible measures to protect and preserve the resource(s).

Conservation does not necessarily mean the prevention of development and keeping the areas vacant. There are several ways to protect natural resources or to keep them available for new development. By providing development standards for areas with moderate and high sensitivity, the March JPA can achieve a balance between protecting its natural resources and providing for the needs of its community. Furthermore, the fostering of a "campus-like" setting and coupling development with the natural environment will further the conservation of natural resources, while creating an attractive and balanced community.

Aside from the preservation of resource areas, there should be controls on development. Some land within the planning area is committed to the provision of public facilities, with the majority of land slated for development of non-residential land uses. Urban development in moderate and highly sensitive areas must be reviewed for its impact on the presence and availability of natural resources. The following standards should apply to development within areas of moderate and high sensitivity for ecological resources:

Field surveys and investigations must be made prior to development approval, to identify potential natural and cultural resources.

Trustee agencies and local environmental groups should be consulted to insure the project and site review is thorough.

Development should be sensitive to significant natural resources located on-site or in nearby areas.

Identified resources shall be kept undisturbed, removed for relocation, or incorporated into the design of the project, depending on the resource and the best means of preservation.

Development in areas with geologic and seismic hazards shall be prohibited when the hazards cannot be mitigated or eliminated by construction methods.

Open Space and Recreation Plan

The Open Space and Recreation Plan of the Resource Management Plan is concerned with the preservation and utilization of open space and undeveloped lands within the March JPA Planning Area. The conservation of open space for public health and safety, natural resources and recreational needs must be considered when accommodating and directing growth within a planning area. New growth often reduces the amount of open space and, if not properly planned, can encroach upon and disturb environmentally sensitive areas. At the same time, economic growth represents additional demands for facilities. As the March JPA Planning Area develops, the need to carefully plan for and preserve an open space element within undeveloped lands becomes increasingly important, and necessary to achieve a balance between urban and natural areas.

The undeveloped areas of the March JPA Planning Area include environmentally sensitive lands such as riparian areas, wetlands, habitat, natural resources such as mineral and groundwater resources, significant landform such as rock outcroppings, areas of controlled use such as airfield and aviation related clear zones, national cemetery, and

IRP sites, as well as areas of historical and cultural resources. These lands are identified and incorporated into the March JPA Planning Area's overall land use plan so that potential impacts to these resources can be minimized or avoided.

March JPA's Open Space and Recreation Plan provides for the preservation of open space areas and provisions for new and expanded recreational facilities. Open space is preserved to allow for the natural management of viewshed areas, the prevention of erosion, the provision of public health and safety, the opportunity for recreational facilities, the preservation of habitat, pollution abatement, and visual and aesthetic qualities. In March JPA Planning Area, urban development is most established in the Northeast Planning Subarea. Rolling hill top, rock outcropping and riparian areas are concentrated within the West March Planning Subarea. These natural resources are preserved as open space because they provide for watersheds, habitat, erosion control, and visual values. Future development will need to be carefully planned to maximize the aesthetic and ecological value of these resources, while maintaining the scenic qualities of these features.

Recreational facilities and open space can be made available through both existing and planned areas. The March JPA establishes the following guidelines for open space:

The highest priority should be given to those open space and natural resource sites which are:

Subject to development in the near future which can irreversibly destroy its open space value, or

Recognized as having significance due to its unique ecological or cultural resources, as identified by the scientific community.

The next level of priority should be accorded to:

Large open space areas which give form and identity to the community, or

Areas which would, by its preservation, complement the efforts of other agencies or individuals in preserving open space in March JPA, or

Areas adjacent to preserved open space areas, or

Areas within proximity to the Riverside National Cemetery, or

Areas of scenic corridors and view sheds.

As growth and new development occurs, the need for parks and recreational facilities increases. Park development and recreational opportunities should be pursued to provide unmet recreational needs. Since the March JPA Planning Area does not contain a component for new housing, March JPA has provided areas for new recreational facilities that contribute to the existing recreational facilities of the area.

Recreational facilities will provide open space amenity, and act as a buffer and recreational outlet within an environment that focuses on employment centers and an area of commerce and industry. The priority for park and recreational facilities should be as follows:

Park facilities should have direct street access, available parking areas and utility connections.

Retention and maintenance of existing park facilities.

Development of a variety of recreation opportunities and park facilities.

Development of both private and public sponsored recreational programs and facilities.

California Code Section 65564 requires that every local open space plan contain an action program to implement the Plan's goals and policies. In addition, an implementation program provides a guide to the community, March JPA staff and officials for implementing the adopted policies. The March JPA Planning Area's Open Space and Recreation Plan requires the enhancement, and maintenance of a park and

open space system that will serve the needs of the community. Several methods will be implemented by the March JPA, and these methods may include:

Develop an acquisition and/or dedication program to acquire lands appropriate for open space use;

Require exactions or in-lieu fees through the Subdivision Map Act process (Government Code Section 66477);

Acquire easement interests pursuant to the Open Space Easement Act of 1974 (Government Code Section 51070 et. seq.);

Require open space provision through specific plans and development agreements;

Use bonds or assessment districts to acquire/maintain open space lands; and

Apply for open space funding grants available to local governments by the state, private foundations, community-minded citizens or non-profit land trusts.

Parks & Recreation

Existing park and recreation facilities include the golf course within the West March Planning Subarea, the recreation fields on the Northeast Planning Subarea which are controlled by the City of Moreno Valley for park and recreational uses, March Field Museum, and passive recreational areas intermixed within the Green Acres portion of the Historic District. Future public parks and recreational facilities include the establishment of a "regional-type" park in West March Planning Subarea for league play and other recreational amenities; along with a natural park within the area of the former WSA located in the northern hills of the West March Planning Subarea.

Natural Open Space

Natural open space includes preserves and undeveloped land for passive recreational use such as walking, and enjoyment of the open scenery. The preservation of riparian areas and large outcropping areas will create a natural environment within the planning area. These may also include trails, and natural space linkages between developments and services.

Private Recreation

Development within the March JPA Planning Area will contain privately-owned recreational facilities, potentially including an "amusement-type" recreation facility (Destination Recreation), golf courses, and other recreational clubs and facilities. Recreational opportunities for private development may include facilities such as aquatic center, tennis club, sports clubs or similar facilities. Private recreation facilities charge user fees, and may be developed to expand recreational opportunities within the March JPA Planning Area.

Scenic Corridors/Vistas

Within the planning area, there exist scenic qualities worth conserving. The aforementioned areas such as the cemetery need to be preserved and protected from obtrusive development. Van Buren Boulevard is a designated scenic corridor serving the West March Planning Subarea. A gateway designation at Van Buren Boulevard and Interstate 215 will assure that development within proximity to this area will complement the open space and scenic qualities already in existence. Furthermore, development along the westside of the Interstate 215 corridor, which is paralleled by the San Jacinto Branch Rail Line, will reserve an open space buffer given siting issues. Development along Interstate 215 will need to be designed to address visual and aesthetic qualities along this corridor.

Exhibit 5-3
Recreational Facilities (Planning & Existing)

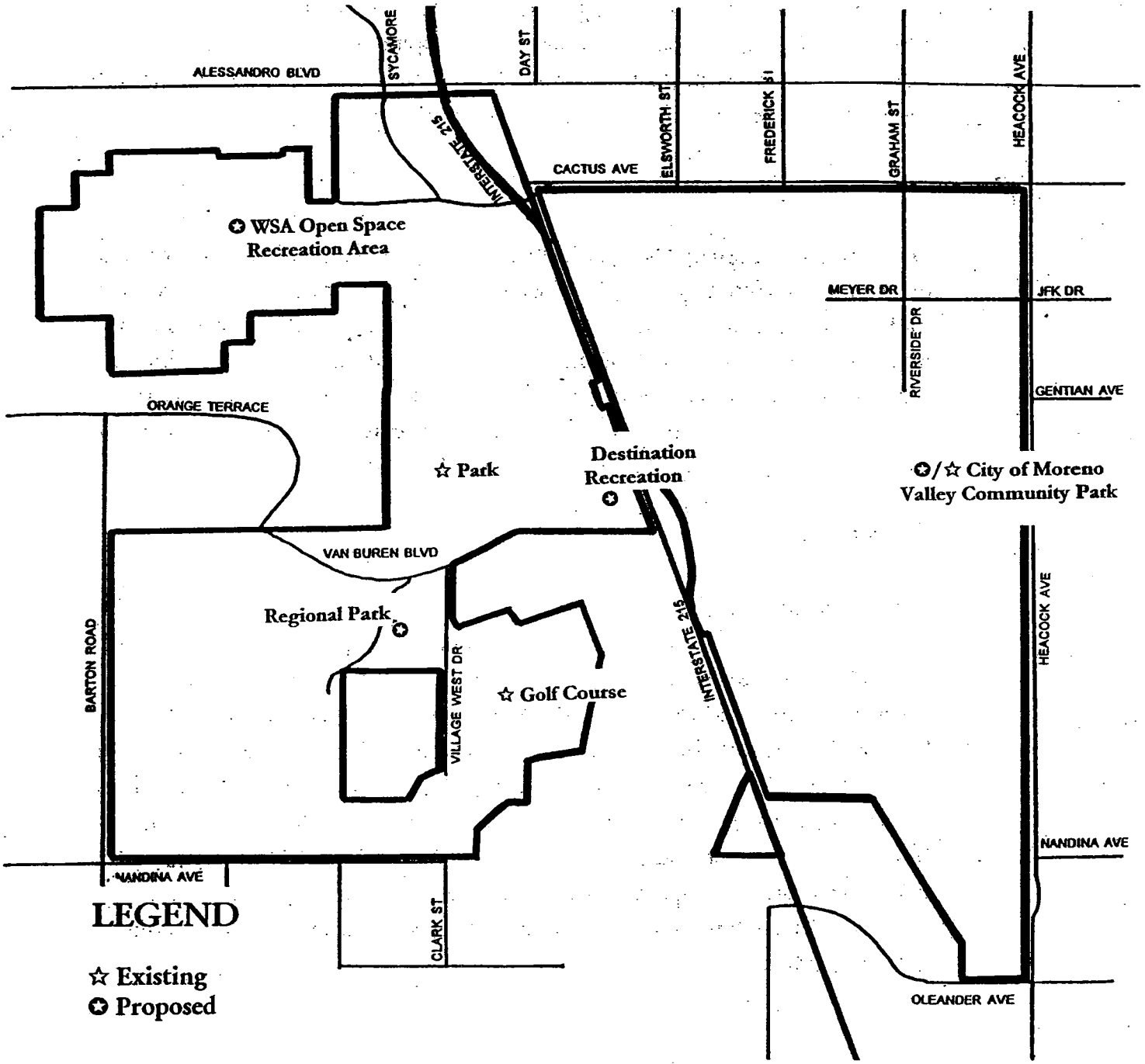


Exhibit 5-4
Scenic Corridors/Gateway

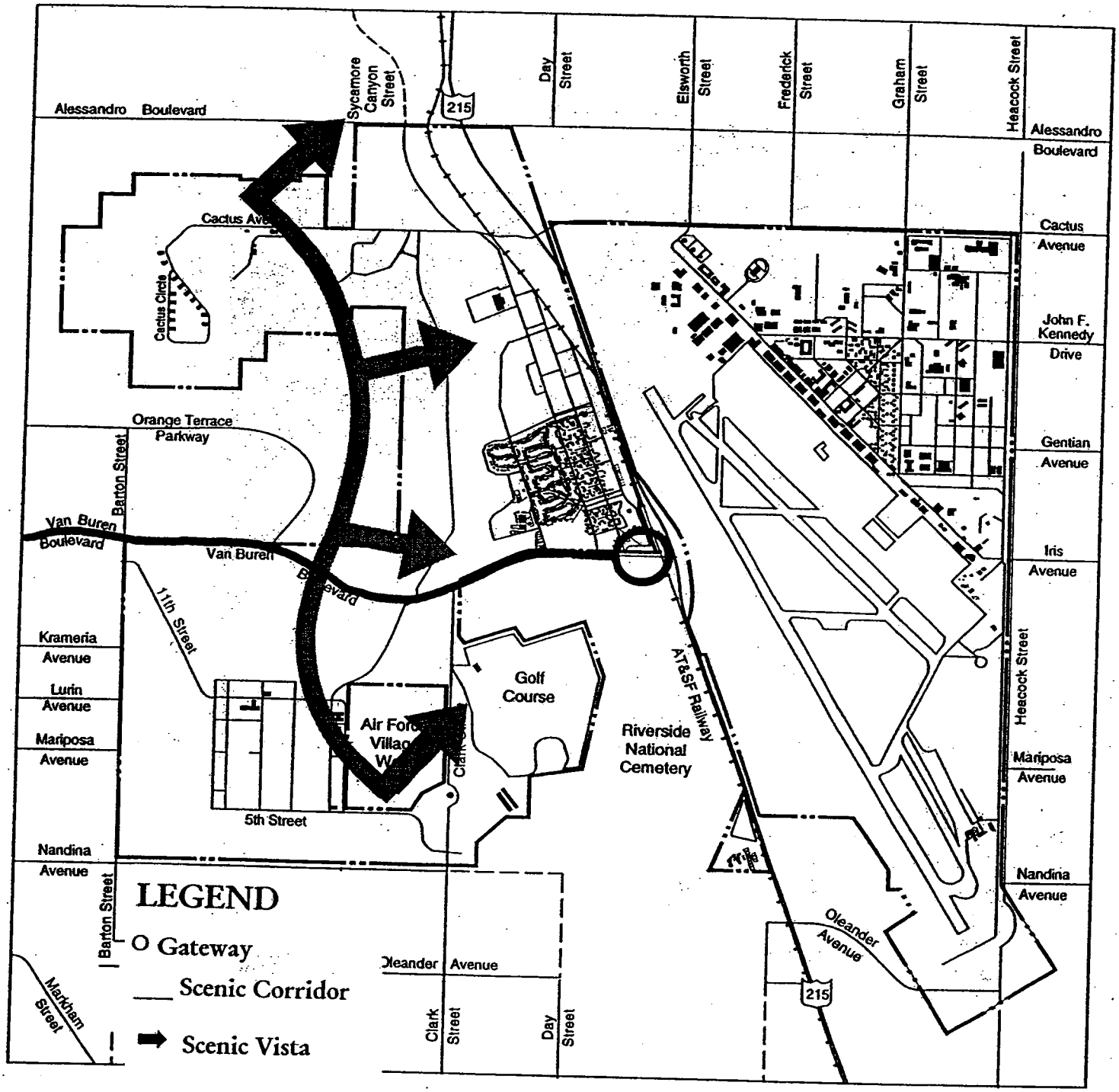
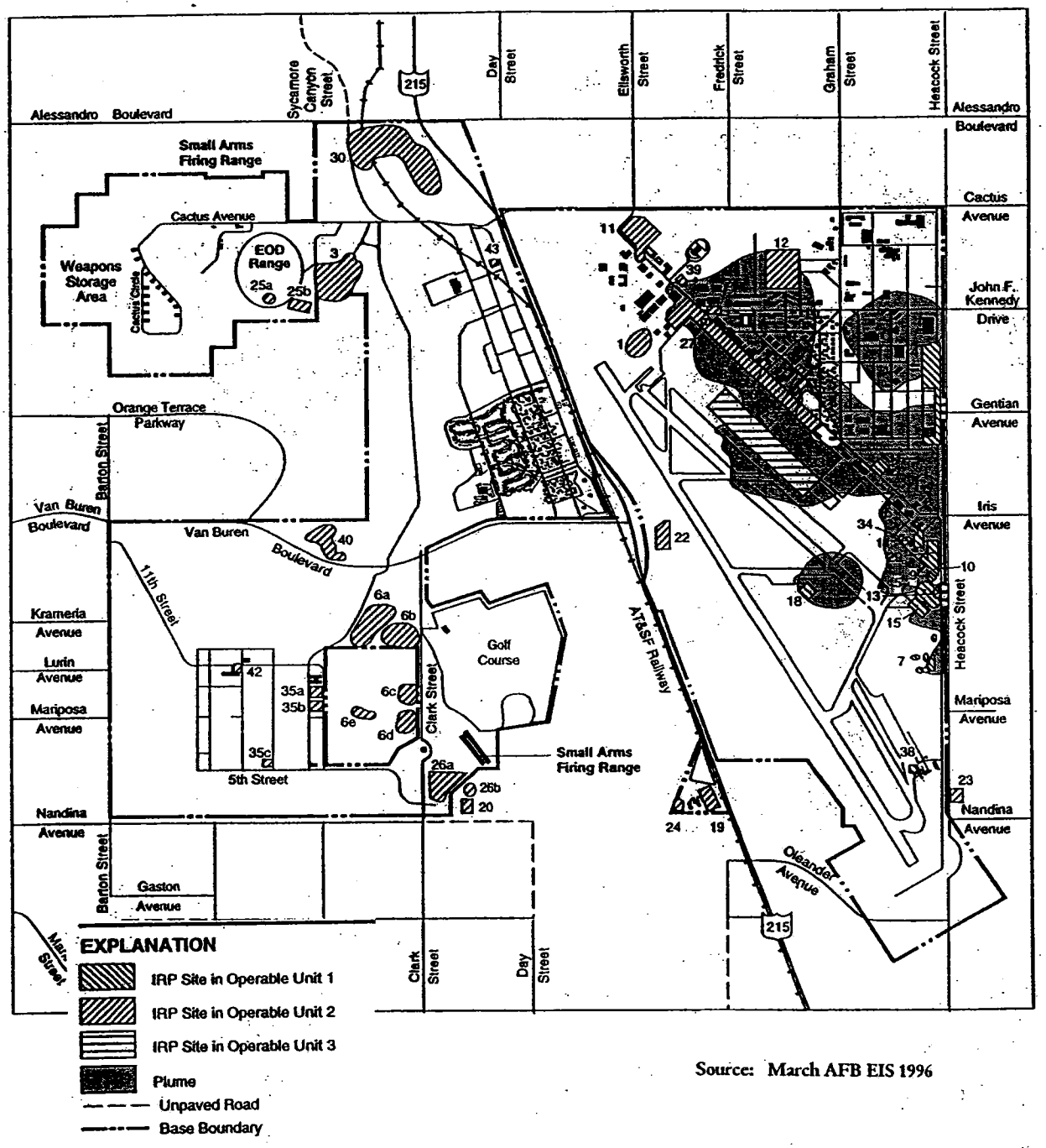


Exhibit 5-5
Installation Restoration Program Sites



Source: March AFB EIS 1996

Public Health & Safety

While various portions of the planning area contain open space and visual qualities, there are areas of restricted development due to public health and safety issues. The aviation field will remain unobstructed and maintained to meet both military and Federal Aviation Administration (FAA) standards for restrictions and clearances. This includes the clear zones, 3000 feet by 3000 feet areas at each end of the runway for safety clearances. The clear zone permits no use and no development, and shall remain completely undeveloped and unobstructed.

The planning area contains 43 locations known as IRP sites. The Air Force is required to remediate past environmental contamination that occurred within the planning area. Remediation is coordinated by Department of Defense with U.S. Environmental Protection Agency (EPA) and appropriate state agencies. The future development of surplused land by land recipients may be restricted due to limitations of reuse from remediation. Limitations on capped land fills restrict development from occurring on two prominent sites, which are included within the Land Use Plan to be recreational uses.

The Riverside National Cemetery, is owned and operated by the Department of Veterans Affairs, is located adjacent to the planning area at Interstate 215 and Van Buren Boulevard. The Land Use Plan includes an area of expansion for the cemetery. The combined property provides both service for veterans affairs, as well as a scenic, open space amenity to the planning area. Measures and restrictions as to use and continued existence and expansion of this facility provide for a continued quality of open space.

Open Space Linkages

Open space linkages are usually linear strips of open space along lands such as easements and arroyos. The purpose of these linkages is to connect open space areas, parkland and development through open space corridors. Trails are usually located within open space linkages. The March JPA Planning Area will have open space linkages through utility easements, golf courses and riparian areas. These open space linkages form an important component to the Open

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IMPLEMENTATION PROGRAMS

There are a number of existing plans and programs which are directly applicable to the aim and objectives of this Element. Many plans and programs are enacted through federal, state, and local legislation and are administered by agencies or special districts that have been delegated with powers to enforce federal, state and local laws. Federal laws that are concerned with the protection of significant cultural and natural resources include the Endangered Species Act of 1973 (as amended in 1978), the Antiquities Act and the National Historic Preservation Act (NHPA) of 1966.

Specific measures have been identified to implement March JPA's Resource Management Plan. These include existing and new programs that would be undertaken by March JPA to achieve the goals and policies of the Resource Management Element.

1. Water Quality Protection

The March JPA shall develop guidelines for storm runoff discharge, to comply with the National Pollution Discharge Elimination System and public works standards. These may include regulation of runoff from construction activity, regular street sweeping, use of storm drain grates, monitoring of industrial and commercial waste discharge into local water streams and drainage channels, controlling the use of pesticides, fertilizers, septic tanks, IRP site clean up and monitoring, and other hazardous materials which may percolate into the groundwater.

The March JPA shall promote the preservation of water courses in their natural state. This shall include maintenance of drainage channels to keep them free of flood water obstructions such as debris and vegetation; use of detention basins; wider setbacks along drainage areas rather than provision of concrete channels, etc. The March JPA shall consult with the Department of Fish and Game and the US Fish and Wildlife Service, regarding the preservation of surface water resources in the March JPA Planning Area.

2. Water Conservation Ordinance

The March JPA shall prepare and adopt a water conservation ordinance to promote efficient use of water resources. The ordinance should encourage the use of drought-tolerant vegetation to decrease the need for watering landscaping. The March JPA should set forth standards and promote the use of drought-tolerant landscaping, to complement turf reduction requirements. March JPA shall continue the use of reclaimed water for the golf course, and pursue the irrigation of recreational facilities and public rights-of-way with reclaimed water, if it will not pose any threat to public health and safety. This may include incentive provisions to development which utilize reclaimed water. March JPA shall require the installation and use of water efficient plumbing appliances in new developments. The March JPA shall coordinate water conservation programs with water and sewer purveyors.

3. Preservation and Managed Production of Natural Resources

Using the March JPA's development review process, development proposals within natural resource areas identified in the Element will be assessed in terms of impacts to the following characteristics where they exist on or near the proposed development site: riparian corridors, sensitive biological habitats, naturally steep slopes, ground and surface water resources, rock outcroppings, and state recognized mineral resource zones.

4. Grading Standards

Development and grading of areas with topography need to be regulated through a grading standards ordinance or set of guidelines. The standards shall set forth guidelines that limit grading and ensure that geologic hazard areas, natural resources and fire protection are considered in site planning for development. The guidelines shall encourage lot size development which corresponds with the slope of the site. Contour grading and preservation of rock outcroppings shall be encouraged. Areas of grading shall be re-vegetated. Development and grading shall be limited within proximity to any water body identified for preservation, in geologically hazardous areas, in environmentally sensitive areas, in visually significant areas, and in flood hazard areas.

5. Landscaping Guidelines

The March JPA shall develop landscaping guidelines which incorporate the use of drought tolerant vegetation and native vegetation. The guidelines shall be designed to preserve existing mature trees and native vegetation to the extent possible, as well as the planting of trees and native vegetation within urban development. The preservation or replanting of mature trees shall be encouraged in new developments, along with the restoration of degraded habitats for native plants. The incorporation of rock outcroppings and riparian areas of arroyos into site designs, will assist with maintaining the "campus-like" atmosphere which blends development with landscape, reduces water consumption, and minimizes disturbance of the natural landscape.

The landscaping standards shall include the planting of street trees in accordance with a list of recommended street trees; landscaping of exposed slopes and graded areas after grading; provision of water conserving irrigation systems; use of fire retardant vegetation on steep slopes and fire hazard areas; and other standards on size, type, and minimum landscaped areas.

6. Environmental Review

The California Environmental Quality Act (CEQA) is a state law that was adopted to protect the quality of the environment. CEQA requires all new development projects to be subject to environmental assessment, and that a negative declaration, mitigated negative declaration or environmental impact report (EIR) be prepared for projects. The mitigated negative declaration is used when impacts of the project to the environment can be adequately mitigated and a mitigation monitoring plan is adopted. An EIR is used when the potential for significant environmental impacts is associated with the proposed project. The EIR identifies the environmental setting, potential impacts, and mitigation measures to avoid or reduce the impacts on any or all of the following areas of the environmental assessment:

1. Land Use and Planning
2. Transportation/Circulation
3. Public Services
4. Population and Housing

5. Biological Resources
6. Utilities/Service Systems
7. Geological Problems
8. Energy/Mineral Resources
9. Aesthetics
10. Water
11. Hazards
12. Cultural Resources
13. Air Quality
14. Noise
15. Recreation

Environmental review must also consider cumulative and growth-inducing impacts and alternatives to the project. March JPA shall comply with the requirements of the CEQA and locally adopted guidelines for implementing CEQA. March JPA shall conduct an environmental assessment of all projects prior to any development approval.

For mitigated negative declarations and EIRs, a monitoring and reporting program must be completed for ensuring compliance with mitigation measures. The mitigation monitoring program provides accountability for project compliance with the mitigation measures. The March JPA shall ensure that upon environmental review, any identified mitigation measures shall be made conditions of approval for the project and the responsibilities of monitoring shall be assigned.

7. Environmental Regulations

Environmental quality is a worldwide concern and there are numerous laws by federal, state, and local agencies that promote environmental protection and ecological balance. Regional environmental issues affect not only the March JPA Planning Area, but encompass a larger area. These include water resources, energy, air quality, growth, transportation, earthquakes, and other environmental concerns. A number of federal, state and special agencies deal with these issues. The March JPA shall cooperate with the State Department of Water Resources, the County Department of Public Works, Riverside County Environmental Health Services, California Department of Fish & Game, U.S. Fish and Wildlife Service, Office of Historic Preservation & SHPO, Army

Corp. of Engineers, South Coast Air Quality Management District, Santa Ana Regional Water Quality Control Board, EPA, and other responsible agencies in the enforcement of laws regarding water quality, biological resources, energy use, and other environmental concerns. It shall coordinate with adjacent cities, the county, and other regional agencies on resource protection programs in the area.

The March JPA shall enforce laws on environmental protection and pollution control within its jurisdiction. It shall consult regulatory agencies on relevant regulations for proposed development and activities in March JPA Planning Area. It shall require proof of compliance with these regulations from developers prior to project finalization.

8. Biological Resources Consultations

Urban development can disturb or remove existing habitats. March JPA shall consult with the Department of Fish and Game and the U.S. Fish and Wildlife Service on their concerns for identified biological resources, as well as compliance of development with state and federal regulations for conservation of sensitive plant and animal species. The March JPA shall maintain a list of sensitive plants and animal species for use as reference in evaluating developments which would occur in suitable habitat areas. The March JPA shall encourage developers to preserve areas with sensitive biological resources through dedication of open space, site preservation, and other ways to limit or prevent human and urban use destruction of these resources.

9. Section 7 Consultation - SKR Land Trade

The March JPA and U. S. Air Force need to complete the Section 7 Consultation process with the U. S. Fish and Wildlife Service concerning habitat lands noted for the Stephens' Kangaroo Rat (SKR) through Biological Opinion issued under the U. S. Air Force. Lands impacted by the Biological Opinion shall be kept in compliance with the Biological Opinion, until the Section 7 consultation is complete; thereafter, the disposition of lands shall be in accordance with terms of the consultation.

10. Alternative Fuels Preference

March JPA shall establish a priority for alternative fuels, for not only March JPA facilities, but also for new development. March JPA shall pursue arrangements with alternative fuel dispensing facilities and corporations for demonstration, experimental and cooperative facilities to serve the needs of the planning area. This may also include research and development and reservation of right-of-way and infrastructure to provide alternative fuels to the planning area.

11. Energy Conservation

Title 24 of the California Administrative Code outlines insulation and energy conservation standards for new development. A number of other energy conservation practices and design features are recommended by state and local agencies and utility companies. The March JPA should enforce state laws on energy conservation design and appliances.

Natural gas and power companies have developed energy conservation designs and measures and offer free consultation services to developers and users. The March JPA can make arrangements by initiating contact between local utility companies and developers during the review process to take advantage of these services. March JPA shall encourage developers to consult with local utility companies on possible energy conservation measures to incorporate into new developments.

There are available brochures and informational material from utility companies that explain the need for energy conservation and the different ways this may be achieved. The March JPA should obtain copies of energy conservation brochures and make them available for developers and tenants. March JPA should require the use of the most cost-effective energy-saving equipment, heating and lighting in all new buildings, considering installation, operating and maintenance costs. The March JPA should also encourage the use of passive solar design systems.

12. Cultural Awareness Program

Cultural resource surveys have been conducted within the planning area. Resources have been identified, and appropriate testing, preservation, mitigation or salvage has been determined. Prior to grading or excavation activities, these resources shall be evaluated for appropriate mitigation, if necessary. The March JPA shall use these surveys as its cultural resource inventory. This inventory shall be used as a guide for requiring future surveys and studies as part of proposed development or redevelopment.

March JPA shall require qualified archaeologists or paleontologists to be present during the excavation of sites which have archaeological or paleontological resources. Removal of paleontological or archaeological artifacts shall be made in compliance with state regulations. The March JPA shall consider prohibiting development when impacts to cultural resources cannot be mitigated. It shall set up a procedure by which uncovered archaeological and paleontological resources will be removed and transferred for preservation at a local educational and scientific facility for research or display. As appropriate, March JPA shall promote cultural awareness through articles, landmark identification, educational programs, field trips, and cultural events.

13. Cultural Resource Management Plan (CRMP)

March JPA shall be diligent in assuring compliance with the approved CRMP including the maintenance manual. Lands affected by the CRMP shall be restricted of use, development and modifications in accordance with the manual. March JPA shall implement additional measures to reinforce the Historic District, its use and preservation. March shall coordinate with the Office of Historic Preservation and SHPO with respect to the Historic District and any other identified cultural resources as necessary.

14. Parks Plan

The March JPA shall undertake a plan to specify the park and recreational opportunities and for the development of its parks and recreational facilities. The March JPA shall prioritize the implementation of this plan. Maintenance of parks and recreational facilities shall be made part of March JPA's operations. The March JPA shall explore

funding sources for park development and operations. These may include a land banking program, land dedication and developer fees, state and federal parkland funds, private donations, and other public, private and non-profit agencies that are involved in recreational and preservation programs.

15. Open Space Preservation

The extent of undeveloped areas throughout the planning area provides numerous opportunities for open space, linkages, and recreational and parkland development. However, it is unlikely that these areas will remain as such without programs for conservation. Therefore, public and private measures should be evaluated to preserve land for open space. Land allocations and dedications shall be encouraged for areas containing habitat and cultural resources; land which make up significant scenic vistas; and land which contains aviation, hydrological and seismic hazards which require preservation.

By promoting contiguous open space areas, there will be greater viability for existing natural resources. The March JPA shall set guidelines for the use of dedicated open space areas, so as not to destroy their value and natural characteristics. The March JPA shall explore potential funding sources for the conservation of open space. This may include federal and state funds, as well as private donations and funding from interested organizations.

16. Private Recreational and Open Space Facilities

March JPA shall pursue recreational and open space opportunities through private ventures. This may include "fee-based" recreational components, such as golf courses, activity centers, museums, amusement centers; or open space allocations through master planning of development with reservation of areas for natural open space retention, environmental mitigation, building setback or natural areas. Both open space and recreational facilities can be publicly owned, privately owned or a combination of the two. March JPA shall pursue joint ventures and/or cooperative agreements which are advantageous to providing, retaining and/or expanding the recreation and open space components of the planning area.

17. Joint Use of Facilities

Joint use refers to utilizing a facility to serve more than one purpose or activity. For example, a structure used for commercial operations during the daytime hours can be used for educational purposes during the evening hours. Negotiations between the March JPA and private enterprise, or between the March JPA and adjacent jurisdictions may be necessary to facilitate joint use. This will lead to lower costs for park provisions. Thus, the March JPA needs to coordinate its programs and facilities with other agencies to address the needs of the planning area. Agreements should include the provision of public recreation facilities to allow for joint use. Coordination with privately operated recreational sites in the planning area will provide maximum utilization of available facilities.

18. Bikeways and Trails Development Plan

The March JPA shall develop and maintain a system of bikeways, trails and/or linkage. The bikeways and trails shall connect to the adjacent trail systems of the County of Riverside and City of Riverside. The trail system shall utilize rights-of-way as provided by roadways, parkways, utility easements, drainage channels, etc. These trails, just like parks, shall be maintained so that their use and function are maximized.

19. Scenic Corridors

The March JPA shall designate scenic corridors and provide signs and guidelines for development along these roadways. The standards shall include compatibility with existing developments and the natural environment, protection of views, limits on outdoor advertising and signs, roadside landscaping, minimal grading and excavation, undergrounding of utility lines, architectural integrity of structures, etc.

Development along these roadways shall then be reviewed for compatibility with the scenic resources prior to approval. March JPA shall maintain these scenic corridors and shall solicit state, county and private funding for their preservation and maintenance. Where appropriate, trails and bikeways shall be incorporated into the scenic corridors.

20. March JPA General Plan Land Use Element

The Land Use Element contains land use designations that encompass open space land uses: Parks/Recreation/Open Space and Cemetery Expansion. The Parks/Recreation/ Open Space land use designation encompasses most of the open space that exists in the March JPA Planning Area including active and passive parkland and natural open space. The Public Facility designation contains more intensive recreational and/or cultural facilities such as March Field Museum. The Cemetery Expansion land use designation is specific to the designation of expanding the national cemetery.

21. Open Space Through Land Use Restrictions

March JPA shall establish and enforce land use restrictions to retain open space for public health and safety. This includes restricting land uses to comply with clean-up standards for IRP sites, enforcement of aviation restrictions relative to Air Installation Compatible Use Zone (AICUZ) and FAA standards, and environmental conservation. Environmental conservation may include the preservation of riparian areas within their natural state, natural drainage courses and channels, and other open space areas. Building setbacks, area buffers, and open space areas supporting the "campus-like" setting are all forms of open space retained through land use restrictions. These restrictions may take place in the form of ordinances, design guidelines, environmental easements, deed restrictions, master plans and programs, dedications, and other means of conservation.

22. Public Health and Safety Regulations

March JPA shall set forth standards and criteria for evaluating development in areas of concern for public health and safety. This includes restriction or limitation of land uses within IRP sites, compliance with AICUZ and FAA standards for aviation operations and land use of adjacent properties, exposure of land and persons to flooding and seismic risk. As appropriate, deed restrictions and technical studies shall be required to assure that appropriate mitigation measures are applied to development projects and that risk is minimized.

GENERAL PLAN

of the

MARCH JOINT POWERS AUTHORITY

Safety / Risk Management Element

SECTION 6: SAFETY / RISK MANAGEMENT ELEMENT

INTRODUCTION

The Safety/Risk Management Element of the March Joint Powers Authority (JPA) General Plan presents a planning area wide approach for preventing the creation of hazards in the planning area and for minimizing the potential for injury, damage and disruption brought by natural and manmade catastrophes and emergencies. The Element establishes safety standards and programs to protect life and property. Public safety standards include guidelines for activities involving risk to the public, as well as measures to follow when development occurs in areas susceptible to natural or manmade hazards. Public safety programs include procedures for the elimination and avoidance of hazards, emergency response during disasters and reconstruction programs to implement after a disaster. The Safety/Risk Management Element develops short-term and long-term actions to reduce risk and lessen the impact of a disaster.

Relationship to General Plan

As a state-mandated element, the Safety/Risk Management Element fulfills the requirements of *Section 65302(g) of the California Government Code* and the *State Planning and Zoning Law*. It contains goals and policies which address public safety issues in the Planning Area. The Element also serves as a public safety plan, identifying standards and programs to protect public safety and outlining adequate facilities and services to serve the emergency needs of the Planning Area. The Safety/Risk Management Element maps the location of known hazard areas and available evacuation routes, and indicates peak water supply requirements, minimum road widths, aviation safety zones, clearances around structures, and other factors affecting safety procedures.

The Safety/Risk Management Element is consistent with other elements of the General Plan, complementing the goals and policies of related elements. The Transportation Element addresses circulation and roadway issues, which relates to the Safety/Risk Management Element in that efficient traffic flow benefits emergency response and evacuation objectives. Safety must be considered in the Land Use Element in planning

for the urban density and land use designations of identified hazard areas. Social, economic, political and aesthetic factors must also be considered and balanced with safety needs. Therefore, rather than repeating the goals and policies of related elements, this Safety/Risk Management Element is tailored to impart safety considerations in the planning process.

Summary of Issues

Natural and man-made hazards in the March JPA Planning Area have been identified in the Safety/Risk Management Profile Report. These hazards present the need for planning, so that the community and the structures in the Planning Area are not exposed to undue risks. The safety issues and resources in March JPA are summarized below:

Regional Seismic Setting: The March JPA Planning Area lies between two major fault zones; the Elsinore-Whittier, 13 miles to the southwest, and the San Jacinto 7 miles to the northeast. A major earthquake on the San Jacinto fault has the potential for setting into motion multiple events, including injuries, crowd control problems, hazardous material releases, and isolated structural damage and/or fires. The planning area lies within the Perris Block, between these two active faults.

San Jacinto Fault: This fault is considered one of the most seismically active faults in the region. The Casa Loma fault, approximately 6 miles east-northeast of the planning area is the closest sply of the San Jacinto fault zone. This fault has a maximum credible earthquake magnitude of 7.5. Earthquake along this sply could cause damage to buildings and urban services. This fault should be considered during the planning and design process of urban developments. Maximum probable earthquakes for design purposes should be recommended on a case-by-case basis, depending on the nature of the proposed project.

Severe Ground Shaking: Nearby active faults can cause strong ground motions in the Planning Area, which may cause damage to existing development. Earthquake damage to structures from near-field sources will be moderate, and may include walls thrown out of plumb and torsional racking of foundation and wall elements. Given the risk, critical facilities must be designed and maintained with a greater margin of safety. The simultaneous occurrence of isolated structural damage, impaired utility service, and fire caused by strong ground motions requires adequate emergency response plans.

Flooding: The 100-year flood boundaries are in areas along Heacock Avenue and Cactus Avenue. Flooding in this area can impact traffic on each roadway. Flood risk in the Planning Area will remain low if adequate drainage facilities are improved, and development built in accordance with standard floodplain ordinance regulations. Long-term planning for drainage devices is needed to control runoff and prevent localized ponding, as well as properly maintaining and sizing of drainage-control facilities.

Aviation Risks: To minimize risk of upset by aviation related activities of the joint use airfield, both the civilian regulations under the Federal Aviation Administration (FAA) approved Airport Layout Plan (ALP) and the military regulations as specified in the approved Air Installation Compatible Use Zones (AICUZ) Report for March will be adhered to and enforced. Additionally, the County of Riverside Airport Land Use Commission is developing a Comprehensive Land Use Plan (CLUP) for March airfield in accordance with the State of California Public Utilities Code. Under a CLUP, a great portion Under the CLUP, a great portion of the planning area will be within the Area of Influence of the airfield. Development and use of property within the Planning Area, as well as outside of the Planning Area, will need to comply with the respective zones and requirements of both the AICUZ and CLUP. The zones and associated requirements, address land uses, use intensity, building height, land use compatibility, and noise exposure and attenuation.

Exhibit 6-1
Seismic Setting & Fault Locations

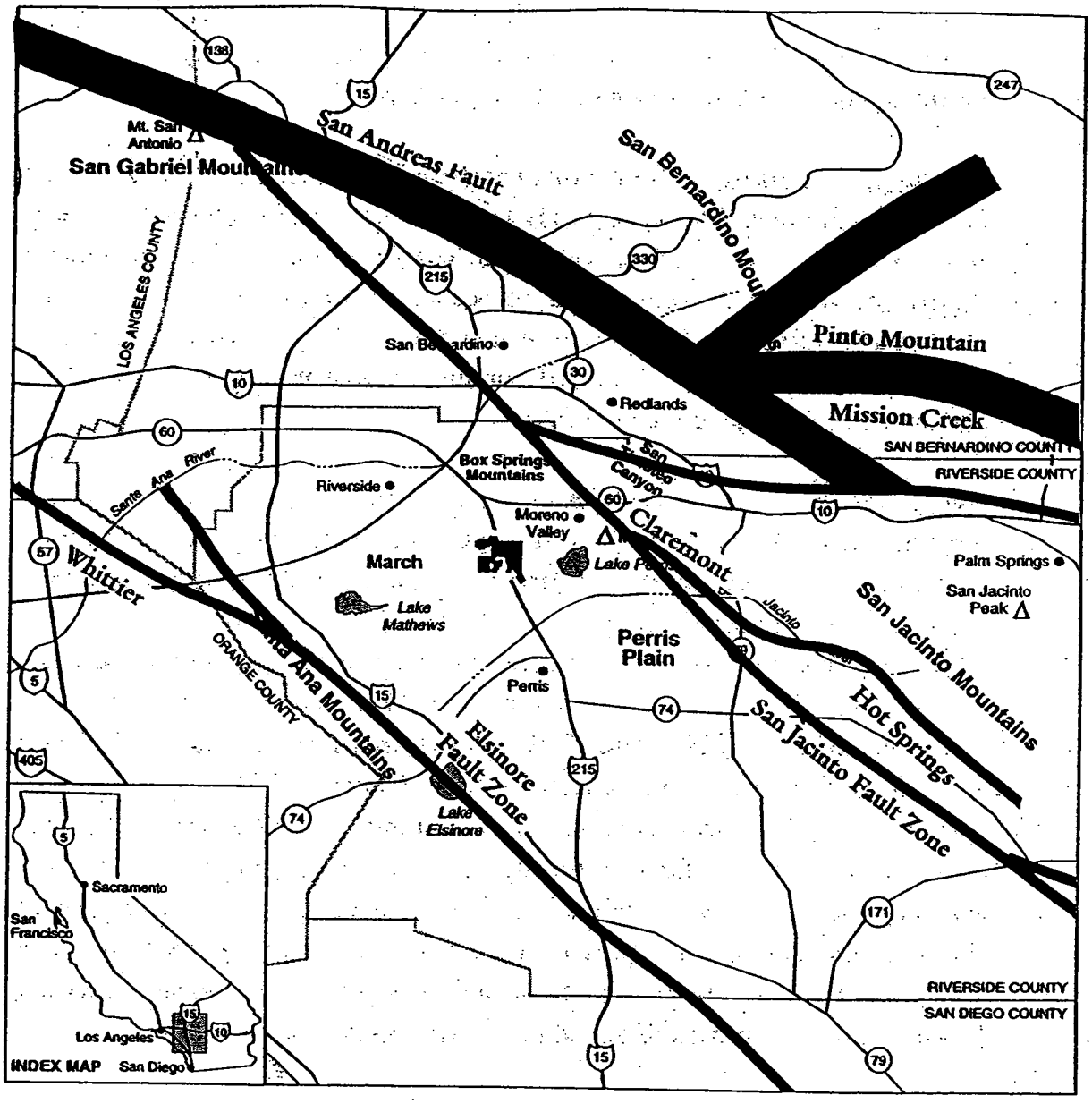


Exhibit 6-2
100-Year Flood Area

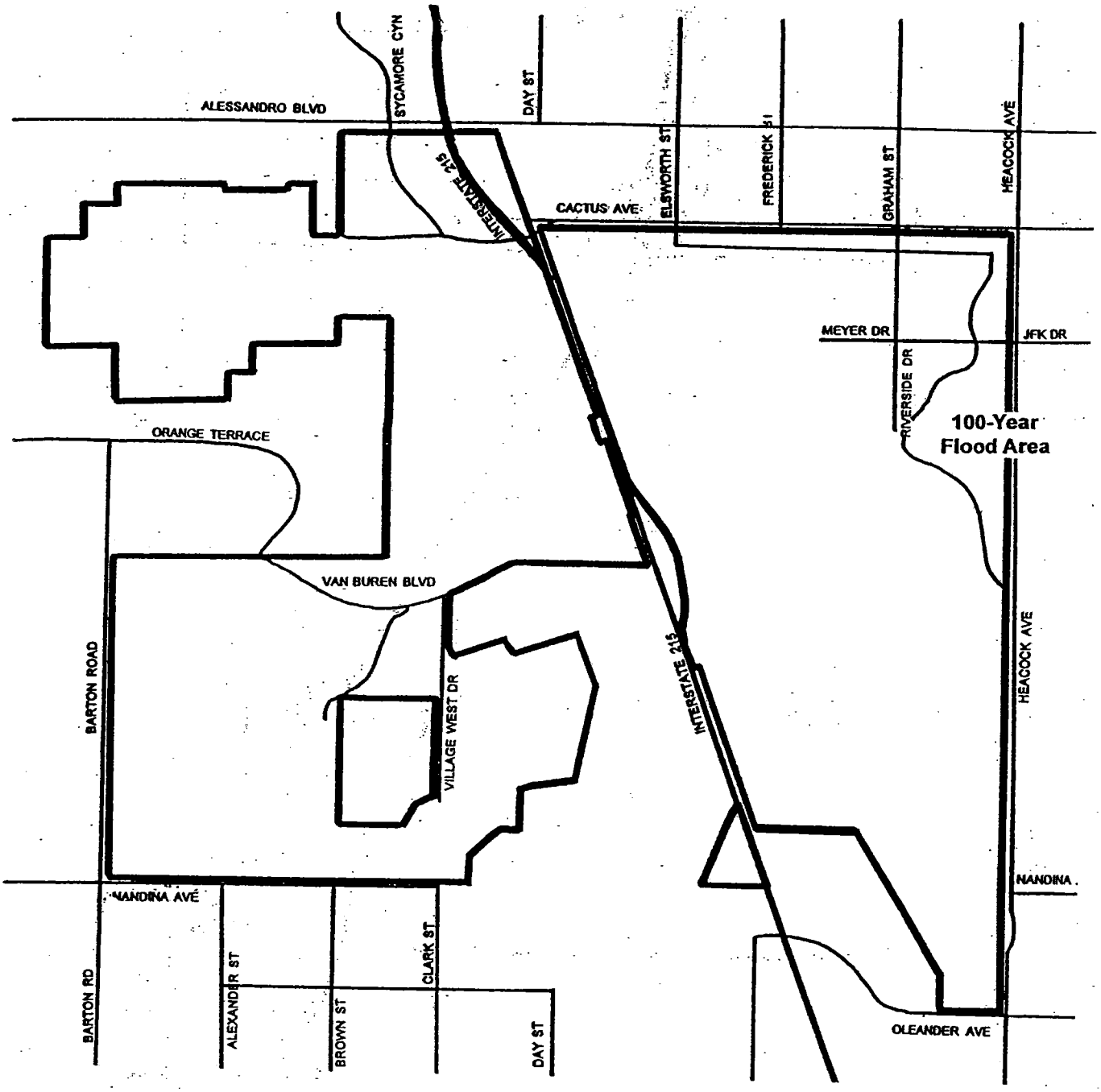


Exhibit 6-3
Aviation Safety Zones (Military)

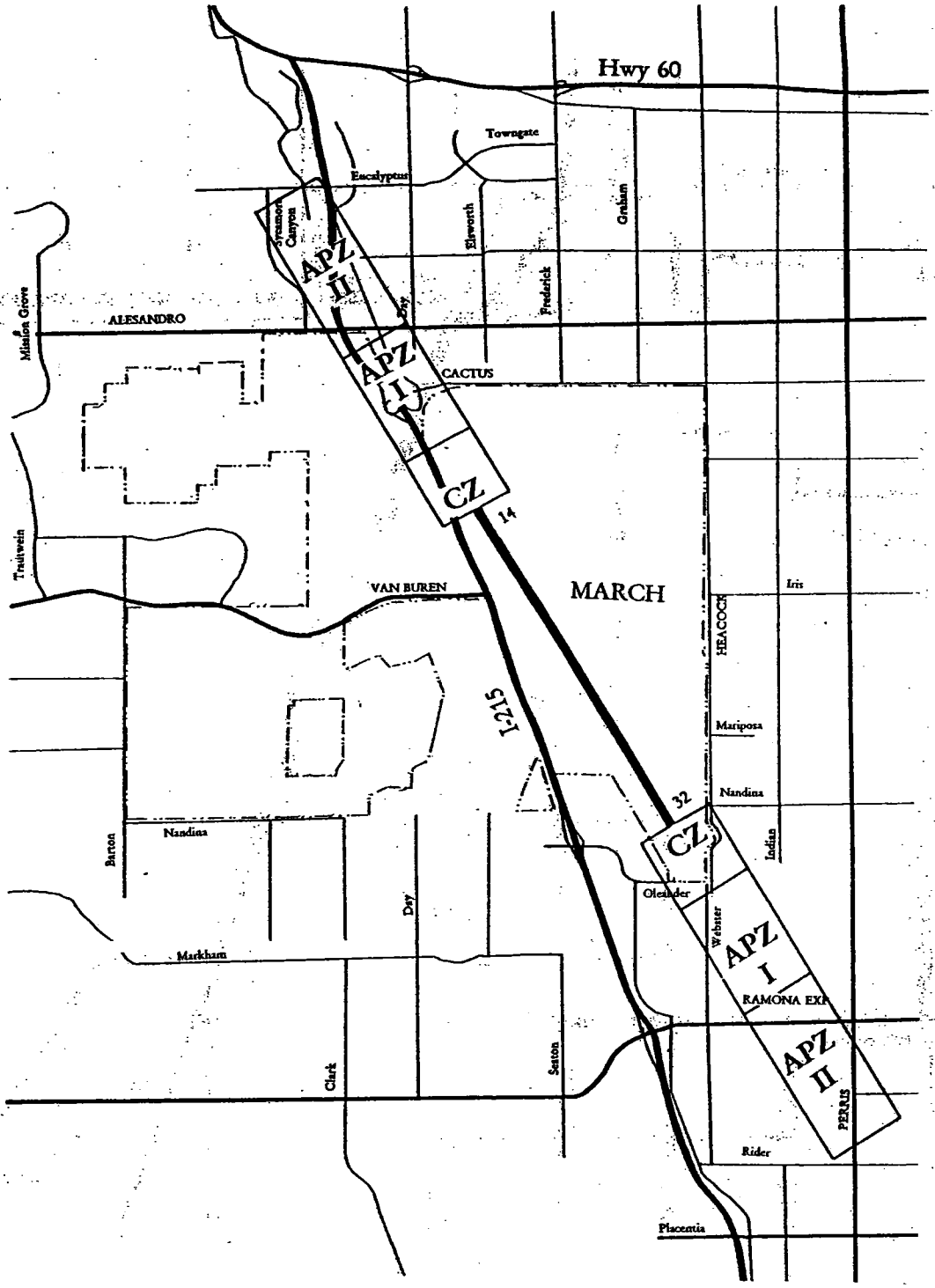
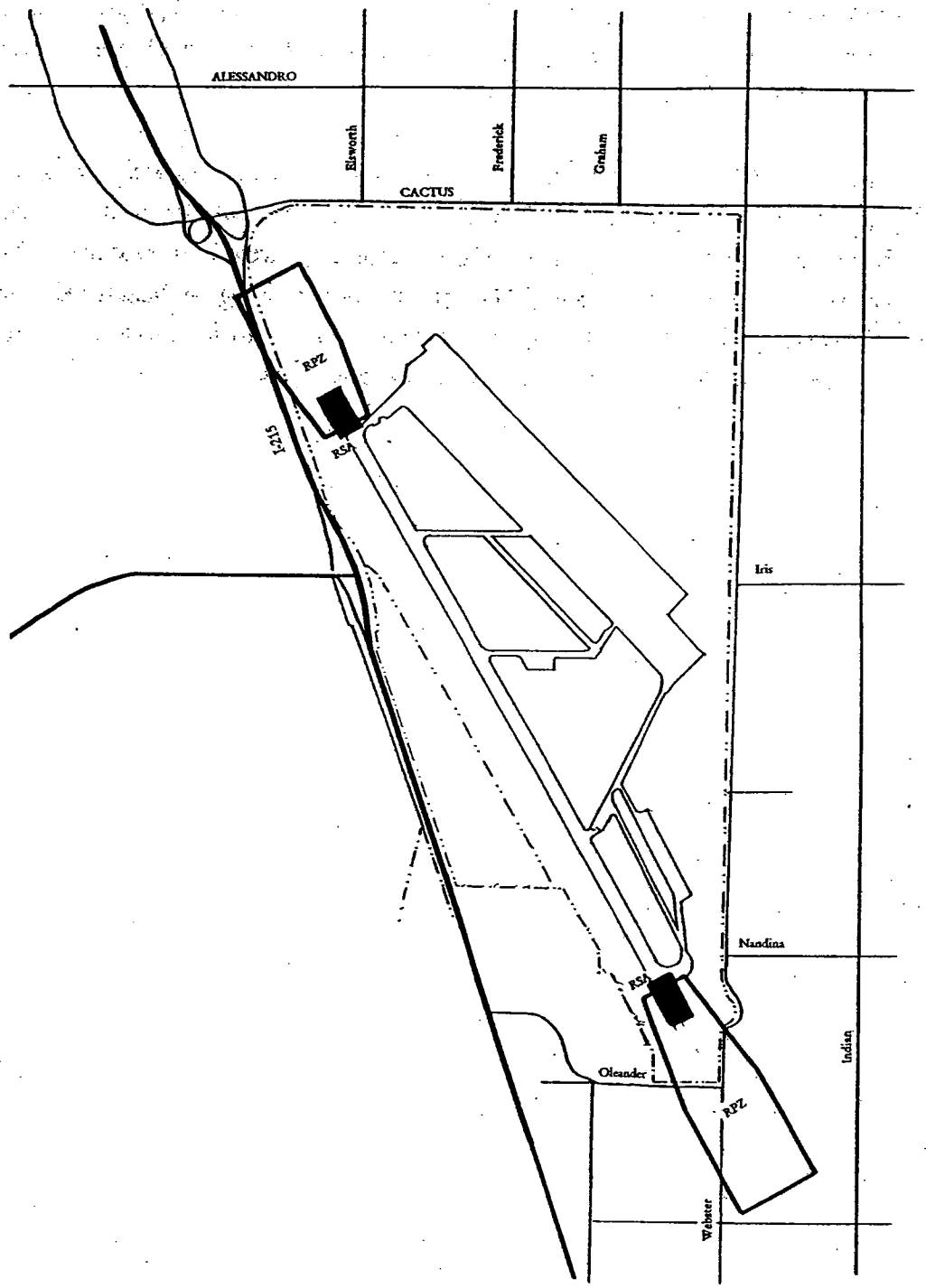


Exhibit 6-4
Aviation Safety Zones (Civilian)



Fire Hazards: The undeveloped grassland area of the West March Planning Subarea can pose a fire hazard, highlighting the need for strict enforcement of brush management and fire prevention programs. The risk of fire is also influenced by brush hazards in neighboring jurisdictions. Multiple fires, coupled with "Santa Ana" wind conditions, could overwhelm the Planning Area's fire suppression resources.

Hazardous Materials: With the Planning Area predominately designated for industrial, business park, and aviation uses, hazardous material transport and hazardous material accidents in the Planning Area may occur. Assuring compliance with "business plans" and proper routing of hazardous materials transport to minimize risk of exposure and create evacuation routes must be considered for development on a case-by-case basis.

GOALS AND POLICIES

Whether related to earthquakes, geologic hazards, aviation risks, or disaster preparedness, Safety/Risk Management Element goals and policies are guided by the March JPA's responsibility to minimize fatalities and injuries; limit the burden on public and emergency response resources (sheriff, fire, medical services); minimize the costs for cleanup, repair, and recovery; and minimize the long-term impacts caused by business disruption and reduced fiscal resources. The goals and policies for the Safety/Risk Management Element address the prevention of hazards in the Planning Area, as well as emergency planning and response to reduce human injury, property destruction, and social and economic disruption.

Seismic and Geologic Hazards

GOAL 1: Minimize injury and loss of life, property damage, and other impacts caused by seismic shaking, fault rupture, ground failure, and landslides.

Policies:

1.1 Require geological and geotechnical investigations in areas of potential seismic or geologic hazards as part of the environmental and development review process. Require mitigation of seismic or geologic hazards to the satisfaction of the responsible agencies.

1.2 Ensure all grading plans comply with the Uniform Building Code (UBC) and California Building Code including, if necessary, requiring preliminary investigations of development sites by a State-registered geotechnical engineers and certified engineering geologists.

1.3 If necessary, require liquefaction assessment studies in any area identified as having moderate to high liquefaction susceptibility.

1.4 Support earthquake strengthening and provisions for alternative or back-up essential services, such as water, sewer, electricity, and natural gas pipelines and connections, especially in areas of high seismic or geologic hazards.

Hillside Management

GOAL 2: Minimize grading and otherwise changing the natural topography, while protecting the public safety and property from geologic hazards.

Policies:

2.1 Discourage any grading beyond that which is necessary to create adequate building pads area.

2.2 Discourage excessive grading of slopes greater than 3:1 (three horizontal to one vertical), but where allowed, encourage varied slope ratios on design slopes to reduce the visual impact of grading.

Flood Hazards

GOAL 3: Minimize injury, loss of life, property damage, and economic and social disruption caused by flood hazards.

Policies:

3.1 Participate in the National Flood Insurance Program.

3.2 Conduct a planning area wide hydrology study and construct drainage improvements according to the requirements of the

study and/or Drainage Plan to reduce the threat of inundation in the Planning Area.

3.3 Ensure all development within identified flood hazard areas complies with Floodplain Management Regulations.

3.4 Ensure that development does not divert storm water run off onto adjacent properties, or cause alterations of natural drainage courses that cannot be adequately handled by existing drainage facilities or the flood control improvements proposed with the development.

3.5 Require the installation and maintenance of storm drains by property owners.

3.6 Assess potential environmental drainage impacts of new construction, including the necessity and impact of District drains and privately-owned and operated storm drains adjacent to slopes and stream-bed areas.

3.7 Utilize and support storm drain maintenance efforts to prevent localized flooding and mud and debris flows from overtaxed storm drains during strong storms.

Fire Hazards

GOAL 4: Reduce threats to public safety and protect property from wildland and urban fire hazards.

Policies:

4.1 Ensure that law enforcement and fire services, such as fire equipment and response time, are adequate and able to respond to a major disaster.

4.2 Improve average fire flow capabilities with infrastructure planning and development to support the land use plan, by upgrading the Planning Area's water distribution system so it can deliver the fire flow requirements set in the Riverside County Fire Protection and Emergency Medical Master Plan.

4.3 Encourage annual fire flow tests, especially in areas of high fire hazard.

4.4 Support the mutual aid agreement with March Air Reserve Base (ARB) Fire Department.

4.5 Ensure that new access roads have adequate widths and turning radius for fire and emergency vehicles.

4.6 Coordinate with the Riverside County Fire Department to support the development of adequate water supplies for emergency fire flow needs in an emergency, including on-site supplies of water, supplementary gravity-fed l water tanks, and auxiliary water distribution systems.

4.7 Encourage the planting and maintenance of drought-resistant, fire-retardant species on slopes to reduce the risk of brush fire and soil erosion in areas adjacent to hillsides; and develop stringent site design and maintenance standards for areas with high fire hazard.

Hazardous Materials

GOAL 5: Reduce the potential for hazardous material exposure or contamination in the Planning Area.

Policies:

5.1 Comply with the enforcement of disclosure laws that require all users, producers, and transporters of hazardous materials and wastes to clearly identify such materials at the site, and to notify the appropriate County, State and/or Federal agencies in the event of a violation.

5.2 For disaster preparedness, identify any Planning Area roadways along which hazardous materials may be transported, and restrict the transport of such materials on those routes.

5.3 Require land uses involved in the production, storage, transportation, handling, or disposal of hazardous materials are located a safe distance from land uses that may be adversely impacted by such activities.

5.4 Ensure the storage, use and transportation of any hazardous material complies with the standards set forth within the errata sheets published for each substance.

5.5 Coordinate with the Riverside County Fire Department and Riverside County Department of Environmental Health to assure improved response and capability of handling hazardous material incidents.

5.6 Promote efforts to reduce or eliminate the use of hazardous materials. Encourage the use of safer alternative products that do not pose a threat to the environment.

Critical Facilities

GOAL 6: Ensure to the fullest extent practical that, in the event of a major disaster, critical structures and facilities remain safe and functional.

Policies:

6.1 Continue to enforce seismic design provisions of the UBC, including the special provisions for critical facilities.

6.2 Review proposed projects to ensure that stairways and elevators are adequately strengthened and that emergency generators, computers, and other vital nonstructural building elements are securely anchored.

6.3 Encourage input by public works and engineering early in the project review process for critical facilities.

6.4 Regularly review the technical data on public safety and seismic safety for use in the planning process and undertake a technical update of the Safety/Risk Management Element every ten years.

Aviation Risk Management

GOAL 7: Reduce the possible risk of upset, injury and loss of life, property damage, and other impacts associated with an aviation facility.

Policies:

7.1 Ensure aviation related activities comply with both military and civilian standards contained within the approved Air Installation Compatible Use Zone (AICUZ) and Airport Layout Plan (ALP).

7.2 Ensure development and use of property within the vicinity of the airfield complies with appropriate building standards and codes, including height restrictions, restrictions on use, setbacks, population densities, insulation and materials, as contained within an approved Comprehensive Land Use Plan (CLUP) and appropriate AICUZ.

7.3 Ensure airport operations adhere to appropriate emergency access and response standards and practices.

Disaster Response Planning

GOAL 8: Plan for emergency response and recovery from natural and urban disasters.

Policies:

8.1 Update emergency plans, contacts, and liaisons with regional, State and Federal emergency response organizations at least every five years.

8.2 Establish an emergency response organization consisting of representatives from County agencies (Public Social Services, Sheriff, Fire), and local representatives from March JPA, and utilities.

8.3 Establish and maintain mutual aid agreements with neighboring jurisdictions and other government's emergency relief agencies; and with private enterprises such as Red Cross, Salvation Army, and local medical institutions to assist in shelter, relief, and first aid operations.

8.4 Designate and maintain emergency shelters and reception centers in coordination with County Public Social Services and the local Red Cross chapter.

8.5 Establish traffic control contingency plans for disaster routes.

8.6 Coordinate with County Sheriff and Fire agencies to identify casualty collection points and sheriff/fire staging areas.

8.7 Inventory, and where necessary, acquire supplemental disaster communication equipment.

8.8 Encourage private businesses to develop disaster preparedness plans for their employees.

8.9 Increase public awareness of Planning Area emergency response plans, evacuation routes and shelters to provide emergency assistance in the event of a natural disaster.

8.10 Inventory and coordinate with managers of dependent care centers (nursing homes, day care centers, etc.), and critical facilities located in the Planning Area to facilitate emergency response.

8.11 Participate in County wide emergency earthquake scenarios, coordinated by County Disaster Services, Chief Administration Office.

DISASTER PREPAREDNESS AND RECOVERY PLAN

Safety planning issues pertaining to emergency response, disaster preparedness, and disaster recovery develop as a natural consequence of the review of hazards and risks within the Planning Area. March JPA's disaster preparedness and recovery plan addresses these issues as a means of promoting public safety and protecting life and property.

In dealing with public safety, it is important to consider prevention, where possible, as the first step in hazard mitigation. This is accomplished by elimination of the hazard, isolation/avoidance of the hazard, or the regulation of land uses and structures in known hazard areas. Exhibits contained within the Safety/Risk Management Profile Report identify known hazard areas in the Planning Area. Standards for development in these areas shall be developed to prevent individuals from undue exposure to the associated risks. When prevention is not possible, the hazard must be planned for. Emergency planning means the formulation of strategies to minimize human injury, property damage, and economic and social disruption. This includes disaster preparedness, emergency response and recovery and reconstruction.

Disaster Preparedness

Disaster preparedness requires an assessment of hazards, identification of resources, and development of a procedural network under a variety of disaster scenarios.

1. Determining the Hazards and Risks. Earthquake shaking, associated fissuring and ground failure; storm-induced landslides and local flooding; and fires and hazardous material accidents are safety concerns in March JPA Planning Area. A major earthquake in the area presents the greatest challenge. Earthquakes occur with little or no warning and often set into motion multiple events, some worse than the original earthquake, and some similar to situations posed by other disasters. A major earthquake on either the San Andreas or the San Jacinto faults is likely to occur within the time frame of this General Plan. A major earthquake that ruptures on all three segments of the southern San

Andreas fault is a credible possibility and is useful as a worst-case disaster planning scenario.

2. Emergency Response Plan. The following are selected components that are considered in the development of the Planning Area's emergency response plans:

   a. Identification of an Emergency Operations Center, and potential temporary shelters and reception areas;

   b. Identification of casualty collection points and sheriff/fire staging areas;

   c. Designation and training of the emergency response organization, which would include representatives from County agencies, March JPA, utilities, and volunteer groups;

   d. Identification of skilled human resources, such as amateur radio operators, heavy equipment operators, and medical support personnel;

   e. Plans for emergency equipment needs, including battery powered and mobile generators, cranes, bulldozers, large ladders; personal gear such as respirators, gloves, and protective clothing, medical equipment and supplies, and tents for temporary shelter and emergency medical centers;

   f. Organizational charts and brief operational checklists and phone numbers;

   g. Inventory and coordination with managers of high occupancy facilities, dependent care centers (nursing homes, day care centers), and critical facilities located in the Planning Area. In all cases, facilities with immobile populations, such as day care centers or nursing homes, or residences where disabled individuals reside should be pre-identified;

   h. Regular training exercises or drills coordinated with other affected agencies to evaluate how well the March JPA Planning Area emergency response organization responds to a regional simulated disaster;

i. Programs that increase public awareness of potential hazards and risks so that businesses and tenants familiarize themselves with evacuation and emergency response procedures or can take action to protect themselves from a hazard;

j. Development of voluntary employer groups that can respond to light rescue, local fire control, and medical assistance needs;

k. Provisions for alternative or back-up essential lifelines, such as fire flow, sewer, and electrical services; and redundant communication lines to ensure efficient response to a crisis, including provisions for specific emergency radio frequencies for the March JPA;

l. Mutual aid agreements with neighboring cities, and with County, State, and Federal emergency relief agencies; and with private enterprises such as Red Cross, Salvation Army, and medical institutions to assist in shelter and relief operations.

3. Minimum Safety Standards for Peak Load Water Supply, Road Width, and Turning Radius. In order to ensure public safety and to maintain an adequate level of fire protection for buildings, minimum safety standards for fire flow and water supply, road width and access, and turning radius for fire apparatus are required. In the March JPA Planning Area, those properties located five road miles or less from a responding fire station, and within 1,000 feet of a hydrant are rated as 4, out of an Insurance Classification scale of 1 to 10, with 1 being the highest rating. The properties located five miles or less from a responding fire station, but more than 1,000 feet from a fire hydrant, and properties located more than five road miles but less than ten road miles from a responding fire station are assigned a classification number of 9. Most existing facilities are within a level four rating or better, and new development shall be constructed with strict adherence to Uniform Fire Code (UFC) and associated requirements as determined by the Fire Marshal.

a. Fire flow. Fire flow is the delivery rate of water necessary to halt and reverse the spread of fire. For the March JPA Planning Area, the

Riverside County Fire Department specifies an average fire flow requirement of 1600 gallons per minute (gpm). The actual average fire flow capability in the Planning Area is averaging above that within the developed areas of the Northeast Planning Subarea. Furthermore, there is a large variance in the fire flows that can be delivered by the water distribution system in the March JPA Planning Area. Water lines may need to be upgraded to meet future needs. However, some of the newer lines meet or exceed the required fire flows in the Planning Area.

b. **Minimum road width, access, and turning radius.** Roadway standards are defined to permit adequate access to structures during fire suppression operations. Such standards are geared for private access roads including driveways, bridges, alleys and restricted access roads designed solely for fire department vehicle access. Based on Public Works Standards adopted by March JPA, the minimum width of paved access roads should be 24 feet. In all cases, fire suppression vehicles should be able to reach within 150 feet of all portions of the outside walls of a building. Because insufficient turning radii can restrict emergency access, minimum turning radius for emergency access ways is 37 feet.

c. **Brush Management.** Brush management of vegetation adjacent to buildings is an important element of fire prevention. Minimum requirements may include managing combustible growth within 100 feet of structures, including clearance of hazardous flammable vegetation for a distance of 30 feet around the building perimeter. Additional standards and regulations are found in the Uniform Fire Code (UFC) and March JPA Ordinance 97-01 both which have been adopted by March JPA.

4. Evacuation and Disaster Routes. Evacuation involves relocation of tenants from threatened buildings or areas to ensure public safety. Disaster routes function as primary thoroughfares for movement of emergency response traffic, such as fire control. Disaster routes and evacuation routes are similar, in that road blockage or traffic jams can reduce response times. However, evacuation activities are controlled by particular situations, and often require improvisation. A road blockage could be in the form of slope failure, roads wash out or local

flooding. Evacuation is complicated during hazardous materials incidents because of the undetectable nature of some toxic chemicals, and because the movement of gas plumes cannot be readily predicted.

Evacuation routes will need to be developed and tailored to the various types of disaster that may occur within the planning area. Evacuation efforts can be restricted severely if evacuation route roads become impassable during a natural disaster. Efforts will be focused on preventing evacuation routes from damage and developing plans for alternate evacuation routes.

Emergency Response

The State and Federal Governments require local governments to prepare and maintain emergency plans as a condition of certain funding assistance. Riverside County is located in Mutual Aid Region VI, as designated by the State of California's Office of Emergency Services. The components of the emergency organization include:

1. Emergency Operations Center (EOC). An EOC coordinate and directs local and mutual aid resources to urgent crisis situations in the Planning Area. The EOC operates as a liaison with the County, other Planning Area emergency operations centers, and the Governor's Office of Emergency Services. The Ben Clark Public Safety Training Center located on Davis Road has been designated the EOC for the area.

2. County Sheriff Department. County Sheriff provides for the protection of life and property, enforces applicable laws, orders and regulations, and provides traffic control, including restricting and rerouting of traffic as needed. It also provides, in coordination with the fire department and other volunteer organizations, for the evacuation and relocation of persons.

3. County Fire Department. County Fire Department provides fire suppression and initial hazardous materials containment and assessment, coordinates search and rescue, and provides emergency medical assistance and evacuation support.

4. Public Health and Medical Operations. Public health service provides for public health, environmental sanitation services, and care and treatment of the ill and injured during a disaster. These services may be provided by the Riverside General Hospital, the Moreno Valley Community Hospital (Valley Health Systems District), local ambulance companies, the Red Cross, County Health Service and County Coroner.

5. Construction and Engineering Operations. These operations provide for the procurement, distribution and use of construction and engineering resources for emergency cleanups of debris in public right-of-ways, inspection of hazardous buildings and utility services.

Disaster Recovery and Reconstruction

After a disaster, a major earthquake in particular, short-term disaster recovery requires disaster operations that are not as immediate as fire suppression or medical attention, but that are equally important in protecting the public safety. March JPA shall develop short-term recovery plans, such as clearing Planning Area streets and transportation corridors to be used for evacuation and emergency access. It shall also establish provisions for restoring utilities and performing safety inspections of structures or buildings weakened by an earthquake, or other consequences resulting from fire, flood, or exposure to hazardous materials.

One short-term consequence of a disaster is the temporary displacement of persons stranded in the Planning Area. As part of the County Multi-Hazard Functional Plan, the County Department of Social Services maintains an inventory of schools, recreation facilities, and community facilities that can be used as temporary shelters. Emergency mass care facilities that have been identified in the March JPA Planning Area include the Arnold Heights School, and Chapels 1 and 2. Each of these facilities can temporarily house people, if needed. These and other mass care facilities that could service the area in the event of a disaster would be staffed by the American Red Cross and other relief agencies. Shelters should be structurally sound, if indoors, or located adjacent to an open space, such as a park or school. They should provide temporary housing and serve as emergency reception and communication centers. Additionally, an emergency

operations center can be easily assembled within the Ben Clark Public Safety Training Center and used as a central facility to coordinate disaster recovery, in concert with all public safety agencies.

March JPA shall also address longer-term recovery, including assistance to rebuilding of structures in areas heavily damaged in a disaster. Allowances in the zoning ordinance to permit temporary offices and facilities, such as trailers or tents, in the event of a disaster, can facilitate the recovery process.

After a damaging storm or earthquake, March JPA will need to:

Define the affected area;

Assess the effectiveness of emergency repairs and identify permanent repair options;

Help individuals and businesses qualify and apply for funds to repair and rebuild; and

Incorporate actions to mitigate future hazards by setting standards for rebuilding and new development in heavily damaged areas.

The financial need caused by business disruption and loss of revenue increases the pressure to rebuild rapidly after a disaster. Rational building decisions must be made by the reviewing agency at this stage and should be established in a reconstruction ordinance.

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IMPLEMENTATION PROGRAMS

The following programs specify ways in which to implement the March JPA's disaster preparedness and recovery plan. They include measures to prevent risks to occupants and to minimize injury from an unavoidable disaster or emergency.

1. Seismic Design

There are currently no Alquist-Priolo Special Studies Zones (APSSZ) within the jurisdiction of the March JPA Planning Area. March JPA shall require compliance with seismic design standards for new development. Seismic design provisions for conventional development, such as industrial and commercial development, specify that a building shall not collapse under seismic loading. However, structural and nonstructural damage can occur. It is economically infeasible to design earthquake-resistant structures for conventional development. The key is to enforce seismic design provisions with adequate review and inspection to ensure maximum quality construction and optimum design.

The March JPA Planning Area is located within Seismic Zone III specified in the Uniform Building Code (UBC). March JPA shall review all projects to ensure compliance with the existing and regularly amended seismic design provisions of the UBC. Coordination among prospective building owners, architects and structural engineers is necessary to ensure that design flaws are identified early in the review process. March JPA designated building inspectors shall review industrial, business park, commercial, and other critical facilities with consideration of the following:

Symmetrical, concrete and steel-framed buildings are particularly earthquake resistant forms of non-residential construction and shall be encouraged.

Irregularly-shaped buildings are more difficult to design to withstand strong ground motions, and are therefore, more susceptible to damage during an earthquake. Irregularly-shaped buildings shall be discouraged.

Buildings with adverse discontinuities in strength between major structural elements are susceptible to earthquake damage and shall be discouraged.

Nonstructural elements must not block exit routes and constrain rescue operations if damaged or overturned during a tremor.

Non-residential, precast tilt-up construction must have adequate diaphragms (horizontal bracing system that transmits horizontal forces to vertical resisting components), and adequate tie-ins or connections between structural components to prevent roof collapse.

Stairways and elevators shall be adequately strengthened, and nonstructural components such as emergency generators, computers, and cabinets shall be anchored.

There is no structural inventory of existing facilities in the March JPA Planning Area identifying existing design weaknesses such as soft-story, tilt-up concrete construction, or irregular structural or nonstructural design. To identify and correct safety hazards in critical facilities, March JPA should consider requiring a review by a structural engineer when a building undergoes substantial improvement or occupancy change.

2. Grading

The majority of the West March JPA Planning Subarea is primarily undeveloped. Grading and building permits will be authorized for development, including the development of the north west, rolling hill areas. For any grading activity in the planning area, it is March JPA's policy to minimize disturbance to natural landforms, to prevent conditions that result in landsliding, runoff, or erosion.

March JPA approved codes and standards for development with the adoption of Ordinance Number 97-01 (which includes the UBC and the Uniform Fire Code) to address safety concerns in the grading process by requiring:

Preliminary investigations of sites by qualified geotechnical engineers and engineering geologists;

Developers to retain the services of a qualified geotechnical engineer and engineering geologist during construction and coordination between the civil engineer, engineering geologist and geotechnical engineer while supervising grading during construction;

Certification as to the stability of the building site to adverse effects of rain and earthquakes before issuance of building permits; and

Mitigation of on site hazards caused by grading that may affect adjacent properties, including erosion and slope instabilities.

