March Air Reserve Base/ Inland Port Airport Joint Land Use Study

Prepared for the
March Joint Powers Authority

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December 2010

This study was prepared under contract with the March Joint Powers Authority with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the March Joint Powers Authority and does not necessarily reflect the views of the Office of Economic Adjustment.

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Foundations of Airport Land Use Compatibility Planning

INTRODUCTION

This chapter outlines the policy foundations upon which airport land use compatibility planning in California is based. Much of the material presented here is drawn from the January 2002 edition of the *California Airport Land Use Planning Handbook* published by the California Division of Aeronautics. (For those seeking more detail, the *Handbook* is available on-line at the Division's web site: www.dot.ca.gov/hq/planning/aeronaut/htmlfile/landuse.html.) Also included here is information pertaining specifically to airport land use compatibility planning practice in Riverside County. The final section describes the function of this *March Air Reserve Base/Inland Port Airport Joint Land Use Study* (JLUS) and the manner in which the *JLUS* is proposed to be implemented by the affected jurisdictions that surround the airport.

In beginning this discussion, it is important to recognize that relatively little of the policy foundations for airport land use compatibility planning come directly from statutes or are otherwise regulatory in nature. The applicable California statutes deal primarily with the *process* of compatibility planning, not with *criteria* defining what land uses are or are not compatible with airports. The statutes require airport land use commissions to "be guided by" information in the state *Handbook*, but the *Handbook* does not constitute formal state policy or regulation. On the federal level, the guidance is even less regulatory in nature. The U.S. Constitution precludes federal government regulation of local land uses. Federal government direct involvement in airport land use compatibility planning occurs mostly because of the federal grant funding upon which airports rely. Beyond this type of involvement, various federal agencies have established nonregulatory guidelines that pertain to airport land use compatibility.

FEDERAL GOVERNMENT POLICIES

Federal airport land use compatibility policies are concerned mostly with noise issues. Several statutes deal specifically with aircraft noise. These statutes are implemented through regulations and policies of individual federal agencies, in particular the Federal Aviation Administration (FAA). Guidance with re-

gard to safety is primarily limited to FAA regulations concerning airport design and protection of airport airspace.

Statutes

Three statutes are of particular relevance to airport land use compatibility planning in that they both support and limit the actions that airports can take to mitigate noise impacts.

- **Aviation Safety and Noise Abatement Act of 1979 (ASNA)**—Among the stated purposes of this act is "to provide assistance to airport operators to prepare and carry out noise compatibility programs." The law establishes funding for noise compatibility planning and sets the requirements by which airport operators can apply for funding. The law does not require any airport to develop a noise compatibility program—the decision to do so is the choice of each individual airport proprietor. Regulations implementing the act are set forth in Federal Aviation Regulations Part 150.

- **Airport and Airway Improvement Act of 1982 (AAIA)**—This act established the Airport Improvement Program (AIP) through which federal funds are made available for airport improvements and noise compatibility planning. The act has been amended several times, but remains in effect as of late 2004. Land use compatibility provisions of the act are implemented primarily by means of the assurances that airports must provide in order to receive federal airport improvement grants.

- **Airport Noise and Capacity Act of 1990 (ANCA)**—In adopting this legislation, Congress' stated intention was to try to balance local needs for airport noise abatement with national needs for an effective air transportation system. To accomplish this objective, the act did two things: (1) it directed the FAA to establish a national program to review noise and access restrictions on aircraft operations imposed by airport proprietors; and (2) it established requirements for the phase-out of most older model, comparatively louder, "Stage 2" airline aircraft from the nation's airline fleet by January 2000. These two requirements are implemented by Federal Aviation Regulations Part 161 and 91, respectively.

Federal Aviation Administration

The most significant FAA policies having a bearing on airport land use compatibility are found in Federal Aviation Regulations and, secondarily, in certain Advisory Circulars.

- **Federal Aviation Regulations Part 36, Noise Standards: Aircraft Type and Airworthiness Certification**—This part of the Federal Aviation Regulations sets the noise limits that all newly produced aircraft must meet as part of their airworthiness certification.

- **Federal Aviation Regulations Part 91, General Operating and Flight Rules**—This part of the Federal Aviation Regulations sets many of the rules by which aircraft flights within the United States are to be conducted. Rules governing noise limits are set forth in Subpart I. Within this subpart is a provision which mandated that all Stage 2 civil subsonic aircraft having a maximum gross weight of more than 75,000 pounds be phased out of operation within the United States by January 1, 2000. This FAR implements the requirements set forth in the Airport Noise and Capacity Act of 1990.

- **Federal Aviation Regulations Part 150, Airport Noise Compatibility Planning**—As a means of implementing the Aviation Safety and Noise Abatement Act of 1979, the FAA adopted these regulations establishing a voluntary program that airports can utilize to conduct airport noise compatibility

planning. "This part prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving these programs." Part 150 also prescribes a system for measuring airport noise impacts and presents guidelines for identifying incompatible land uses. Airports that choose to undertake a Part 150 study are eligible for federal funding both for the study itself and for implementation of approved components of the local program.

The noise exposure maps are to be depicted in terms of average annual Day-Night Average Sound Level (DNL) contours around the airport. For the purposes of federal regulations, all land uses are considered compatible with noise levels of less than DNL 65 dB. At higher noise exposures, selected land uses are also deemed acceptable, depending upon the nature of the use and the degree of structural noise attenuation provided. In setting the various compatibility guidelines, however, the regulations state that the designations:

> "...do not constitute a Federal determination that any use of land covered by the [noise compatibility] program is acceptable or unacceptable under federal, state, or local law. *The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities.* FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses." [*emphasis added*]

Note that the DNL noise metric is the same as the CNEL (Community Noise Equivalent Level) metric used in California except that DNL does not include a penalty weighting for evening (7:00 to 10:00 p.m.) operations—each operation is counted as if it were three operations—as does CNEL. Both metrics apply a 10-fold weighting—each operation is counted 10 times—for nighttime activity (10:00 p.m. to 7:00 a.m.).

- **Federal Aviation Regulations Part 161, Notice and Approval of Airport Noise and Access Restrictions**—This part of the federal regulations implements the Airport Noise and Capacity Act of 1990. It codifies the analysis and notification requirements for airport proprietors proposing aircraft noise and access restrictions on Stage 2 or Stage 3 aircraft weighing 75,000 pounds or more. Among other things, an extensive cost-benefit analysis of proposed restrictions is required. The analysis requirements are closely tied to the process set forth in FAR Part 150 and are more stringent with respect to the quieter, Stage 3 aircraft than for Stage 2.

- **Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace**—FAR Part 77 establishes standards for determining obstructions to navigable airspace and the effects of such obstructions on the safe and efficient use of that airspace. The regulations require that the FAA be notified of proposed construction or alteration of objects—whether permanent, temporary, or of natural growth—if those objects would be of a height that would exceed the FAR Part 77 criteria. The height limits are defined in terms of imaginary surfaces in the airspace extending about two to three miles around airport runways and approximately 9.5 miles from the ends of runways having a precision instrument approach.

  When notified of a proposed construction, the FAA conducts an aeronautical study to determine whether the object would constitute an airspace hazard. Simply because an object (or the ground) would exceed an airport's airspace surfaces established in accordance with FAR Part 77 criteria does not mean that the object would be considered a hazard. Various factors, including the extent to

which an object is shielded by nearby taller objects, are taken into account. The FAA may recommend marking and lighting of obstructions.

The FAA has no authority to remove or to prevent construction or growth of objects deemed to be obstructions. Local governments having jurisdiction over land use are typically responsible for establishing height limitation ordinances that prevent new, and enable removal of existing, obstructions to the FAR Part 77 surfaces. Federal action in response to new airspace obstructions is primarily limited to three possibilities:

- For airports with instrument approaches, an obstruction could necessitate modification to one or more of the approach procedures (particularly greater visibility and/or cloud ceiling minimums) or even require elimination of an approach procedure.
- Airfield changes such as displacement of a landing threshold could be required (especially at airports certificated for commercial air carrier service).
- The owner of an airport could be found in noncompliance with the conditions agreed to upon receipt of airport development or property acquisition grant funds and could become ineligible for future grants (or, in extreme cases, be required to repay part of a previous grant).

- **FAA Advisory Circular 150/5300-13, Airport Design**—The primary function of this Advisory Circular is to establish standards for dimensions and other features of airport runways, taxiways, and other aircraft operating areas. For the most part, these airport components are all on airport property. One that is sometimes not entirely on airport is the runway protection zone (RPZ). RPZs are trapezoidal-shaped areas located at ground level beyond each end of a runway. The Advisory Circular describes their function as being "to enhance protection of people and property on the ground." The dimensions of RPZs vary depending upon:
  - The type of landing approach available at the airport (visual, nonprecision, or precision); and
  - Characteristics of the critical aircraft operating at the airport (weight and approach speed).

  Ideally, each runway protection zone should be entirely clear of all objects. The *Airport Design* Advisory Circular strongly recommends that airports own this property outright or, when this is impractical, to obtain easements sufficient to control the land use. Acquisition of this property is eligible for FAA grants (except at some small airports which are not part of the national airport system). Even on portions of the RPZs not under airport control, the FAA recommends that churches, schools, hospitals, office buildings, shopping centers, and other places of public assembly, as well as fuel storage facilities, be prohibited. Automobile parking is considered acceptable only on the outer edges of RPZs (outside the extended object free area).

Other Federal Agencies

- **U.S. Environmental Protection Agency (EPA)**—A report published in 1974 by the EPA Office of Noise Abatement and Control continues to be a source of useful background information. Entitled *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, this report is better known as the "Levels Document." The document does not constitute EPA regulations or standards. Rather, it is intended to "provide state and local governments as well as the federal government and the private sector with an informational point of departure for the purposes of decision-making." Using Yearly Day-Night Average Sound Level (DNL) as a measure of noise acceptability, the document states that "undue interference with activity and annoyance" will not occur if *outdoor* noise levels in residential areas are below DNL 55 dB and *indoor*

levels are below DNL 45 dB. These thresholds include an "adequate margin of safety" as the document title indicates.

- **Department of Housing and Urban Development (HUD)**—HUD guidelines for the acceptability of residential land use are set forth in the Code of Federal Regulations Title 24, Part 51, "Environmental Criteria and Standards." The guidelines identify a noise exposure of DNL 65 dB or less as acceptable, between 65 and 75 dB as normally acceptable if appropriate sound attenuation is provided, and above DNL 75 dB as unacceptable. The goal for interior noise levels is DNL 45 dB. These guidelines apply only to new construction supported by HUD grants and are not binding upon local communities.

- **Department of Defense Air Installations Compatibility Use Zones (AICUZ) Program**—The AICUZ Program was established by the DOD in response to growing incompatible urban development around military airfields. DOD Instruction Number 4165.57 (November 8, 1977) provides the overall guidance for the program and mandates preparation of an AICUZ plan for each installation. Each of the military services has its own individual guidelines for implementing the basic instructions. The Air Force guidelines, for example, are defined in Air Force Instruction 32-7063, *Air Installation Compatible Use Zone Program* (April 17, 2002) and Air Force Handbook 32-7084, *AICUZ Program Manager's Guide* (March 1, 1999). The Air Force publications describe the two objectives of the AICUZ program as being: to assist local, regional, state, and federal agencies in protecting public health, safety, and welfare by promoting compatible development within the area of influence of military installations; and to protect Air Force operational capability from the effects of land uses which are incompatible with aircraft operations. AICUZ plans prepared for individual military airfields serve as recommendations to local land use jurisdictions, but have no regulatory function.

  Each AICUZ plan delineates the installation's area of influence with respect to height limitations for airspace protection, accident potential, and noise. FAR Part 77 is used for airspace protection criteria. For safety compatibility, three accident potential zones (APZs) are defined: a clear zone (equivalent to the RPZ at civilian airports), and APZs I and II. These zones extend a total of 15,000 feet beyond the ends of runways. Noise contours using the DNL metric, or CNEL in California, indicate the extent of noise impacts. Land use compatibility guidelines are provided with respect to each of these factors. Residential development is considered incompatible within all three APZs except for low-density development in APZ II, as well as within all noise contours above 65 dB.

- **Department of Defense Joint Land Use Study (JLUS) Program**—In 1985, congress authorized the DOD to make available community planning assistance grants *(Title 10 U.S.C. Section 2391)* to state and local government to help better understand and incorporate the AICUZ technical data into local planning programs. The Office of Economic Adjustment (OEA) manages the JLUS program. A JLUS is a cooperative land use planning effort between the affected local government and the military installation. The JLUS presents a rationale, justification, and a policy framework to support the adoption and implementation of recommended compatible development criteria. These measures are designed to prevent urban encroachment; safeguard the military mission; and protect the public health, safety, and welfare.

STATE OF CALIFORNIA POLICIES

Unlike with federal government policies that are merely advisory as airport land use compatibility planning guidelines, some elements of state policy are regulatory in nature.

State Aeronautics Act

The California State Aeronautics Act—Division 9, Part 1 of the California Public Utilities Code—provides the policy guidance most directly relevant to compatibility planning. Three portions of the act are of particular interest. One, beginning with Section 21670, establishes requirements for airport land use compatibility planning around each public-use and military airport in the state and the creation of an airport land use commission in most counties. Another—Section 21669—requires the State Department of Transportation to adopt, to an extent not prohibited by federal law, noise standards applicable to all airports operating under a state permit. A third effectively makes FAR Part 77 a state law.

- **Airport Land Use Commission Statutes**—Although numerous changes have been made to the ALUC statutes over the years, the basic requirements for the establishment of ALUCs and the preparation of airport land use compatibility plans have been in place since the law's enactment in 1967. The fundamental purpose of ALUCs to promote land use compatibility around airports has remained unchanged. As expressed in the present statutes, this purpose is:

  > "...to protect public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses."

  As noted in the introduction to this chapter, the focus of the ALUC statutes is on the process of compatibility planning. Compatibility criteria are not defined. Rather, reference is made to other sources of compatibility criteria, specifically:

  - The preamble to the law indicates that one of the purposes is "to promote the overall goals and objectives of the California airport noise standards adopted pursuant to Section 21669" i.e., the California Airport Noise Regulations.
  - Section 21674.7 requires that, when adopting or amending a compatibility plan, ALUCs "be guided by" information contained in the *Airport Land Use Planning Handbook*. This section further states that "prior to granting permits for the renovation or remodeling of an existing building, structure, or facility, and before the construction of a new building, it is the intent of the Legislature that local agencies shall be guided by the height, use, noise, safety, and density criteria that are compatible with airport operations" as outlined in the *Handbook*. Highlights of the compatibility criteria set forth in the *Handbook* are included later in this chapter.
  - With regard to military airports, Section 21675(b) states that ALUCs must prepare a compatibility plan for them and that such plans "shall be consistent with the safety and noise standards in the Air Installation Compatible Use Zone [plan] prepared for that military airport."