Good grading design must balance safety and aesthetics to preserve the natural visual quality and community character. Mitigation of existing and/or potential slope problems at the site shall be recommended by qualified geotechnical engineers, engineering geologists, and contractors, as based on detailed site-specific information and current grading codes. The following are selected aspects of safe and unobtrusive grading design:

Slope Ratio: Graded hillsides have the least visual impact if fill slope ratios are varied. Slope ratios for cut and fill slopes shall not exceed 2:1 (horizontal to vertical). Fill slopes with a slope grade of 3:1 are preferred.

Contour Grading: If areas are modified by grading, the finished slopes are least obvious if rounded to conform to the existing, natural slopes.

Slope Cover and Irrigation: Proper vegetation, such as fast growing, deeply rooted, fire and drought resistant cover, inhibits infiltration of water and reduces the hazard of erosion.

Drainage Control: Surface devices such as terrace drainage (horizontal slope and down slope drains) and subdrains (seepage control) need to be constructed to funnel water to storm drains. Berms are also commonly placed at the tops of slopes to channel drainage away from slopes.

Debris Protection: Slough and debris walls can be constructed at the toe of unstable slopes; this acts to impede shallow landslides and debris flows and/or deflects eroded, saturated material into storm drains.

Gully Erosion Control: Gullies need to be protected by paved, concrete channels, or flood velocity reduction structures that can direct water safely to storm drains.

Drainage Maintenance: Drainage devices must be regularly inspected and cleared, especially before storms, to ensure proper function. Private owners may be made responsible for inspection and maintenance of drainage devices on their property.

Rodent Control: Burrowing animals cause excessive slope destabilization. Some jurisdictions utilize districts to implement a rodent abatement program.

March JPA shall require that planting and irrigation be implemented for all cut slopes greater than five feet in height and fill slopes greater than three feet in height. Recently burned areas are very prone to erosion and shall be quickly stabilized with suitable vegetation. Potentially active landslides and even engineered slopes can be de-stabilized by excessive water. To ensure that reactivation is prevented, the introduction of water through landscaping must be minimized, especially in areas underlain by small natural landslides and/or deep-seated landslides too large to have been mitigated during smaller grading projects.

3. Master Flood Control and Drainage Plan

A hydrology study shall be conducted and coordinated with Riverside County Flood Control and Water Conservation District (RCFC&WCD) to establish a Master Flood Control and Drainage Plan for the planning area, or amended existing area drainage plans to incorporate the planning area. Storm drain plans must identify the areas in the planning area where the existing drainage devices are inadequate to handle a 100-year storm; and where little to no infrastructure exists, the necessary facilities to accommodate the planned land uses. Proper drainage is also necessary to ensure adequate access or egress for emergency response, fire fighting, or evacuation activities.

March JPA shall encourage the correction of sheet flow or concentrated channel flow problems along existing single access routes and in areas where the existing drainage devices are inadequate.

4. Flood Plain Ordinance

March JPA shall prepare and adopt a flood plain ordinance in accordance with the requirement of Federal Emergency Management Agency (FEMA). Additionally, March JPA shall apply to FEMA as a community, and seek participation in the National Flood Insurance Program (NFIP). The planning area, as a former federal military installation, has not been part of the Flood Insurance Rate Maps (FIRM) issued in conjunction with NFIP through FEMA. A letter of map revision shall be applied for, to request inclusion of the planning area into the program.

5. Fire Hazard Mitigation

March JPA Planning Area is served by the County of Riverside Fire Department for fire suppression services. Fire Stations are manned by both County Fire Department personnel and volunteers. Mutual aid agreements involving fuel management, suppression assistance, and logistical support are provided through the Riverside County Fire Department and March Air Reserve Base (ARB) Fire Department.

March JPA recently adopted the 1994 UFC. For the March JPA Planning Area Fire Marshal services are under contract, and the March JPA utilizes additional fire prevention provisions as contained within March JPA Ordinance 97-01. This ordinance consists of additional criteria for development, including provision for fire sprinkler systems. The March JPA Fire Prevention services contractor reviews structural plans to conform with UFC and Ordinance 97-01.

Public assembly facilities and high occupancy facilities require special emergency needs in addition to fire suppression. High occupancy facilities (100 persons or more), or other occupancies of special concern in the planning area, as noted by the County Fire Department, include Chapels 1 & 2, Arnold Heights School and the auditorium (Bldg 3409). Fire drills and public education are needed to facilitate rescue operations and fire

containment. Additional fire protection for these facilities can include fire-resistant construction and interior automatic fire sprinkler systems.

With future development and growth in the Planning Area, fire suppression services will have to be augmented. This can be achieved through construction of adequate fire flows and hydrant location for new construction. Construction of facilities will improve the average response time to an emergency in the Planning Area. In areas with high fire risks, March JPA shall encourage planting vegetation with drought-resistant, fire-retardant plants that also provide for erosion control.

6. Emergency Fireflow

The water distribution system in some areas of the Planning Area may be deficient in providing the required fire flow. In the event of an earthquake, secondary water supply systems may be necessary to supplement reservoirs. This is especially true if pipeline damage reduces the available fire flow, and water sources cannot be used to suppress fires in areas of the Planning Area. March JPA shall coordinate with the water purveyors in upgrading of the existing water system, to provide adequate emergency fire flow capacity over maximum water demand.

7. Hazardous Materials Regulations

One of the best ways to reduce the impact of a hazardous material release is through regulation governing the storage, use, disposal, and manufacture of hazardous materials. Several regulations have been implemented to address the issue of hazardous substances at the state, federal and county levels. The County of Riverside Department of Environmental Health, Hazardous Materials Division, is the administering agency in March JPA Planning Area for the implementation of the Riverside County Hazardous Materials Release Response Plan and Inventory Program. The County of Riverside Department of Environmental Health, Hazardous Materials Division and Riverside County Fire Department maintain emergency response teams.

Businesses and facilities that handle hazardous and acutely hazardous materials above certain established quantities are required to submit a yearly inventory and amended business plan; if changes have occurred with respect to the substances that they handle,

to the County of Riverside Department of Environmental Health, Hazardous Materials Division. Business plans are designed to be used by the County of Riverside Department of Environmental Health, Hazardous Materials Division and Riverside County Fire Department emergency response teams during a hazardous material release to evaluate and mitigate the situation as quickly and accurately as possible. Within the March JPA Planning Area, there are a limited number of facilities that require a business plan pursuant to complying with the County of Riverside Department of Environmental Health, Hazardous Materials Division.

Inspectors from the County of Riverside Department of Environmental Health, Hazardous Materials Division, inspect the businesses and facilities that have submitted business plans at least once every year to validate the accuracy of their plans. It is the responsibility of the handlers to submit any changes (such as types or quantities of hazardous materials used, ownership, etc.) to the County of Riverside Department of Environmental Health, Hazardous Materials Division.

8. Hazardous Materials Use

Structural and nonstructural failures as a result of strong ground shaking or surface fault rupture during an earthquake can increase the probability of a hazardous materials release. March JPA shall require risk reduction alternatives for hazardous materials storage, which may include:

Enforcement of the most recently adopted UBC regarding seismic design provisions for commercial development and critical facilities. Facilities that store hazardous materials shall be designed to withstand strong ground motion with only limited structural damage.

Enforcement of current regulations, including those in the UFC, regarding the storage of hazardous materials, with an emphasis on secondary containment systems, segregation of reactive chemicals and monitoring systems.

Immobilization of all unanchored hazardous materials containers.

Encourage storage of the minimum amount of hazardous materials necessary for day to day operation, especially of those materials that can produce toxic gaseous clouds.

Encourage the use of less hazardous or nonhazardous substances whenever possible.

Proper and early disposal of hazardous wastes.

9. Critical Facilities

Some segments of the lifeline utilities and infrastructure that serve March JPA can be expected to be damaged in a major earthquake. Critical facilities shall maintain back-up power, including generators, fuel, and batteries. March JPA shall encourage and support programs established by utility companies designed to strengthen connections and lines in areas of high hazards, and to provide for back-up and/or redundant service alternatives.

10. Response Coordination

March JPA needs to coordinate with the County Fire, Sheriff, and Chief Administration Office to effectively implement an emergency plan. Emergency plans for the March JPA Planning Area must also reflect the nature of impacts likely to result from earthquakes (multiple incidents), storms (damaged roads), and fires (evacuation). March JPA needs to coordinate with County Public Social Services and the American Red Cross to designate and operate emergency shelters and reception centers. Ideally, shelters shall serve as first aid stations, public information and emergency coordination centers, as well as gathering/collection areas for displaced or evacuated people.

In addition, coordination with employer groups and organizations is necessary to maintain the efficiency of March JPA's emergency response organization. Increased public awareness of Planning Area emergency response plans, evacuation routes, and shelters, in addition to information on how to reduce risks at the office, improves overall safety in the Planning Area.

California Division of Mines and Geology Special Publication 60, Earthquake Planning Scenario for a Magnitude 8.3 Earthquake on the San Andreas fault in southern California (Davis, et al., 1982) can be used as a guide to developing emergency planning contingencies for the Planning Area. A major earthquake involving all three segments of the San Andreas fault can be considered the worst-case earthquake disaster for emergency planning purposes.

11. Evacuation Routes

Provisions need to be made for traffic control contingencies along Planning Area designated disaster routes, especially for areas near Interstate 215. Routes that provide single access to areas or where emergency access could be threatened shall be identified and targeted for the following actions:

Implementation of mitigation measures that prevent earthquake induced slope failures from blocking these roads;

Improvement of streets of inadequate width or inadequate drainage that can hinder the mobilization of fire equipment and other emergency vehicles; and

Development of plans for traffic control contingencies and evacuation of high occupancy and immobile populations.

12. Reconstruction Ordinance

Reconstruction policies are necessary to guide rebuilding decisions in the aftermath of a major earthquake or other disaster. March JPA may consider enacting a reconstruction ordinance that considers the impact of reestablishing areas proven to be susceptible to a high-risk from a natural or urban hazard. It can also facilitate rebuilding, in certain cases, by defining conditions when permits can be waived if redevelopment is safe and beneficial to the Planning Area.

A reconstruction ordinance allows the definition of standards for rebuilding decisions before a disaster occurs. Circumstances for bringing the damaged property up to current code or some other acceptable level are usually incorporated into such an ordinance. A main element of a reconstruction ordinance is the "preliminary assessment

of damage" and initial recommendations. Rebuilding decisions often require detailed geotechnical/geologic studies or structural analysis to determine and assess the effectiveness of emergency repairs, and identify appropriate permanent repairs. One option is to require environmental studies if more than 50 percent of the property is damaged in a disaster, whether it is caused by structural damage or fault rupture, landsliding, or other ground failure.

13. Aviation Use Compatibility

March JPA shall adhere to and comply with the approved ALP and AICUZ Report for the joint use aviation facility, as well any CLUP prepared for the aviation field at March. This includes responding to all development proposals within the respective zone districts, outside of the planning area. Both areas to the north and south are located within the adjacent jurisdictions. March JPA shall foster formal relationships with the adjacent jurisdictions to prevent these areas from incompatible land uses and additional exposure of risk to persons and property.

APPENDIX VI-A: EARTHQUAKE PREPAREDNESS

A major earthquake will pose the greatest challenge to the Planning Area's emergency response organization because the simultaneous occurrence of multiple incidents can quickly overwhelm the emergency relief agencies of the area. Therefore, the Planning Area shall focus on improving public awareness of earthquake preparedness and encouraging public self-help. The following is a list of tasks that individuals at the home or office shall take to lessen the overall impact of a major earthquake.

Before an Earthquake:

Remove or correct interior nonstructural hazards, such as top-heavy bookcases and storage cabinets, water heaters and other appliances. Anchor furniture and water heaters against the wall, and replace stiff connections to gas-fired appliances with flexible ones.

Set aside a supply of emergency food and water, and obtain first aid materials, a gas shut-off wrench, fire extinguisher, and battery-powered radio. Identify persons with first aid training and check for an emergency supply of medication for all parties, especially the children, disabled, and elderly.

Practice taking cover. This exercise will make people aware of the safest places during an earthquake, such as under a desk, table, bed or strong doorway. The maximum duration of severe shaking from a major earthquake expected to impact the March JPA Planning Area is roughly 50 seconds.

Practice exiting. Walk the possible escape routes from your facility and plan to avoid light fixtures, masonry chimneys, unsupported walls and other overhead hazards. Power for elevators and escalators may fail, so be aware of alternate exits. Do not panic or run; crowded exits shall be evacuated in an orderly manner to avoid additional injuries in a rush for the door.

Practice turning off the electricity and water, and know how to turn off the gas at the street main at your facility. Do not practice gas shut-off; for safety reasons only the utility company shall turn it back on. Be sure everyone in the household can locate main switches and valves.

Review the responsibilities of each person after an earthquake. Plans for picking up children from schools, day-care centers, or other facilities with dependents shall be regularly checked and reviewed. Have available the phone number of a person outside of the area that can manage and relay family messages.

Contact March JPA and area tenants about forming a co-op self-help group.

After an Earthquake:

Check for injuries in your area.

Extinguish small fires and check for additional fire hazards, such as cracked walls, roof lines and attics, and other physical signs of structural damage that can cause a malfunction in the electrical wiring.

Check for the smell of leaking gas, and if detected, shut off gas at the gas meter. Unanchored gas heaters or gas-fired hot water heaters may experience damage to valves and service connections.

Shut off electrical power if there is damage to the wiring or there is a gas leak. The main switch is usually located in or next to the main fuse or circuit breaker box.

Clean up flammable liquids, medicines, and other harmful substances.

Check for structural and nonstructural damage, such as cracked chimneys, fallen power lines, and other objects that may become unstable and fall during an aftershock.

Try not to use water in case there is a drop in water pressure for firefighting purposes (fire flow). Toilets shall not be flushed until both incoming water lines and outgoing sewer lines have been checked to see if they are open.

Try not to use the phone unless it is a genuine emergency. Emergencies, damage report alerts, and other information can be obtained by turning on your radio.

Report serious injuries and significant damage to a nearby emergency operations center.

PROFILE REPORTS
for the
GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

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LIST OF ACRONYMS/ABBREVIATIONS

----- A -----

AB	Assembly Bill
ACM	Asbestos Containing Material
ACOE	Army Corp of Engineers
AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
AFRC	Air Force Reserve Command
AFRES	Air Force Reserves
AFIS	American Forces Information Services
AFVW	Air Force Village West
AICUZ	Air Installation Compatible Use Zone
ALP	Airport Layout Plan
APS	Aboveground Petroleum Storage
APZ	Accident Potential Zone
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ANG	Air National Guard
ARB	Air Reserve Base
ARC	Air Reserve Command
AT&SF	Atchison Topeka & Santa Fe Railway

----- B -----

BACT	Best Available Control Technology
BCP	Base Clean-Up Plan
BRAC	Base Realignment and Closure
BO	Biological Opinion

----- C -----

CAA	Federal Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CCAA	California Clean Air Act

CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
Cl^-	Chloride
CNEL	Community Noise Equivalent Level
CRMP	Cultural Resources Management Plan
CO	Carbon Monoxide
COE	Army Corps of Engineers
CSC	California Special Concern species
CZ	Clear Zone

----- D -----

dBA	A-Weighted Decibel
DNL	Day Night Average Noise Level
DOD	Department of Defense
DRMO	Defense Revitalization and Marketing Office
DTSC	Department of Toxic Substances Control

----- E -----

EA	Environmental Assessment
EBS	Environmental Baseline Survey
EC	Elemental Carbon
EDMS	Emission and Dispersion Modeling System
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMWD	Eastern Municipal Water District
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ERC	Emission Reduction Credit
ESA	Endangered Species Act

----- F -----

FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Works Administration
FONSI	Finding of No Significant Impact

----- G -----

gpm	gallons per minute

----- H -----

HAP	Homeless Assistance Plan
HAP	Hazardous Air Pollutant
HCD	Department of Housing and Community Development
HCP	Habitat Conservation Plan
H_2SO_4	Sulfuric Acid
HUD	Department of Housing and Urban Development

----- I -----

ICBO	International Conference of Building Officials
IRP	Installation Restoration Program
ISO	Insurance Service Office
ISR	Indirect Source Measures

----- J -----

JPA	Joint Powers Authority
JPC	Joint Powers Commission

----- K -----

----- L -----

L_{dn}	Day Night Average Noise Level
L_{eq}	Equivalent Noise Level
LRA	Local Redevelopment Authority

----- M -----

MAA	Maximum Annual Average
MACT	Maximum Achievable Control Technology
MGD	Million Gallons per Day
MJPRA	March Joint Powers Redevelopment Agency
MMI	Modified Mercalli Intensity
MRIV	Metropolitan Riverside County
MRZ	Mineral Resource Zone
MSL	Mean Sea Level
MWD	Metropolitan Water District

----- N -----

Na^+	Sodium
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Communities Conservation Plan
NEPA	National Environmental Policy Act
NH_4	Ammonium
NHPA	National Historic Preservation Act
NLR	Noise Level Reduction
NO_2	Nitrous Dioxide
NO_3	Nitrous Trioxides
NO_x	Nitrogen Oxides
NRHP	National Register of Historic Places

----- O -----

O_3	Ozone
OC	Organic Compounds
OFZ	Obstacle Free Zone
OSHA	Occupational Safety and Health Act

----- P -----

PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
Pb	Lead
PM_{10}	Particulate Matter (equal to or less than 10 microns in diameter)
ppm	parts per million
PSD	Prevention of Significant Deterioration
PUC	Public Utilities Commission

----- Q -----

----- R -----

RACT	Reasonably Available Control Technology
RCHCA	Riverside County Habitat Conservation Agency
RCTC	Riverside County Transportation Commission
RECLAIM	Regional Clean Air Incentives Market
ROG	Reactive Organic Gas
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RSAF	Royal Singapore Air Force
RTA	Riverside Transit Agency

----- S -----

SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	Southern California Air Quality Management District
SEL	Sound Exposure Level
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SKR	Stephens' Kangaroo Rat
SO_2	Sulfur Dioxide
SO_3	Sulfur Trioxide
$SO_4^=$	Sulfate
SO_x	Sulfur Oxides

----- T -----

TCE	Trichloroethylene
TCM	Transportation Control Measures
TDM	Transportation Demand Management
TDS	Total Dissolved Solids
TMA	Transportation Management Associations
TMO	Transportation Management Organizations
tpy	tons per year
TSP	Total Suspended Particulates

----- U -----

UBC	Uniform Building Code
UFC	Uniform Fire Code
USAF	United States Air Force
USDA	United State Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United State Geological Survey

----- V -----

VOC	Volatile Organic Compound
VMT	Vehicle Miles Traveled

----- W -----

WMWD	Western Municipal Water District
WPA	Works Progress Administration
WSA	Weapons Storage Area
WRCOG	Western Riverside Council of Governments

----- X -----

----- Y -----

----- Z -----

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INTRODUCTION

The Profile Reports of the March Joint Powers Authority General Plan provide a discussion of existing, or "base line" conditions of the Planning Area. The reports identify needs and resources, and provides background information on issues and opportunities that need to be considered in the planning and formulation of the General Plan. By delineating the needs and resources of the Planning area, the March Joint Powers Authority (JPA) will be in a position to best meet and provide for the needs, interests and obtain the goals and objectives of the General Plan.

The Profile Reports are organized in the same manner as the General Plan. Each section of the profile reports correlates to a General Plan element. The sections are as follows: land use, transportation, noise/air quality, housing, resource management and safety/risk management. References within the Profile Reports are made where overlapping issues arise, to avoid duplication of material and redundancy of information.

Aside from the General Plan formulation, the Profile Reports may be used by March JPA as a Master Environmental Assessment. It can serve as a baseline condition in evaluating how base reuse and proposed developments would change existing conditions in the area and what resources may be impacted. Because of the nature of the data in these reports, it is necessary to update some information on a more regular basis than others. Thus, while soil resources, geologic characteristics, and water resources need not be reviewed unless new studies are completed, traffic volumes are likely to require update as development occurs. Also, some reports provide more detailed information and are more in-depth than others. This is to comply with specific requirements in state law regarding General Plan development.

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PROFILE REPORT
for the
GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

Land Use

LAND USE

INTRODUCTION

The Land Use Profile Report discusses the location and distribution of existing land uses, summarizes the base reuse plan and existing facilities for the March Joint Powers Authority (JPA), and identifies infrastructure of the area. This report also identifies development constraints affecting existing and future development.

PROJECT SETTING

The *March Joint Powers Authority Planning Area* (the "Planning Area") is defined as the area formerly known as March Air Force Base (AFB). Located within the western Riverside County region of Southern California, March AFB encompassed approximately 6,500 acres. The planning area is bisected by Interstate 215 (Highway 395), approximately three miles south of State Highway 60. The surrounding communities include the cities of Moreno Valley, Perris and Riverside, and unincorporated areas of Riverside County.

History:

March AFB, California, a military installation almost continually since 1918, served as an active duty aerial refueling and deployment base, as well as home for Air Force Reserve (AFRES) and California Air National Guard (ANG) units. March AFB was one of the bases recommended by the 1993 Defense Base Realignment and Closure Commission for realignment. The Commission's recommendation included departure of the active duty wing, with AFRES and other federal agency units remaining within a military cantonment area. The Commission's recommendations were accepted by the President and submitted to Congress on July 2, 1993. March AFB converted to March Air Reserve Base (ARB) April 1, 1996.

March Joint Powers Authority:

In response to base realignment at March, the adjacent jurisdictions immediately formed a joint powers authority. March JPA is a public entity created for the purpose of addressing the use, reuse, and joint use of realigned March AFB. The four individual public entities that cooperatively formed the JPA are the cities of Perris, Moreno Valley, Riverside and the County of Riverside. The JPA was created by separate resolutions of the four jurisdictions in September 1993.

The JPA is governed by the provisions of the Joint Powers Agreement that created the Authority. The JPA Agreement created the legislative body of the March JPA; the March Joint Powers Commission (JPC). The Commission is the decision and policy making body for the Authority. It consists of eight elected officials (two from each of the four jurisdictions). March JPA completed the organizational requirements of initiating a new governmental jurisdiction, and assumed a leadership position in looking toward the future of March.

Land Use Authority:

Pursuant to a non-codified legislative declaration, the County of Riverside transferred land use authority to March JPA March 11, 1997. With the formal transfer of local land use authority from the County of Riverside to March JPA, March JPA is the lead agency for the development of a General Plan and associated environmental documentation to satisfy the requirements of California Environmental Quality Act (CEQA). The formulation of the General Plan will set the premise to actuate development and base reuse in accordance with state statutes.

Base Reuse:

Conversion of March AFB from an active duty military installation to an ARB, resulted in the disposal and reuse of approximately 4,400 acres of land. Realignment of the base results in a significant impact to the local economy. The impacts are measured in direct loss of 10,000 military and civilian jobs, loss of contract spending by the base, and loss of indirect economic activity as a result

of the changes. However, an opportunity is created relative to the portions of the base that are not retained for use by the Department of Defense (DOD). Planning and implementing new uses for currently vacant lands, reuse of existing facilities, and joint use in cooperation with the Reserves is the challenge of the March JPA.

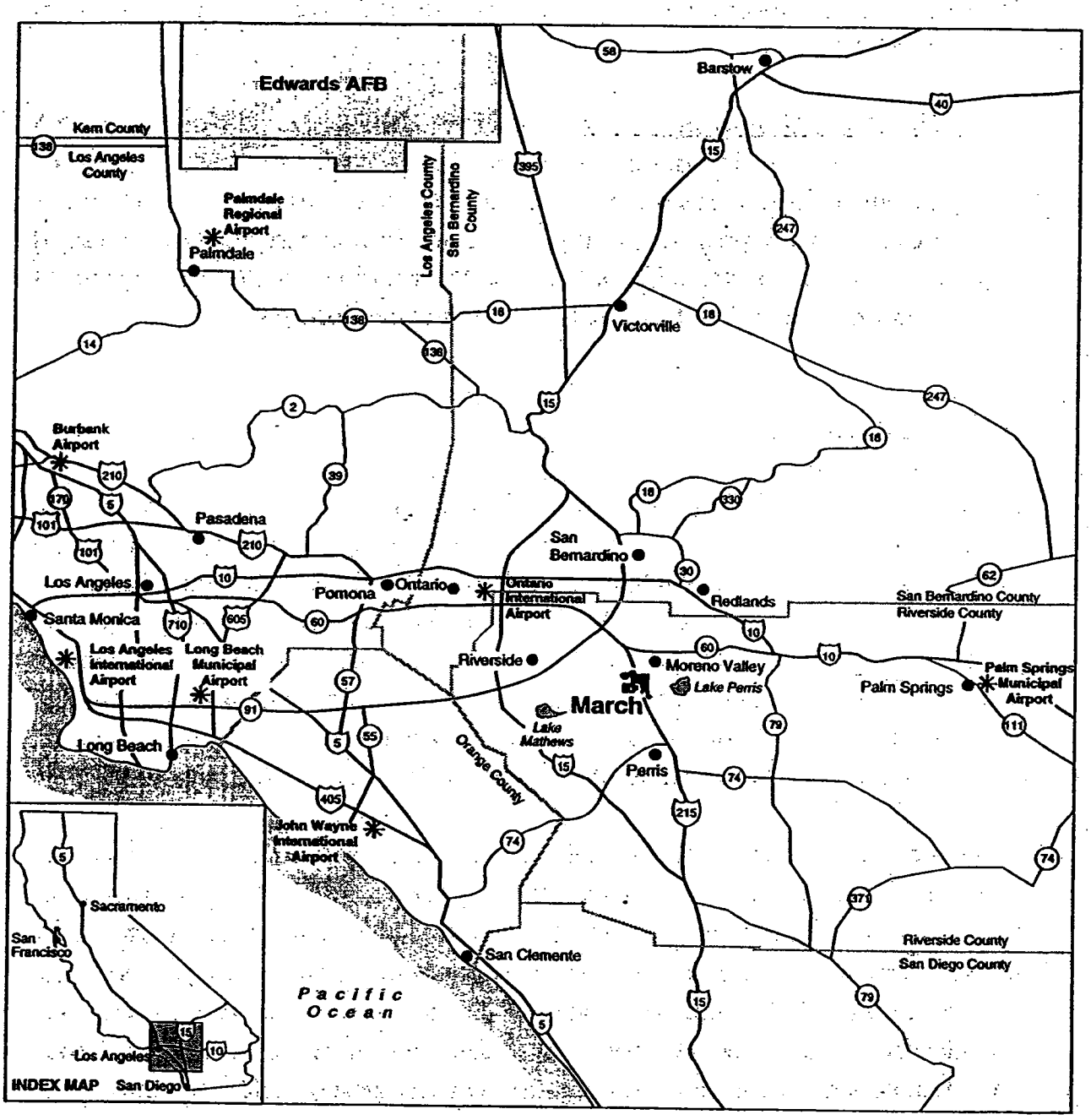
The *March Air Force Base Reuse Master Plan* was developed by the March JPA for the DOD to identify means of revitalizing or redeveloping the realigned military installation in a beneficial manner. The base reuse master plan serves as the base work or premises of the general plan. In summary, the General Plan is an implementation tool of the base master plan, to realize the requirements of California state law to facilitate base reuse and development.

PLANNING AREA

Through the Joint Powers Agreement, the area governed by the March JPA includes the entire boundaries of March AFB, prior to base realignment in April 1996. This area incorporates approximately 6,500 acres total, inclusive of the "cantonment" area; an area retained by the DOD for the AFRES. The "non-cantonment" area, or area no longer retained by the DOD, includes 4,400 acres of the total base area. Additionally, civilian aviation is incorporated through joint use of the airfield within the cantonment area. The definitive boundary of the March JPA Planning Area is the entire base area, inclusive of the ARB area which is a federal installation retained for the AFRES.

The non-cantonment area of the planning area can be easily divided into the subareas, each with distinct geographical characteristics. The most developed portion of the non-cantonment area is the *Northeast Area,* which is part of the main base and immediately adjacent to the cantonment area. *West March* consists of the entire base property west of Interstate 215, and is primarily undeveloped and contains various environmental elements and habitat. The area prime for civilian aviation use is the *Southeast Area,* which is under-utilized, and immediately adjacent to the aviation field cantonment area.

Exhibit 1-1
Vicinity Map



Source: March AFB EIS 1996

CURRENT ZONING & LAND USE

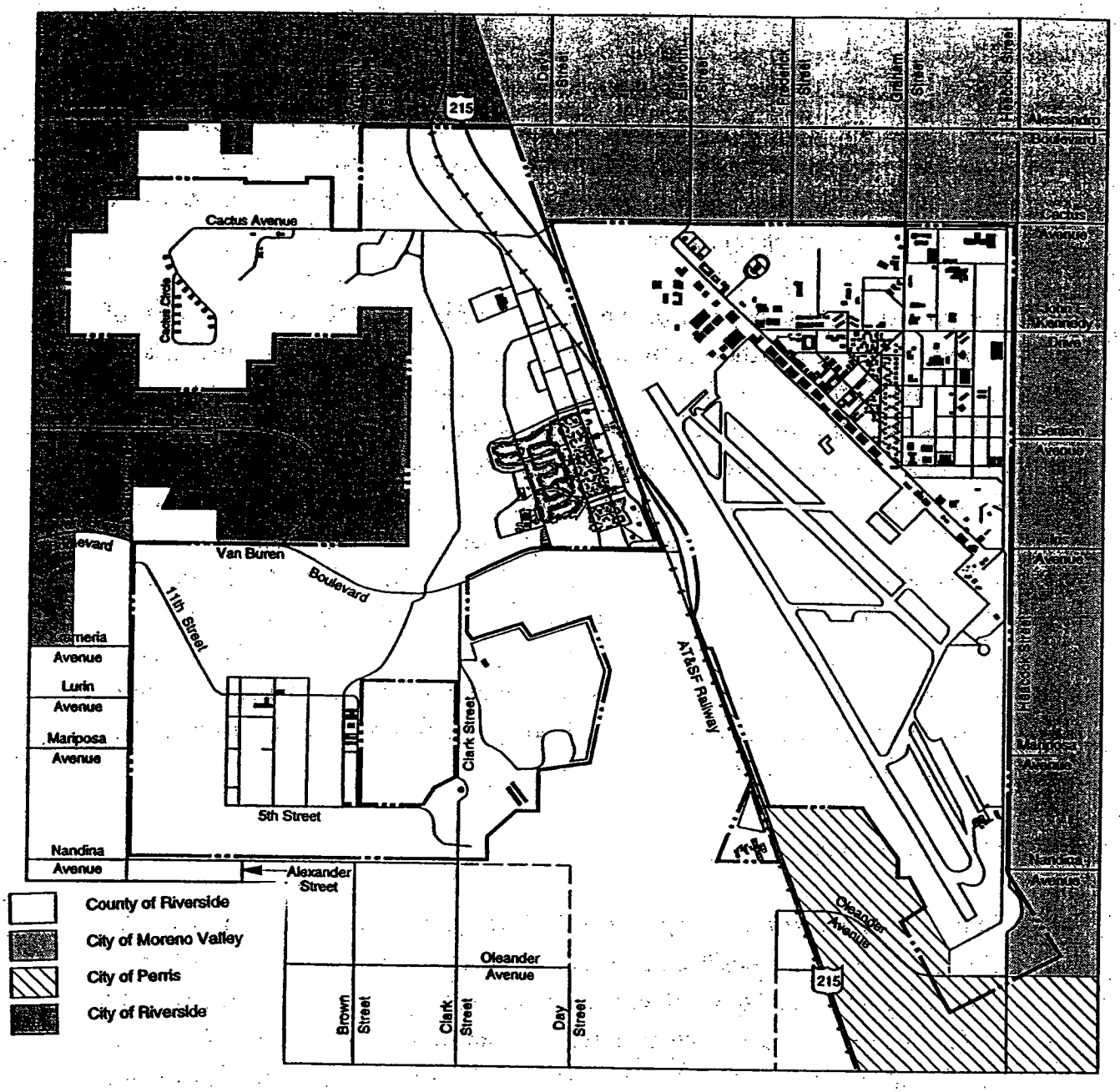
As an unincorporated area within the County of Riverside, the entire area formerly known as March AFB is wholly contained within the County and under county jurisdiction. Both the Edgemont-Sunnymead Land Use Planning Area of the County of Riverside General Plan and county zoning designates this area as federal property and not subject to local zoning or land use control. Prior to portions of the base being incorporated into March AFB, the County zoned the area for rural residential use. On March 11, 1997 land use authority was transferred from the County of Riverside to the March JPA for the entire planning area.

Land uses existing on base prior to base realignment April 1, 1996 were primarily of general categories. The Northeast Planning Subarea or "main base" area contained the majority of base facilities and services. This area included commercial and service oriented facilities, institutional facilities inclusive of the hospital and dental clinic, the historical district including Green Acres housing, and recreational facilities. Aviation and aviation support facilities, including a 13,300 lineal foot runway, and U.S. Customs and Aero Club aviation activities are located parallel to Interstate 215 within the southwestern edge of the Northeast Planning Subarea. The West March Planning Subarea contains the golf course, weapons storage area, Arnold Heights housing, sewer plant, and the Noncommissioned Officers Academy. A large portion of West March Planning Subarea is vacant land or land undeveloped but utilized as a readiness training mobility area in the 1950's. The Southeast Planning Subarea contains the former alert facility and the March Field Museum.

March Air Reserve Base:

March ARB encompasses approximately 2102 acres of the former March AFB, thereby an estimated 4,400 acres of land and existing facilities has been declared surplus by the federal government. Aviation facilities, with the exception of the old Alert Facility are contained within the cantonment area. The AFRES and ANG will continue to utilize and operate the aviation facilities and support the continued military mission at March ARB.

Exhibit 1-2
March JPA Member Jurisdictions Map



Source: March AFB EIS 1996

TABLE 1-1 BASE LAND USES PRIOR TO REALIGNMENT	
LAND USE	ACRES
Airfield	1,715
Aviation Support	505
Industrial	515
Institutional	
Medical	54
Educational	253
Commercial	218
Residential	278
Public Facilities/Recreation	376
Vacant Lands	2,790

Base Reuse Process:

Upon closure or realignment of a military installation, a base master reuse plan is composed. A Land Use Plan for the Master Reuse Plan is developed as a Phase One component of the three-phase Base Reuse Implementation Process. The Land Use Plan delineates the spatial distribution and land use pattern for base property not within the cantonment area, of which an analysis is incorporated into the environmental assessment completed for the Base Master Reuse Plan comprehensively. Additionally, a Homeless Assistance Plan (HAP) is developed in accordance with the amended McKinney Act the provisions are made to homeless service providers through the plan.

Exhibit 1-3
March JPA Planning Area Boundary & March JPA Planning Subareas

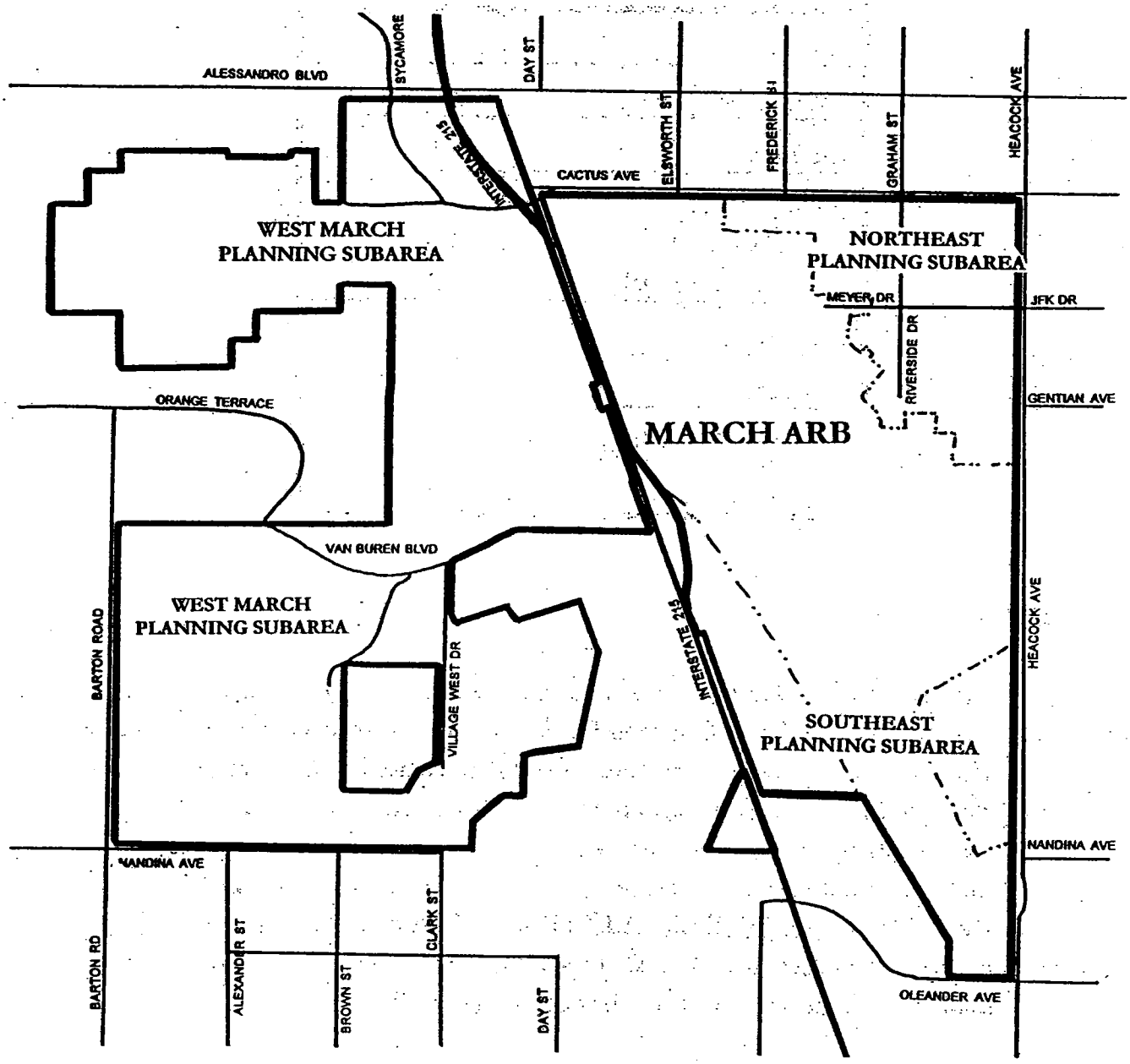
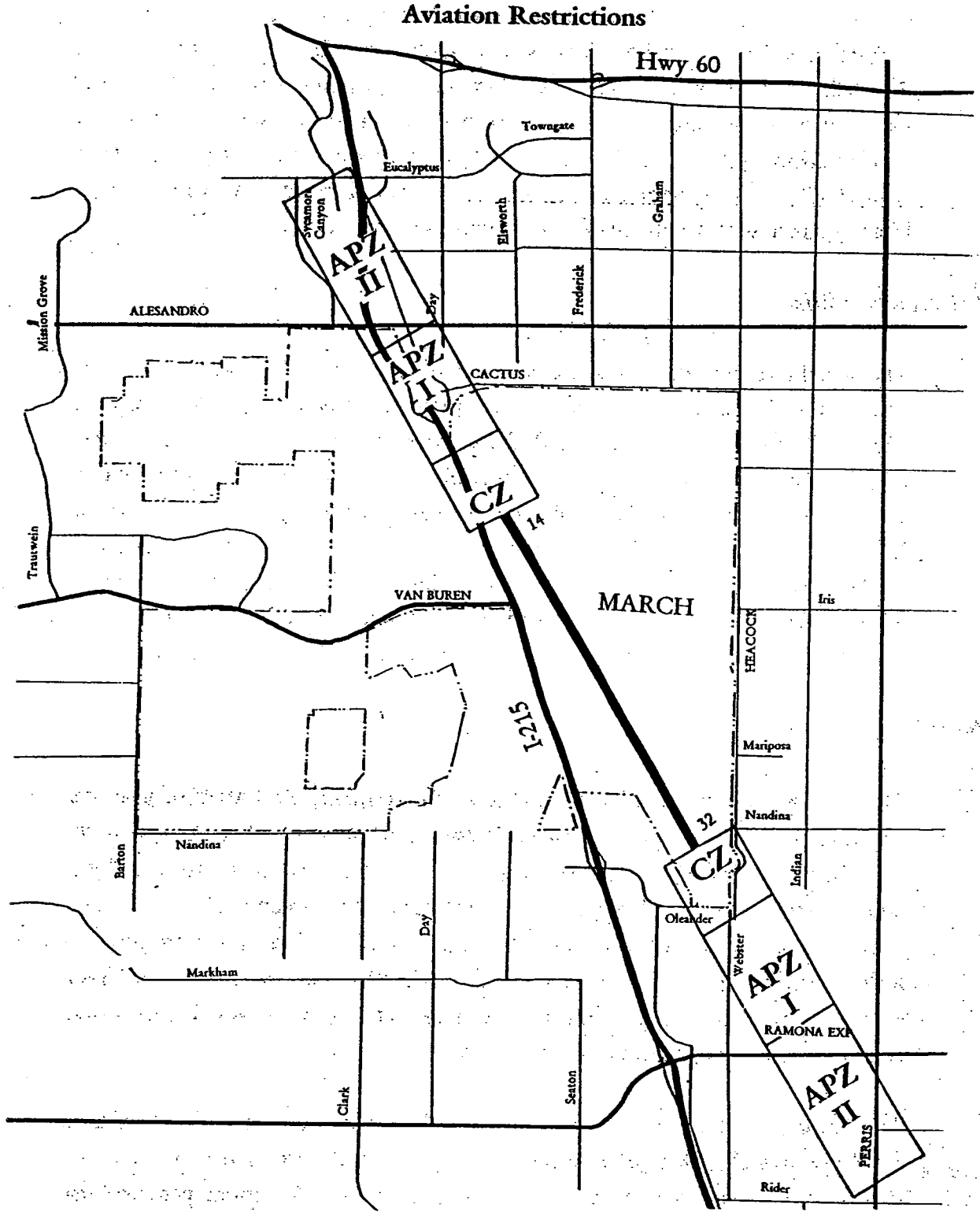


Exhibit 1-4
Aviation Restrictions



The plan sets forth the framework for redevelopment and reuse of the non-cantonment area. The base reuse plan provides a baseline analysis to satisfy the requirements of National Environmental Policy Act (NEPA). Pursuant to the Base Closure Community Assistance Action, the primary objective of the land use plan is to develop a land use pattern that will implement the reuse and revitalization opportunities as identified by the local redevelopment agency (March JPA). The general plan in a sense implements the base master reuse plan in accordance with California Government Code and CEQA.

Aviation Facilities:

The airfield general lies along the east side of Interstate 215 and includes two runways and associated taxiways. The primary runway, Runway 14/32 is 13,300 feet long with a width of 300 feet, while Runway 12/30 is 6,980 feet long by 150 feet wide. Runway 12/30 is closed for Air Force use but supports U.S. Customs operations and Aero Club aviation activities. The glide slopes, radar facilities, and aircraft safety distances, clear zones, and accident potential zones (APZs) on base property extends northwest and southeast from Runway 14/32. The area along the southern portion of Runway 14/32 containing the old Alert Facility has the capacity to initiate civilian aviation operations.

Joint Use Aviation:

The Base Master Reuse Plan designated approximately 333 acres of land for civilian aviation facilities at the southern end of the airfield at March. Property on both sides of the main runway will be made available to the local redevelopment agency (JPA) through the base reuse implementation process. This acreage is intended to be used for commercial aviation through a military/civilian joint use arrangement; whereby the civilian and military entities would share essential aviation facilities such as the control towers and runways, as well as maintenance of facilities.

The development of civilian aviation through joint use at March is technically feasible at March. Establishing commercial joint use at a downsized military air base located in or near a major metropolitan area holds great promise for

reversing the economic loss of base realignment. However, the standards for military aviation and commercial aviation as regulated by the FAA differ, which makes conversion and joint use of military airfields difficult or restrictive in most instances. The findings of the Southern California Association of Governments (SCAG) Joint Use Feasibility Report, support the technical ability to meet Federal Aviation Administration (FAA) criteria for both passenger and air cargo service at March. The Airport Layout Plan (ALP) identifies and delineates necessary improvements and facilities to develop and operate an all-cargo airport.

EXISTING FACILITIES

Due to the planning area being a realigned miliary base with retention of the AFRES, there are several buildings and facilities that currently exist, but exclusively used by the military. The Northeast Planning Subarea has several buildings and facilities. Furthermore, the majority of reuse requests or facilities being retained by the DOD outside the area of cantonment are located within this area. The reuse characteristics of the approximately 550 acre Northeast Planning Subarea (main base) can be defined as denoted in Table 1-2.

The planning subareas of West March and Southeast have limited development. The Southeast Planning Subarea contains the old Alert Facility, along with concrete aprons, with the March Field Museum being location between the runway and Interstate 215. West March Planning Subarea is primarily vacant and underdeveloped, but contains the former Non-Commissioned Officers' Academy and DRMO. Much of the property in this planning subarea is under restrictive use due to Stephens' Kangaroo Rat (SKR).

March Field Historic District:

With reactivation of the base in 1927, many of the existing permanent facility, including 129 military family housing units (Green Acres) along with the commanding officers' residence, the administration building, barracks, hospital, hangars and other support facilities were constructed. These facilities were erected within a distinctive triangular area northeast of the flightline. Architecturally, this period of base construction (1928-1934) represents the

successful integration of the principal of the City Beautiful Movement and innovative technological design to create a highly formal, yet functional environment. This area is designation by United States Air Force (USAF) as a historical district, and has been submitted to be formally listed on the National Register of Historic Places (NRHP).

TABLE 1-2
NORTHEAST SUBAREA EXISTING REUSE CHARACTERISTICS

AREA	CHARACTERISTIC	FACILITIES/USES
18%	DEVELOPED	EXISTING FACILITIES SURPLUSED BY THE FEDERAL GOVERNMENT AVAILABLE FOR REUSE WITH CIVILIAN/COMMERCIAL SERVICES.
11%	HISTORICAL DISTRICT	GREEN ACRES HISTORICAL DISTRICT OF 111 HOUSING UNITS AND GARAGES, PRIMARILY RETAINED FOR RESIDENTIAL USE, WITH POTENTIAL FOR LIMITED SERVICE COMMERCIAL OR PROFESSIONAL USES.
17%	PARK/ RECREATION	CITY OF MORENO VALLEY HAS REQUESTED ACREAGE AND FACILITIES FOR RECREATIONAL AND PARK USES.
29%	VACANT & DEVELOPABLE LAND	POCKETS OF LAND AVAILABLE FOR DEVELOPMENT OR FULL REDEVELOPMENT BY DEMOLISHING EXISTING FACILITIES TO PERMIT NEW DEVELOPMENT.
23%	PUBLIC & FEDERAL FACILITIES	FACILITIES AND LAND BEING RETAINED BY THE FEDERAL GOVERNMENT FOR PUBLIC USES AND MILITARY OPERATIONS. (NON-CANTONMENT)
2%	ROADS & RIGHTS OF WAY	EXISTING ROADS AND RIGHTS OF WAY, NON-DEVELOPABLE LANDS.

March Air Reserve Base:

March ARB is approximately 2102 acres within the main cantonment area. March ARB is a triangular shaped area, bordered by Interstate 215 along the southwest, Cactus Avenue to the north, and the Northeast and Southeast Planning Subareas to the east and south. The planning area incorporates March ARB, and recognizes its status as a federal facility; thereby designating the facility as military operation and aviation.

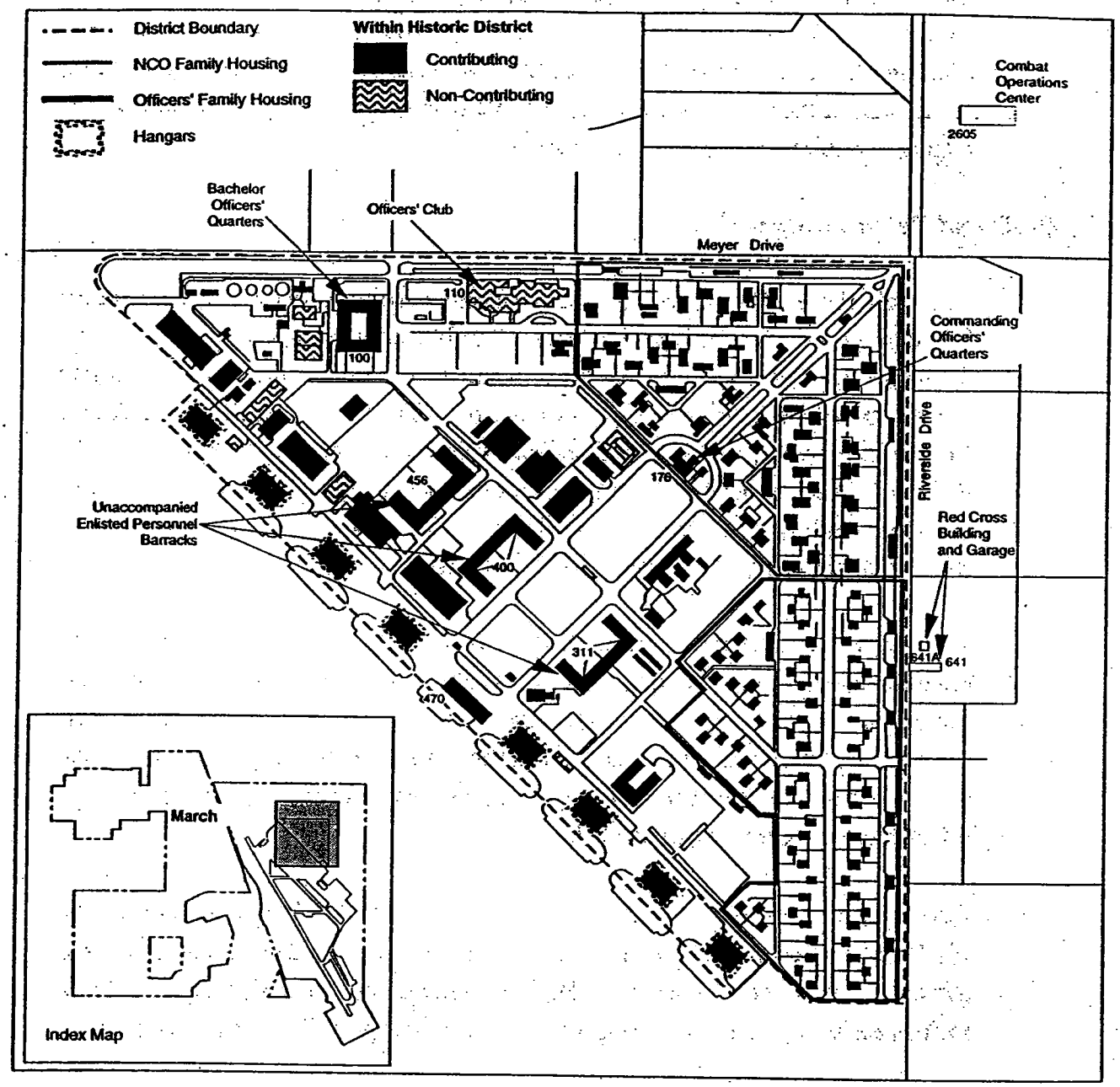
DOD and Public Facilities:

Through the DOD screening and property surplus process, other military branches within the DOD and federal and public entities have a right to request facilities. Additionally, the area of cantonment has non-contiguous properties located outside the primary cantonment area. The March AFB Master Reuse Plan reflects these properties and facilities retained by the DOD or other public entities. These properties, although immune from local government jurisdiction are given land use designations, should in the future they be declared surplus or the public entity no longer retains the property.

An alternative land use pattern will be included with the assessment of the environmental impact report, relative to approximately 92 acres of park and recreation facilities located within the Northeast Planning Subarea. This alternative pattern will be created should the public benefit transfer of land to the City of Moreno Valley not be completed, and development and use of the site infeasible for recreational and park uses.

Furthermore, through the base reuse process and the HAP was prepared. The HAP designates specific properties and facilities to be utilized for homeless assistance providers. Hereto, a land use designation is assigned, and these facilities will be permitted through a conditional use permit or other mechanism.

Exhibit 1-5
March Field Historic District



Source: March AFB EIS 1996

Stephens' Kangaroo Rat:

Under jurisdiction of the DOD as an active duty AFB, in consultation with US Fish and Wildlife Service; March AFB established a preserve for the management of SKR. The Preserve consists of 1,000 acres of grassland in the northern and central portions of the West March Planning Subarea . Take of individual and loss of habitat in the preserve are strictly limited by the Biological Opinion (BO), upon which the preserve was established. An additional 1,200 acres of SKR open space area was set aside pursuant to the BO. Take of individuals and habitat is limited to a lesser degree in the SKR open space lands as compared to the management area.

Installation Restoration Program (IRP) Sites:

There were 43 Installation Restoration Program (IRP) sites identified within the property of March AFB at time of realignment. Of these, 16 site area occur on lands proposed for release outside of the cantonment area. These IRP sites are a result of the storage, use, and disposal of household refuse, construction debris, hazardous substances, and petroleum products and their derivatives over the course of the installation's history. An Environmental Baseline Survey (EBS) and Base Realignment and Closure (BRAC) Cleanup Plan (BCP) have been prepared for March, which outlines the status, management and response strategy, and action items related to the cleanup of hazardous and contaminated sites at the base. Clean up has commenced and should not hinder development.

ADJACENT LAND USES & ZONING

Surrounding land uses of the planning area can be primarily characterized as: residential, agricultural and vacant land with industrial and commercial uses flanking the main transportation corridors.

Exhibit 1-6
DOD Facilities & Boundaries of Cantonment

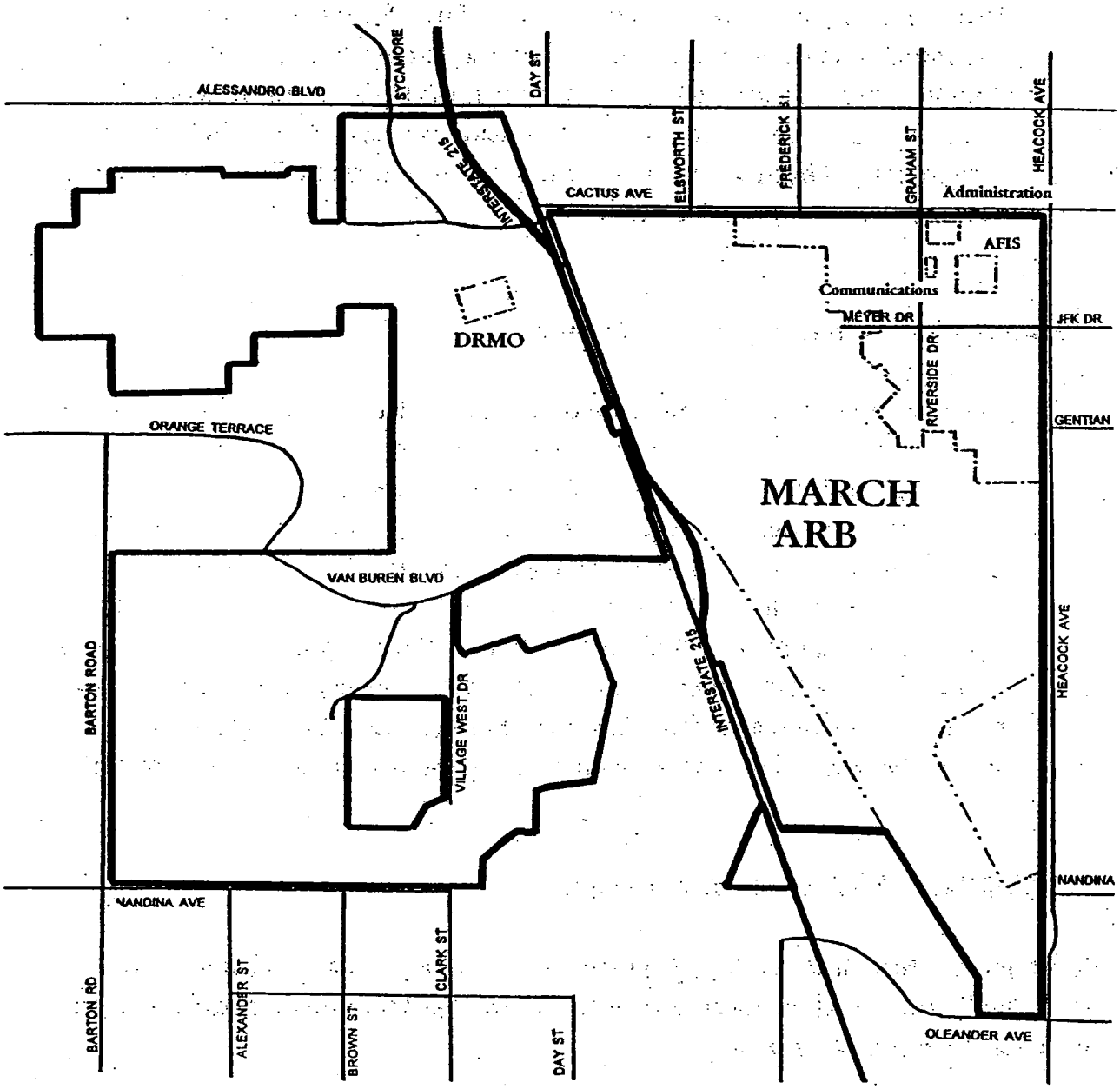


Exhibit 1-7
SKR Management & Open Space Areas

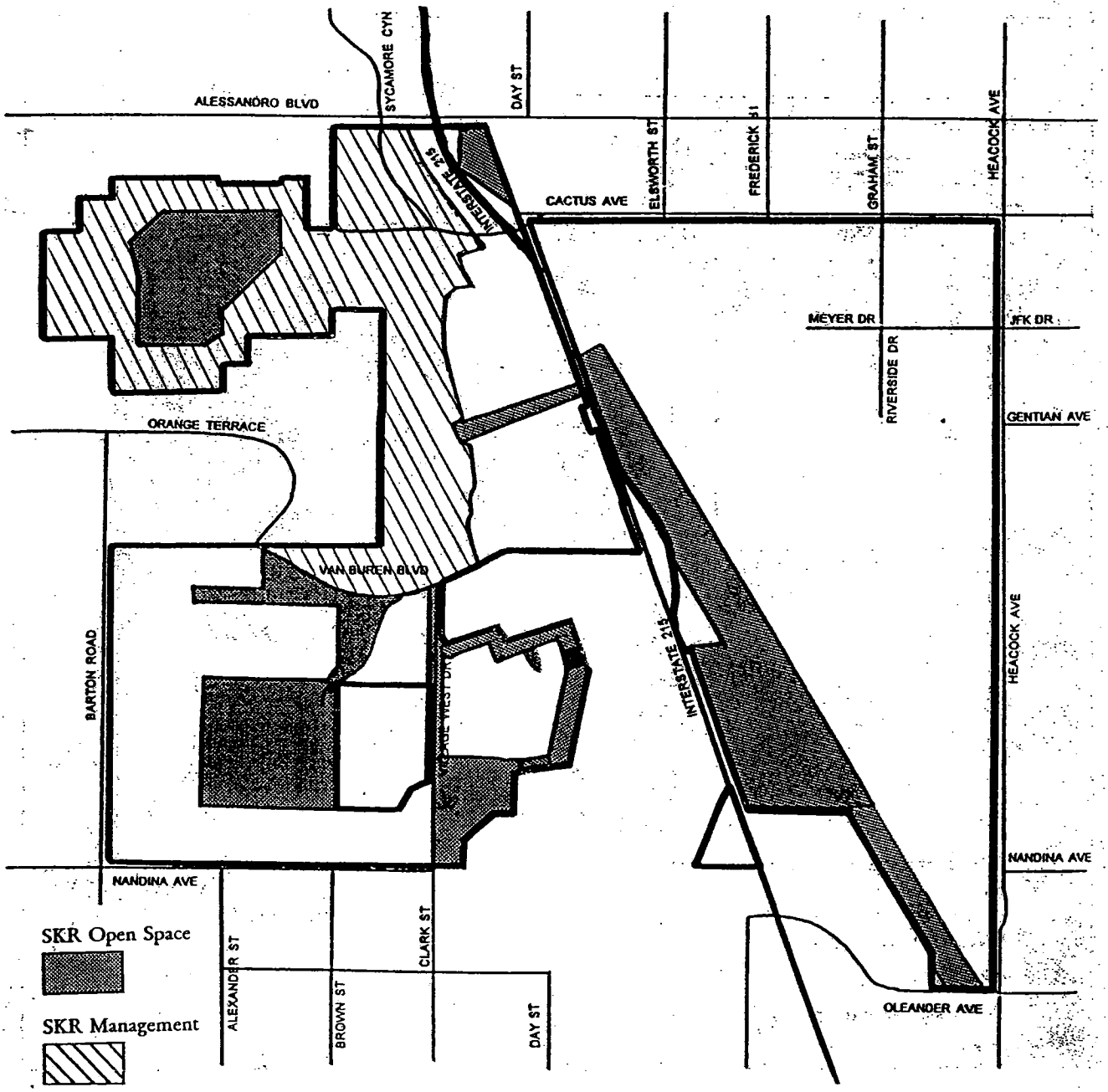
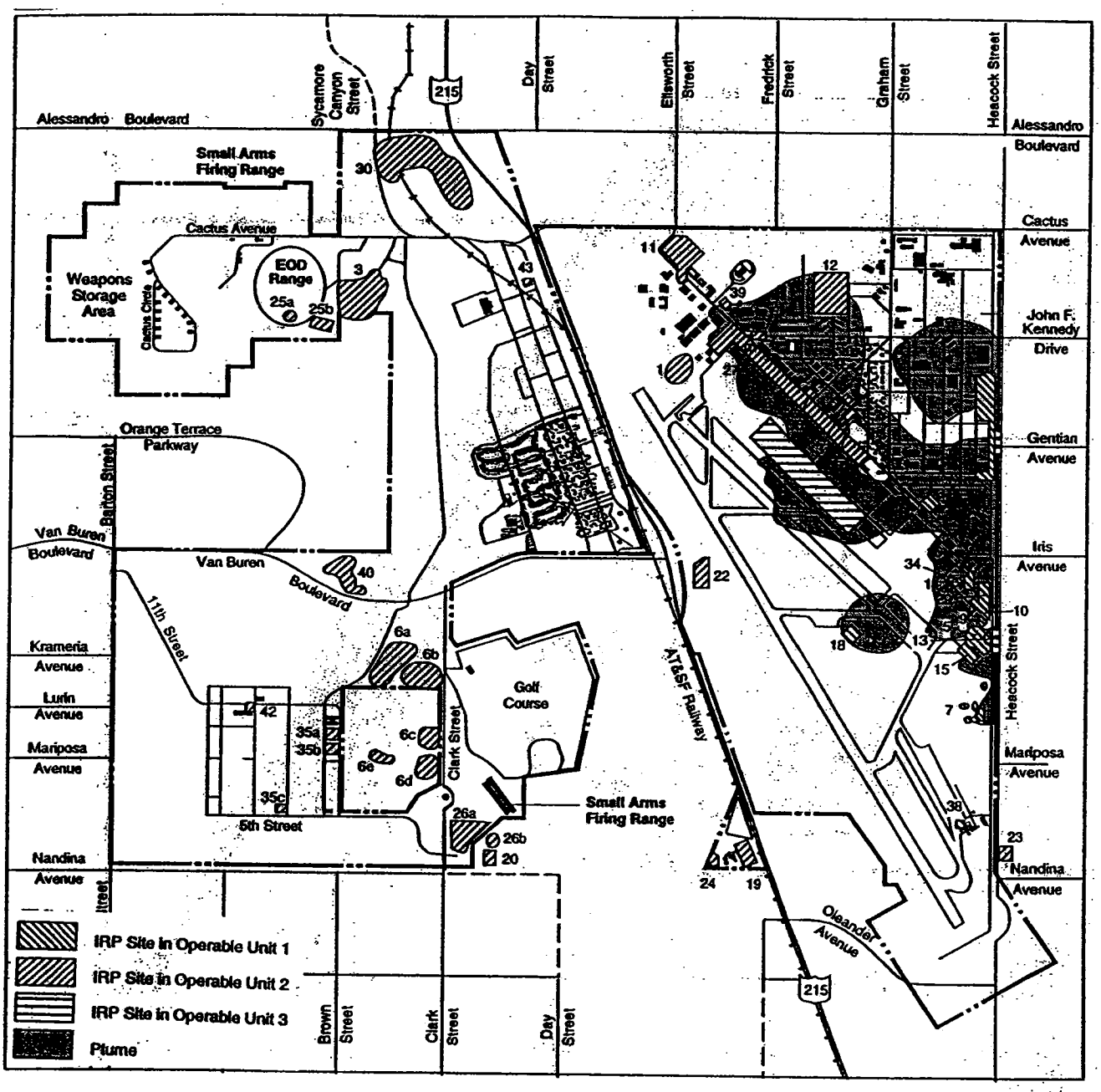


Exhibit 1-8
Installation Restoration Programs Sites



Source: March AFB EIS 1996

City of Moreno Valley:

North of the planning area within the City of Moreno Valley, land is being developed commercially and with business park uses, as demonstrated by the Corporate Center at Cactus Ave and New Hope, and the entitled Centerpoint Specific Plan. Also within the City of Moreno Valley east of the base, large tracts of residential development exists, extending from Cactus Avenue to approximate vicinity of Iris along Heacock Avenue. South of Iris, east of Heacock Avenue is the Moreno Valley Industrial Area (formerly known as the Oleander Specific Plan). The draft amendment to the plan delineates a flexible industrial land use plan for the area.

City of Perris:

Within the City of Perris, along the southern boundary of the planning area, the area is designed with heavy and light manufacturing land uses. The zoning for the area consist of a mixture of industrial zones with agricultural zones that have existed historically, as has the agricultural land uses, which consist of fields with scattered greenhouse structures. This area is contained within the City of Perris Redevelopment Project Area 1987, Northwest Subarea. The northwest industrial area is one undergoing transformation from historically agricultural to industrial, at a pace dependent upon the market.

City of Riverside:

The City of Riverside flanks the planning area both to the north, generally west of Interstate 215 and to the west; these areas are developing in accordance with three specific plans. The Orangecrest Specific Plan covers 1,514 acres west of the West March Planning Subarea between Van Buren Boulevard and the Weapons Storage Area (WSA). This area is a planned community of residential uses with commercial and industrial areas. The Orangecrest Specific Plan is approximately 70% complete. The Sycamore Canyon Business Park Specific Plan is a high quality industrial development incorporating 1,417 acres north of

Alessandro Boulevard, west of Interstate 215. The master plan is slated for development and completion over a 20-year period. Between the two specific plans is the Mission Grove Specific Plan which was recently amended to include residential uses in addition to industrial uses.

County of Riverside:

The Mead Valley Community Plan within the County of Riverside was adopted May 1996 for the area south of the West March Planning Subarea . The county is currently undertaking the consistency zoning for this area. The area is characterized by an industrial based corridor along Interstate-215 with large lot, rural residential uses to the west. The area contains scattered single-family homes, many with accessary equestrian uses and facilities. Similar land uses and zoning existing within the county area west of the planning area, just west of Barton Road. The west area contains orange groves and agricultural uses, with fewer residential uses.

Other land uses or facilities of interest include Interstate 215 which bisects the planning area, along with the paralleling railroad tracts owned by Riverside County Transportation Commission (RCTC) and operated by A.T.&S.F. Long-range plans of RCTC include the transformation of the San Jacinto Branch line to accommodate Metrolink Commuter Rail service as well as freight service. The federal government previously surplused land to create the Riverside National Cemetery and Air Force Village West. Air Force Village West is a retirement community for officers from all service branches of the military and its facilities include independent living detached houses and assisted living quarters.

LAND USE PLAN

The land use plan of the general plan will designate the land use pattern and distribution of development within the planning area. Table 1-3 delineates the distribution of land use designations.

LAND USE CONTROLS

The Zoning Ordinance and Zoning Map will be the primary implementation tools of the Land Use Element. The Zoning Map and Zoning Ordinance identify the specific land uses allowed in the planning area and sets forth regulations and standards for development consistent with the goals, policies, and objectives of the General Plan. Upon receipt of land use authority March 11, 1997, the March JPA adopted Ordinance # JPA-97-01, which is the Development Code and Building and Construction Code for March JPA. Table 1-4 denotes the attributes of zoning districts within the Development Code.

REDEVELOPMENT AREA

The March Joint Powers Redevelopment Agency was formed, and subsequent to the passing of Assembly Bill 3769 the March AFB Redevelopment Project Area established. Under AB 3769 the Redevelopment Agency was permitted to include in a redevelopment project area up to 2% of lands within a one-mile perimeter of March AFB. The March AFB Redevelopment Project Area encompasses the entire former military base, along with 467 acres within the City of Moreno Valley Industrial area.

INFRASTRUCTURE AND PUBLIC SERVICES

Adequate utility and delivery systems exist to serve the existing and future development and use of the base. As lands are developed, utility and other infrastructure requirements will be major factors in the phasing and intensity of future development. It is acknowledged that the level of potential development proposed under the land use plan is beyond the current capacities of the utility purveyors. Opportunities to jointly plan for the provision of utility services to the March planning area exists.

Exhibit 1-9
March AFB Redevelopment Project Area

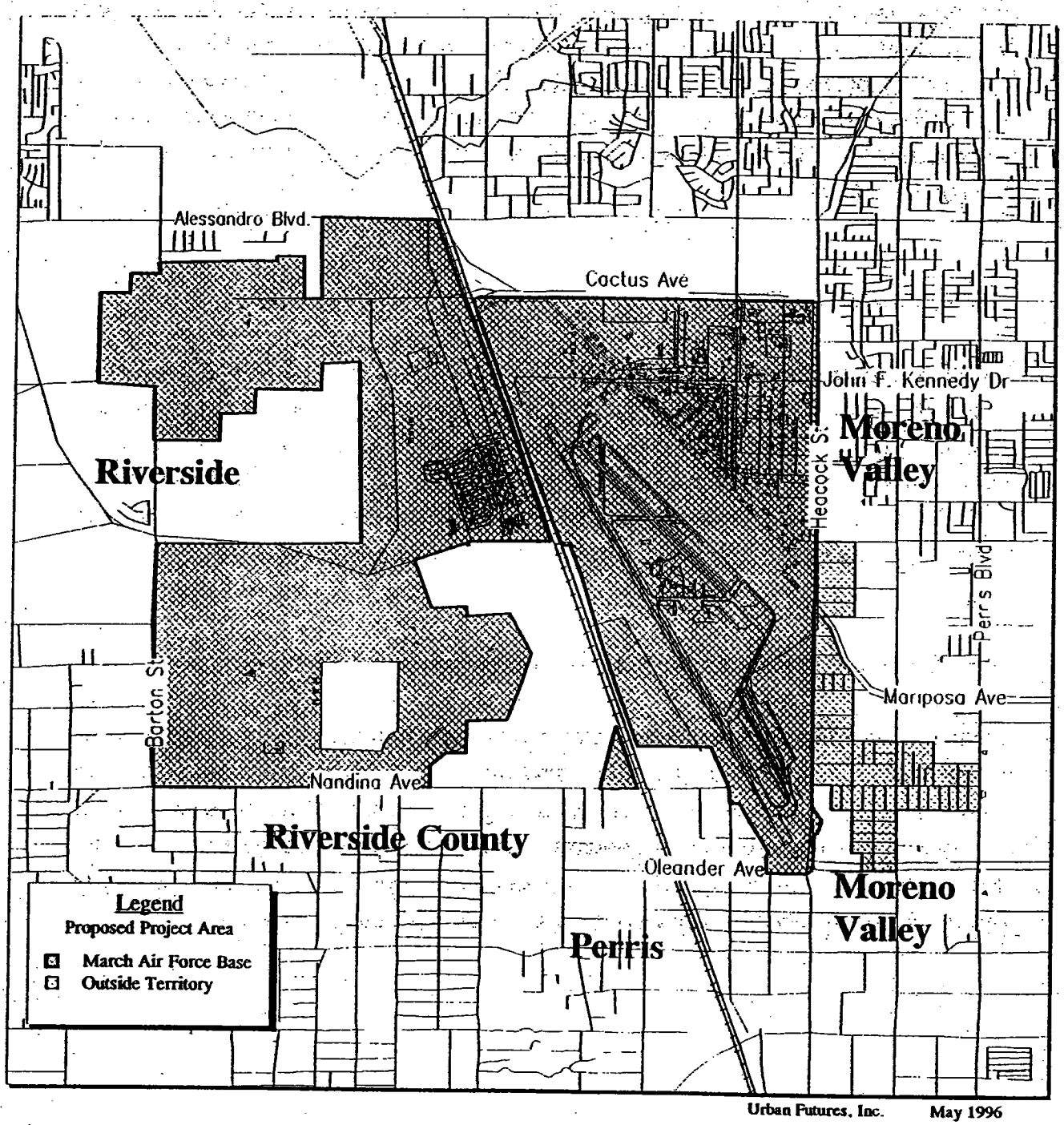


TABLE 1-3
GENERAL PLAN LAND USE DESIGNATION DISTRIBUTION

LAND USE	NORTH EAST	SOUTH EAST	WEST	TOTAL
Business Park	121		1157	1278
Mixed Use	190		174	364
Office	47		57	104
Industrial			433	433
Public Facility		40	409	449
Park/Recreation/Open Space	92		682	774
Commercial			45	45
Historic District	58			58
Civilian Aviation		316		316
AFVW Expansion			75	75
Cemetery Expansion			160	160
Destination Recreation			135	135
LAND USE SUBTOTALS	508	356	3327	4191
Clear zone			34	34
Streets	21		55	76
Rights-of-ways	29			29
SUBTOTAL	558	356	3416	4330
Military Aviation/Operations				2102
TOTAL				6432

TABLE 1-4
ZONING DISTRICTS

ZONING DISTRICT	SYMBOL	ATTRIBUTES
Commercial Districts		
Office	O	Campus-like office setting for corporate and administrative centers.
Office Commercial	OC	Office centers with service commercial uses.
Village Commercial	VC	For old-town site to reflect "turn of the century" commercial village.
Tourist Recreational Commercial	TRC	Supportive commercial uses serving tourist needs, including hotels and recreation centers.
Neighborhood Commercial	NC	Commercial uses that serve the day-to-day needs of a neighborhood area.
Community Commercial	CC	Commercial uses that serve the more general needs of the community.
Industrial Districts		
Business Park	BP	Provides for light industrial, research and development, and office based firms.
Business Park-Mixed Use	BPX	Accommodates a wider range of service nature businesses, in a campus-like setting.
Industrial	I	Manufacturing, research and development, warehousing and distribution centers.
Other Districts		
Open Space	OS	Lower intensity passive and natural open space recreational areas, including preserves.
Planned Development	PD	Master planned properties, can have commercial, residential or industrial uses.
Specific Plan	SP	Areas that have an entitles Specific Plan for development.
Public	P	Public and institutional facilities.

TABLE 1-4
ZONING DISTRICTS

ZONING DISTRICT	SYMBOL	ATTRIBUTES
Overlay Districts		
Air Installation Compatible Use Zone	AICUZ	Overlay that reflects the standards and restrictions of the 1992 Military AICUZ Report.
Outdoor Advertising Displays	OADO	Overlay that addresses the siting of outdoor advertising displays (billboards).

Source: March JPA Ordinance # JPA-97-01

The Infrastructure Subcommittee created the March Air Force Base Realignment Report, April 1995, which identified the existing infrastructure, expansion capabilities, and findings and recommendations. The utilities at time of the general plan process, operated under caretaker operations, have not been declared surplus by the DOD. Easements and right-of-way for infrastructure systems will need to be preserved and accommodated with development and base reuse.