  With respect to the compatibility planning process, two sections of the law are particularly significant to local land use agencies:

  - ALUC authority is limited to "areas not already devoted to incompatible uses." This phrase is generally taken to mean that ALUCs have no authority over existing land uses. However, changing an incompatible land use in a manner that would make it more incompatible is considered to be within the jurisdiction of ALUCs.
  - Section 21676 describes the types of land use actions that must be submitted to an ALUC for review. These actions include adoption or amendment of a general plan or zoning ordinance. Section 21676.5 indicates that until such time as a local agency's general plan has been made consistent with the ALUC's plan, the ALUC may require the local agency to submit all "actions, regula-

tions, and permits" for review. After the agency's general plan has been deemed consistent, then these additional actions are not subject to ALUC review unless agreed upon between the agency and the ALUC.

- **California Airport Noise Regulations**—The airport noise standards promulgated in accordance with the State Aeronautics Act are set forth in Section 5000 et seq. of the California Code of Regulations (Title 21, Division 2.5, Chapter 6). The regulations establish criteria under which a county board of supervisors can declare an airport as having a "noise problem." The specifics of the regulations are applicable only to a few, primarily major airline, airports that have been declared as having a noise problem (March ARB is not one of these). Nevertheless, some of the provisions are of interest in a nonregulatory manner to other airports.

  Most relevant are the criteria that define what are considered incompatible land uses with respect to noise. Section 5006 states that:

  > "The level of noise acceptable to a reasonable person residing in the vicinity of an airport is established as a community noise equivalent level (CNEL) value of 65 dB for purposes of these regulations. This criterion level has been chosen for reasonable persons residing in urban residential areas where houses are of typical California construction and may have windows partially open. It has been selected with reference to speech, sleep and community reaction."

  Of particular note in the above is that the 65 dB CNEL criterion has been set specifically with respect to *urban* residential areas. The regulations provide no guidance with respect to other community settings.

  Four types of land uses are defined as incompatible within the 65 dB CNEL contour:

  - Residences of all types;
  - Public and private schools;
  - Hospitals and convalescent homes; and
  - Churches, synagogues, temples, and other places of worship.

  However, these uses are not deemed incompatible if any of several mitigative actions has been taken as spelled out in Section 5014. Among these measures are airport acquisition of an avigation easement for aircraft noise and, except for some residential uses, acoustical insulation adequate to ensure that the interior CNEL due to aircraft noise is 45 dB or less in all habitable rooms.

- **Regulation of Obstructions**—Section 21659 gives the state authority to enforce the standards set by FAR Part 77. No structure or tree is permitted to reach a height that exceeds FAR Part 77 obstruction standards unless the FAA has determined that the object would not constitute a hazard to air navigation or create an unsafe condition for flight.

Other State Regulations

Additional state regulations having a bearing on airport land use compatibility planning include the following:

- **Government Code**—Section 65302.3 requires that local agencies must either modify their general plans and any applicable specific plans to be consistent with the compatibility plan adopted by an ALUC or take the steps indicated in Public Utilities Code Section 21676 to overrule the ALUC. The local plans are to be amended within 180 days of when the ALUC plan is adopted or amended.

- **California Building Code**—California Code of Regulations Title 24, known as the California Building Code, contains standards for allowable interior noise levels associated with exterior noise sources. The standards apply to new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family residences.

  The standards state that:

  > "Interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metric shall be either the Day- Night Average Sound Level (L_{dn}) or the Community Noise Equivalent Level (CNEL), consistent with the noise element of the local general plan. Worst-case noise levels, either existing or future, shall be used as the basis for determining compliance with [these standards]. Future noise levels shall be predicted for a period of at least 10 years from the time of building permit application."

  With regard to airport noise sources, the code goes on to indicate that:

  > "Residential structures to be located where the annual L_{dn} or CNEL exceeds 60 dB shall require an acoustical analysis showing that the proposed design will achieve the prescribed allowable interior level. For public use airports or heliports, the L_{dn} or CNEL shall be determined from the airport land use plan prepared by the county wherein the airport is located. For military bases, the L_{dn} shall be determined from the facility Air Installation Compatible Use Zone (AICUZ) plan. For all other airports or heliports, or public use airports or heliports for which a land use plan has not been developed, the L_{dn} or CNEL shall be determined from the noise element of the general plan of the local jurisdiction. "When aircraft noise is not the only significant source, noise levels from all sources shall be added to determine the composite site noise level."

- **Real Estate Disclosure Laws**—State legislation that took effect in January 2004 (Building and Professions Code Section 11010 and Government Code Sections 1103 and 1353) requires that the presence of an airport nearby be disclosed as part of most residential real estate transactions. This requirement applies within the airport influence area as defined by the airport land use commission in the county. The law provides the following specific language to be used in the disclosure:

  > "This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you."

- **State Education Code**—Provisions of the Education Code applying to elementary and secondary schools (Section 17215) and community colleges (Section 81033) require the California Division of Aeronautics to review proposals for acquisition of a school site situated within two miles of an existing or planned airport runway. The Division must then investigate the proposed site and report back to the Department of Education its recommendations as to whether the site should be acquired for school purposes. The Division is also required to establish criteria to be used in this review process.

- **General Plan Guidelines**—Section 65302(f) of the California Government Code, requires that a noise element be included as part of local general plans. Airports and heliports are among the noise sources specifically to be analyzed. To the extent practical, both current and future noise contours (expressed in terms of either CNEL or DNL) are to be included. The noise contours are to be

"used as a guide for establishing a pattern of land uses... that minimizes the exposure of community residents to excessive noise."

Guidance on the preparation and content of general plan noise elements is provided by the Office of Planning and Research in its *General Plan Guidelines* publication (last revised in 2003). This guidance represents an updated version of guidelines originally published by the State Department of Health Services in 1976. Included in the document is a table indicating noise compatibility criteria for a variety of land use categories. Another table outlines a set of adjustment or "normalization" factors that "may be used in order to arrive at noise acceptability standards which reflect the noise control goals of the community, the particular community's sensitivity to noise..., and their assessment of the relative importance of noise pollution."

- **Senate Bill 1462, Military Readiness Activities: Special Use Airspace**—Approved September 2004, this bill amends the Planning and Zoning Law to require that a local planning agency, prior to adopting or substantially amending its general plan, refer the proposed action to specified entities, including the branches of the U.S. Armed Forces. For land use actions within the airport influence area of March Air Reserve Base (see Exhibit 3-3), the contacts are:
  - Air Force Center for Engineering and the Environment (AFCEE)
    Regional Environmental Office
    333 Market Street, Suite 625
    San Francisco, CA 94105
    (415) 977-8884
  - March ARB Community Planner
    452nd Base Engineering Building 2403
    1261 Graeber Street
    Riverside, CA 92518
    (951) 655-7216

  This requirement applies to all proposed actions that would affect lands within 1,000-feet of a military installation, beneath a low-level flight path, or within special use airspace as defined in Section 21098 of the Public Resources Code. The DOD must provide electronic maps identifying these areas (the military installation, low-level flight areas and special use airspace) to the Office of Planning and Research (OPR), which will make this information available to cities and counties. This law also allows the military branches to request consultation with the local agency and the project applicant to discuss the effects of the proposed project on the military installation, potential alternatives and mitigation measures.

- **Senate Bill 926, Economic Development**—Approved September 2004, the law consolidates efforts to retain military bases under a single state office—the Office of Military and Aerospace Support—in the Business, Transportation and Housing Agency. This bill also modifies the Planning and Zoning Law to require that when a local agency is evaluating the impact of the proposed general plan amendment on military installations, military training routes, and restricted airspace, that this evaluation be based not only on information provided by the military, but on other sources, as well. With respect to open-space, the Planning and Zoning Law defines the lands adjacent to military installations, military training routes, and restricted airspace as open space in support of the mission of military installations. These open-space areas are intended to provide buffer zones to military activities and complement the resource value of the military lands. This bill also requires that a city or county reflect the open-space provisions as part of their next general plan revision.

Airport Land Use Planning Handbook

Drawing from original research and a variety of other sources such as those described herein, the *California Airport Land Use Planning Handbook* provides an extensive amount of information upon which local airport land use compatibility criteria can be based. Indeed, as noted earlier herein, local compatibility planning must "be guided by" the information in the *Handbook*. On most topics, the *Handbook* provides a significant degree of latitude in setting compatibility criteria to best suit the characteristics of a particular airport and its environs. Moreover, agencies can deviate from this guidance where there is strong rationale for doing so and compliance with the basic objectives of the statutes can still be demonstrated.

The *Handbook* discussion of compatibility issues is divided into chapters on noise and safety. The noise discussion includes overflight issues and safety includes airspace protection. A few highlights are worth noting.

- **Noise**—The *Handbook* notes that 65 dB CNEL is the maximum noise level normally compatible with urban residential land uses, but that this level is too high for many airports. The "normalization" process is cited as a means for adjusting this criterion to reflect community characteristics. Additional factors to be considered are listed in Table 7C.

- **Overflight**—Overflight concerns are addressed in terms of the need for buyer awareness measures and avoidance of particularly noise-sensitive land uses.

- **Safety**—Safety compatibility guidelines in the *Handbook* utilize accident location data to identify the areas of greatest risk near runways. Several sample sets of safety zones are depicted along with suggested maximum residential density and nonresidential intensity criteria. Distinctions between rural, suburban, and urban settings are taken into account in these criteria.

- **Airspace Protection**—The criteria for this topic stem directly from FAR Part 77 standards for avoidance of airspace obstructions and other FAA regulations with respect to bird strike concerns and other hazards to flight.

Riverside County Airport Land Use Commission Policies

The role played by the Riverside County Airport Land Use Commission in airport land use compatibility planning within the county is defined by state ALUC statutes outlined earlier. The ALUC meets monthly to review land use development projects submitted to it in accordance with state law.

Between 2004 and 2006, the commission adopted an updated compatibility plan for most of the public-use airports in the county and adoption of the remaining plans is pending as of mid 2007. The plan is organized around a set of procedural policies and compatibility criteria generally applicable to all airports in the county. Excerpts of these policies are contained in Appendix B herein. For each airport, a set of maps is provided to give the essential geographical context to the compatibility criteria. The maps are drawn to take into account the specific characteristics of the airport and its operations, as well as its environs. Additionally, airport-specific policies are included to supplement or modify the countywide policies as appropriate. Appendix A of this *JLUS* document itemizes the airport-specific policies proposed to apply to March ARB/IPA.

Preparation of a compatibility plan for March ARB was not included in the countywide project because of funding issues. The overall organization of the plan, though, allows a section on March ARB to be added. The work scope for the present *Joint Land Use Study* includes providing a recommended March ARB/IPA compatibility plan to the ALUC for its consideration.

The plan's procedural policies are based upon the ALUC statutes. They indicate what types of local land use actions are to be submitted for review and what choices of actions the ALUC can take when conducting its reviews. Submittal of certain types of land use actions is mandatory under state law. These include proposed adoption or amendment of a general plan or zoning ordinance affecting land within the influence area of an airport. Submittal of other types of land use actions—referred to in the plan as *major land use actions*—is mandatory only until such time as a local land use jurisdiction has modified its general plan for consistency with the compatibility plan or has overruled the ALUC, but is requested to continue thereafter on a voluntary basis.

The compatibility policies define a set of six zones covering the environs of each airport. The zones take into account a combination of noise and safety compatibility concerns. For each zone, various compatibility criteria are established including acceptable residential densities, maximum usage intensities (the number of people per acre) for nonresidential uses, height limitations on structures, and certain other requirements. With respect to noise, the draft plan sets a basic standard of CNEL 60 dB as the maximum acceptable noise exposure for new residential development around airports in the county. This criterion was adjusted upward to CNEL 62 and 65 dB for the Palm Springs International and Riverside Municipal airports, respectively, in recognition of the noisy urban character of their environs. Similarly, a lower threshold of CNEL 55 dB was adopted for the three low-activity desert airports.

As required by state law, each land use jurisdiction having territory within an airport influence area delineated by the ALUC, must modify its general plan and any applicable specific plans to be consistent with the ALUC's plan. Alternatively, local jurisdictions have the option to overrule the ALUC by taking a specific set of actions defined in state law. In particular, overruling the ALUC requires that the jurisdiction's governing body make findings as to how the general plan or specific plan complies with the purposes of state airport land use compatibility planning statutes. Local jurisdictions also can use the overruling process with regard to individual land use development actions submitted to the ALUC for review and found by the ALUC to be inconsistent with its adopted compatibility criteria.

With regard to this requirement for local jurisdictions to modify their general plans and specific plans for consistency with the ALUC's plan, it is important to recognize that the requirement applies only to proposed development. ALUCs have no authority over existing development. Furthermore, existing development is usually taken to include most development for which no local jurisdiction discretionary actions to change the land use remain to be taken—that is, a vested right to proceed with the development has been established. Therefore, to the extent that land use designations in a general plan or specific plan merely reflect existing conditions, no local jurisdiction plan changes are necessary. The land use would become a nonconforming use with respect to the ALUC policies, but not in relation to the general plan or specific plan. A caveat to this "grandfathered" status is that changes to existing nonconforming land uses which would result in increased nonconformance with compatibility criteria would be inconsistent with ALUC policies. More details on this topic are included in Chapter 2, "Countywide Policies," of the *Riverside County Airport Land Use Compatibility Plan.*

MARCH JOINT LAND USE STUDY

The March Joint Powers Authority (JPA) is comprised of the four surrounding land use jurisdictions: the County of Riverside and the cities of Moreno Valley, Perris, and Riverside. The March JPA has full land use and redevelopment authority—comparable to that of the county and cities—over the portions of the former base that are now under its direct control and shares responsibility for operation and maintenance of the airport through a joint use agreement with the U.S. Department of Defense.

In order to address airport land use compatibility issues around the March ARB/IPA, the March JPA, as proprietor of the airport, sought and obtained funding from the U.S. Department of Defense Office of Economic Adjustment (OEA). The OEA funding provides for preparation of a Joint Land Use Study (JLUS) which is broadly intended to assist military installations and nearby communities with efforts to mitigate and avoid land use compatibility conflicts.

The *March ARB/IPA JLUS* is an unusual planning study in that, while it is conducted under the auspices of the March JPA, the primary actions required for its adoption and implementation are intended be taken by the entities having jurisdiction over land uses around the airport: the four-member jurisdictions and the JPA itself. The *JLUS* merely serves as the JPA's land use compatibility planning recommendations to each of these entities—it need not be adopted by the JPA except as it applies to the lands under the JPA's direct control. Additionally, though, the *JLUS* is recommended to the Riverside County ALUC for adoption as the Airport Land Use Compatibility Plan for March ARB/IPA. Once the ALUC adopts the *JLUS* as a Compatibility Plan, potentially with modifications, then each of the five jurisdictions exercising land use authority would be obligated to either bring its general plan and any specific plans into consistency with the ALUC plan or to overrule the ALUC as described in the preceding section.