Water Service:

The March JPA Planning area is within the boundaries of Western Municipal Water District (WMWD), with the exception of a small portion at the eastern edge of the southern tip of the aviation area. WMWD is one of 27 water agencies that purchase and deliver supplemental water from Metropolitan Water District (MWD). WMWD utilizes imported water from MWD, and does not use ground water sources within the March area.

The water system for the planning area is operated from four distinct pressure zones. There are approximately 60 miles of water line varying from 2" to 16" in diameter. West March contains a welded steel storage tank of 2.5 MG which provides service to the March JPA Planning Area west of I-215, and to a portion of the planning area east of I-215. An elevated storage tank is located within the

Northeast Planning Subarea area, and supplies most of the area east of I-215. Pressure zones for the WSA and the former 15th Headquarters are served from elevated storage tanks within each area.

In 1984 the Air Force ceased operating its own water treatment facility, therefore water is supplied to the planning area by WMWD from Lake Mathews (Colorado River terminus) and with an agreement with Eastern Municipal Water District (EMWD) for delivering treated State Water Project water to March. Further information and exhibit of water service facilities is contained within the Infrastructure Subcommittee March Air Force Base Realignment Report, April 1995.

Sewer Service:

March AFB contains a waste water treatment plant, which serves the entire planning area along with Riverside National Cemetery and Air Force Village West. As an active duty base, the plant treated approximately 0.7 million gallons per day (MGD), with a current capacity to accommodate 0.75 MGD. West March Planning Subarea is generally served by gravity sewer systems, with the area east of I-215 pumped from a main sewer station to the treatment plant. There are currently seven small lift stations that ultimately flow to the main lift station. There is a 10" diameter force main from the main lift station to the treatment plant.

The sewage effluent BOD and suspended solids range from 12 to 20 mg/l and 10 to 20 mg/l respectively at time of an active duty base. The effluent is pumped from the storage pond at the treatment plant to an open storage reservoir at the Lt. General Archie J. Old, Jr. Golf Course. When effluent is not of sufficient quantity, the effluent is mixed with untreated Colorado River water. The water is currently used for irrigation of the golf course and cemetery. Expansion of the treatment facility will be necessary to facilitate and serve the base reuse plan and development of the general plan land use plan, as well as the potential need to upgrade the water reclamation to tertiary treated water, instead of secondary treated water.

Electrical Power:

Electricity to the planning area has been supplied by Edison via two 33kV circuits from the Alessandro Substation to the March Substation, and a tap 115kV transmission line on the Alessandro-Highgrove-March-Maxwell 115kV line that serves the Tanker Substation. Electricity is supplied to the planning area via the two military substations. Electrical service is distributed through the military's existing electrical distribution system. With the realignment of the base and development of civilian uses, the electrical system will need to be upgraded to meet Public Utilities Commission (PUC) standards, or other acceptable industry standards in light of deregulation.

Natural Gas:

As with electric power within the former base area, natural gas service is operated through the planning area through the military's natural gas line. Natural gas service is currently operated under the caretaker. With the future disposition of military property, the natural gas facilities will need to be upgraded to meet PUC and commercial standards and facilities for natural gas.

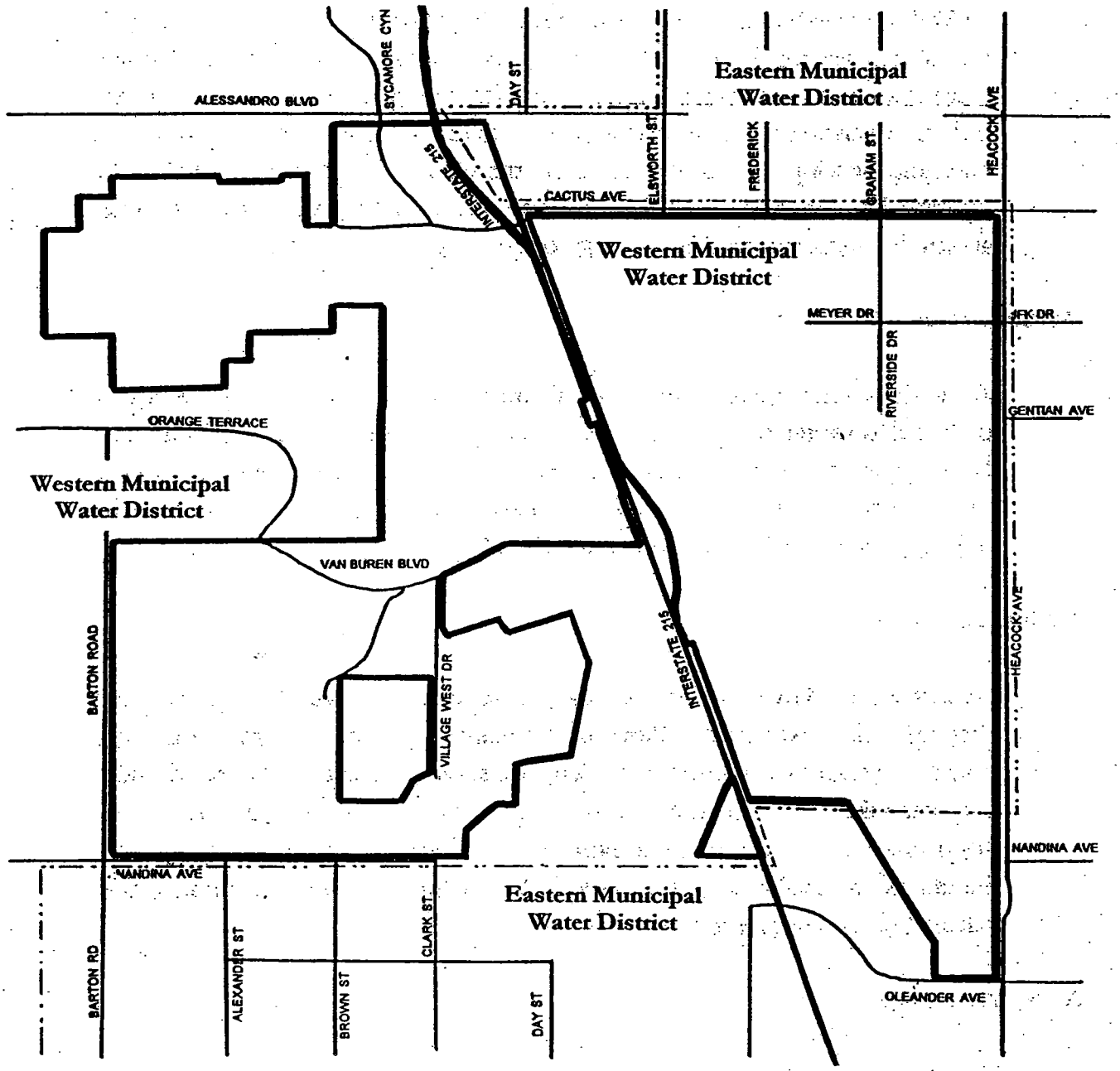
Communications:

As with electric power within the former base area, telephone service is operated through the Northeast Planning Subarea switch via the military's communications infrastructure. Telephone service is currently operated under the caretaker. With the future disposition of military property, the communications facilities will need to be upgraded to meet commercial standards and facilities for fibre-optics, ISDN lines and other technologically advancing communications services pursued.

Storm Drainage:

See Discussion below in Environmental Constraints - Drainage and Flood Plain

Exhibit 1-10
Water District Boundaries



Further information and exhibits of utility service facilities are contained within the Infrastructure Subcommittee March Air Force Base Realignment Report, April 1995. A copy of this report is on file at the offices of the March JPA.

Law Enforcement:

Through retrocession of legal jurisdiction for base realignment, the March JPA planning area is an unincorporated territory within the County of Riverside; thereby law enforcement services fall under the Riverside County Sheriff's Department. Sheriff substations are located within the Cities of Moreno Valley, Riverside and Perris. Currently, response time from the Moreno Valley substation is eight minutes for non-emergencies and five minutes for emergencies. This substation has ten-hour shifts of field officers, with an average of 4.4 officers per day.

As development and reuse in the planning area occurs, so will the level of police staff services. Prior to base realignment, the planning area was under military police control. Military police will be responsible for areas within the cantonment boundaries. Additionally, within the planning area, the Riverside County Sheriff's Department is developing the Ben Clark Public Safety Training Center on approximately 360 acres within the West March Planning Subarea.

Fire Protection:

As with law enforcement services, through retrocession of legal jurisdiction for base realignment, fire protection services are under the jurisdiction of Riverside County Fire Department. Fire Marshall services will be provided by Riverside County Fire Department through the City of Moreno Valley, since the JPA adopted the City of Moreno Valley development codes and standards, inclusive of fire codes.

Fire protection services are accommodated by existing fire stations, as well as an automatic aid agreement that is currently being development with the March ARB fire department. The planning area contains the March ARB fire station. All other stations are located within the City of Moreno Valley and the

unincorporated area of Woodcrest and Mead Valley. Current response time is three minutes, with the longest current response time eight minutes from the stations further away. Current Insurance Service Office (ISO) rating is Class 4. The ISO rating is based upon service equipment and distance to the property. With development and intensification of land uses, an additional station within the West March Planning Subarea may need to be developed to assure that response times are maintained.

Additionally, the Ben Clark Training Center slated to be developed within the West March Planning Subarea will perform fire fighting and protection services in conjunction with California Department of Forestry Services. It is proposed that an emergency staging area for the region be established within the facility.

Library Services:

The March JPA planning area, an unincorporated area of the County of Riverside, is part of the Riverside County Free Library and the Public Library of the City of Riverside. The County Free Library supports 23 branch libraries and 3 bookmobiles through property tax assessment within unincorporated Riverside County areas and 15 cities participating in the Library District. Service standards in the Riverside County branch libraries are 1.2 volumes per capita and 0.5 square feet per capita. Based on Riverside City and County Public Library Annual Reports, the 1990 volume per capita was 0.97 and the 1991 volume per capita was 1.07. Although volumes per capita have increased in recent years, they have not kept pace with Riverside County service standards. Recently, the library system was privatized; still remaining a public system, but outsourced for operations by a private firm.

The surrounding incorporated and unincorporated communities contain library services through the Riverside County Free Library and the Public Library of the City of Riverside.

Exhibit 1-11
School District Boundaries & School Sites

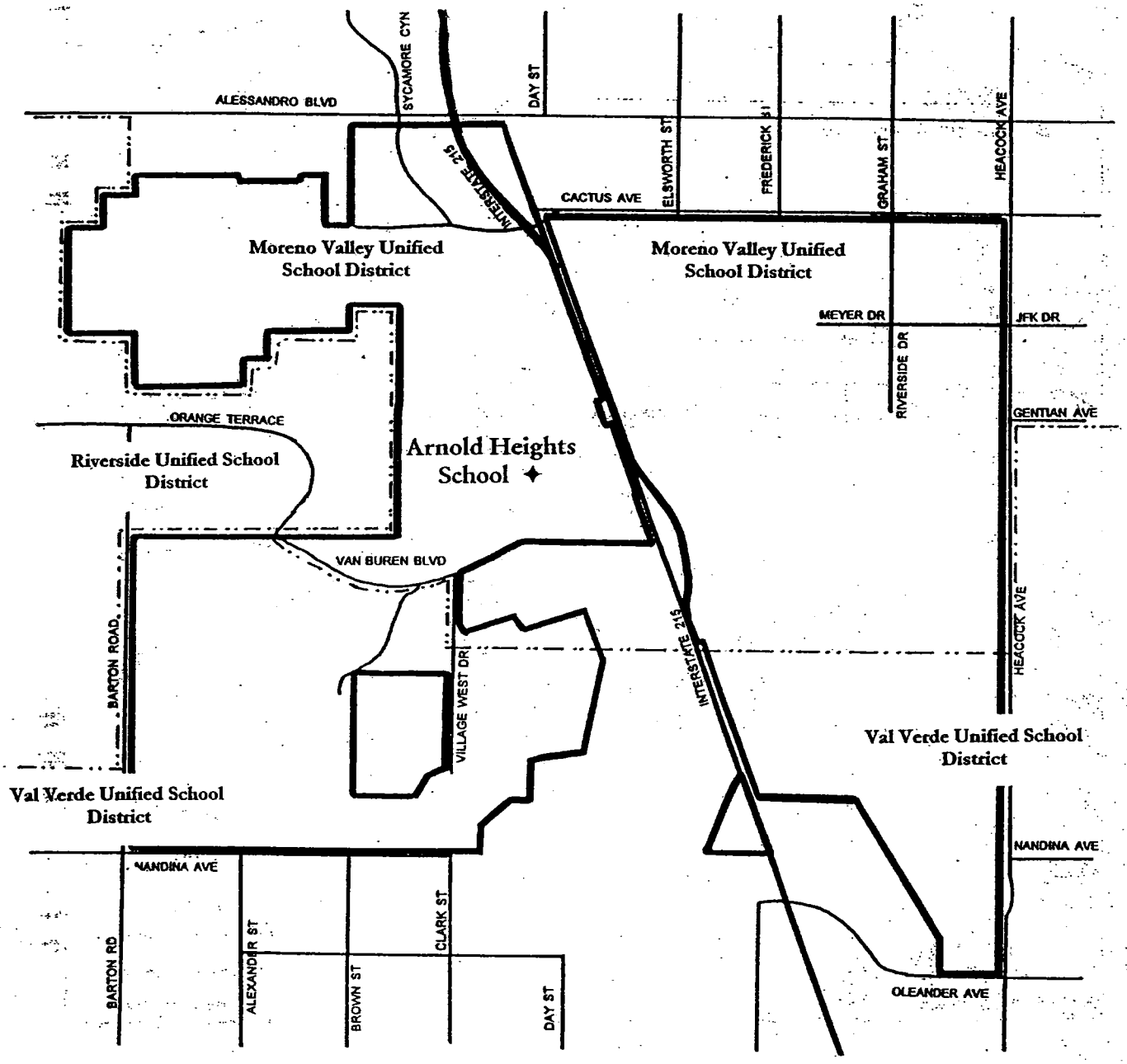
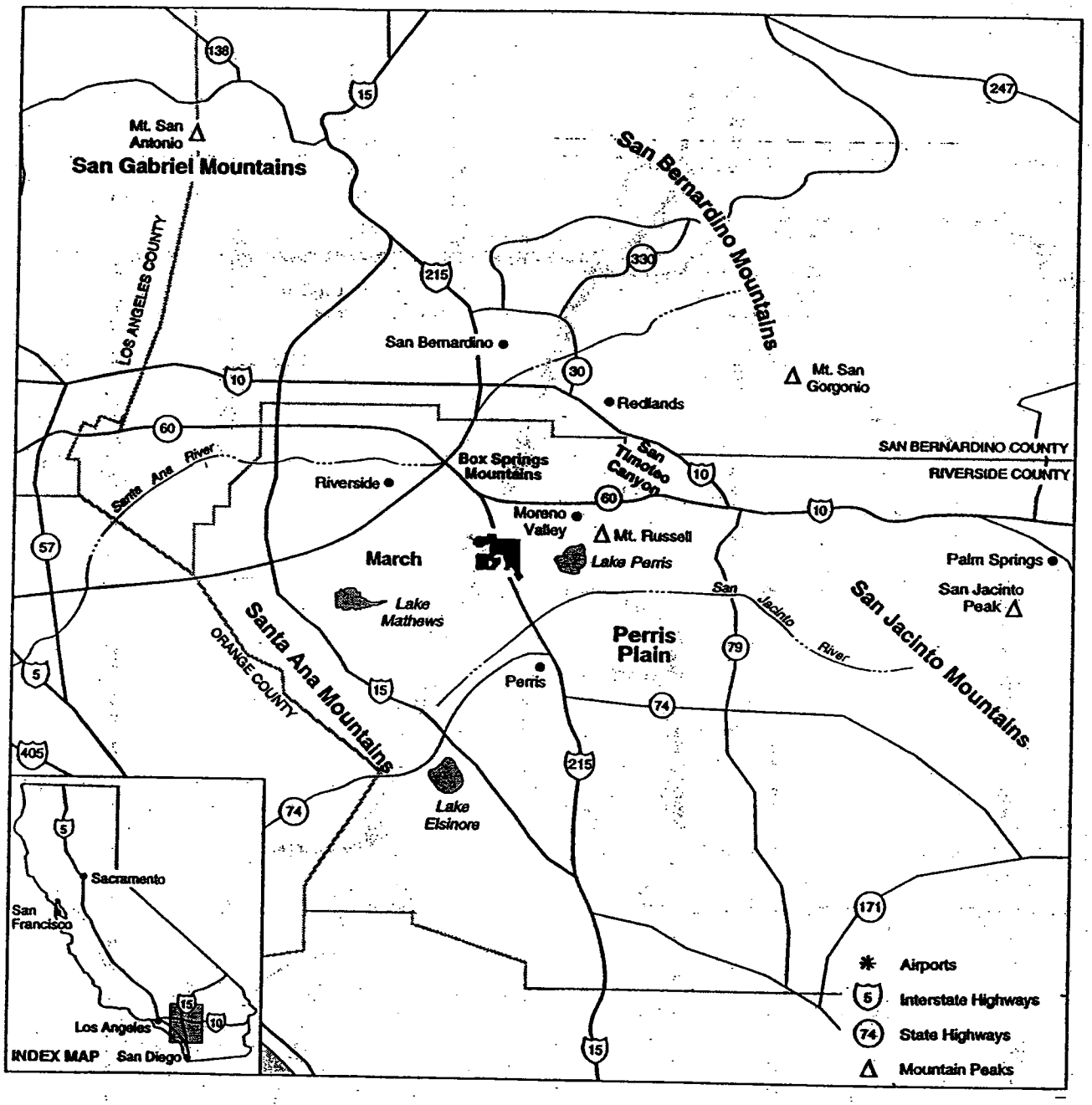


Exhibit 1-12
Geological Map



Source: March AFB EIS 1996

School Facilities:

The March JPA planning area is bisected by Val Verde Unified School District and Moreno Valley Unified School District. The northern area of the planning area from approximately Van Buren Boulevard north is under the jurisdiction of Moreno Valley Unified School District, with the remainder under Val Verde Unified School District. Arnold Heights Elementary School within the Moreno Valley Unified School District is located within the West March Planning Subarea. The ten acre school site has a capacity to hold 750 students, and had an enrollment of approximately 600 students when March AFB was active. All other schools within the districts are located within the Cities of Moreno Valley, Perris or the County of Riverside.

The planning area will not contain any new housing units; thereby generating the need for additional school facilities. However, the historic district of Green Acres within the Northeast Planning Subarea will continue to be used for residential purposes. Families housed within Green Acres will have children within the Moreno Valley Unified School District, and are currently within the attendance areas for the following schools: Arnold Heights Elementary School, Badger Springs Middle School, and Moreno Valley High School. All former military housing known as Arnold Heights will not be used for residential purposes.

ENVIRONMENTAL CONSTRAINTS

The March JPA Planning Area is affected by a variety of environmental factors that influence existing facilities and future development and land use.

Soils and Topography:

The topography of the former base area is generally characterized by rounded ridges and incised drainage in the West March Planning Subarea, and relatively flat slopes east of Interstate 215. Elevations range from approximately 1,760

feet mean sea level (MSL) in the West March Planning Subarea , to about 1,465 MSL in the southeast corner.

Terrain of the planning area is easily characterized by as a flat alluvial plain valley bounded by low lying granitic bedrock on the west. The gentle slope of the valley floor is approximately 20 feet per mile in a south-southeasterly direction. The areas of the West March Planning Subarea are characterized by hilly terrain with small canyons, while the planning area east of I-215 is on the valley floor.

The U.S.D.A. Natural Resources Conservation Service has identified and characterized the soils in western Riverside County. Two major soil associations exist in the planning area: the Cieneba-Rockland-Fallbrook association on the western portion of the planning area, and the Monserate-Arlington-Exeter association on the eastern portion. The Cieneba-Rockland-Fallbrook soils occur on the West March Planning Subarea , and are derived from granite rock and are typically 1 to 3 feet thick, have a surface layer of sandy loam and are well drained. Soils of the Monserate-Arlington-Exeter association are derived from granitic alluvium and occurs on the eastside of I-215. These soils share similar characteristics, with the Monserate-Arlington-Exeter soils having a relatively low permeability silica hardpan at a depth of 28 to 50 inches, which consists of a moderately high runoff potential.

Large areas in the West March Planning Subarea and isolated pockets in the southerly portion of the Northeast Planning Subarea have soils that are eligible as "statewide important farmland" soils, and other soils that are "prime farmland" soils when irrigated. However, these soils are not irrigated for agricultural purposes, are covered by existing structures or have been disturbed to some degree by former human activity, and therefore, may not be suitable for classification as "prime" or "statewide important" farmlands.

Areas within the West March Planning Subarea, particularly north of Van Buren Boulevard contain rock outcroppings. Within the rolling hills and intermittent drainage courses, large and small outcroppings exist. Historically, gravel pit operations have occurred on two locations within the West March Planning Subarea for extraction of rock material to be crushed and used as aggregate or

base material. These operations no longer exist, and there is no need for reclamation of the former sites. The planning area contains no significant mineral deposits.

Seismic Hazards:

The planning area is located in Southern California, an area well known for its seismic hazards and activity. The main source for potential earthquake damage in the planning area is from seismic activity along the San Jacinto fault, about five miles east of the base. Another major fault, considered "potentially active," is the Casa Loma fault, located approximately 1.5 miles southwest of the San Jacinto fault.

The San Jacinto fault is considered to be the most "active fault" within Southern California. The March Planning Area is located in Seismic Intensity Zone III, which has a moderately high potential for strong to severe groundshaking. Extensive damage to structures from intensive groundshaking could result from a major seismic event occurring along the San Jacinto fault. Other regional faults of significance which could affect the base in terms of groundshaking are the San Andreas and Lake Elsinore faults. The San Andreas is an "active" fault, and is located approximately 15 miles northeast of the base. The Lake Elsinore fault is considered "potentially active," and is located about 17 miles southwest of the base.

Many structures on the former base were not built to current seismic building codes, although the former base hospital has been retrofitted for earthquake safety due to its status as a "critical" emergency facility. Prior to reuse of existing facilities, analysis of structure suitability for the proposed use will need to be conducted as part of the certificate of occupancy process.

Drainage and Flood Plains:

Surface water runoff from the March JPA Planning Area is directed southeast through a series of storm drains and surface drainage ditches within the Northeast Planning Subarea area. Storm sewers and other drainage facilities and

improvements on the former base are minimal. The primary drainage facilities are the Cactus storm drain channel which runs in an east-west direction parallel to Cactus Avenue along the northern boundary of the Northeast Planning Subarea, and the Heacock storm drain channel which runs north-south adjacent to Heacock Street along the eastern perimeter of the Northeast Planning Subarea; both are unlined and have been designated as "wetlands" (i.e., "waters of the United States"). These unlined drainage channels flow into the Perris Valley Storm Drain. The Cactus Channel has very little capacity, and the Heacock Channel is in need of upgrade to accommodate the increased flows attributable to development in the adjacent community of Moreno Valley. All drainage and channels on base connect into either the Heacock or Perris Valley storm drains.

The areas of the West March Planning Subarea contains no drainage facilities, and hydrological studies and master plan needs to be prepared to create a flood control facility master plan to support future development and creation of impervious surfaces. Interim measures for on-site retention/detention may also be considered. The March JPA will need to prepare and adopt a master flood control and drainage plan to address flooding and storm water disposal in the area.

March AFB is within the San Jacinto watershed, which encompasses about 760 square miles. The Northeast Planning Subarea is surrounded by areas within the 100-year flood plain as designated by the Federal Emergency Management Agency (FEMA). Areas subject to 100-year floods are located along the northern and eastern boundary. The unlined natural drainage and channels on the base may become flood plains during inundation by 100-year flood events.

Airport and Aviation Hazards and Noise:

Substantial portions of the planning area are impacted by noise from military aircraft operations and overflights. Noise is an influencing factor in the development of the planning area. The general plan land use designations and patterns consider noise impacts in planning for the distribution and selection of land uses within the general plan. Nonetheless, it will be necessary to mitigate

noise impacts for some uses in areas subject to excessive noise levels. See the profile reports on Section 3 for further discussion relative to noise.

Future land use developments will need to be reviewed for their potential exposure to noise levels to determine the suitability of a particular use in a particular location and appropriate mitigation, if necessary. The 1992 AICUZ Study Land Use Compatibility matrix (reference Section IV.A.3) lists land uses and their compatibility with various noise zone exposure levels.

Additionally, the 1992 AICUZ Study denotes the clear zones (CZ), accident potential zones (APZs) I & II for both north and south ends of runway 14/32. Additionally, civilian use FAA standards such as runway protection zones (RPZs) and clearances as shown on the approved Airport Layout Plan (ALP) must be adhered to. Restriction of land uses for both noise and risk potential/land use compatibility shall be in and above site zoning and development standards.

Wetlands:

Approximately 86 acres of localized jurisdictional wetlands/riparian habitats occur on base along draws and drainage depressions. These wetlands are dominated by willow riparian woodland vegetation and are considered a "sensitive" habitat type by responsible resources agencies. Wetlands occur mostly in the West March Planning Subarea, but are also located along portions of the Cactus storm drain and Heacock ditch channels at the northeastern corner of the Northeast Planning Subarea. Both channels are considered to be "Waters of the U.S." along their entire lengths along the planning area.

Contaminated Sites:

Contaminated sites exist at various locations on the base site as a result of the storage, use, and disposal of household refuse, construction debris, hazardous substances, and petroleum products and their derivatives over the course of the installation's history. The IRP exhibits depicts the known locations of these

hazardous sites. The entire base has 43 identified Installation Restoration Program (IRP) sites. Of these, 16 sites occur on lands proposed for release outside of the cantonment area; an additional three sites occur on Air Force Village West property, and two on Riverside National Cemetery lands expansion.

An Environmental Baseline Survey (EBS) and BRAC Cleanup Plan (BCP) have been prepared for March. These Air Force documents outline the status, management and response strategy, and action items related to the cleanup of hazardous and contaminated sites at the base. These programs support the cleanup and restoration of the base property, which is necessary to meet the requirements for property disposal and reuse activities associated with the realignment of March AFB.

Timely economic reuse should not be precluded by cleanup phasing or by funding phasing. In addition, the level of cleanup will be consistent with the proposed land use for a particular contaminated site and the IRP strategy consistent with the land use element designations of the General Plan.

Stephens' Kangaroo Rat (SKR):

Major portions of the West March Planning Subarea , as well as about 441 acres of the Northeast Planning Subarea between the runway and the I-215 freeway, are habitat for the federally listed endangered Stephens' Kangaroo Rat (SKR). Habitat areas amount to approximately 2200 acres for the entire base. March AFB established a SKR Management Area and SKR Open Space area as part of a December 4, 1991 agreement with the US Fish and Wildlife Service, as mitigation for the development of base properties to meet current and future Air Force needs. The SKR areas are managed by the Nature Conservancy using funds supplied under the agreement.

The Management Area covers about 1000 acres of grasslands in the northern portion of the West March Planning Subarea . Destruction or "take" of individual SKR in the preserve is limited and loss of habitat is constrained by the agreement. The agreement also provided that an additional 1,200 acres be set

aside as "open space" for the SKR, where take of individual animals and habitat is, to a lesser degree, also limited.

The Riverside County Habitat Conservation Agency (RCHCA) has prepared a Long-Term Habitat Conservation Plan (HCP) for the SKR in Western Riverside County. The SKR HCP initially showed the Sycamore Canyon-March AFB SKR habitat as a proposed "core reserve" area for long-term SKR management purposes. Subsequent to the decision to realign March, a strategy was developed to trade SKR habitat on March in exchange for purchasing SKR habitat elsewhere in Western Riverside County in order to take full advantage of the economic redevelopment potentials afforded by surplus lands at March.

The SKR habitat at March is surrounded by urban and urbanizing uses that will diminish the biological value of those lands as viable SKR habitat over the long-term. Under these conditions, and given the value of March properties for development to replace jobs lost by the realignment, it was determined that more and better quality SKR habitat could be purchased elsewhere. The reopening of the 1991 agreement to pursue this land use/management strategy is currently underway. The general plan work program assumes that this strategy will be successful, and that the lands currently designated for SKR management and open space purposes will be available for development.

Biological and Other Environmental Factors:

In addition to the wetlands and SKR issues described previously, other potential biological constraints to base reuse were identified, primarily concerning the occurrence of sensitive wildlife species and their habitats. The open areas of the former base consist mainly of grasslands comprised of non-native species of European origin, isolated coastal sage scrub remnants, and localized wetlands/riparian habitats along draws and drainage depressions. The coastal sage scrub is considered to be the Riversidian sub-type. Field surveys of the base conducted by the US Fish and Wildlife Service (March, 1994; USFWS) have documented a total of 98 bird species as occurring on March AFB.

Two are state and federally listed as "endangered" (Bald eagle; Least Bell's vireo), five are federal Category 2 candidates, and nine others are noted on various watchlists as "sensitive." An endangered species, Least Bell's vireo, was identified in drainage with willow riparian habitat along Van Buren Boulevard in the West March Planning Subarea. Burrowing owls are also known to occur on the base. California gnatcatchers were not observed to occupy the remnant coastal sage scrub environs.

Other field surveys (USFWS; January, 1994) also noted the presence of several reptile and amphibian species of concern; a total of 15 herpetological species are known to occur on the base. Of these, four are Category 2 candidates for listing as federal threatened or endangered species; (San Diego horned lizard; Orange-throated whiptail; Coastal western whiptail; Northern red diamond rattlesnake). Four individuals of the Western spadefoot toad were also incidentally captured during the surveys near Plummer Road in the northwest portion of the base, and is considered "...extinct throughout much of lowland southern California" (Stebbins 1985). Previous surveys (USFWS, 1993) also noted the presence or possibility of other sensitive wildlife species on the base, including the Los Angeles pocket mouse (federal Category 2 subspecies), Bell's sage sparrow (Fed Cat 2), and the Ferruginous hawk (Fed Cat 2); among others. Further discussion is included within the Profile Report for Resource Management Element.

TABLE 1-5
Potential and Listed Endangered, Threatened and Candidate Species at March Air Force Base, Riverside County, California

1993 and 1994 surveys by US Fish & Wildlife Service

MAMMALS		
Stephens' kangaroo rat	Dipodomys stephensi	(E)
San Diego black-tailed jackrabbit	Lepus californicus bennettii	(2)
Los Angeles little pocket mouse	Perognathus longimembris brevinasus	(2)
REPTILES		
San Diego horned lizard	Phrynosoma coronatum blainvillii	(2)
Orange throated whiptail	Cnemidorphorus hyperythrus	(2)
Coastal western whiptail	Cnemidorphorus tigris multiscutatus	(2)
Northern red diamond rattlesnake	Crotalus ruber ruber	(2)
Western spadefoot toad	Scaphiopus hammondii	
BIRDS		
Last Bell's vireo	Vireo belli pusillus	(E)
Brown pelican	Pelecanus occidentalis	(E)
Ferruginous hawk	Buteo regalis	(2)
Mountain plover	Charadrius montanus	(2)
California horned lark	Eremophila alpestris actia	(2)
Loggerhead shrike	Lanius ludovicianus	(2)
Tricolored blackbird	Agelaius tricolor	(2)
Bell's sage sparrow	Amphispiza belli	(2)

Legend:

(E) - Endangered

(2) - Category 2: Taxa for which existing information indicates that listing may be warranted, but for which substantial biological information to support a proposed rule is lacking.

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APPENDIX 1-A:

TABLE 1-A
EXISTING BUILDINGS WITHIN THE NON-CANTONMENT AREA

BLDG #	FACILITY TYPE	SQ.FT.	BLDG #	FACILITY TYPE	SQ.FT.
HISTORIC	Green Acres Housing	N/A	962	Dining Hall, AMN	17,177
125	VOQ/Services	1,686	976	Dormitory/722 LGS	25,608
148	Museum	634	977	Dormitory/Storage	25,906
154	Traffic Checkhouse	120	1000	Commissary	116,562
354	SP Cen Con	151	1050	Troop Subs Whse	2,494
500	Environmental Health	5,855	1054	New Enlisted Dorm	48,000
501	Temporary Lodging Fcty	10,373	1055	Dormitory Support	
502	Trn Lodge Spt Bldg	456	1100	Traffic Check House	70
534	Hazard Storage	2307	1305	Alert Facility/ANG	24,171
548	Exchange Service Station	2,040	1306	SP Entry Control	118
549	Exchange Service Station	3,517	1308	Swimming Pool	880
550	Exchange Service Station	250	1309	Readiness	1,024
602	SWADS	26,764	1312	Master SRVILL, CON	145
641	Red Cross	2,640	1313	Readiness, Crew	1,767
642	Disaster Preparedness	384	2506	BaSE Engr Adm	16,385
651	Recreation Center	38,764	2507	BE Maint Shop	16,250
659	Bank of America	4,580	2508	BE Stor CV Fclty	12,275
660	Branch Exchange	3,166	2509	BE Stor CV Fclty	540
755	Base Package Store	3,438	2510	BE Stor Shed	2,594
758	Exchange Sales Store	84,580	2511	BE Stor Shed	750
760	Base Theater	10,673	2512	BE Stor Shed	740
768	ResComp Med	9,400	2513	BE Stor Shed	4,160
823	Child Care Center	4,266	2514	BE Stor Shed	1,363
877	Dormitory/722 CES	25,608	2517	BE Maintenance Shop	970
938	Library/Arts & Crafts	14,524	2518	BE Pav Grnd Fclty	1,535
940	Dormitory/722 MDG	25,608	2519	BE Pav Grnd Fclty	2,916
941	Auto Hobby Shop	7,970	2560	BSE Engr Admin	692
942	Burger King/AAFES	3,523	2593	Youth Center	8,864

TABLE 1-A
EXISTING BUILDINGS WITHIN THE NON-CANTONMENT AREA

960	AAFES/FMO	85,937	2594	Child Care Center	13,200
2595	Child Care Center	10,973	3420	Band Center	2,400
2597	Admin Ofc, Non-AF	1,665	5022+	Storage Igloos	2,392
2598	Traffic Check House	144	5030	Storage Igloo	1,218
2599	SP Con Iden	1,800	5033	Storage Igloo	1,383
2600	Chapel Cen	21,810	5034	Storage Igloo	2,147
2604	Family Support Ctr	25,440	5035	Storage Igloo	1,047
2605	Sq OPS	53,208	5036	Storage Igloo	2,147
2606	Utility Vault	4,826	5037	Storage Igloo	1,047
2630	HQ Group	53,139	5039	Warehouse	5,000
2632	HQ Group	300	5041	SHP Convl Mun	1,920
2670	Data Processing	8,404	5042	SHP, Srvll Insp	5,564
2706	NCO Open Mess	25,688	5043	SP Entry Con Bldg	1,675
2990	Hospital	174,110	5052	SP Kennel SPt Bldg	568
2992	AMB Shelter	2,288	6007	BE Stor Cv Fclty	4,990
2994	Material Services	200	6009	Bldg Wtr Sup	880
2995	Dental Clinic	16,430	6102	Golf Clubhse/Equip	85
2996	RES Comp Med Trng	8,000	6104	Golf Clubhse/Equip	5,779
2998	RES Forces AE Trng	8,575	6105	Golf Clubhse/Equip	3,000
3401	HTG GSvlyy Bldg	611	6110	Golf Clubhse/Equip	1,085
3403	HQ Numbered AF	67,440	6111	Golf Clubhse/Equip	1,500
3404	HTG Fclty Bldg	1,800	6112	Golf Clubhse/Equip	1,550
3407	VAQ Dormitory	25,461	6702	Chapel Cen	10,231
3408	NCO Prof Ed Center	25,461	25099	Arnold Hghts Fire St	1,109
3409	NCO Prof Ed Center	14,835	25469	Arnold Hghts Youth	848
3411	Water Pump Station	747	25511	Ard Hghts/Teen Ctr	3,640
3415	Material Services	8,192	25xxx	Arnold Heights	—
3417	Dormitory	25,774	TOTAL		1,391,655
3418	Band Center	25,774			

PROFILE REPORT
for the
GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

Transportation

TRANSPORTATION

INTRODUCTION

This document summarizes the initial sections of the March JPA Transportation Element. According to State guidelines (State of California Government Code Section 65302(b)), General Plan Circulation (Transportation) Element shall include "the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals and other public utilities and facilities, all correlated with the land use element of the plan." The mandatory circulation element issues, or those which must be addressed within the General Plan, are as follows:

- Major thoroughfares
- Transportation routes
- Terminals
- Other local public utilities and facilities

Other specific items which are not mandatory but may be covered within General Plan Transportation Element include:

- Streets and highways
- Public transit routes, stops and terminals
- Bicycle and pedestrian routes and facilities
- Truck routes and restrictions
- Railroad, multi-modal facilities and goods movement systems
- Transportation system management and transportation demand management
- Joint Use (military / civilian) Aviation
- Aviation terminals for air cargo and passenger services

Upon adoption, the March JPA General Plan Transportation Element will cover all of the issues listed above. It will describe existing circulation conditions in the March JPA, establish standards for planning improvements to the circulation system in coordination with planned growth in the March JPA and it will provide a basis for measurement of

circulation system performance in future years and for future updates of the General Plan Transportation Element.

ROADWAYS

One of the principal elements of any Transportation Element is the definition of the March JPA Planning Area roadway system in terms of designated functions. For example, local streets are designed to serve only short distance local trips while arterial roadways are to serve longer distance trips and higher traffic volumes. The "functional classification system" defines each roadway in the March JPA Planning Area and provides guidelines for the level and type of traffic based on type of roadway. The proposed functional classification system is described in more detail below along with a summary of existing circulation system conditions.

FUNCTIONAL CLASSIFICATION SYSTEM

The primary circulation system in the March JPA consists of surface streets and arterial highways. These streets serve two distinct and equally important functions: Access to adjacent properties, and movement of persons and goods into and through the March JPA planning area, respectively. The design and operation of each street or arterial highway depend upon the importance placed on each of these functions. For example, the arterial highways are designed to carry large volumes of vehicles into and through the March JPA planning area so they have more lanes, higher speed limits and fewer driveways. In contrast, local streets have fewer lanes, lower speed limits, and more driveways to provide access to fronting properties.

A classification system is used to identify the function of each roadway in the March JPA Planning Area. The system provides a logical framework for the design and operation of the roadway system. Because March JPA is a local government with land use authority, the functional classification of the March JPA's existing street system was previously established by the Federal Government and the County of Riverside. One of the purposes of the first Transportation Element is to establish a functional classification system for the March JPA to adopt for future circulation planning.

The functional classification system allows the community and elected officials to identify preferred characteristics of each street. If observed characteristics of any street changes from the functional classification, then actions can be taken to return the street to its originally intended use or to change the designated classification in response to new development and base reuse. Each classification has a designated curb-to-curb width and right-of-way width. Therefore, right-of-way can be obtained under the guidance of the General Plan for those roadways which are not yet built to standard.

It is important to note that the functional designation of a roadway does not necessarily indicate the existing conditions (i.e., traffic volume, width and available right-of-way). Instead, it indicates the intended use and ultimate design of the roadway to accommodate anticipated travel demand.

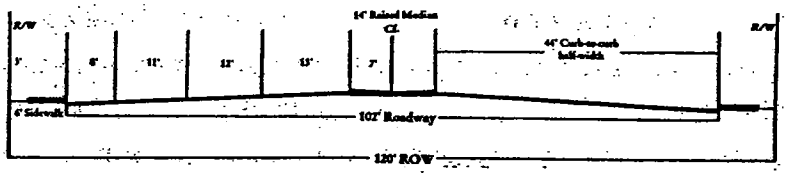
The technical analysis associated with General Plan Transportation Elements includes many terms which are not commonly used and which may require explanation for the reader. For this reason, a glossary of terms is provided at the end of this document which explains many of the most often used technical terms in transportation planning and engineering.

MARCH JPA GENERAL PLAN ROADWAY CLASSIFICATIONS

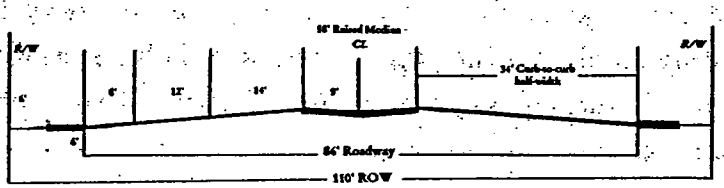
It is important to note that additional right-of-way may be required for any of these classifications wherever an arterial highway coincides with an adopted route for an additional public facility (e.g., bikeways or riding and hiking trails), or for a scenic highway.

The functional classification system for March JPA Planning Area roadways is as delineate herein below to provide proper guidance as the planning area develops and reuse of the former active duty base occurs. The roadway system recommended encompasses the key roadways in the planning area, along with regional circulation system facilities of the respective jurisdictions. The following functional classification system categories are discussed below, with typical cross sections provided in Exhibit 2-1:

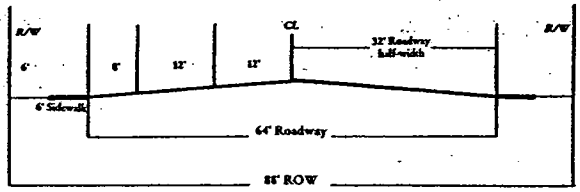
Exhibit 2-1
Roadway Classification Cross-Sections



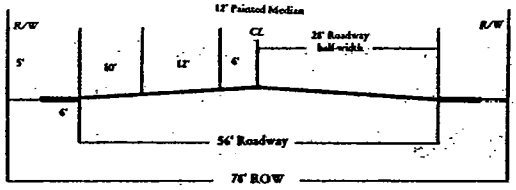
ARTERIAL HIGHWAY



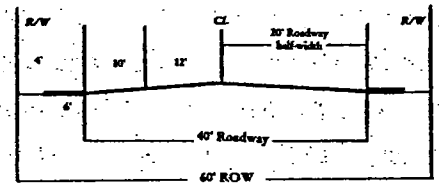
MAJOR ARTERIAL



MINOR ARTERIAL



INDUSTRIAL
COLLECTOR



LOCAL STREET

1. Arterial Highway. These roadways would provide a 102-foot roadway within a 120-foot right-of-way upon full buildout. This is sufficient width to provide three lanes in each direction plus raised median to accommodate controlled left turn lanes at intersections. The roadway without curbside parking, will accommodate a Class II commuter serving bike lane. Roadways designated as an arterial highway serve a sub-regional basis and are continued throughout the sub-region within the respective jurisdictions.

2. Major Arterial. These roadways would provide an 86-foot roadway within a 110-foot right-of-way upon full buildout. This is sufficient width to provide two lanes in each direction plus raised median to accommodate control left turn lanes at intersections. A Class II commuter serving bike lane can be accommodated if curbside parking is restricted.

3. Minor Arterial. These roadways would provide a 64-foot roadway within an 88-foot right-of-way. This is sufficient width to provide two through lanes in each direction, with a Class II bike lane, or curbside parking area. This roadway classification has no center median. Minor arterials function in a similar manner to major arterial except that minor arterial carries less total traffic, less non-local through traffic and a relatively greater proportion of local traffic.

4. Industrial Collector. These roadways would provide a 56-foot roadway within a 78-foot right-of-way. This is sufficient to provide one lane in each direction with a Class II bike lane. Industrial Collector streets function as feeder routes to carry traffic from the arterial system to the local system, but should carry only very minimal levels of non-local through traffic.

5. Local Streets. All streets not designated as one of the facility types above is a local street. Local streets function purely to provide direct access to abutting land uses and should not serve any through traffic.

6. Service Streets. Service streets are purely rights-of-way designed to provide access to areas that need to be serviced, but does not carry standard "public" traffic. A service street is designed as a two-lane roadway without any additional right-of-way. The minimum standard for a service street shall be no less than 24 feet wide to accommodate two-way traffic. Use of service streets shall be limited to areas that require access for purely maintenance and servicing, and will not function as a "public" transportation facility in the general sense.

TABLE 2-1

ROADWAY CLASSIFICATION
MARCH JPA GENERAL PLAN

Roadway Classification	Number of Lanes	Right of Way	Roadway Cross-Section	Type of Median	Sidewalk Parkway
Arterial Highway	6	120'	102'	14' Raised	6'/3'
Major Arterial	4	110'	86'	18' Raised	6'/6'
Minor Arterial	4	88'	64'	N/A	6'/6'
Industrial Collector	2	78'	56'	12' Painted	6'/5'
Local	2	60'	40'	N/A	6'/4'
Service	2	24' min	24' min	N/A	N/A

The functional classification of each street is determined based on several key factors including the following:

1. Future Traffic Volumes. The classification of each roadway should be designated so that the roadway capacity, once it is fully built out, will support the anticipated traffic volumes at an acceptable level of service (LOS) once the planning area's developable parcels are also fully built out. Level of service is a qualitative measure describing operational conditions of a traffic stream or intersection. It is usually based on a calculation of the average delay experienced by vehicles during peak hours. Service levels range from A to F, with A representing excellent operating conditions and free flow, while F represents extreme congestion and significant motorist delay. The definition of acceptable level of service is determined by the March JPA as part of the development of the General Plan through the Goals and Policies.

   Many studies have been completed on the appropriate levels of traffic on various types of facilities. Table 2-2 displays general guidelines that are used to categorize roadways into logical functional classifications. For the March JPA, LOS E is the minimum acceptable level of service, and LOS D is the desirable standard for peak hour conditions.

2. Adjacent Land Uses. Another important element in setting roadway functional classifications is adjacent land uses. Each classification is specified to carry certain types of traffic. For example, freeways are designed to carry relatively large volumes of long distance "through" traffic, while local streets represent the opposite end of the spectrum and are designed to carry only traffic destined for land uses along the street. Arterial and collector streets are designated to carry varying levels of local and through traffic.

KEY EXISTING ROADWAY NETWORK

Exhibit 2-2 illustrates the existing roadway network for the March JPA.

TABLE 2-2
LEVEL OF SERVICE

Level of Service	Description	Volume to Capacity Ratio
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	0-.59
B	Very good operation. Many drivers begin to feet somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	.60-.69
C	Good operation. Occasionally drivers may have to wait more than 60 seconds, and backup-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	.70-.79
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues. This level is typically associated with design practice for peak periods.	.80-.89
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	.90-1.00
F	Forced flow. Represents jammed conditions. Backups form locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	Over 1.00

Source: *Highway Capacity Manual*, Special Report 209, Transportation Research Board, Washington, D.C., 1985 and *Interim Materials on Highway Capacity*, NCHRP Circular 212, 1982.

Interstate 215: I-215 is a six-lane north-south freeway which separates the eastern half of the March JPA Planning Area (with the airfield and former Air Force base facilities) from the largely undeveloped western half. To the north, I-215 passes through the cities of Riverside and San Bernardino before merging into I-15. To the south, I-215 passes through Perris and Sun City before

merging with I-15 in Murrieta. I-215 currently carries approximately 70,000 vehicles per day south of Van Buren Boulevard and 60,000 vehicles per day north of Van Buren. Full interchanges are provided at Alessandro Boulevard, Cactus Avenue, Van Buren Boulevard, and Oleander Avenue.

Alessandro Boulevard: Alessandro Boulevard is a four-lane east-west arterial which serves as the northern March JPA Planning Area boundary west of I-215, and has an interchange with I-215. West of the March JPA Planning Area it passes through the City of Riverside, splitting into Central Avenue and Arlington Avenue. East of I-215 it is a key arterial through the City of Moreno Valley. Alessandro Boulevard currently carries approximately 27,000 vehicles per day west of I-215 through the March JPA Planning Area.

Barton Street: Barton Street is a two-lane north-south road which serves as the western March JPA Planning Area boundary south of Van Buren Boulevard. It terminates on the north at Orange Terrace Parkway, and extends past Nandina Avenue on the south. Barton Street currently carries approximately 4,000 vehicles per day south of Van Buren Boulevard.

Cactus Avenue: Cactus Avenue is a four-lane east-west arterial which serves as the northern March JPA Planning Area boundary east of I-215. It has an interchange with I-215, and carries approximately 26,000 vehicles per day east of I-215. West of I-215 it carries 8,000 vehicles per day, and extends only a short distance before turning north to Alessandro Boulevard.

Heacock Street: Heacock Street is a four-lane north-south arterial which serves as the eastern March JPA Planning Area boundary. Currently, Heacock Street is only improved as far south as Iris Street; from Oleander Avenue to Gentian Avenue it is a two-lane paved street, south of Oleander Avenue it is only developed as a dirt road. To the north of the JPA area, it has an interchange with SR-60.

Oleander Avenue: Oleander Avenue is a four-lane east-west arterial through its interchange with I-215. Immediately west of the interchange, Oleander currently terminates at Harvill Street, though it is planned to be extended westerly to connect with Nandina Avenue. East of I-215, it continues for a short distance as a four-lane arterial, then continues as a two-lane road to its current terminus at the Heacock Street alignment. Oleander is planned as a six-lane arterial by the City of Perris, to be continued easterly from its current terminus.

Van Buren Boulevard: Van Buren Boulevard is a four-lane east-west arterial through the western half of the March JPA Planning Area. Its eastern terminus is at its interchange with I-215. Westerly, it passes through the City of Riverside, turning north through the Arlington area to an interchange with SR-91. Through the planning area it currently carries approximately 24,000 vehicles per day.

Other key regional facilities outside the March JPA Planning Area are described below.

State Route 91: SR-91 is an east-west freeway located approximately five miles northwest of the March JPA Planning Area, and connects the City of Riverside with areas to the west, and is the primary regional roadway connection from Riverside County to Orange County and southern Los Angeles County. From the March JPA Planning Area, access to SR-91 is provided by Van Buren Boulevard, Alessandro Boulevard/Arlington Avenue, and I-215.

State Route 60: SR-60 is an east-west freeway located approximately three miles north of the March JPA Planning Area, and connects downtown Los Angeles and the southern San Gabriel Valley with Riverside, Moreno Valley, and Beaumont, where it connects with I-10. From the March JPA Planning Area, access to SR-60 is provided by I-215 and Heacock Street.

Cajalco Road: Cajalco Road is a two-lane road approximately two miles south of the March JPA Planning Area, and connects I-215 with I-15 south of the City of Corona. Though Cajalco Road is a low-volume facility today, this corridor has been proposed for a future expressway, which would be a key regional facility for access to the planning area from the west.

Ramona Expressway: The Ramona Expressway is a two to four-lane road which is the extension of Cajalco Road east of I-215. It connects I-215 with SR-79 and the City of San Jacinto to the east. It has been proposed as a future expressway, which would be a key regional facility for access to the March JPA Planning Area from the east.

Local Facilities:

The following paragraphs describe the general physical characteristics of roadways within the March JPA Planning Area. The physical descriptions are based on field review of each facility.

Northeast Planning Subarea (Main Base):

Riverside Street: Riverside Street is a north-south street which enters the "Main Base" area at Cactus Avenue, opposite Graham Street in Moreno Valley. It contains three travel lanes in each direction north of Meyer Drive and one travel lane in each direction south of Meyer Drive.

Meyer Drive: Meyer Drive is an east-west street which enters the Main Base area at Heacock Street, opposite John F. Kennedy Drive in Moreno Valley. It contains two travel lanes in each direction east of Riverside Street and one travel lane in each direction west of Riverside Street.

Southeast Planning Subarea (Aviation):

A two-lane access road connects the air museum (on the west side of the runway adjacent to I-215) with Van Buren Boulevard at its interchange with I-215.

West March Planning Subarea:

Village West Drive: Village West Drive is a two-lane road which provides access to Air Force Village West from Van Buren Boulevard.

Plummer Road: Plummer Road currently exists south of Van Buren Boulevard as a two-lane street providing access to the Ben Clark Public Safety Training Center (CTC).

INTERSECTION OPERATING CONDITIONS

Existing Conditions

Table 2-3 shows existing peak hour levels of service at the key intersections in and around the March JPA Planning Area. These LOS are based on afternoon peak hour turning movement counts collected in 1997. Currently, one of the study intersections (Cactus Avenue at Heacock Street) operates at LOS E, and one (Heacock Street at the SR-60 eastbound ramps) operates at LOS D. All others are LOS C or better.

Future Conditions

Table 2-4 shows the projected future peak hour levels of service, including buildout of the March JPA General Plan Land Use Plan, growth in regional traffic, and improvement of the transportation system as outlined in the Transportation Element.

Exhibit 2-2
Existing Roadway Network

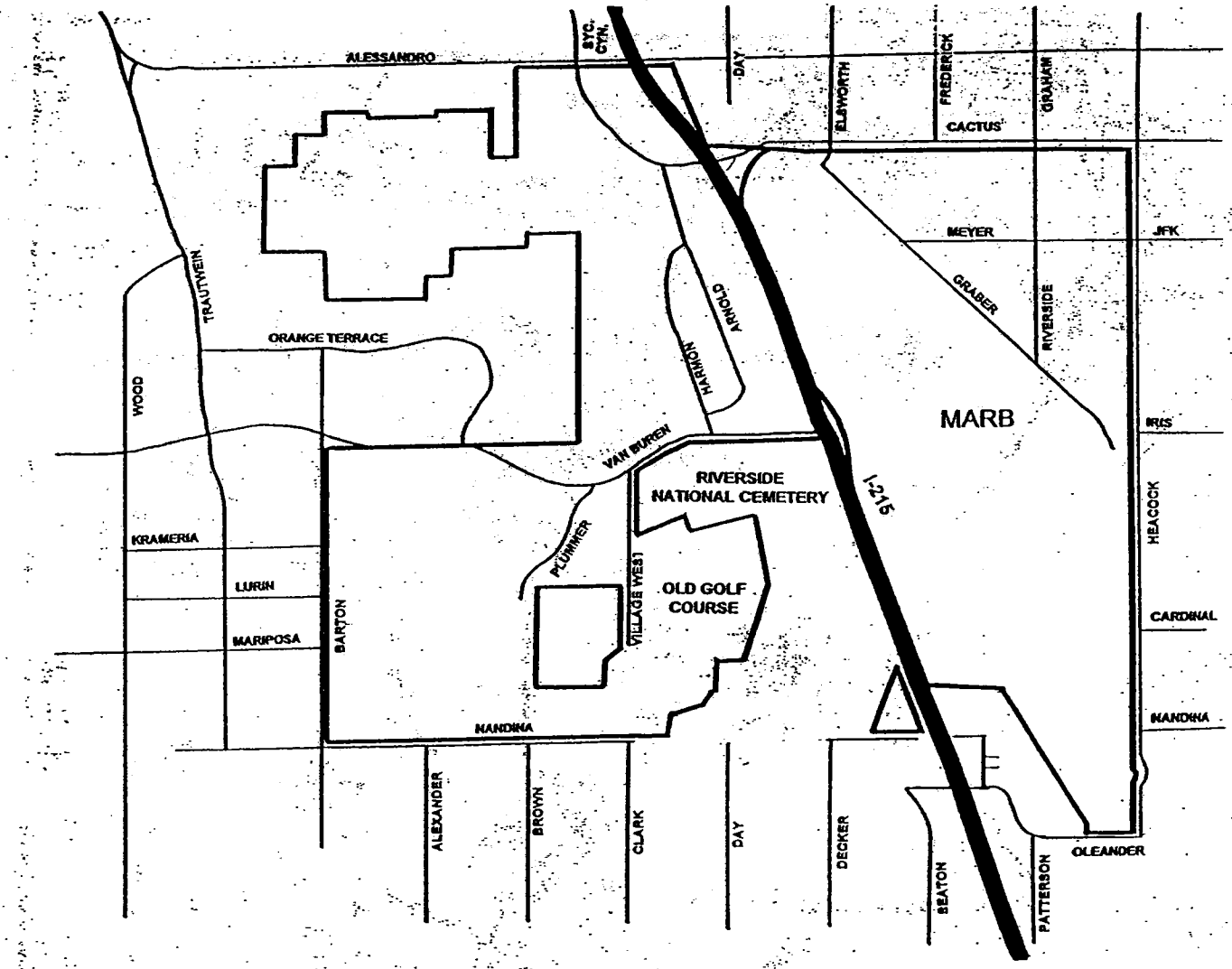


Exhibit 2-3
Regional Roadway Setting of Planning Area

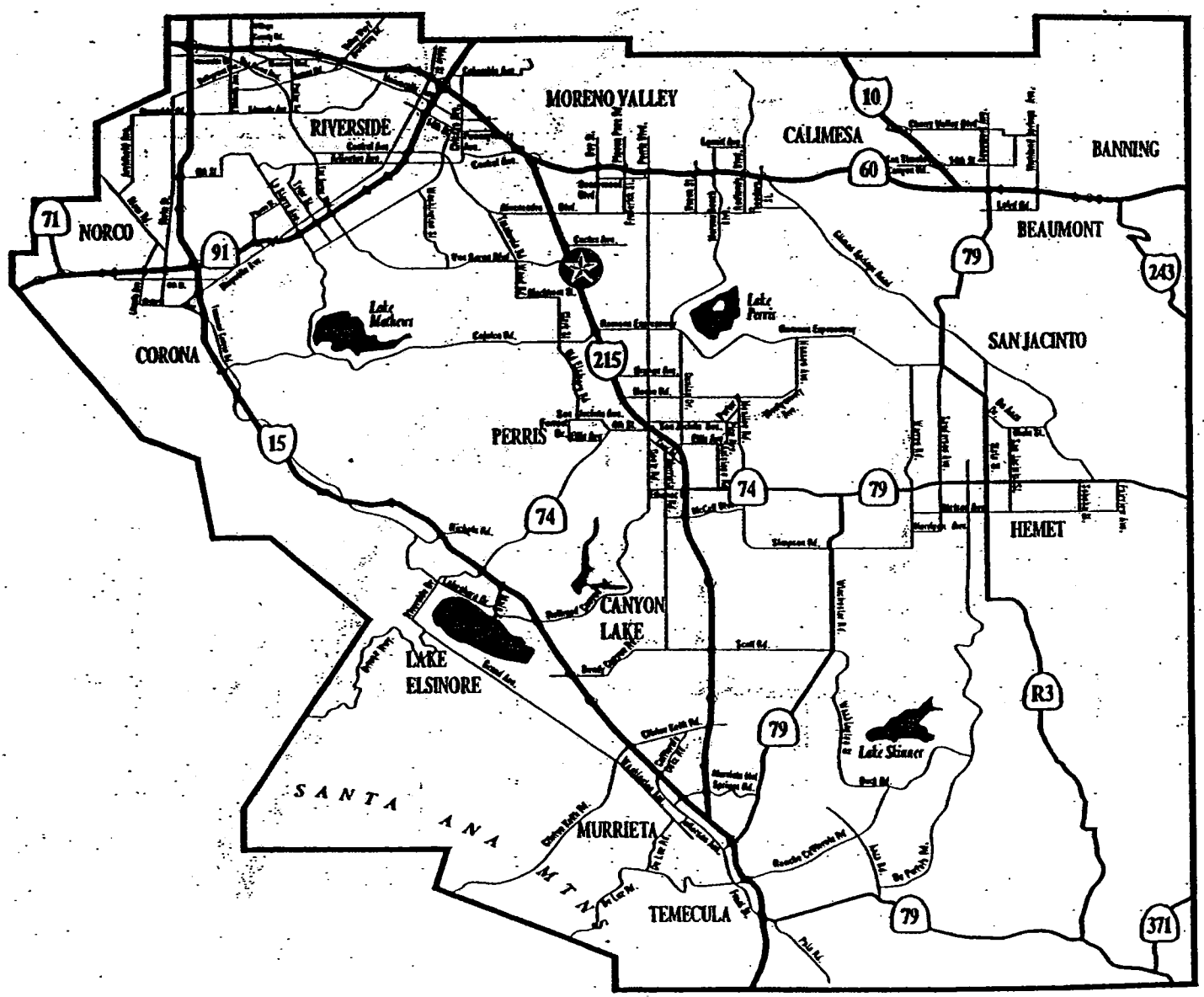


TABLE 2-3
EXISTING LEVEL OF SERVICE
PM PEAK HOUR

ROADWAY/INTERSECTION	V/C	DELAY	LOS
Heacock @ SR-60 EB Ramps	0.565	26.1	D
Heacock @ SR-60 WB Ramps	0.548	9.3	B
Alessandro @ Trautwein	0.551	22.1	C
Alessandro @ Barton	0	1.8	N/A
Alessandro @ W. Frontage Road	0.504	10.4	B
Alessandro @ I-215 SB Ramps	0.365	5.9	B
Alessandro @ I-215 NB Ramps	0.337	5.2	B
Cactus @ Plummer	0	0	N/A
Cactus @ I-215 SB Ramps	0.228	12.7	B
Cactus @ I-215 NB Ramps	0.552	7.6	B
Cactus @ Frederick	0.412	6.8	B
Cactus @ Heacock	0.394	57	E
Van Buren @ Washington	0.748	16.8	C
Van Buren @ Trautwein	0.486	22.7	C
Van Buren @ Barton	0.521	14.5	B
Van Buren @ Orange Terrace	0.325	2.3	A
Van Buren @ Plummer	0	1.4	N/A
Van Buren @ Village West (Clark)	0.688	19.2	C
Van Buren @ Harmon	0.372	2.6	A
Van Buren @ I-215 SB Ramps	0	1.7	N/A
Van Buren @ I-215 NB Ramps	0.425	8.6	B
Nandina @ Barton	0.951	13.7	C
Oleander @ I-215 SB Ramps	0.094	8.7	B
Oleander @ I-215 NB Ramps	0.106	4	A

Exhibit 2-4
Study Intersections

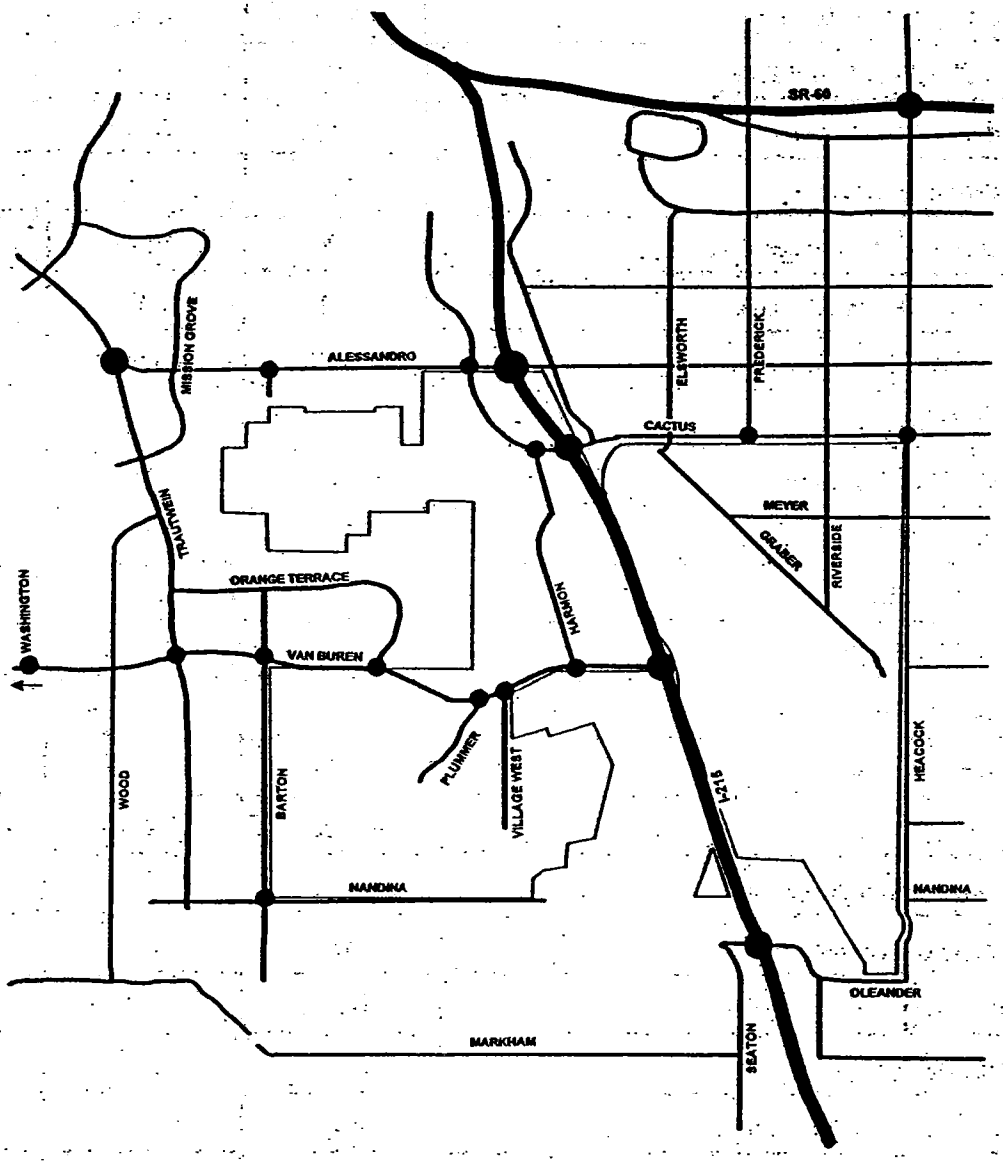


TABLE 2-4
FUTURE LEVEL OF SERVICE
PM PEAK HOUR

ROADWAY/INTERSECTION	FUTURE BACKGROUND			FUTURE W/PROJECT & IMPROVEMENT		
	V/C	DELAY	LOS	V/C	DELAY	LOS
Heacock @ SR-60 EB Ramps	0.788	13.6	B	0.788	13.6	B
Heacock @ SR-60 WB Ramps	0.582	13.5	B	0.582	13.5	B
Alessandro @ Trautwein	1.362	235.9	F	1.036	32.4	D
Alessandro @ I-215 SB Ramps	1.502	168.1	F	1.227	52.5	E
Alessandro @ I-215 NB Ramps	0.864	16.8	C	0.864	16.8	C
Cactus @ I-215 SB Ramps	0.612	17.9	C	0.612	17.9	C
Cactus @ I-215 NB Ramps	1.278	139.9	F	0.995	25.7	D
Cactus @ Frederick	0.981	23.7	C	0.981	23.7	C
Cactus @ Heacock	0.942	30.4	D	0.942	30.5	D
Van Buren @ Washington	1.481	356	F	0.978	39.6	D
Van Buren @ Trautwein	1.116	133.2	F	0.819	39	D
Van Buren @ Barton	1.329	245.2	F	0.843	12	B
Van Buren @ Orange Terrace	0.799	10.4	B	0.799	10.4	B
Van Buren @ Village West (Clark)	0.698	3.3	A	0.698	3.3	A
Van Buren @ Harmon	0.716	4.3	A	0.716	4.3	A
Van Buren @ I-215 SB Ramps	1.651	736.8	F	0.762	14.2	B
Van Buren @ I-215 NB Ramps	0.729	15.3	C	0.729	15.3	C
Nandina @ Barton	0.441	19	C	0.441	11.8	B
Oleander @ I-215 SB Ramps	0.667	11.5	B	0.667	11.5	B
Oleander @ I-215 NB Ramps	0.444	3.4	A	0.444	3.4	A

TRANSIT SERVICES

Riverside Transit Agency (RTA) is the operator of fixed bus routes and service for the majority of Western Riverside County. RTA currently operates fixed bus routes within the planning area as well as intercity service between the adjacent member jurisdictions. Service also feed the commuter rail station in Riverside.

TRUCK ROUTES

Areas surrounding the March JPA Planning Area designate truck routes that are then carried through the planning area. This is easily demonstrated by Van Buren Boulevard; which is designated and operated as a truck route in the City of Riverside, however, designated or not the function of the truck route on Van Buren Boulevard continues through the planning area. It is the goal of the general plan to connect the existing and planned truck route system of the adjacent jurisdictions, and complete the transportation network for truck routes. Additionally, with the establishment of new land uses, a truck route system within the planning area will be created to serve the needs of the land use pattern.

BIKE LANES

Within the March JPA planning area, the are no existing or formally designated bike lane facilities. The general plans of the adjacent member jurisdictions have both planned and existing bike routes and facilities in proximity or adjacent to the March JPA Planning Area. As with most systems, the planning area was an island from, or missing link of a network. The bike lane facilities recommended within the General Plan, are designed to link the adjacent bike facilities into a network, as well as provide a means of alternative transportation to function within the planning area.

RAILWAY

Rail service within the planning area is limited to the San Jacinto Rail Branch Line located parallel on the west side of Interstate 215. There is an older existing spur line located between Van Buren Boulevard and Cactus Avenue. The line is primarily used for limited freight service. Operations primarily include delivery of bulk goods to the industrial areas south of the planning area, and transporting potatoes and other limited agricultural products from the San Jacinto Valley.

Existing service on the line is limited to low cost, bulk freight due to the condition of the rail line, and limit of speed to that of approximately 10 miles per hour. This AT & SF rail line is owned by Riverside County Transportation Commission (RCTC), with designs and master plans to upgrade the rail line, in order to operate passenger service; connecting the San Jacinto and Perris Valleys with the Metrolink Station in Riverside. A source of funding has not been secured to estimate an operation date for the San Jacinto Branch Rail Line.

The San Jacinto Branch Rail Line, as indicated above, does serve a function in the movement of goods; primarily low value, bulk freight. Most of the operations for this rail line service the industrial areas of the Perris Valley and San Jacinto Valley. Freight rights for the line have been retained, and the rail line will continue to serve the movement of goods. With upgrading of the rail line, and the existing spur south of Cactus Avenue, future opportunities for goods movement and multi-modal transportation are available. Additionally, this route has been identified as the potentially location of a high speed rail corridor.

AVIATION TRANSPORTATION

The aviation field at March is a great asset. March Field contains a 13,300 foot length runway; which is the longest in California and virtually any aircraft can take off at its maximum gross take off weight, under most conditions. Furthermore, the runway protection zones, runway safety areas, and obstacle free zones meet Federal Aviation

Administration (FAA) guidelines and standards. Most important, navigation aids (navaids), lighting and associated facilities for commercial/civilian use exists at March Field.

Through base realignment, the number of operations at the military installation reduced. In 1992, a total of 104,320 operations were conducted by assigned aircraft. The number of operations by AFRES is estimated to be approximately 42,000 operations annually. The FAA, based upon annual service volume (ASV), estimates an airport's annual capacity. This capacity is based upon runway use, aircraft mix, weather conditions and configuration of the airfield. The ASV based upon airspace and airfield at March is approximately 200,000 operations. Based upon the available capacity of the airport, March JPA has successfully pursued the ability of utilizing March for civilian aviation operations.

Joint Use Aviation:

Early 1997, the March Air Force Base Joint Use Feasibility Study was finalized. The Study was prepared for March Joint Powers Authority (JPA) by Southern California Association of Governments (SCAG) in conjunction with P&D Aviation and Advanced Transportation Systems, and funded by an FAA grant received by SCAG. This study was prepared to assess the technical feasibility of joint use operations at March AFB, due to decreased military aviation operations attributed to base realignment. Specifically analyzed within the study, is the establishment of a joint use aviation facility at March AFB to establish civilian aviation. The study analyzed both air cargo and passenger services.

On May 7, 1997, a joint use agreement was entered into by the Department of Defense and March JPA. This joint use agreement permits the establishment and operation of commercial aviation, via joint use aviation facility at March. The civilian (JPA) and military (AFRES) entities share essential aviation facilities such as the control towers and runways, as well as maintenance of facilities, under this joint use arrangement.

Airspace:

March Aviation Field is Class C airspace as specified in Federal Aviation Regulation (FAR) Part 71. Class C airspace is a controlled airspace. Generally, that airspace from the surface to 4,000 feet above the airport elevation, for an airport with an operational control tower are serviced by a radar approach control and have a number of instrument flight rules (IFR) operations. The purpose of Class C airspace is to identify visual flight rules (VFR) aircraft, and VFR aircraft must receive radio permission from air traffic control (ATC) in order to enter Class C airspace.

With the number of commercial and general aviation fields in Southern California, the airspace in most areas is becoming congested. The existing system of enroute airways and navigational aids is increasingly sparse as analogous low altitude airways and flight tracks are used for both LAX and Ontario airports due to runway configuration and navaids. However, airspace for March Field is not restricted.

March's airspace is unconstrained due to numerous elements. First, being the orientation of the runway and location of navaids. The flight path or flight tracks for March are not in conflict with other airports with a greater number of annual operations. Aircraft operations at March are primarily conducted on Runway 32 (landings from the south and departures to the north). With prevailing winds, Runway 32 can be used 95 percent of the time, with the remaining operations on Runway 14 (landings from the north and departures to the south).

Evaluations of the airspace for March is estimated to be 125,000 annual operations, based upon the current IFR capacity of the Hemet radar sector. This level of capacity was confirmed by Southern California Terminal Radar Approach Control (TRACON). This capacity is higher than a typical radar sector due to the fact that two radar facilities are within the sector. These are the March GCA and the Hemet sector of the TRACON. Furthermore, the Hemet sector is relatively simple compared to other sectors. The hourly radar sector

capacity has been quantified to handle 40 aircraft per hour; which is substantial greater than the average 25 to 30 aircraft per hour.

Airport Layout Plan:

An airport layout plan (ALP) is a plan by which existing and proposed airport facilities, and boundaries for an aviation field and airport are depicted. The means in which these elements are delineated are in a form prescribed by the Federal Aviation Administration (FAA). Items delineated within the ALP may include, runways, taxiways, aprons, runway clearance line, airport point of reference, runway protection zones, approach surface, terminal locations, airport and runway data and building restriction line. In the case of March, both military and civilian FAA airport standards are included within the ALP.

A set of five (5) airport plans meeting Federal Aviation Administration (FAA) criteria, was prepared for and approved by the March Joint Powers Commission for submittal to FAA. March JPA submitted these plans to FAA on May 29, 1997; with FAA approval granted June 3, 1997. The airport plans include; Airport Layout Plan, Terminal Area Plan, Airport Land Use Plan, Airport Airspace Plan and Approach Profiles and Plans. The plans, as a set, address the requirements and criteria for March to be jointly used with the military for civilian aircraft operations, under the Joint Use Agreement.

Airport Terminals:

As the joint use agreement was executed May 7, 1997, no civilian aviation terminals existed prior. Two terminal locations were identified through the base reuse planning process; each flanking the southern end of Runway 32/14, on the east and west sides respectfully. The west side terminal location is devoid of any supportive aviation improvements (i.e. aprons, taxiways, etc..), and is encumbered by SKR Open Space designation. However, the east side terminal location contains the "alert facility" along with aprons, ramps and taxiways. Based upon the approved Airport Layout Plan for March, the east side terminal

area will be an all cargo facility, with the west side terminal having the ability to be developed for passenger/cargo or all cargo.

Passenger:

As identified through the SCAG/FAA study, it is estimated that the physical capacity of the regional airport system is 100 million annual air passengers (MAP). In 1995, commercial jet airports in the system serviced 73.3 MAP. Without new or expanded airports added to the regional system, existing air carrier airports in Southern California should collectively reach capacity in 10 to 15 years. Regional Air Passenger Demand Allocation Model or RADAM allocations for March estimate to be 2.99 MAP by year 2016. This is half of what Ontario Airport served in 1996.