The remainder of the *JLUS* document is organized into three chapters and a set of appendices.

- *Chapter 2* contains background data and technical information used to develop the compatibility criteria to mitigate the impact of military operations at March ARB/IPA on adjacent land uses.
- *Chapter 3* sets forth the recommended land use compatibility criteria and associated map. The factors upon which the criteria and map are based are described. Also, selected ALUC countywide policies that would be applicable to March ARB/IPA are noted.
- *Chapter 4* examines the relationship between the recommended compatibility criteria/map and the plans and policies of each of the five affected land use jurisdictions. Notable conflicts are listed. Additionally, the role that each jurisdiction and the ALUC is expected to play in implementation of the *JLUS* recommendations is outlined along with options for how the compatibility criteria can be incorporated into these entities' respective plans.
- *Appendices* contain the March ARB/IPA Compatibility Plan recommended to the ALUC for adoption, excerpts from the policies adopted by the ALUC for other airports in the county, a copy of the Federal Aviation Regulations Part 77 pertaining to airspace protection, details on the methodology for calculating usage intensities (a key criterion in the compatibility criteria), and a glossary.

Chapter 2

March Air Reserve Base / Inland Port Airport Background Data

2

March Air Reserve Base/ Inland Port Airport Background Data

INTRODUCTION

This chapter examines information regarding current and projected future aviation activity at March Air Reserve Base/Inland Port Airport and the impact that this activity has and will have on surrounding land uses. The objective of this effort is to identify where land use compatibility measures may be necessary as well as an overall airport influence area. The maps included in this chapter depict the factors that are determinants of the airport influence area boundary.

AIRPORT HISTORY AND ROLE

Originally established as a military airport at the present site in 1918, March air base has gone through various changes in name and function. For most of the second half of the twentieth century, the base was known as March Air Force Base. The current March Air Reserve Base name became official in 1996 as a result of recommendations of the 1993 Defense Base Realignment and Closure Commission (BRAC). This change in military function also meant that major portions of the base not essential to aircraft operations became excess to military needs and that exclusive military use of runways was no longer required.

To take responsibility for civilian development and use of the excess military property, a joint powers authority was established comprised of the four surrounding land use jurisdictions: the County of Riverside and the cities of Moreno Valley, Perris, and Riverside. The March Joint Powers Authority (JPA) has full land use and redevelopment authority—comparable to that of the county and cities—over the portions of the former base that are now under its direct control. These lands include the adjacent industrial park and a portion of the airport building area.

The JPA shares responsibility for operation and maintenance of the airport through a joint use agreement with the U.S. Department of Defense (DOD). The JPA designated the civilian component of the joint use facility as the March Inland Port Airport and operates it under an umbrella agency, the March Inland Port Airport Authority (MIPAA). The DOD has sole authority over the types of military aircraft based at the field. Decisions on civilian aircraft usage are under the JPA's purview, but are subject to the provisions of the joint use agreement as well as limitations that the Federal Aviation

Administration would establish as a condition for acceptance of airport development grants. The emphasis of the MIPAA is upon development of air cargo activities at the airport. The JPA General Plan also identifies passenger service as an objective for the airport. Meetings of the JPA and umbrella agencies are open to the public.

Ownership of the runway system and strictly military areas of the airport remain under the control of the U.S. Air Force, specifically the 452nd Air Mobility Wing. The primary missions of this unit include providing military airlift and air refueling capabilities. In this capacity, the unit transports people, equipment, and supplies to meet U.S. armed forces requirements anywhere in the world. The aerial refueling aircraft based at March ARB also operate anywhere in the world where the need for their capabilities arises. In addition to these functions of the host unit, several other government organizations operate flying missions from the base.

The civilian component of the joint use facility accommodates commercial operations and will likely accommodate general aviation activity in the future. Under the joint use agreement, air cargo service was initiated at the airport in October 2005 and ceased in December 2008. Operations by private general aviation aircraft currently (late 2010) require prior permission. Once general aviation facilities are constructed, future general aviation operations may not require prior permission. Civilian flight training is not allowed.

AIRFIELD CONFIGURATION AND FLIGHT PATTERNS

As the role of March ARB/IPA has evolved over time, the facilities have changed as well. However, the runway system and other basic aeronautical components of the base have existed in largely their present configuration since the World War II era. A summary of major features is presented in Exhibit 2–1. Exhibit 2–2 depicts the overall layout of the airport.

Today, the airport has two runways. The primary runway—oriented north-northwest/south-southeast and designated Runway 14-32—is 13,300 feet in length, making it one of the longest in the state. The length, width, and pavement strength of Runway 14-32 enable it to accommodate nearly any type of military or civilian aircraft. The smaller secondary runway—Runway 12-30—was once the primary runway, but its length is now reduced to just over 3,000 feet and its use restricted to light aircraft.

Instrument approach procedures serving the airport include a Category II Instrument Landing System (ILS) enabling precision instrument approaches from the south for landing on Runway 32 with minimums as low as 100 feet cloud ceiling and ¼-mile visibility. All but a small fraction of the aircraft approaches are made to Runway 32 and the ILS is used on many of these operations even when visual flight conditions exist. From the north, only nonprecision approach capabilities are provided for Runway 14. The approach path is offset nearly 30° to the west presumably because of high terrain. The high terrain also affects instrument procedures in other ways: aircraft approaching from the south and circling to land on Runway 14 must do so west of the airport; and aircraft executing a missed approach on the Runway 32 ILS must turn to the left as they climb. Both of these occurrences are relatively infrequent, however.

Aircraft departing March ARB also commonly follow defined instrument procedures. The SKYES-ONE departure procedure (Exhibit 2-3) applies to takeoffs in either direction on the runway. For takeoffs on Runway 14, aircraft fly straight out along the runway heading for a distance of 20 nautical miles (n.m.), then turn right and proceed southward to the SKYES intersection (approximately 10 n.m. east of the Fallbrook airport). When taking off on Runway 32, which is the most common direction of

operation, aircraft fly the runway heading to approximately 2.0 n.m. beyond the north end of the runway (1.4 n.m. past the March TACAN), then turn left to head southward to the DIAMD intersection (situated near the south end of Lake Elsinore) before again turning left to 130° at DIAMD intersection and proceeding to the SKYES intersection east of Fallbrook. Aircraft must cross over DIAMD intersection at or above 5,800 feet MSL unless otherwise instructed by air traffic control. Depending upon factors such as aircraft performance and wind conditions, the flight tracks actually flown will vary slightly. In particular, the radius of the turn that aircraft make from the Runway 32 heading to the southward course will vary.

In addition to these instrument approach procedures, a variety of flight patterns are flown by aircraft operating at March ARB/IPA under visual flight conditions. Closed circuit flight training operations by military aircraft constitutes a significant component of this activity. Because of the particular needs of military aircraft and missions, the routes flown differ from standard patterns utilized at civilian airports. Also, the affected area is larger than typical civilian airport traffic patterns. The *March ARB Air Installation Compatible Use Zone (AICUZ) Study* shows closed pattern routes extending 3 to 4 n.m. north of the airport and into central Perris 6 n.m. to the south. The high terrain to the north and east limits most of this training activity to the area west of the airport, primarily within about 2 n.m. of the runway.

Exhibit 2–4 depicts in simplified form the locations of the major instrument and visual flight patterns at March ARB/IPA. These locations are as shown in the 2005 AICUZ Study and were used for the purposes of modeling the airport noise impacts. Except perhaps along the extended runway centerline, few aircraft follow these precise routes. In order to more fully represent the range of actual aircraft flight tracks, it is necessary to turn to data from ground radar or as transmitted from transponders on board the aircraft. Additionally, the simplified flight-track data does not provide aircraft altitude information. For compatibility planning purposes around March ARB/IPA, it is necessary to identify the locations where aircraft commonly fly at less than approximately 3,000 feet above the airport's elevation of 1,535 feet above mean sea level while approaching or departing the airport or conducting closed circuit flight training there. Radar images recorded by Federal Aviation Administration air traffic control facilities provide representative data for aircraft operations at March ARB/IPA. Exhibits 2–5 and 2–6 depict a selection of radar flight tracks during summer (2004) and winter (2004-05) periods, respectively. Note that the altitude data is referenced to mean sea level (MSL). Thus, flight altitudes below 3,000 feet above the airport are represented by the blue (2,000 to 3,000 feet MSL), green (3,000 to 4,000 feet MSL), and first part of the purple (4,000 to 10,000 feet MSL) track colors. Problems have been encountered in obtaining arrival track data for the lower altitudes of interest. However, the instrument approach procedures flown by most aircraft at March ARB suggest that, by the time that aircraft descend to about 4,000 feet MSL, they are beginning to line up along the final, straight-in approach course for landings on Runway 32 (from the south). The 3,000-foot altitude on a 3.0° glide slope is reached at a distance of just beyond 10 statute miles from the runway end.

AVIATION ACTIVITY LEVELS

Historic

Compared to the years when March operated as an Air Force Base, aircraft activity levels are substantially lower. Activity counts maintained by the Air Force air traffic control tower personnel at the base indicate a total of 34,230 aircraft operations took place during calendar year 2006 compared to

approximately 125,000 during the peak years as an Air Force Base. The following tabulation summarizes how this activity was split among military, air carrier, and general aviation users. Additional data is contained in Exhibit 2–7.

Aircraft Operations — Calendar Year 2006

Category	*Operations*	*Percentage*
Military	16,201	47.3%
Air Carrier **	4,608	13.5%
General Aviation *	13,421	39.2%
Total	*34,230*	*100.0%*

* General aviation operations are almost exclusively March Aero Club aircraft operations on the secondary runway.

** Air carrier operations were mostly DHL air cargo operations, but also include civilian air transport aircraft operated under military contract.

Newer activity data is not currently available from the Air Force. However, the Air Force indicates that the number of military operations remains about the same as tabulated here (some changes have occurred in the mix of aircraft). Civilian air carrier activity has declined with the discontinuation of DHL service. General aviation activity continues to be generated almost entirely by military personnel flying aircraft associated with the March Aero Club.

Forecast

Beginning with the *Joint Use Feasibility Study* in 1997, a variety of aircraft activity forecasts have been prepared March ARB/IPA. Exhibit 2-8 summarizes these forecasts. As the summary shows, the forecasts make different assumptions as to the mix of military and civilian operations.

In each of these forecasts, military operations are assumed to remain constant over time, although the level at which the volume is held constant varies from one forecast to another. All of the forecasts also include a civilian air cargo component, although again the operational volumes vary. Where the forecasts greatly differ is with regard to the anticipated volume of air passenger service. This number ranges from none in the 2005 AICUZ to as much as 8.0 million passengers per year in the Southern California Association of Governments (SCAG) 2004 *Regional Transportation Plan* projections. However, in work for the 2008 *Regional Transportation Plan*, the SCAG Aviation Technical Advisory Committee approved a 2035 forecast that limits the passenger carrying capacity of March ARB/IPA to 2.5 million passengers per year.

The joint use agreement between the U.S. Air Force and the March JPA allows for civilian use of the airport provided that the aircraft and their operators meet certain specified conditions. The focus of the JPA, has generally been upon attracting air cargo operators. Additional limiting factors are that the airport air quality conformity determination and the joint use agreement with the U.S. Air Force both limit civilian aircraft operations to no more than 21,000 per year.

Of all the forecasts, the 2005 *AICUZ Study* prepared for the Air Force best reflects the future role of the facility as envisioned by its operators. The forecast of 69,600 annual operations was a short-term

one, extending only to 2010. It anticipated a maximum military mission of 44,860 annual operations. Civilian aircraft operations are capped at 21,000 operations per year, consistent with the terms of the joint use agreement and related air quality conformity determination. A recent amendment to the Joint Use Agreement allows general aviation activity as part of the 21,000 civilian aircraft operations. The JPA estimates that general aviation will comprise no more than 8,400 operations by 2025 with about 25% being by jet aircraft and the remainder by propeller airplanes. The 2010 projections also anticipated 3,740 fire attack aircraft operations by the California Department of Forestry and Fire Protection (CalFire) not included within the 21,000 operations cap. However, subsequent to completion of the AICUZ, CalFire decided not to relocate to March ARB.

State law governing airport land use compatibility planning requires that the time horizon be at least 20 years. Based upon the constraints established by the joint powers agreement and air quality conformity determination, the March Operations Assurance Task Force (MOATF) has recommended that the projected 69,600 operations projection contained in the 2005 AICUZ be used for airport planning as it provides the best long-term estimation of future airport activity through the 20-year time range. Accordingly, this projection is the one used for the purposes of this *JLUS*. Fleet mix and other activity data distributions associated with this projection are included in Exhibit 2–7.

AIRPORT INFLUENCE AREA

As stated in the introduction, the primary purpose of this chapter is to establish a suitable boundary for the influence area of March ARB/IPA. The California Civil Code Section 1353(a)(2) defines an airport influence area as "the area in which current or future airport-related noise, overflight, safety, or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses as determined by an airport land use commission." The geographic extent of these four impact factors is depicted on the accompanying maps and described below.

Airport Impact Factors

Noise

The noise contours depicted in the 2005 *AICUZ Study* are shown in Exhibit 2–9. Exhibits 2–10, 2–11, and 2–12 illustrate the extent of the noise impact based on the activity levels and other assumptions identified in the 1998, 1992, and 1985 AICUZ Studies, respectively. For comparison purposes, Exhibit 2–13 shows the CNEL 65 and 75 dB noise contours from all four AICUZ studies.

The noise contours from the 1985 *AICUZ Study* are reflected in the interim compatibility plan (*Airport Influenced Area* map) which remains in use by the Riverside County ALUC. At that time, the airport was operating as an Air Force Base. As can be seen, the 2005 AICUZ noise contours are greatly diminished from those in 1985, both north and south of the base.

The March JPA's General Plan (1999) references both the 1992 and 1998 *AICUZ Studies*. The 1992 *AICUZ Study* was prepared while the airport was still operating as a military base. The 1992 *Study* identified 125,000 annual operations conducted by the U.S. Air Force aircraft fleet. The 1992 noise contours are significantly larger than the 1998 contours.

The noise contours in the 1998 *AICUZ Study* reflect the realignment conditions of the airport resulting from the Base Realignment and Closure (BRAC) process. This activity includes the military mission of

the Air Force Reserves and the civilian operations of March Inland Port as permitted under the joint use agreement. The 2005 *AICUZ Study* was based upon similar assumptions regarding the activity at the base and thus produced similar noise contours. In comparison with the noise contours from the 1998 *AICUZ Study*, the CNEL 65 dB noise contours from the 2005 *AICUZ Study* are generally slightly smaller on the north, but essentially identical on the south; the CNEL 60 dB contours, however, are slightly elongated in the 2005 study compared to 1998, particularly to the south.

Noise contours themselves are not a direct determinant of an airport influence area. The noise level considered significant must first be decided. In some cases, it may be appropriate to consider a composite set of noise contours to account for changes in military missions, as well as to consider the inherent imprecision of noise contours. The MOATF has established the 65 dB CNEL as the maximum noise exposure considered normally acceptable for residential land uses. For clarity, the 65-CNEL contour is shown with a heavier line-weight in all of the noise contour graphics.

Overflight

Regardless of the Community Noise Equivalent Level (CNEL) set as the maximum acceptable for residential land use development, the noise of individual aircraft operations will be audible over a much more widespread area. These overflight impacts do not necessarily require that restrictions on land use development be established, but they are nevertheless airport land use compatibility factors. Overflights primarily are considerations for the purposes of disclosures in real estate transactions.

Again, the presence of aircraft overflights is not directly an airport influence area determinant. Some measure of significance must be defined. For general aviation airports, the airport traffic pattern is often used to delineate where aircraft overflights are significant in that aircraft fly both frequently and at a relatively low altitude over these areas. At air carrier and military airports, the larger and often noisier aircraft operating there suggests a more expanded definition of significant overflight area. In this regard, a useful criterion is the area within which aircraft typically are flying at less than 3,000 feet above the ground level (AGL). Most air carrier and military aircraft at this altitude are both distinctly audible and visible. Also, 3,000 feet is the altitude above which the FAA considers air traffic routes locations to be environmentally insignificant in most circumstances.

The locations of where aircraft are below 3,000 feet AGL when flying in the vicinity of March ARB/IPA can be determined from radar data and the airport's instrument approach procedures. To the north, most aircraft are climbing and therefore reach the 3,000-foot height relatively close to the runway compared to landing aircraft. Exhibits 2–5 and 2–6 show departure flight track data for several Summer and Winter days, respectively. Similar data for arrival flight tracks was not available for this study. However, most arriving aircraft approach from the south and utilize the Runway 32 ILS approach procedure. Based upon this procedure's 3.0° glide slope, the point at which aircraft descend below 3,000 feet above the runway elevation can be calculated as slightly over 10 statute miles from the southern end of the runway.

Safety

Although accidents involving aircraft approaching, departing, or maneuvering around an airport can occur anywhere in an airport vicinity, most occur either on the runway or close to the runway ends. The Air Force has defined a set of accident potential zones (APZs) for use in AICUZ studies for individual air bases based upon Air Force accident data collected over a nearly 30-year period. The three zones—Clear Zone (CZ), APZ I, and APZ II—extend a total of 15,000 feet beyond the runway end at a width of 3,000 feet. The first study conducted by the U.S. Air Force reviewed 369 major

accidents from 1968 to 1972. The results of this study showed that approximately 75% of all accidents occurred on or near the runway or in the defined accident zones, while the balance of aircraft accidents (over 25%) took place within a 10-nautical mile radius of the airport. A subsequent update of the study incorporated aircraft accidents through July 1995 and included a total of 838 records. The accident statistics indicated that a larger percentage of accidents (over 30%) occurred outside the defined safety zones, but within a 10-nautical mile radius of the facility. The percent distribution is as follows:

Military Aircraft Accident Statistics

	1989 Study	*1995 Study*
On-Airport Accidents		
On or near runway	23%	25%
Subtotal	23%	25%
Near-Airport Accidents		
Defined Safety Zones		
Clear Zone (CZ)	39%	27%
Accident Potential Zone I (APZ I)	8%	10%
Accident Potential Zone II (APZ II)	5%	6%
Subtotal	52%	43%
Within Airport Environs		
Within 10 nautical-mile radius of base, but outside of defined accident zones	25%	32%
Subtotal	25%	32%
Total	100%	100%

Unlike Navy practice, the APZs for Air Force facilities are normally depicted as aligned with the extended runway centerline and do not curve to follow the flight routes. For March ARB/IPA, this APZ configuration is appropriate to the south because most aircraft are following the instrument approach procedure course on landing or fly straight out on departure. To the north, however, the flight track data shows that essentially all aircraft make a left turn after takeoff, generally at a distance of about 7,000 to 10,000 feet beyond the north end of the runway. This turning departure flight route should be considered in the safety compatibility planning for this portion of the airport environs. The APZs for March ARB, as defined by the *2005 AICUZ Study*, are depicted in Exhibit 2–14.

As can be seen on the map, these zones extend 15,000 feet beyond the runway ends and thus onto private lands around the base. The Air Force recommends significant land use restrictions within these areas. As a determinant of the overall airport influence area, however, APZs are smaller and thus less of a factor than the noise and airspace protection factors.

Airspace Protection

The final airport land use compatibility factor is the need to protect the airspace around the airport from activities that can impair the use of the facility or even be the cause of an accident. The height of structures in the nearby area is the most critical concern in this regard. Other land use activities also can adversely affect airport usage, however. These include uses that attract birds, generate electronic interference with aircraft navigation or communications, or generate visual impairments such as smoke, glare, or distracting lights.

Criteria defining nominal limits on the heights of structures around airports are set forth in Part 77 of the Federal Aviation Regulations (FAR). Objects that exceed these heights are considered to be

airspace obstructions and, subject to FAA evaluation, may be deemed hazards. Significant with respect to March ARB/IPA is that the FAR Part 77 airspace protection criteria differ between military and civilian airports. The military FAR Part 77 surfaces create height limits that are more restrictive than the civilian surfaces along the runway approaches, but are less restrictive in some other locations. Also, the military surfaces extend over a larger geographic area and include protection for a future precision instrument approach from the north. Given the joint use nature of the airport, both sets of surfaces need to be taken into account. Exhibit 2-15 combines the military and civilian airspace surfaces in a manner that more clearly distinguishes which set of surfaces are controlling (more restrictive) in the different areas within the airport vicinity. These controlling surfaces dictate the allowable heights of objects within the airport environs. Cross-sections show the vertical relationship between the military and civilian airspace surfaces.

As the airspace protection map illustrates, high terrain penetrates the FAR Part 77 surfaces in several areas, especially to the north and southwest. This terrain, as well as any individual existing obstacles, is taken into account in establishment of the airport's instrument approach and departure procedures. The true critical airspace protection needs for the airport are represented by a set of TERPS (U.S. Standard for Terminal Instrument Procedures) surfaces which correlate with the actual instrument procedures and their associated minimums. A review of the TERPS surface mapping provided by the Air Force indicates that the TERPS surfaces are generally less restrictive than either set of FAR Part 77 surfaces. In the areas where the TERPS surfaces are more restrictive, the restrictions would not limit objects to less than 200 feet in height. In these few locations, provisions of Part 77 requiring FAA review of all objects taller than 200 feet regardless of their proximity to the airport should ensure protection of the airport airspace. Height limitation policies based upon TERPS surfaces therefore do not appear to be necessary for March ARB/IPA—the FAR Part 77 requirements will suffice.

Determining Overall Airport Influence Area Boundary

To determine the overall influence area boundary for March ARB/IPA, decisions must be made as to where the compatibility factors described herein represent significant concerns. Examination of the maps shows that the military FAR Part 77 surfaces are the most geographically extensive of any of the impact factors. However, in the outer portions of this area, only very tall objects (over 200 feet in height) are a concern and these are addressed through other processes. Areas affected by noise and routine overflights thus become prominent determinants of the airport influence area. As previously discussed, the suggested overflight impact significance threshold is based upon where aircraft are below 3,000 feet above ground level. Radar flight track data and the altitudes associated with the Runway 32 ILS approach, as described earlier, provide a reasonable approximation as to how large of an area is affected by this overflight criterion.

As noted earlier, the Riverside County Airport Land Use Commission (ALUC) has established a set of study area boundaries (the *Airport Influenced Area*) for March ARB/IPA that have served as an interim compatibility plan for the airport (Exhibit 2-16). A look at the outermost boundary indicates that it encompasses most of the area of overflight concern as represented by the traffic pattern map and the Runway 32 ILS glide slope criterion noted above. Expansion of this boundary to encompass areas of high terrain may be necessary if frequent overflights of those areas are depicted. Additionally, input from the affected jurisdictions, JPA, and ALUC, as well as new data collected as part of this *JLUS*, may warrant some adjustments to the airport influence area boundary.

A final point to again emphasize is that inclusion of an area within the airport influence area does not necessarily mean that major restrictions on land use development are required. Typically, the outer

portions of an airport influence area have few restrictions other than on tall structures. Real estate transaction disclosure requirements are the only other significant policy that would be applicable within this area.

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General Information

- *Airport Ownership:* United States Air Force
  - Airfield maintenance and usage shared with March Joint Powers Authority (JPA) by means of joint use agreement last amended June 2008
- *Year Opened:* 1918
- *Airport Property Size*
  - Air Force property: 2,300 acres
  - JPA property: 360 acres
- *Airport Classification:* Joint Use
- *Airport Elevation:* 1,538 feet MSL

Airport Planning Documents

- *Joint Use Agreement*
  - Between March JPA and U.S. Air Force
  - Amended February 2001
- *Air Installation Compatible Use Zone (AICUZ) Study*
  - Prepared by U.S. Air Force, 2005
  - Prior versions: 1985, 1992, 1998
- *March Inland Port Air Cargo Development Plan*
  - Prepared for March JPA, April 1997

Runway/Taxiway Design

Runway 14-32

- *Critical Aircraft:* Military transport
- *Airport Reference Code:* D-VI
- *Dimensions:* 13,300 ft. long, 200 ft. wide
- *Pavement Strength (main landing gear configuration)*
  - 65,000 lbs (single wheel)
  - 260,000 lbs (dual wheel)
  - 530,000 lbs (dual-tandem wheel)
- *Average Gradient:* 0.35%
- *Runway Lighting*
  - High-intensity runway edge lights (HIRL)
  - Rwy 32: standard 2,400-foot high-intensity approach lighting system with centerline sequenced flashers

Runway 12-30

- *Critical Aircraft:* Small single- and twin-engine piston
- *Airport Reference Code:* B-I (small)
- *Dimensions:* 3,010 ft. long, 100 ft. wide
- *Pavement Strength (main landing gear configuration)*
  - 12,500 lbs (single wheel)
- *Average Gradient:* 0.44%
- *Runway Lighting:* None

Approach Protection

- *Runway Clear Zones*
  - Runways 14 and 32: 3,000-ft. long; mostly on-airport
  - Runway 12 and 30: 1,000-ft. long; all on-airport
- *Approach Obstacles:* None

Building Area

- *Aircraft Parking Locations*
  - Military: Northeast side of airport
  - Civilian: Northeast of Runway 32 threshold
- *Other Major Facilities*
  - Air Traffic Control Tower
  - Extensive military facilities including military passenger terminal; aircraft maintenance facilities; alert aprons/ hangars; munitions storage
  - Former DHL air cargo facility
- *Services*
  - No public services

Traffic Patterns and Approach Procedures

- *Airplane Traffic Patterns*
  - All runways: Left traffic
  - Pattern altitude:
    - Rectangular 3,000 ft. MSL (1,465 ft. above runway elevation)
    - Overhead 3,500 ft. (1,965 ft. above runway elevation)
- *Instrument Approach Procedures (best minimums)*
  - Runway 32 ILS (CAT II):
    - Straight-in (1,600 ft. visibility; 100 ft. descent height)
  - Runway 32 ILS:
    - Straight-in (½ mi. visibility; 200 ft. descent height)
    - Circling (1 mi. visibility; 600 ft. descent height)
  - Runway 32 TACAN:
    - Straight-in (½ mi. visibility; 400 ft. descent height)
    - Circling (1 mi. visibility; 600 ft. descent height)
  - Runway 32 VOR:
    - Straight-in (½ mi. visibility; 400 ft. descent height)
    - Circling (1 mi. visibility; 600 ft. descent height)
  - Runway 14 TACAN (offset 29° west of straight in):
    - Straight-in (1 mi. visibility; 700 ft. descent height)
    - Circling (1 mi. visibility; 700 ft. descent height)
  - No circling northeast of runway on any procedure
- *Standard Instrument Departure Procedures (SKYES-ONE)*
  - Rwy 14: straight out to 20 NM, then right turn
  - Rwy 32: left turn to at 2.0± mile beyond runway end south to DIAMD intersection (south of Lake Elsinore)
- *Visual Approach Aids*
  - Airport: Rotating beacon
  - Runways 14 and 32: PAPI
- *Operational Restrictions / Noise Abatement Procedures*
  - Prior permission required for all transient aircraft
  - General Aviation provisions currently being negotiated by March ARB and March JPA

Planned Facility Improvements

- *Airfield*
  - Construct full-length west parallel taxiway for civilian use
  - Civilian fuel farm
- *Building Area*
  - Air cargo facilities expansion northeast and northwest of Runway 32 approach end
- *Property*
  - No fee acquisition planned

Exhibit 2–1

Airport Features Summary

March Air Reserve Base / Inland Port Airport

RUNWAY DATA

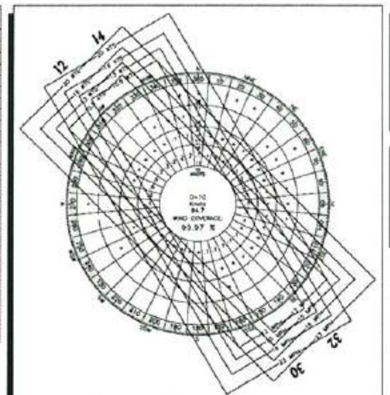
	RUNWAY 14-32 EXISTING	RUNWAY 14-32 FUTURE	RUNWAY 12-30* EXISTING
EFFECTIVE GRADIENT (IN %)	0.35	SAME	0.44
PAVEMENT STRENGTH (X 1000 LBS.)	65(S)	SAME	12.5(S)
	260(D)	SAME	--
	175(ST)	SAME	--
	530(DT)	SAME	--
PAVEMENT STRENGTH (PCN NO.)	47	SAME	--
RUNWAY LIGHTING	HIRL	SAME	NONE
RUNWAY MARKING	PRECISION	SAME	VISUAL
NAVAIDS, VISUAL AIDS	ILS(32) PAPI(14,32)	SAME	NONE
WIND COVERAGE % (20 Knots)	99.97	SAME	99.7
AIRPLANE DESIGN GROUP	V	VI	--
APPROACH CATEGORY (FAR PART 77)	NPI/PIR	SAME	VISUAL/VISUAL
APPROACH SURFACES	34:1/50:1	SAME	20:1/20:1
APPROACH VISIBILITY MINIMUMS	1 MI/CAT II	SAME	VISUAL/VISUAL
MAXIMUM ELEV. ABOVE MSL	1,535' (14)	SAME	1,515(12)
RUNWAY LENGTH	13,300'	SAME	3,150'
RUNWAY WIDTH	300'	SAME	75'
RUNWAY AND TAXIWAY SURFACES	CONCRETE	SAME	ASPHALT
OBSTACLE FREE ZONE (OFZ) WIDTH	400'	SAME	--
OFZ LENGTH BEYOND RUNWAY END	200'	SAME	--
RUNWAY SAFETY AREA (RSA) WIDTH	500'	SAME	--
RSA LENGTH BEYOND RUNWAY END	1,000'	SAME	--
RUNWAY OBJECT FREE AREA (ROFA) WIDTH	800'	SAME	--
ROFA LENGTH BEYOND RUNWAY END	1,000'	SAME	--
RUNWAY CATEGORY	TRANSPORT	SAME	--

* RUNWAY 12-30 IS NOT USED FOR CIVILIAN OPERATIONS.