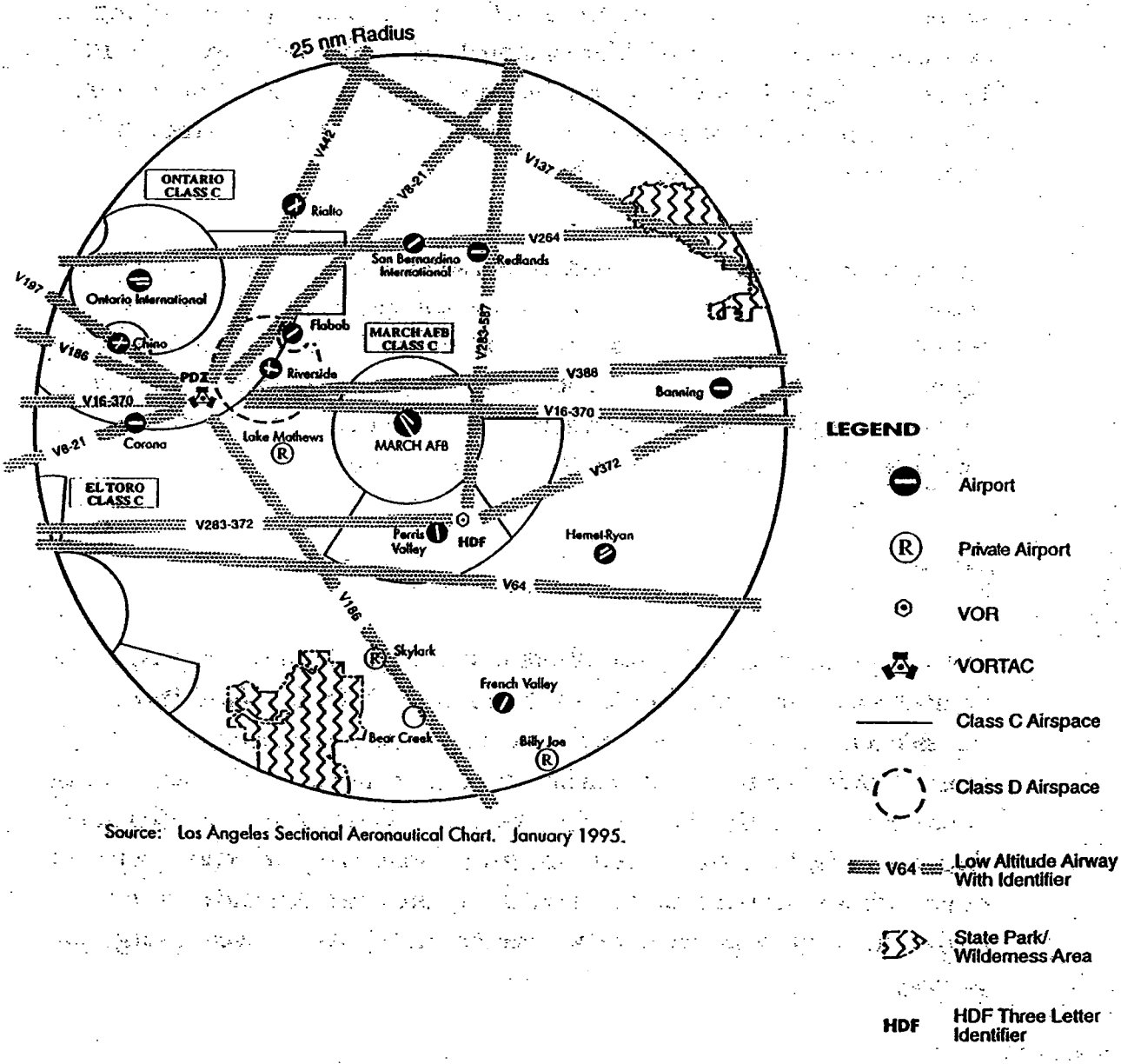
The preferred alternative of the SCAG/FAA study, estimates passenger terminal needs to include 12 gate positions. This would also include 12.5 acres of an apron area, 210,00 square foot terminal building on 10.5 acres of land and 3770 parking spaces on 43.3 acres. Total land required to support the preferred alternative of providing for passenger and in addition to air cargo at March would be approximately 67 acres to support 2.99 MAP per year.

Air Cargo:

March JPA has from the reuse planning efforts, established the presence of creating an air cargo operation/terminal at March; "***March Inland Port***". The east side terminal location area has been selected to be developed into an all air cargo terminal due to its readily achievable means with the existing improvements of the former alert facility. Furthermore, as delineated throughout the SCAG/FAA study, the market trends and projections of the air cargo industry demonstrate the need to capture these demands. The study further evaluates the potential to be an all air cargo facility, as well as cargo and passenger.

Exhibit 2-5

Airspace Environment & Adjacent Airports

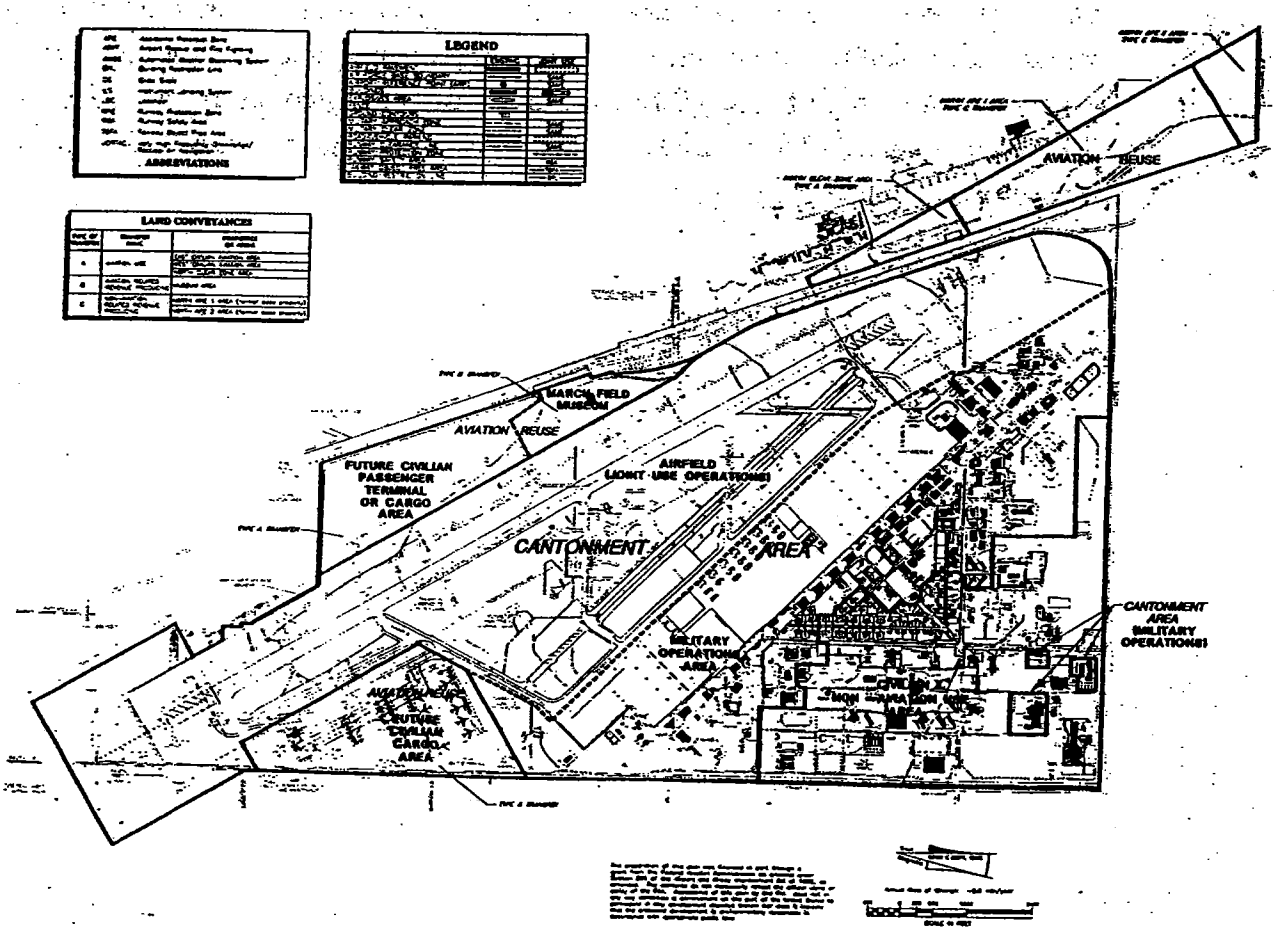


Source: Los Angeles Sectional Aeronautical Chart. January 1995.

The air cargo industry is dramatically changing, with exponential growth. Air cargo facilities in Southern California are being further constrained; with limits on the number of annual operations for many airports and the increase in air passenger travel, operations for air cargo is being squeezed at existing facilities. The air cargo industry is moving from transporting goods in the underbelly of passenger aircraft, to all cargo aircraft.

The air cargo volumes for Southern California were 2,151,000 tons in 1994 with a projected volume of 8,888,000 tons by year 2016. This represents a greater than 400% growth factor. The study further analyzed the air cargo capacity at March to be 426,000 tons under the preferred alternative at year 2016, and 1,245,000 tons (20% of total regional volume forecast) if March is operated as an all air cargo port.

Exhibit 2-6
Airport Land Use Plan



GLOSSARY OF TRANSPORTATION TERMS

The language of transportation planning in the context of this General Plan Transportation Element includes a number of terms that are not commonly used or understood. The following section defines some of these terms for the user of this document.

Auto Occupancy is the number of people occupying an automobile, including the driver and all passengers.

Average Daily Traffic (ADT) is the total volume of traffic that travels over a fixed point on a road in a twenty-four hour period. This is a commonly used measure of traffic volume.

Average Vehicle Ridership (AVR) is a ratio of the number of person trips divided by the number of vehicles used to make those trips during the peak periods. An AVR of 1.5 indicates that, on average, one out of every two vehicles is carrying two passengers. Increasing AVR is a means of accommodating travel demand while at the same time decreasing the number of vehicle trips made.

Capacity refers to the maximum number of vehicles that can pass over a given section of roadway during a given time period under prevailing roadway and traffic conditions. Capacity is usually expressed in vehicles per lane per hour and is a function of street width, configuration, signals and potential conflict points.

Demand-Responsive Transit is a transit service which provides door-to-door or point-to-point transportation at the user's request. Dial-a-Ride and Airport Shuttle services are examples of Demand-Responsive Transit.

Fixed Route Transit is a transit service operating over the same street or highway pattern on a predetermined schedule. The Riverside Transit Agency operates a fixed route bus transit system.

Goal is the ultimate purpose of an effort stated in a way that is general in nature and immeasurable; a broad statement of intended direction and purpose.

Headway is the time between arrivals of a bus or train at a specific location and in the same direction.

High Occupancy Vehicle (HOV) is a vehicle carrying two or more persons, including the driver, either in a carpool, vanpool, bus or other multiple passenger vehicle.

High Occupancy Vehicle (HOV) Lane is a freeway or arterial street lane that is reserved for use by buses, vanpools, and carpools; often referred to as commuter or carpool lanes.

Implementation Policy is a specific statement guiding action and implying a clear commitment.

Level of Service (LOS) is an indication of the performance of a roadway or intersection based on an evaluation of driving conditions, with six performance ratings as follows:

A - Free Flow, very small or no delays at traffic signals
B - Stable Flow, little delay
C - Restricted flow, moderate delays
D - Approaching unstable flow, substantial delays
E - Capacity Conditions, Long delays
F - Forced Flow, unacceptable delays

The **mode of travel** is that type of transportation used by people to get to where they want to go. A mode of travel can be auto, bus, bicycle, walking, rail or airplane.

Objective is a measurable goal; a statement of desirable accomplishment within a specific time frame that is definite enough to know when and if it has been achieved.

Peak hour(s) is the time in which traffic volume is the highest for the day, and is commonly the period of greatest congestion. Peak hours during the weekday are typically from 7:00 to 9:00 AM and 4:00 to 6:00 PM, although some areas may experience peak periods at other times of the day.

Ridesharing generally refers to people sharing the same vehicle to travel to their final destinations, including carpooling and vanpooling.

A **traffic model** is a tool used to forecast the future actions and interactions of a transportation system under a given set of conditions such as land use, population and socioeconomic characteristics, and travel characteristics. Traffic models are usually set up on computers using specialized software packages.

A **Transit Center** is a facility where buses and/or other transit routes converge, enabling passengers to transfer among routes and services.

Transportation Demand Management (TDM) are individual actions or comprehensive plans to reduce the number of vehicular trips generated by or attracted to new or existing development. TDM measures attempt to reduce the number of vehicle trips by increasing bicycle or pedestrian trips or by expanding the use of bus, transit, carpool, vanpool or other high occupancy vehicles. TDM measures include, but are not limited to the following:

building bicycle routes and facilities;

improving bus routes, building bus shelters, publicizing existing under-utilized transit routes;

subsidizing bus use or providing free bus tokens to the public or at the private level through employers;

providing, organizing or subsidizing vanpools;

providing carpool matching services, subsidizing carpool users, providing preferential parking areas for carpools, or reducing parking costs for carpools;

providing commuter programs.

Transportation Systems Management (TSM) is a methodology for improving local transportation systems that is aimed at creating a more efficient use of the existing roadway system. TSM measures to increase existing system efficiency include signal synchronization, restriping of streets to add lanes, and adding right or left turn pockets at intersections, and they typically do not include construction of new roadways or the acquisition of additional right-of-way to widen existing roads.

A **trip** is one way travel from an origin to a destination for a particular purpose such as a journey to work or the grocery store. The **trip end** is both the origin and destination of a trip; each trip has two trip ends. A **person trip** is one way travel by one person from an origin to a destination by any mode of travel. **Trip generation** refers to vehicle or person trips produced by or attracted to specific land uses.

Volume/Capacity Ratio, or V/C Ratio is the ratio of the volume of traffic to the design capacity of a road to handle those volumes. For example, if the capacity of the road is 20,000 vehicles/day and traffic counts indicate 18,000 vehicles/day are using the road, then the V/C Ratio is 1.8:2.0, V/C Ratios are used to estimate levels of service and congestion for roadways and intersections.

PROFILE REPORT
for the
GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

Noise / Air Quality

AIR QUALITY:

March JPA Planning Area is located in the South Coast Air Basin (SCAB), an area which is governed by the regulations of the South Coast Air Quality Management District (SCAQMD). Southern California has the worst air quality in the nation, two to three times worse than any other area of the country. State and federal ambient air quality standards are regularly exceeded for four of the six criteria pollutants. Despite considerable improvements made to provide for cleaner air in the SCAB, additional improvements are necessary to meet federal and state requirements for clean, healthful air.

The problem of air quality for the region is addressed through the "Air Quality Management Plan" (AQMP) for the SCAB. The AQMP contains a series of measures designed to reduce air pollution from both stationary and mobile sources. The Department of Defense (DOD) is regulated by the AQMP, and there are currently several stationary permits that control emissions from equipment on the realigned base.

The *1997 AQMP* identifies several actions that local governments are called upon to implement in order to improve air quality. These actions focus primarily on reducing emissions from automobiles, either directly by inducing people to drive less, or indirectly by influencing land uses so that the lengths of trips will be reduced. The Air Quality Element of the Western Riverside Subregional Comprehensive Plan identifies approaches and strategies (transportation control measures) for reducing or shortening the length of vehicle trips.

Because the western Riverside County region is housing-rich and job-poor, many local residents commute to work in other areas, thus increasing emissions. The land use plan for the general plan emphasizes the creation of a major employment center, thereby increasing the number of jobs available locally, and providing the basis for a better balance of jobs and housing. This is consistent with the AQMP and local air quality strategies to reduce vehicle miles traveled (VMT) and mobile sources.

— NOISE SECTION —

The Noise Section of the Profile Report discusses the characteristics of noise, the existing noise environment in the March JPA Planning Area, and stationary and mobile sources of noise. It also provides state and federal guidelines for the control of noise levels.

Every day, people are subject to a multitude of sounds in the urban environment. Many of these sounds are by-products of day-to-day activities. The type of annoyance produced by sound depends on its loudness, duration, time of day, impulse character, pure tone content, variability, seasons of the year, and the community. Individual annoyance is relative and variable. Physical health, psychological stability, social cohesion, property values, and economic productivity are factors affected by excessive amounts of noise.

Metrics such as Day-Night Average Noise Level (DNL or Ldn) and Community Noise Equivalent Level (CNEL), which are 24-hour averages, are sometimes supplemented with other metrics, primarily the equivalent sound level (L_{eq}). The L_{eq} is the equivalent, steady-state level that would contain the same acoustical energy as the time-varying level during the same time interval. Occasionally, the Sound Exposure Level (SEL) is used to supplement DNL and CNEL, especially where sleep disturbance is concerned. The SEL value represents the A-weighted sound level integrated over the entire duration of the noise event and referenced to a duration of one second. When an event last longer than one second, the SEL value will be higher than the highest sound level during the event.

Community noise levels are measured in terms of the A-weighted decibel (dBA or dB). A-weighing is a frequency correction that correlates overall sound pressure levels with the frequency response of the human ear. Additional units of measurement have been developed to evaluate the longer term characteristics of sound. One of the more common noise measurements uses statistical samples in terms of percentile noise levels. For example, the L_{10} noise level represents the noise level that is exceeded 10% of the

Federal Highway Works Administration (FHWA): The FHWA has established design standards for different land uses. These standards apply to the planning and design of federally-funded highway projects, and are expressed in terms of both L_{eq} and L_{10} (see Table 3-3).

TABLE 3-2
PERMISSIBLE NOISE EXPOSURE IN THE WORKPLACE

Duration-Hour Per Day	Sound Level, dBA
8	90
6	92
4	95
3	97
2	100
1	105

Source: Department of Labor Occupational Noise Exposure Standards, Code of Federal Regulations, Title 29, Chapter XVII Part 1910, Subpart G, 36 FR10466, May 29, 1971, as amended and corrected through June 19, 1983.

Department of Housing and Urban Development (HUD): The Department of Housing and Urban Development (HUD) has adopted environmental criteria and standards for determining project acceptability and necessary mitigation measures to ensure that projects assisted by HUD provide a suitable living environment. The standards include noise limits of 65 dB Ldn for residential areas. HUD standards are noted in Table 3-4.

TABLE 3-3
NOISE ABATEMENT CRITERIA

Category	Land Use	Leq, dBA	L_{10}, dBA
A	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need, e.g., amphitheaters, parks and open spaces.	57 (Exterior)	60 (Exterior)
B	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, recreation areas, playgrounds, active sports areas, and parks not included in Category A.	67 (Exterior)	70 (Exterior)
C	Developed lands, properties or activities not included in categories A or B.	72 (Exterior)	75 (Exterior)
D	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.	52 (Interior)	55 (Interior)

Source: Department of Transportation, Federal Highway Administration Highway Noise Control Standards and Procedures, Title 23, Code of Federal Regulations. Chapter 1, Subchapter J, Part 772, 38, FR 15953, June 19, 1973, as amended through May 29, 1979.

Noise Control Act: In 1972, the Noise Control Act authorized the Environmental Protection Agency (EPA) to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health (hearing loss levels) and welfare (annoyance levels) with an adequate margin of safety (see Table 3-5).

TABLE 3-4
HOUSING SITE ACCEPTABILITY STANDARDS

Acceptability	Ldn (CNEL)	Special Approvals and Requirements
Acceptable	65 dB and less	None
Normally Unacceptable	65 dB to 75 dB	Special environment clearance and 5 dB additional attenuation for building within 65 to 70 dB Ldn and 10 dB additional attenuation for building within 70 dB to 75 dB Ldn.
Unacceptable	75 dB and greater	Submittall of environmental impact statement.

Source: Department of Housing and Urban Development Environmental Criteria and Standards, Title 24, Code of Federal Regulations, Part 51, issued at 44 FR 40860, July 12, 1979; amended by 49 FR 880, January 6, 1984

California Motor Vehicle Code: The State of California has adopted noise standards for areas not regulated by the federal government. State standards regulate noise levels of motor vehicles and motor boats, establish noise impact boundaries around airports, regulate freeway noise affecting classrooms, sound transmission control, occupational noise control, and identify noise insulation standards. The California Motor Vehicle Code sets operational noise limits according to the type of vehicle and date of manufacture. Table 3-6 describes noise limits for the sale of new vehicles. Table 3-7 describes noise standards for vehicle operation at various speeds.

TABLE 3-5
RECOMMENDED NOISE LEVELS

Effect	Level	Area
Hearing Loss	Leq(24) ≤ 70 dB	All areas.
Outdoor activity interference and annoyance	Ldn ≥ 55 dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	Leq(24) ≤ 55 dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	Leq(24) ≤ 45 dB	Indoor residential areas.
	Leq(24) ≤ 45 dB	Other indoor areas with human activities such as schools, etc.

Sources: U.S. Environmental Protection Agency, "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." March 1974.

California Streets and Highway Code: Division 1, Chapter 1, Article 6 of this code requires State-funded noise abatement programs for freeway construction or any use which will result in noise levels exceeding 55 dBA L_{10} or 52 dBA Leq at existing classrooms, libraries, multi-purposes rooms, and spaces used for pupil personnel services of a public or private elementary or secondary school. The noise abatement program may include installing acoustical materials, eliminating windows, installing air conditioning, or constructing sound buffer structures or other measures.

TABLE 3-6
CALIFORNIA MOTOR VEHICLE NOISE LIMITS FOR VEHICLES

Sales of New Vehicles	Date of Manufacture	dB(A) Value at 50 Feet
Motorcycles	Before 1970	92
Motorcycles other than motor-driven cycles	After '69, Before '73	88
	After '72, Before '75	86
	After '74, Before '86	83
	After '85	80
Vehicle with a gross vehicle weight of 6,000 lbs. or more	After '67, Before '73	88
	After '72, Before '75	86
	After '74, Before '78	83
	After '77	80
Any other motor vehicle	After '67, Before '73	86
	After '72, Before '75	84
	After '74	80
Noise level limits for the operation of off-highway motor vehicles	Before '73	92
	After '72, Before '75	88
	After '74	86

Source: California Motor Vehicle Code, 1992.

Sound Transmission Control Standards: The California Administration Code, Title 24, Building Standards Chapter 2.35, outlines noise insulation performance standards to protect persons within new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings. It requires an interior noise level of 45 dB CNEL or less for residential projects. For residential buildings or structures within the 60 dB CNEL of an airport, or vehicular or industrial noise source, an acoustical analysis must be made to show compliance with the standards.

TABLE 3-7
CALIFORNIA MOTOR VEHICLE NOISE LIMITS FOR VEHICLES

Operation of Vehicle	Less than 35 mph[1]	36 to 45 mph[2]	Over 45 mph[2]
Any motor vehicle with a manufacturer's gross vehicle weight rating of 6,000 pounds or more and any combination of vehicles towed by such a motor vehicle.	82 dBA	--	--
Any motor vehicle with a manufacturer's gross vehicle weight rating of 10,000 pounds or more and any combination of vehicles towed by such a motor vehicle.	--	86 dBA	90 dBA
Any motorcycle other than a motor driven cycle.	77 dBA	82 dBA	86 dBA
Any other motor vehicle and any combination of vehicle towed by such motor vehicle.	74 dBA	76 dBA	82 dBA

[1] On Streets with a grade not exceeding plus or minus 1 percent.
[2] On any street.
Source: Excerpts from the California Motor Vehicle Code, 1988.

Noise standards in Title 21, Public Works, Chapter 25, Division of Aeronautics, of the same code, requires compatible land uses within a criterion CNEL contour for airports. Compatible and incompatible land uses have been identified for areas within an airport's 65 dB CNEL. Occupational Noise Control Standards are also found in Title 8, Industrial Relations, Chapter 4 of the state Administrative Code. It provides permissible noise level exposure at the workplace in terms of permitted hours per workday. Noise and land use compatibility is defined as follows:

1. Incompatible land uses within the 65 dB CNEL include:
   a. Single-family dwellings
   b. Multiple-family dwellings
   c. Trailer parks
   d. Schools of standard construction
   e. Hospitals

2. Compatible land uses within the 65 dB CNEL include:
   a. Agricultural
   b. Airport uses
   c. Industrial uses
   d. Commercial uses
   e. Open space
   f. High-rise apartments in which adequate protection against exterior noise has been included in the design and construction, along with a central air conditioning system. Adequate protection means the noise reduction (exterior to interior) shall be sufficient to assure that interior community noise equivalent level in all habitable rooms does not exceed 45 dB during aircraft operations.

California Occupational Noise Control Standards: The California Code of Regulation, Title 8, Industrial Relations, Chapter 4, as revised and effective September 28, 1984, outlines permissible noise exposure at a workplace, as shown in Table 3-8.

Land Use Compatibility: The State Office of Noise Control has prepared "Guidelines for the Preparation and Content of Noise Elements of the General Plans." This provides a guide for land use compatibility of noise sensitive land uses in areas subject to noise levels of 55 to 80 dB CNEL or Ldn. Residential uses are normally unacceptable in areas exceeding 70 dB CNEL and conditionally acceptable between 55 and 70 dB CNEL for low density single family, duplex, mobile homes, and between 60 and 70 dB CNEL for multi-family units. Schools, libraries, hospitals, and nursing homes are treated as noise

sensitive land use requiring acoustical studies within areas exceeding 60 dB CNEL. Commercial/professional office buildings and industrial land uses are normally unacceptable in areas exceeding 75 dB CNEL and are conditionally acceptable within 67 to 78 dB CNEL (for commercial/professional offices) and 70 to 80 dB CNEL (for industrial land uses). Golf courses are normally unacceptable in areas exceeding 70 dB CNEL. However, the state stresses that these guidelines can be modified to reflect community sensitivities to noise. Exhibit 3-9 shows noise compatibility for various land uses.

TABLE 3-8
CALIFORNIA OCCUPATIONAL NOISE CONTROL STANDARDS

Sound Level dB(A)	Permitted Hours of Exposure Per Weekday
90	8
95	4
100	2
105	1
110	0.5

Source: California Code of Regulation, Title 8, Industrial Relations, Chapter 4, as revised and effective September 28, 1984.

Military AICUZ Standards: The military has set forth compatible use standards for military aviation. These standards are contained with the March Air Force Base (AFB) AICUZ Study, conducted in 1992 as an activity duty base, and later updated in 1998 after re-alignment. The AICUZ is prepared by the DOD, as a means to reaffirm Air Force policy of promoting public health, safety

and general welfare in and around military aviation installations. The AICUZ is used as a planning and development tool.

Within the AICUZ, standards for land use compatibility are set relative to noise zones. There are five noise zones. The noise levels are based upon the flying operations conducted at March, including types of aircraft, number of operations, flight patterns, variation in altitude, power settings, and hours of operations. This data is used to develop the noise zones, based upon DNL and CNEL methodologies.

The AICUZ contains land use guidelines for noise exposure compatibility. The guidelines as contained within the AICUZ have been established on the basis of studies prepared and sponsored by several federal agencies, including Department of Housing and Urban Development, Environmental Protection Agency, Air Force, and state and local agencies. Table 3-10 delineates the land use compatibility matrix from the 1998 AICUZ study for March ARB.

Civilian vs. Military Standards: The guidelines of California Department of Health, Office of Noise Control determine the ranges of acceptable levels for noise-sensitive receptors similar to those presented in the AICUZ land use compatibility guidelines. The most relevant difference between the two guidelines is the acceptable level for residential (single-unit, multiple-unit and mobile homes) land uses. Federal standards indicate 65 dB is the maximum normally acceptable exterior noise level compatible with residential land uses, whereas the California guidelines establish 60 dB as the maximum normally acceptable level for new residential units and 65 dB for existing units.

The California guidelines presented in Table 3-9 may be adjusted by each local jurisdiction to reflect the desires of the community and its assessment of importance of noise. The surrounding communities of County of Riverside, City of Riverside, City of Moreno Valley and City of Perris accept CNEL 60 dB as the acceptable external noise level for new residential lands; with 70 dB if noise reduction is incorporated with CNEL 45 dB as the acceptable interior level.

TABLE 3-9
LAND USE COMPATIBILITY

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE DNL OR CNEL dB						
	55	60	65	70	75	80	80+
Residential - low density single family, duplex, mobile home	NA						
		CA					
					NU		
						CU	
Residential - multiple family	NA						
			CA				
					NU		
						CU	
Transient lodging - hotels, motels	NA						
			CA				
					NU		
							CU
Schools, libraries, churches, hospitals, nursing homes	NA						
			CA				
					NU		
							CU
Auditoriums, concert halls, amphitheaters	CA						
				NU			
Sports arena, outdoor spectator events	CA						
				NU			

TABLE 3-9
LAND USE COMPATIBILITY

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE DNL OR CNEL dB						
	55	60	65	70	75	80	80+
Playgrounds, neighborhood parks	NA	NA	NA	NU	NU	CU	CU
Golf courses, riding stables, water recreation, cemeteries	NA	NA	NA	NA	NU	NU	CU
Business, commercial and professional office buildings	NA	NA	NA	CA	CA	NU	NU
Industrial, manufacturing, utilities, agriculture	NA	NA	NA	NA	CA	NU	NU

INTERPRETATION LEGEND:

NA: **NORMALLY ACCEPTABLE** - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CU: **CONDITIONALLY ACCEPTABLE** - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will suffice.

NU: **NORMALLY UNACCEPTABLE** - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CU: **CLEARLY UNACCEPTABLE** - New construction or development should generally not be undertaken.

Caltrans-Aeronautics Division, Airport Land Use Planning Handbook: The State of California Department of Transportation Aeronautics sets forth guidelines in the Airport Land Use Planning Handbook for noise compatibility to land use. These guidelines are denoted in tables 3-10 and appendix Table 3-A.

TABLE 3-10
LAND USE COMPATIBILITY

Criteria	DNL/CNEL=65 dBA	DNL/CNEL=60 dBA	DNL/CNEL=55 dBA
	Set by the FAA and other federal agencies as level above which residential land uses may be incompatible if not acoustically treated. Established by California state law as the maximum acceptable for residential and other incompatible land uses. Schultz curve predicts that about 13% of the population will be highly annoyed at this noise exposure.	The contour within which California Noise Insulation Standards require an acoustical analysis of proposed residential structures, other than detached single-family dwellings. Suggested by the California Office of Noise Control as the maximum "normally acceptable" noise exposure for residential areas. Individual noise events will occasionally cause significant interference with residential land use activities, particularly outdoor activities, in quiet suburban/rural communities. Schultz curve indicates about a 7% of population highly annoyed.	Identified by the U.S. EPA as the level below which "undue interference with activity and annoyance" will not occur. Individual noise events will seldom significantly interfere with residential land use activities; commonly occurring noise events will not cause disruption under most circumstances. About 4% of population highly annoyed at this noise level. In urban areas, aircraft contribution to this level may be less than that of other noise sources.
Suggested Applicability	Appropriate for airports in urban locations.	Suitable for airports in suburban settings.	Suitable for airports in quite rural locations.

Source: Hodges & Shutt (December 1993)

EXISTING NOISE ENVIRONMENT

Typical noise sources in and around the airfield usually includes aircraft, surface traffic, and other human activities. Military aircraft operations and surface traffic on local streets and highways are the existing primary sources of noise. In the state of California, noise land use compatibility for airports is considered for areas with CNEL of 60 dB and greater.

Military Operation Levels:

Aircraft noise at March airfield occurs during aircraft engine warmup, maintenance and testing, taxiing, takeoffs, approaches and landings. Pre-realignment conditions are reflected within the 1992 AICUZ. A new AICUZ was completed in 1998 that reflects the realignment conditions; which includes the military mission of the AFRES and the civilian aviation operations of MIP, as permitted under the joint use agreement.

Land Use Compatibility:

Existing and proposed land uses through the base reuse plan are determined overall to be compatible with the 1992 and 1998 AICUZ reports. The primary exception is the March Field Museum. It is important to note, that in 1998, the U.S. Air Force is updated the AICUZ Study, and accounts for all projected aviation operations as permitted under the Joint Use Agreement executed May 1997 between the U.S. Air Force and the March JPA.

Traffic Noise Levels:

The Environmental Impact Statement (EIS) prepared for the base realignment modeled surface traffic noise levels for roadways in the vicinity of March AFB using the Federal Highway Administration's Highway Noise Model (1978). The model incorporates vehicle mix, traffic volume projections, day/evening/night splits, and speed to generate CNEL. Table 3-13 represents the existing noise environment at time of base realignment attributed to roadway and vehicular traffic.

TABLE 3-11
AIR FORCE AICUZ LAND USE COMPATIBILITY WITH RESPECT TO NOISE ZONES

LAND USE	NOISE ZONES (DNL/CNEL)			
	65-70dB	70-75dB	75-80dB	80+dB
RESIDENTIAL				
Single-unit; detached	A[a]	B[a]	N	N
Single-unit; semi-detached	A[a]	B[a]	N	N
Single-unit; attached row	A[a]	B[a]	N	N
Two-units; side-by-side	A[a]	B[a]	N	N
Two-units; one above another	A[a]	B[a]	N	N
Apartments; walk up	A[a]	B[a]	N	N
Apartment; elevator	A[a]	B[a]	N	N
Group quarters	A[a]	B[a]	N	N
Residential hotels	A[a]	B[a]	N	N
Mobile Home parks or courts	N	N	N	N
Transient lodgings	A[a]	B[a]	C[a]	N
Other residential	A[a]	B[a]	N	N
MANUFACTURING				
Food and kindred products	Y	Y[b]	Y[c]	Y[d]
Textile mill products	Y	Y[b]	Y[c]	Y[d]
Apparel and other finished products	Y	Y[b]	Y[c]	Y[d]
Lumber and wood products	Y	Y[b]	Y[c]	Y[d]
Furniture and fixtures	Y	Y[b]	Y[c]	Y[d]
Paper and allied products	Y	Y[b]	Y[c]	Y[d]
Printing publishing and allied industries	Y	Y[b]	Y[c]	Y[d]
Chemicals and allied products	Y	Y[b]	Y[c]	Y[d]

TABLE 3-11
AIR FORCE AICUZ LAND USE COMPATIBILITY WITH RESPECT TO NOISE ZONES

LAND USE	NOISE ZONES (DNL/CNEL)			
	65-70dB	70-75dB	75-80dB	80+dB
Petroleum refining and related industries	Y	Y[b]	Y[c]	Y[d]
Rubber and miscellaneous plastic products	Y	Y[b]	Y[c]	Y[d]
Stone, clay and glass products	Y	Y[b]	Y[c]	Y[d]
Primary metal industries	Y	Y[b]	Y[c]	Y[d]
Fabricated metal products	Y	Y[b]	Y[c]	Y[d]
Professional, scientific and controlling instruments; photographic and optical goods	Y	A	B	N
Miscellaneous manufacturing	Y	Y[b]	Y[c]	Y[d]
TRANSPORTATION, COMMUNICATION AND UTILITIES				
Rail, rapid transit and street railroad	Y	Y[b]	Y[c]	Y[d]
Motor vehicle transportation	Y	Y[b]	Y[c]	Y[d]
Aircraft transportation	Y	Y[b]	Y[c]	Y[d]
Marine craft transportation	Y	Y[b]	Y[c]	Y[d]
Highway and street right-of-way	Y	Y[b]	Y[c]	Y[d]
Automobile parking	Y	Y[b]	Y[c]	Y[d]
Communication	Y	Y[c]	B[e]	N
Utilities	Y	Y	Y[b]	Y[c]
Other transportation, communication and utilities	Y	A[c]	B[c]	N
TRADE				
Wholesale trade	Y	Y[b]	Y[c]	Y[d]
Building materials, hardware, farm equipment	Y	Y[b]	Y[c]	Y[d]

TABLE 3-11
AIR FORCE AICUZ LAND USE COMPATIBILITY
WITH RESPECT TO NOISE ZONES

LAND USE	NOISE ZONES (DNL/CNEL)			
	65-70dB	70-75dB	75-80dB	80+dB
Retail - general merchandise	Y	A	B	N
Retail - food	Y	A	B	N
Retail - automotive, marine craft, aircraft and accessories	Y	A	B	N
Retail - apparel and accessories	Y	A	B	N
Retail - furniture, home furnishings, and equipment	Y	A	B	N
Retail - eating and drinking establishments	Y	A	B	N
Other retail trade	Y	A	B	N
SERVICES				
Finance, insurance, and real estate services	Y	A	B	N
Personal services	Y	A	B	N
Cemeteries	Y	A	Y[c]	Y[d]
Business services	Y	A	B	N
Repair services	Y	Y[b]	Y[c]	Y[d]
Professional services	Y	A	B	N
Hospital, nursing homes	A*	B*	N	N
Other medical facilities	Y	A	B	N
Contract construction services	Y	A	B	N
Governmental services	Y*	A*	B*	N
Educational services	A*	B*	N	N
Miscellaneous services	Y	A	B	N

TABLE 3-11
AIR FORCE AICUZ LAND USE COMPATIBILITY WITH RESPECT TO NOISE ZONES

LAND USE	NOISE ZONES (DNL/CNEL)			
	65-70dB	70-75dB	75-80dB	80+dB
CULTURAL, ENTERTAINMENT AND RECREATIONAL				
Cultural activities, including churches	A*	B*	N	N
Nature exhibits	Y*	N	N	N
Public assembly	Y	N	N	N
Auditoriums, concert halls	A	B	N	N
Outdoor music shells, amphitheaters	N	N	N	N
Outdoor sports arenas, spectator sports	Y[f]	Y[f]	N	N
Amusements	Y	Y	N	N
Recreational activities, including golf courses, riding stables water recreation	Y*	A*	B*	N
Resort, group camps	Y*	Y*	N	N
Parks	Y*	Y*	N	N
Resource protection and extraction	Y[g]	Y[h]	Y[I]	Y[i,j]
Agriculture, except livestock	Y[g]	Y[h]	Y[I]	Y[i,j]
Livestock farming and animal breeding	Y[g]	Y[h]	Y[I]	Y[i,j]
Agricultural related activities	Y[g]	Y[h]	N	N
Forestry activities and related services	Y[g]	Y[h]	Y[I]	Y[i,j]
Fishing activities and related services	Y	Y	Y	Y
Mining activities and related services	Y	Y	Y	Y
Other resource protection and extraction	Y	Y	Y	Y

NOTES:

* The designation of these uses as "compatible" in this zone reflects individual federal agencies and program consideration of general cost and feasibility factors as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider.

(a) 1. Although local conditions may require residential use, it is discouraged in DNL/CNEL 65-70 and strongly discouraged in DNL/CNEL 70-75. The absence of viable alternative development options should be determined and an evaluation indicating that a demonstrated community need for residential use would not be met if development were prohibited in these zones should be conducted prior to approvals.

2. Where the community determines that residential uses must be allowed, measures to achieving outdoor to indoor NLR for CNL/CNEL 66-70 and CNL/CNEL 71-75 should be incorporated into building codes and be considered in individual approvals.

3. NLR criteria will not eliminate outdoor noise problems. However building location and site planning, design, and use of berms and barriers can help mitigate outdoor exposure particularly from level sources. Measures that reduce noise at a site should be used whenever practical in preference to measures that only protect interior spaces.

(b) Measures to achieve the NLR for CNL/CNEL 66-70 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

© Measures to achieve the NLR for CNL/CNEL 71-75 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

(d) Measures to achieve the NLR for CNL/CNEL 76-80 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

(e) If noise sensitive use indicated is NLR; if not, use is compatible.

(f) Land use compatible provided special sound reinforcement systems are installed.

(g) Residential buildings require the NLR for 66-70 DNL/CNEL.

(h) Residential buildings require the NLR for 71-75 DNL/CNEL.

(I) Residential buildings not permitted.

(j) Land use not recommended; built if community decides use is necessary; hearing protection devices should be worn by personnel.

A, B, or C	Land use and related structures generally compatible; measures to achieve NLR for 66-70, 71-75, and 76-80 DNL/CNEL.
A*, B*, or C*	Land use generally compatible with NLR; however, measures to achieve an overall noise level reduction do not necessarily solve noise difficulties and additional evaluation is warranted.
Ax, Bx	NRL: see footnotes
CNEL	Community Noise Equivalent Level.
DNL	Day-night average noise level.
N (No)	Land use and related structures are not compatible and should be prohibited.
NLR	Noise level reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
Nx	No with exceptions - See notes a through j
Y (yes)	Land use and related structures compatible without restriction
Y^x	Yes with restrictions - Land use and related structures generally compatible; see notes a through j

EXHIBIT 3-1
AICUZ NOISE CONTOURS (1992)

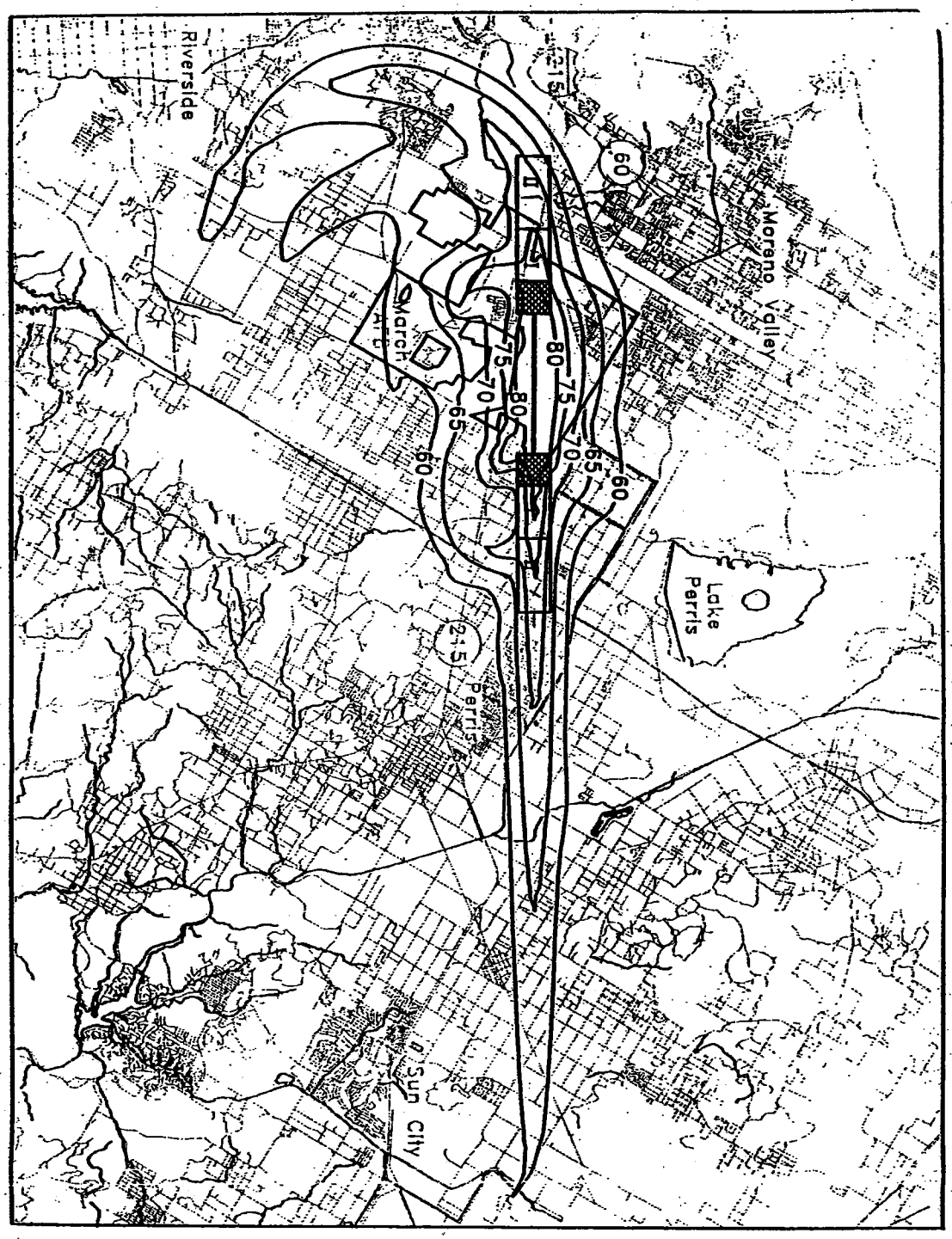


EXHIBIT 3-2
AICUZ NOISE CONTOURS (1998)

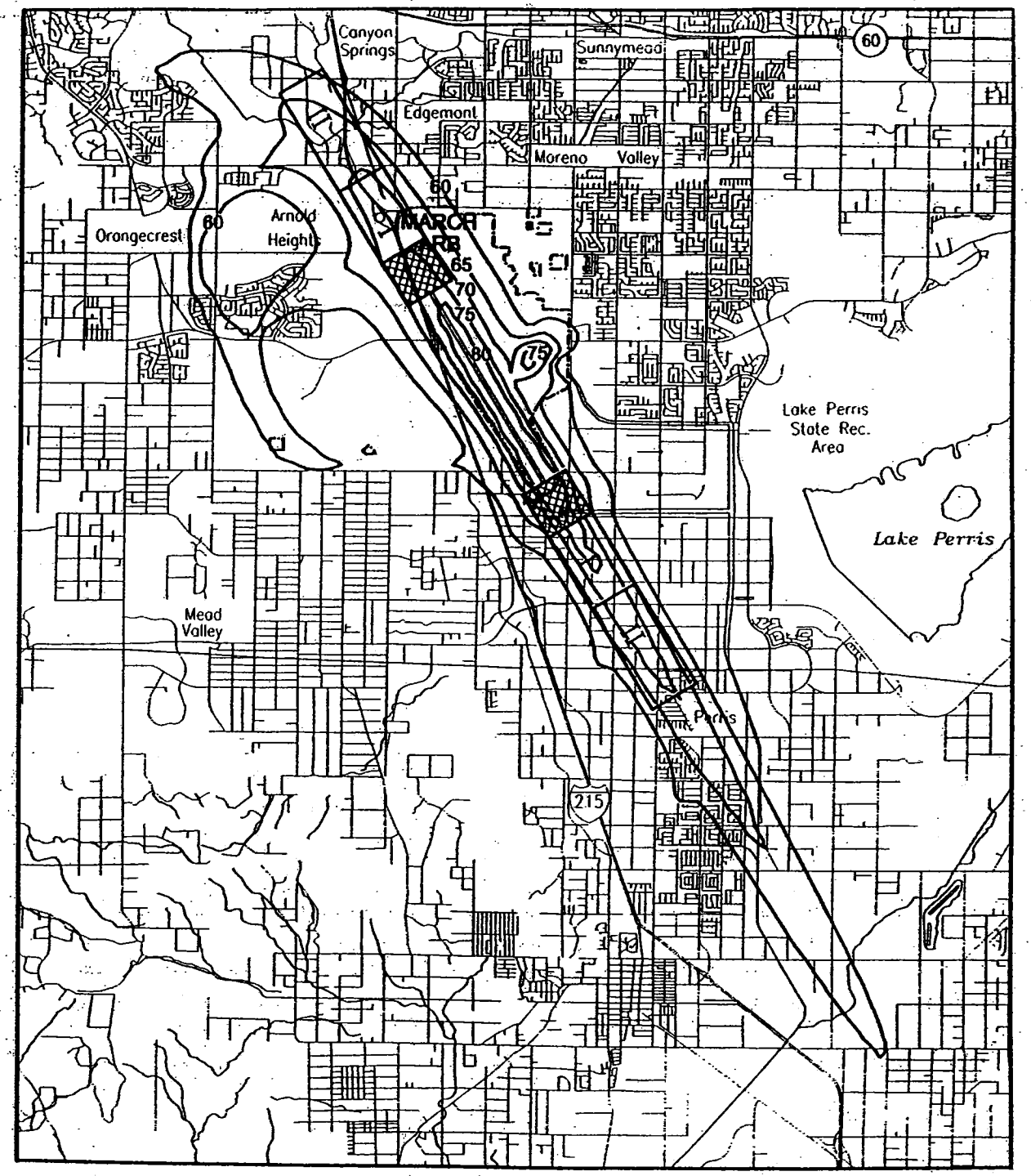


TABLE 3-12
EXISTING NOISE ENVIRONMENT

LAND USE	NOISE ZONE	COMPATIBILITY DESIGNATION			
		65-70	70-75	75-80	80+
EXISTING LAND USES					
Cemetery	60-70	Y	A	Y©	Y(d,j)
Green Acres	<60	A(a)	B(a)	N	N
Golf Course	<60	Y*	A*	N	N
Chapel #1	<60	A*	B*	B*	N
Chapel #2	60-65	A*	B*	N	N
Air Force Village West-Single units	<60	A(a)	B(a)	N	N
Air Force Village West-Medical/nursing home	60-65	A*	B*	N	N
Hospital	<60	A*	B*	N	N
Sewer Treatment Plant	60-65	Y	Y	Y(b)	Y©
Arnold Heights School	60-65	A*	B*	N	N
Interstate 215	60-75	Y	Y(b)	Y©	Y(d)
San Jacinto Branch Rail Line	60-75	Y	Y(b)	Y©	Y(d)
March Field Museum	65-75	A*	B*	N	N
PROPOSED LAND USES					
Park - Moreno Valley	<60	Y*	Y*	N	N
Regional Park	<60	Y*	Y*	N	N
-Nature Exhibits	<60	Y*	N	N	N
-Outdoor sport arenas	<60	Y(f)	Y(f)	N	N

TABLE 3-12
EXISTING NOISE ENVIRONMENT

LAND USE	NOISE ZONE	COMPATIBILITY DESIGNATION			
		65-70	70-75	75-80	80+
-Outdoor Amphitheater	<60	N	N	N	N
WSA Open Space/Park	60-65	Y*	Y*	N	N
Homeless Assistance Facilities	<60	Y/A*	N/B*	N	N
Clark Public Safety Training Center	60-65	A*	B*	N	N
Commercial Retail Center	60-70	Y	A	B	N
Destination/Water Recreation	60-75	Y	Y/A*	N/B*	N
Industrial	60-75	Y/Y*	Y	Y©	Y(d)
Civilian Aviation	60-75	Y	Y(b)	Y©	Y(d)
Business Park	60-75	Y	Y(b)	Y©	Y(d)
Mixed Use	60-75	Y	A	B	N
Office	<60	Y	A	B	N

Notes: Same as Table 3-11
Shaded areas represent applicable noise contour location, based upon 1998 AICUZ

TABLE 3-13
EXISTING ROADWAY NOISE

Roadway	Segment	Distance*
ALESSANDRO BLVD	Trautwein - I-125	310
	I-215 - Elsworth	270
	Elsworth - Heacock	250-290
CACTUS AVE	I-125 to Elsworth	250
	Elsworth - Graham	240
	Graham - Heacock	180
VAN BUREN BLVD	Trautwein - Orange Terrace Prkwy	340
	Orange Terrace Prkwy - Plummer	360
	Plummer - I-215	370
OLEANDER AVE	I-125 - Heacock	100
NANDINA AVE	Barton - Alexander	90
	Alexander - Clark	20
JFK AVE	Heacock - Perris	70
HEACOCK AVE	Cactus - JFK	160
	JFK - Nandina	90
	Nandina - Oleander	70
I-125	Alessandro - Cactus	1,110
	Cactus - Van Buren	1,200
	Van Buren - Oleander	1,230
BARTON	Van Buren - Nandina	110

*Distance = Distance from centerline of roadway to 60 dB contour.

— AIR QUALITY SECTION —

This Air Quality Section of the Profile Report provides information on local air quality, emission sources, and legal requirements for air quality planning. Also, it summarizes programs that meet Air Quality Management Plan (AQMP) requirements. This background information will provide the basis for identifying programs and policies to be incorporated into the Noise/Air Quality Element.

Air quality issues are basically rooted with the health problems that arise from exposure to air pollution. As a public health issue, the preservation of good air quality has gained importance at all levels of planning. Air quality is based on levels of contaminants, such as ozone, carbon monoxide, nitrogen dioxide and particulate matter in the air.

Ozone (O_3) is a nearly colorless gas which irritates the lungs and damages materials and vegetation. It is formed by photochemical reaction (when nitrogen dioxide is broken down by sunlight). Carbon monoxide (CO) is a colorless, odorless toxic gas which interferes with the transfer of oxygen to the brain. It is produced by the incomplete combustion of carbon-containing fuels (vehicular exhaust). Nitrogen dioxide (NO_2) is a yellowish-brown gas which, at high levels, can cause breathing difficulties. It is formed when nitric oxide (pollutant from burning processes) combines with oxygen. PM_{10} are particulate matter less than 10 microns in diameter. It causes a greater health risk than larger sized particles, since these fine particles can more easily penetrate the defenses of the human respiratory system and cause irritation by themselves and in combination with gases.

These pollutants come from vehicle exhaust, power generation, natural gas generation and the operation of certain equipment in construction and industry. Exhaust emissions from vehicles vary according to speed, type of engine (gasoline or diesel), the length of use, and the power available. Emissions from stationary sources occur at off-site power plants and are estimated by the amount of natural gas and electric power consumption. Construction and industrial equipment generate pollutant emissions that are highly variable according to the type and technology of a specific equipment.

AIR QUALITY REGULATIONS

Federal Clean Air Act (CAA):

The Federal Clean Air Act (CAA) establishes ambient air quality standards and requires all areas of the nation to meet these standards. The 1977 amendments to the Act state that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards by December 31, 1987. The South Coast Air Basin (SCAB) could not meet the deadline for ozone, nitrogen dioxide, carbon monoxide, or PM_{10}. The State Implementation Plans (SIP) for the basin, as adopted in 1979 and 1982, were unable to demonstrate attainment by the required date, and the U.S. Environmental Protection Agency (EPA) was forced by federal court action to disapprove the plan.

The 1990 Amendments to the Act outline new ways of attaining the federal air quality standards. These amendments call for mandatory annual reductions, progressively more stringent requirements, new tailpipe emissions standards, and transportation alternatives. Regulations for toxic air pollutants have also been included. The amendments to the CAA extended the ozone attainment deadline to 2010 for any area that was determined to have extreme ozone pollution. The SCAB is the only area in the nation considered as an extreme nonattainment area. The basin is required to reduce ozone precursor emissions by 3% annually from a 1990 base; attainment of the federal carbon monoxide standards by no later than 2000; attainment of the federal PM_{10} standards by no later than 2005; and mandates transportation management controls in the Los Angeles and San Diego areas, while making them optional elsewhere in the nation.

California Clean Air Act (CCAA):

In 1988, the California Legislature enacted the California Clean Air Act (CCAA), which requires air pollution control districts to achieve and maintain the state air quality standards. These standards are generally stricter than the federal standards. The CCAA amended the enabling authority for air pollution

control districts in California by giving these districts, including the South Coast Air Quality Management District (SCAQMD), broad new authority through the CCAA to regulate motor vehicle use with indirect source controls in areas that have not met national or state ambient air quality standards.

The CCAA requires that regional emissions be reduced by 5 percent per year from a 1987 base, averaged over 3 year periods, until attainment can be demonstrated. No specific attainment date is designated. Each area that does not currently meet a national or state ambient air quality standard was required to prepare a plan which demonstrated how the 5 percent reductions would be achieved. The plan was to be locally adopted and submitted to the California Air Resources Board (CARB) by June 30, 1991. Areas with the most heavily degraded air quality are required to reduce emissions 50 percent from 1987 levels by December 31, 2000. Plans must be updated in 1998, if attainment cannot be demonstrated by the year 2000.

Provisions of the 1990 Clean Air Act Amendments (CAAA) that relate to violations of ozone and carbon monoxide standards emphasize strategies for reducing vehicle miles traveled, and require the submission of a plan revision "that identifies and adopts specific enforceable transportation control strategies and transportation control measures to offset any growth in emissions from growth in vehicle miles traveled or numbers of vehicle trips in such area." This will meet the statutory requirements for demonstrating periodic emissions reductions.

State Implementation Plan:

The State Implementation Plan (SIP) is the vehicle by which states demonstrate adherence to the National Ambient Air Quality Standards (NAAQS). The SIP must contain specific measures to attain this goal for areas currently designated as nonattainment. The 1990 CAAA established interim milestones to ensure reasonable further progress toward achievement of the NAAQS for ozone. The CAAA requires interim reductions in volatile organic compounds (VOC) emissions. In all but "marginal" ozone nonattainment areas, the 1990 CAAA requires that state submit a 1996 Rate of Progress Plan that explains how VOC

emissions will be reduced by 15 percent from the adjusted base year inventory over a period of six years.

Extreme nonattainment areas must further reduce VOC emissions by an average of three percent per year for the three-year period after 1996 or until the air quality standard is achieved. A plan must be submitted to achieve attainment of the NAAQS by 2010. The SCAQMD revised their current 1994 AQMP in 1997. The revised 1997 plan establishes a 1993 baseline and "backcast" historical emissions in order to analyze the effectiveness of existing and future control measures and demonstrate the region's rate of progress. Further discussion is found under the 1994/1997 AQMP later in this section.

AIR QUALITY STANDARDS

Air quality is based on the level of contaminants in the air, as compared to national and state standards. Standards set by the U.S. EPA and the CARB is at levels that protect public health and welfare, with an adequate margin of safety. There are national and state standards for ozone, carbon monoxide, nitrogen dioxide, PM_{10} (suspended particulate matter 10 microns or less in diameter), sulfur dioxide, and lead. Aside from these, California has standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. The federal and state standards are provided in Table 3-14.

AIR POLLUTANTS

SCAQMD monitors concentrations of air pollutants at 35 locations in southern California's Los Angeles, Orange, Riverside and San Bernardino Counties. In 1995 pollutant concentrations exceeded the federal and state standards for ozone, carbon monoxide, and particulate matter, and the state standard for sulfate. Standards for nitrogen dioxide, sulfur dioxide, and lead were not exceeded.

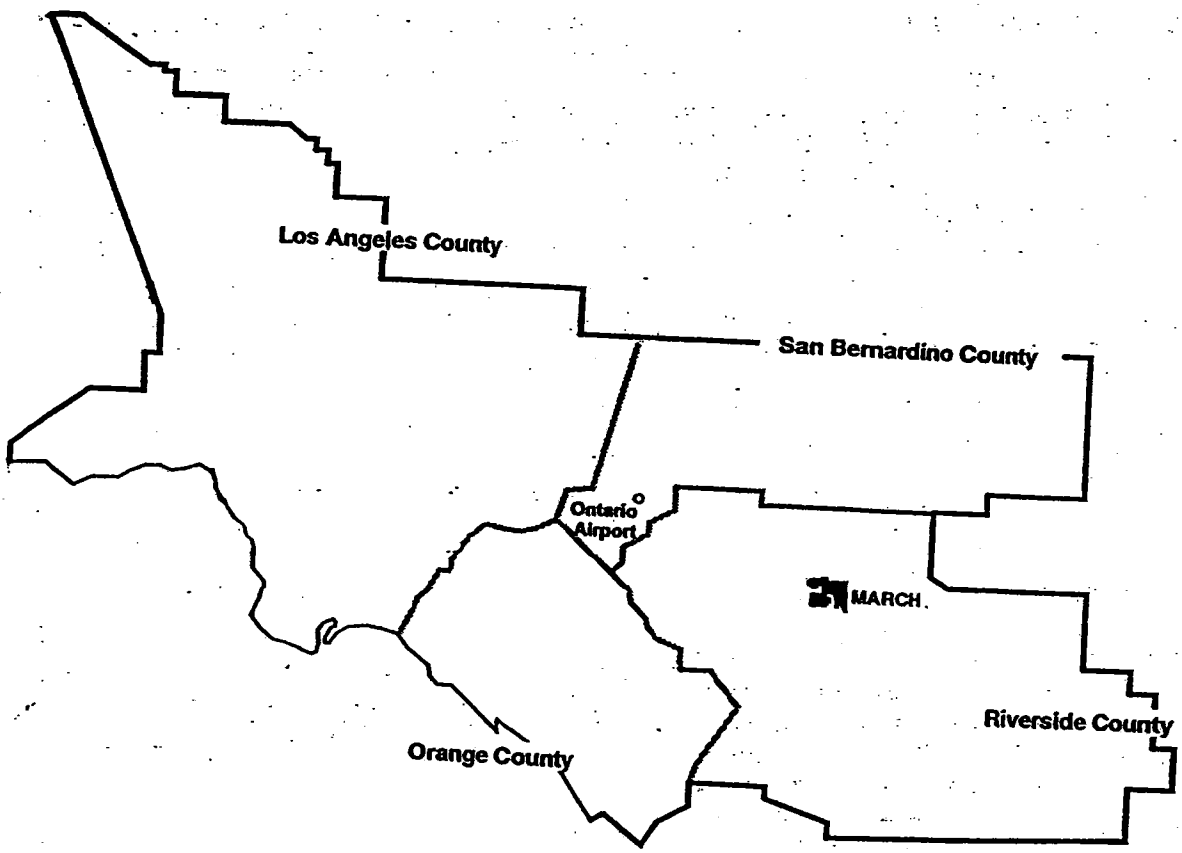
TABLE 3-14
AMBIENT AIR QUALITY STANDARDS

	California	National	
Air Pollutant	**Concentration**	**Primary**	**Secondary**
Ozone	>0.09 ppm, 1-hr avg.[a]	>0.12 ppm, 1-hr avg.	0.12 ppm, 1-hr avg.
Carbon Monoxide	>9.0 ppm, 8-hr. avg. >20 ppm. 1-hr. avg.	>9.0 ppm, 8-hr. avg. >35 ppm, 1-hr avg.	>9.0 ppm, 8-hr. avg.[b] >35 ppm, 1-hr. avg.
Nitrogen Dioxide	>0.25 ppm, 1-hr avg.	0.053 ppm, annual avg.	0.053 ppm, annual avg.[c]
Sulfur Dioxide	≥0.04 ppm, 24-hr avg. with ≥0.10 ppm. 1-hr avg. ozone or with 24-hr TSP ≥100 ug/m^3 >.25 ppm 1-hr avg.	0.03 ppm, annual avg .>0.14 ppm, 24-hr avg.	>0.50 ppm, 3-hr. avg.
Suspended Particulate Matter (PM_{10})	>50 ug/m^3, 24-hr. avg. >30 ug/m^3 annual geometric mean	>150 ug/m^3, 24-hr avg.; >50 ug/m^3 annual arithmetic mean	>150 ug/m^3, 24-hr avg.; >50 ug/m^3 annual arithmetic mean
Sulfates	≥25 ug/m^3, 24-hr avg.[d]	—	—
Lead	≥1.5 ug/m^3, 30-hr. avg.	≥1.5 ug/m^3, calendar quarter	>1.5 ug/m^3
Hydrogen Sulfide	≥0.03 ppm, 1-hr avg.	—	—
Vinyl Chloride	≥0.010 ppm, 24-hr. avg.	—	—
Visibility-Reducing Particles	In a sufficient amount to product an extinction coefficient of 0.23 per km due to particles when the relative humidity is less than 70% CARB Method V.	--	—

[a]) Effective 3/9/87. The standard was previously ≥0.10 ppm, 1-hr. avg.
[b]) Effective 9/13/85. The standard changed from ≥9.3 ppm to ≥9.5 ppm.
[c]) Effective 7/1/85, standard changed from >.0532 ppm to >.0534 ppm.
[d]) Effective 3//9/87, standard changed from ≥25 ppm to >25 ppm.
[e]) Effective 7/1/87. The standards were previously:
Primary: Annual geometric mean TSP >75 ug/m^3 and 24-hr avg. TSP >260 ug/m^3
Secondary: Annual geometric mean TSP >60 ug/m^3 and 24-hr avg. TSP >150 ug/m^3
ppm = parts per million by volume ug/m^3 = micrograms per cubic meter > = greater than
≥ = greater than or equal to

Source: CARB

EXHIBIT 3-3
SOUTH COAST AIR BASIN



Non Attainment Pollutants:

The March JPA Planning Area is located in the SCAB which has been designated by both the EPA and CARB for being in attainment of the NAAQS and California Ambient Air Quality Standards (CAAQS) for SO_2, but nonattainment for O_3, CO, NO_2 and PM_{10}. According to federal classification, the SCAB is designated for being in the "extreme" ozone nonattainment category (0_3 concentration greater than 0.28 ppm). An area designated as "extreme" is subject to a number of special requirements, including provisions for use of reasonably available control technology (RACT) on all major sources, vapor recovery, transportation control measures, and reductions in VOCs. Areas with classifications other than "extreme" are subject to less stringent requirements. Attainment for extreme ozone classification areas must be achieved by November 15, 2010.

The SCAB is also designated as "serious" nonattainment for federal CO standards. An area designated as serious for CO (ambient concentration greater than 16.4 ppm) must implement various special requirements, including use of oxygenated fuels, an enhanced motor vehicle inspection and maintenance program, attainment demonstration plans, and implementation of transportation control measures. Attainment of the CO NAAQS is required by year 2000.

The SCAB is designated serious PM_{10} nonattainment because the currently proposed SIP for the SCAB projects nonattainment of the 24-hour PM_{10} NAAQS until the year 2000, and nonattainment of the annual PM_{10} NAAQS until 2006. These projections exceed the "moderate" PM_{10} attainment deadline of December 31, 1994.

Ozone O_3:

A highly reactive form of oxygen, ozone is a colorless gas with a sharp odor. High ozone concentrations exist naturally in the stratosphere. Ozone concentrations are normally very low (0.03-0.05 ppm) at the earth's surface in rural areas, as a result of naturally occurring mixing of ozone through the troposphere. In urban areas, a complicated series of chemical and photochemical reactions occur between reactive organic compounds, nitrogen oxides, and the oxygen in the air. Ozone is a highly

reactive oxidant, which accounts for its damaging effects at the earth's surface on materials, plants, and health.

TABLE 3-15
STATUS OF POLLUTANTS MONITORED BY SCAQMD (1995)

POLLUTANT	SYMBOL	STATE STND (MAX CONCENTRATION)	FEDERAL STND
Ozone	O_3	Exceeded (260%)	Exceeded (200%)
Carbon Monoxide	CO	Exceeded	Exceeded (146%)
Particulate Matter	PM_{10}	Exceeded	Exceeded (138%)
Sulfate	$SO_4^=$	Exceeded (105%)	NO FED STND
Nitrogen Dioxide	NO_2	Compliance	Compliance (87%)
Sulfur Dioxide	SO_2	Compliance	Compliance (10%)
Lead	Pb	Compliance	Compliance (4%)

Ozone is damaging to living cells, given its propensity for reacting with organic materials. Ambient concentration of ozone in the SCAB are frequent to cause health effects. Ozone enters the body primarily through the respiratory tracts and causes respiratory irritation and discomfort. In short, it reduces the respiratory system's ability to remove inhaled particles and fight infection. Persons with respiratory disease or exercise regularly, children and elderly are more susceptible to the effects of ozone. Ozone can also impact vegetation, cause crop damage, and damage to forest and other ecosystems.

In 1995, SCAQMD measured ozone at 33 regular monitoring locations. The 1-hour average was 200% (exceeded 98 days) of the federal standard and 260% (154

days) of the state standard. For the western Riverside County area the number of days exceeding federal standard for ozone was 20-40 days in 1995, within the region of the March JPA Planning Area.

Carbon Monoxide (CO):

A relatively inert gas, carbon monoxide is colorless and odorless. The major source of CO in urban areas is incomplete combustion of carbon-containing fuels, mainly gasoline. In 1993, 97% of the CO emitted into the basin's atmosphere was from mobile sources; therefore, the highest concentrations of CO are in the vicinity of major concentrations of vehicular traffic. Carbon monoxide is directly emitted into the air, therefore is a primary pollutant. Ambient concentrations of CO exhibit large spatial and temporal variations dependent upon the rate at which CO is emitted, and the meteorological conditions that govern transport and dilution. Highest concentrations in the basin occur on weekdays during morning rush hour.

Inhaling sufficient concentrations of CO can displace oxygen and bind with hemoglobin in the blood; thereby reducing the capacity to carry oxygen by the blood. Persons at most risk include heart patients, fetuses, smokers and heavy exercisers. Concentration of CO can cause impairment of manual dexterity, vision, learning ability, and performance at work. The combination of CO with other pollutants have a synergistic effect, as demonstrated by studies with animals.

The concentration of CO in the basin is measured at 22 of the 35 monitoring stations. The highest concentrations are found in coastal and central Los Angeles County. Carbon monoxide measurements in the area of the March JPA Planning Area are found to be less than state and federal standards. Historically the Riverside County area has not exceeded CO standards during the last two decades.

Suspended Particulate Matter PM_{10}:

Particulate matter with a diameter less than about 10 micrometers, is known as part of total suspended particulate (TSP). In 1987, EPA adopted PM_{10} standards, which replaced prior TSP standards. Measurements for PM_{10} concentrations are

undertaken by SCAQMD at 23 locations within the basin. The average composition of TSP with PM_{10} is 48-63% of total TSP.

The compounds that make up PM_{10} can be generally broken down. The chemical detailed analysis of PM_{10} shows an average amount of sulfate, nitrate (NO_3), ammonium (NH_4), organic carbon (OC), elemental carbon (EC), sodium (Na^+), chloride (Cl^-), and other materials such as soil components. PM_{10} concentrations are measured at five basin locations, including Metropolitan Riverside County (MRIV). MRIV recorded high proportion of sulfate (6-11%), nitrates (22-26%), organic carbon (15-20%) and elemental carbon (5-8%) compounds in PM_{10}. The greater portion of these components are derived from stationary or mobile sources. The amount of soil-related material is 17-31%, due to suspension of soil in the air by human activity, including road dust and construction grading.

The maximum annual average (MAA) recorded concentration of PM_{10} was 138% of the federal standard in the MRIV area. The location which exceeded most frequently the federal 24-hour standard is MRIV on 6.6% of the days, with a maximum concentration of 145% of the federal standard. The MAA was 172% of the state standard recorded at MRIV. Much of the high concentration of PM_{10} in the MRIV occurs in summer months, and is attributed to high winds coupled with vacant land and arid soils.

EPA is currently considering adopting a new particulate standard of $PM_{2.5}$. This would apply to particulate matter with less than 2.5 micrometers in diameter. The suggested range for a 24-hour $PM_{2.5}$ standards is 18-65 ug/m^3 and the range for annual $PM_{2.5}$ standards is 12.5-20 ug/m^3. Preliminary evaluation of this criteria suggest that the number of days exceeding the $PM_{2.5}$ could be greater than the current PM_{10} standard.

Sulfate $SO_4^=$:

Sulfates are chemical compounds with contain the sulfate ion ($SO_4^=$), and are part of the mixture of solid materials which make up PM_{10} and TSP. The primary sulfates are produced by oxidation of sulfur dioxide. Oxidation of sulfur dioxide yield sulfur trioxide (SO_3), which reacts with water, thereby producing sulfuric acid

(H_2SO_4). This change contributes to acid precipitation. Furthermore, the reaction of sulfuric acid with basic materials such as ammonia yields sulfates, a component of PM_{10}.

The MRIV exceeds the state standard for sulfates at a rate of 105%. MRIV is the only area in the SCAB to exceed the standard in 1995. The standard was exceeded 2% of the days sampled. There is currently no federal standard for sulfates.

Air Quality Monitoring:

The District has a number of air quality monitoring stations within the basin. Two stations are within proximity to the March JPA Planning Area, they are; Metropolitan Riverside County (#s 4144/4146), and Perris Valley (#4149). Table 3-16 summarizes the 1995 air quality measurements at these stations for the respective air pollutants.

Table 3-17 represents the 1995 maximum concentrations of pollutants in Metropolitan Riverside County (MRIV).

Other Pollutant Regulations:

As part of the 1994 AQMP, facilities in the SCAB that emit more than 4 tons per year (tpy) of VOCs, nitrogen oxides (NO_x), or sulfur oxides (SO_x) are subject to Phase II of the SCAQMD's Regional Clean Air Incentive Market (RECLAIM) program for NO_x and SO_x, and/or the new RECLAIM program for VOC. Phase I of the RECLAIM emission reduction program for NO_x and SO_x took effect on January 1, 1994. March is subject to these criteria, as use of the airfield emits more than 4 tons of VOC and NO_x. Further discussion relative to NO_x and VOC emission for March is later in this section under Air Quality Conformity Analysis for Joint Use Aviation at March.

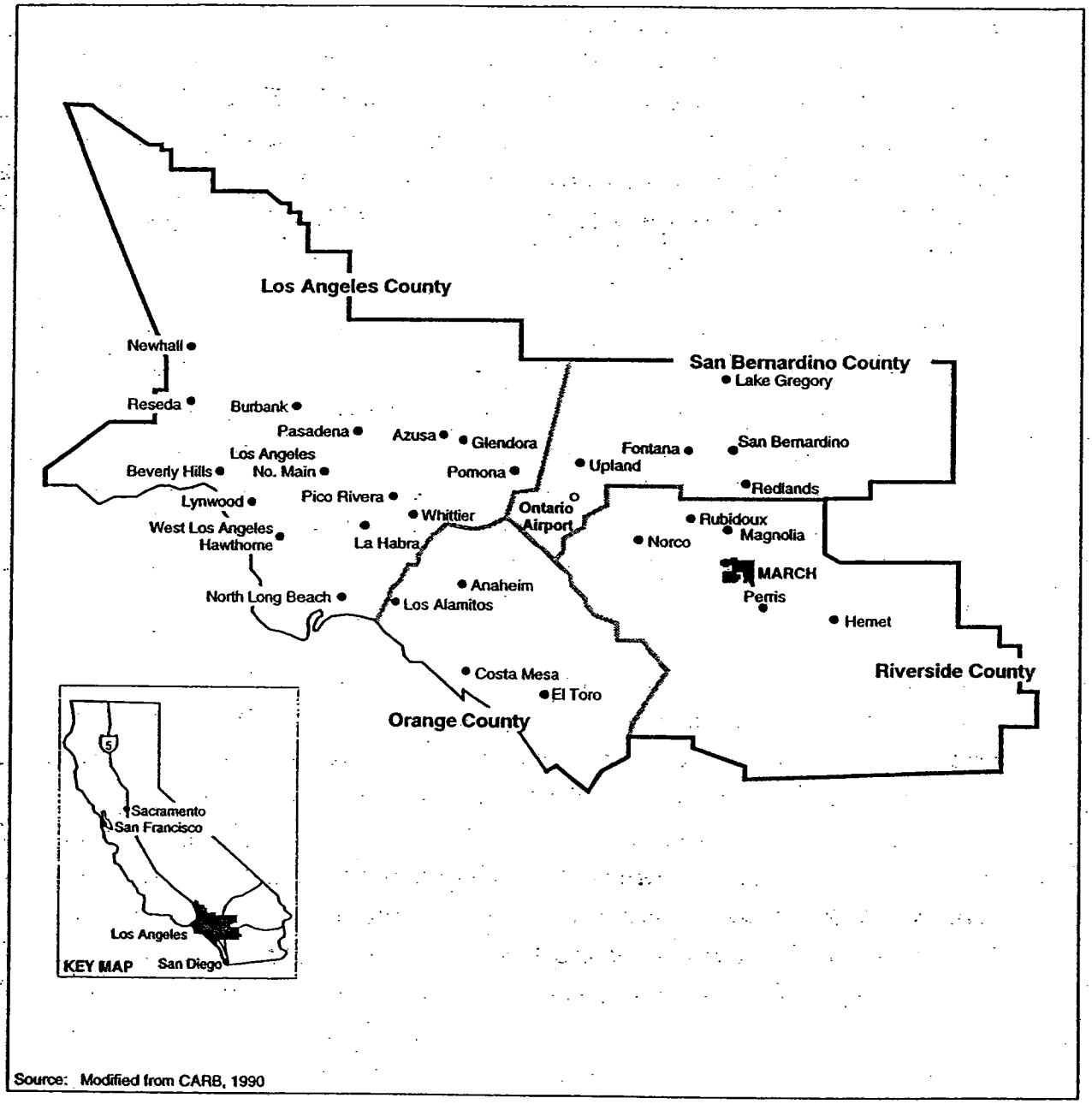
TABLE 3-16
1995 AIR QUALITY MEASUREMENTS

STATION	# OF DAYS OF DATA	MAX. CONC.	2nd HIGH CONC.	NUMBER OF DAYS STANDARD EXCEEDED	
				FEDERAL	STATE
OZONE					
Metro Riv Co.	365	.21[1]	.20[1]	52	109
Perris Valley	365	.20	.18	36	107
CARBON MONOXIDE					
Metro Riv Co.	365	9[1]\6.5[2]	5.8[2]	0	0
SUSPENDED PARTICULATES					
Metro Riv Co.	61	219[3]	--	4 (6.6)	38 (62.3)
NITROGEN DIOXIDE					
Metro Riv Co.	365	.15[1]	--	0	0
SULFUR DIOXIDE					
Metro Riv Co.	365	.01[1]	.006[4]	--	0
SULFATE					
Metro Riv Co.	--	26.3[3]	--	--	1 (1.6)
LEAD					
Metro Riv Co.	--	.05[5]	.04[6]	0	0

NOTES:

1 Max concentration in ppm 1-hour
2 Max concentration in ppm 8-hour
3 Max concent. in ug/m$_3$ 24-hour
4 Max concentration in ppm 24-hour
5 Max number concentration in ug/m$_3$
6 Max quarterly concent. in ug/m$_3$

EXHIBIT 3-4
AIR QUALITY MONITORING STATIONS



Source: Modified from CARB, 1990

AIR POLLUTANT EMISSION SOURCES

Prior to realignment of March Air Force Base (AFB) to March Air Reserve Base (ARB), an emission inventory was conducted based upon 1992 information. The March AFB emissions were based upon inventory calculations for on-base military and civilian sources, and off-base employee commuting and secondary population sources. The primary on-base emission sources included aircraft flying operations, aerospace ground equipment, aircraft ground operations, motor vehicles, heating and power production, and area sources.