LOCATION MAP

NOTES:

1. Existing facilities are from Tabs C-1 and E-10 by March Air Force Base.
2. All elevations given are NAVD 88. All coordinates are in California Coordinate System Zone 6 NAD 83
3. Property within RPZs is owned by the Department of Defense in fee.
4. Building Restriction Line for east side area set at military Taxiway Clearance Line.
5. Topography for the March Inland Port east area based on aerial survey by The Keith Cos. in 1999.
6. All survey monuments are protected in concrete.
7. Top elevations noted in the Building Table are estimated.



ALL-WEATHER WIND ROSE

CROSSWIND COVERAGE

RUNWAY	10.5	13	16	20 (KTS)
12	32.07%	32.40%	32.60%	32.74%
14	32.61%	32.85%	33.11%	33.20%
30	59.21%	69.21%	69.66%	69.71%
32	58.48%	68.85%	69.09%	69.13%
12-30	98.60%	98.39%	99.85%	99.08%
14-32	98.72%	99.32%	99.83%	99.96%
COMBINED	99.02%	99.51%	99.90%	99.97%

Based on 76,725 observations between 1996 through 2005 taken at March ARB.

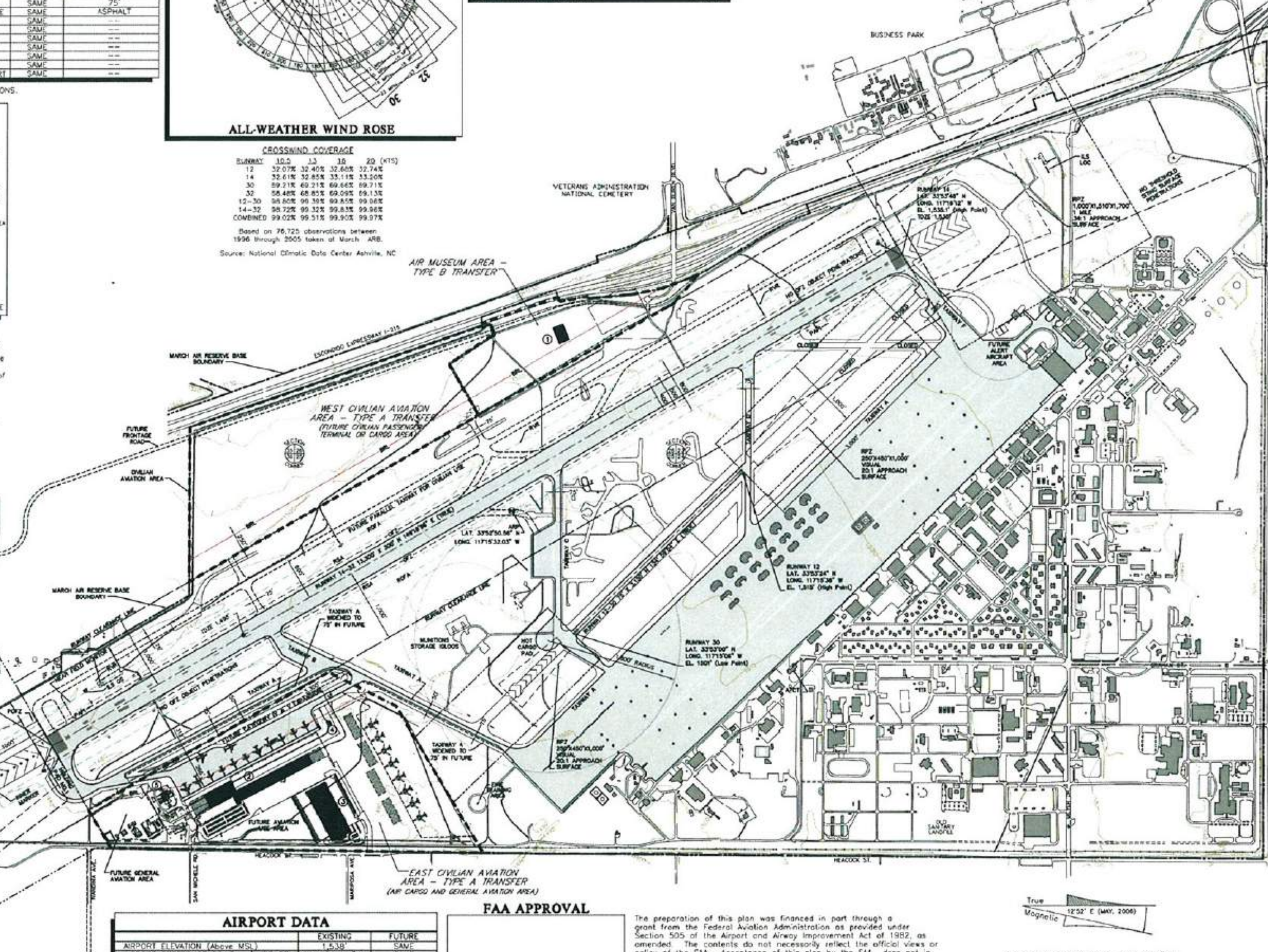
Source: National Climatic Data Center Ashville, NC

LAND CONVEYANCES

TYPE OF TRANSFER	TRANSFER NAME	PROPERTIES OR AREAS
A	AVIATION USE	EAST CIVILIAN AVIATION AREA
		WEST CIVILIAN AVIATION AREA
B	AVIATION USE	AIR MUSEUM AREA

BUILDING TABLE

#	DESCRIPTION	TOP ELEVATION
1	AIR MUSEUM	1,560'
2	AIR CARGO SORT FACILITY	1,522'
3	PHILLIPS CONSUMER ELECTRONICS	1,522'
4	GROUND HANDLING FACILITY	1,510'
5	PROPOSED FUEL FARM	1,525'



APZ	Accident Potential Zone
ATCT	Air Traffic Control Tower
BRL	Building Restriction Line
D	Dual Wheel Gear
DT	Dual Tandem Wheel Gear
FAR	Federal Aviation Regulations
GS	Glide Slope
HIRL	High Intensity Runway Lights
ILS	Instrument Landing System
LOC	Localizer
MSL	Mean Sea Level
OFZ	Obstacle Free Zone
PAPI	Precision Approach Path Indicator
PCN	Pavement Classification Number
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
S	Single Wheel Gear
ST	Single Tandem Wheel Gear
VORTAC	Very High Frequency Omnirange/ Tactical Air Navigation

ABBREVIATIONS

RUNWAY END DATA

RUNWAY		EXISTING	FUTURE
32	LATITUDE	33°51.9' N	SAME
	LONGITUDE	117°14.9' W	SAME
	ELEVATION	1,488.3'	SAME
14	LATITUDE	33°53.8' N	SAME
	LONGITUDE	117°16.2' W	SAME
	ELEVATION	1,535.1'	SAME
30	LATITUDE	33°53.0' N	SAME
	LONGITUDE	117°15.1' W	SAME
	ELEVATION	1,501'	SAME
12	LATITUDE	33°53.4' N	SAME
	LONGITUDE	117°15.6' W	SAME
	ELEVATION	1,515'	SAME

LEGEND

	EXISTING	FUTURE
AIRFIELD PAVEMENT		
AIR FORCE BASE BOUNDARY		SAME
AIRPORT REFERENCE POINT (ARP)		SAME
MARCH JPA BUILDINGS		
EXPLOSIVES AREA		SAME
FENCE		SAME
GROUND CONTOURS		SAME
MILITARY APPROACH ZONE		SAME
MILITARY CLEAR ZONE		SAME
ROAD/VEHICLE PARKING		
RUNWAY CLEARANCE LINE		SAME
RUNWAY PROTECTION ZONE		SAME
RUNWAY SAFETY AREA	RSA	SAME
RUNWAY OBSTACLE FREE ZONE	OFZ	SAME
RUNWAY OBJECT FREE AREA	ROFA	SAME
BUILDING RESTRICTION LINE	BRL	SAME
CIVILIAN AVIATION AREA CONVEYANCES		SAME
SURVEY MONUMENT		SAME
SECTION CORNER		SAME

NO.	DATE	REVISION	BY	APP.
5	2/2007	Removed future parallel Taxiway A.	AWS	LMS
4	7/13/06	Revised ALP per FAA comments.	SLA	LMS
3	11/18/04	Added cargo hub site plan and aircraft parking per operator.	DPS	JAH
2	5/18/04	Depict existing CAT II ILS, proposed CDF, cargo, fuel, and other improvements.	DPS	JAH
1	4/3/97	Added Conveyance information	SLA	CCB

AIRPORT LAYOUT PLAN

MARCH INLAND PORT MORENO VALLEY, CALIFORNIA

DMJM AVIATION

DESIGNED: AWS	CHECKED: SLA	SHEET 1 OF 1
DRAWN: AWS	DATE: FEB. 2007	

AIRPORT DATA

		EXISTING	FUTURE
AIRPORT ELEVATION (Above MSL)		1,538'	SAME
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	LATITUDE	33°52'50.56" N	SAME
	LONGITUDE	117°15'32.03" W	SAME
MEAN MAX. TEMP. OF HOTTEST MONTH		94°F (AUGUST)	SAME
AIRPORT AND TERMINAL NAVAIDS		ILS,VORTAC	SAME
AIRPORT REFERENCE CODE		D-V	D-VI
AIRPORT WIND COVERAGE % (20 Knots)		99.97	SAME
MISCELLANEOUS FACILITIES		ATCT WIND CONES	SAME
AIRPORT TYPE		TRANSPORT	SAME
DESIGN AIRCRAFT		AN-124	SAME
CPS AT AIRPORT?		NO	YES

FAA APPROVAL

The preparation of this plan was financed in part through a grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

SPONSOR APPROVAL

APPROVED BY ______________ ______
NAME DATE

Exhibit 2-2

Airport Diagram

March Air Reserve Base / Inland Port Airport

Source: DMJM Aviation (May 2004)