The base related emissions for March ARB at realignment (1996) were estimated in the Final Environmental Impact Statement (FEIS) by calculating on- and off-base emissions associated only with the cantonment area. The reduction in base-related emissions reflects the loss of both direct and indirect sources given the Air Force's reduced activities and secondary population. Table 3-19 reflects these reductions.

TABLE 3-18
MAXIMUM ALLOWABLE POLLUTANT CONCENTRATION INCREASES UNDER PSD REGULATIONS

POLLUTANT	AVERAGING TIME	MAXIMUM ALLOWABLE INCREMENT (ug/m^3)		
		Class I	Class II	Class III
Nitrogen Dioxide NO_2	Annual	2.5	25	50
Sulfur Dioxide SO_2	Annual	2	20	40
	24-Hour	5	91	182
	3-Hour	25	512	700
Particulate Matter PM_{10}	Annual	4	17	34
	24-Hour	8	30	60

Source: Title 40 CFR Parts 51 & 52, as revised June 3, 1993.

TABLE 3-19
PRE-REALIGNMENT (1992) EMISSIONS INVENTORY AT MARCH AFB (tpy)

EMISSION SOURCE	NO_x	CO	SO_2	PM_{10}	VOC
On-Base Sources[a]					
Aircraft Flying Operations (U) [b]	501.8	645.4	13.1	15.6	241.0
Aircraft Ground Operations (P) [c]	0.0	0.1	0.0	0.0	0.1
Aircraft Ground Operations (U) [c]	2.4	7.1	0.3	0.1	5.3
Aerospace Ground Equipment (P) [d]	12.1	15.2	1.2	1.5	2.7
Aerospace Ground Equipment (U)	0.7	3.7	0.1	0.1	0.5
Motor Vehicles [c][c]	102.0	1,056.1	5.1	8.4	128.3
Heating & Power Production (P) [c]	25.1	4.8	1.3	1.8	1.4
Heating & Power Production (U) [c]	1.1	0.9	0.1	0.2	0.3
Area Sources (P) [c]	--	--	--	--	6.7
Area Sources (U) [c]	4.2	412.3	0.1	6.2	60.4
Other Major Sources (P) [c]	--	--	--	--	48.9
Other Major Sources (U) [c]	--	--	--	--	531.0
Subtotal On-Base Sources	649.4	2,145.6	21.3	33.9	1,026.6
Off-Base Sources					
Motor Vehicles	540.6	3,731.9	40.0	63.2	382.2
Secondary Population	241.4	1,278.9	22.8	161.7	271.0
Subtotal Off-Base Sources	782.0	5010.8	62.8	224.9	653.2
TOTAL BASE-RELATED EMISSIONS	1,431. 4	7,156.4	84.1	258.8	1.679.8
SCAB[g] TOTALS	470,901	2,494,293	44,180	305,958	536,484

Source: FEIS, March AFB 1996

NOTES:

(a) On-base permitted sources are designed by (P). Unpermitted cercus are designated by (U). Split between permitted and unpermitted sources based upon 1992 annual emission calculation and fees submitted to the SCAQMD for March AFB.

(b) Aircraft flight operation emissions based on Emission and Dispersion Modeling System (EDMS).

(c) Data obtained from Pacific Environmental Services Inc., 1994.

(d) Aerospace equipment emissions for military aircraft for 1992 obtained from Pacific Environmental Services Inc., 1994. Aerospace equipment emissions for civilian aircraft based upon EDMS.

(e) Privately owned vehicle emissions calculated from estimates of vehicle miles traveled provided by the transportation resource. Emission factors obtained from the SCAQMD's California Environmental Quality Act (CEQA) Handbook.

(f) Secondary population does not represent total emission levels; only the emissions for persons residing off-base who would out-migrate from the basin due to realignment.

(g) Data obtained from Appendix III-A of the 1994 AQMP.

Localized Intersections:

CO concentrations were modeled for the FEIS for base realignment. Receptors were placed at six key intersections. Both one-hour and eight-hour average concentrations were calculated. Table 3-21 reflects the results of the localized CO modeling for the realignment baseline. The maximum predicted 1-hour and 8-hour concentrations plus background occur at the Graham/Alessandro intersection. The maximum predicted 1-hour concentration of 25.8 ppm exceeds the 1-hour CAAQS for CO (20 ppm) by 5.8 ppm. Exceedances of the CAAQS 1-hour standard occurs at each intersection modeled in 1996. The maximum predicted 8-hour concentration of 18.6 ppm exceeds the 8-hour CAAQS and NAAQS (9 ppm) by 9.6 ppm. All intersections modeled have maximum predicted concentrations above CAAQS and NAAQS standards for 8-hour period.

TABLE 3-20
PROJECTED REALIGNMENT (1996) EMISSIONS INVENTORY AT MARB (tpy)

EMISSION SOURCE	NO_x	CO	SO_2	PM_{10}	VOC
On-Base Sources[a]					
Aircraft Flying Operations (U) [b]	115.2	352.7	1.6	11.4	235.6
Aircraft Ground Operations (P) [c]	0.0	0.1	0.0	0.0	0.1
Aircraft Ground Operations (U) [c]	1.8	5.3	0.2	0.1	4.0
Aerospace Ground Equipment (P) [c]	5.7	7.2	0.6	0.7	1.3
Aerospace Ground Equipment (U)[c]	0.3	1.8	0.0	0.0	0.2
Motor Vehicles [d]	35.5	292.4	2.3	4.4	32.3
Heating & Power Production (P) [c]	12.1	2.4	0.7	0.9	0.7
Heating & Power Production (U) [c]	0.6	0.4	0.0	0.2	0.2
Area Sources (P) [c]	--	--	--	--	0.8
Area Sources (U) [c]	1.6	49.4	0.0	4.3	5.1
Other Major Sources (P) [c]	--	--	--	--	1.2
Other Major Sources (U) [c]	--	--	--	--	531.0
Subtotal On-Base Sources	**172.8**	**711.7**	**5.4**	**22.0**	**812.5**
Off-Base Sources					
Motor Vehicles[d]	113.4	710.8	8.3	14.4	64.8
Total Base-Related Sources	**286.2**	**1,422.5**	**13.7**	**36.4**	**877.3**
Construction Emissions [e]	8.7	1.9	0.9	24.6	2.0
SCAB[f] TOTALS	382,976	1,827,548	39,227	327,420	394,397

Source: FEIS, March AFB 1996

NOTES:

(a) On-base permitted sources are designed by (P). Unpermitted sources are designated by (U). Split between permitted and unpermitted sources assumed to be the same as in 1992.

(b) Aircraft flight operation emissions based on EDMS.

(c) Emissions based on data from 1992 emissions survey prepared by Pacific Environmental Services, Inc. (1994) and on factors which reflect reduced on-base activities, reduced hearing and power requirements, reduction on-base and secondary population associated with the base, and application of control measures contained in the SCAQMD's 1994 AQMP.

(d) Motor vehicle emissions calculated from estimates of vehicle miles traveled provided by the transportation resource. Emission factors obtained from the SCAQMD's CEQA Handbook.

(e) Based on a total of the expected construction within the cantonment in 1996-1997.

(f) Data obtained from Appendix III-A of the 1994 AQMP.

(g) Data obtained from Appendix III-A of the 1994 AQMP

TABLE 3-21
MAXIMUM 1-HOUR & 8-HOUR CONCENTRATION IN 1996
Realignment plus background, part per million

Intersection	1-Hour	8-Hour
Alessandro/Mission Grove	20.5	14.4
Elsworth/Alessandro	20.2	14.4
Elsworth/Cactus	20.8	14.6
Graham/Alessandro	25.8	18.6
Graham/Cactus	21.8	15.4
Trautwein/Van Buren	20.7	14.6

CLIMATE AND METEOROLOGY

The March JPA Planning Area is located in the eastern portion of the SCAB of California. The basin covers approximately 6,600 square miles, encompassing Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. It is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east.

The basin has a Mediterranean climate, characterized by warm summers, mild winters, infrequent rainfall, moderate daytime onshore breezes, and moderate humidities. Variations in rainfall, temperatures, and localized winds occur throughout the basin due to the presence of various mountains and hills inland and the Pacific Ocean on the west. Rain also varies seasonally. Summers are often dry and four to five months could extend with no rain. In the winter, occasional storms often bring rain. Rainfall is lowest in the coastal plain and inland valleys, higher in the foothills, and highest in the mountain areas. Winters are cold but frost is rare, as temperatures seldom fall below 28°F. The annual average daytime temperatures range from 91° F in August to 62°F in January, with temperatures frequently reaching 100°F during the summer months. Annual rainfall in the March JPA Planning area of Western Riverside County is 9 inches and occurs almost exclusively from late October to early April. The average relative humidity is 59 percent.

Winds patterns in the planning area generally follow predominant winds in the basin. During the day, the predominant wind is from the west through southwest directions, demonstrating the effects of the regional onshore flow pattern. At night, the direction of the local offshore flow is generally from the northeast and east directions. Average wind speed is 2 to 3 miles per hour, with wind speeds of 70 miles per hour and greater with Santa Ana conditions.

The predominant winds in the planning area are broken by occasional winter storms and episodes of Santa Ana winds. Santa Ana winds are strong northerly or northeasterly winds that originate from the desert and go through the Newhall and Cajon Passes and into the basin. They occur most often from September through March. Usually warm, always very dry, and often full of dust, these winds are particularly strong in passes and

at the mouths of canyons. On the average, Santa Ana winds occur five to ten times a year, each lasting up to a few days.

Meteorological Influences on Air Quality:

Wind flow patterns affect air quality by directing pollutants downwind of their sources. Local meteorological conditions (such as light winds and shallow vertical mixing) and topographical features (such as surrounding mountain ranges) create areas of high pollutant concentrations by hindering dispersal. Temperature inversions are created by a semi-permanent subtropical high pressure cell over the Pacific Ocean, by trapping cool air near the ground with warm air from the ocean. This hampers dispersion by trapping air pollutants in a limited atmospheric volume near the ground.

During summer, sunshine provides the energy for photochemical reactions between nitrogen oxides and reactive organic compounds which form ozone. Because of the long time period required to form ozone in the atmosphere, ozone concentrations are largely determined by transport patterns. With southwesterly winds occurring on most days in the planning area, the ozone transport route into the area is from sources to the west and southwest, and as far as the urban areas of Los Angeles. In turn, ozone pollutants emitted in Planning Area are most likely to contribute to ozone levels in areas east of the planning area. Ozone concentrations in Planning Area generally peak during the afternoon, after noon sunlight has occurred and after the transport of reactive organic compounds from the Los Angeles area. They are greater in summer and early fall, when abundant sunshine exists.

Ozone and other contaminants from urban areas to the west move eastward in the basin, through mountain passes and up the mountain slopes. In the winter, temperature inversions occur close to ground level during the night and early morning hours. Thus, the greatest pollution problems are from carbon monoxide and nitrogen oxides. Carbon monoxide transport is limited. Since it is produced primarily from automobile exhaust, the highest concentrations are associated with areas of heavy traffic.

SCAQMD REGULATIONS

Air Quality Management Plan (AQMP):

The SCAQMD has adopted the comprehensive 1997 AQMP for the SCAB. The previous AQMPs relied, in part, on technology which has not yet been invented to meet its target. It called for stricter controls on automobiles, paints and coatings, new industries, and transportation usage. The 1989 AQMP called for local governments to specify the measures they will use to improve air quality. These measures are to include actions to reduce contributions to air pollution from vehicle trips, energy usage, local vehicle congestion, and local sources of particulates, including grading and construction. A major objective of the 1989 AQMP was achieving a greater balance between housing and employment opportunities throughout the region. The basis for this policy is that workers can be expected to reduce vehicle miles traveled if they live where there is greater opportunity for employment in the vicinity.

As a result, the existing job/housing ratio in subregions which had previously been established for planning purposes were identified and subregions which had either a disproportionate number of housing units or jobs were assigned job/housing goals intended to bring the subregion into greater balance by the year 2010. Local governments were expected to monitor new development and take measures to encourage greater housing density in areas projected to be rich in jobs or either decrease projected housing units or increase projected job opportunities in areas which were projected to have an excess of housing.

Although the 1989 AQMP was adopted after passage of the CCAA, it was prepared to comply with federal requirements in anticipation of an extension of the attainment deadline. Additional revisions were scheduled for 1991 to comply with new requirements in the CCAA, and the latest prior revision being the 1994 AQMP. Enactment of the 1990 CCAA Amendments required the 1994 AQMP to meet procedural requirements.

The 1997 AQMP puts a greater focus on PM_{10}, determined to be a newly important pollutant to Southern California. The plan further reflects attainment strategies that

are a result of a collaborate task force effort of government, industry, academia and organizational leaders. The 1997 AQMP combines technology with federal, state and regional policy. Air quality monitoring records of recent years have provided SCAQMD with information and knowledge of systems and means of effectively reducing air pollution and enhancing air quality in the SCAB.

1997 Air Quality Management Plan:

Since the 1994 AQMP, notable progress has been made with respect to the implementation of Phase II reformulation of fuels, replacement of Regulation XV rideshare programs with an equivalent emission reduction program under Rule 2202, and new incentive programs for generating emission credits. Since the 1994 AQMP, critical linkages between ozone and PM_{10} have been identified. The 1997 AQMP addresses the designation of the SCAB as a "serious" non-attainment area for PM_{10} in 1993 by U.S. EPA. The CAA specifies that four years from that date of reclassification, a PM_{10} SIP must be submitted and demonstrate attainment by year 2006. The 1997 AQMP addresses this requirement.

The 1997 AQMP continues to emphasize local government measures, but continues the shift in emphasis from jobs/housing balance to equivalent reductions in vehicle miles traveled and the adoption of ordinances in lieu or in conjunction with adoption of air quality ordinances, plans or elements in general plans. The 1997 AQMP focuses on improved emission inventories; fine-tuned overall control strategy with a continued emphasis on flexible, alternative approached including intercredit training; and certain control measures of the 1994 AQMP are eliminated or modified as they have been determined to be infeasible.

Key issues in the 1997 AQMP include:

Applicability of Best Available Retrofit Control Technology (BARCT);

Reducing nonattainment pollutants and their precursors at a rate of five percent per year;

Ensure no net increase in mobile source emissions;

Reduce population exposure to severe nonattainment pollutants (i.e., ozone, carbon monoxide and nitrogen dioxide) according to a prescribed schedule; and

Rank control measures by cost-effectiveness and implementation priority.

Furthermore, state law requires market-based programs to be part of the attainment strategy, and average vehicle ridership during peak commute hours to be 1.5 persons per vehicle by year 1999 or the equivalent emission reduction. However, recent legislation (SB 772) prohibits SCAQMD from enforcing rules to require employee trip reduction plans. Conclusively, state law requires the plan to provide for attainment of the federal and state ambient air quality standards at the earliest practical date.

The basic control strategy is essentially the same as the 1994 AQMP, however certain refinements are included in the 1997 AQMP. The basic control strategy of the 1994 AQMP with few exceptions has been determined to be sufficient to demonstrate attainment for PM_{10} and ozone federal standards through the 1994 CA-SIP. The most notable changes include: removal of the future indirect source measures (ISRs); less reliance on Transportation Control Measures (TCMs) and on long-term future technologies; and removal of otherwise infeasible control measures.

The responsibility and implementation of the 1997 AQMP is divided amongst several agencies. Local government participation with the implementation of the 1997 AQMP can be through a number of the control measures. Local government will participate with emission reductions from paved and unpaved roads, telecommunication systems/practices, advanced shuttle systems, intelligent vehicle highway systems, zero based emission vehicle infrastructure and alternative fuel vehicle infrastructure. Local governments have both a participatory role as well as role of responsibility in the 1997 AQMP.

TABLE 3-22
AGENCIES RESPONSIBLE FOR IMPLEMENTATION OF THE 1997 AQMP FOR SCAB

AGENCY	PRINCIPAL RESPONSIBILITIES
EPA	State mobile vehicle emission standards Airplanes, trains & ships Mobile operating construction & farm equipment (<175 hp) Off-shore oil development
ARB	On-road/Off-road vehicles Motor vehicle fuels Consumer products
SCAQMD	Stationary (industry/commercial) & area sources Some mobile sources
SCAG	AQMP conformity assessment Regional Transportation Improvement Program
Local Governments & CTC	Transportation and local government actions Transportation facilities

Pursuant to the AQMP, attainment of federal standards will occur no later than year 2000 for carbon monoxide, year 2006 for PM_{10}, and year 2010 for ozone. Federal standards have been met for nitrogen dioxide. State standards would be attained by year 2000 for carbon monoxide and post-2010 for PM_{10} and ozone. Again, state standards have been met for nitrogen dioxide Future AQMP revision will need to identify additional control measures to attain these standards.

Once the AQMP is approved by CARB, it shall be submitted to the U. S. EPA for incorporation into the SIP. Upon approval from EPA, the AQMP will serve as the framework for future federal air pollution control programs in the SCAB.

Stationary Source Controls:

In addition to the local government measures, the 1991, 1994 and 1997 AQMP's contain a number of measures which tighten existing, or add new controls on industrial, commercial and residential activities. These 1989 AQMP was divided into three tiers: Tier I contained measures that were considered to be feasible and ready for immediate implementation; Tier II were measures where technology had been developed but additional testing or commercial development was needed to enact the controls; and Tier III measures were those where new technology would have to be developed in order to achieve the projected emission reductions.

Many of the measures in Tiers I and II have already been enacted. One of the most significant measures is a revised Regulation XIII, the District's New Source Review Rule, which now requires offsets from all emission increases.

Any new or modified existing source of emissions that emits more than 1 pound a day of a regulated air pollutant is subject to the requirements of Regulation XIII, which requires that all increases in emissions be offset by achieving at least an equal amount of reductions from existing sources. Small sources, i.e., sources emitting less than 2 tons/year of any regulated contaminant, are eligible to receive these offsets from the Community Bank, which is funded through shutdowns of facilities throughout the basin. In addition, new or modified equipment is required to install Best Available Control Technology (BACT), as specified by the SCAQMD. Most, if not all, industrial facilities in March JPA will be eligible to receive offsets from the Community Bank because they may be relatively small in size. However, some existing equipment may be old, and is therefore emitting higher pollution than would be possible if equipment were replaced with equipment using BACT. Cleanup of these facilities is an option for sources elsewhere in the basin which are not eligible to use the Community Bank.

The SCAQMD received authorization through the CCAA to adopt rules regulating indirect sources of pollutants. Indirect sources are facilities which do not have equipment which emits pollutants, but which attract large numbers of automobiles which represent, in aggregate, a significant source of pollution. The March JPA

Planning Area currently has no source which would qualify as a major indirect source.

The 1991, 1994 and 1997 AQMPs placed a high priority on market incentives. In response, the SCAQMD developed a new program called Regional Clean Air Incentives Market or RECLAIM that will allow large facilities to meet their 5% annual emission reduction targets. Companies subject to the new regulations will be able to achieve required emission reductions of reactive organic gasses, nitrogen oxides, and, potentially, sulfur oxides through their choice of add-on controls, use of reformulated products, and/or purchasing excess emission reductions from other sources. Equipment permits will be replaced with facility permits. Emission rates are to be replaced with mass emission limits. Retrofit control rules will be replaced with annual emission reductions.

The District is recommending that source categories with annual emissions equal to or greater than four tons of these pollutants be included in the program. They estimate that the program will apply to approximately 2,000 sources of reactive organic gas (ROG), 700 sources of NO_x emissions, and possibly 100 sources of SO_x emissions. Certain essential public services, restaurants, dry cleaners, and gasoline dispensing facilities will be regulated through command and control rules. Additional small source exemptions may also be considered where it appears more cost effective to regulate through source specific rules. Sources that emit less than 4 tons a year may be included in the program at a later date.

Many local industries are covered by SCAQMD regulations, including those which are engaged in metal plating; manufacturing of fiberglass and plastic products; labeling and storage of organic solvents; decreasing equipment; and use of materials which emit hazardous air pollutants. Commercial restaurants are subject to SCAQMD regulations covering charbroilers.

AQMP CONFORMITY PROCEDURES

The EPA requires that local and regional components of plans to meet federal standards (SIP's) include conformity procedures for evaluating federally funded projects. Conformity demonstration procedures for the AQMP extended these requirements to non-federally funded capacity-enhancing waste water treatment projects and to regionally significant transportation and general development projects. Guidelines for demonstrating this conformity were developed by SCAG and approved by the SCAQMD and CARB. Criteria for determining whether a project is required to demonstrate conformity are shown in Table 3-23.

TABLE 3-23
AQMP GENERAL DEVELOPMENT CONFORMITY CRITERIA

1. Airports with at least 50 based aircraft, 25,000 annual itinerant operations, or 35,000 local operations.
2. Airports served by a CAB or PUC certified carrier.
3. Public use airports more than 20 miles away from the nearest airport meeting the above criteria.
4. Sports, entertainment or recreation facilities that accommodate at least 4,000 people per performance, or that contain 1,500 fixed seats or more.
5. Office building or office parks that employ more than 1,000 people or contain over 250,000 square feet.
6. Hotels or motels with 500 rooms or more.
7. New electrical generating facilities or expansion of existing generating facilities.
8. Transmission lines with capacity of 22 kw or more.
9. Flood control project, dams, reservoirs or debris basins on or affecting a major water body that has a tributary area greater than 20,000 acres at the county line, or facilities on a drainage course having a tributary basin greater than 50,000 acres and draining directly into the ocean.
10. Projects in an area that is designated to be of regional significance and concern in the SCAG adopted Conservation and Open Space Plan.

TABLE 3-23
AQMP GENERAL DEVELOPMENT CONFORMITY CRITERIA

11. Industrial plants and industrial parks that employ more than 1,000 people, occupy more than 40 acres of land or contain more than 650,000 square feet of floor space.
12. Mining operations with more than 40 acres or producing 600,000 short tons annually.
13. Petroleum or gas refineries, recovery operations, storage facilities or expansion of existing facilities (not gas station storage facilities).
14. Designation of a drilling district.
15. Petroleum and gas pipelines that are part of a national distribution system.
16. Water ports, or the expansion of an existing port, so that capacity is increased by at least one million short tons of cargo per year.
17. Small craft harbors with 300 or more boat slips or open water moorages, or expansions of an existing harbor to accommodate at least 300 additional boat slips or open water moorages.
18. Residential development including mobile home parks with 500 dwellings or more.
19. State highways and arterial roads(construction or major modification) or roads that provide primary access to a regionally significant area (designated in the SCAG adopted Conservation and Open Space Plan).
20. Construction of a post-secondary school, public or private, for 3,000 students or more, or expansion of an existing facility having a capacity of 3,000 students or more by an addition of at least 20 percent more students.
21. Sewage treatment facilities with a capacity of at least 750,000 gallons per day, or the expansion of an existing facility by at least that much, and any proposed interceptor.
22. Shopping centers or trade centers that employ 1,000 persons or more, or contain 500,000 square feet of floor space.
23. Class I solid waste disposal sites or the expansion of an existing Class I site, or other sites of more than 40 acres, or expansions of sites by at least 40 acres.
24. Transit projects.
25. Water treatment facilities with a capacity of 225,000 gallons a day or more, or the expansion of an existing facility by that much, and proposed major arterial water mains.

Source: SCAQMD

General development projects subject to conformity review must demonstrate that they conform to the subregional job/housing balance goals established in the SCAG's Growth Management Plan and incorporated in the AQMP. If not, such projects must implement trip reduction measures, user fees, or other appropriate mitigation measures which will achieve reductions in vehicle miles traveled (VMT) equivalent to the amount that SCAG estimates would be achieved through meeting the job/housing balance target. The AQMP calls for transportation demand measures equivalent to the job/housing performance goal. These measures must be in addition to all those otherwise required in the AQMP. Job/housing balance is still one option for achieving these reductions.

Initially, SCAG performs the conformity review for all applicable projects. Once a city or county has adopted an air quality element consistent with the AQMP, the local jurisdiction takes over the conformity monitoring and SCAG review is no longer required. Each city or county is responsible for monitoring the cumulative impact of small projects within its jurisdiction to determine whether progress is being made towards achieving job/housing balance. Semiannual reports on local actions to implement the plan, as well as progress toward achieving job/housing balance or equivalent reductions in VMT, are required by SCAG and SCAQMD in order to compile reports required by the California CARB, as part of its 1989 AQMP approval action.

Conformity Procedures for the 1991 AQMP were issued by SCAG in May, 1991. Conformity procedures for general development projects are similar to those for the 1989 AQMP. Two areas of difference are (1) that mitigation measures which achieve reductions in VMT equivalent to that which would be achieved through jobs/housing balance can be substituted for a jobs/housing balance demonstration, and (2) the analysis must show the alternative with the least air quality impact rather than showing that the project will result in no significant long term adverse impacts on air quality.

Air Quality Conformity Analysis for Joint Use Aviation at March:

The airfield at March is owned, operated and maintained by the Air Force Reserve Command (AFRC). Through base realignment, civilian aviation via a joint-use arrangement was established. The joint use of the airfield by military and civilian aircraft includes mutual use of airfield facilities. The proposal to establish joint use in conjunction with AFRC military activities must comply with the federal CAA through the preparation and adoption of the General Conformity Determination.

The General Conformity Determination for Proposed Multiple Uses of March ARB (the "conformity analysis"), was prepared by the USAF, with Final Conformity Determination issued May 1997. The conformity analysis assessed and addressed the consistency of the aviation activities of the airfield through the joint use arrangement, with the California SIP through the 1994 AQMP. The conformity analysis was prepared to meet general conformity requirements under 40 Code of Federal Regulations Part 93, Subpart B, and the SCAQMD Rule 1901.

Joint use of the airfield facilities at March ARB is to be initiated in 1997. Projections of civilian aircraft activities are to reach 21,000 annual aircraft operations by year 2010. Other uses for the ARB airfield incorporated into the conformity analysis is Royal Singapore Air Force (RSAF). March ARB was a candidate installation considered to support the RSAF aircrew training. Although the analysis included RSAF, March ARB was not selected. Air emissions attributed to RSAF, are thereby emissions available at March.

The conformity analysis examined the air quality impact of emissions of nonattainment pollution resulting from the proposed multiple use of the airfield at March, and determination of compliance to the SIP. March ARB is in the SCAB. The SCAB is designated by the US EPA as being in nonattainment of the NAAQS for ozone, carbon monoxide, nitrogen dioxide, and particulate matter equal to or less than 10 microns in diameter (PM_{10}).

The general conformity rule of the federal CAA applies to federal actions in acres that violate one or more of the federal air quality standards, and areas that are subject to attainment maintenance plans. The conformity determination evaluated

the conformity of; establishing civilian joint use of the airfield and the siting of RSAF in conjunction with the activities and operations of the AFRC, for each nonattainment pollutant based upon future CO, VOC, NO_2 (treated as NO_x) emissions.

The threshold levels for the March ARB area as defined by the general conformity rule are as follows: Ozone (VOC and NO_x)*[Extreme]* is 10 tons per year (tpy); NO_2 is 100 tpy; CO is 100 tpy; and PM_{10}*[Serious]* is 70 tpy. Regionally significant thresholds represent ten percent (10%) of the SCAB emission inventory for the nonattainment pollutants. This threshold criterion results in emissions thresholds that are greater than de minimus levels; thereby are not used as limited factors in the applicability determination.

The findings of the conformity analysis are summarized in the following two tables. Table 3-23 specifically addresses levels of NO_x and VOC associated with use of the airfield within a contextual time frame. NO_x and VOC pollutants were specifically addressed, as the total annual emissions for the build out year (2010) and interim years are greater than the conformity threshold limit of 10 tpy for extreme nonattainment areas. Table 3-25 delineates the emission source and projected emission to be generated from each use, for each nonattainment pollutant.

As demonstrated by the Table 3-24, the SIP annual budget for March ARB multiple uses is not expended. Based upon the emission analyses, the reasonable project emission of NO_x and VOC would not exceed the allocated March AFB SIP budget in the 1994 AQMP. The analysis demonstrates conformity, based upon the emission and modeling analyses.

AIR QUALITY PLANNING

As described earlier, Air Quality Elements or their equivalent must be incorporated in local general plans in order to conform to requirements of the adopted AQMP. Guidelines for the Development of local Air Quality Elements have been prepared by the SCAG. These guidelines contain a number of actions which are recommended or required for local governments in order to conform to the AQMP. Southern California

jurisdictions differ significantly in size and character. Therefore, some recommended actions are not applicable to all jurisdictions and programs need to be tailored to meet the unique conditions of each jurisdiction.

TABLE 3-24
COMPARISON OF MARCH AFB SIP BUDGET
AND PROPOSED MULTIPLE USES OF MARCH ARB (in tpy)

EMISSION SOURCE	*1990*	*1997*	*1999*	*2000*	*2002*	*2005*	*2007*	*2008*	*2010*
VOC									
Military		749.6	707.6	700.8	689.7	675.3	668.4	665.0	660.3
RSAF		0.0	8.0	4.8	4.1	3.2	2.7	2.4	1.9
Civil Aircraft Activities		13.3	39.1	52.4	74.3	100.9	95.1	95.6	98.9
Total Project Emissions		762.9	754.7	758.0	768.1	779.3	766.1	763.0	761.1
March AFB SIP Budget	2082.1	2029.6	1990.3	1964.6	1921.9	1866.5	1841.0	1828.3	1811.3
Remaining Budget		1266.7	1235.6	1206.6	1153.8	1087.1	1074.9	1065.2	1050.3
NO_x									
Military		253.7	256.7	254.4	245.2	235.3	230.4	228.6	225.8
RSAF		0.0	27.0	20.2	18.7	16.5	15.7	15.7	15.6
Civil Aircraft Activities		25.2	72.9	96.1	136.2	200.6	221.6	221.9	238.6
Total Project Emissions		278.9	356.6	368.7	400.0	452.4	467.7	466.2	480.0
March AFB SIP Budget	1010.7	787.3	759.5	743.8	716.4	677.5	658.1	650.3	638.8
Remaining Budget		508.4	402.9	375.1	316.3	225.1	190.4	184.1	158.8

Note: (a) Civil aircraft activities include emissions from aircraft flying and ground operations, and construction activities within MARB cantonment.

TABLE 3-25
TOTAL DIRECT AND INDIRECT EMISSIONS FROM THE PROPOSED MULTIPLE USES OF MARCH ARB (in tpy)

EMISSION SOURCE	EXISTING EMISSIONS (1996)	PEAK ANNUAL EMISSIONS	NET CHANGE	DE MINIMUS THRESHOLDS
CO				
Military	1235.7	1174.2		
RSAF		0.0		
Civil Aircraft Activities		40.8		
Total Project Emissions		1215.0	-20.7	
Total Direct/Indirect Emissions				100
VOC				
Military	755.3	675.3		
RSAF		3.2		
Civil Aircraft Activities		99.6		
Total Project Emissions		779.3	24.0	
Total Direct/Indirect Emissions				10
NO_x				
Military	258.2	225.8		
RSAF		15.6		
Civil Aircraft Activities		238.6		
Total Project Emissions		480.0	221	
Total Direct/Indirect Emissions				10
PM_{10}				
Military	14.0	18.1		
RSAF		2.2		
Civil Aircraft Activities		7.5		
Total Project Emissions		27.8	13.8	
Total Direct/Indirect Emissions				70

Note: (a) Peak year emissions occur in 1997 for CO, 2005 for VOCs, 2010 for NOx, and 2005 for PM_{10}

(b) Civil aircraft activities include emissions from aircraft flying and ground operations, and construction activities within MARB cantonment.

Identification of existing programs and conditions in the March JPA Planning Area that impact on air quality will help identify opportunities and constraints for new or modified programs. The following discussion expands on March JPA Planning Area programs that are helping to improve local air quality.

Land Use:

The March JPA Planning Area is largely industrial/commercial, to be developed in a large cohesive fashion. The land use plan focuses on the creation of an employment center within the housing rich environment of western Riverside County.

New Construction:

The March JPA Planning Area has no special controls on fugitive dust other than complying with the SCAQMD's nuisance regulations. Developers must submit a grading plan before receiving a grading permit; the plan must include dust control on site, such as periodic watering, soil binders, etc. Trucks are not required to cover their loads on public streets.

Energy Conservation:

The March JPA Planning Area uses Title 24, but has no additional ordinances at this time. The March JPA has an alternative fuel vehicle.

Public Transit and Parking:

There is limited public transit service to the March JPA Planning Area. The area is currently served by Riverside Transit Agency (RTA). With routes that serve the greater sub-region.

Regional Planning:

The March JPA Planning Area is within Western Riverside Council of Governments (WRCOG). The WRCOG is involved in subregional planning efforts, including

the preparation of the subregion's contribution to SCAG's Regional Comprehensive Plan, an air quality element, transportation control measures (TCM) and transportation demand management (TDM) measures, and other programs relating to growth management, air quality, and transportation planning for the subregion. The efforts and programs of WRCOG can be incorporated into specific development and operational policies and programs. The Air Quality Element of the March JPA General Plan reflects the March JPA's support of the WRCOG's Air Quality Implementation Program. This program will allow the subregion to meet clean air goals, as required under the AQMP.

Job/Housing Balance:

The March JPA Planning Area is located in the western Riverside subregion. For the subregion as a whole, the ratio of jobs to housing units was estimated to be 0.45 in 1984. This means that there are only 0.45 jobs per housing unit in the area making it "housing rich." Jobs and housing are considered to be "balanced" at a ratio of 1.2. The subregion is projected to increase jobs more than housing units by 2010, based on current trends. Therefore, a goal of 0.70 jobs per housing unit was set for 2010.

The employment center nature of the General Plan Land Use Element will contribute to reducing VMT, as a number of residents in the sub-region are commuting into the Orange County and Los Angeles areas, as well as San Diego. The activities by March JPA will assist the region in achieving better jobs/housing balance.

Table 3-A
LAND USE GUIDELINES FOR NOISE COMPATIBILITY

TYPE OF AIRPORT/ LAND USE	55-60 CNEL	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80+ CNEL
Air Carrier & Military						
Residential/Lodgings		▸ Potential for annoyance exists; identify high complaint areas. ▸ Determine whether sound insulation requirements should be establish for these areas. ▸ Require acoustical reports for all new construction. ▸ Noise easement should be required for new construction	▸ Discourage new single family dwellings ▸ Prohibit mobile homes. ▸ New construction or development should d be undertaken only after analysis of noise reduction requirements is made, and needed noise insulation is included in the design. ▸ Noise easements should be required. ▸ Develop policies for"in-fill" development.	▸ New construction or development of residential uses should not be undertaken. ▸ New hotels and motels may be permitted after an analysis of noise reduction requirements is made and noise insulation is included in the design.	▸ New hotels and motels should be discouraged.	
General Aviation						
Residential/Lodgings	▸ Potential for annoyance exists; identify high complaint areas. ▸ Determine whether sound insulation requirements should be establish for these areas. ▸ Noise easement should be required for new construction. ▸ Discourage residential use underneath the flight pattern.	▸ Discourage new single family dwellings. ▸ Prohibit mobile homes. ▸ New construction or development should d be undertaken only after analysis of noise reduction requirements is made, and needed noise insulation is included in the design. ▸ Noise easements should be required. ▸ Develop policies for"in-fill" development.	▸ New construction or development of residential use should not be undertaken. ▸ New hotels and motels may be permitted after an analysis of noise reduction requirements is made, and needed noise insulation is included in the design.	▸ New hotels and motels should be discouraged.		
All Airports						
Public/Institutional		▸ Satisfactory with little noise impact and requiring no special noise insulation requirements for new construction.	▸ Discourage institutional uses. ▸ If no other alternative location is available, new construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation is included in the design.	▸ No new institutional uses should be undertaken.		
Commercial			▸ Satisfactory with little noise impact and requiring no special noise insulation requirements for new construction.	▸ New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed insulation features included in the design. Noise reduction levels of 25-30 dB will be required.	▸ New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed insulation features included in the design. Noise reduction levels of 25-30 dB will be required.	▸ New construction or development should not be undertaken unless related to airport activities or services. Conventional construction will generally be inadequate and special noise insulation features should be included in the construction.
Industrial				▸ Satisfactory with little noise impact and requiring no special noise insulation requirements for new construction.	▸ New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed insulation features included in the design. ▸ Measures to achieve noise reduction of 25-30 dB must be incorporated in portions of building where the public is received and in office areas.	▸ New construction or development should not be undertaken unless related to airport activities or services. Conventional construction will generally be inadequate and special noise insulation features should be included in the construction.
Recreation/Open Space			▸ Satisfactory with little noise impact and requiring no special noise insulation requirements for new construction. ▸ Outdoor music shells and amphitheaters should not be permitted.	▸ Parks, spectator sports, golf courses and agricultural generally satisfactory with little noise impact. ▸ Nature areas for wildlife and zoos should not be permitted.	▸ Land uses involving concentrations of people (spectator sports and some recreational facilities) or of animals (livestock, farming and animal breeding) should not be permitted.	

PROFILE REPORT
for the
GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

Housing

HOUSING

PROJECT BACKGROUND

March Air Force Base (AFB) realigned to March Air Reserve Base (ARB) April 1, 1996, which resulted in the disposal and reuse of 4,400 acres of the 6,500 acre active duty base. The communities surrounding the former March AFB include the cities of Moreno Valley, Perris and Riverside, and unincorporated areas of Riverside County. These four jurisdictions formed a "joint powers authority" under the enabling laws in California. The March Joint Powers Authority (JPA) is a public entity created for the purpose of addressing the use, reuse, and joint use of the realigned March AFB.

March AFB Master Reuse Plan:

The March JPA was established to plan for the economic revitalization of the base and was subsequently recognized by the Department of Defense (DOD) and the State of California as the official "local redevelopment agency" (LRA) for March AFB. With the formation of March JPA by the four jurisdictions, reuse planning authority was delegated to the March JPA for the March AFB realignment process and the March AFB Master Reuse Plan was developed. Base-wide reuse planning required the preparation and submittal of the March AFB Master Reuse Plan to the Department of Air Force. The Air Force then completed an Environmental Impact Statement.

The March AFB Master Reuse Plan outlines a means of revitalizing or redeveloping the realigned military installation in a beneficial manner. The March AFB Master Reuse Plan includes both a Land Use Plan, as well as goals and policies. Both the Land Use Plan and the goals and policies of the March AFB Master Reuse Plan include no housing new opportunities. The basic premise supporting the "no housing new opportunities" policy include the following:

The Land Use Plan denotes the distribution and assignment of the land use designations to insure aviation and noise compatibility, public health

and safety, and contributing measures to better achieve a jobs/housing balance within the region.

The need to create an employment center within the housing-rich environment of the Inland Empire, and replacing the economic loss resulting from base realignment.

The majority of the former housing available on the former March AFB has been deemed unsuitable for occupancy under the Department of Housing and Urban Development (HUD) regulations.

The March AFB Master Reuse Plan serves as the basis, or premises of the March JPA General Plan. In summary, the March JPA General Plan is an implementation tool of the March AFB Master Reuse Plan, while complying with the requirements of California state law in facilitating base reuse and development.

Other actions, beyond the March AFB Master Reuse Plan further the position of no housing opportunities within the March JPA Planning Area, as well as non-retention of former military units for housing. The majority of the former housing available on the former March AFB have been deemed unsuitable for occupancy under HUD regulations; this is primarily applicable to the more than 500 units known as Arnold Heights. The former on-base housing stock that is being retained is limited to the 111 housing units of Green Acres Estates located within the March Field Historic District. As part of a Historic District, these structures must be retained, but their use is not restricted. No housing opportunities are identified within the March JPA Planning Area due to land use compatibility issues related to the continued military activities of the Air Force Reserves and aviation operations.

March AFB Redevelopment Project Area:

The March JPA redevelopment counterpart, the March Joint Powers Redevelopment Agency (MJPRA), adopted a project area that encompasses the

entire March JPA Planning Area and approximately an additional 500 acres within the City of Moreno Valley. This redevelopment project area was formulated pursuant to Assembly Bill (AB) 3769, which was developed to assist "military base conversion redevelopment agencies" with the economic blight associated with closed and realigned military bases in California. Accordingly, the 20 percent housing set aside funds are permitted to be utilized within the March JPA member jurisdictions; and therefore no requirement was made for housing sites within the project area (March JPA Planning Area).

Assembly Bill 2736:

The no housing opportunities status for the March JPA Planning Area was furthered with the passing of AB 2736 by the State of California in 1996. AB 2736 specifically states that "The agency (redevelopment agency) shall not be required to replace barracks or dormitory-style housing or Arnold Heights housing that is adoptively reused, demolished, or removed within the boundaries of March AFB."[1] Given the language of this bill and its status, the long-time standing policy of not including housing within the March JPA Planning Area is furthered.

HOUSING ELEMENT SUMMARY

The March JPA Planning Area is located within the sub-region of Western Riverside County. The sub-region as with the overall Inland Empire, is an area rich in housing stock and development opportunities, yet limited in employment opportunities. Western Riverside County can be characterized as a place where people can afford to live, but for adequate employment opportunities must commute to areas outside the Inland Empire. Adequate housing sites continue to be available within the sub-region, as demonstrated through the certified housing elements of each of the March JPA's member jurisdictions.

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1 AB 2376 Sec. 16 (b)

The March JPA, as a local entity with land use authority, is mandated to have as a required element of the March JPA General Plan a Housing Element. The Housing Element for the March JPA is developed in accordance with the cooperative spirit of the joint powers authority and the preceding actions that specifically pertain to the reuse and development of the former March AFB.

The March JPA General Plan Housing Element consists of incorporation by reference each of the housing elements of the four member jurisdictions. The four member jurisdiction housing elements have previously been certified by the Department of Housing and Community Development. The Land Use Plan identifies no housing areas, and creates an employment center within the housing rich environment of western Riverside County.

Copies of each of the following certified housing elements is on file with the Office of the March JPA.

City of Moreno Valley:

Resolution Number 88-75, September 20, 1988
Resolution Number 91-64, May 14, 1991
Resolution Number 92-130, December 8, 1992

City of Perris:

Resolution Number 2398, October 31, 1994

City of Riverside:

Resolution Number 17172, June 20, 1989
Resolution Number 18226, April 27, 1993

County of Riverside:

Resolution Number 91-036, June 4, 1991

PROFILE REPORT
for the
GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

Resource Management

RESOURCE MANAGEMENT

INTRODUCTION

The Resource Management Profile Report identifies the environmental resources of the planning area. It addresses soil resources, water resources, vegetation and wildlife, scenic highways, visual resources, cultural (historical, archaeological, and paleontological) resources, open space and recreational opportunities. These resources are typically nonrenewable or limited and need to be preserved and managed in order to be available for future generations.

ENVIRONMENTAL SETTING

March Joint Powers Authority (JPA) Planning Area is located in Riverside County, California, approximately 50 miles east of Los Angeles. The approximately 6,500 acre site is boarded on most of its edges by the cities of Riverside, Moreno Valley and Perris. To the north, wildlife habitat exists in Sycamore Canyon and the Box Springs Mountains, via somewhat tenuous connection to the site. Riverside County is one of the fastest growing counties in the country, with most of the growth centered in the western portion, where the planning area is located.

Coastal southern California experiences a Mediterranean type climate with warm, dry summers and cool, wet winters. However, occasional late summer thunderstorms coming from the southwest reach the area. Rainfall averages 12 inches, with a range of 4.4 - 24.8 inches. The location of the planning area in an inland valley subjects the area to considerable daily and seasonally temperature changes. Daily temperature changes area frequently as much as 44 degrees Fahrenheit (22 degrees Celsius). The lowest temperatures occur from December - February, while the warmest months are from July - September. Frost is limited, if not rare for the area.

The topography of the planning area is generally characterized by rounded ridges and incised drainage in the West March Planning Subarea, and relatively flat slopes east of Interstate 215. Elevations range from approximately 1,760 feet mean sea level (MSL) in the West March Planning Subarea, to about 1,465 MSL in the southeast corner of the planning area. Two major soil associations exist in the planning area: the Cieneba-

Rockland-Fallbrook association on the western portion of the planning area, and the Monserate-Arlington-Exeter association on the eastern portion.

The open areas of the planning area mainly consist of grasslands consisting of nonnative species of European origin, isolated costal sage scrub remnants, and localized riparian habitats along draws and depressions. March Air Force Base (AFB) established the SKR Management Area and SKR Open Space area as part of a December 4, 1991 agreement with the US Fish and Wildlife Service (USFWS), as mitigation for the development of base properties to meet current and future Air Force (USAF) needs. Through the Biological Opinion (BO), major portions of the West March Planning Subarea, as well as about 441 acres of the east of I-215, between the runway and the I-215 freeway, were identified as either management or open space habitat for the federally listed endangered Stephens' Kangaroo Rat (SKR). Habitat areas amount to approximately 1,000 acres of management and an additional 1,200 acres of open space, for a combined total of 2,200 acres for the entire planning area. The Habitat Conservation Plan (HCP) of the Riverside County Habitat Conservation Agency (RCHCA), only recognizes the 1,000 acres of management area as part of the Sycamore Canyon - March AFB core preserve. The SKR management area is currently managed by the Nature Conservancy using funds supplied under the agreement.

Military operations date back to 1918, with structures built commencing in 1920's. The Green Acres housing development in the Northeast Planning Subarea is a National Register Historic District. The Historic District will be restricted to support the USAF commitments to maintain the integrity of the March AFB Historic District.

WATER RESOURCES

Water resources encompass surface water, surface drainage, ground water and water quality. Wetlands are discussed within the biological resources section.

Surface Water:

The majority of the planning area is located within the San Jacinto Watershed, one of the three major geographical subdivisions of the Santa Ana Basin. The

San Jacinto watershed encompasses 760 square miles, and the San Jacinto River is the major drainage feature. The northwest corner and part of the southwestern corner of the planing area are within the Upper Santa Ana watershed, which drains tributaries of the Upper Santa Ana River.

No permanent surface water bodies are within the planning area, with the exception of small water impoundments used for irrigation purposes. Approximately one mile south of the planning area is a portion of the Colorado River Aqueduct, which is part of the California State Water Project. The Colorado River Aqueduct carries water from the Colorado River from the eastern deserts of California to Lake Mathews for storage. Lake Mathews is located approximately 10 miles southeast of the planning area. Lake Mathews, a Metropolitan Water District (MWD) facility is a primary source of potable water for the planning area and surrounding communities.

Ground Water:

The main aquifer in the Perris Valley is formed by coarse-grained alluvial deposits. The deposits are highly permeable and capable of yielding large amounts of water under unconfined conditions. The ground water system in the Perris and Moreno Valleys is almost completely surrounded by non-water-bearing rocks such that the amount of water flowing into or out of the basin is negligible. Natural recharge to the aquifer results from primarily infiltration and precipitation.

Recharge occurs by both natural and artificial means. Within the central portion of the planning area, artificial recharge occurs due to the Heacock channel and irrigated areas within March Air Reserve Base (ARB) and the Northeast Planning Subarea. This artificial recharge causes localized ground water heights, which effect the direction of ground water flows.

Ground water movement within the region tends to follow the surface topography. East of the planning area, ground water generally flows southwest through Moreno Valley and into Perris Valley. Ground water gradient slopes gently to the southeast. In the northwest portion of the planning area, ground

water flows toward the northwest, indicting the presence of a ground water divide. Ground water north of this divide generally flows north to Sycamore Canyon. No wells within the planning area supply water. Former wells used by the military have been abandoned due to insufficient yields, and trichloroethylene (TCE) contamination.

Water Quality:

Surface water quality records are not detailed to the planning area; however, U.S. Geological Survey (USGS) gaging stations along the Santa Ana River at the MWD crossing northeast of the planning area collected samples in 1985-1986. The water in the Santa Ana River is considered of good quality, but hard to very hard, with a suspended solid concentration ranging from 274 to 697 parts per million (ppm).

The quality of ground water is questionable. The quality of ground water in the northern portions of the Perris Plain and Moreno Valley is good. Total dissolved solids (TDS) concentrations in these areas range from 250 to 1,000 ppm. In the southern portion of the Perris Plain, TDS values can exceed 12,000 ppm. TDS within the planning area are greater than 1,000 ppm, with some areas almost 2,000 ppm. Ground water monitoring within the planning area have identified contamination by TCE and tetrachloroethylene (PCE), as well as chlorinated hydrocarbons, benzene, bromochloromethane, diobromochloromethane, chloroform, methylene chloride, and a variety of other volatile organic compounds (VOCs). The ground water contamination is located within the Northeast Planning Subarea and March ARB, within proximity of the airfield and flightline. Ground water contamination is included within the base Installation Restoration Program (IRP) site clean up program.

Flood Plains:

Flooding can cause serious harm to a community, including loss of life and property. Federal, state, and local laws and regulations have been enacted to require identification of flood hazard areas and to utilize special development practices to reduce flooding hazards and to minimize uncontrolled storm water

diversion. The maintenance of the existing storm channels will also keep flooding hazards to a minimum. For the under developed West March Planning Subarea a hydrology study needs to be prepared, and a drainage master plan developed. Floodplain zones exist just west of Heacock Avenue, near the Iris Channel. Structures are located within the 100-year flood area, including more recent military construction of the new commissary and Los Hall. Improvements to the flood channels by the Riverside County Flood Control and Water Conservation District, have decreased the extent of the 100-year Floodplain so that fewer developed areas are susceptible to flooding.

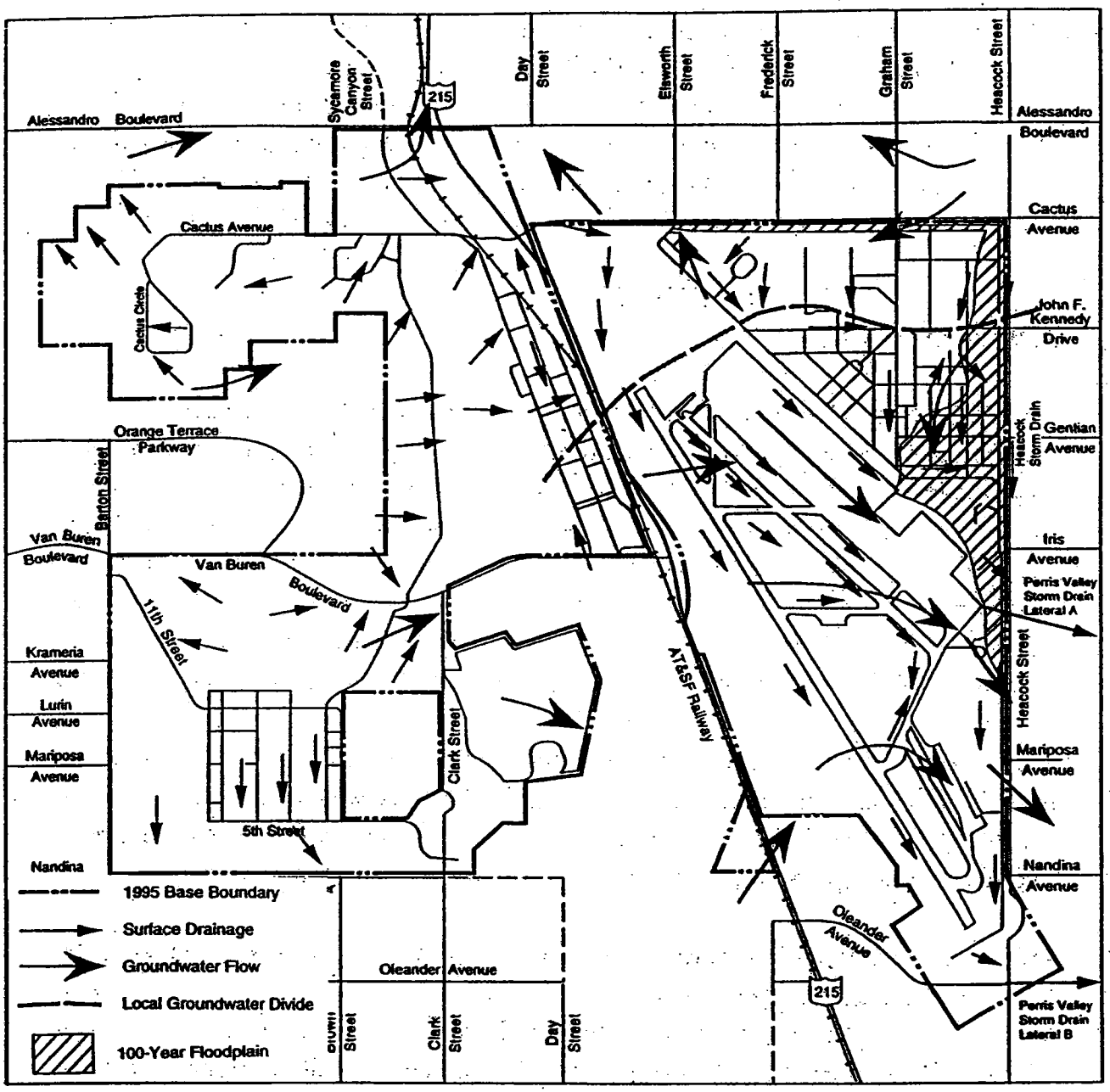
SOIL RESOURCES

The USDA Natural Resources Conservation Service has identified and characterized the soils in western Riverside County, including the planning area. Selected properties for all soil series occurring within the planning area are found in Table 5-1. Two major soil associations are present within the planning area. They are the Cieneba-Rocky Fallbrook association and the Monserate-Arlington-Exeter association. Both soil associations are generally fair to good sources of top soil, fair to good sources of road fill, have variable but generally low permeability, and generally exhibit severe restrictions for septic system either because of shallow bedrock or low permeability silica hardpans.

Cieneba-Rocky Fallbrook association is derived from granitic rock and three feet thick, have a surface layer of sandy loam to fine sandy loam, are well drained, are course to medium grained, and have slopes ranging from 2 to 50 percent. These soils occur on undulating to steep terrain, such as granitic rock uplands and low mountains.

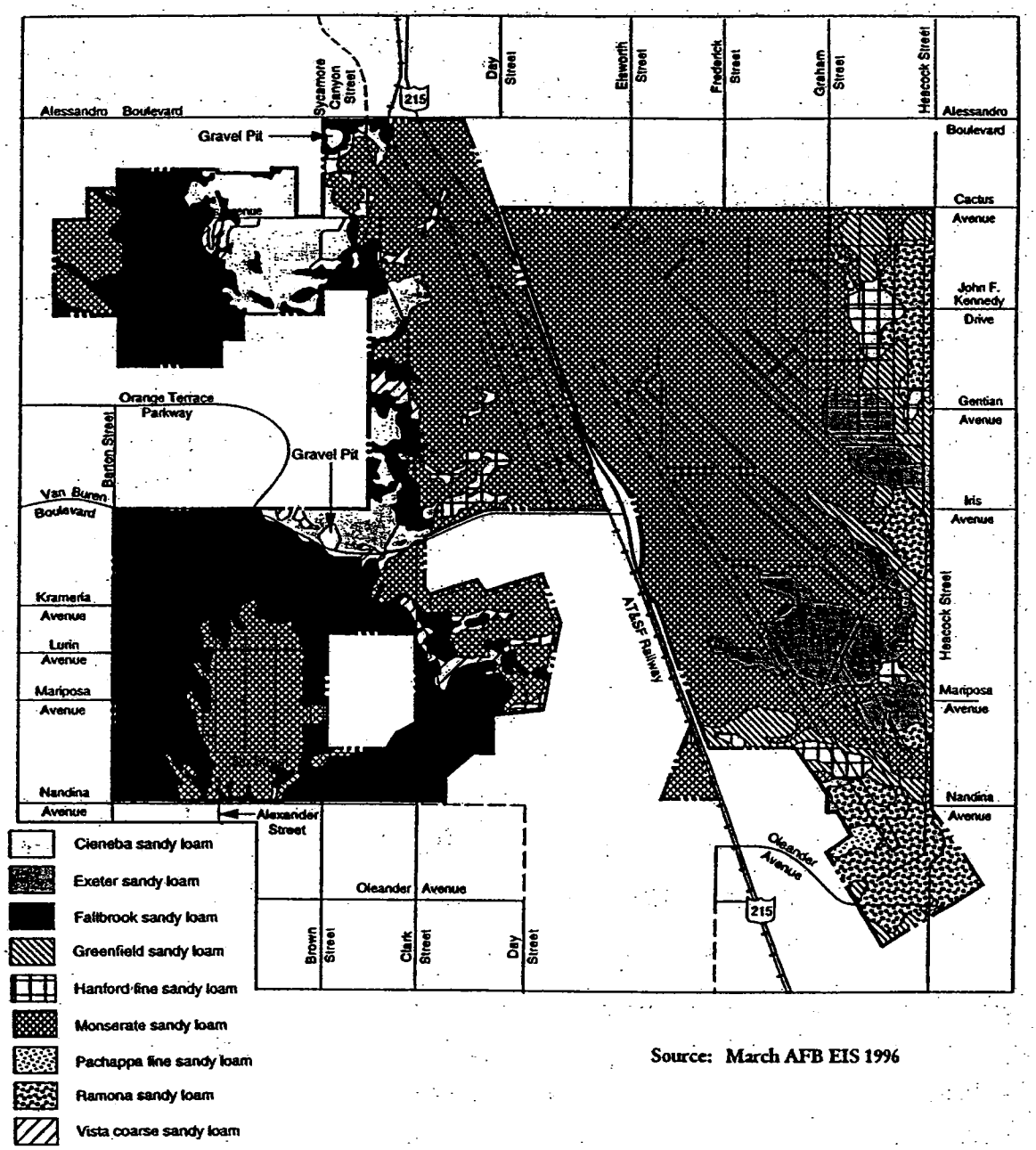
Monserate-Arlington-Exeter association is derived from granitic alluvium and occurs on the eastern side of the planning area. These soils have a surface layer of sandy loam to loam, are well drained, are fine to medium grained, and are gently sloping. The soils are topically underlain by a shallow, relatively low permeability silica hardpan at a depth of 28 to 50 inches, resulting in a moderately high runoff potential. These soils occur on alluvial fans, terraces, and valleys.

Exhibit 5-1
Planning Area Hydrology



Source: March AFB EIS 1996

Exhibit 5-2
Planning Area Soils



Source: March AFB EIS 1996

TABLE 5-1
SOIL PROPERTIES

SOIL TYPE	TEXTURE	SLOPE %	RUNOFF	PERME-ABILITY	EROSION POTENTIAL
Cieneba Rocky	Sandy loam	8-15	Moderate	Rapid	Moderate
Cieneba Rocky	Sandy loam	15-50	Rapid	High	High
Exeter	Sandy loam	0-2	Slow	Moderate	Slight
Exeter Deep	Sandy loam	0-2	Slow	Moderate	Slight
Exeter Deep	Sandy loam	0-5	Slow	Moderate	Slight
Exeter Deep	Sandy loam	2-8	Mod. slow	Moderate	Mod. slight
Fallbrook	Fine sandy loam	2-8	Slow	Moderate	Slight
Fallbrook	Sandy loam	5-8	Moderate	Moderate	Moderate
Fallbrook	Sandy loam	8-15	Moderate	Moderate	Moderate
Fallbrook Shallow	Sandy loam	8-15	Moderate	Moderate	Moderate
Fallbrook Shallow	Fine sandy loam	8-15	Moderate	Moderate	Moderate
Fallbrook Rocky	Sandy loam	15-50	Rapid	Moderate	High
Greenfield	Sandy loam	0-2	Mod. slight	Moderate	Mod. slight
Hanford	Fine sandy loam	0-2	Slow	Moderate	Slight
Monserate	Sandy loam	0-5	Moderate	Moderate	Moderate
Monserate	Sandy loam	5-8	Moderate	Moderate	Moderate
Monserate	Sandy loam	8-15	Moderate	Moderate	Moderate
Monserate Shallow	Sandy loam	5-15	Rapid	Moderate	High
Pachappa	Fine sandy loam	0-2	Slight	Moderate	Slight
Ramona Vista Rocky	Course sandy loam	2-35	Moderate	Rapid	Moderate

Agricultural Lands:

Soils within the planning area contain characteristics that make them eligible as Farmlands of Statewide Importance, and other soils that are prime farmland soils when irrigated. However, these soils are not irrigated for agricultural purposes. The Farmlands of Statewide Importance soils are located on the eastern portion of the planning area, which is approximately 90 percent disturbed or developed. Therefore, their suitability for classification as Prime Farmland or Farmlands of Statewide Importance may not be well suited. The USDA Natural Resources Conservation Service has determined that no prime, unique, statewide or local important farmland is present within the planning area.

Mineral Resources:

No significant mineral deposits are found to be in the planning area. Mineral resources within the planning area include rock resources as identified by the County of Riverside and the California Department of Conservation, Division of Mines and Geology. In former years, two small gravel pits were operated in the West March Planning Subarea. Both pits have been inoperable for more than a decade, and were part of the IRP site cleanup conducted by the USAF. The Division of Mines and Geology also identifies Mineral Resource Zones (MRZ) within Riverside County, although none of these mineral zones currently exist in the planning area.

CULTURAL RESOURCES

Cultural resources includes historic (prehistoric), paleontological and archeological resources. These types of resources include sites, structures, districts, artifacts, or any other physical evidence of human activity considered to be important to culture, subculture, or community for scientific, traditional, religious or other reasons. Cultural resources are defined to contribute to the knowledge of the past and the inhabitants thereof. The contents herein summarizes the key components of cultural resources within the planning area. Additional discussion is found within the Final Environmental Impact Statement (EIS) prepared for the disposal of portions of March

AFB, April 1996, and the approved Cultural Resource Management Plan (CRMP) for March AFB.

Historic Resources:

Historic resources are defined according to the National Historic Preservation Act (NHPA) (Title 36 code of Federal Regulations [CFR] 60.4). The quality of significance is present in districts, sites, buildings, structures and objects that: (a) are associated with events that have made a significant contribution to the broad patterns of history; (b) are associated with the lives of persons significant in the past; © embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic value; or represent a significant and distinguishable entity whose components may lack individual distinction; and (d) have yielded, or may be likely to yield, information important in prehistory or history.

In order to be listed in the National Register of Historical Places (NRHP), a cultural resource must meet at least one of the above criteria and possess integrity of location, design, setting, materials, workmanship, feeling, and association. Should a resource retain the physical characteristics it possessed in the past, it has capacity to convey information about culture and people, historical patterns, or architectural or engineering design and technology.

The primary law governing cultural resources in terms of their treatment in an environmental analysis is the NHPA, which addresses the protection of archeological, historic and Native American resources. In compliance with the NHPA the USAF has submitted and is in the process of consultation with the State Historic Preservation Officer (SHPO), as required under Section 106 of the NHPA for the United States Air Force historic district at March Air Field, including the officers' housing area of Green Acres.

Prehistoric

The physiography and climate of Southern California have supported aboriginal people since early Holocene time (circa 10,000 B.C.); prior to this time occupational patterns are both speculative and controversial. Five major periods

of prehistory, or the time prior to European contact, based upon a temporal range of distinctive projectile points and associated radiocarbon dates, identify a cultural chronology for the region: Lake Mojave (10,000 - 5000 B.C.), Pinto Period (5000 -2000 B.C.), Gypsum Period (2000 B.C. - A.D. 500), Saratoga Springs Period (A.D. 500 - A.D. 1200), and the Protohistoric (A.D. 1200 - historic).

What is known of the pre-contact period at the planning area is extrapolated from data collected from investigations conducted elsewhere in the region, specifically at Lake Perris. The archaeological record reflects gradual population movement into the San Jacinto Plain area beginning approximately 2300 Before Present (B.P.) (300 B.C.) With a dramatic increase in the population density around 500 B.P. (A.D. 1500). Because this occurrence coincides with the desiccation of Lake Cahuilla, a freshwater Pleistocene lake in the Salton Basin (east of the San Jacinto Mountains), it is speculated that there was an influx of people seeking more productive environs. The Native American groups, Luiseno and Cahuilla, who utilized the resources on and around the planning area during protohistoric (between European contact and established written history) and historic periods are described in ethnographic data that have been collected since the early 1900s.

Premilitary History

California's historic period began in 1769 with the first Spanish expedition into Alta California led by Gaspar de Portola. Spain's three-fold strategy to colonize the region included the establishment of missions, pueblos, and presidios. In 1775-1776, Juan Bautista de Anza led an expedition from Mexico to San Francisco, resulting in the founding of the presidio and missions in San Francisco. Part of the route followed by the expedition crossed what is now the northeastern corner of March AFB. In 1990, de Anza's 1,200-mile route was designated by the National Park Service as a National Historic Trail, under the National Trails System Act.

Early settlement in Riverside County was slow and sporadic. In 1818, the first European settler, Leandro Serrano, obtained rights from the priests at San Luis Rey Mission to settle on five leagues of land in Temescal Valley. Three years

later, the fathers of San Gabriel Mission established a rancho in the San Bernardino Valley managed by neophytes (missionized Indians) and another in 1824 located near Banning and Beaumont. Following Mexican independence and secularization of the Spanish missions in 1833, the number of privately held California ranchos increased dramatically.

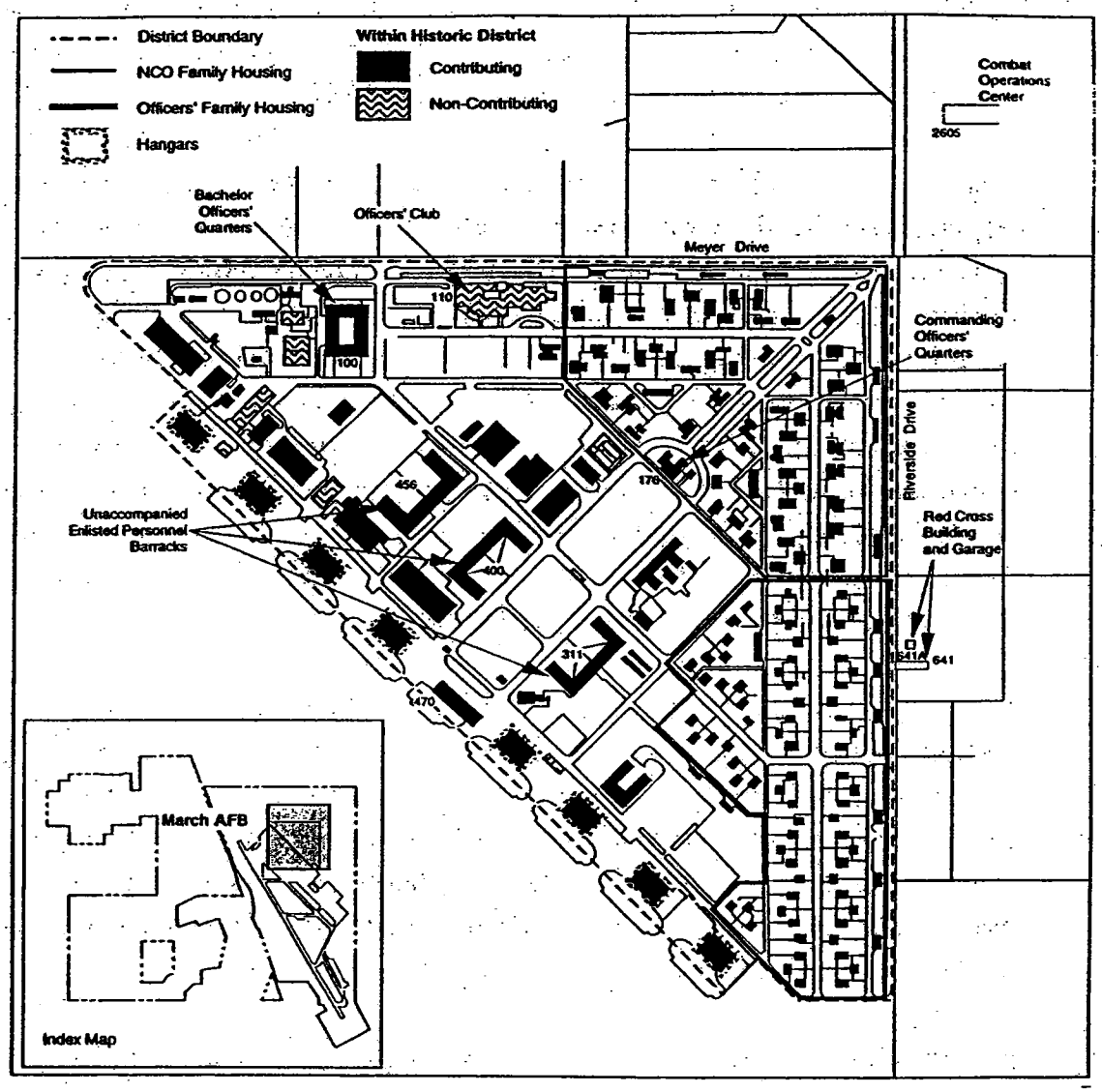
Between 1834 and 1836, 16 Mexican land grants were confirmed within western Riverside County. Rancho Jurupa (32,000 acres) extended 17 miles across the Santa Ana River valley and the 48,000-acre Sobrante de San Jacinto Rancho was located in the Lake Mathews area. Southeast of March AFB was the San Jacinto Nuevo Potrero Rancho, which covered 48,000 acres of land in what is now Moreno Valley and the Perris Plain. The rancho period in California's history was colorful, but brief.

During the 1820's and 1830's Anglo-American fur trappers, wanderers, and speculators had been coming to California; many of them stayed and married into California society. When hostilities broke out between the United States and Mexico during the mid-1840's the American conquest of California created havoc among the Mexicans, Anglos, and Indians. The signing of the Treaty of Guadalupe Hidalgo on February 2, 1848, ended the Mexican War and marked the beginning of the American Period when California became a possession of the United States and a state in 1850.

The mild climate, availability of water, and transportation networks brought settlers and prosperity to southern California. The Butterfield Overland Mail Route operated from 1858 to 1861, and connected Aguanga and Temecula with Los Angeles. Interstate-10, which crosses the Colorado desert from the east, and SR 11, which runs north through Coachella Valley, were originally stagecoach routes. In what was to become Riverside County, access to water from the Santa Ana River and irrigation transformed this semi-arid area into an important California agricultural and industrial center.

The nationwide military buildup that took place prior to the United States entering World War I initiated another historical development in Riverside County, the construction of Alessandro Aviation Field, later to be renamed March Air Field.

Exhibit 5-3
Historic District



Source: March AFB EIS 1996

Military History

March Field commenced as a military installation between 1917 and 1918. The War Department established ten new airfields across the nation to support mobilization and entry into World War I. Officially declared open on February 7, 1918, the one square mile base was named Alessandro Aviation Field and later changed to March Air Field. The base closed in 1923.

Reactivated in 1927, and operated to 1943, the base was the principal tactical training base for all of the western United States. Many of the permanent facilities were built at this time, including 129 military family housing units (Green Acres), the commanding officers' residence, the hospital, the administration building, barracks, hangers and other support facilities. These facilities built between 1927 and 1943 were constructed within a distinctive triangular area northeast of the flightline. Architecturally, the period of base construction within the historic district represents the integration of the principles of the City Beautiful Movement, and innovative technological design. These influences created a highly formal yet functional environment that coordinates architecture, landscape and transportation.

In 1940, as World War II military building was taking place, 930 acres were added to the one-square mile base. The Works Progress Administration (WPA) built a power station, hangar additions, bridges, runways, and taxiways. In 1941 the War Department approved additional housing, maintenance, storage and other strategic support facilities. The construction of 1940 and thereafter was not integrated into earlier construction by either siting or architecture. The majority of frame-type buildings have been removed.

The 1950's represented a major construction period. Arnold Heights housing, including 583 Wherry units were built. Strategic tactical and support facilities, including replacement of older facilities, were constructed during this time.

Historic District / Green Acres

An inventory conducted in 1985 evaluated the historical buildings at March AFB. The establishment of an historic district was recommended for

nomination. The historic district proposed included the original one square mile and adjacent buildings constructed between 1928-1943. The March Field Historic District is located within a triangular area of about 158 acres, and consists of essentially all buildings and structures constructed between 1928 and 1943 as "part of the second generation of March Field" and one extent building from the original 1918 March Field. The March Field Historic District was listed on the NRHP with the concurrence of the California SHPO, based upon the following eligibility criteria:

(1) Association with an event that made significant contribution to the broad patterns of history;

(2) Association with the lives of people significant in our past; and

(3) the Comprehensive Plan of 1928-1934 of the base that included buildings, structures, and landscape that embodied the distinctive characteristic of its type, period, and method of construction.

The District is significant for a number of reasons, including the continuity and integrity of architectural style and technological construction within a planned community environment. The architectural motif of the district is Mission Revival, as well as the construction utilizing hollow wall concrete method. The sheer number and scale of hollow wall concrete buildings at March ranks amongst the most significant examples. Additionally, the unity of design encompasses residential, administrative and industrial buildings.

Designation of Green Acres and the Historic District in accordance with NHPA protects these lands and property from actions that may diminish their cultural and historical value (Title 36 CFR 800.9). Thereby, the following actions are not permitted:

Physical destruction, damage or alteration of all or part of the property;

Isolating the property from its setting or altering the character of the property's setting when that character contributes to the property's qualification for the NRHP;

— Introduction of visual or auditory elements that are out of character with the property or that alters its setting;

Transfer or sale of a federally owned property without adequate conditions or restrictions regarding its preservation, maintenance, or use;

Neglect of a property, resulting in its deterioration or destruction.

A draft Historic Preservation Plan prepared by JRP Historical Consulting Services and Brian F. Mooney in 1994 addresses the treatment and long-term management of all formerly reevaluated historical properties within the planning area. This report was finalized as part of the Cultural Resource Management Plan and Maintenance manual in 1996.

Camp Haan

In 1940, as part of the World War II military buildup taking place nationwide, 930 additional acres were acquired to the north, east, and south of the existing base, increasing the base holdings to 1,590 acres. The base's mission included hosting bombardment and pursuit groups and later fighter groups. The base was also involved in anti-aircraft protection training and testing of new ideas and equipment. The secret testing of jet-assisted and liquid rocket takeoffs helped the United States enter the jet age. The Works Progress Administration built a power station, hanger additions, bridges, runways, and taxiways. The following year the War Department approved additional funding for housing, maintenance, storage, and other strategic support facilities as part of the mobilization effort. Eventually an 800-foot extension of the railroad spur was also completed. This new construction phase was not integrated either architecturally or technologically with the earlier construction. The majority of the frame-type buildings have since been removed.