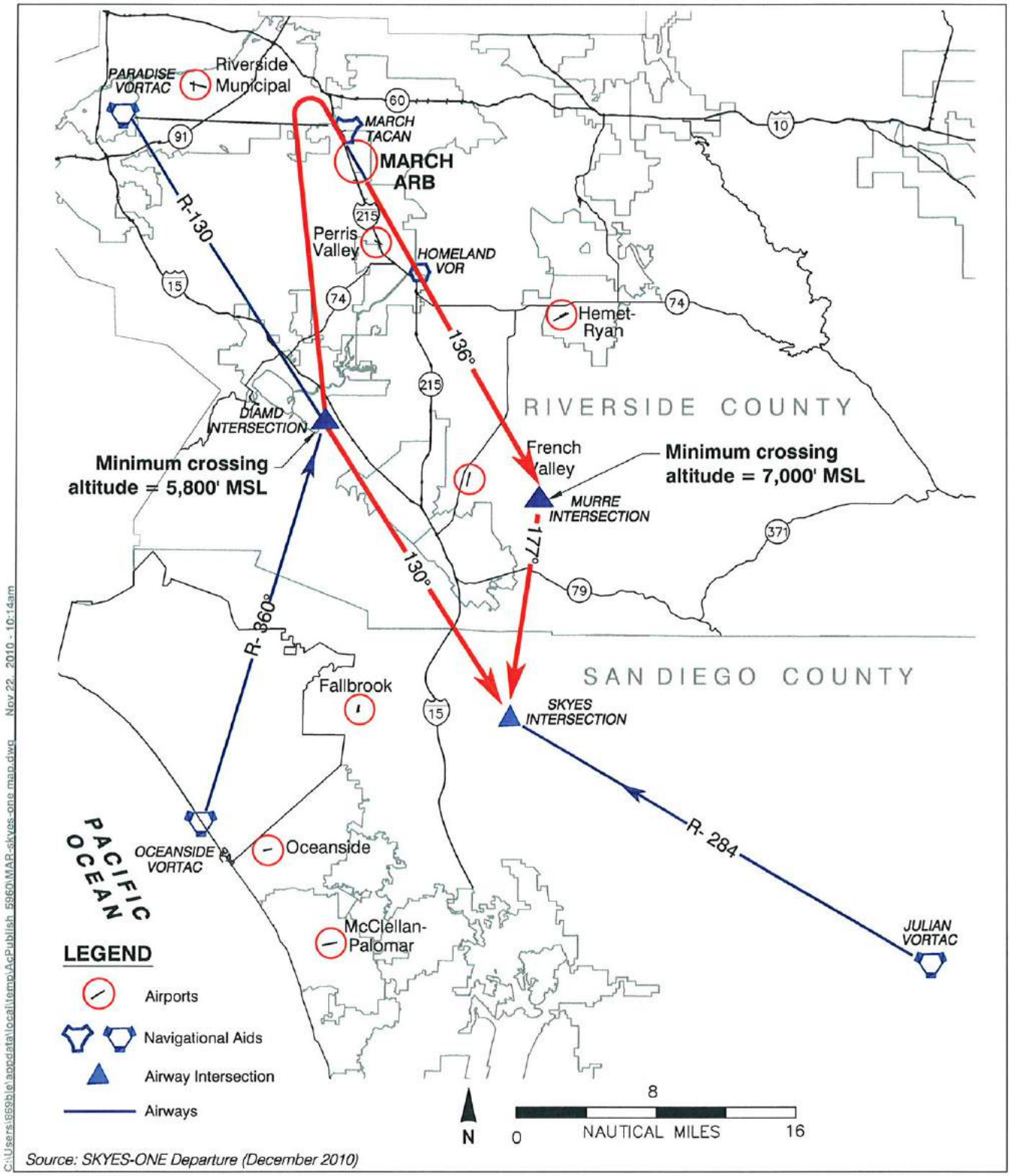


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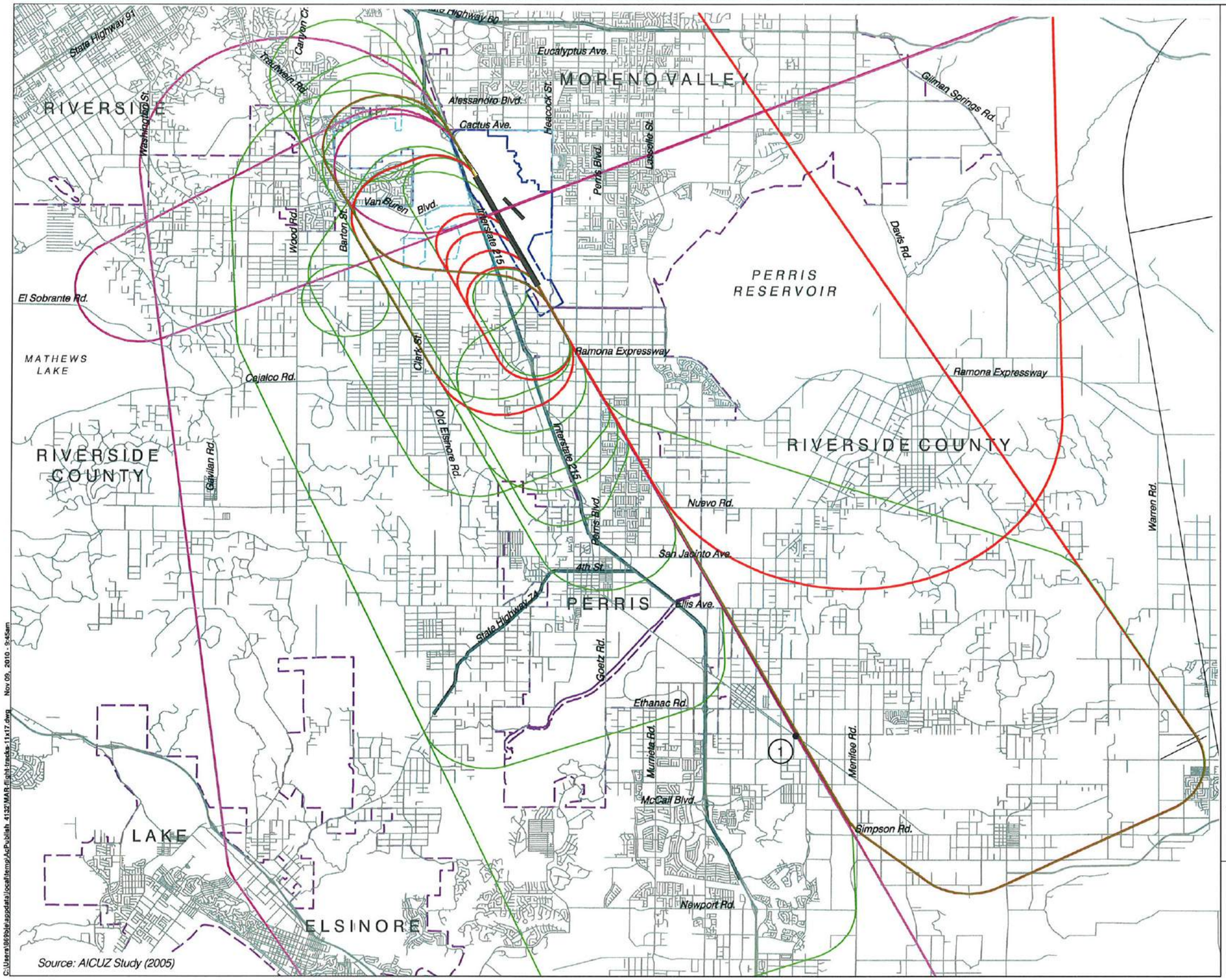
Exhibit 2-3

SKYES-ONE Departure Procedure

March Air Reserve Base / Inland Port Airport



LEGEND

Flight Tracks
- Arrival
- Departure
- Closed Pattern

(1) Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

Boundary Lines
- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Source:

Flight tracks as depicted in Air Installation Compatible Use Zone Study for March Air Reserve Base (August 2005).

N

0 2 4 MILES

MILES

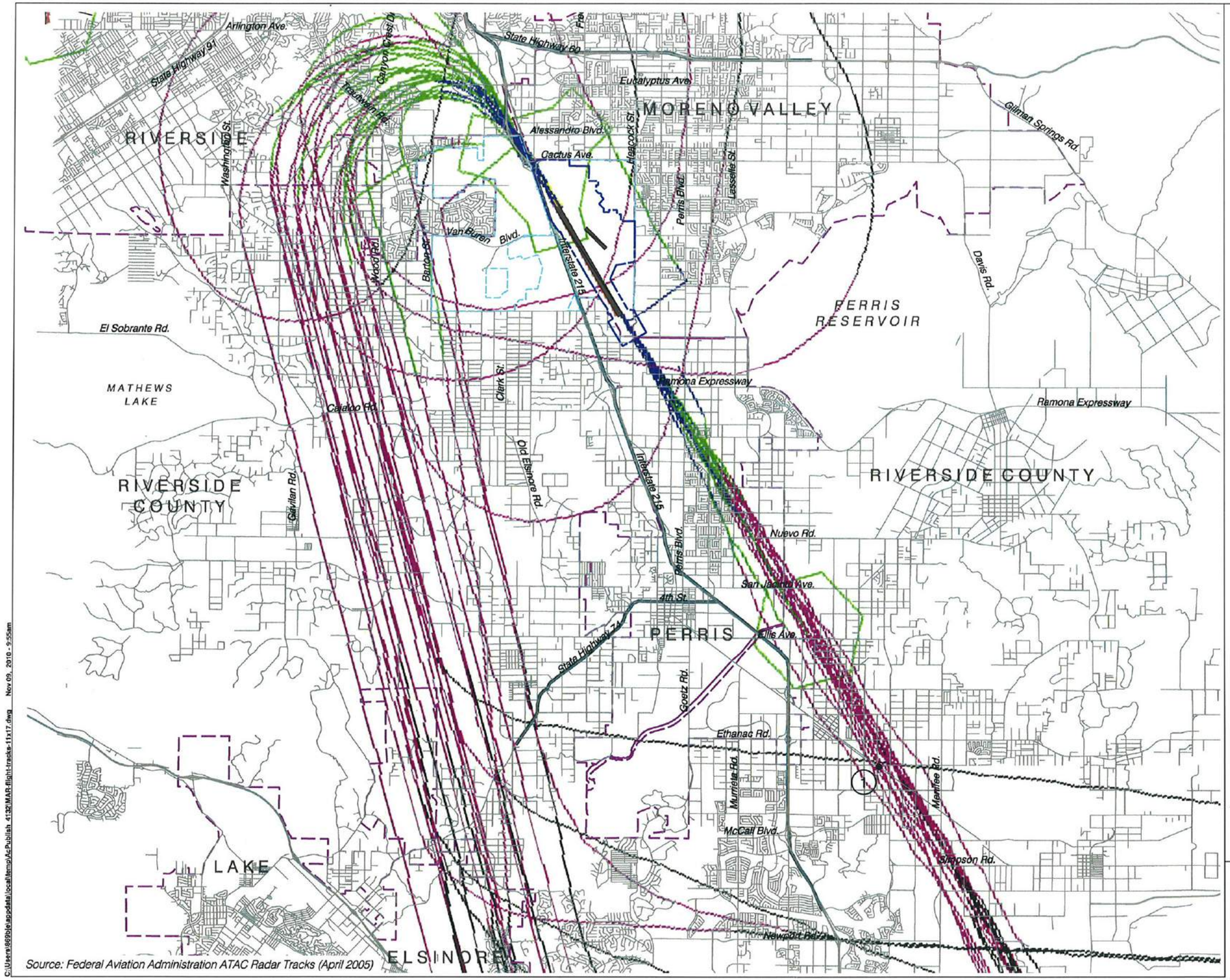
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 2-4

Generalized Flight Tracks

March Air Reserve Base / Inland Port Airport



Source: Federal Aviation Administration ATAC Radar Tracks (April 2005)

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LEGEND

Altitudes*

0	---	1,000	RED
1,000	---	2,000	YELLOW
2,000	---	3,000	BLUE
3,000	---	4,000	GREEN
4,000	---	10,000	PURPLE
10,000	---	23,000	BLACK

(1) Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

* Note

Airfield flight altitudes relate to mean sea level.

Flight tracks shown represent FAA radar data for departures from March ARB/IPA on selected Summer dates.

July 19, 21, and 22, 2004
August 12, 19, and 29, 2004
September 10, and 23, 2004

Source:

Flight tracks provided by Federal Aviation Administration ATAC Radar (April 2005).

N

0 2 4 MILES

MILES

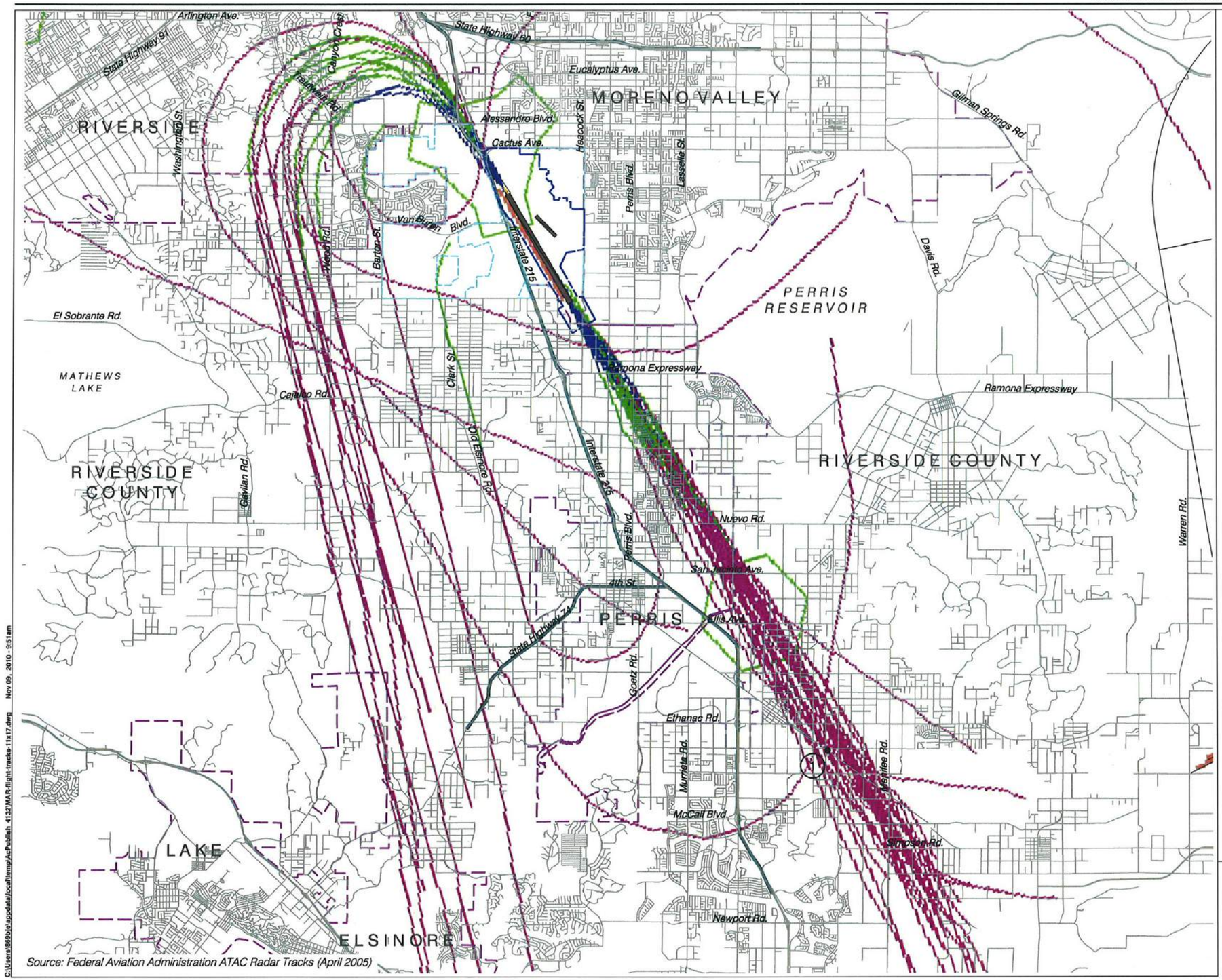
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 2-5

Departure Flight Tracks (Summer)

March Air Reserve Base / Inland Port Airport



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LEGEND

Altitudes*

0	---	1,000	**RED**
1,000	---	2,000	**YELLOW**
2,000	---	3,000	**BLUE**
3,000	---	4,000	**GREEN**
4,000	---	10,000	**PURPLE**
10,000	---	23,000	**BLACK**

① Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

* Note

Airfield flight altitudes relate to mean sea level.

Flight tracks shown represent FAA radar data for departures from March ARB/IPA on selected Winter dates.

December 9 and 14, 2004
February 3, 8, and 18, 2005
March 1, 16, and 21, 2005

Source:

Flight tracks provided by Federal Aviation Administration ATAC Radar (April 2005).

N

0 2 4 MILES

MILES

March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 2-6

Departure Flight Tracks (Winter)

March Air Reserve Base / Inland Port Airport

BASED AIRCRAFT [a]

	Current Mission	Future Mission
Aircraft Type		
KC-135 Tanker	10	no
C-17 Transport	8	change
F-16 Fighter/Attack	4	
UH-60 Helicopter	2	
Cessna	1	
Total	*25*	

AIRCRAFT OPERATIONS [a]

	Current Mission [b]	Future Mission [c]
Annual Operations [d]		
Military	33,637 [d]	44,860
Civilian	7,176	21,000
CalFire	0	3,740 [e]
Total Annual Operations	*40,813* [f]	*69,600*
Average Per Day	*181*	*305*
Distribution by Aircraft Type		
Military		*(64.4%)*
Transport	33.9%	29.3%
Fighter/Attack	5.0%	3.2%
Helicopter	3.5%	3.0%
Tanker	37.6%	27.3%
Contract Air Carrier	2.4%	1.6%
Aero Club	?? [d]	??
Civilian		*(30.2%)*
Commercial Cargo	0.0%	18.1%
Business Jet	0.0%	2.8%
Propeller (singles & twins)	0.0%	9.3%
CalFire	0.0%	5.4%
Distribution by Type of Operation		
Local Operations		
Military	50%	43%
Civilian	0%	0%
CalFire	—	0%
Itinerant Operations		
Military	50%	57%
Civilian	100%	100%
CalFire	—	100%

TIME OF DAY DISTRIBUTION [a]

	Current	Future
All Aircraft (Military & Civilian)		
Day (7:00a.m. – 7:00 p.m.)	72%	67%
Evening (7:00p.m. – 10:00p.m.)	13%	20%
Night (10:00 p.m. – 7:00a.m.)	15%	13%
Military Aircraft Only		
Day	77%	77%
Evening	13%	13%
Night	10%	10%
Civilian Aircraft Only (Commercial Cargo)		
Day	42%	37%
Evening	13%	35%
Night	45%	28%

RUNWAY USE DISTRIBUTION [a]

	Current	Future
All Aircraft – Day/Evening/Night		
Takeoffs & Landings		
Runway 14	10%	no
Runway 32	90%	change
Runway 12	Restricted Use	
Runway 30	Restricted Use	

FLIGHT TRACK USAGE [a]

Current and Future

- Departures, Runway 32
  - Aircraft make immediate left turn for southbound departure or left turn to eastbound departure.
- Approaches, Runway 32
  - Most aircraft enter wide right-traffic pattern from north
  - Straight in approach from the south
- Departures, Runway 14
  - Straight out departure
- Approaches, Runway 14
  - Aircraft use close in right traffic
- Closed Traffic Pattern
  - Departing Runway 32 use left traffic procedures
  - Departing Runway 14 use right traffic procedures

Notes

[a] Source: March ARB AICUZ Study (August 2005)

[b] "Current Mission" represents 2004 military and military-related contract carrier activity as itemized in the 2005 AICUZ Study plus anticipated civilian air cargo operations beginning late Autumn 2005.

[c] "Future Mission" is 2005 AICUZ projected activity for 2010, including both military and civilian aircraft operations. Per the Joint Use Agreement, civilian operations are capped at 21,000 annually, excluding CalFire. The March Operations Assurance Task Force (MOATF) has determined that this 69,600 annual operations projection is representative of a 20-year forecast for compatibility planning purposes.

[d] Air Force Aero Club operations on the secondary runway are not included in the AICUZ data.

[e] California Department of Forestry and Fire Protection no longer plans to establish a fire attack base at March ARB.

[f] Total activity level for CY 2006 equaled 34,230 operations: military 16,201; general aviation 13,421; and air carrier 4,608. This data is from air traffic control tower and includes Aero Club aircraft operations on the secondary runway. Unlike AICUZ data, the tower counts contract military transport operations as air carrier rather than military and Air Force Aero Club operations as general aviation.

Exhibit 2-7

Airport Activity Data Summary

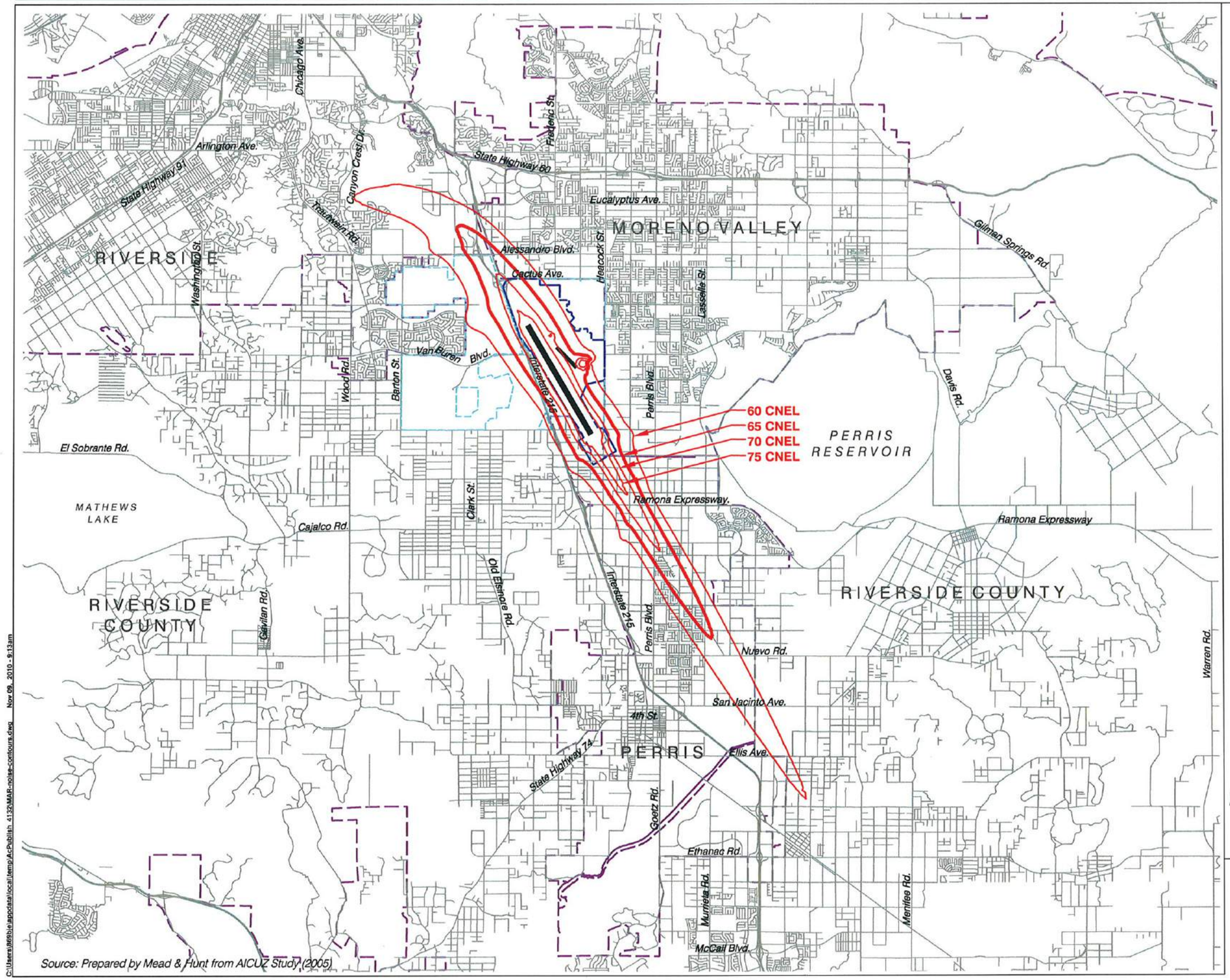
March Air Reserve Base / Inland Port Airport

Source	Operations			Comments
	Military	Civilian	Total	
March AFB Joint Use Feasibility Study (SCAG – 1997)				
2016 All-Cargo	40,950	33,945	74,895	All scenarios except first include passenger flights as well as air cargo
2016 Minimum Demand	40,950	41,913	82,863	
2016 Preferred Plan	40,950	56,581	97,531	
2016 Maximum Demand	40,950	84,455	125,405	
AICUZ Study (U.S. Air Force – 1998)				Civilian operations for air cargo only; no passenger service
Current and Forecast (no specific year)	40,396	21,000	61,396	
March Inland Port Air Cargo Development Plan (March JPA – 1999)				
2020 Low Growth Scenario	22,000	12,012	34,012	In all 3 scenarios, civilian operations are all-cargo only; no passenger service
2020 Moderate Growth Scenario	22,000	24,596	46,596	
2020 High Growth Scenario	22,000	58,344	70,344	
Joint Use Agreement (USAF and March JPA – 2001)				The same number is found in the Clean Air Act General Conformity Determination for joint use of the base
Authorized limits	40,396	21,000		
Regional Transportation Plan (SCAG – 2004)				Assumes 8.0 million annual passengers; air cargo operations not included
2030 Preferred Aviation Plan Forecast		132,519		
March Inland Port Ground Access Study (SCAG – 2004)				
2030 Constrained Forecast		46,720		2.0 million annual passengers + air cargo
2030 Preferred Forecast		198,560		8.0 million annual passengers + air cargo
AICUZ Study (U.S. Air Force – 2005)				
2010 Forecast	44,860	21,000	69,600	Total operations include 3,740 annual operations by California Department of Forestry
2008 Regional Transportation Plan Forecasts (SCAG – 2007)				
2035 Forecast				2.5 million annual passengers

Exhibit 2–8

Aircraft Operations Forecasts

March Air Reserve Base / Inland Port Airport



LEGEND

Noise Contours

- 60 dB CNEL
- 65 dB CNEL
- 70 dB CNEL
- 75 dB CNEL

2005 AICUZ Future Mission Average Annual Day*

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Forecast (2010)*	
Annual Operations	69,600
Average Annual Day	191

Source:
Forecasts and noise contours from Air Installation Compatible Use Zone Study for March Air Reserve Base (August 2005).

*Note:
Forecast total operations reflect forecasted 2010 military mission plus 2010 forecast of civil activity.

N

0 2 4 MILES

MILES

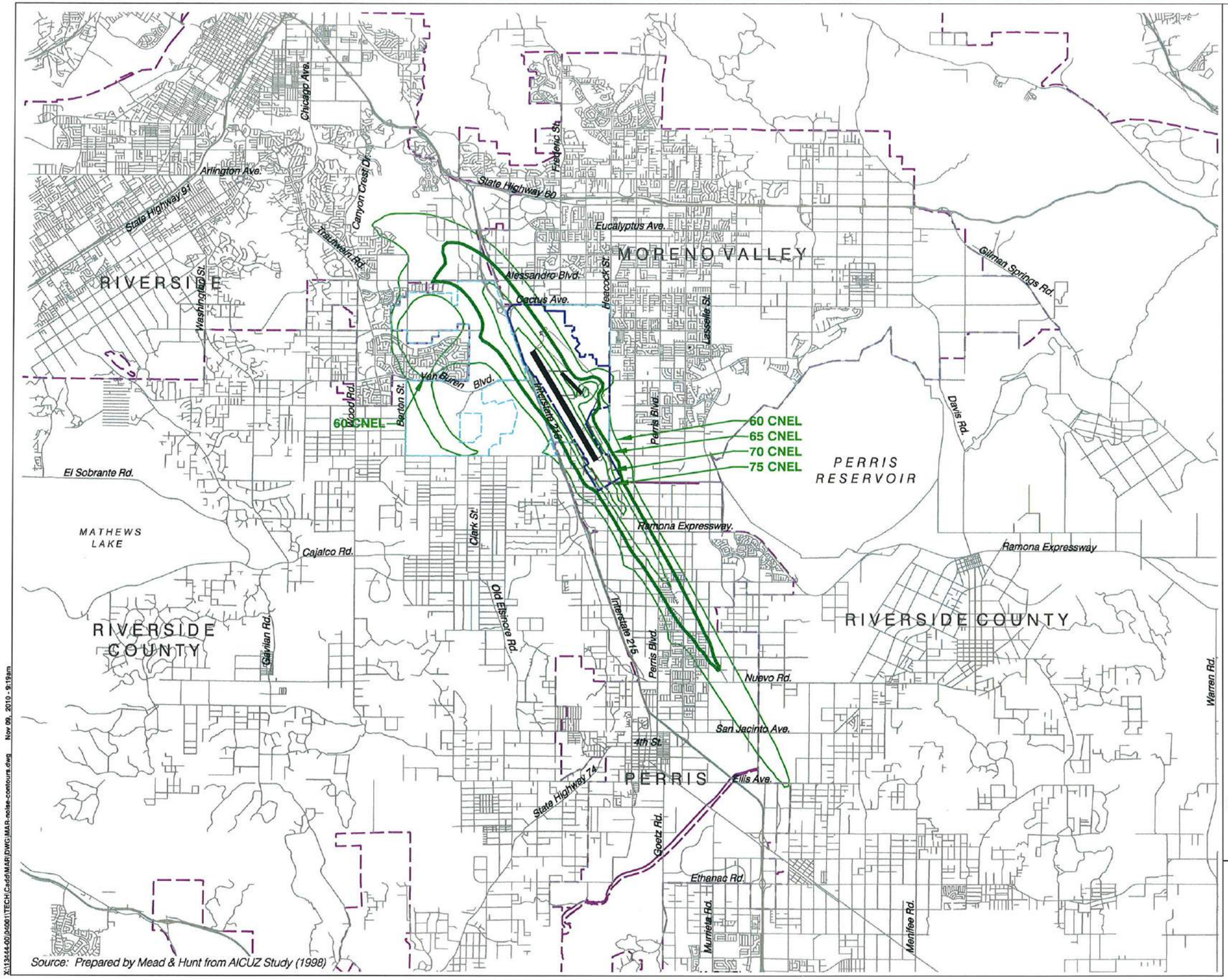
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 2-9

Noise Contours (2005 AICUZ)

March Air Reserve Base / Inland Port Airport



LEGEND

Noise Contours

- 60 dB CNEL
- 65 dB CNEL
- 70 dB CNEL
- 75 dB CNEL

} 1998 AICUZ Forecast* Average Annual Day

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Forecast (2010)*	
Annual Operations	61,396
Average Annual Day	168

Source: AICUZ Study (1998)

Source:
Forecasts and noise contours from Air Installation Compatible Use Zone Study for March Air Reserve Base (1998).

*Note:
Forecast total operations reflect current and forecast military activity plus 2010 forecast of civil activity.

N

0 2 4 MILES

MILES

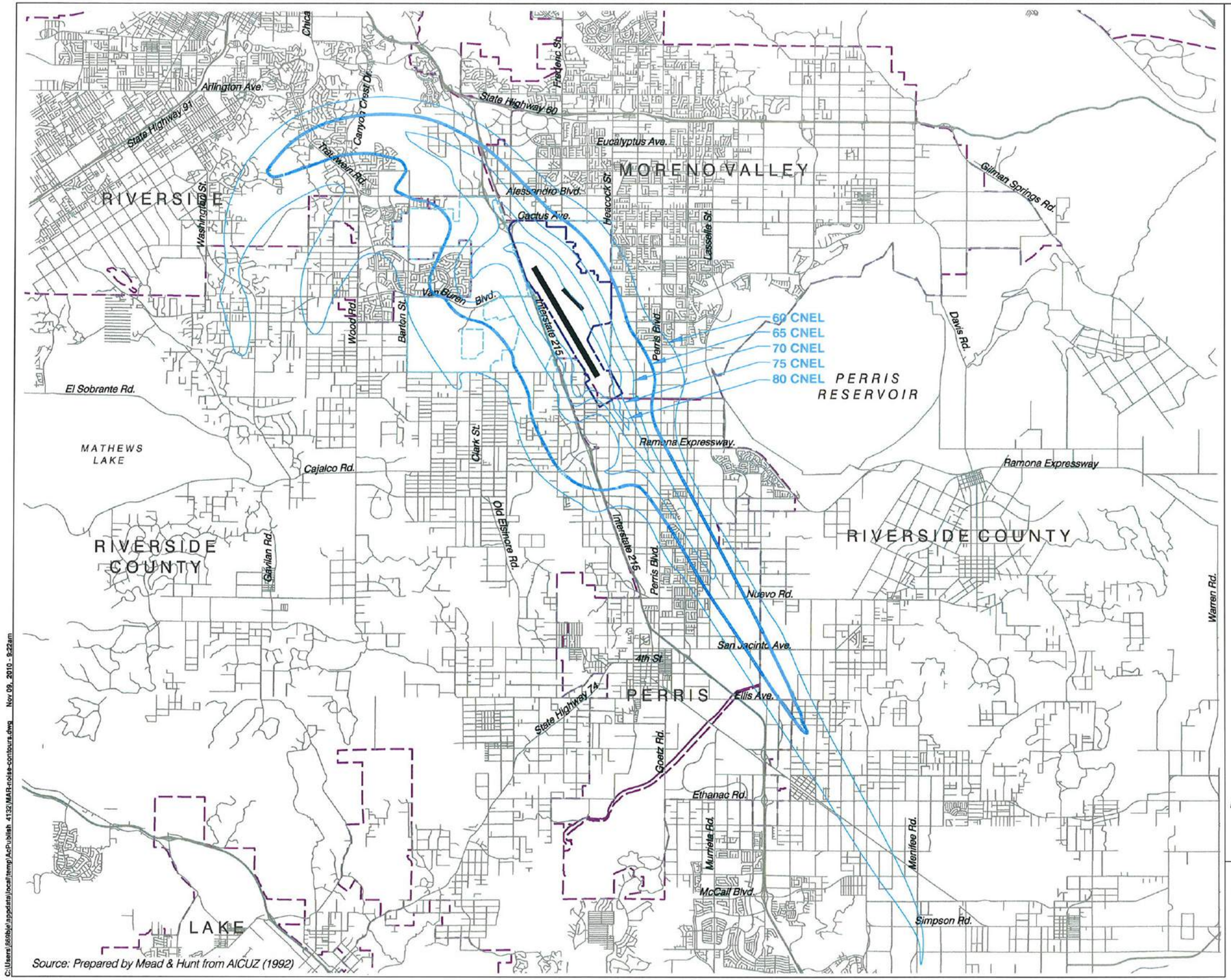
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 2-10

Noise Contours (1998 AICUZ)

March Air Reserve Base / Inland Port Airport



LEGEND

Noise Contours

- 60 dB CNEL
- 65 dB CNEL
- 70 dB CNEL
- 75 dB CNEL
- 80 dB CNEL

} 1992 AICUZ Projected* Average Annual Day

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Projected*	
Annual Operations	125,560
Average Annual Day	344

Source:
Forecasts and noise contours from Air Installation Compatible Use Zone Study for March Air Reserve Base (1992).