Camp Haan (CA-Riv-3285H), a World War II Antiaircraft Replacement Training Center and prisoner-of-war camp, was first recorded in 1987. Three additional areas within the West March Planning Subarea have subsequently been recorded as part of Camp Haan, none of which were determined to be significant, primarily because they had been substantially impacted by demolition

activities. This $6 million installation, which covered 8,058 acres, was opened on November 11, 1940, and eventually hosted the Army Services Depot, Southwest Branch; U.S. Disciplinary Services Barracks; and an Italian prisoner-of-war camp. Camp Haan consisted of 350 buildings and 2,500 tent platforms for both walled and sided tents. The first buildings to be constructed were described as "early mobilization type;" later construction was described as "theater of operations type". When the camp was closed in August 1946, many of the wooden buildings and 2,459 tent floors were removed. Remains within the West March Planning Subarea consist of foundations, building piers, and paved roads near the military housing area and the site once occupied by Headquarters 15th Air Force.

The 1994 survey included previously unsurveyed portions of Camp Haan. Five historic sites were recorded. Four are associated with Camp Haan. Three concrete building foundations and one boulder exhibiting World War II-era graffiti. The fifth historic site is a glass shard deposit that is approximately 20 centimeters in depth. The site has been tentatively dated between 1880 and 1920 because of the presence of sun-altered amethyst glass that was not manufactured after 1915. Eligibility of Camp Haan for listing on the NRHP is not supported, as integrity of the site has been severely compromised. Formal testing was not recommended for the four sites associated with Camp Haan because the exhibit no potential for subsurface deposits.

Archeological Resources:

Records indicate that ten archeological surveys have been conducted, with no sites or artifacts determined to be eligible for inclusion within the National Register (Table 5-2). Sites have been document and recorded (Table 5-3). The last survey conducted included an intensive examination that covered 2,500 acres of undeveloped land. This survey as with the prior surveys found that sites (1) cannot be temporally placed within a regional chronology because they lack associated artifacts, and (2) lack midden (an indication of the presence of subsurface deposits) that would indicate long-term use or occupation. Therefore, they are not eligible for inclusion within the National Register.

TABLE 5-2
ARCHAEOLOGICAL SURVEYS AND RECORDED SITES AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Reference	Survey Acreage	Archaeological Sites Recorded	Survey Results
Drover 1986 (MF-21)	50	———	Approximately 23 acres surveyed on MAFB property. No resources found within base property, but two milling sites found off base.
Spanne 1986 (MF-508)	32	———	No resources.
McCarthy 1986b (MF-2237)	130	3096 3097 3098 3100 3105 3099	Six bedrock milling sites; McCarthy recommended no further evaluation necessary.
Drover 1987 (MF-2346)	153	3325 3326 3327 3328 3329	Five bedrock milling sites recorded; Drover recommended no further evaluation. Land subsequently transferred to private ownership for Air Force Village West housing development.
Swope & Neiditch 1987 (MF-2313)	970	3285 3289 3293 3297 3301 3286 3290 3294 3298 3302 3287 3291 3295 3299 3303 3288 3292 3296 3300	One historic site (a portion of Camp Haan), 18 milling sites, and four isolated artifacts (a chalcedony core, a basalt flake, a mano, and a metate). No further evaluations recommended by Swope and Neiditch; SHPO concurred regarding lack of NRHP eligibility for all sites (reply to USAF870821A).

TABLE 5-2
ARCHAEOLOGICAL SURVEYS AND RECORDED SITES AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Reference	Survey Acreage	Archaeological Sites Recorded	Survey Results
Nichaus & Associates 1987 (no MF#)	No systematic survey	3380 3381 3382	Three bedrock milling sites recorded, but probably no systematic survey. Environmental Assessment produced for land conveyance for Air Force Village West housing development. Assume no further evaluations recommended by Nichaus? SHPO concurrence of ineligibility (reply to USAF870821A) given for sites CA-REV-3380 and CA-RIV-3381.
Drover 1989 (MF-3755)	50	———	No resources.
Budinger 1990 (MF-3475)	834	4067 4068 4069	Three bedrock milling sites and one isolated chalcedony biface.
McDonald & Giacomini 1996 (no MF # assigned to date)	~2,500	5399 5412 5426 5440 545411 5400 5413 5428 5441 545511 5401 5414 5429 5442 545611 5402 5415 5430 5443 5810 5403 5416 5431 544411 5811 5404 5417 5432 5445 5812 5405 5418 5433 5446 5813 5406 5419 5434 5447 5814 5407 5420 5435 5448 5815 5408 5421 5436 5449 5816 5409 5422 5437 5450 5817 5410 5424 5438 5451 5818 5411 5425 5439 545311 5819	Five historic sites associated with Camp Haan, 60 prehistoric milling feature sites, and three historic isolate artifacts recorded. Testing recommended at two large milling sites (CA-RIV-5439 and CA-RIV-5488).

SOURCE: Cultural Resources Management Plan for March AFB, California, September 1996

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
3096	Single boulder with six milling slicks.	Not eligible	No record?	No record
3097	Two adjacent boulders, one with one slick, and one with two slicks.	Not eligible	No record?	No record
3099	Two boulders, one with a single slick, and one with nine slicks.	Not eligible	No record?	No record
3100	A large boulder with nine slicks, and a smaller boulder with one slick.	Not eligible	No record?	No record
3105	Two boulders; one with a single slick and another with four slicks.	Not eligible	No record?	No record
3285 H	Building foundations and roads associated with Camp Haan.	Not eligible	Not eligible	Not eligible
3286	Four milling slicks on a single boulder.	Not eligible	Not eligible	Not eligible
3287	Three milling slicks on a 3-m boulder.	Not eligible	Not eligible	Not eligible
3288	One milling slick in a bedrock outcrop of decomposing granite.	Not eligible	Not eligible	Not eligible
3289	One grinding slick on the central boulder of a group of three boulders.	Not eligible	Not eligible	Not eligible
3290	Two grinding slicks on a 2-m by 3-m boulder.	Not eligible	Not eligible	Not eligible
3291	One milling slick on a small boulder in a bedrock outcrop.	Not eligible	Not eligible	Not eligible
3292	Six slicks on two adjacent boulders.	Not eligible	Not eligible	Not eligible

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
3293	Two grinding slicks on a 1-m by 2-m boulder.	Not eligible	Not eligible	Not eligible
3294	Three oblong milling slicks on a 2-m by 4-m boulder.	Not eligible	Not eligible	Not eligible
3295	Single 36-m by 12-m slick on a small (0.5 m by 0.5 m) boulder.	Not eligible	Not eligible	Not eligible
3296	Three slicks dispersed in a boulder outcrop measuring 10 m by 10 m.	Not eligible	Not eligible	Not eligible
3297	Two slicks on a very small boulder in a bedrock outcrop.	Not eligible	Not eligible	Not eligible
3298	One grinding slick on a granitic boulder.	Not eligible	Not eligible	Not eligible
3299	One oblong grinding slick on a singular boulder.	Not eligible	Not eligible	Not eligible
3300	One grinding slick on a large boulder in a group of three boulders.	Not eligible	Not eligible	Not eligible
3301	Two milling slicks on two adjacent boulders.	Not eligible	Not eligible	Not eligible
3302	Three slicks on one exfoliating boulder.	Not eligible	Not eligible	Not eligible
3303	One boulder with a single grinding slick.	Not eligible	Not eligible	Not eligible
3325	Four grinding slicks on one boulder and three slicks on another boulder; boulders are on either side of a small drainage.	Not eligible	No record?	Transferred

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
3326	Single milling slick on a large boulder adjacent to modern quarry.	Not eligible	No record?	Transferred
3328	Slightly used slick on a prominent boulder in an granitic bedrock outcrop.	Not eligible	No record?	Transferred
3329	Two bedrock grinding slicks on one boulder, and one slick on each of two other boulders.	Not eligible	No record?	Transferred
3380	Two milling features on a single boulder.	Not eligible	Not eligible	Not eligible
3381	A single, shallow milling slick on a boulder.	Not eligible	Not eligible	Not eligible
3382	Single milling slick on a small boulder.	Not eligible	No record?	No record
4067	Bedrock milling feature.	Not eligible	No record?	No record
4068	Bedrock milling feature.	Not eligible	No record?	No record
4069	Bedrock milling feature.	Not eligible	No record?	No record
5399	Two milling features with three slicks and one rub. Open site located on the side of a small knoll.	Not eligible	Not eligible	Not eligible
5400	Ten milling features with 12 slicks and one basin.	Not eligible	Not eligible	Not eligible
5401	One milling feature with four slicks adjacent to asphalt golf cart path.	Not eligible	Not eligible	Not eligible

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
5402	Two milling features with three slicks and one rub in a small, low-lying granite outcrop incorporated into the golf course landscape.	Not eligible	Not eligible	Not eligible
5403	One milling feature with a collared mortar in a small knoll outcrop bordering a lime dump.	Not eligible	Not eligible	Not eligible
5404	Four milling features with eight slicks and one rub in a scattered bedrock outcrop on a knoll bordering a lime dump.	Not eligible	Not eligible	Not eligible
5405	Six milling features with eight slicks and one basin in a long, narrow row of granite boulders. The outcrop appears to be partially covered by and adjacent lime dump.	Not eligible	Not eligible	Not eligible
5406	One milling feature with on slick in a small bedrock outcrop.	Not eligible	Not eligible	Not eligible
5407	One milling feature with one slick on a low-lying boulder. Site is located near a dirt road.	Not eligible	Not eligible	Not eligible
5408	One milling featured with two slicks and a rub between the slicks. Site located near a well-used dirt road.	Not eligible	Not eligible	Not eligible
5409	Three milling features with six slicks in a scattered granite outcrop incorporated into the golf course landscape. Some trash dumping in the area.	Not eligible	Not eligible	Not eligible

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
5410	Two milling features 30 m apart, with three slicks total: incorporated into the golf course landscaping.	Not eligible	Not eligible	Not eligible
5411	One milling feature with one basin and one rub on the golf course.	Not eligible	Not eligible	Not eligible
5412	Two milling features with two slicks in a large granite outcrop on a knoll shared with the base gun range.	Not eligible	Not eligible	Not eligible
5413	Three milling features with one slick, two basins, and two rubs in a large granite outcrop incorporated into the golf course landscape.	Not eligible	Not eligible	Not eligible
5414	Two milling features with two slicks. Signs indicate buried cable through out the site outcrop; roads, fences, and housing are within 20 m of site.	Not eligible	Not eligible	Not eligible
5415	Two milling features with four slicks. Site shows evidence of extreme disturbance from bulldozing, construction dumping, and quarrying.	Not eligible	Not eligible	Not eligible
5416	One milling feature with one slick in a small granite outcrop on a rise above a dry wash. Vehicle traffic and modern dumping in evidence.	Not eligible	Not eligible	Not eligible

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
5417	One milling feature with one slick in a large, low-lying granite outcrop. Site and surrounding area very disturbed due to adjacent dump site.	Not eligible	Not eligible	Not eligible
5418	One milling feature with two slicks and one rub in a large, low-lying granite outcrop. Some boulders appear to have been bulldozed into the site area.	Not eligible	Not eligible	Not eligible
5419	Five slicks on a very large, eroded and fractured boulder. Located on a knoll to that appears to have been altered due to military construction in area.	Not eligible	Not eligible	Not eligible
5420	Seven milling features with 23 slicks and one rub in a group of small, low boulder clusters. Evidence of vehicular traffic and dumping in the area.	Not eligible	Not eligible	Not eligible
5421	One milling feature with three slicks on bank of a dry stream bed. Large amount of modern trash dumped in area.	Not eligible	Not eligible	Not eligible
5422	One milling feature with six slicks on a large, flat-topped boulder in an outcrop of massive boulders lining a small dry stream bed. Modern trash dumped in area.	Not eligible	Not eligible	Not eligible

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
5424	One milling feature with one slick in a sparse outcrop bordering a dry wash. Disturbance is not obvious, but a gas pipeline runs 2 m from the feature.	Not eligible	Not eligible	Not eligible
5425	Thirty-eight milling features with 88 slicks in an outcrop concentrated on a short steep slope, becoming scattered on a large, level plain above the site. Disturbance is not obvious, but various types of construction have occurred on three site boundaries.	Not eligible	Not eligible	Not eligible
5426	Two milling features with five slicks in a small granite outcrop surrounded by knolls. A gas pipeline borders the site, and modern trash dumping is evident.	Not eligible	Not eligible	Not eligible
5428	Four milling features with 13 slicks in a low-lying granite outcrop. Two features have graffiti and a large amount of trash is on-site. A well-used dirt road is located 15 m away.	Not eligible	Not eligible	Not eligible
5429	Five milling features with 11 slicks and one basin in a disced field. A natural drainage is found near the eastern boundary.	Not eligible	Not eligible	Not eligible

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
5430	One milling feature with one slick in a large outcrop bordering a water storage tank. Some boulders were moved by construction.	Not eligible	Not eligible	Not eligible
5431	One milling feature with two slicks in a disturbed granite outcrop. Boulders have been moved for water tank construction.	Not eligible	Not eligible	Not eligible
5432	One milling feature with two slicks in an outcrop of three boulders 50 m from a dry wash. The site area appears to have been cleared.	Not eligible	Not eligible	Not eligible
5433	Four milling features with five slicks and three basins in a scatter of boulders bisected by a dry drainage. Construction dumping, railroad construction, and paved and dirt roads are all nearby.	Not eligible	Not eligible	Not eligible
5434	One milling feature with three slicks in a low-lying granite outcrop along a natural drainage at the foot of a high knoll. The site area appears to have been cleared, and a well-used dirt road is nearby.	Not eligible	Not eligible	Not eligible

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
5435	One milling feature with one slick on a low boulder on the rise of a high knoll. A well-used dirt road runs through the area, and modern trash dumping has occurred.	Not eligible	Not eligible	Not eligible
5436	Two slicks on a flat-topped, ground -level boulder on the top of a high knoll. A dirt road and modern trash are close to the site.	Not eligible	Not eligible	Not eligible
5437	One slick on a very small ground-level boulder on a slope. Site is located near a dirt road.	Not eligible	Not eligible	Not eligible
5438	One milling feature with one slick in a low granite outcrop of three boulders resting in a drainage. Modern trash and dirt roads are located close to the site.	Not eligible	Not eligible	Not eligible
5439	Twenty-one milling features with 41 slicks in a large outcrop lining a drainage. Hay bales are scattered throughout the site.	Potentially eligible	Potentially eligible	Evaluation required
5440	One milling feature with three slicks in a dry drainage directly adjacent to a well used dirt road.	Not eligible	Not eligible	Not eligible
5441	Two milling features with five slicks in a small outcrop on a gentle slope. Little obvious disturbance, but a paved road is located 25 m east.	Not eligible	Not eligible	Not eligible

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
5442	One milling feature with three slicks in an isolated cluster of granite boulders. The site feature is painted with "TKC 2019." Footpaths are found in the area.	Not eligible	Not eligible	Not eligible
5443	One split boulder with two slicks on a level plateau with deep drainage. Dirt roads, graded house pads, and "environmental" dump sites are all located in the site area.	Not eligible	Not eligible	Not eligible
5444 H	Large granite boulder with three crude incised concrete markers; associated with Camp Haan. Firing range located close to site.	Not eligible	Not eligible	Not eligible
5445	Two milling features with two slicks and one rub bordering the golf course; area is mowed for weed control.	Not eligible	Not eligible	Not eligible
5446	Two milling features with one basin and one rub in an area with a great amount of construction disturbance.	Not eligible	Not eligible	Not eligible
5447	One milling feature with one slick in an area disturbed by bulldozing, construction dumping , and quarrying.	Not eligible	Not eligible	Not eligible

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
5448	Sixty-four milling features with 132 slicks, 15 basins, 3 mortars, and a mano fragment in a very large outcrop on a medium slope. Some areas of the outcrop have been quarried, and a dirt road bisects the site.	Potentially eligible	Potentially eligible	Evaluation required
5449	Three milling features with 17 slicks. Site appears undamaged although a barbed-wire fence runs through the site.	Not eligible	Not eligible	Not eligible
5450	Eight milling features with 18 slicks in a large bedrock outcrop at the base of a knoll. Two drainage transect the site and some concrete foundation fragments have been dumped in the site area.	Not eligible	Not eligible	Not eligible
5451	One milling feature with on slick in a small, low outcrop of boulders located in a flood plain area. Phone cable junction box buried cable 2-3 m northwest of site outcrop.	Not eligible	Not eligible	Not eligible
5453 H	Historic glass shard scatter with amethyst and clear glass; site deposit is 20 cm in depth as seen in a stream embankment. Modern trash is abundant in the area.	Not eligible	Not eligible	Not eligible

TABLE 5-3
ARCHAEOLOGICAL SITES RECORDED AT MARCH AFB*
(*MARCH JPA PLANNING AREA)

Site No.	Site Description	NRHP Eligibility Recommendation	Agency NRHP Eligibility Determination	SHPO Consultation/ Concurrence
5454 H	Camp Haan concrete foundation (60-70 total) adjacent to railroad tracks. Some slabs have been destroyed, and modern truck trailers and trailer storage containers are parked on some of the foundations.	Not eligible	Not eligible	Not eligible
5455 H	Two Camp Haan concrete foundations located on the northeast corner of Plummer Rd. and Cactus Ave. adjacent to firing range.	Not eligible	Not eligible	Not eligible
5456 H	Two Camp Haan concrete foundations located east of the firing range. \roads intersect near the site, and weed control takes place in the site vicinity.	Not eligible	Not eligible	Not eligible
5810	One milling feature with one slick, located in an "environmental" landfill. Feature is extremely decomposed and cracked.	Not eligible	Not eligible	Not eligible
5811	Two granite boulders with nine slicks among a huge outcrop in and on the sides of a wide drainage, located in an " environmental" landfill.	Not eligible	Not eligible	Not eligible
5812	Five milling features with 18 slicks, a mano fragment, and a flake in an outcrop of huge boulders, with a moderate amount of trash on site.	Not eligible	Not eligible	Not eligible

Only significant Paleontological remains are subject to consideration and protection by a federal agency. Among the criteria used for National Natural Landmark designation are illustrative character, present condition, diversity, rarity, and value for science and education.

A fossil is the hardened remains or traces of plant and animal life of some previous geologic period which has been preserved in rock formations in the earth's crust. Quaternary-age fossils have been found in alluvial deposits near the planning area. However, very few finds are of significant scientific quality. North of the planning area, in San Timoteo Canyon, vertebrate fossils have been found and have been used to date local rock formations. Other fossils, both marine and non marine, are found throughout the Peninsular Ranges Province in sedimentary rock units. These units are not present within the planning area. Therefore, there is no significant paleontological resources determined to be within the planning area.

OPEN SPACE & RECREATIONAL RESOURCES

The Open space and recreation issues deal with existing open spaces, vacant land, and parks and recreational facilities in the March JPA Planning Area. Vacant land refers to undeveloped land left as open space. Open space areas include areas unsuitable for development due to IRP remediation restrictions, habitat and riparian areas, and areas that are undeveloped to comply with existing land use controls such as parks, building setback areas, buffers, utility easements, and playing fields.

The March JPA Planning Area will be primarily developed with open areas retained through development patterns creating a campus-like setting. Other open space areas within the planning area include: the golf course, airfield area, expansion of Riverside National Cemetery, Arnold Heights school playground and adjacent park, the recreation area in the Northeast Planning Subarea, proposed regional park, unimproved streams and drainage courses, and riparian areas.

Recreational Areas:

Recreational areas existing within the March Planning Area are limited. Due to the former military status of the area, the Arnold Heights housing areas incorporated small common recreational areas, instead of individual unit play yards; while the main base area includes youth centers and recreational facilities for base personnel. Green Acres contains common areas, but is devoid of recreational facilities within the historic district itself. Other existing recreational areas include the golf course (18 holes) and small park next to Arnold Heights school in the West March Planning Subarea.

With base reuse, the existing recreational facilities have closed, except for the golf course, school and small park. The City of Moreno Valley has requested approximately 92 acres in the Northeast Planning Area, which consists of play fields, ball fields, recreation center, equestrian center and open areas. The request for said property by the City of Moreno Valley is for the establishment of a community park and recreation center.

Other recreational opportunities resulting from base reuse include the creation of a regional park sports complex in the West March Planning Subarea. The regional park to be located on the southside of Van Buren Boulevard, just west of Village West Drive, is partially the result of an IRP cleanup. The area is a closed landfill, therefore has land use restrictions. The proposed regional park will be over 200 acres, with league-type ball fields for a variety of sports. Additionally, passive recreation areas, trails, sport complex centers are proposed. The base reuse plan includes other recreational facilities, including the designation of 146 acres for a destination recreation complex, expansion of the golf course, and retention and enhancement of the March Field Museum.

Open Space:

Open space includes those areas that contain sensitive plant and animal habitat; archaeological, historic, and paleontological resources; unique geographic features; and mineral resources. March JPA will ensure that lands containing important natural resources are not impacted by development by implementing

protective measures, sensitive planning practices, and acquisition and dedication programs.

A great portion of property within the planning area is vacant, undeveloped or otherwise open land. While the base reuse plan delineates a land use pattern or development of the planning area, open space and open land areas will be retained. Other than "vacant land," there is open space land within the planning area that includes: airfield, easement and utility areas, railway corridor, and the adjacent Riverside National Cemetery. The West March Planning Subarea currently contains 1,000 acres of SKR management and 1,200 acres of SKR open space. See discussion under Biological Resources.

Even with the base reuse plan, development within the planning area will retain open space for riparian areas, easements, corridors, and clear zone for aviation operations. Expansion of the cemetery, and other public facilities will retain open space areas. Furthermore, development constraints and land use controls will conserve open space within areas of development.

Land Use Controls:

As development of the planning area occurs, open space and aesthetic amenities will be preserved through site design, site constraints, setbacks and landscape requirements. Furthermore, as denoted within the base reuse plan, construction within large tracts of land are envisioned to be master planned and foster a campus-like setting. It is the desire to create a balanced development atmosphere that not only preserves, but capitalizes and enhances the environment. This may include the use of trails between development, retaining riparian areas, preservation of rock outcroppings, and setbacks for scenic corridors. Additionally, land development is constrained by the aviation field. Areas such as the Clear Zone must remain as open space.

Exhibit 5-4
Recreation Facilities (Existing & Proposed)

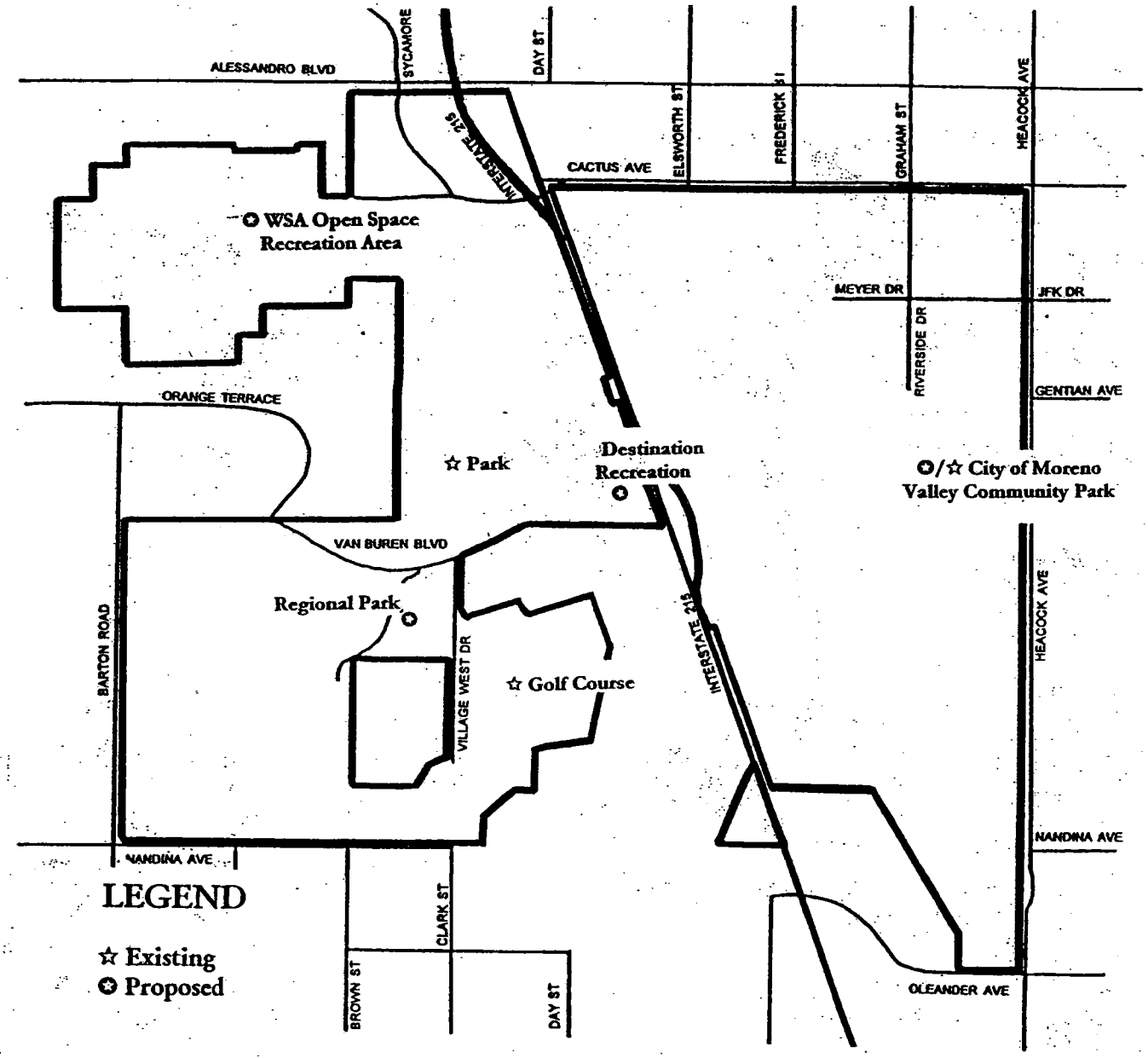
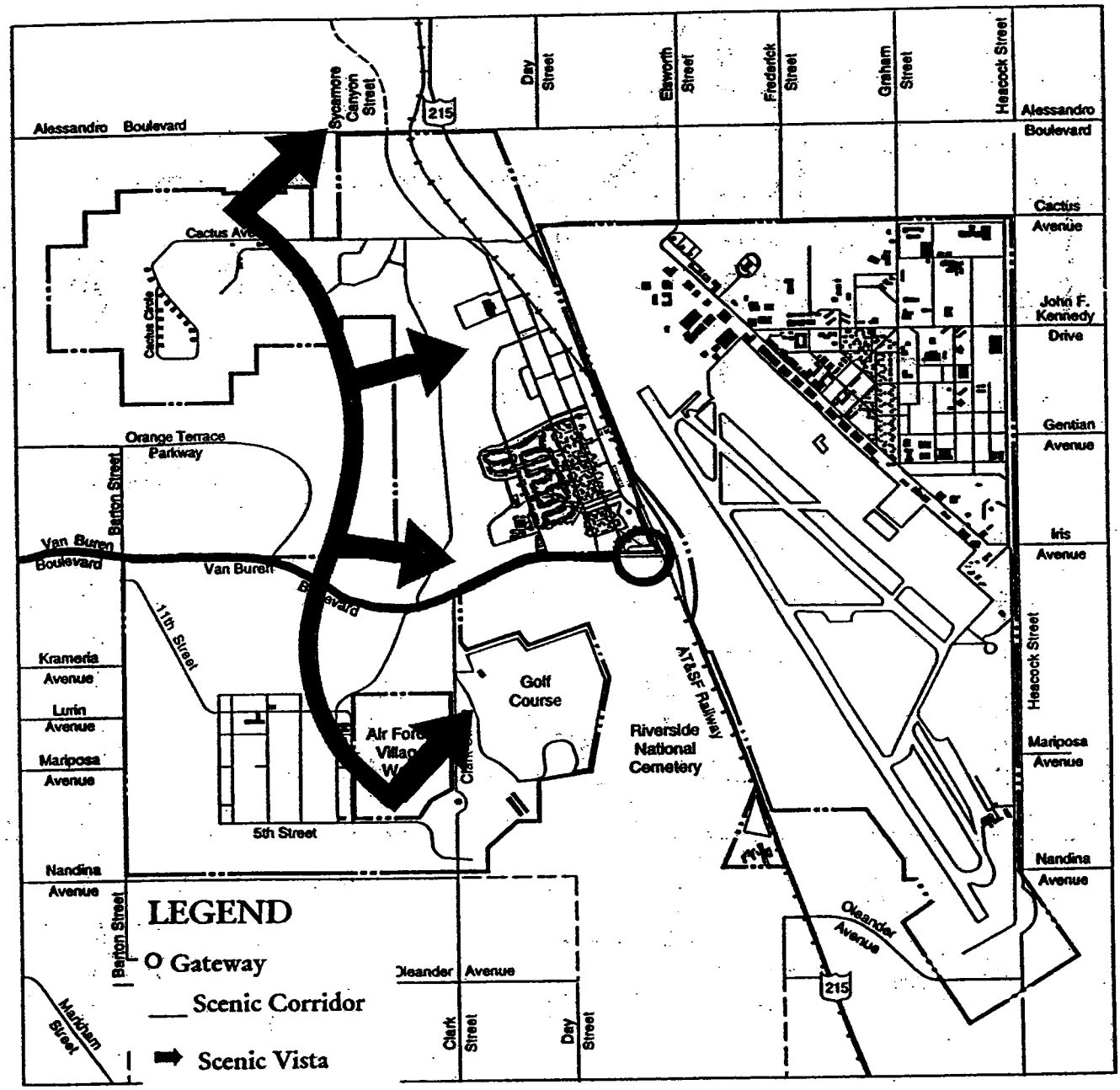


Exhibit 5-5
Scenic & View Shed Areas



Scenic Areas:

The planning area contains scenic areas from the architectural value of the historic district to the scenic vistas of the undeveloped rounded ridges of in the West March Planning Subarea. Additionally, significant rock outcroppings, riparian areas and other natural features can be preserved as open space within development. Preservation and conservation of scenic areas and corridors such as Van Buren Boulevard and Interstate 215 corridor can be protected by land use controls. Furthermore, the scenic quality of Van Buren Boulevard at Riverside National Cemetery is a natural gateway to the area of West March Planning Subarea, and sets forth a tone for new development.

BIOLOGICAL RESOURCES

The biological resources within the planning area include native and introduced plants and animals. It includes vegetation, wildlife, threatened and endangered species, and sensitive habitats.

Vegetation:

The open areas within the planning area consist of grasslands comprising non-native species, urban landscape and localized riparian communities. The exact species of composition of native grassland is uncertain. A few remnant species of coastal sage scrub occur on a small portion of the nonnative grasslands currently dominant throughout the undeveloped portion of the West March Planning Subarea.

Nonnative grasslands are characterized by exotic annual forbs, such as mustards and filarees, and by exotic grasses such as wild oats, red brome, cheat grass, Mediterranean grass, and barley. Only limited and disjunct stands of brittlebush, valley cholla, prickly pear, and California buckwheat are representative of a former costal sage scrub community in the West March Planning Subarea. Planted and naturalized landscape species are common throughout the developed portions of the planning area.

Planted and escaped landscape species are common throughout the planning area. Stands of Brazilian and Peruvian pepper, eucalyptus, European olive and oleander are found near development and buildings. A diverse assortment of non-native trees, shrubs and forbs have been planted on the golf course and within areas of development.

Wildlife:

Wildlife studies conducted within the planning area demonstrate a diverse composition of wildlife consisting of resident amphibians, reptiles, mammals, and permanent and seasonal birds. This is particularly true within the West March Planning Subarea.

Amphibian

The most common amphibian occurring within the planning area is the Pacific treefrog. The Pacific treefrog is found to occur in every plant community. The western toad, Pacific salamander and bullfrog may occur within the planning area, but it has not been identified in past surveys. The only sensitive amphibian specie known to exist is the Western spadfoot toad, which is currently a Federal Category 2 candidate species.

Reptile

The planning area contains many types of reptiles including; western fence lizard, granite spiny lizard, southern alligator lizard, gopher snake, and Pacific rattlesnake. The most common reptile is the side blotched lizard. Federal Category 2 candidate species include the Orange throated whiptail, costal western whiptail, San Diego horned lizard and northern red-diamond rattlesnake.

Birds

Many seasonal granivores (seed eaters) are attracted to the expansive open grasslands in the West March Planning Subarea. Additionally, the grasslands are habitat for federal Candidate Category 2 species including: ferruginous hawk,

mountain plover, tricolored blackbird, loggerhead shrike, and California horned lark. The burrowing owl, California Special Concern (CSC) species, is known to exist. March AFB has provided artificial burrows for owls within the northeast (main base) portion of the planning area. Migratory and permanent birds find the riparian areas to be suitable habitat. The federally listed Least Bell's vireo is known to occur within the willow riparian habitat in the West March Planning Subarea.

Mammals

Typical grassland mammals include California ground squirrel, Beechey ground squirrel, Botta's pocket gopher, and Audubon's cottontail. Other small rodents are present as evidenced through trapping surveys. The coyote is the most common mammalia predator. In addition to SKR, federal Candidate Category 2 mammals include San Diego black-tailed jackrabbit and Los Angeles pocket mouse.

Sensitive, Threatened and Endangered Species:

Sensitive, threatened and endangered species are known to exist or suspected to be present on or near the planning area. These species are delineated within Table 5-4. Comprehensive surveys for most taxomonic groups have been conducted within the planning area, with the noted occurrence of individual sensitive species or the probability of occurrence noted as such.

Plant

In a 1992 USFWS survey, none of the eight sensitive plant species with historic ranges on or in the proximity of the planning area was found (James 1992). Payson's jewelflower *(Caulanthus simulans)* a federal candidate (Category 2) is a fire ephemeral (post fire) plant with a moderate probability of occurrence following grassland fires. The planning area lacks suitable conditions for all other sensitive plant species.

Mammal

The Stephens' Kangaroo Rat (SKR) is known to exist within the planning area. Further discussion relative to SKR is located under Sensitive Habitat. Several surveys as well as management practices identify the SKR existence within the planning area. Surveys (USFWS, 1993) noted the presence or possibility of sensitive wildlife species in the planning area, including the Los Angeles pocket mouse (federal Category 2 subspecies).

Bird

The open areas of the planning area consist mainly of grasslands consisting of nonnative species of European origin, isolated coastal sage scrub remnants, and localized wetlands/riparian habitats along draws and drainage depressions. The coastal sage scrub is considered to be the Riversidian sub-type. Field surveys of the planning area conducted by the USFWS (March 1994; USFWS) have documented a total of 98 bird species as occurring on March AFB. Two are state and federally listed as "endangered" (Bald eagle; Least Bell's vireo), five are federal Category 2 candidates, and nine others are noted on various watchlists as "sensitive." An endangered species, least Bell's vireo, was identified in drainage with willow riparian habitat along Van Buren Boulevard in the West March Planning Subarea. Burrowing owls are also known to occur in the planning area. California gnatcatchers were not observed to occupy the remnant coastal sage scrub environs.

Previous surveys (USFWS, 1993) also noted the presence or possibility of other sensitive wildlife species in the planning area, including the Bell's sage sparrow (Fed Cat 2), and the Ferruginous hawk (Fed Cat 2); among others.

TABLE 5-4
Listed and Candidate Species Occurring on or Near March JPA Planning Area

COMMON NAME	SCIENTIFIC NAME	HABITAT	STATE STATUS	FEDERAL STATUS	PROBABILITY
MAMMALS					
Stephens' kangaroo rat	Dipodomys stephensi	Grassy or rocky slopes with low bushes	T	E	Occurs [4]
Greater western mastiff bat	Eumops perotis californicus	Roosts in natural crevices, trees and buildings	CSC	2	Low
Spotted bat	Euderma maculatum	Arid areas	CSC	2	Low
San Diego desert woodrat	Neotoma lepida intermedia	Dense scrub	CSC	2	Low
San Diego black-tailed jackrabbit	Lepus californicus bennittii	Scrub and grassland habitats	CSC	2	Occurs [2]
Los Angeles little pocket mouse	Perognathus longimembria brevinasus	Costal sage scrub and grassland	CSC	2	Occurs
Northwestern San Diego pocket mouse	Chaetodipus fallax fallax	Scrub areas	ND	2	Low
PLANTS					
San Diego button celery	Eryngium artistulatum var. parishii	Vernal pools	E	E	Low
California orcutt grass	Orcuttia californica	Vernal pools	E	E	Low
Munz's onion	Allium munzi	Clay soils	T	1	Low
Thread-leaf brodiaea	Brodiaea filifolia	Heavy clay soils in costal sage scrub	E	1	Low
Payson's jewelflower	Caulanthus simulans	Chaparral, granitic soils	ND	2	Moderate

TABLE 5-4
Listed and Candidate Species Occurring on or Near March JPA Planning Area

COMMON NAME	SCIENTIFIC NAME	HABITAT	STATE STATUS	FEDERAL STATUS	PROBABILITY
Many-stemmed dudleya	Dudleya multicaulis	Clay soils	ND	2	Low
Little mouse tail	Myosurus minimus spp. apus	Vernal pools and alkaline marshes	ND	2	Low
		BIRDS			
Bald eagle	Haliaeetus leucocephalus	Seacoast and inland waterways	E	E	Occurs[1]
Peregrine falcon	Falco peregrinus	Open foraging areas	E	E	Low
Brown Pelican	Pelecanus occidentalis	Large open bodies of water	E	E	Low
Southwestern willow flycatcher	Empidonax traillii extimus	Oak, riparian	E	PE	
Least Bell's vireo	Vireo bellii pusillus	Riparian habitats with willow stands	E	E	Occurs[2]
Costal California gnatcatcher	Polioptila californica californica	Coastal sage scrub with chamise chaparral	CSC	T	Low
Ferruginous hawk	Buteo regalis	Grassland	CSC	2	Occurs [1]
Burrowing owl	Speotyto cunicularia athene	Burrows; open fields and low herbaceous vegetation	CSC	ND	Occurs [5]
Mountain plover	Charadrius montanus	Wet areas of grassland	CSC	1	Occurs [1]
California horned lark	Eromophila alpestris actia	Grassland and agricultural fields	CSC	2	Occurs [1]
Loggerhead shrike	Lanius ludovicianus	Variety of open habitats	CSC	2	Occurs [3]

TABLE 5-4
Listed and Candidate Species Occurring on or Near March JPA Planning Area

COMMON NAME	SCIENTIFIC NAME	HABITAT	STATE STATUS	FEDERAL STATUS	PROBABILITY
Tricolored blackbird	Agelaius tricolor	Wetlands and grasslands	CSC	2	Occurs [1]
Ansy rufous-crowned sparrow	Aimophila ruficeps canescens	Grassy or rocky slopes with low bushes	CSC	2	Low
Bell's sage sparrow	Amphispiza belli belli	Chaparral and deserts	CSC	2	Low
AMPHIBIANS AND REPTILES					
San Diego horned lizard	Phrynosoma coronatum blainvillei	Variety, where harvester ants occur	CSC	2	Occurs [2]
San Diego banded gecko	Coleonyx varigatus abbotti	Canyon walls and rocky tracts	ND	2	Low
Orange-throated whiptail	Cnemidophorus hyperythrus	Sandy banks and brushy areas and washes	CSC	2	Occurs [2]
Costal western whiptail	Cnemidophorus tigris multiscutatus	Semi-arid habitat, annual grassland	ND	2	Occurs [2]
San Bernardino ringneck snake	Diadophis punctatus modestus	Moist areas	ND	2	Low
Coastal rosy boa	Lichanura trivirgata rosafusca	Rocky chaparral covered foothills	CSC	2	Moderate
Two-striped garter snake	Thamnophis hammondii	Near water	ND	2	Low
Coast patch-nosed snake	Salvadora hexalepis virgultea	Dense chaparral and coastal sage scrub	ND	2	Moderate

TABLE 5-4
Listed and Candidate Species Occurring on or Near March JPA Planning Area

COMMON NAME	SCIENTIFIC NAME	HABITAT	STATE STATUS	FEDERAL STATUS	PROBABILITY
INVERTEBRATES					
Riverside Fairy Shrimp	Streptocephalus woottoni	Vernal Pools and vernally wet areas	ND	E	Low
Quino checkerspot butterfly	Euphydryas editha quino	Rocky outcroppings with coastal sage scrub	ND	E	Low
Northern red diamond rattlesnake	Crotalis ruber ruber	Chaparral in rocky areas	CSC	2	Low

U.S. Fish and Wildlife Service: (E) Endangered (T) Threatened (PE) Potentially Endangered
California Department of Fish and Game: (CSC) Species of Special Concern (ND) Not Designated

1 Category 1- Taxa for which the Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species.
2 Category 2- Taxa for which existing information indicates that listing may be warranted, but for which substantial biological information to support a proposed rule is lacking.

(1) James and Hanlon, 1994a
(2) Tetra Tech, 1993
(3) James and Vizgirdas, 1993; The Earth Technology Corporation 1994a; Tetra Tech, 1993
(4) Montgomery, 1992
(5) Zembal, 1992; James and Hanlon, 1994

Source: March AFB FEIS, February 1996

Exhibit 5-6
SKR Management & Open Space Lands

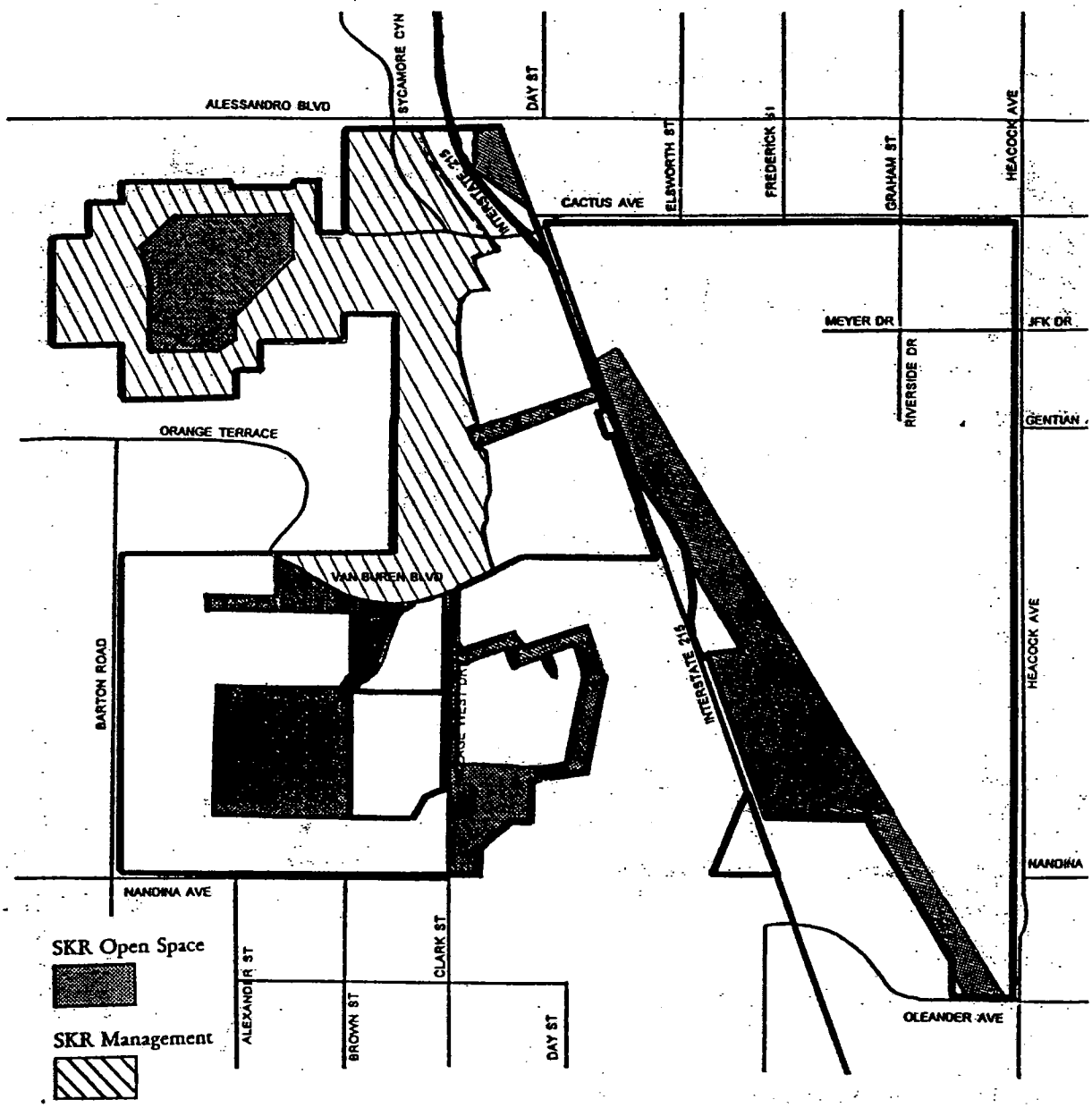
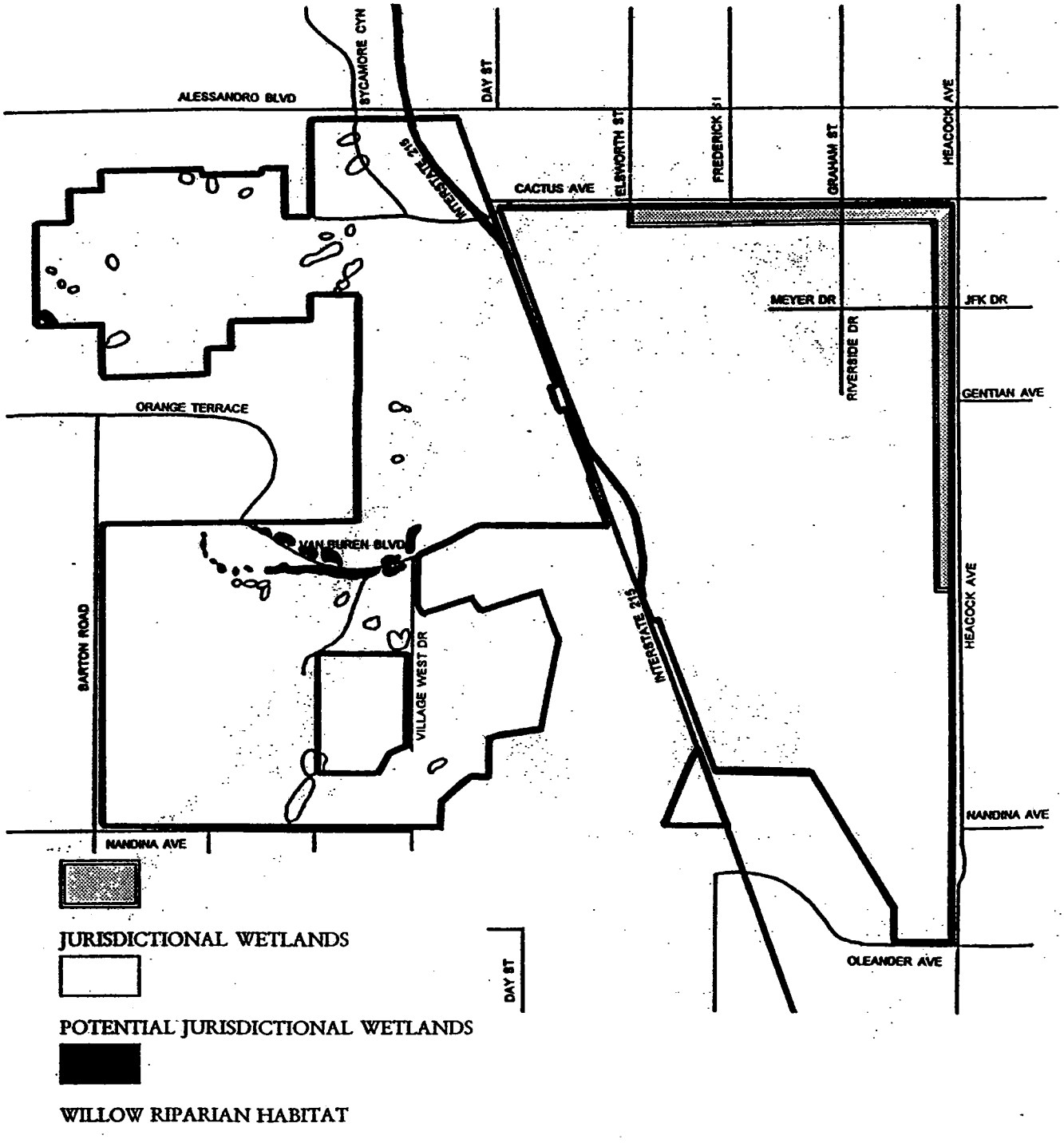


Exhibit 5-7
Wetland & Riparian Areas



— *Amphibians/Reptiles*

Field surveys (USFWS; January, 1994) also noted the presence of several reptile and amphibian species of concern; a total of 15 herpetological species are known to occur in the planning area. Of these, four are Category 2 candidates for listing as federal threatened or endangered species; (San Diego horned lizard; Orange-throated whiptail; Coastal western whiptail; Northern red diamond rattlesnake). Four individuals of the western spadefoot toad were also incidentally captured during the surveys near Plummer Road in the northwest portion of the planning area, and is considered "...extinct throughout much of lowland southern California" (Stebbins 1985).

Sensitive Habitats:

Sensitive habitats include wetlands, plant communities that are unusual or of limited distribution, and important areas for sensitive wildlife. Sensitive habitats consist of jurisdictional wetlands at the northeastern corner of the planning area and in the West March Planning Subarea. The West March Planning Subarea also includes management and open space habitat for the SKR, and habitat for Least Bell's Vireo (willow riparian) and fairy shrimp (vernal pools) species.

Stephens Kangaroo Rat

Under the USAF, March AFB, in consultation with the USFWS, established a preserve for management of SKR. The preserve contains 1,000 acres of grassland in the northern and central portion of the West March Planning Subarea. Take of individuals and loss of habitat in the preserve are strictly limited by the Biological Opinion (BO) under which the preserve was established. The BO also called for the setting aside of an additional 1,200 acres of open space for SKR, where take of individuals and loss of habitat is limited to a lesser degree. The establishment of open space for SKR was in response to proposed construction projects proposed for March AFB, but never proceeded forward.

Since the BO for March AFB, Riverside County Habitat Conservation Agency (RCHCA) prepared a Long-Term Habitat Conservation Plan (HCP) for the

SKR in Western Riverside County. The SKR HCP indicates the Sycamore Canyon-March AFB SKR habitat as a proposed "core reserve" area for long-term SKR management purposes. Subsequent to the decision to realign March AFB, a strategy is to trade SKR habitat on the former March AFB in exchange for purchasing SKR habitat elsewhere in Western Riverside County in order to take full advantage of the economic redevelopment potentials afforded by surplus lands at March AFB.

The SKR habitat at March is surrounded by urban and urbanizing uses that diminish the biological value of those lands as viable SKR habitat over the long term. Under these conditions, and the need to replace jobs lost by the realignment, it has been determined that more and better quality SKR habitat could be purchased elsewhere. Pursuant to the base realignment process, Section 7 consultation process has commenced between the Air Force Base Conversion Agency (AFBCA) and USFWS to establish and set forth criteria for trading lands within the planning area in order to support implementation of the base reuse plan and the general plan land use plan.

Wetlands

The planning area consist of approximately 86 acres of localized jurisdictional wetlands/riparian habitat that occur along draws and drainage depressions. Wetlands are those areas defined as inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life within saturated soil conditions. These wetlands are dominated by willow riparian woodland vegetation and are considered a "sensitive" habitat type.

Potential wetlands occur mostly in the West March Planning Subarea, but are also located along portions of the Cactus storm drain and Heacock ditch channels at the northeast corner of the planning area. Both channels are considered to be "Waters of the U.S." along their entire lengths of the planning area. A small area south of Cactus Avenue and west of the Weapons Storage Area (WSA) supports four ephemeral (temporary) pools of water totaling less than 0.1 acre. Unique plant species and pool morphology suggests that these areas are vernal pools.

The area of jurisdictional wetlands is confined to the unimproved channels along Heacock and Cactus Avenues. Restrictions of jurisdictional wetlands require a Section 404 permit from the Army Corps of Engineers for any modification and/or alteration to the wetlands. In the case of the Heacock and Cactus Channels, any crossing over the channels; from the public road right-of-ways to land adjacent to the channel, will require a Section 404 permit. Careful consideration of localized drainage and runoff must be made with adjacent development, as maintenance of the channels is restricted to limited activities.

Vernal Pools

Vernal pools are protected by federal regulations, as they are considered jurisdictional wetlands. These pools are potential habitat for the endangered Riverside fairy shrimp and the proposed endangered conservancy fairy shrimp and vernal pool fairy shrimp. However, a report issued August 1995, determined that no special-status fairy or tadpole shrimp were to be observed within the planning area. The common, wide spread Lindahl's fairy shrimp were found at 10 of the 18 locations sampled. Additionally, no suitable habitat for the Conservancy fairy shrimp was observed (Earth Tech/Arnold, Richard 1995).

Willow Riparian

The riparian communities are often considered wetlands under Section 404 of the Clean Water Act, as denoted above. The willow riparian communities support several sensitive species, offering breeding habitat for Least Bell's vireo and southwestern willow fly catcher in the West March Planning Subarea.

REGULATORY FRAMEWORK FOR BIOLOGICAL RESOURCES

State, federal, and local laws and regulations exist to protect wildlife and plant resources. Compliance with federal, state, and local regulations may be required at various stages in the environmental planning process. Compliance with federal regulations becomes necessary when a proposed project involves a federal action, including permits, grants, licenses, or other forms of federal authorizations or approval which may result in construction. The impacts associated with a proposed federal action must be analyzed pursuant to the National Environmental Policy Act (NEPA). All general plan amendments, specific plans, and tentative tract approvals require an assessment of impacts on biological resources pursuant to the California Environmental Quality Act (CEQA). In addition, local regulations often require an assessment of impacts when: (1) significant biological resources, such as rare, threatened or endangered species, riparian habitat, oak woodland, or other large trees are affected; (2) sensitive communities of special concern as reported by the California Department of Fish and Game's Natural Diversity Data Base are present; or (3) the project is located within or affects wildlife movement corridors.

The following section summarizes the major federal, state, and local laws that guide the planning process with respect to biological resources.

National Environmental Policy Act (NEPA):

Whenever a branch of the federal government is involved with a project, the provisions of NEPA apply. The goals of NEPA with respect to biotic resources include: the attainment of the widest range of beneficial uses of the environment without degradation; preservation of the diversity of natural aspects of the environment; and achievement of a balance between population size and resource capacity. Federal involvement can include actions that require federal funds (such as infrastructure highways or block grants), federal permits (e.g., permits pursuant to Section 404 of the Clean Water Act, or Section 10(a) of the ESA), or if federal lands, such as national forest lands, are involved.

If the project is not subject to categorical exclusion under NEPA, the lead agency may prepare an Environmental Assessment (EA) to determine if an Environmental Impact Statement (EIS) is necessary (the lead agency is that

federal agency with the most involvement in the project, or the first agency to be involved). An EA can be avoided if there is a decision to proceed with the preparation of an EIS. If a finding of no significant impact (FONSI) is made on the EA, the proposed action may proceed without further federal environmental analysis.

If the EA does not result in a FONSI, an EIS must be prepared. A notice of intent to prepare an EIS is published in the Federal Register to allow other agencies and the public to review the project. Federal, state, local agencies, and the public are invited to help determine the scope and issues which should be included in the EIS (scoping process). Based upon issues raised during the scoping process, a draft EIS is prepared that outlines the project, possible impacts, and alternatives to the project which may have less impact.

The draft EIS is reviewed by government agencies and the public, and comments concerning the impacts and alternatives are elicited. All comments are reviewed and addressed in the final EIS, which is submitted to the U.S. Environmental Protection Agency (EPA) and other federal agencies concerned with the project for review and comment. The lead agency renders a record of decision that includes the decision, alternatives, and practical means to avoid environmental harm. Upon approval of the final EIS, the project may proceed.

Section 404 of the Clean Water Act:

The purpose of Section 404 of the Clean Water Act is to maintain the integrity of United States waters through the control of discharge of fill materials. Areas that may meet the definition of "waters of the United States" and lie within March JPA include the Cactus and Heacock channels, and any other "blue line" areas as indicated on USGS topographic maps. Also included is habitat for migratory birds that cross state lines, habitat used by species covered by the ESA, and waters used for recreation by out-of-state visitors. Most of the waters of the United States that occur within the March JPA planning area either convey water or are moist, for at least part of the year.

Section 404 states that no dredge or fill material may be discharged into aquatic ecosystems unless no adverse effects will result, and that there should be no

discharge of dredge or fill material into wetlands if there is an alternative that would have less environmental impact. Adverse effects include those that jeopardize endangered or threatened species or critical habitat under the ESA of 1973. Section 404 guidelines also recognize that the loss of wetlands is the most significant environmental impact and that the loss is irreversible.

Authority for Section 404 is delegated to the U.S. Army Corps of Engineers (COE). Pursuant to Section 404(b)(1), persons who wish to add fill to a United States water must file an application with COE. Information required on the application is fairly general and does not require detailed plans; although the entire project and all planned phases must be addressed in the application. The primary objective of the application is to disclose how much fill will be placed, where fill will be placed, and how and why it will be placed in United States waters. Wetland-dependent wildlife species must also be reviewed in consultation with the USFWS (under Section 7 of the federal ESA). Other federal or state agencies may ultimately be involved with the process (e.g., waters that fall under the California Department of Fish and Game [CDFG] jurisdiction pursuant to Section 1603 of the Flash and Game code).

The COE prints public notification, which is followed by a public comment period. All public comments are sent to the applicant. The applicant must also respond to requests from the COE for additional information. After receipt of a complete application, the COE prepares an EA, pursuant to the provisions of NEPA.

Federal Endangered Species Act of 1973:

The Endangered Species Act (ESA) states that federal agencies must insure that their actions will not jeopardize the existence of threatened or endangered species, or result in the destruction or adverse modification of critical habitat of such species. In addition to the habitats of the listed species, several more plant and animal species in March JPA Planning Area which are candidates for listing also receive recognition in federal actions. The federal list is updated yearly and species that occur in the March JPA Planning Area may be listed in the future. Therefore, the March JPA should attempt to update its regional list of endangered and threatened species yearly to remain current.

The USFWS is delegated the responsibility to ensure that the provisions of the ESA will be carried out. Section 7 of the ESA requires consultation with USFWS when a federal action may adversely affect a listed species to insure that the proposed action will not jeopardize the continued existence of such species (as explained under NEPA above, "federal actions" include private projects that involve federal funding, agency involvement, or federal lands). A biological assessment is submitted to the USFWS for review. The USFWS will render a "biological opinion" (BO) as to the effects of a proposed action on listed species or their habitats. The BO also considers "reasonable and prudent" alternatives to the project that would avoid jeopardizing listed species. Those proposing the action may request a "draft BO" in order to work with the USFWS in developing acceptable alternatives.

Section 9 of the ESA prohibits the "take" of a federally listed endangered species. The term take is defined as direct loss of endangered species (death) or loss through habitat destruction. A project that may include the taking of listed species must be filed with the USFWS prior to beginning the project. The applicant must provide documentation of impacts associated with the taking of listed species, steps to minimize and mitigate impacts, alternative actions to avoid take, and reasons why alternatives are not being used.

After public review of the project and its effects on endangered or threatened species, a permit may be granted pursuant to Section 10(a) if take is incidental. Incidental take is defined as removing or destroying a species or its habitat when such taking is incidental to, and not the purpose of, otherwise lawful activities. The applicant must show that the project minimizes and compensates, to the maximum extent practicable, all impacts on the listed species. The applicant must ensure funding for proposed conservation plans, and must ensure that the incidental take of the listed species does not reduce the likelihood of the survival and recovery of the species in the wild.

California Environmental Quality Act (CEQA):

CEQA applies to any government action within the state of California. This can include activities directly undertaken by a government agency, projects financed in whole or in part by a government agency, or private actions which require

approval from a government agency under other regulations (such as a Section 404 permit pursuant to the Clean Water Act). If it is found that the project is not subject to the provisions of CEQA, a notice of exemption is prepared and the action can proceed unaltered. If the agency involved finds that no significant impacts will occur, the agency prepares a negative declaration and the project can proceed as proposed. If a proposed action may cause significant damage on biological resources, CEQA requires the preparation of an Environmental Impact Report (EIR).

CEQA also requires review of general biotic resources, endangered species, and sensitive species that may be affected by an action. Section 15380 of CEQA defines a plant or animal species as 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, or predation. Species are presumed to be rare, threatened, or endangered as listed by the State of California in Sections 670.2 or 670.5, Title 14, of the California Administrative Code, or federally rare, threatened, or endangered pursuant to the Federal ESA, Title 50, Code of Federal Regulations, Sections 17.11 or 17.12. Section 15386 of CEQA names the California Department of Fish and Game (CDFG) as a "trustee agency" having jurisdiction over endangered or threatened plants and animals. Under CEQA, state agencies must consult with CDFG if projects are likely to jeopardize the continued existence of listed plants or animals, and CDFG must provide reasonable and prudent alternatives to avoid the problem (Fish and Game Code Sections 2090 and 2091). A complete list of all state and federal listed endangered species known to occur or have suitable habitat in March JPA is included in Table 5-4.

An EIR must analyze the effects of a proposed activity on biological resources. Alternatives to the proposed action must be explored, as well as mitigation measures to minimize or compensate for impacts to biological resources.

California Department of Fish and Game Code Section 1603:

Section 1603 of the Fish and Game code states that it is unlawful for any person to divert or obstruct the flow, or to alter the bed, channel, or bank of any river, stream, or lake without notifying the CDFG of such action. Areas in the March

JPA Planning Area subject to the CDFG 1603 agreements are likely to include the Cactus and Heacock channels, and any "blue line" areas as indicated on USGS topographic maps.

After notification of such activity, the CDFG will inform the applicant of any fish or wildlife resource that may be adversely affected by the alterations. This notification will also include measures that the CDFG feels are necessary to protect the fish and wildlife. The persons proposing the action may request an on-site investigation by the CDFG, or the CDFG may find an on-site investigation necessary before proposing measures to protect fish and wildlife.

It is unlawful to begin projects affected by this section of the Fish and Game code until CDFG has found that fish and wildlife will not be adversely affected, or until CDFG proposals, or those of arbitrators, have been incorporated into the project. If CDFG fails to respond to notification of project plans within 30 days, the project may proceed. Projects that involve routine maintenance or operation of water supply, drainage, flood control, or waste treatment facilities do not require CDFG notification once the initial notification procedures have been completed, unless the activities covered by the original notification change substantially. Also, the provisions of Section 1603 are not applicable to emergency work necessary to protect life or property, but CDFG must be notified of emergency actions within 14 days of the action.

Projects falling under 1603 jurisdiction may also require Section 404(b)(1) permits, as discussed above, and may result in consultation with the USFWS pursuant to Section 7 of the ESA of 1973, or coordination pursuant to Section 9 and Section 10 of the ESA.

California Fish and Game Code and Endangered Species Act:

The California Endangered Species Act (CESA) generally applies to the same listed species as the federal ESA, although some differences in the lists do occur. The state law prohibits taking of state-listed and candidate species. Unlike the federal law, the Fish and Game Code does not provide for incidental taking of listed species or the preparation of habitat conservation plans. However, the

Code does authorize the CDFG to approve management agreements that serve a similar purpose:

> Section 2018 (part of the CESA) allows the Department to "authorize individuals, public agencies, universities, zoological gardens and scientific and educational institutions to import, export, take or possess (listed or candidate) species for scientific, educational or management purposes;" and
>
> Section 2835 allows the Department to authorize take of a listed or candidate species in areas covered by an approved Natural Communities Conservation Plan (NCCP).

With respect to prohibition of take, the CESA differs from the ESA in three ways:

> The state defines "take" as "to hunt, pursue, catch or kill" or attempt the same. Unlike the federal definition, the terms "harm" or "harass" are not used in the state code. However, activities that would trigger a "jeopardy" determination under the state consultation process are essentially the same as those that would constitute "harm" or "harassment" under the federal law.
>
> Unlike the federal law, the state prohibition on taking applies to species proposed for listing, as well as to species listed as threatened or endangered. When the Fish and Game Code Commission designates a species as a "candidate for listing," that species receives the full protection of the CESA for a one-year period during which the final determination on listing is made.
>
> Section 2082 and 2835 authorize the CDFG to approve management agreements and permits that serve a similar purpose as a Section 10(a) permit under the ESA. The NCCP under Section 2835 is similar to the Multi-Species Habitat Conservation Plan (HCP) under federal law.

NCCPs differ from Section 2081 agreements primarily in that they are intended to conserve, protect, recover, and enhance species and ecosystems before they are

in jeopardy of extinction. This planning process is intended to preserve local and regional biological diversity, reconcile urban development and wildlife needs, and meet the objectives of both the ESA and CESA. To this end, the USFWS has placed the California gnatcatcher under the statutory regulation of the state NCCP program through species rules that are allowed by the ESA.

Section 1913 of the Fish and Game Code treats listed plant species differently from listed animal species. Prior to the taking of listed or candidate plant species, the CDFG must be notified 10 days in advance of taking to permit the Department to collect seeds or transplant these plants at the Department's discretion.

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PROFILE REPORT
for the
GENERAL PLAN
of the
MARCH JOINT POWERS AUTHORITY

Safety / Risk Management

SAFETY / RISK MANAGEMENT

INTRODUCTION

This Profile Report for the Safety/Risk Management Element provides an assessment of natural and man-made hazards in the planning area, including, but not limited to, earthquakes, landslides, fire, flood, dam inundation, aviation and hazardous materials accidents. It also provides a framework by which safety considerations are introduced into the planning process.

SETTING

The March Joint Powers Authority (JPA) Planning Area is located in Western Riverside County Area, bounded by the Cities of Moreno Valley, Perris, Riverside and the County of Riverside. The planning area is located within the northern portion of the Perris Plains, within the Santa Ana basin which covers an area of 2,000 square miles and is part of the Peninsula Ranges Province. Other major features in the area are the Pacific Costal Plain to the west, the Transverse Ranges including the San Bernardino and San Gabriel Mountains and the Mojave Desert to the north, and the San Jacinto Mountains and Mojave Desert to the east.

Many of the safety issues addressed in this document are directly related to southern California's geologic and seismic characteristics, while other issues are particular to the distinctive geologic and topographic setting of this part of Riverside County. Southern California is one of the most seismically-active regions of the world, experiencing, on average, an earthquake of Magnitude 4 or greater every four years. Earthquakes could result in strong ground motions, surface rupture, and liquefaction in the planning area.

The March JPA Planning Area overlies part of the eroded Cretaceous and older crystalline basement rock (Perris Erosional Surface) and the alluvial filled valley (Perris Plain). The West March Planning Subarea is predominantly on the Perris Erosional Surface, with the Northeast Planning Subarea on the Paloma Surface/Perris Plain. The Perris Plain alluvial deposits are composed of alternating layers of varying amounts of clay, silt, sand and gravel. The thickness varies from a few feet to greater than 800 feet.

Climate and topography play an important role in defining the threat to March JPA from fires and floods. The undeveloped areas of the planning area sustain several plant varieties that are fuel for wild fires. Structural fires can occur during an earthquake as a result of damage to natural gas pipes and connections, and toppled appliances. The flat alluvial plains with their gentle slopes are subject to flooding along natural and man-made drainage courses.

SEISMIC HAZARDS

The March JPA Planning Area is located between two major fault zones: the Elsinore-Whittier, 13 miles to the southwest, and the San Jacinto, 7 miles to the northeast. The area between the two faults is known as the Perris Block or Perris Plain. These northwest-trending faults are considered active faults by the California Division of Mines and Geology.

There are no active faults in the planning area, and the Casa Loma Fault, approximately six miles to the east-northeast is the closest sply of the San Jacinto Fault zone to the planning area. The fault has a maximum credible earthquake magnitude of 7.5. Earthquakes along other major faults in the area, such as the Elsinore-Whittier Fault zone, could also cause major damage to buildings and services. The Planning Area is located within Seismic Hazard Zone III (ICBO 1994) of the Uniform Building Code (UBC, 1994).

Earthquakes are normally classified as to severity according to their magnitude (as measured from seismographs), or their seismic intensity. The destructiveness of an earthquake at a particular location is commonly reported using a seismic intensity scale. Because the amount of destruction generally decreases with increasing distance away from the epicenter, earthquakes are assigned several intensities, but only one magnitude. Seismic intensities are subjective classifications based on observations of damage caused by past earthquakes. The Modified Mercalli Intensity (MMI) scale has 12 levels of damage, the higher the number, the greater the damage (Table 6-1). The intensity of seismic ground shaking at any given location is a function of several factors, but primarily the magnitude of the earthquake, the distance from the epicenter to the planning area, and the local geologic and topographic conditions. The amount of

damage is also controlled to a certain extent by the size, shape, age, and engineering characteristics of the affected structures.

TABLE 6-1
MODIFIED MERCALLI INTENSITY SCALE*

I.	Tremor not felt.
II.	Tremor felt by persons at rest or in upper floors of a building. (2)
III.	Tremor felt indoors. Vibrations feel like a light truck passing by; may not be recognized as an earthquake. Hanging objects swing. (3)
IV.	Hanging objects swing. Vibrations feel like a heavy truck passing by, and the jolt feels like a heavy ball striking the walls. Standing cars rock. Windows, dishes and doors rattle. Glasses clink and crockery clashes. Wooden walls and frames crack in the upper range of scale 4.
V.	Earthquake felt outdoors, and its direction can be estimated. Sleepers are awakened. Liquids are disturbed, some spilled. Small unstable objects are displaced or upset. Doors swing, closing and opening. Shutters and pictures move. Pendulum clocks stop, start or change rate. (4)
VI.	Earthquake felt by everybody. Many are frightened and run outdoors. Persons walk unsteadily. Window, dishes and glassware are broken. Knick-knacks and books fall off shelves; pictures fall off walls. Furniture moves or is overturned. Weak plaster and masonry D are cracked. Small bells in churches and schools ring. Trees and bushes are shaken.
VII.	Difficult to stand. Earthquake noticed by drivers of motor cars. Hanging objects quiver. Furniture is broken. Damage to masonry D, including fallen plaster, loose bricks and stones, cracks in tiles and cornices. Weak chimneys break at roof line. Some cracks in masonry C. Waves form in ponds, disturbing mud at the bottom. Slides and caving in sand and gravel banks. Large bells ring. Concrete irrigation ditches are damaged. (5)
VIII	Steering of motor cars is affected. Partial collapse of masonry C structures. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting and falling of chimneys, factory stacks, monuments, towers and elevated tanks. Frame structures, if not bolted to foundations, shift. Loose panel walls are thrown out; decayed pilings brake off. Branches brake off trees. Changes in flow or in temperature of springs or wells. Cracks in wet ground and on steep slopes. (6)

TABLE 6-1
MODIFIED MERCALLI INTENSITY SCALE*

IX.	General panic. Masonry D structures destroyed; masonry C heavily damaged, sometimes completely collapsed. General damage to foundations. Frame structures, if not bolted, shift off their foundations. Serious damage to reservoirs. Underground pipes are broken. Conspicuous cracks in the ground. In alluvial areas, sand and mud are ejected, forming sand craters.
X.	Most masonry and frame structures are destroyed. Most foundations destroyed. Some well-built wooden structures and bridges are destroyed. Serious damage to dams, dikes, and embankments. Underground pipelines are seriously damaged. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and in flatlands. Rails bent slightly. (7)
XI.	Rails bent greatly. Underground pipelines completely out of service. Many and widespread disturbances of the ground, including broad fissures, earth slumps and land slips in soft, wet ground. Sand- and mud-charged water ejected from fissures in the ground. Sea-waves (tidal waves or tsunami) of significant magnitude. Severe damage to wood-frame structures, especially if near to the shock center. Severe damage to dams, dikes and embankments. Few, if any, masonry structures remain standing. Large, well-constructed bridges destroyed due to damage to their supporting piers or pillars. Wooden bridges are affected less. (8+)
XII.	Damage is nearly total. Lines of sight and level are distorted. Objects are thrown into the air. Great and varied disturbances of the ground, including numerous shearing cracks, landslides, large rock-falls, and numerous and widespread slumping of river banks. Fault slips in firm rock with notable horizontal and vertical offset. Water channels, both at the surface and underground are disturbed and modified. Lakes are dammed, rivers are deflected, waterfalls occur. The rolling effect of the seismic waves is actually seen at the ground surface.

Masonry A:	Good workmanship, mortar and design. Reinforced, especially laterally, and bound together with steel, concrete, etc. Designed to resist lateral forces.
Masonry B:	Good workmanship and mortar. Reinforced, but not designed to resist lateral forces.
Masonry C:	Ordinary workmanship and mortar. Not reinforced or designed to resist horizontal forces.
Masonry D:	Weak materials, such as adobe; poor mortar. Low standards of workmanship weak horizontally.

These masonry types are not to be confused with the conventional Class A, B, and C construction types.

* Modified and rewritten after Richter (1958) and Toppozada and others (1988) using Rossi=Forel's Intensity Scale. Bold numbers in parenthesis () indicate approximate equivalent in Richter Magnitude Scale. This comparison assumes the intensity is determined on a bedrock site near the earthquake epicenter.

The State of California, under the guidelines of the Alquist-Priolo Special Studies Act (Hart, 1990), classifies faults according to the following criteria:

Active: faults showing proven displacement of the ground surface within the last 11,000 years (Holocene); and

Potentially Active: faults showing evidence of movement within the last two million years (modified to 750,000 years by U.S. Geological Survey).

A fault that has not moved in the last 11,000 years, as determined from direct geologic evidence, is presumed to be inactive. However, the evidence necessary to prove that a fault has not moved within the Holocene is sometimes difficult to obtain (Hart, 1990.) The State definition of an active fault is designed to gauge the surface rupture potential of a fault, and is used to prevent development from being sited directly on the trace of an active fault. In general, potentially active faults are, relative to active faults, less likely to be the origin of a damaging earthquake. In reality, however, there is a gradation of seismic risk posed by potentially active and active faults.

GEOLOGIC HAZARDS

Geologic hazards and geotechnical constraints in the March JPA Planning Area are controlled by the engineering characteristics of the sediments and rocks that underlie this area.

Seismically Induced Hazards:

The potential for liquefaction and seismically induced dynamic settlements of soils is low within the March JPA Planning Area. The relatively dense and cohesive nature of the underlying alluvium and the presence of a shallow (less than 50 feet below ground surface) regional water table, results in a low susceptibility of seismically induced hazards.

FLOOD AND INUNDATION HAZARDS

A 100-year flood event is that flood with a probability of occurring once every 100 years, or that has a 1/100 chance of occurring in any one year. Smaller-scale flooding, generally associated with overburdened storm drain systems can damage property and hinder emergency activities, such as fire department access to fire hydrants or evacuation. Consequently, the potential for more frequently-occurring, small scale flooding is also assessed herein. Potential flooding hazards due to the failure of dams and other water retention structures are also discussed.

Storm Flooding:

In general, surface water runoff within the planning area is directed southeast through a series of storm drains and surface drainage ditches. Storm sewers and other drainage facilities and improvements on the base are minimal. The primary drainage facilities are the Cactus storm drain channel which runs in an east-west direction parallel to Cactus Avenue along the northern boundary of the Northeast Planning Subarea, and the Heacock storm drain channel which runs north-south adjacent to Heacock Street along the eastern perimeter of the Northeast Planning Subarea; both are unlined and have been designated as "wetlands" (i.e., "waters of the United States"). These unlined drainage channels flow into the Perris Valley Storm Drain. The Cactus Channel has very little capacity and the Heacock Channel is in need of upgrade to accommodate the increased flows attributable to development in the adjacent community of Moreno Valley. All drainage and channels in the planning area connect into either the Heacock or Perris Valley storm drains.

March JPA Planning Area is within the San Jacinto watershed, which encompasses about 760 square miles. The Northeast Planning Subarea is surrounded by areas within the 100-year flood plain as designated by the Federal Emergency Management Agency (FEMA). In the Northeast Planning Subarea, areas subject to 100-year floods are located along the northern and eastern boundary. The unlined natural drainage and channels of the planning area may become flood plains during inundation by 100-year flood events.

Most potential flooding problems in the planning area are related to the inadequacy of the existing drainage devices. With development of the planning area, a hydrological study and infrastructure master plan will be prepared to address the size and placement of drainage and storm drain facilities, along with the ability to accept flows for 100-year flows down stream.

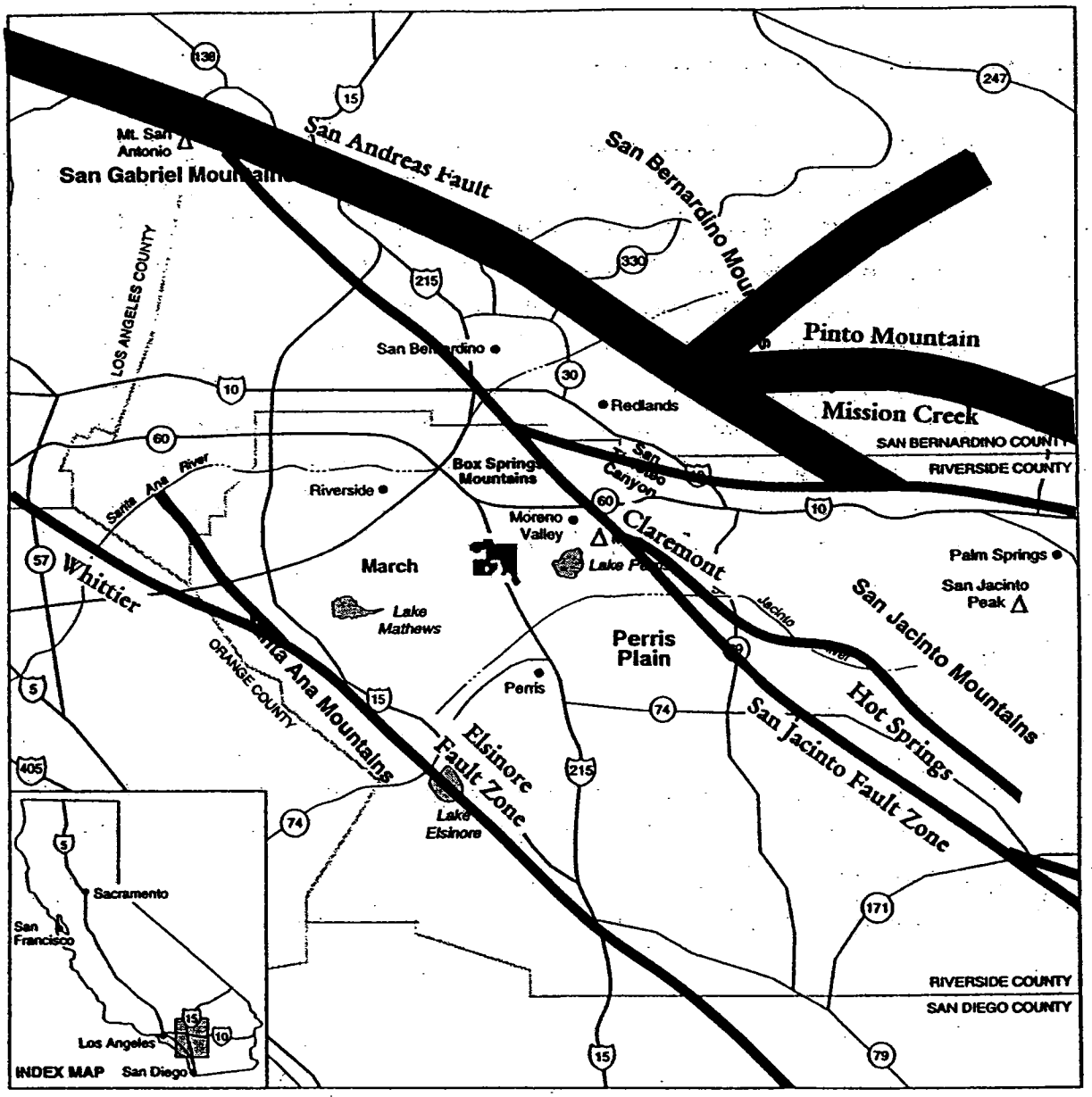
Seismically-Induced Inundation:

Seismically-induced inundation refers to flooding as a result of water retention structures failing during an earthquake. Lake Perris Dam is located southeasterly of the planning area, as well as downstream, therefore the planning area is not subject to inundation by dam failure at Lake Perris. Earthquake-induced waves can cause significant structural damage to aboveground water tanks if not adequately braced and baffled. Sloshing water can lift a water tank off its foundation and buckle the bottom of the tank. Pipes connected to the tank can be sheared off. There are several aboveground water tanks in the March JPA Planning Area. If these water tanks are damaged during an earthquake, efforts to suppress earthquake-induced fires in the planning area could be hindered. Damaged tanks and water mains can also limit the amount of water available to the March community.

FIRE HAZARDS

Open space and vacant areas in the planning area are covered with dry grasslands. Introduced vegetation include landscaping plants and nonnative species. The grasslands are highly combustible due to the volatile oils contained in plant tissues. Generally, brush fires are more likely to occur in the dry, summer months.

Exhibit 6-1
Geological Characteristics



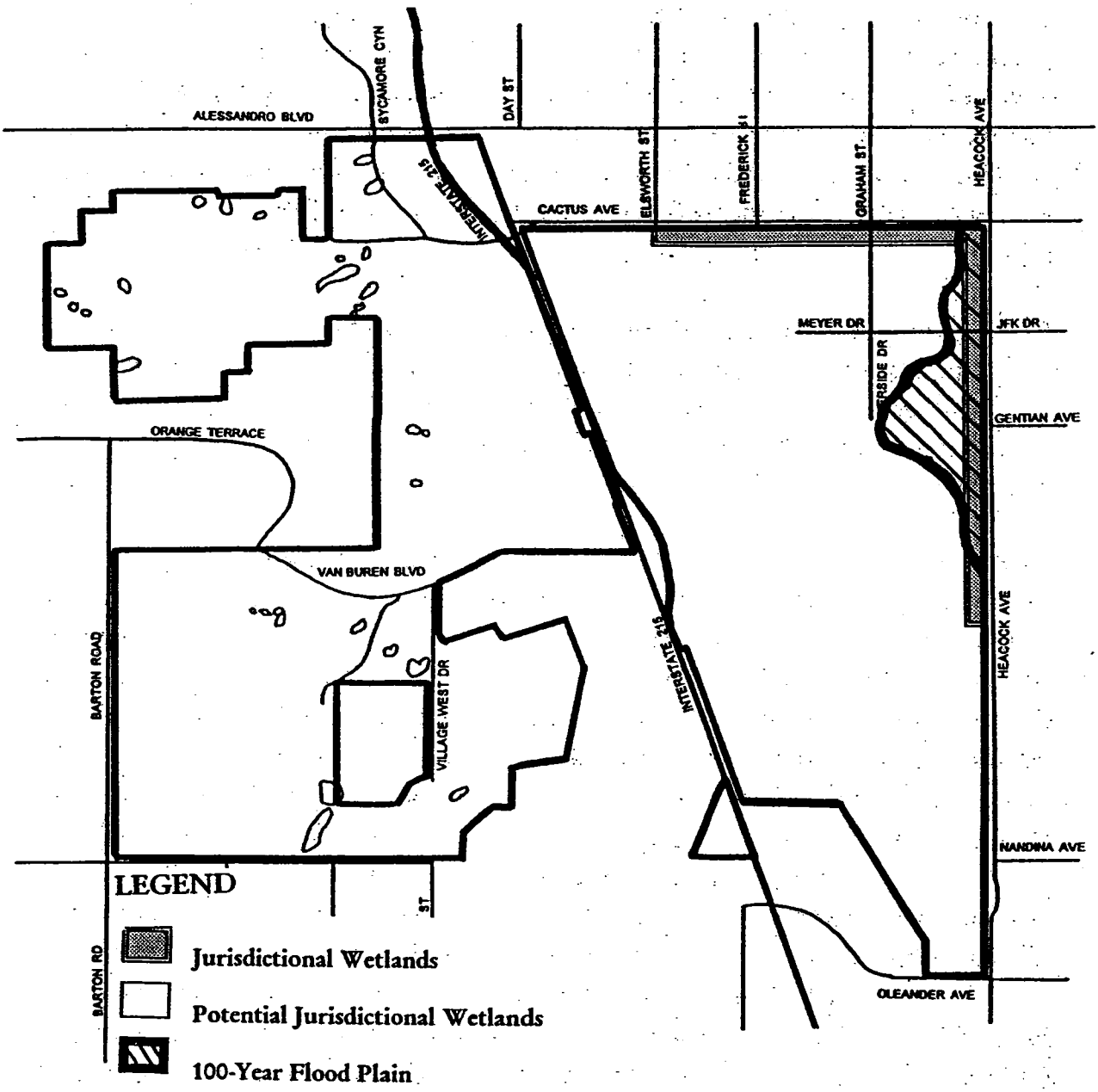
HAZARDOUS MATERIALS

The State of California defines a hazardous material as a substance that is toxic, ignitable or flammable, or reactive and/or corrosive. An extremely hazardous material is defined as a substance that shows high acute or chronic toxicity, carcinogenicity, bio-accumulative properties, persistence in the environment, or is water reactive (California Code of Regulations, Title 22). This section will concentrate on the hazards associated with the use, storage or manufacturing of hazardous materials in or near the March JPA Planning Area. Additional information with greater detail is contained within the Environmental Baseline Survey (EBS) conducted for March Air Force Base (AFB), May 1994.

The primary concern associated with the release of a hazardous material is the short and long term effects that exposure to a hazardous substance may have on the public. This is particularly true when a toxic gas is involved, since a gaseous toxic plume is more difficult to contain than a solid or liquid spill and a gas can impact a larger segment of the population in a shorter time span.

All facilities that handle more than a specified amount of hazardous materials are required by both the Federal and State governments to submit a business plan to their local administering agency (the reportable quantities are 50 or more gallons of a liquid, 500 pounds or more of a solid, or 200 cubic feet or more of a gas at standard temperature and pressure; quantities for acutely hazardous materials vary according to the substance). Within March JPA Planning Area, the administering agency is the County of Riverside Department of Environmental Health, Hazardous Materials Division. Every handler is required to submit a business plan and an inventory of hazardous substances and acutely hazardous materials to the County of Riverside Department of Environmental Health, Hazardous Materials Division on a yearly basis. If the hazardous materials inventory of a business should change, a revised business plan must be submitted. Inspectors from the County of Riverside Department of Environmental Health, Hazardous Materials Division conduct yearly inspections of businesses that have submitted a business plan and conduct follow up inspections as needed.

Exhibit 6-2
Flood Areas/Wetland Channels



Most chemicals used have their own unique physical and chemical characteristics; what might be an acceptable mitigation procedure for one chemical may be totally inadequate for another. Therefore, business plans should contain, for each hazardous and extremely hazardous material handled, a description of the physical and chemical properties of the material and the symptoms that result from contact with the material. The plan should also have a site map that shows where each hazardous material is stored and handled, where emergency response equipment is located, and evacuation plans and procedures.

The County of Riverside Department of Environmental Health, Hazardous Materials Division maintains a data base that contains the business plans submitted by occupants within the March JPA Planning Area. Business plans are designed to be utilized by the Fire Department in the event of a hazardous materials incident to allow for quick and accurate evaluation of each situation for appropriate response. The County of Riverside Department of Environmental Health, Hazardous Materials Division is responsible for distribution of hazardous materials information to the appropriate fire departments and emergency response teams in the March JPA area. Employees of facilities that use, store or manufacture hazardous materials should be aware of where a copy of the business plan is kept, and how the plan is put into operation should a hazardous material incident occur.

Although significant concentrations of hazardous materials, at levels for which a business plan is required, are generally associated with manufacturing and industrial areas, hazardous materials are also used and stored in commercial and business park areas.

Hazardous Materials Incidence Response:

The County of Riverside Department of Environmental Health, Hazardous Materials Division, and County of Riverside Fire Department is responsible for responding to hazardous material release incidents in March JPA. The nearest County Emergency Response Team is housed in Beaumont, approximately 22 miles northeast of the March JPA Planning Area boundary. The County of Riverside Department of Environmental Health, Hazardous Materials Division and Riverside County Fire Department follow the procedures set forth in the

County Multi-Hazard Functional Plan. Agencies of the March JPA Planning Area manage emergency operations in accordance with their Emergency Action Checklist, Response to a Hazardous Material Incident. This document assigns specific tasks to different planning area agencies in the event of an emergency.

Releases of hazardous materials may occur during a natural disaster, such as during an earthquake. Improperly-stored containers of hazardous substances may overturn or break, pipelines may rupture, and storage tanks may fail. Containers may also explode if subject to high temperatures, such as those generated by a fire. If two or more chemicals which are reactive when combined come in contact as a result of a spill, the hazard may be compounded. The 1994 Uniform Fire Code includes criteria designed to minimize the risk of an accident. These guidelines are to be followed when storing, using or transporting hazardous materials, and include secondary containment of substances, segregation of chemicals to reduce reactivity during a release, sprinkler and alarm systems, monitoring, venting and auto shutoff equipment, and treatment requirements for toxic gas releases.

In the March JPA Planning Area, most facilities that handle hazardous and/or acutely hazardous substances in quantities above the reportable limits are located in the Northeast Planning Subarea area, areas largely surrounded by vacant land and at the sewage treatment plant. These facilities are located a minimum of approximately eight miles and a maximum of 22 miles from the Riverside County Hazardous Materials and Riverside County Fire Department Emergency Response Teams located in Riverside and Beaumont. Emergency Response Teams will, in an ideal situation, be able to respond to an incident in 15 to 25 minutes.

The planning area's proximity to rail and highway transportation routes poses the potential for spills or leaks from transport of hazardous materials. Interstate 215 and Van Buren Boulevard are heavily traveled by trucks that carry many types of hazardous materials including, but not limited to, gasoline, rocket fuels, pesticides, and radioactive materials. The California Highway Patrol is in charge of spills that occur in or along freeways, with local sheriffs, CALTRANS, and

police departments responsible for additional enforcement and routing assistance.

The AT&SF railroad line that exists parallel to Interstate 215, bisecting the planning area, also carries hazardous cargoes. Although railroad traffic is not as prevalent as that along truck routes, the volume of hazardous materials transported is generally much greater.

Installation Restoration Program Sites:

Contaminated sites exist at various locations on the base as a result of the storage, use, and disposal of household refuse, construction debris, hazardous substances, and petroleum products and their derivatives over the course of the installation's history. The entire base has 43 identified Installation Restoration Program (IRP) sites. Of these, 16 sites occur on lands proposed for release outside of the cantonment area; an additional three sites occur on Air Force Village West property, and two on National Cemetery lands.

The Air Force is required to remediate past environmental contamination that occurred within the planning area. Remediation is coordinated by Department of Defense (DOD) with U.S. Environmental Protection Agency (EPA) and appropriate state agencies. The future development of surplused land by land recipients may be restricted due to limitations of reuse from remediation. Sites must be remediated prior to conveyance of any land.

An Environmental Baseline Survey (EBS) and BRAC Cleanup Plan (BCP) have been prepared for March. These Air Force documents outline the status, management and response strategy, and action items related to the cleanup of hazardous and contaminated sites at the base. These programs support the cleanup and restoration of the base property, which is necessary to meet the requirements for property disposal and reuse activities associated with the realignment of March AFB.

The IRP process for March AFB commenced September 1993, with the majority of the clean up sites completed or near completion at time of base

realignment in April 1996. For a detailed analysis see March AFB Disposal Final Environmental Impact Statement (EIS), February 1996.

Storage Tanks:

Underground storage tanks are subject to federal regulations within RCRC, 42 U.S.C. 6991 and U.S. EPA implementing regulations. In the state of California, CCR Title 23, Section 2610 et seq, and the Health and Safety Code Section 25280 through 25299.7 of Division 20, Chapter 6.7 regulates underground storage tanks, of which these regulations exceed federal standards and regulations. The regulations are enforced by the Regional Water Quality Control Board and implemented by County of Riverside Health Services Agency, Department of Environmental Health, Hazardous Materials Management Division.

At time of realignment of March AFB, there were 31 active and 3 inactive underground storage tanks. The majority which are on the Northeast Planning Subarea (Appendix H, Final EIS 2/96). Additionally, there are numerous aboveground storage tanks. A Bulk Fuel Storage Area in the northern portion of the Northeast Planning Subarea and two hydrant fueling systems utilize the largest of these tanks. The bulk storage consists of three above ground storage tanks (2203, 2204, & 2205) with a total capacity of 5.88 million gallons. JP-8 is delivered to these tanks via an 8-inch Santa Fe pipeline from Colton, California. The fuel distribution system utilizes a closed-loop system. Maintenance and monitoring of the system is conducted by Air Force Reserves (AFRES) in compliance with the Aboveground Petroleum Storage (APS) Act.

Asbestos:

Facilities on the former March AFB were constructed with Asbestos Containing Material (ACM). The Air Force is required to abate active ACM facilities, and remove ACM in accordance with State of California regulations as enforced by California EPA Department of Toxic Substances Control (DTSC). A base-wide survey must be conducted, and all facilities must be identified prior to property transfer and facility disposal.

Polychlorinated Biphenyls (PCB):

A base-wide survey was conducted in 1991, and all transformers identified as containing 50ppm or more PCBs were replaced.

Radon:

A naturally occurring, colorless and odorless radioactive gas produced by radioactive decay of naturally occurring Uranian is found in rocks containing Uranian. Radon present in soils can enter buildings and accumulate, thereby causing risk of exposure to cancer via inhaling of radon. A radon screening survey was conducted May 1988, of which no samples exceeded the U.S. EPA recommended mitigation level of 4 pinocuries per liter.

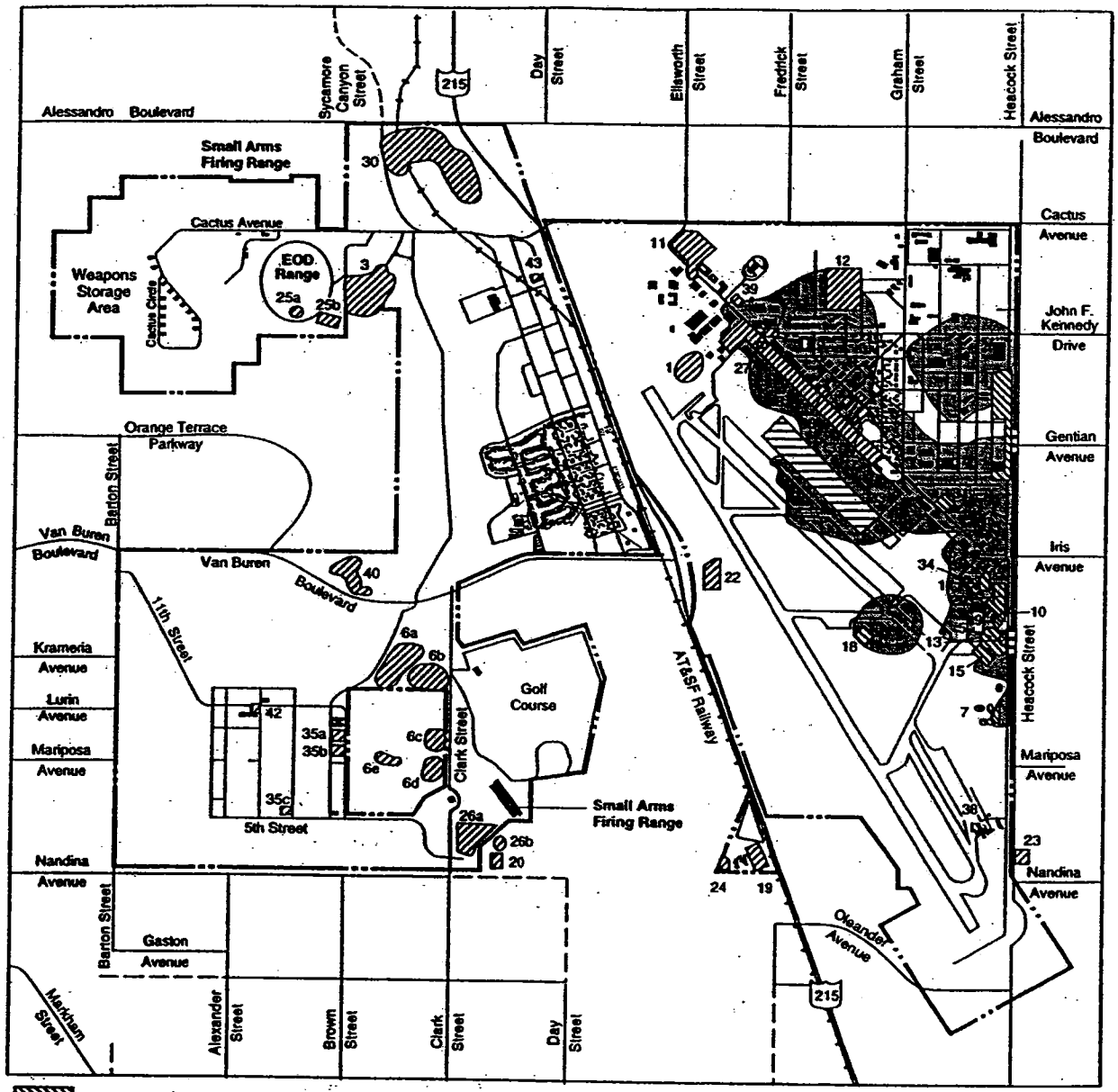
Lead Based Paint:

Majority of facilities constructed prior to 1978 utilized lead-based paint. In January 1995, a survey was conducted through random sampling of housing units, and high-priority facilities. The survey results found the presence of lead-based paint on some surfaces inmost of the housing units, of which approximately 50% contained lead at concentrations in excess of 400 ppm. All identified lead-based paint hazards will be abated from housing units within Green Acres. The possibility of presence of lead-based paint on other facilities will require disclosure of the possible presence of lead-based paint and must be included within property leases and transfer documents.

AVIATION SAFETY ZONES

With the operation of military and civilian aviation on Runway 14/32, both military standards under Air Installation Compatible Use Zones (AICUZ) Study 1992 and Federal Aviation Administration (FAA) standards need to be recognized for aviation operations.

Exhibit 6-3
IRP Site Map



Source: March AFB EIS 1996

Military:

Under the military operations it is standard that an Air Installation Compatible Use Zone (AICUZ) Study be prepared. The AICUZ for March AFB is the 1992 AICUZ which was prepared prior to base realignment, and the 1998 AICUZ for March ARB which was prepared after realignment. The AICUZ sets the a program of compatibility land uses in the vicinity of military aviation operations. The standards for military operations are as follows:

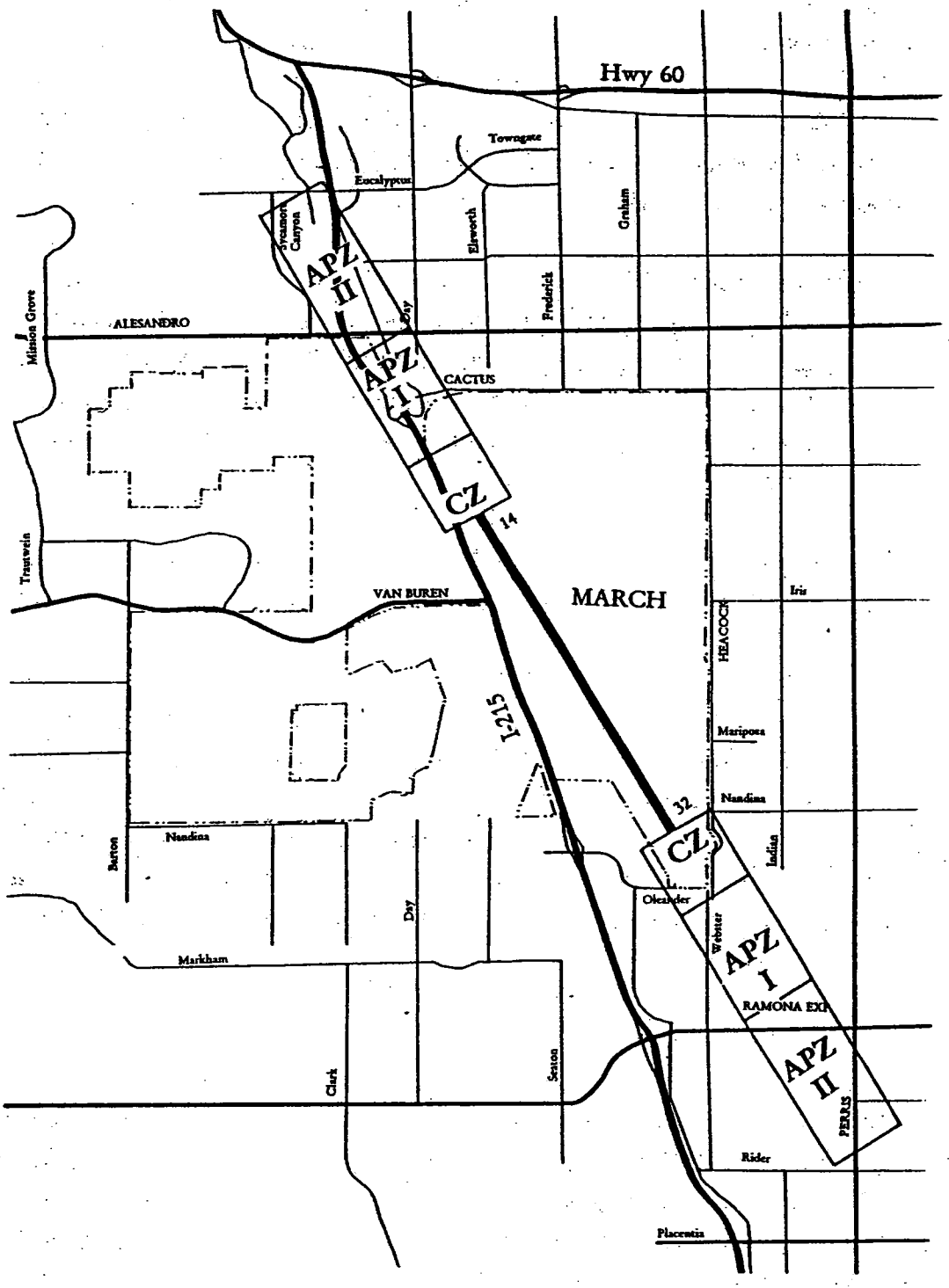
Clear Zone (CZ): The clear zone (CZ) is a 3,000' by 3,000' area closest to the end of each runway and along the approach and departure flight path. These areas must remain clear and free of any infrangible obstacles. The north CZ is predominately within the area of the AFRES with a small portion within the West March Planning Subarea. The southern CZ is within the cantonment area.

Accident Potential Zones (APZ): The accident potential zones (APZs) are areas beyond the CZ which possess a significant potential for accidents. APZ I extends from the outer edge of the respective CZ for an additional 5,000 feet. APZ II extends from APZ I for 7,000 in length. APZ I & II permit limited development and use of properties. In the case of Runway 14/32, the majority of APZ I & II for each are predominately within adjacent jurisdictions. The City of Moreno Valley has incorporated the AICUZ 1992 into their development code standards. The Cities of Perris and Riverside have not adopted these restrictions formally. Further discussion relative to land use compatibility is located within the Noise/Air Quality Profile Report.

Civilian:

Runway safety and protection areas as noted on the approved airport layout plan must comply with FAA standards for civilian use. The FAA standards fit within the Military standards under the adopted AICUZ. The standards referenced herein support ARC D-VI civilian use of the airfield. The areas of protection are as follows for Runway 14/32:

Exhibit 6-4
Aviation Safety Zones (Military)



Runway Safety Area (RSA): The RSA is a defined space surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot or excursion from the runway. The RSA for Runway 14/32 is 520 feet wide, and extends 1,000 feet beyond each runway end.

Runway Protection Zones (RPZs): Required at each end of the runway, the RPZs enhance the protection of persons and property on the ground. The RPZ is controlled by the airport authority. RPZs remain clear of incompatible objects and activities. The RPZs for Runway 14 is 1,000 feet wide, starting 200 feet from end of runway and extending to 2,700 feet past end of runway. The RPZ enlarges in width to 1,750 feet, extending in length an additional 2,500 feet. The RPZ for Runway 32 is 1,000 feet wide starting 200 feet from end of runway to 1,900 feet from end of runway, and enlarges in width to 1,510 feet extending in length an additional 1,700 feet.

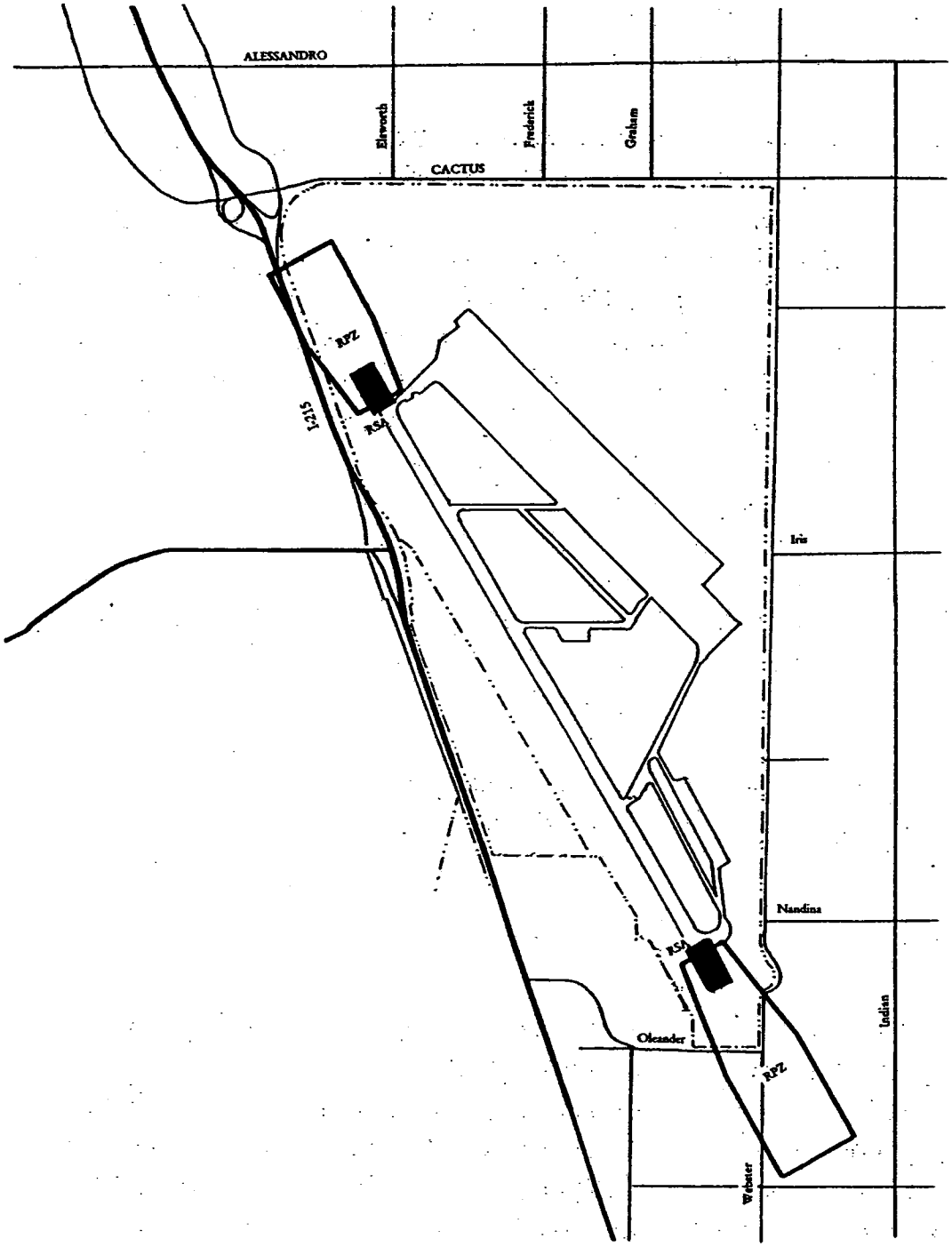
Obstacle Free Zone (OFZ): The airspace below 150 feet above the established airport elevation and along the runway and extending along center line. The ARC D-V standard is 400 feet wide and extends 200 feet beyond each end of Runway 14/32.

All base reuse and development shall adhere to the military and FAA standards to support joint use of the airfield.

NOISE

Substantial portions of the planning area are impacted by noise from aircraft operations and overflights, as denoted by the 1992 AICUZ and within the Final EIS for base realignment. In the West March Planning Subarea, the former Arnold Heights housing area is exposed to noise levels ranging from 70-75 dBA, while noise levels at Air Force Village West are in the 60-65 dBA range. In the Northeast Planning Subarea, noise levels at the Green Acres historic district are on the order of 65-75 dBA.

Exhibit 6-5
Aviation Safety Zones (Civilian)

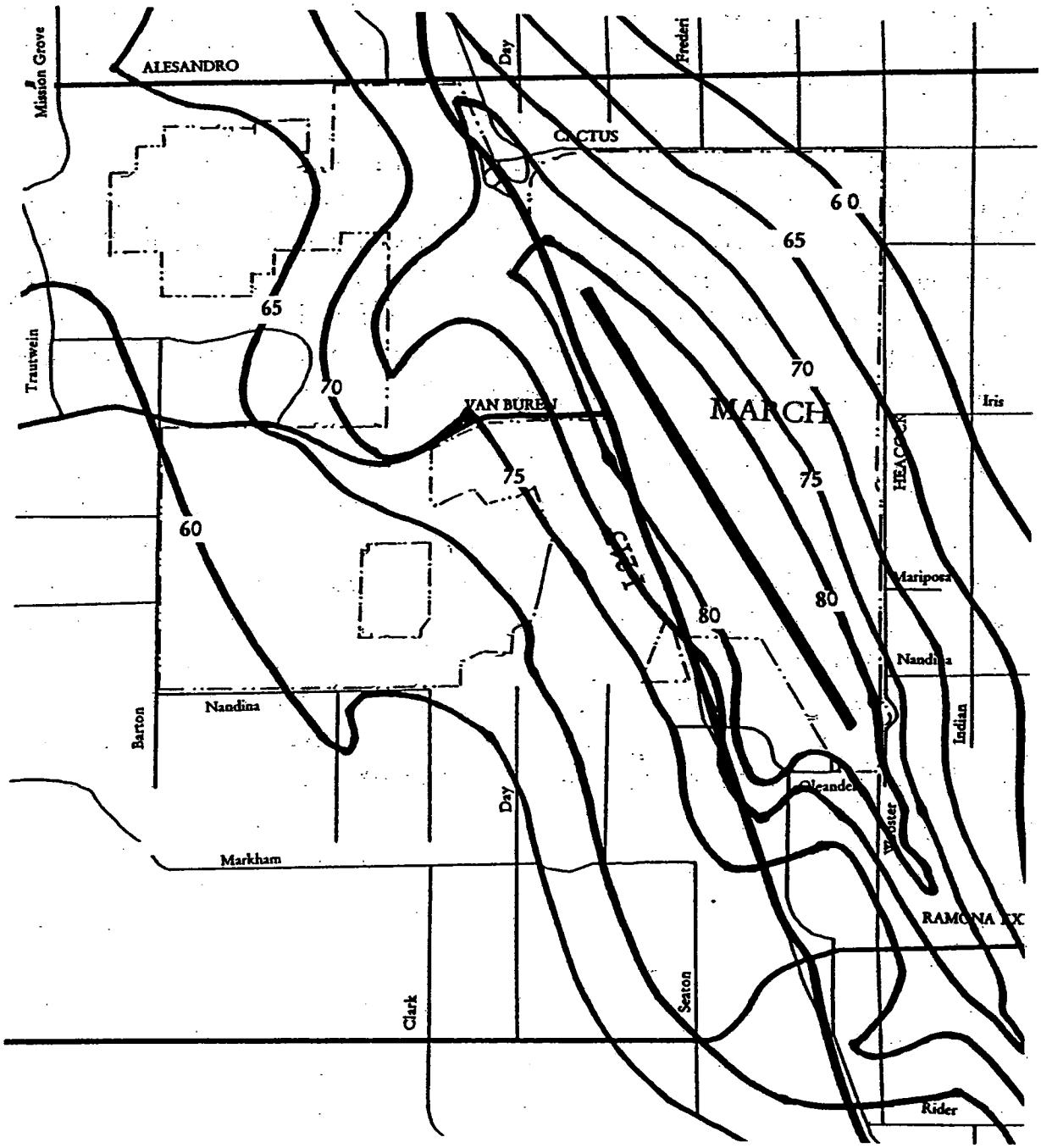


Noise levels associated with the realigned military mission at March are assumed to be somewhat less than the 1992 noise levels due to less frequent flights, fewer fighter aircraft operations, and the installation of "quieter" engines in military aircraft. The EIS contains contours based on the realigned mission and related aircraft operations, however, a new AICUZ report is being conducted, but not yet completed or approved by the military at this time.

Noise generated by surface transportation in the vicinity of the planning area were analyzed using the Federal Highway Administration's Highway Noise Model. This model incorporates vehicle mix, traffic volume projections, day/evening splits, and speed to general Community Noise Equivalent Level (CNEL). The noise levels are then presented as a function of distance from centerline of the road. There are a number of main roadways generating surface transportation noise in excess of 60 dBA. Table 3.4-13 of the Final EIS delineates the noise exposure from surface transportation.

Noise is a land use influencing factor. The general plan land use plan considered the noise impacts, and locates noise compatible land uses accordingly. However, as projects are developed, mitigation on a case-by-case basis will need to be employed in accordance with the Uniform Building Code (UBC) and acoustical studies that may be required for some uses in areas subject to excessive noise levels. Development projects will need to be reviewed for their potential exposure to noise levels to determine the suitability of a particular use in a particular location and appropriate mitigation, if necessary. The 1992 AICUZ Study Land Use Compatibility matrix (reference Section IV.A.3) lists land uses and their compatibility with various noise zone exposure levels.

Exhibit 6-6
Noise Contours (within Planning Area)



APPENDIX A

MARCH JPA TRANSPORTATION STUDY TECHNICAL REPORT

MARCH JPA TRANSPORTATION STUDY

TECHNICAL REPORT

Final Report

Prepared for:

March Joint Powers Authority

Prepared by:

Parsons Brinckerhoff Quade & Douglas, Inc.

June 30, 1998
Revised December 4, 1998

INTRODUCTION

When March Air Force Base was realigned to an Air Reserve Base, a Joint Powers Authority (JPA) was formed to handle base reuse and development. The March JPA consists of the County of Riverside and the Cities of Riverside, Moreno Valley, and Perris. As of March 11, 1997, the March JPA has been given full land use authority for the March JPA Planning Area. In this role, the March JPA is developing its first General Plan for the area. This report documents the technical analysis conducted in support of the General Plan Transportation Element.

The JPA area includes the full extent of the previous March Air Force Base, straddling the I-215 Freeway in Western Riverside County. The runways and most of the former Air Force Base facilities are located east of I-215, bounded generally by Cactus Avenue on the north, Heacock Street on the east, and Oleander Avenue on the south. The portion of the planning area west of I-215 is largely undeveloped, and is bounded generally by Alessandro Avenue on the north, Barton Street on the west, and Nandina Avenue on the south.

The Transportation Element of the March JPA General Plan is critical because it presents the plan for the overall transportation system in the planning area and its association to the sub-region. The Transportation Element and the Land Use Element must be compatible, and support each other. The transportation system presented in the Element must be designed to adequately handle the forecast travel demand based on the planned development as outlined in the Land Use Element. This analysis is therefore designed to identify the transportation system facilities and policies needed to serve planned land uses.

This plan has been developed to be consistent with applicable regional and subregional transportation plans and programs, including the Regional Transportation Plan (RTP), the Western Riverside County Draft Comprehensive Transportation Plan (CTP), the Long-Range Transit Plan (LRTP) for Western Riverside County, the Riverside County Congestion Management Program (CMP), and the Regional Transportation Improvement Program (RTIP). To ensure this consistency, the analysis applied a travel demand forecasting model and regional growth assumptions obtained from the Southern California Association of Governments based long-range improvement assumptions on the RTP, CTP, and LRTP; based near-term assumptions on the programmed improvements in the RTIP; and followed the Level of Service methodology used for the CMP.

The study area for the transportation analysis includes the JPA area plus key regional arterial streets and freeways which provide access to the area, including I-215, SR-60, SR-91, the Cajalco Corridor, the Ramona Expressway, Alessandro Avenue, Heacock Street, and Van Buren Boulevard.

The technical report includes the following sections:

- methodology used in the technical analysis
- existing transportation system and conditions

- future background conditions based on projected subregional growth
- March JPA Area land use and trip generation
- future conditions with JPA development
- recommended circulation system and policies
- improvement priorities.

METHODOLOGY

LEVEL OF SERVICE ANALYSIS

Roadway congestion was measured based on peak hour intersection levels of service (LOS), which measures the degree of congestion and delay at intersections, which are the most constrained locations on the roadway system. LOS was calculated using the Highway Capacity Manual methodology. Using this method, average vehicular delay and volume/capacity ratio are calculated for the intersection based on traffic volumes, lane geometry, signal timing, etc. The average delay is used to measure the intersection level of service as shown in Table 1. LOS A represents minimal delay. LOS F represents unacceptable levels of delay and extreme congestion. LOS E is the minimum acceptable LOS for the Riverside County Congestion Management Program, and the member agencies of the JPA have identified LOS D or better as the desirable objective for peak hour operations.

TRIP GENERATION

Trip generation rates are used to estimate the volume of traffic which will be generated by the planned development. For each type of land use, a typical trip generation rate is applied to the amount of projected development to estimate future trips.

Table 2 lists the land uses included in the March JPA Land Use Element, describes the use, and documents the source of the trip generation rate applied to the use. Rates for most land uses were obtained from the Institute of Transportation Engineers (ITE)Trip Generation Manual (5th edition). However, a number of uses in the planning area are not typical uses for which trip generation data are available. The sources of data for these rates are identified in the table and described below:

- Air Force Village West Expansion: Expansion of this Air Force residential area will accommodate plans for skilled nursing facilities and institutional residential care facilities, so the ITE rate for nursing homes was applied to this use.

- Aviation: Integrated carriers are expected to be the primary users of the air cargo facilities. They tend to be more seasonal and demand-responsive. Although there may be days when very few flights land or take off, there may also be heavy days when all of the facilities are in constant use. Aviation planning experts suggested that truck terminals would represent a comparable use. This assumption was verified by comparing the resulting trip generation with the estimated trip generation for a cargo airfield at the El Toro Marine Corps Air Station.
- Business Park: The ITE rate for business park uses was applied to this category.
- Cemetery Expansion: This designation applies to the expansion of the Riverside National Cemetery, which is a veterans' cemetery adjacent to the JPA area. The ITE cemetery rate was applied.
- Clear zone: The clear zone is the undeveloped area around the airfield runway. No trips will be generated in this area.

TABLE 1
INTERSECTION LEVEL OF SERVICE DESCRIPTION

LEVEL OF SERVICE	AVERAGE DELAY (SEC)	TRAFFIC FLOW / DELAY CHARACTERISTIC
A	0-5	This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths mat also contribute to low delay.
B	5-15	This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	15-25	These higher delays may result from fair progression and/or longer cycle length. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	25-40	Influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	41-60	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratio. Individuals cycle failures are frequent occurrences.
F	over 60	This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high V/C ratio below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: Highway Capacity Manual, Special Report 209 Transportation Research Board, National Research Council, 1994

TABLE 2
MARCH JPA TRANSPORTATION ELEMENT
TRIP GENERATION ASSUMPTIONS

Type of Use	Description	Source of Trip Generation Rates
AFVW Expansion	Skilled Nursing Facility, Retirement Care Facility	ITE Nursing Home
Aviation	Air Cargo Operations	ITE Truck Terminal
Business Park		ITE Business Park
Cemetery Expansion		ITE Cemetery
Clear Zone	airfield clear zone	no trips generated
Commercial		ITE Shopping Center
Destination Recreation	Regional Commercial Attraction	ITE Amusement Park
Historical District	111 residential dwelling units	ITE Apartments
Industrial		ITE General Light Industrial
Military Operations & Aviation	Air Force Reserve Operations	ITE Military Base, ITE General Office
Mixed Use	Complementary Uses Including: Commercial; Business Park; Office; Medical; Educational & Vocational; Research & Development; Services	blended rate of ITE shopping center, business park, office, medical office, vocational, and R&D
Office		ITE General Office
Park/Recreation/ Open Space	Nature Preserves, Active Recreation Uses	ITE City Park
Public Facility	TAZ 7-Elementary School	ITE Elementary School
	TAZ 13-Public Safety Training Center	ITE General Office
	TAZ 17-Sewer Treatment Plant	ITE Utilities
	TAZ 18-March AFB Museum	existing trips
Stephens' Kangaroo Rat		no trips generated

Notes:
ITE - Institute of Transportation Engineers,Trip Generation Manual, 5th Edition

- Commercial: Commercial uses will include retail and service-oriented businesses serving the JPA area. The ITE shopping center rate was applied to these uses.
- Destination Recreation: This use is planned as a potential amusement park or other regional recreation facility, so the ITE rate for amusement parks was applied.
- Historical District: The historic district in the northeast portion of the JPA area can accommodate 111 residential dwelling units or small offices. The ITE apartment rate was applied because the units are older low-intensity uses.
- Industrial: Industrial uses may support a wide range of manufacturing and non-manufacturing uses ranging from warehouse and distribution facilities to industrial activities. The ITE general light industrial rate was applied to this category.
- Military Operations and Aviation: For military operations, 1,000 employees are expected at the base and cantonment area on a daily basis. This includes the accounting office, radio and television staff, and the 63rd Army Reserve. Since the Military Base trip generation rate in the ITE manual assumes that military personnel live on-base, this rate was applied to the proportion of employees expected to occupy housing in the historic district. The remaining employees would live off-base, and would generate more vehicle trips, but would not be expected to leave and re-enter the base much during the day. The general office rate of 3.3 trips per employee was therefore applied to the off-base personnel.
- Mixed Use (West of I-215): Mixed use development in this area is planned to consist of commercial, business park, office, medical, educational and vocational, and research and development uses. A composite trip generation rate was developed for the Mixed Use category using ITE rates and the following percentages of use: 20% commercial, 20% business park, 30% office, 10% medical, 10% educational and vocational, and 10% research and development uses.
- Mixed Use (Northeast area): Planned uses for the Mixed Use designation in the northeast portion of the JPA area are consistent with business park uses, so the ITE rate for business park was applied to this area.
- Office: Office uses include business activities associated with professional or administrative services. The ITE general office rate was applied to these uses.
- Park/Recreation/Open Space: This designation applies to passive and active park or recreation area. The ITE city park rate was applied to this category.
- Public Facility – Elementary School: The ITE rate for elementary schools was applied to the public facility area designated for a school.
- Public Safety Training Center (Sheriff's Training Facility): The facility is expected to serve approximately 1,200 visitors (trainees) on a monthly basis, so each day the facility will generate approximately 322 people (including employees and visitors). ITE rates for other uses were reviewed to determine a potential range of trips generated per employee. They vary from 3.0 trips per person for light industry to 3.9 trips per person for general office to 5.8 trips per person for business park. A lower level of entering and exiting traffic during the day would be expected at this type of facility, so a rate of 3.9 trips per person was applied.
- Public Facility – Sewer Treatment Plant: The ITE utilities rate was applied to the area designated for a sewer treatment plant.
- Public Facility – March Air Museum: Existing trip volumes to/from the March Air Museum were applied to future scenarios.
- Stephens Kangaroo Rat (SKR): Areas designated as SKR habitat would not generate traffic.

The trip generation rates include commercial vehicles (trucks) as well as passenger vehicles. Truck volumes in most of the area are expected to be typical for these types of land uses. The exception is the air cargo facility – a significant percentage of the traffic it generates is expected to be commercial vehicles.

Estimates of afternoon peak hour trip generation were also developed for the purpose of estimating peak hour impacts at study intersections. For the peak hour estimates, the same sources were consulted, as well as the San Diego Traffic Generators and City of San Diego Trip Generation Rate Summary.

TRAFFIC FORECASTING

Traffic forecasts were developed to estimate future background traffic conditions (assuming no further development of the March JPA area) and future conditions with full development of the JPA land use plan.

The traffic forecasts were based on the RIVSAN CTP subregional travel demand forecasting model developed and maintained by the Southern California Association of Governments (SCAG). The CTP model is consistent with the SCAG regional model, with greater detail focused in Riverside and San Bernardino Counties.

For the March JPA forecasts, the CTP model network and trip tables were obtained from SCAG. The model was refined for the March JPA area by splitting the two traffic analysis zones into 25 TAZ, and incorporating additional collector roads into the roadway network.

The model was used in the preparation of background traffic forecasts. The model's base year (1990) traffic estimates were compared with its forecasts of Year 2015 traffic (which are based on SCAG's regional projections of population and employment growth). The model's estimated traffic growth factors were applied to the existing traffic volumes to obtain the estimates of future traffic volumes without the planned development in the March JPA. From these forecasts, background LOS were calculated for study intersections, assuming no physical improvements to the roadway system.

The model was also used to estimate the regional distribution of trips with development of planned uses in the March JPA area. The trip generation estimated for project land uses was input to the model to create a new regional distribution of trips including March JPA uses. The model's trip distribution output was used to estimate how the plan would affect commuting patterns, specifically the number of Riverside County residents who would be able to work in Riverside County rather than commute to Los Angeles or Orange Counties. The model's trip distribution was also used to estimate how the existence of a major employment center would affect peak hour background traffic volumes in the study area, specifically the change in trip volume between areas to the east (Moreno Valley, Hemet, and San Jacinto) and areas to the west of the March JPA (Los Angeles and Orange Counties, Corona, and Riverside). Finally, the model's trip distribution was used to determine the direction of travel for trips to and from

planned developments in the March JPA, and which roadways would be used by this traffic.

Using these data, the background traffic forecasts were adjusted to reflect the changes in through traffic volumes, then project trips were added to achieve the estimate of future traffic with March JPA development. From these forecasts, LOS were again calculated for study intersections, assuming no physical improvements to the roadway system.

The traffic forecasts and LOS calculations for background traffic were used to identify roadway improvements which would be needed whether or not the March JPA area is developed as planned. The traffic forecasts and LOS calculations including March JPA development were used to identify additional roadway improvements which would be needed because of planned development in the JPA area.

The JPA area is ideally situated to accommodate future travelers using a number of different travel modes. High-occupancy vehicle lanes are planned for the median of I-215. Commuter rail is planned on the San Jacinto Branch Line adjacent to I-215. The JPA plan includes a multi-modal transportation center at the interchange of Van Buren with I-215, and the Long Range Transit Plan for Western Riverside County envisions express buses linking this center with the other urbanized areas in the County. These planned facilities and services, combined with a proposed Transportation Demand Management Plan for the JPA area, will help to reduce the forecast travel demands. The identification of roadway improvement needs was based on the full estimate of JPA area trip generation, so the projected levels of service with recommended improvements represent a worst case scenario.

EXISTING TRANSPORTATION

ROADWAY SYSTEM

The existing regional and arterial roadways in the March JPA area are shown in Figure 1, and are described below.

I-215 is a six-lane north-south freeway which separates the eastern half of the JPA area (with the airfield and former Air Force base facilities) from the largely undeveloped western half. To the north, I-215 passes through the cities of Riverside and San Bernardino before merging into I-15. To the south, I-215 passes through Perris and Sun City before merging with I-15 in Murrieta. I-215 currently carries approximately 70,000 vehicles per day south of Van Buren Boulevard and 60,000 vehicles per day north of Van Buren. Full interchanges are provided at Alessandro Boulevard, Cactus Avenue, Van Buren Boulevard, and Oleander Avenue.

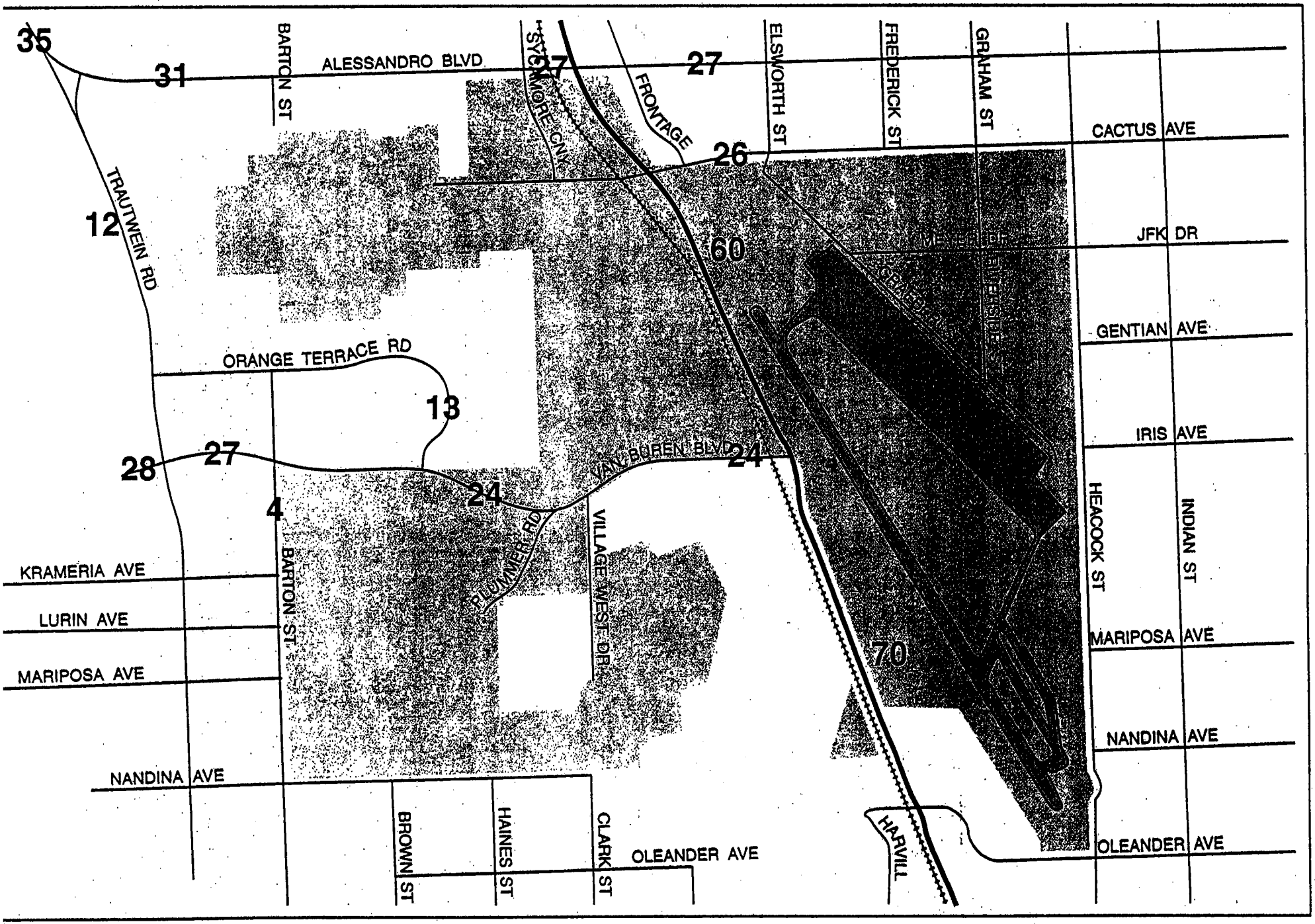
Alessandro Boulevard is a four-lane east-west arterial which serves as the northern JPA boundary west of I-215, and has an interchange with I-215. West of the JPA area it passes through the City of Riverside, splitting into Central Avenue and Arlington Avenue. East of I-215 it is a key arterial through the City of Moreno Valley. Alessandro Boulevard currently carries approximately 27,000 vehicles per day west of I-215 through the JPA area.

Barton Street is a two-lane north-south road which serves as the western JPA boundary south of Van Buren Boulevard. It terminates on the north at Orange Terrace Parkway, and extends past Nandina Avenue on the south. Barton Street currently carries approximately 4,000 vehicles per day south of Van Buren Boulevard.

Cactus Avenue is a four-lane east-west arterial which serves as the northern JPA boundary east of I-215. It has an interchange with I-215, and carries approximately 26,000 vehicles per day east of I-215. West of I-215 it carries 8,000 vehicles per day, and extends only a short distance before turning north to Alessandro Boulevard.

Heacock Street is a four-lane north-south arterial which serves as the eastern JPA boundary. Currently, Heacock Street is only improved as far south as Iris Street; from Oleander Avenue to Gentian Avenue it is a two-lane paved street, south of Oleander Avenue it is only developed as a dirt road. To the north of the JPA area, it has an interchange with SR-60.

Oleander Avenue is a four-lane east-west arterial through its interchange with I-215. Immediately west of the interchange, Oleander currently terminates at Harvill Street, though it is planned to be extended westerly to connect with Nandina Avenue. East of I-215, it continues for a short distance as a four-lane arterial, then continues as a two-lane road to its current terminus at the Heacock Street alignment. Oleander is planned as a six-lane arterial by the City of Moreno Valley, to be continued easterly from its current terminus.



MARCH JPA TRANSPORTATION STUDY

FIGURE

Van Buren Boulevard is a four-lane east-west arterial through the western half of the JPA area. Its eastern terminus is at its interchange with I-215. Westerly, it passes through the City of Riverside, turning north through the Arlington area to an interchange with SR-91. Through the JPA area it currently carries approximately 24,000 vehicles per day.

Other key regional facilities outside the JPA area are described below.

SR-91 is an east-west freeway located approximately five miles northwest of the JPA area, and connects the City of Riverside with areas to the west, and is the primary regional roadway connection from Riverside County to Orange County and southern Los Angeles County. From the March JPA area, access to SR-91is provided by Van-Buren Boulevard, Alessandro Boulevard/Arlington Avenue, and I-215.

SR-60 is an east-west freeway located approximately three miles north of the JPA area, and connects downtown Los Angeles and the southern San Gabriel Valley with Riverside, Moreno Valley, and Beaumont, where it connects with I-10. From the March JPA area, access to SR-60 is provided by I-215 and Heacock Street.

Cajalco Road is a two-lane road approximately two miles south of the JPA area, and connects I-215 with I-15 south of the City of Corona. Though Cajalco Road is a low-volume facility today, this corridor has been proposed for a future expressway, which would be a key regional facility for access to the JPA area from the west.

The Ramona Expressway is a two to four-lane road which is the extension of Cajalco Road east of I-215. It connects I-215 with SR-79 and the City of San Jacinto to the east. It has been proposed as a future expressway, which would be a key regional facility for access to the JPA area from the east.

EXISTING LEVELS OF SERVICE

Table 3 shows existing peak hour levels of service at the study intersections. These LOS are based on afternoon peak hour turning movement counts collected in 1997. Currently, one of the study intersections (Heacock Street at the SR-60 eastbound ramps) operates at LOS D. All others are LOS C or better.

TRANSIT SERVICES

The Riverside Transit Agency (RTA) is the operator of fixed bus routes and service for the majority of Western Riverside County. RTA currently operates fixed bus routes within the planning area as well as intercity service between the adjacent member jurisdictions. Service also feeds the commuter rail station in Riverside.

TABLE 3
EXISTING PM PEAK HOUR LOS

	V/C	DELAY	LOS
Heacock at SR-60 EB Ramps	0.565	26.1	D
Heacock at SR-60 WB Ramps	0.548	9.3	B
Alessandro at Trautwein	0.551	22.1	C
Alessandro at Barton		1.8	NA
Alessandro at W. Frontage Road	0.504	10.4	B
Alessandro at I-215 SB Ramps	0.365	5.9	B
Alessandro at I-215 NB Ramps	0.337	5.2	B
Cactus at Plummer			NA
Cactus at I-215 SB Ramps	0.228	12.7	B
Cactus at I-215 NB Ramps	0.552	7.6	B
Cactus at Frederick	0.412	6.8	B
Cactus at Heacock	0.229	10.3	B
Van Buren at Washington	0.748	16.8	C
Van Buren at Trautwein	0.486	22.7	C
Van Buren at Barton	0.521	14.5	B
Van Buren at Orange Terrace Parkway	0.325	2.3	A
Van Buren at Plummer		1.4	A
Van Buren at Clark (Village West)	0.688	19.2	C
Van Buren at Harmon	0.372	2.6	A
Van Buren at I-215 SB Ramps		1.7	A
Van Buren at I-215 NB Ramps	0.425	8.6	B
Nandina at Barton (4-way stop)	0.951	13.7	C
Oleander at I-215 SB Ramps	0.094	8.7	B
Oleander at I-215 NB Ramps	0.106	4	A
Oleander at Indian			NA
Plummer at Alessandro			NA

TRUCK ROUTES

Currently, there are no designated truck routes within the JPA area, though existing arterials such as Van Buren Boulevard function as a truck route. Cactus Avenue (on the north JPA boundary) is designated as a truck route by the City of Moreno Valley from I-215 to Perris Boulevard. Heacock Street (on the east JPA boundary) is designated as a truck route by the City of Moreno Valley from Oleander Avenue to Nandina Avenue. It is a goal of the General Plan to connect the existing and planned truck route system of the adjacent jurisdictions, and complete the transportation network for truck routes. Additionally, with the establishment of new land uses, the plan will create a truck route system within the planning area to serve the needs of the land use pattern.

BIKE LANES

Within the JPA area, the are no existing or formally designated bike lane facilities. The general plans of the adjacent member jurisdictions have both planned and existing bike routes and facilities in proximity or adjacent to the March JPA Planning Area, including a planned Class I trail along Cactus Avenue from I-215 to Perris Boulevard. It is a goal of the General Plan to link the adjacent bike facilities into a network, and to accommodate this mode of alternative transportation within the planning area.

RAILWAY

Rail service within the planning area is limited to the San Jacinto Rail Branch Line located on the west side of Interstate 215. There is also an existing spur located between Van Buren Boulevard and Cactus Avenue. The line is primarily used for limited freight service. Operations primarily include delivery of bulk goods to the industrial areas south of the planning area, and transporting potatoes and other limited agricultural products from the San Jacinto Valley.

Existing service on the line is limited to low cost, bulk freight due to the condition of the rail line, and limit of speed to approximately 10 miles per hour. This AT & SF rail line is owned by Riverside County Transportation Commission (RCTC). RCTC has prepared a study of potential commuter rail service in this corridor (the San Jacinto Branch Line Commuter Rail Corridor Study), and plans to upgrade the rail line in order to operate commuter rail service connecting the San Jacinto and Perris Valleys with the Metrolink Station in Riverside. One of the potential stations identified in this study is Van Buren/I-215, which was identified as a destination station which would have limited parking. A source of funding has not yet been secured for upgrading the line and implementing commuter rail service. With upgrading of the rail line, and the existing spur south of Cactus Avenue, future opportunities for goods movement and multi-modal transportation are available.

FUTURE BACKGROUND CONDITIONS

Forecasts of future background conditions were prepared to help determine the roadway improvements which would be needed to serve future regional growth, regardless of planned development in the March JPA area. As noted in the Methodology section, this study's background traffic growth forecasts are based on SCAG regional growth projections and the resulting traffic projections from the RIVSAN CTP model. The forecasts assume development of funded roadway improvements, such as the addition of HOV lanes to the 60/215 Freeway between Riverside and Moreno Valley and Riverside, but do not assume completion of unfunded improvements such as the Cajalco Corridor.

FUTURE TRAFFIC VOLUMES

Figure 2 shows the forecast of total daily traffic volumes for the future background condition. Volumes on through routes such as Alessandro Boulevard and Van Buren Boulevard are projected to be at least double existing volumes. This is attributable to the projections of continued growth, particularly in residential development, in the surrounding area as well as the rest of Western Riverside County. Projected congestion on the combined 60/215 Freeway segment through Riverside diverts a significant volume of traffic to Alessandro and Van Buren (10 -20% of their volumes) to avoid the freeway congestion.

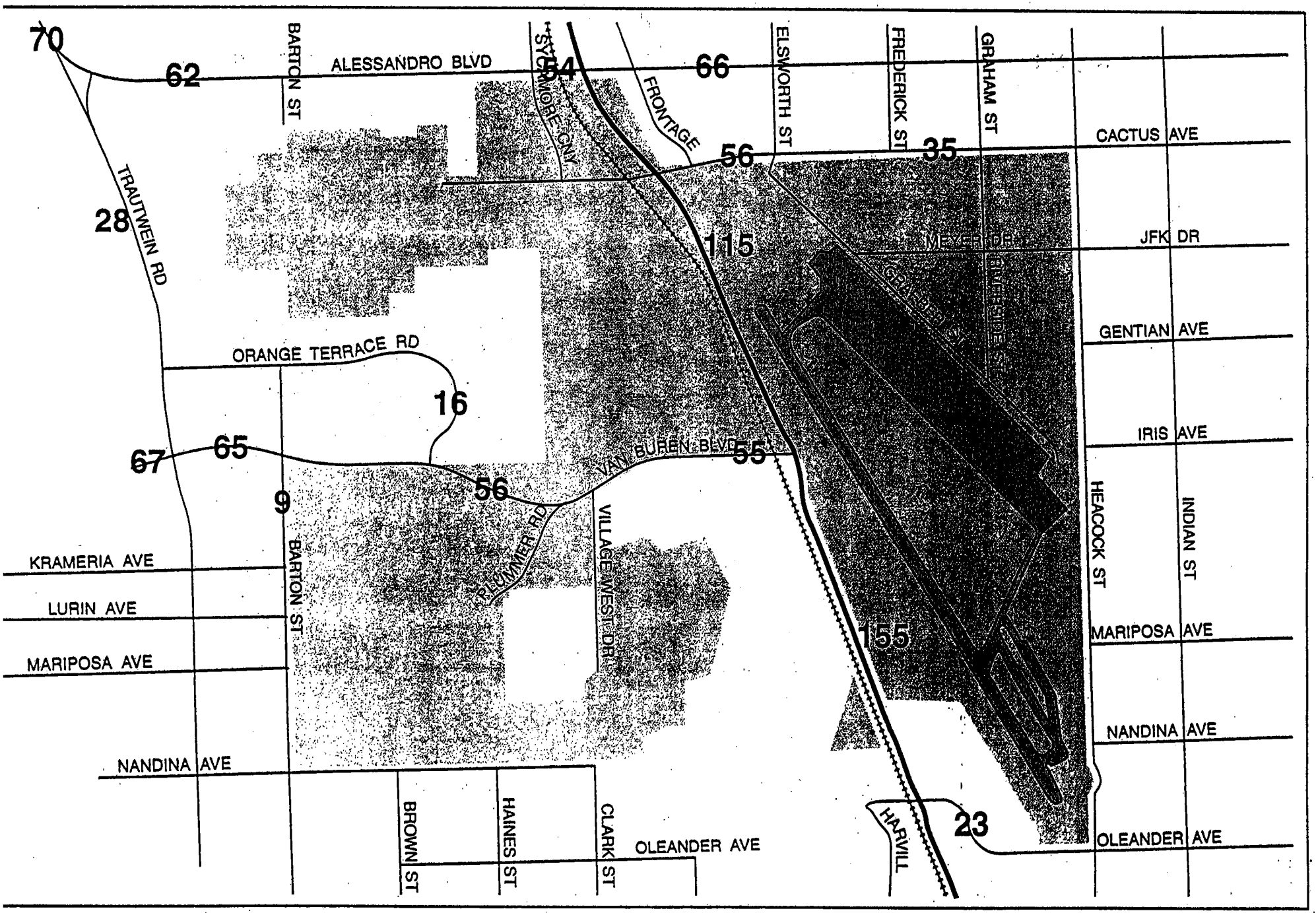
LEVELS OF SERVICE

The future background levels of service at study intersections are presented in Table 4 together with the existing LOS. The projected regional growth causes unacceptable (LOS F) conditions on Alessandro Boulevard west of I-215, on Van Buren Boulevard from Barton Road westerly, and through the interchanges of I-215 with Cactus Avenue and Van Buren.

NEEDED ROADWAY IMPROVEMENTS

For future background traffic to be accommodated at acceptable levels of service, a number of roadway capacity improvements will be required. These improvements therefore represent the needed capacity enhancements if no additional development occurs in the JPA area. The improvements needed to serve regional growth are shown in Figure 3 and include:

- widening Alessandro Boulevard to six lanes west of I-215.
- widening Van Buren Bouelvard to six lanes from Barton Street westerly.
- reconstructing the Van Buren Boulevard interchange with I-215.
- widening Barton Street south of Van Buren Boulevard.
- widening the intersection of Barton Street with Van Buren Boulevard.



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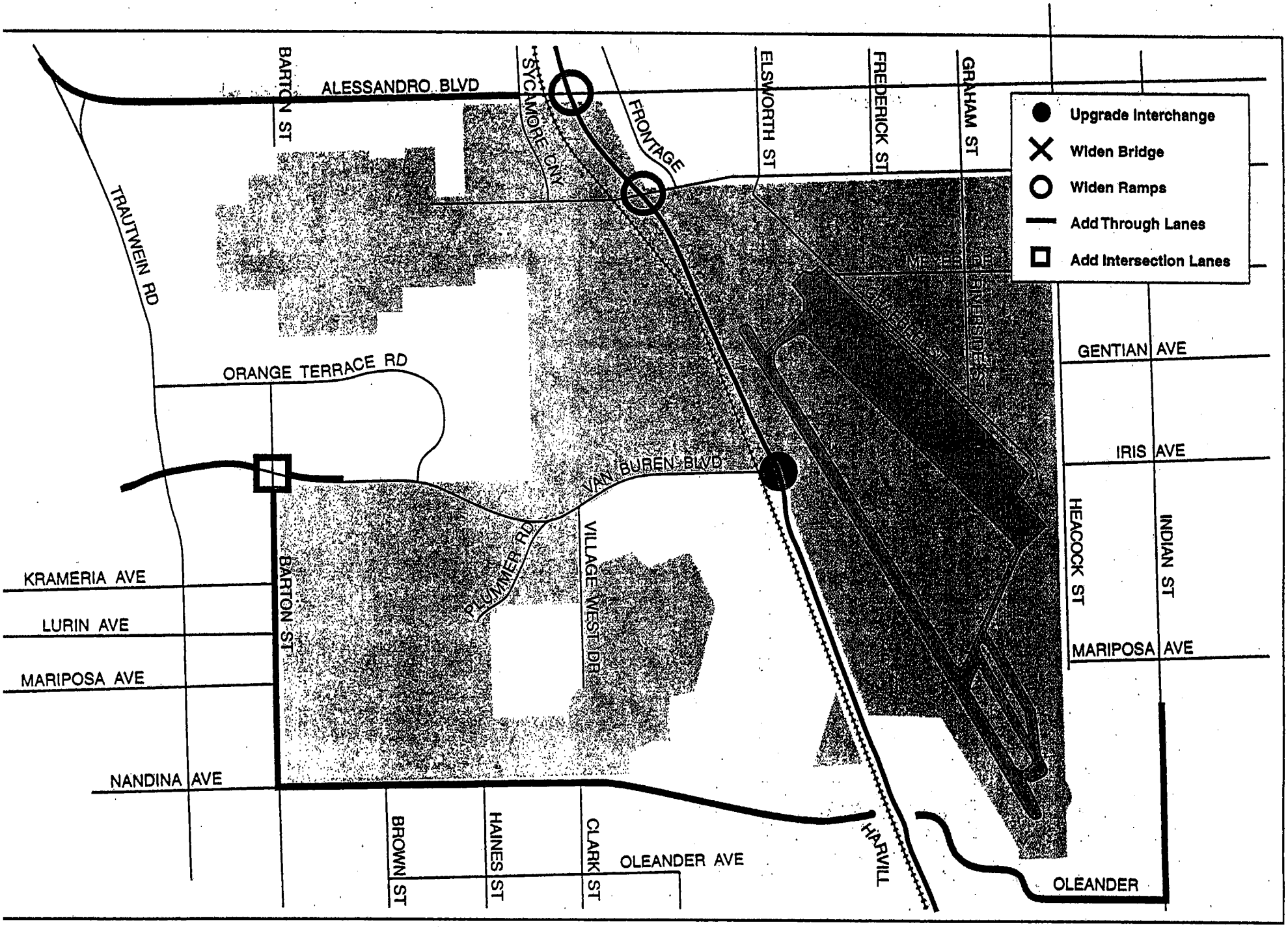
MARCH JPA TRANSPORTATION STUDY

Average Daily Traffic Volumes (in thousands) Future without Project (2015)

FIGURE 2

TABLE 4
FUTURE BACKGROUND PM PEAK HOUR LOS

	Existing			Future Background		
	V/C	DELAY	LOS	V/C	DELAY	LOS
Heacock at SR-60 EB Ramps	0.565	26.1	D	0.788	13.6	B
Heacock at SR-60 WB Ramps	0.548	9.3	B	0.582	13.5	B
Alessandro at Trautwein	0.551	22.1	C	1.362	235.9	F
Alessandro at I-215 SB Ramps	0.365	5.9	B	1.502	168.1	F
Alessandro at I-215 NB Ramps	0.337	5.2	B	0.864	16.8	C
Cactus at I-215 SB Ramps	0.228	12.7	B	0.612	17.9	C
Cactus at I-215 NB Ramps	0.552	7.6	B	1.278	139.9	F
Cactus at Frederick	0.412	6.8	B	0.981	23.7	C
Cactus at Heacock	0.229	10.3	B	0.497	17.6	C
Van Buren at Washington	0.748	16.8	C	1.481	356	F
Van Buren at Trautwein	0.486	22.7	C	1.116	133.2	F
Van Buren at Barton	0.521	14.5	B	1.329	245.2	F
Van Buren at Orange Terrace Parkway	0.325	2.3	A	0.799	10.4	B
Van Buren at Clark (Village West)	0.688	19.2	C	0.698	3.3	A
Van Buren at Harmon	0.372	2.6	A	0.716	4.3	A
Van Buren at I-215 SB Ramps		1.7	A	1.651	736.8	F
Van Buren at I-215 NB Ramps	0.425	8.6	B	0.729	15.3	C
Nandina at Barton (4-way stop)	0.951	13.7	C	0.441	19	C
Oleander at I-215 SB Ramps	0.094	8.7	B	0.667	11.5	B
Oleander at I-215 NB Ramps	0.106	4	A	0.444	3.4	A



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MARCH JPA TRANSPORTATION STUDY

Improvements Needed Without Project

FIGURE 3

- widening Nandina Avenue and extending it easterly to connect with the Oleander interchange of I-215.
- widening Oleander Avenue to four lanes east of I-215 and extending it easterly.
- constructing Indian Street north of Oleander Avenue.
- widening existing ramps in the I-215 interchanges with Alessandro Boulevard and Cactus Avenue.

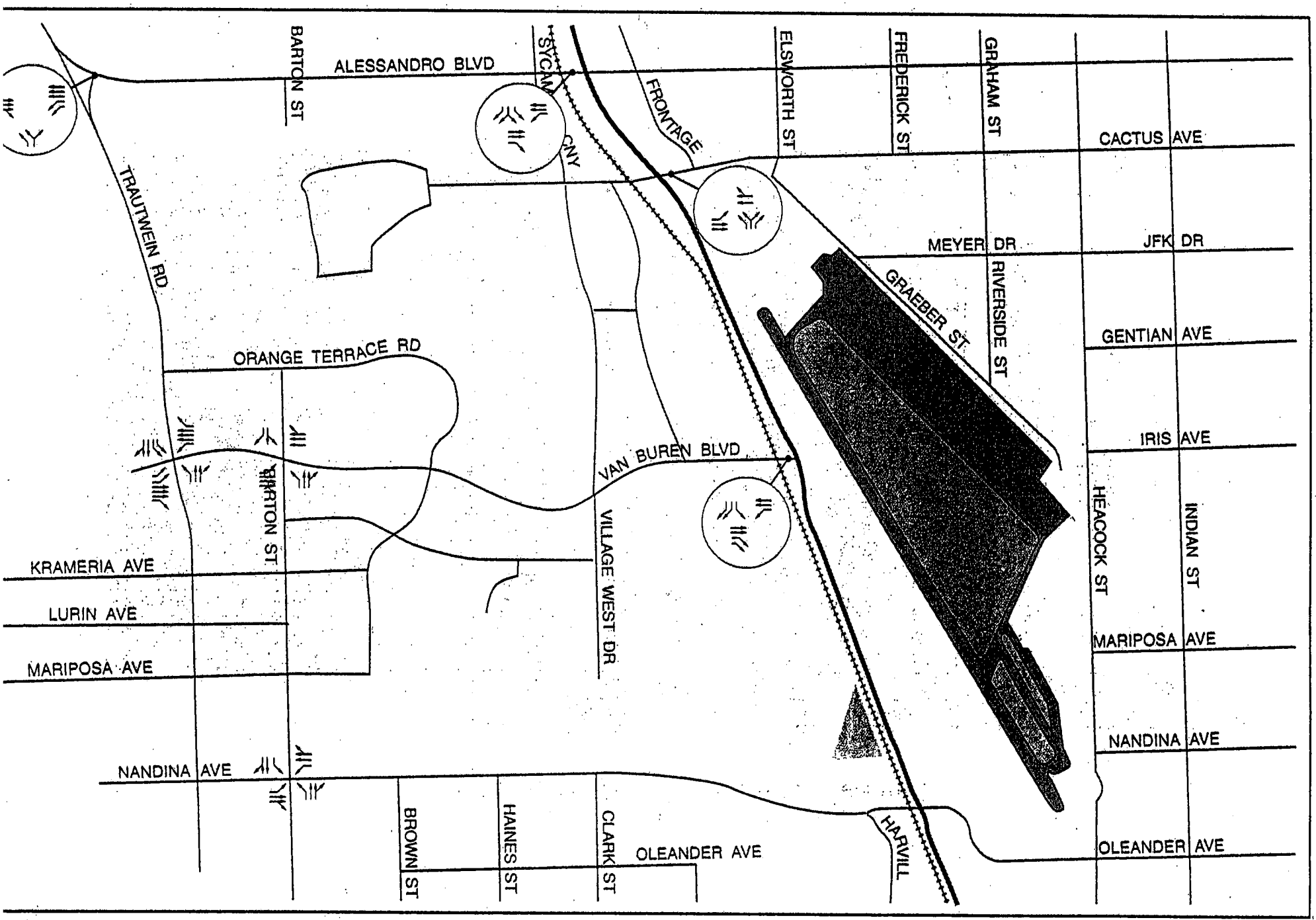
These improvements are consistent with the adjacent jurisdictions' General Plans and the draft CTP, but are not currently programmed.

The estimated cost of constructing these improvements is $36 million; acquisition of right-of-way for these improvements could cost up to $53 million more. (The unit costs and cost estimate calculations for individual projects are included in Appendix A.)

Figure 4 shows the assumed turn lane geometry at intersections identified for improvement in this scenario. The number of intersection lanes assumed in this analysis can be used as an indication of the future right-of-way requirements.

FUTURE LEVELS OF SERVICE WITH IMPROVEMENTS

Table 5 shows the future background LOS with the identified improvements. The LOS improve to LOS D or better at all study intersections with the identified improvements.



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MARCH JPA TRANSPORTATION STUDY

Intersection Lane Geometry - No Project

FIGURE

4

TABLE 5
FUTURE BACKGROUND LOS WITH IMPROVEMENTS

	Existing			Future Background			Future with Improv.		
	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS
Heacock at SR-60 EB Ramps	0.565	26.1	D	0.788	13.6	B	0.788	13.6	B
Heacock at SR-60 WB Ramps	0.548	9.3	B	0.582	13.5	B	0.582	13.5	B
Alessandro at Trautwein	0.551	22.1	C	1.362	235.9	F	1.036	32.4	D
Alessandro at I-215 SB Ramps	0.365	5.9	B	1.502	168.1	F	1.227	52.5	E
Alessandro at I-215 NB Ramps	0.337	5.2	B	0.864	16.8	C	0.864	16.8	C
Cactus at I-215 SB Ramps	0.228	12.7	B	0.612	17.9	C	0.612	17.9	C
Cactus at I-215 NB Ramps	0.552	7.6	B	1.278	139.9	F	0.995	25.7	D
Cactus at Frederick	0.412	6.8	B	0.981	23.7	C	0.981	23.7	C
Cactus at Heacock	0.229	10.3	B	0.497	17.6	C	0.497	17.6	C
Van Buren at Washington	0.748	16.8	C	1.481	356	F	0.978	39.6	D
Van Buren at Trautwein	0.486	22.7	C	1.116	133.2	F	0.819	39	D
Van Buren at Barton	0.521	14.5	B	1.329	245.2	F	0.843	12	B
Van Buren at Orange Terrace Parkway	0.325	2.3	A	0.799	10.4	B	0.799	10.4	B
Van Buren at Clark (Village West)	0.688	19.2	C	0.698	3.3	A	0.698	3.3	A
Van Buren at Harmon	0.372	2.6	A	0.716	4.3	A	0.716	4.3	A
Van Buren at I-215 SB Ramps		1.7	A	1.651	736.8	F	0.762	14.2	B
Van Buren at I-215 NB Ramps	0.425	8.6	B	0.729	15.3	C	0.729	15.3	C
Nandina at Barton (4-way stop)	0.951	13.7	C	0.441	19	C	0.441	11.8	B
Oleander at I-215 SB Ramps	0.094	8.7	B	0.667	11.5	B	0.667	11.5	B
Oleander at I-215 NB Ramps	0.106	4	A	0.444	3.4	A	0.444	3.4	A

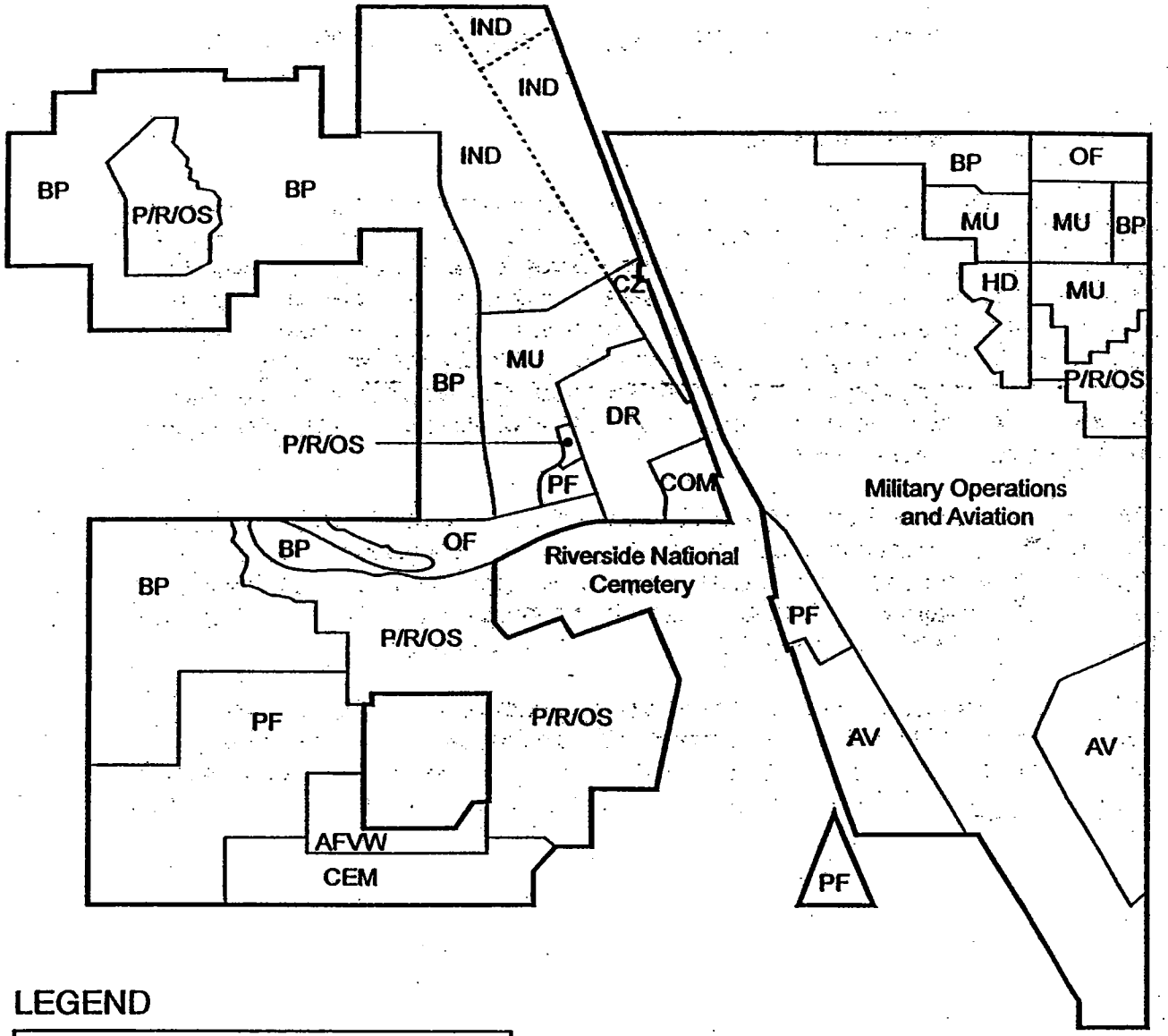
JPA AREA LAND USE AND TRIP GENERATION

PROPOSED LAND USE PLAN

Locations of planned land uses for the JPA area are illustrated in Figure 5. The area west of I-215 and north of Van Buren is largely planned to be business park, industrial, and mixed use, and also includes Destination Recreation and Commercial near the interchange of Van Buren and I-215. The area west of I-215 and south of Van Buren is planned to include a significant amount of open space, plus business park, public facility (the Sheriff's training facility), Air Force Village West expansion, and Riverside National Cemetery expansion. East of I-215 the plan includes proposed cargo aviation facilities in the southern portion, and the historic district and low-intensity mixed use developments in the northeast.

The proposed General Plan Land Use Element is referred to as Alternative 1 in this analysis. Trip generation for the planned land uses is documented in Table 6. At buildout, the proposed plan is expected to generate approximately 220,000 vehicle trips per day and almost 22,000 trips in the afternoon peak hour. The large majority of these trips (over 80%) will be generated on the west side of I-215.

This analysis also considers a second land use alternative, which would reserve approximately 1,000 acres of the northwest JPA area for Stephens Kangaroo Rat habitat. This land use plan, referred to as Alternative 2 in this analysis, would generate approximately 166,000 daily trips, or 25% fewer trips than the preferred land use plan (see Table 7).



LEGEND

AFVW - Air Force Village West Expansion
AV - Aviation
BP - Business Park
CEM - Cemetary Expansion
COM - Commercial
CZ - Clear Zone
DR - Destination Recreation
HD - Historic District
IND - Industrial
MU - Mixed Use
OF - Office
OS - Open Space
P - Park
PF - Public Facility
R - Recreation

	MARCH JPA TRANSPORTATION STUDY	FIGURE
PB	Land Use Plan	5

TABLE 6
DRAFT GENERAL PLAN ALTERNATIVE
LAND USE & TRIP GENERATION ESTIMATES (based on land use estimates)

					Daily			PM Peak Hour			
Area	TAZ	Land Use Type	Size	Units	Trip Generation Equation/Rate	Total	Rate/ unit	Trip Generation Equation/Rate	Ins	Outs	Total
West	1	Business Park	2,258	tsf	Ln(T)=.964Ln(x)+2.839	29,237	12.9	Ln(T)=.859Ln(x)+1.187	548	1943	2,491
		Park\Recreation\Open Space	150	ac	2.23 trips/ac	335	2.2	.22 trips/ac	13	20	33
	2	Business Park	1,411	tsf	Ln(T)=.964Ln(x)+2.839	18,585	13.2	Ln(T)=.859Ln(x)+1.187	366	1297	1,663
	3	Industrial	891	tsf	7.468(x)-101.921	6,554	7.4	1.433(x)-163.421	134	980	1,114
	4	Business Park	1,129	tsf	Ln(T)=.964Ln(x)+2.839	14,988	13.3	Ln(T)=.859Ln(x)+1.187	302	1071	1,373
	5	Industrial	545	tsf	7.468(x)-101.921	3,965	7.3	1.433(x)-163.421	74	543	617
		Mixed Use-Commercial	27	tsf	150.50 trips/tsf	3,993	150.5	12.37 trips/tsf	164	164	328
		Mixed Use-Business Park	27	tsf	Ln(T)=.964Ln(x)+2.839	403	15.2	Ln(T)=.859Ln(x)+1.187	12	43	55
		Mixed Use-Office	40	tsf	Ln(T)=.756Ln(x)+3.765	699	17.6	Ln(T)=.737Ln(x)+1.831	16	78	94
		Mixed Use-Medical	13	tsf	Ln(T)=1.178Ln(x)+2.777	338	25.5	Ln(T)=1.015Ln(x)+1.302	15	35	51
		Mixed Use-Educ. & Vocat.	13	tsf	12.87 trips/tsf	171	12.9	1.06 trips/tsf	11	4	14
		Mixed Use-R&D	13	tsf	7.7 trips/tsf	102	7.7	Ln(T)=0.821Ln(x)+1.118	4	22	26
	6	Industrial	545	tsf	7.468(x)-101.921	3,965	7.3	1.433(x)-163.421	74	543	617
		Mixed Use-Commercial	53	tsf	114.43 trips/tsf	6,071	114.4	8.33 trips/tsf	221	221	442
		Mixed Use-Business Park	53	tsf	Ln(T)=.964Ln(x)+2.839	786	14.8	Ln(T)=.859Ln(x)+1.187	22	77	99
		Mixed Use-Office	80	tsf	Ln(T)=.756Ln(x)+3.765	1,181	14.8	Ln(T)=.737Ln(x)+1.831	27	130	157
		Mixed Use-Medical	27	tsf	Ln(T)=1.178Ln(x)+2.777	764	28.8	Ln(T)=1.015Ln(x)+1.302	31	72	102
		Mixed Use-Educ. & Vocat.	27	tsf	12.87 trips/tsf	341	12.9	1.06 trips/tsf	21	7	28
		Mixed Use-R&D	27	tsf	7.7 trips/tsf	204	7.7	Ln(T)=0.821Ln(x)+1.118	7	38	45
		Clear Zone	20	ac	Negligible			Negligible			
	7	Mixed Use-Commercial	186	tsf	65.3339 trips/tsf	12,132	65.3	5.31 trips/tsf	493	493	986
		Mixed Use-Business Park	186	tsf	Ln(T)=.964Ln(x)+2.839	2,631	14.2	Ln(T)=.859Ln(x)+1.187	64	227	291
		Mixed Use-Office	279	tsf	Ln(T)=.756Ln(x)+3.765	3,044	10.9	Ln(T)=.737Ln(x)+1.831	67	328	395
		Mixed Use-Medical	93	tsf	Ln(T)=1.178Ln(x)+2.777	3,343	36.0	Ln(T)=1.015Ln(x)+1.302	110	256	365
		Mixed Use-Educ. & Vocat.	93	tsf	12.87 trips/tsf	1,195	12.9	1.06 trips/tsf	74	25	98
		Mixed Use-R&D	93	tsf	7.7 trips/tsf	715	7.7	Ln(T)=0.821Ln(x)+1.118	19	107	126
		Park\Recreation\Open Space	14	ac	2.23 trips/ac	30	2.2	.22 trips/ac	1	2	3
		Public Facility	62	tsf	10.72 trips/tsf	668	10.7	1.07 trips/tsf	33	33	67
	8	Destination Recreation	135	ac	75.76 trips/acre	10,228	75.8	3.95 trips/acre	325	208	533
		Commercial	412	tsf	42 trips/tsf	17,131	41.6	3.93 trips/tsf	129	146	1,618
		Clear Zone	14	ac	Negligible			Negligible			
	9	Business Park	141	tsf	Ln(T)=.964Ln(x)+2.839	2,019	14.3	Ln(T)=.859Ln(x)+1.187	51	180	230
		Office	521	tsf	Ln(T)=.756Ln(x)+3.765	4,890	9.4	Ln(T)=.737Ln(x)+1.831	107	521	628
	10	Business Park	988	tsf	Ln(T)=.964Ln(x)+2.839	13,177	13.3	Ln(T)=.859Ln(x)+1.187	269	955	1,224
	11	Business Park	282	tsf	Ln(T)=.964Ln(x)+2.839	3,939	14.0	Ln(T)=.859Ln(x)+1.187	92	326	417
		Park\Recreation\Open Space	150	ac	2.23 trips/ac	335	2.2	.22 trips/ac	13	20	33
	12	Business Park	847	tsf	Ln(T)=.964Ln(x)+2.839	11,358	13.4	Ln(T)=.859Ln(x)+1.187	236	837	1,073
	13	Public Facility	322	emp	Ln(T)=.832Ln(x)+2.330	1,254	3.9	.59 trips/emp	38	151	188
	14	Park\Recreation\Open Space	368	ac	2.23 trips/ac	821	2.2	.22 trips/ac	33	49	82
	15	AFVW Expansion	150	emp	4.03 trips/employee	605	4.0	.35 trips/tsf	22	30	53
	16	Cemetery Expansion	160	ac	4.16 trips/acre	666	4.2	.33 trips/ac	11	43	53
	17	Public Facility	125	tsf	.79 trips/tsf	99	0.8	.08 trips/tsf	5	5	10
		Total				162,960			4,253	12,230	17,625
Southeast	18	Aviation	723	tsf	9.85 trip/tsf	7,118	9.9	.9 trips/acre	325	325	650
		Public Facility	122	tsf	Negligible			Negligible			
	19	Aviation	723	tsf	9.85 trip/tsf	7,118	9.9	.9 trips/acre	325	325	650
		Total				14,236			650	650	1,301
Northeast	20	Military Operations & Aviation (on-site)	83	emp	1.78 trips/emp	148	1.8	.23 trips/emp	4	15	19
		Military Operations & Aviation (off-site)	917	emp	Ln(T)=.832Ln(x)+2.330	2,996	3.3	.5 trips/emp	90	359	449
	21	Business Park	332	tsf	Ln(T)=.964Ln(x)+2.839	4,607	13.9	Ln(T)=.859Ln(x)+1.187	106	374	480
		Mixed Use	85	tsf	Ln(T)=.964Ln(x)+2.839	1,240	14.6	Ln(T)=.859Ln(x)+1.187	33	116	149
	22	Office	430	tsf	Ln(T)=.756Ln(x)+3.765	4,226	9.8	Ln(T)=.737Ln(x)+1.831	93	452	545
		Mixed Use	85	tsf	Ln(T)=.964Ln(x)+2.839	1,240	14.6	Ln(T)=.859Ln(x)+1.187	33	116	149
		Business Park	221	tsf	Ln(T)=.964Ln(x)+2.839	3,116	14.1	Ln(T)=.859Ln(x)+1.187	75	264	339
	23	Historic District	111	du	Ln(T)=1.024Ln(x)+1.710	687	6.2	Ln(T)=.902Ln(x)+.528	77	42	119
	24	Mixed Use	113	tsf	Ln(T)=.964Ln(x)+2.839	1,636	14.4	Ln(T)=.859Ln(x)+1.187	42	149	191
		Park\Recreation\Open Space	95	ac	2.23 trips/ac	212	2.2	.22 trips/ac	8	13	21
	25	Business Park	184	tsf	Ln(T)=.964Ln(x)+2.839	2,614	14.2	Ln(T)=.859Ln(x)+1.187	64	226	290
		Total				22,722			623	2,127	2,750
		Grand Total				219,918			5,527	15,007	21,877

Notes:

tsf - Thousands of square feet
ac - Acre
du - Dwelling Unit
T - trips
x - Thousands of square feet

Sources:

1 - ITE Trip Generation Manual, 5th edition
2 - SANDAG, San Diego Traffic Generators (December 1996)
3 - City of San Diego, Trip Generation Rate Summary (Sept. 1994)

TABLE 7
ALTERNATIVE SKR LAND USE PLAN
LAND USE & TRIP GENERATION ESTIMATES (based on land use estimates)

					Daily			PM Peak Hour			
Area	TAZ	Land Use Type	Size	Units	Trip Generation Equation/Rate	Total	Rate/ unit	Trip Generation Equation/Rate	Ins	Outs	Total
West	1	Stephens Kangaroo Rat	400	ac	Negligible			Negligible			
	2	Stephens Kangaroo Rat	320	ac	Negligible			Negligible			
	3	Industrial	542	tsf	7.468(x)-101.921	3,946	7.3	1.433(x)-163.421	74	540	613
		Business Park	538	tsf	Ln(T)=.964Ln(x)+2.839	7,334	13.6	Ln(T)=.859Ln(x)+1.187	160	567	726
	4	Stephens Kangaroo Rat	180	ac	Negligible			Negligible			
	5	Industrial	632	tsf	7.468(x)-101.921	4,620	7.3	1.433(x)-163.421	89	654	743
	6	Industrial	632	tsf	7.468(x)-101.921	4,620	7.3	1.433(x)-163.421	89	654	743
		Clear Zone	20	ac	Negligible			Negligible			
	7	Mixed Use-Commercial	142	tsf	70.51 trips/tsf	10,019	70.5	5.95 trips/tsf	423	423	845
		Mixed Use-Business Park	142	tsf	Ln(T)=.964Ln(x)+2.839	2,033	14.3	Ln(T)=.859Ln(x)+1.187	51	181	232
		Mixed Use-Office	213	tsf	Ln(T)=.756Ln(x)+3.765	2,486	11.7	Ln(T)=.737Ln(x)+1.831	55	269	325
		Mixed Use-Medical	71	tsf	Ln(T)=1.178Ln(x)+2.777	2,439	34.3	Ln(T)=1.015Ln(x)+1.302	84	195	278
		Mixed Use-Educ. & Vocat.	71	tsf	12.87 trips/tsf	914	12.9	1.06 trips/tsf	56	19	75
		Mixed Use-R&D	71	tsf	7.7 trips/tsf	547	7.7	Ln(T)=0.821Ln(x)+1.118	15	86	101
		Public Facility	62	tsf	10.72 trips/tsf	668	10.7	1.07 trips/tsf	33	33	67
	8	Destination Recreation	135	ac	75.76 trips/acre	10,228	75.8	3.95 trips/acre	325	208	533
		Commercial	412	tsf	42 trips/tsf	17,131	41.6	3.93 trips/tsf	129	146	1,618
		Clear Zone	14	ac	Negligible			Negligible			
	9	Stephens Kangaroo Rat	100	ac	Negligible			Negligible			
	10	Business Park	986	tsf	Ln(T)=.964Ln(x)+2.839	13,155	13.3	Ln(T)=.859Ln(x)+1.187	269	954	1,223
	11	Business Park	628	tsf	Ln(T)=.964Ln(x)+2.839	8,509	13.6	Ln(T)=.859Ln(x)+1.187	182	647	829
		Mixed Use-Commercial	213	tsf	62.26 trips/tsf	13,270	62.3	5.01 trips/tsf	534	534	1,068
		Mixed Use-Business Park	213	tsf	Ln(T)=.964Ln(x)+2.839	3,005	14.1	Ln(T)=.859Ln(x)+1.187	72	256	328
		Mixed Use-Office	320	tsf	Ln(T)=.756Ln(x)+3.765	3,378	10.6	Ln(T)=.737Ln(x)+1.831	74	363	438
		Mixed Use-Medical	107	tsf	Ln(T)=1.178Ln(x)+2.777	3,932	36.9	Ln(T)=1.015Ln(x)+1.302	126	294	420
		Mixed Use-Educ. & Vocat.	107	tsf	12.87 trips/tsf	1,372	12.9	1.06 trips/tsf	85	28	113
		Mixed Use-R&D	107	tsf	7.7 trips/tsf	821	7.7	Ln(T)=0.821Ln(x)+1.118	21	120	141
	12	Business Park	837	tsf	Ln(T)=.964Ln(x)+2.839	11,228	13.4	Ln(T)=.859Ln(x)+1.187	234	828	1,062
	13	Public Facility	322	emp	Ln(T)=.832Ln(x)+2.330	1,254	3.9	.59 trips/emp	38	151	188
	14	Park\Recreation\Open Space	385	ac	2.23 trips/ac	859	2.2	.22 trips/ac	34	52	86
	15	AFVW Expansion	150	emp	4.03 trips/employee	605	4.0	.35 trips/tsf	22	30	53
	16	Cemetery Expansion	160	ac	4.16 trips/acre	666	4.2	.33 trips/ac	11	43	53
	17	Public Facility	125	tsf	.79 trips/tsf	99	0.8	.08 trips/tsf	5	5	10
		Total				129,137			3,291	8,277	12,911
Southeast	18	Aviation	723	tsf	9.85 trip/tsf	7,118	9.9	.9 trips/acre	325	325	650
		Public Facility	122	tsf	Negligible			Negligible			
	19	Aviation	723	tsf	9.85 trip/tsf	7,118	9.9	.9 trips/acre	325	325	650
		Total				14,236			650	650	1,301
Northeast	20	Military Operations & Aviation (on-site)	44	emp	1.78 trips/emp	77	1.8	.23 trips/emp	2	8	10
		Military Operations & Aviation (off-site)	957	emp	Ln(T)=.832Ln(x)+2.330	3,103	3.2	.5 trips/emp	93	372	466
	21	Business Park	332	tsf	Ln(T)=.964Ln(x)+2.839	4,607	13.9	Ln(T)=.859Ln(x)+1.187	106	374	480
		Mixed Use	85	tsf	Ln(T)=.964Ln(x)+2.839	1,240	14.6	Ln(T)=.859Ln(x)+1.187	33	116	149
	22	Office	430	tsf	Ln(T)=.756Ln(x)+3.765	4,226	9.8	Ln(T)=.737Ln(x)+1.831	93	452	545
		Mixed Use	85	tsf	Ln(T)=.964Ln(x)+2.839	1,240	14.6	Ln(T)=.859Ln(x)+1.187	33	116	149
		Business Park	221	tsf	Ln(T)=.964Ln(x)+2.839	3,116	14.1	Ln(T)=.859Ln(x)+1.187	75	264	339
	23	Historic District	58	du	Ln(T)=1.024Ln(x)+1.710	354	6.1	Ln(T)=.902Ln(x)+.528	43	23	66
	24	Mixed Use	113	tsf	Ln(T)=.964Ln(x)+2.839	1,636	14.4	Ln(T)=.859Ln(x)+1.187	42	149	191
		Park\Recreation\Open Space	95	ac	2.23 trips/ac	212	2.2	.22 trips/ac	8	13	21
	25	Business Park	184	tsf	Ln(T)=.964Ln(x)+2.839	2,614	14.2	Ln(T)=.859Ln(x)+1.187	64	226	290
		Total				22,425			590	2,114	2,705
		Grand Total				165,798			4,532	11,042	16,916

Notes:

tsf - Thousands of square feet
ac - Acre
du - Dwelling Unit
T - trips
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Sources:

1 - ITE Trip Generation Manual, 5th edition
2 - SANDAG, San Diego Traffic Generators (December 1996)
3 - City of San Diego, Trip Generation Rate Summary (Sept. 1994)

FUTURE CONDITIONS WITH JPA DEVELOPMENT

As documented in the Methodology section, the March JPA traffic model was used to distribute regional trips, assuming full development as envisioned in the land use plan. The resulting trip distribution data were used to assign future trips generated in the JPA area to the roadway system, and to determine the impact of JPA development on regional travel patterns. This information was then used to create forecasts of future daily and peak hour traffic including development of the JPA area land use plan.

EFFECTS ON REGIONAL TRAVEL PATTERNS

The location of a major employment center in the March area will make it possible for more residents of Western Riverside County to commute to jobs here rather than in Orange or Los Angeles Counties. This would be expected to reduce the peak hour traffic in the peak direction, thereby reducing peak congestion on these roadways and balancing peak traffic flows to better utilize the roadway system's capacity.

The traffic model was used to estimate the regional trip distribution including the JPA land use plan. The following table summarizes the changes in regional travel demand through this area because of developing the employment center at March.

Change in total daily vehicle trips:	
Hemet/San Jacinto to Riverside/Corona/LA Co./Orange Co.	- 2,764
Moreno Valley/Perris to Riverside/Corona/LA Co./Orange Co.	-29,532
Total	-32,296
Change in eastbound PM peak hour vehicle trips (peak direction):	
Riverside/Corona/LA Co./Orange Co. to Hemet/San Jacinto	- 77
Riverside/Corona/LA Co./Orange Co. to Moreno Valley/Perris	- 1,313
Total	- 1,390
Change in westbound PM peak hour vehicle trips (off-peak direction):	
Hemet/San Jacinto to Riverside/Corona/LA Co./Orange Co.	+ 86
Moreno Valley/Perris to Riverside/Corona/LA Co./Orange Co.	+ 497
Total	+ 583

Development of the JPA area plan could therefore reduce the daily traffic volume in and out of the County by 32,000 vehicles. During the afternoon peak it would increase the volume of trips in the off-peak direction (from east to west) by almost 600 trips, but would decrease the peak direction (from west to east) volume by almost 1,400 in the peak hour.

The availability of more employment opportunities in Western Riverside County would also help to reduce regional travel and vehicular emissions. The travel forecasting model estimates that the planned development at March JPA would replace 5,000 peak period trips which would otherwise travel to and from Los Angeles or Orange

Counties. If these trips decreased from an average of 50 miles to an average of 15 miles, this would reduce regional vehicles miles of travel by 350,000 miles per day.

ASSIGNMENT OF JPA TRAFFIC

Figure 6 shows the assignment of daily traffic volumes generated in the JPA area with the preferred land use plan.

FUTURE VOLUMES INCLUDING JPA AREA TRAFFIC

Estimates of total future traffic started with the future background traffic volumes. Through traffic on Alessandro and Van Buren was reduced to reflect the reduction in regional trips passing through the area (since 70% of this volume is projected to be drawn from the 60/215 freeway, the remaining 30% was subtracted from the forecast volumes on Alessandro and Van Buren). Trips generated in the JPA area were added to obtain the total forecast traffic volume.

The estimates of future total daily traffic are shown in Figure 7.

LEVELS OF SERVICE – PREFERRED LAND USE PLAN

Forecasts of peak hour traffic passing through study intersections were developed in the same fashion as the daily volume forecasts. Table 8 shows the intersection levels of service, assuming existing lane geometry. Increases in background traffic combined with projected JPA traffic reduce the peak hour LOS at most study intersections to F.

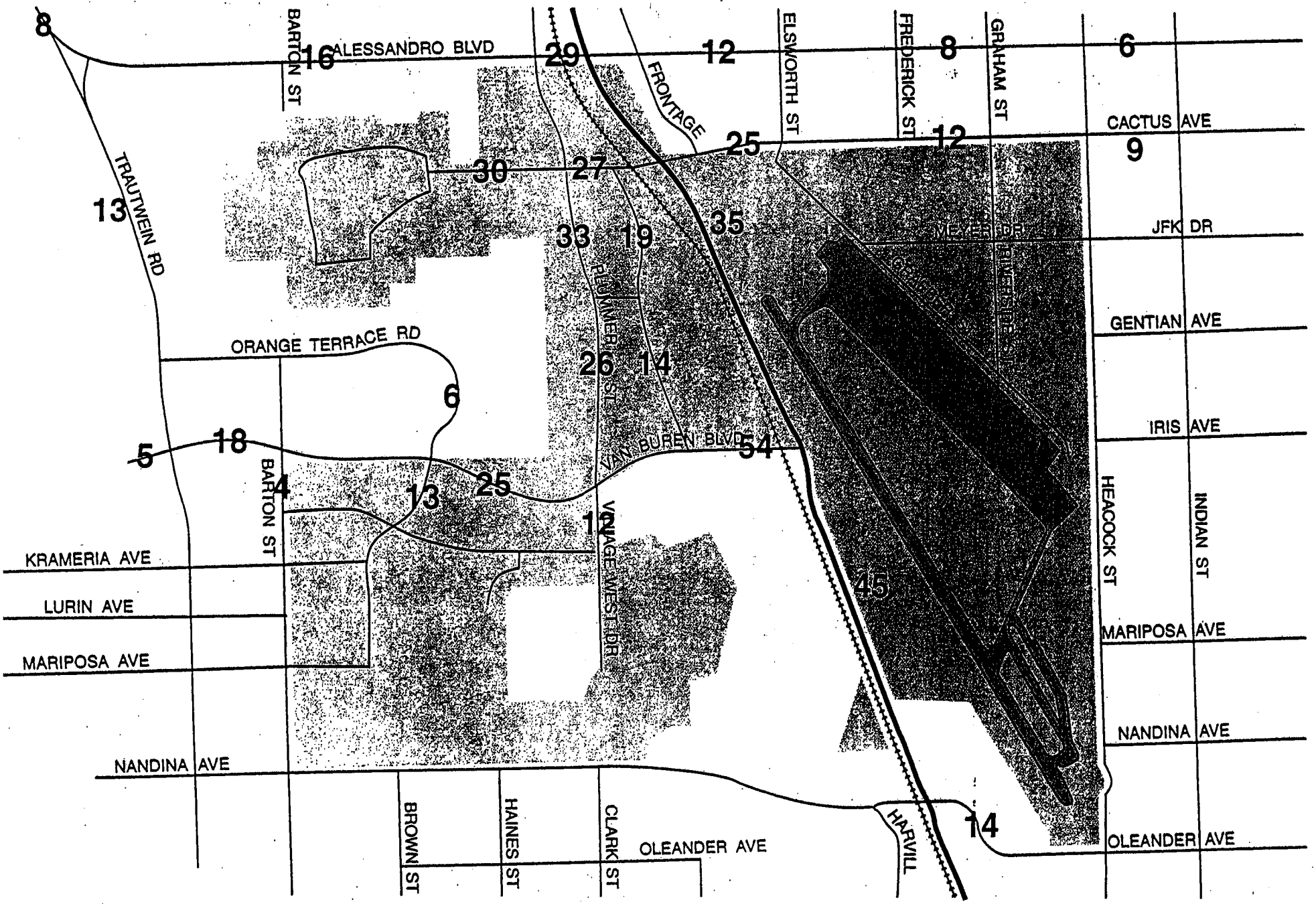
LEVELS OF SERVICE – SKR LAND USE PLAN

Peak hour intersection forecasts and LOS were also prepared for the alternative land use plan which would use the northwest portion of the JPA area for Stephens Kangaroo Rat habitat. The resulting intersection LOS are summarized in Table 9. Most intersections are projected at LOS F with this land use plan as well, though conditions improve substantially at the two intersections nearest to the habitat reserve (Cactus at Plummer and Plummer at Alessandro).

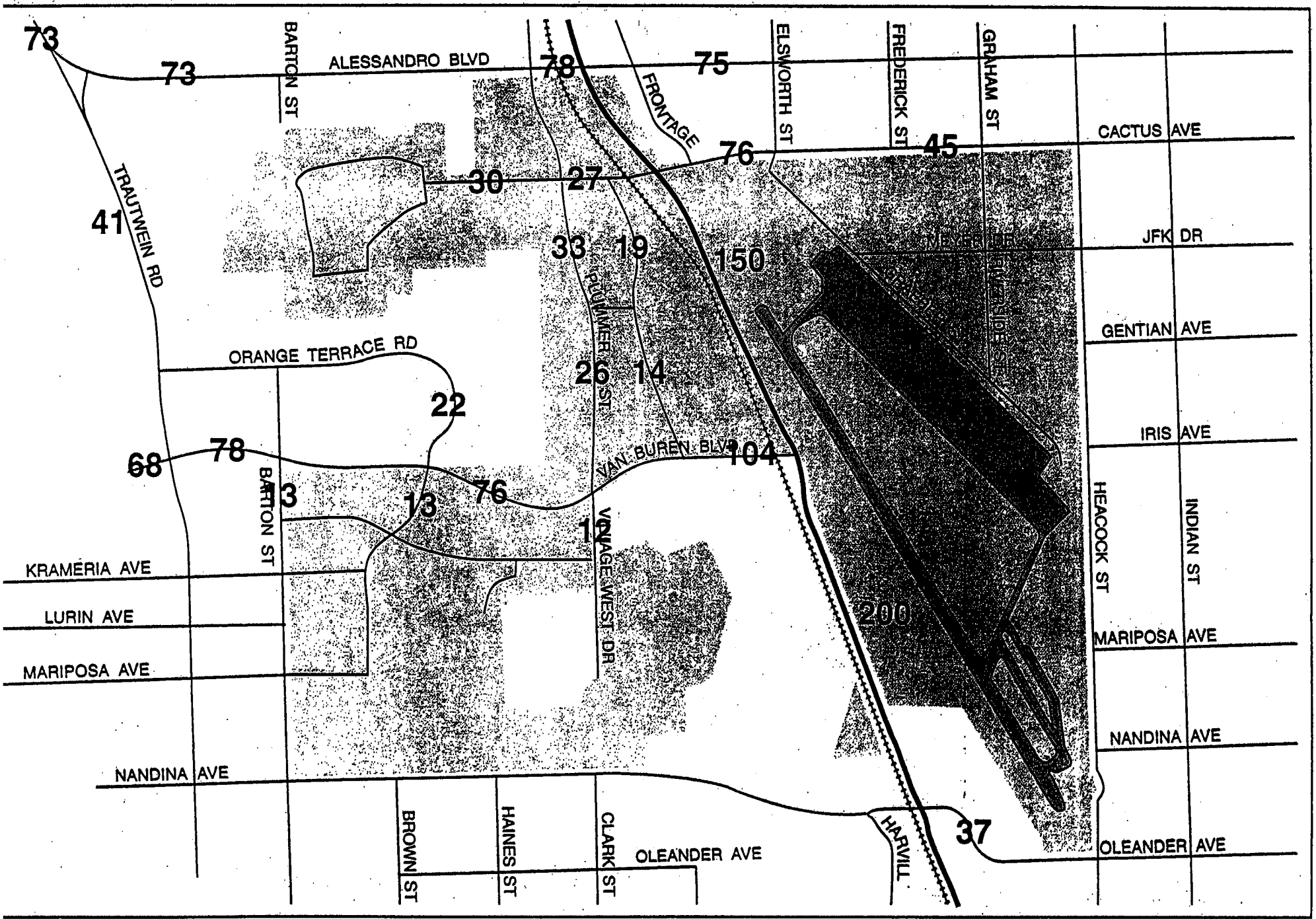
NEEDED ROADWAY IMPROVEMENTS

To achieve acceptable future levels of service (LOS D or better) with JPA area traffic, a number of roadway capacity improvements will be needed in addition to those identified for the Future Background scenario. Locations requiring additional improvement are shown in Figure 8. The improvements include:

- widening of Alessandro between Plummer and I-215;



	MARCH JPA TRANSPORTATION STUDY	FIGURE
PB	Average Daily Traffic Volumes (in thousands) March JPA Area General Plan (project area traffic only)	6



MARCH JPA TRANSPORTATION STUDY

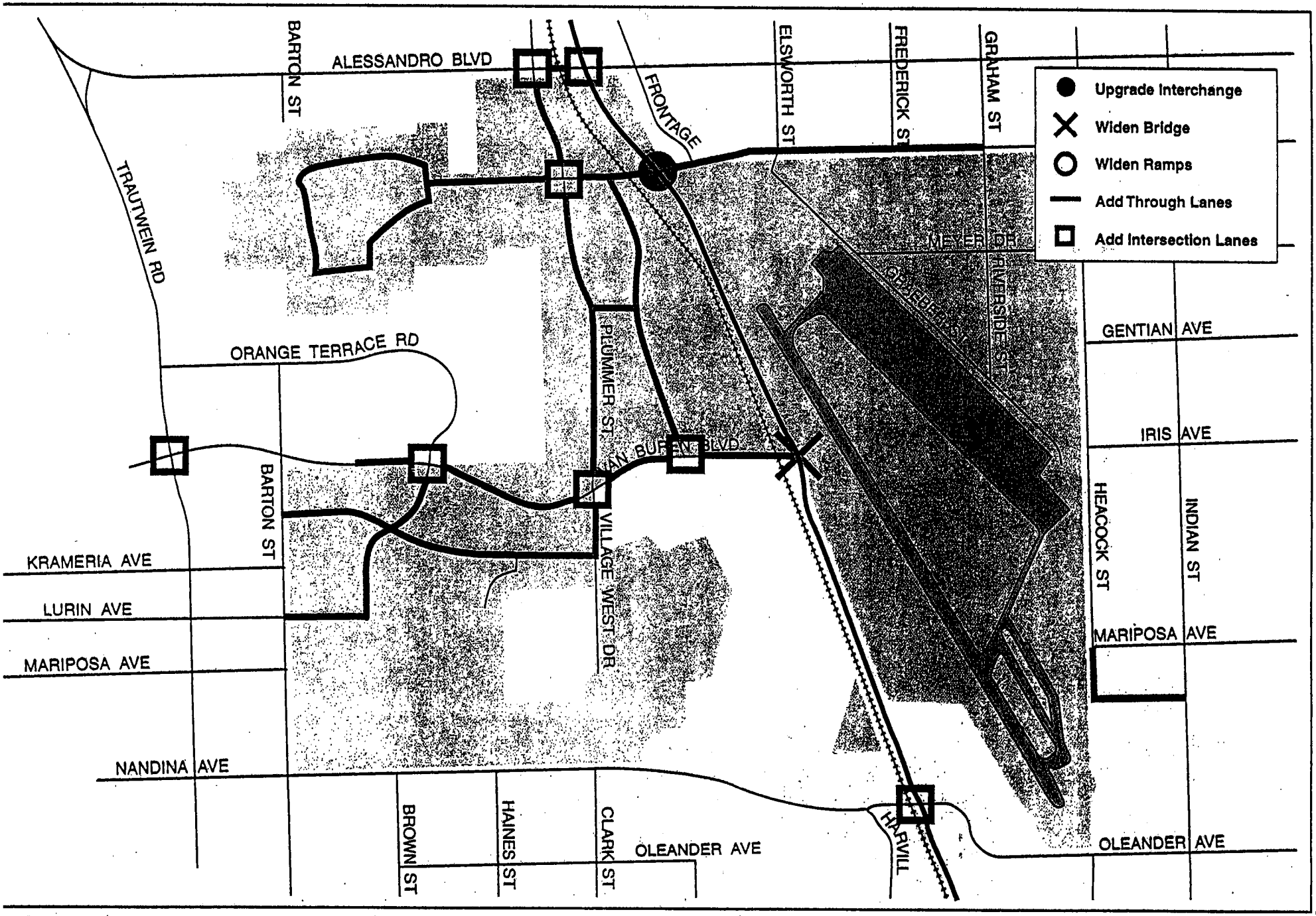
FIGURE

TABLE 8
PM PEAK HOUR LOS SUMMARY WITH ALTERNATIVE 1

	Existing			No Project			Alt. 1		
	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS
Heacock at SR-60 EB Ramps	0.565	26.1	D	0.788	13.6	B	0.894	26.9	D
Heacock at SR-60 WB Ramps	0.548	9.3	B	0.582	13.5	B	0.593	14.3	B
Alessandro at Trautwein	0.551	22.1	C	1.362	235.9	F	1.361	216.7	F
Alessandro at I-215 SB Ramps	0.365	5.9	B	1.502	168.1	F	1.763	636.5	F
Alessandro at I-215 NB Ramps	0.337	5.2	B	0.864	16.8	C	1.612	268.6	F
Cactus at I-215 SB Ramps	0.228	12.7	B	0.612	17.9	C	1.476	322.1	F
Cactus at I-215 NB Ramps	0.552	7.6	B	1.278	139.9	F	1.904	512.9	F
Cactus at Frederick	0.412	6.8	B	0.981	23.7	C	1.288	127.1	F
Cactus at Heacock	0.229	10.3	B	0.497	17.6	C	0.717	20.3	C
Van Buren at Washington	0.748	16.8	C	1.481	356	F	1.568	392.4	F
Van Buren at Trautwein	0.486	22.7	C	1.116	133.2	F	1.404	197.4	F
Van Buren at Barton	0.521	14.5	B	1.329	245.2	F	1.858	653.3	F
Van Buren at Orange Terrace Parkway	0.325	2.3	A	0.799	10.4	B	1.428	270.8	F
Van Buren at Clark (Village West)	0.688	19.2	C	0.698	3.3	A	1.245	202.4	F
Van Buren at Harmon	0.372	2.6	A	0.716	4.3	A	1.06	76.1	F
Van Buren at I-215 SB Ramps		1.7	A	1.651	736.8	F	2.433	overflow	F
Van Buren at I-215 NB Ramps	0.425	8.6	B	0.729	15.3	C	1.214	133.3	F
Nandina at Barton	0.951	13.7	C	0.441	19	C	0.7	15.7	C
Oleander at I-215 SB Ramps	0.094	8.7	B	0.667	11.5	B	0.973	33.6	D
Oleander at I-215 NB Ramps	0.106	4	A	0.444	3.4	A	0.603	4.1	A
Oleander at Indian			NA			NA	1.124	51.8	E
Plummer at Alessandro			NA			NA	2.48	2336.6	F

TABLE 9
PM PEAK HOUR LOS SUMMARY WITH ALTERNATIVE 2

	Existing			No Project			Alt. 1			Alt.2		
	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS
Heacock at SR-60 EB Ramps	0.565	26.1	D	0.788	13.6	B	0.894	26.9	D	0.887	19.4	C
Heacock at SR-60 WB Ramps	0.548	9.3	B	0.582	13.5	B	0.593	14.3	B	0.587	13.8	B
Alessandro at Trautwein	0.551	22.1	C	1.362	235.9	F	1.361	216.7	F	1.334	200.1	F
Alessandro at I-215 SB Ramps	0.365	5.9	B	1.502	168.1	F	1.763	636.5	F	1.596	272.6	F
Alessandro at I-215 NB Ramps	0.337	5.2	B	0.864	16.8	C	1.612	268.6	F	1.152	143.8	F
Cactus at Plummer	0	0	NA			NA	1.457	526.6	F	0.639	13.3	B
Cactus at I-215 SB Ramps	0.228	12.7	B	0.612	17.9	C	1.476	322.1	F	1.156	210.9	F
Cactus at I-215 NB Ramps	0.552	7.6	B	1.278	139.9	F	1.904	512.9	F	1.661	427.9	F
Cactus at Frederick	0.412	6.8	B	0.981	23.7	C	1.288	127.1	F	1.192	79.2	F
Cactus at Heacock	0.229	10.3	B	0.497	17.6	C	0.717	20.3	C	0.649	20.2	C
Van Buren at Washington	0.748	16.8	C	1.481	356	F	1.568	392.4	F	1.57	394	F
Van Buren at Trautwein	0.486	22.7	C	1.116	133.2	F	1.404	197.4	F	1.267	136.8	F
Van Buren at Barton	0.521	14.5	B	1.329	245.2	F	1.858	653.3	F	1.795	656.4	F
Van Buren at Orange Terrace Parkway	0.325	2.3	A	0.799	10.4	B	1.428	270.8	F	1.361	179.4	F
Van Buren at Clark (Village West)	0.688	19.2	C	0.698	3.3	A	1.245	202.4	F	1.508	282.1	F
Van Buren at Harmon	0.372	2.6	A	0.716	4.3	A	1.06	76.1	F	1.106	99.3	F
Van Buren at I-215 SB Ramps		1.7	A	1.651	736.8	F	2.433	overflow	F	2.671	overflow	F
Van Buren at I-215 NB Ramps	0.425	8.6	B	0.729	15.3	C	1.214	133.3	F	1.403	290.1	F
Nandina at Barton	0.951	13.7	C	0.441	19	C	0.7	15.7	C	0.685	15.1	C
Oleander at I-215 SB Ramps	0.094	8.7	B	0.667	11.5	B	0.973	33.6	D	1.007	34.1	D
Oleander at I-215 NB Ramps	0.106	4	A	0.444	3.4	A	0.603	4.1	A	0.583	4	A
Plummer at Alessandro			NA			NA	2.48	2336.6	F	1.726	500.1	F



PB

MARCH JPA TRANSPORTATION STUDY

FIGURE

Additional Improvements Needed With Project (in addition to "without project" improvements)

- widening the bridge of Cactus Avenue across I-215, and widening the off-ramps;
- widening Cactus Avenue to six lanes from I-215 to Graham Street (consistent with the Moreno Valley General Plan);
- widening Van Buren to six lanes from I-215 to Barton Street;
- additional widening of the Van Buren bridge over I-215;
- construction or widening of several internal JPA area roads;
- widening of several key intersections to provide additional turn lanes;
- developing the roadway connection from the air cargo terminal to Indian Street.

The estimated cost of constructing these additional improvements is $51 million; acquisition of right-of-way for these improvements could cost up to $11 million more, assuming that right-of-way within the JPA area will be dedicated without any acquisition cost. (The unit costs and cost estimate calculations for individual projects are included in Appendix A.)

The improvements needed to serve the SKR Alternative (Alternative 2) are essentially the same, with the following changes:

- fewer lanes would be required on Alessandro between Plummer and I-215;
- Cactus Avenue would not be developed west of Plummer Street; and
- less widening would be required at the intersection of Cactus Avenue and Plummer Street.

Figure 9 shows the assumed turn lane geometry at intersections identified for improvement in the preferred land use scenario. The number of intersection lanes assumed in this analysis can be used as an indication of the future right-of-way requirements.

Peak hour levels of service with the identified improvements are shown in Table 10. The identified improvements would achieve LOS D or better at all study intersections. It is therefore concluded that the transportation system can be improved sufficiently to accommodate traffic generated by the proposed land use plan.

FIGURE 9

MARCH JPA TRANSPORTATION STUDY

Intersection Lane Geometry - With Project

TABLE 10
PM PEAK HOUR LOS SUMMARY WITH IMPROVEMENTS

	Existing			No Project with Improv.			Alt. 1 with Improvements			Alt.2 with Improvements		
	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS
Heacock at SR-60 EB Ramps	0.565	26.1	D	0.788	13.6	B	0.894	26.9	D	0.887	19.4	C
Heacock at SR-60 WB Ramps	0.548	9.3	B	0.582	13.5	B	0.548	9.9	B	0.481	6.5	B
Alessandro at Trautwein	0.551	22.1	C	1.036	32.4	D	1.041	34	D	1.018	27.6	D
Alessandro at I-215 SB Ramps	0.365	5.9	B	1.227	52.5	E	0.988	35.05	D	0.961	26.1	D
Alessandro at I-215 NB Ramps	0.337	5.2	B	0.864	16.8	C	1.045	35.5	D	0.896	13.7	B
Cactus at Plummer			NA			NA	0.974	34.7	D	0.609	9.3	B
Cactus at I-215 SB Ramps	0.228	12.7	B	0.612	17.9	C	0.862	25.6	D	0.908	15.7	C
Cactus at I-215 NB Ramps	0.552	7.6	B	0.995	25.7	D	0.683	12.9	B	0.541	10.7	B
Cactus at Frederick	0.412	6.8	B	0.981	23.7	C	0.781	12.6	B	0.676	20	C
Cactus at Heacock	0.229	10.3	B	0.497	17.6	C	0.717	20.3	C	0.649	20.2	C
Van Buren at Washington	0.748	16.8	C	0.978	39.6	D	1.048	39.2	D	1.032	39.2	D
Van Buren at Trautwein	0.486	22.7	C	0.819	39	D	0.93	38.6	D	0.984	25.9	D
Van Buren at Barton	0.521	14.5	B	0.843	12	B	0.896	29.1	D	0.97	34	D
Van Buren at Orange Terrace Parkway	0.325	2.3	A	0.799	10.4	B	0.724	24.7	C	1.075	36.9	D
Van Buren at Clark (Village West)	0.688	19.2	C	0.698	3.3	A	1.008	39.4	D	0.907	32.9	D
Van Buren at Harmon	0.372	2.6	A	0.716	4.3	A	0.804	21	C	0.825	11.4	B
Van Buren at I-215 SB Ramps		1.7	A	0.762	14.2	B	0.831	24.5	C	1.102	39.6	D
Van Buren at I-215 NB Ramps	0.425	8.6	B	0.729	15.3	C	0.806	39.6	D	0.892	39.2	D
Nandina at Barton (4-way stop)	0.951	13.7	C	0.441	11.8	B	0.7	15.7	C	0.685	15.1	C
Oleander at I-215 SB Ramps	0.094	8.7	B	0.667	11.5	B	0.944	29.4	D	0.981	24.4	C
Oleander at I-215 NB Ramps	0.106	4	A	0.444	3.4	A	0.603	4.1	A	0.583	4	A
Oleander at Indian			NA			NA	0.763	39.1	D	0.763	39.1	D
Plummer at Alessandro			NA			NA	0.977	39.4	D	0.767	7.1	B

RECOMMENDED CIRCULATION SYSTEM

This chapter describes the transportation system elements recommended to serve the long-range preferred land use plan proposed for the March JPA area.

ROADWAYS

Functional Classifications

A classification system is used to identify the function and typical design features of roadways. Each classification has a designated curb-to-curb width and right-of-way width. The classifications indicate the roadway's ultimate function and design characteristics, so that right-of-way can be obtained under the guidance of the General Plan for roadways not yet built to standard. The functional classifications used for the March JPA roadway plan, and are generally consistent with the City of Moreno Valley's classifications, are described below.

Arterial Highway. These roadways would provide a -102 foot roadway within a 120-foot right-of-way upon full buildout. This is sufficient width to provide three lanes in each direction plus raised median to accommodate controlled left turn lanes at intersections. The roadway without curbside parking, will accommodate a Class II commuter serving bike lane. Roadways designated as an arterial highway serve a sub-regional basis and are continued throughout the sub-region within the respective jurisdictions.

Major Arterial. These roadways would provide an 86-foot roadway within a 110-foot right-of-way upon full buildout. This is sufficient width to provide two lanes in each direction plus raised median to accommodate control left turn lanes at intersections. A Class II commuter serving bike lane can be accommodate if curbside parking is restricted.

Minor Arterial. These roadways would provide a 64-foot roadway within an 88-foot right-of-way. This is sufficient width to provide two through lanes in each direction, with a Class II bike lane, or curbside parking area. Additional width will be needed at intersections where exclusive left turn lanes are provided. This roadway classification has no center median. Minor arterials function in a similar manner to major arterial except that minor arterial carry less traffic, less non-local through traffic and a relatively greater proportion of local traffic.

Industrial Collector. These roadways would provide a 56-foot roadway within a 78-foot right-of-way. This is sufficient to provide one lane in each direction with a Class II bike lane. Industrial Collector streets function as feeder routes to carry traffic from the arterial system to the local system, but should carry only very minimal levels of non-local through traffic.

Local Streets. All streets not designated as one of the facility types above is a local street. Local streets function purely to provide direct access to abutting land uses and should not serve any through traffic.

Service Streets. Service streets are purely rights-of-way designed to provide access to areas that need to be serviced, but does not carry standard "public" traffic. A service street is designed as a two lane roadway without any additional right-of-way. The minimum standard for a service street shall be no less than 24 feet wide to accommodate two-way traffic. Use of service streets shall be limited to areas that require access for purely maintenance and servicing, and will not function as a "public" transportation facility in the general sense.

Recommended roadway classifications are shown in Figure 10. The number of lanes and typical dimensions associated with each classification are identified in Table 11.

TABLE 11
ROADWAY CLASSIFICATIONS

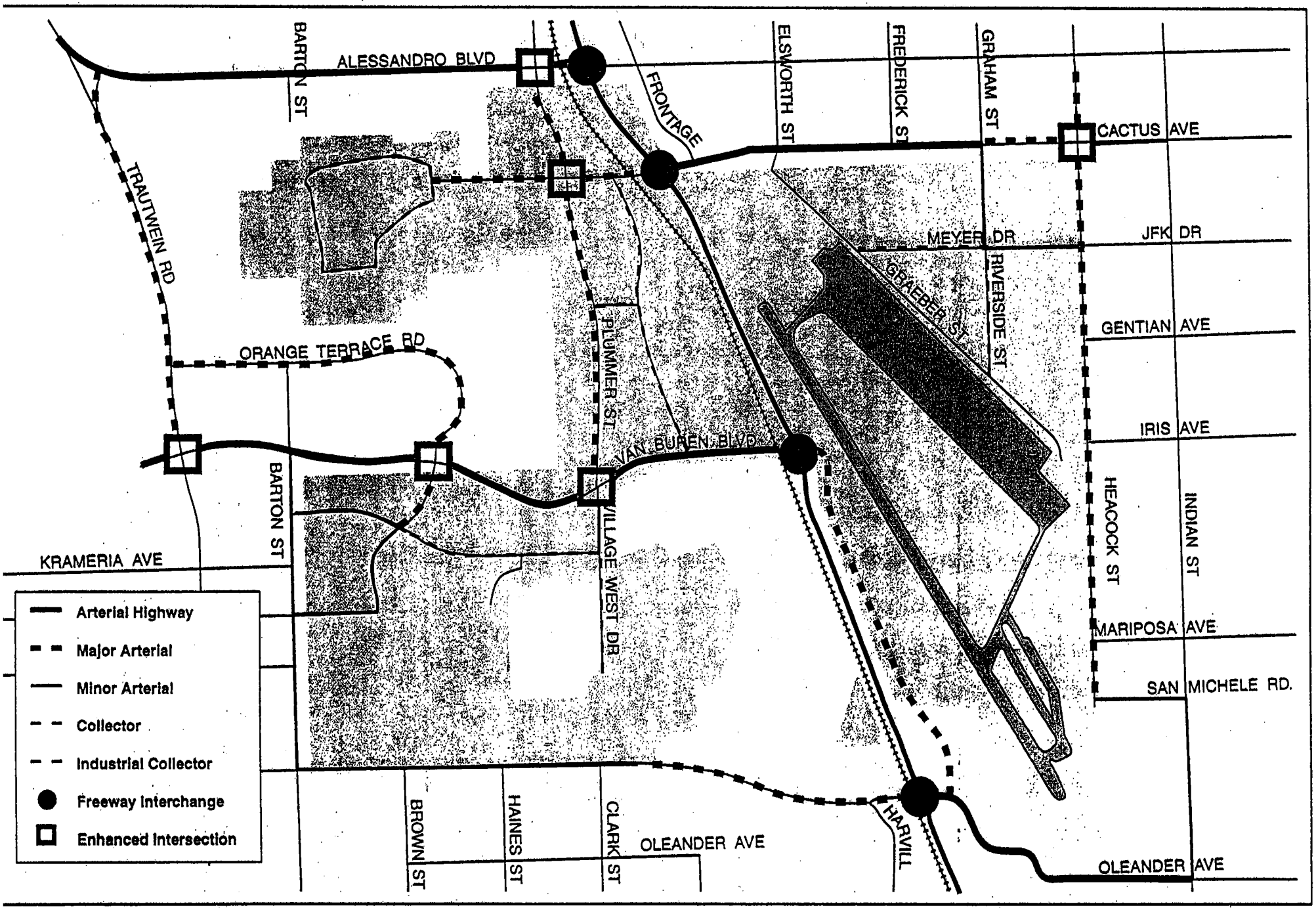
Roadway Classification	Number of Lanes	Right-of-Way	Roadway Cross-Section	Type of Median	Sidewalk/ Parkway
Arterial Highway	6	120'	102'	14' raised	6' / 3'
Major Arterial	4	110'	86'	18' raised	6' / 6'
Minor Arterial	4	88'	64'	n/a	6' / 6'
Industrial Collector	2	78'	56'	12' painted	6' / 5'
Local	2	60'	40'	n/a	6' / 4'
Service	2	24' min.	24' min.	n/a	n/a

Truck Routes

All roadways identified as collector streets or higher in the functional classification system will be designated as truck routes for the March JPA area. Roads will be designed with appropriate standards to serve the circulation needs of trucks.

Cross-Sections For Northeast Area

The roadways in the northeast portion of the JPA area were developed as part of the Air Force Base, and do not include the typical dimensions associated with public roads of similar function and capacity. Modification of the roadway or right-of-way dimensions would in many cases affect adjacent buildings. The classifications for these roads are therefore intended to indicate the future number of lanes; roadway and right-of-way dimensions should be determined individually.



MARCH JPA TRANSPORTATION STUDY

March JPA Area Roadway Plan

FIGURE 10

Interchange Improvements

Increases in background traffic combined with JPA area traffic will necessitate capacity improvements to the four interchanges along I-215 which serve the JPA area. The recommended improvements at each interchange are identified below. These improvements are concepts which will provide capacity to serve future traffic volumes; actual improvement designs should be developed through the Caltrans process (Project Study Report, Project Report/Environmental Document, Plans Specifications and Estimates).

I-215 at Alessandro Boulevard. The existing structure is sufficiently wide to accommodate future capacity needs. Additional lanes should be added on the eastbound approach, the westbound approach, and the southbound off-ramp.

I-215 at Cactus Avenue. To accommodate future capacity needs, the existing structure should be widened, and additional lanes should be provided on the eastbound approach, westbound approach, southbound off-ramp, and northbound off-ramp.

I-215 at Van Buren Avenue. The existing interchange has limited capacity and needs to be rebuilt to accommodate future traffic. The structure should be wider, and additional lanes are needed on the southbound off-ramp and the west approach and departure.

I-215 at Oleander Avenue. The existing interchange has sufficient capacity to accommodate projected volumes through the Year 2015 if a right turn lane is provided on the eastbound approach. However, the surrounding area in Moreno Valley and Perris is slated for substantial additional long-term development (primarily industrial) which will generate additional traffic demands through this interchange and may require additional capacity improvements. The upcoming Moreno Valley Industrial Area Specific Plan Traffic Study will address the long-term improvement needs for this interchange with planned development in the surrounding area

Improvement of these interchanges should also consider the addition of HOV bypass lanes on on-ramps to provide additional incentive for carpooling.

Air Cargo Terminal Access

The March JPA has begun development of an air cargo terminal, named the March Inland Port. Two terminal locations were identified through the base reuse planning process, one on the west side of the runway and one on the east side of the runway. The east side contains the "alert facility" along with aprons, ramps, and taxiways, whereas the west side location is devoid of supportive aviation improvements. Based on the approved Airport Layout Plan for March, the east side terminal area will be an all cargo facility, with the west side terminal having the ability to be developed in the future for passenger/cargo or all cargo.

A convenient roadway linkage between the air cargo terminal and the freeway system is important for facilitating goods movement in and out of the terminal, and an accessible air cargo terminal will increase the area's marketability as an employment

center. Therefore it is important that the roadway access between the terminal and the nearby interchange at I-215 and Oleander Avenue be as convenient as possible.

Two primary constraints will affect the location of this access road. First, regulations require that there be no stopped traffic on roadways in the runway clear zone. If built in their current alignments, Oleander Avenue and Heacock Street would pass through the clear zone, and traffic stopping at their intersection would undoubtedly back up into the clear zone. The second constraint is a major drainage channel just north of the Oleander Avenue alignment. Clearance restrictions affect where a roadway could cross this channel. To accommodate these two constraints, the recommended roadway (Figure 10) shows realignment of Oleander Avenue to the south, and development of San Michele Road and Indian Street to connect the terminal with Oleander Avenue. When detailed design studies are undertaken for this roadway, other alignment options should be evaluated to determine whether the north-south part of the route could be located further west to further improve the access between the air cargo terminal and the I-215 freeway. In addition, geometric design standards for these roads should be selected to ensure easy movements for the 60-foot truck trailers which will come into the air cargo facility.

Off-Site Improvement Needs

To accommodate the projected growth in background traffic and the planned development at March JPA, several regional roadways should be improved. The regional facilities recommended for improvement are described below.

I-215 Freeway. Background traffic growth on I-215 will require expansion of the current six-lane facility to eight lanes of capacity. Current Caltrans plans and the Western Riverside Comprehensive Transportation Plan (CTP) anticipate the addition of two high occupancy vehicle lanes to I-215 between SR-60 in Moreno Valley and I-15 in Temecula. This improvement would provide the additional capacity needed, and would provide a carpooling incentive for employees at the March JPA.

The segment of I-215 which is merged with SR-60 between Moreno Valley and Riverside is currently being expanded under Measure A to add HOV lanes and truck climbing lanes. This improvement will help relieve existing congestion, but future growth in background traffic will result in traffic volumes which exceed the available capacity, which in turn will increase traffic on parallel arterials such as Alessandro and Van Buren. Relief of projected future traffic congestion on this segment of I-215/SR-60 will be a key to ensuring adequate regional circulation in Western Riverside County, and will be important for providing convenient access to the JPA area from the north. The JPA should encourage the responsible agencies (Caltrans and RCTC) to initiate a process such as a Major Investment Study which will identify long-term improvements for implementation in this key corridor in addition to those provided under Measure A.

Traffic generated in the JPA area is projected to create traffic demand for a ten-lane facility on I-215 between Van Buren and the Ramona/Cajalco interchange. Future updates of the CTP should review this projected need in light of updated regional population and employment forecasts, so that future I-215 corridor planning can provide the additional capacity if needed.

Ramona Expressway. The Ramona Expressway extends from I-215 easterly to San Jacinto. Upgrading this road to full expressway standards and providing additional lanes will be needed to serve future travel demands between the San Jacinto Valley (Hemet and San Jacinto) and the central portion of Western Riverside County. The upgraded Ramona Expressway will therefore be a key regional link for the JPA area. The March JPA should therefore support development of the Ramona Expressway.

Cajalco Corridor. Similar to the Ramona Expressway, development of a full expressway in the Cajalco Corridor will provide important regional access for the JPA area. Without the Cajalco Corridor, trips to and from the west will need to use either Van Buren, Alessandro, or the 60/215 freeway to reach the JPA area. Development of the Cajalco Corridor between I-215 and I-15 would provide a less-congested connection to the west, and combined with the Ramona Expressway would complete an east-west linkage across Western Riverside County. The March JPA should support development of an expressway in the Cajalco Corridor, and should work with the County of Riverside to identify and plan a convenient north-south arterial roadway to provide access between the Cajalco Corridor and the western portion of the JPA area.

PUBLIC TRANSPORTATION

The land use plan for the March JPA envisions primarily employment-related uses, particularly business park, office, and industrial. This type of development would be best served by commuter-oriented transit services. Specific examples of commuter-oriented transit services which should be pursued as the area develops include commuter rail and express bus services.

The planned Metrolink commuter rail extension along the San Jacinto Branch Line from downtown Riverside to Hemet and San Jacinto would primarily serve commuter trips. Initially, service would be operated from San Jacinto to Riverside in the morning peak, and back in the afternoon; ultimately two-way service may be considered. The JPA should support development of commuter rail in this corridor as one means of enhancing commuter access to the March JPA.

The I-215 corridor is also being considered as part of a high speed rail (HSR) system in California. If HSR is eventually implemented in this corridor, the March JPA should pursue a stop in the JPA area.

The Long-Range Transit Plan (LRTP) for Western Riverside County envisions a system of express buses linking the urban centers, and the March JPA area was identified as one of the urban centers to be served. In this system, buses would travel on the freeway, stopping at a multimodal transportation center in each urban center and using HOV lanes on the connecting freeways, thereby offering attractive travel times for long-distance service. The LRTP envisions future express bus connections between March and Temecula/Murrieta, Hemet/San Jacinto, Lake Elsinore, and Banning/Beaumont. Since the March JPA is envisioned as a major employment center, this type of commuter-oriented transit service should be pursued as employment levels become sufficient to support ridership.

Key to the attractiveness and success of the commuter rail and express bus services will be to have an effective, convenient system for collection and distribution in the JPA area. A local area shuttle service should be developed to link the employment centers within the JPA to the transportation center which will be served by the commuter rail and express bus service.

The LRTP also envisions improvements in local bus service commensurate with population and employment growth. As the March JPA and surrounding areas develop, local bus service provided by the Riverside Transit Agency (RTA) should be expanded to better link the March JPA with the surrounding communities of Moreno Valley, Riverside, and Perris.

MULTIMODAL TRANSPORTATION CENTER

The RCTC study of commuter rail on the San Jacinto Branch line envisioned a commuter rail station in the northwest quadrant of Van Buren and I-215. The northwest quadrant was identified over the southwest quadrant because of preferable location and terrain. A station in this area was viewed as a destination station, so the study did not envision much parking adjacent to the station.

With the potential for commuter rail, express bus, local bus, and an area shuttle service, the JPA transportation plan should include development of a multimodal transportation center to serve and link these modes. The northwest quadrant of the I-215/Van Buren interchange is the preferred location for this facility, because this location would provide good spacing with other planned Metrolink stations, would conveniently serve as a central point for bus transit oriented in all directions, and would not conflict with the planned intermodal terminal further to the north (see below). Since the JPA area is planned as a major employment destination, the multimodal center would not need to provide a large amount of parking.

INTERMODAL FACILITY

The location of the San Jacinto Branch Line through the March JPA, and especially the existing spur line south of Cactus Avenue, provide a unique opportunity for an intermodal facility in the JPA area. This facility would provide a location for the transfer of goods between trucks and rail, and would enhance the attractiveness of this area to businesses which could benefit from convenient access to rail for shipping.

As noted above, the I-215 corridor is being considered as part of a potential high speed rail system in California. The system would likely provide two types of goods movement services – parcel service and high speed containerized freight (which would be carried at night). Location of the intermodal facility near the multimodal transportation center could provide a unique opportunity to have facilities which serve both the passenger and goods which could be moved via high speed rail. Plans for these two facilities and surrounding uses should preserve this opportunity, and the JPA

should work with RCTC and the California High Speed Rail Authority to determine how to best serve both passenger and rail functions if this area becomes a candidate for a HSR station.

The need for linking the intermodal terminal with the air cargo terminal was evaluated, and does not appear to be an important element to support goods movement. Linkage between air cargo and intermodal terminals has been tried around the country, without success to date because the typical goods shipped via rail and air are just too different to make transfer viable.

TRANSPORTATION DEMAND MANAGEMENT

Transportation demand management (TDM) strategies may be effectively employed in the March JPA planning area. TDM strategies, if proposed now and integrated into the General Plan process and development agreements, can contribute to a reduction in trip generation within the JPA area.

Several factors contribute to the potential for a successful trip reduction strategy in the March JPA planning area. The large amount of relatively undeveloped land (about 6,450 acres) allows for an innovative strategy for trip reduction through land use planning and development agreements. Transit accessibility will be high if planned commuter rail, express bus, and local bus services are developed, and if the proposed multimodal transportation center is developed with a convenient shuttle service to link it with the employment areas. Short-distance local trips can be eliminated by planning master developments which contain an appropriate mix of uses.

The recommended TDM elements for the JPA area are identified below. This combination of strategies is estimated to achieve a six to nine percent reduction in trips compared to the estimates presented earlier in this report. The recommended TDM elements will be implemented by three different types of entities – the March JPA, potential developers in the planning area, and the individual employers.

March JPA-Implemented Measures

- Encourage/require larger-scale development
- Appropriate Mix of Development

Developer-Implemented Measures

- Onsite Employee Transportation Coordinator
- Transportation Management Association
- Passenger Loading/Drop-off Areas
- Bicycle/Pedestrian Paths
- Bicycle Storage Facilities and Showers
- Vanpool Service
- Shuttle to Multimodal Station
- Enhanced Transit Services

Employer-Implemented Measures

- Guaranteed Ride Home
- Subsidized Transit Passes
- Flexible Work Hours
- Telecommuting
- Alternative Work Hours

NON-MOTORIZED TRANSPORTATION

Class II bike lanes for commuter purposes can be accommodated within the identified cross-section for most roadway classifications if curbside parking is restricted. Commuter facility Class II bike lanes will be provided on Van Buren Boulevard, Alessandro Boulevard, Plummer Road, Cactus Avenue, Orangetree Parkway extension, Village Drive West, Harmon Road, Park Street, and Heacock Street.

All roadway cross-sections include a six-foot wide sidewalk to facilitate and encourage pedestrian access within the JPA area.

FUNDING

In order to develop, operate, and maintain its circulation system in accordance with this plan, the JPA must identify and secure adequate sources of revenue. Available sources of transportation funding, and the requirements to secure funds from those sources, have undergone significant changes in recent years, and such changes are likely to continue in the foreseeable future. It is therefore very important that the JPA keep abreast of current funding sources and requirements, and position itself to obtain its fair share of available revenues.

Local general fund revenues, the primary traditional source of funding cities, local circulation improvements, are extremely limited for the JPA. Since many of the traditional funding sources are not available, impact fees and improvements funded by developers have become another important means of paying for these improvements. New development could contribute a fair share of the cost for improvements which will provide direct benefits in the form of improved access or increased capacity. Assessment districts and Mello Roos Community Facilities District can also be considered for securing funding through private sources.

Other potential revenue sources include state and federal funds earmarked for specific purposes such as public transportation, bicycle facilities, and airports.

PROJECT PRIORITIES

DEVELOPMENT PHASING ISSUES

Discussions between the JPA and potential developers about projects in the March JPA have been focused on two areas: the air cargo terminal and vacant lands along Van Buren. Consequently, transportation system improvement priorities should focus on the projects needed to adequately serve new development in those areas.

PRIORITY PROJECTS

To serve development of the air cargo terminal, the following transportation improvements should be pursued as high priority projects:

- Develop the roadways to connect the air cargo terminal to the Oleander Avenue interchange at I-215. This is initially planned to include realignment and improvement of Oleander Avenue, plus construction of Indian Avenue and San Michele Road.

To serve development along Van Buren Avenue, the following improvements should be pursued as high priority projects:

- Reconstruct the Van Buren/I-215 interchange.
- Implement internal project roadways needed to serve the initial developments.

ACTION PLANS FOR ACHIEVING PRIORITY PROJECTS

Air Cargo Terminal Connection

- Participate in the Moreno Valley Industrial Area Specific Plan Traffic Study to determine long-range roadway improvement needs in the area.
- Submit the connection for inclusion in the Regional Transportation Plan, Regional Transportation Improvement Program, and National Highway System Connections to Intermodal Terminals.
- Conduct detailed engineering and environmental studies to determine precise alignments for the roadways which will provide the connection from the terminal to I-215 at Oleander Avenue.
- Construct improvements.

Van Buren/I-215 Interchange

- Initiate the Caltrans process (Project Study Report/ Project Report/ Environmental Document/ Plans Specifications and Estimates) for identifying and designing needed improvements to the interchange.
- Submit the interchange project for inclusion in the Regional Transportation Improvement Program.
- Construct improvements.

Internal Roadways

- Conduct traffic impact analysis for proposed developments within the JPA area.
- Identify improvements needed to provide access and circulation for proposed developments.
- Conduct design and environmental studies for identified improvements.
- Construct improvements.

Appendices for the March JPA Transportation Study Technical Report

A. Cost Estimates

B. Levels of Service Calculations: Existing

C. Levels of Service Calculations: Future Background

D. Levels of Service Calculations: Future Background with Improvements

E. Levels of Service Calculations: Future with Project (alt 1)

F. Levels of Service Calculations: Future with Project (alt 2)

G. Levels of Service Calculations: Future with Project plus Improvements (alt 1)

H. Levels of Service Calculations: Future with Project plus Improvements (alt 2)

Copies of the above-referenced appendices are on file at the offices of the March JPA.

APPENDIX B

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