*Note:
The 1992 AICUZ indicates the average daily operations projected for the base after implementation of the Base Realignment and Closure (BRAC) then underway. Projected annual operations data is not provided in the AICUZ Study. The number shown here is estimated assuming 365 days of average daily operations.

N

0 2 4 MILES

MILES

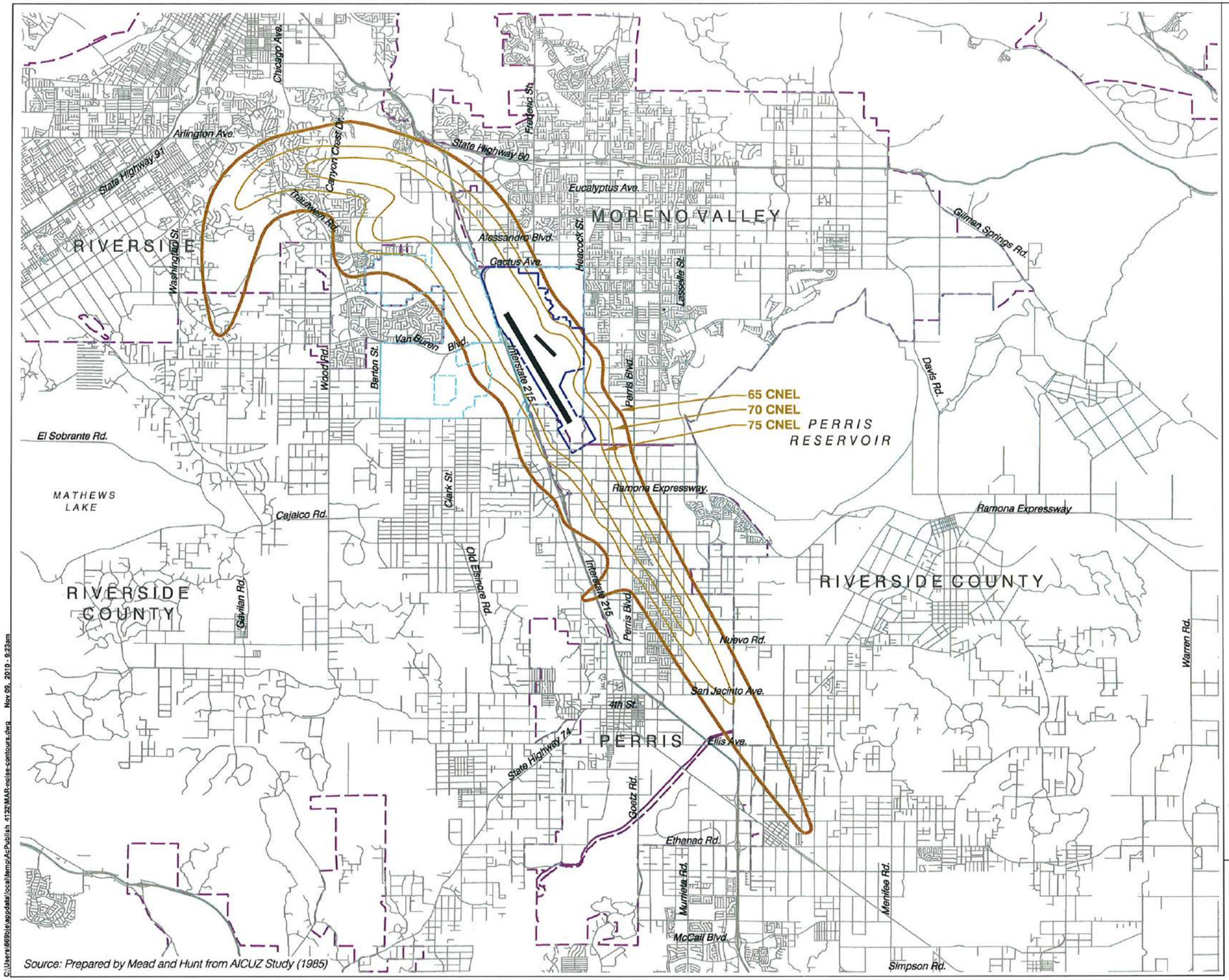
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 2-11

Noise Contours (1992 AICUZ)

March Air Reserve Base / Inland Port Airport



Source: Prepared by Mead and Hunt from AICUZ Study (1985)

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LEGEND

Noise Contours

- 65 dB CNEL
- 70 dB CNEL
- 75 dB CNEL

} 1985 AICUZ Average Annual Day

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Note:

1. When comparing with 2005 and 1998 AICUZ contours, note that this map does not depict a 60 dBCNEL contour.
2. Aircraft activity data used to generate 1985 AICUZ noise contours is not available.

Source:
Noise contours from Air Installation Compatible Use Zone Study for March Air Reserve Base (1985).

N

0 2 4 MILES

MILES

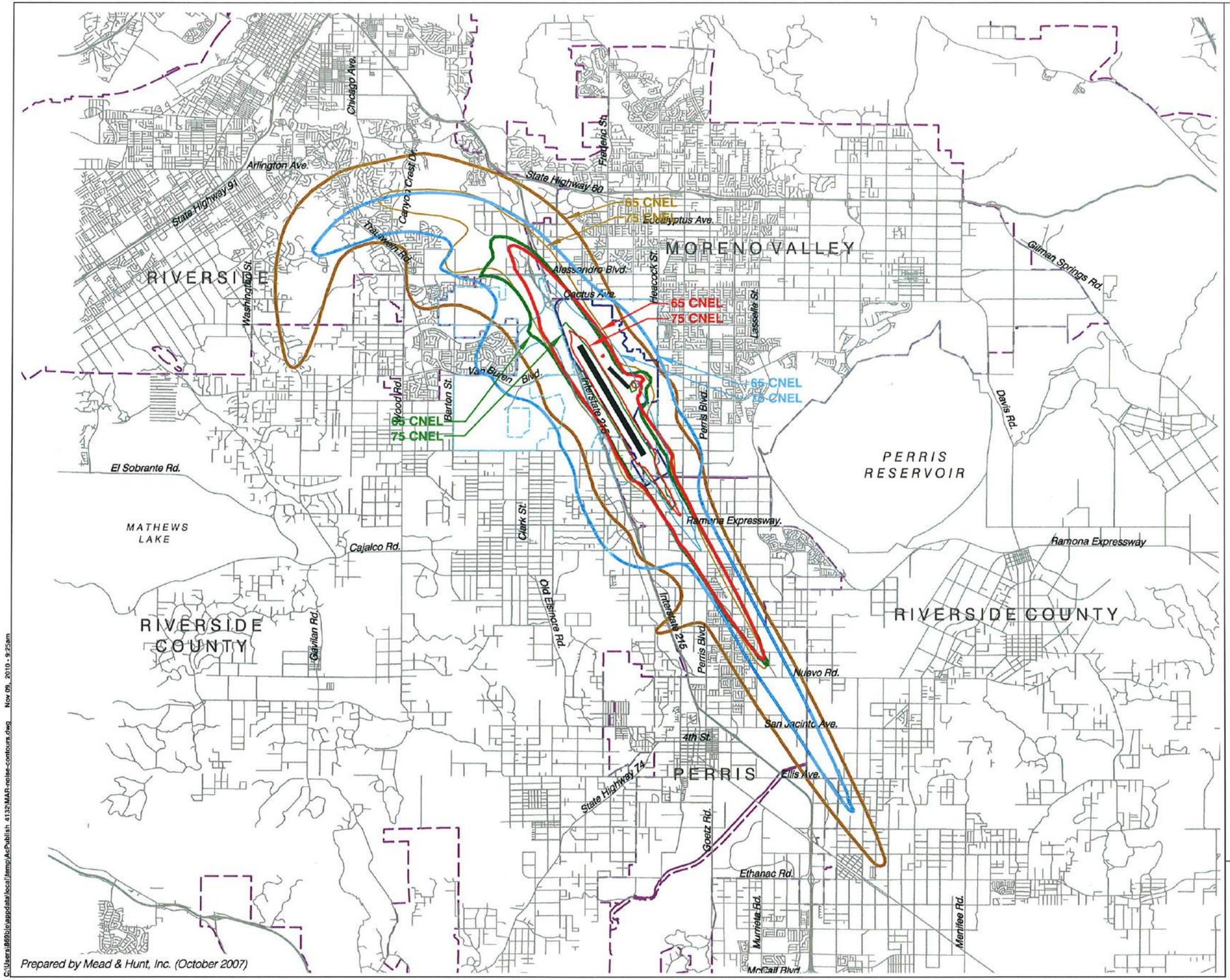
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 2-12

Noise Contours (1985 AICUZ)

March Air Reserve Base / Inland Port Airport



Prepared by Mead & Hunt, Inc. (October 2007)

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LEGEND

Noise Contours

- 65 dB CNEL / 75 dB CNEL — 2005 AICUZ
- 65 dB CNEL / 75 dB CNEL — 1998 AICUZ
- 65 dB CNEL / 75 dB CNEL — 1992 AICUZ
- 65 dB CNEL / 75 dB CNEL — 1985 AICUZ

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Source:
Forecasts and noise contours from Air Installation Compatible Use Zone Study for March Air Reserve Base (years 1985, 1992, 1998, and 2005)

N

0 2 4 MILES

MILES

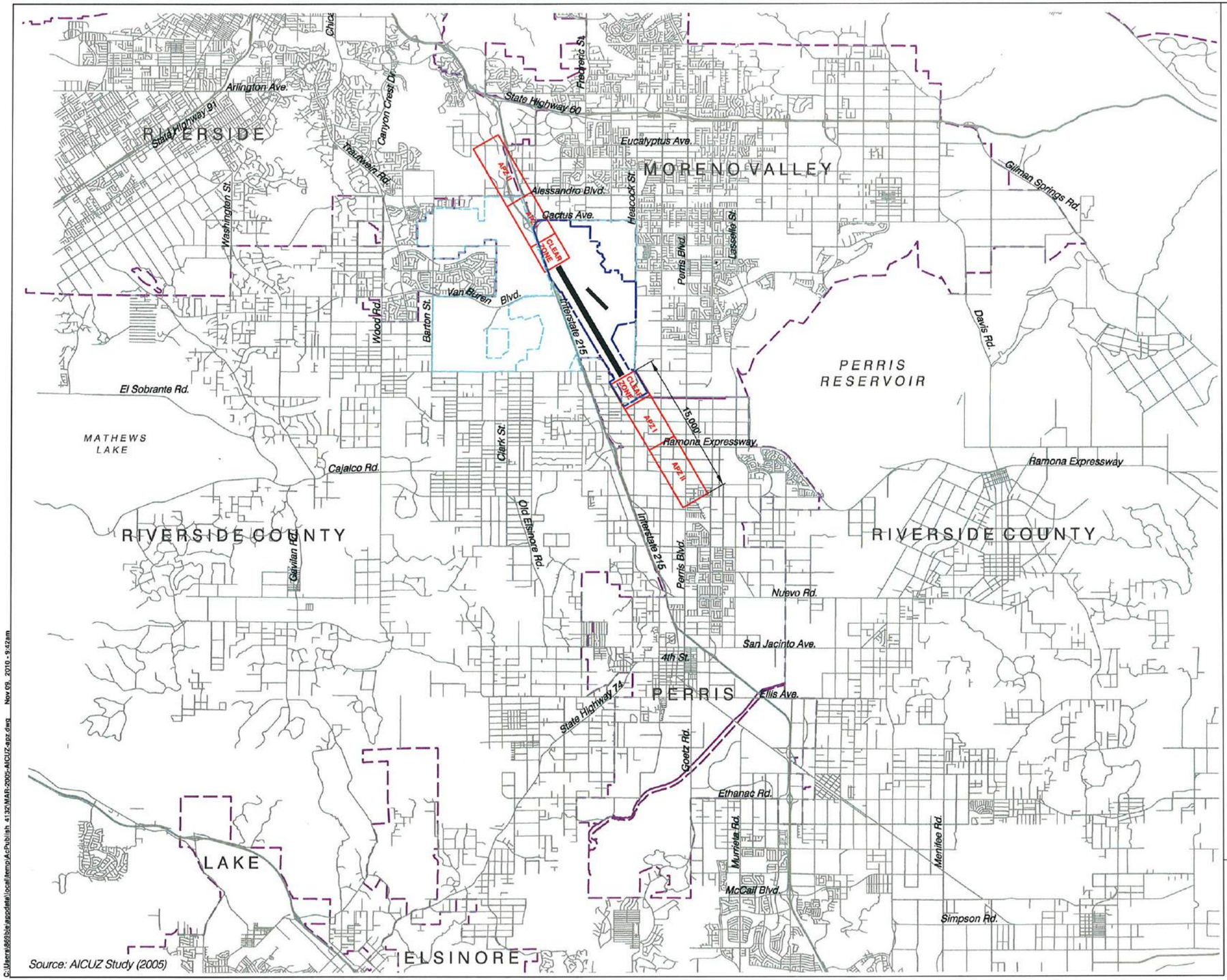
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 2-13

Comparison of AICUZ Noise Contours

March Air Reserve Base / Inland Port Airport



Source: AICUZ Study (2005)

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LEGEND

CLEAR ZONE Clear Zone
APZ I Accident Potential Zone I
APZ II Accident Potential Zone II

Boundary Lines
- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Source:
Clear and Accident Potential Zones from Air Installation Compatible Use Zone Study for March Air Reserve Base (August 2005).

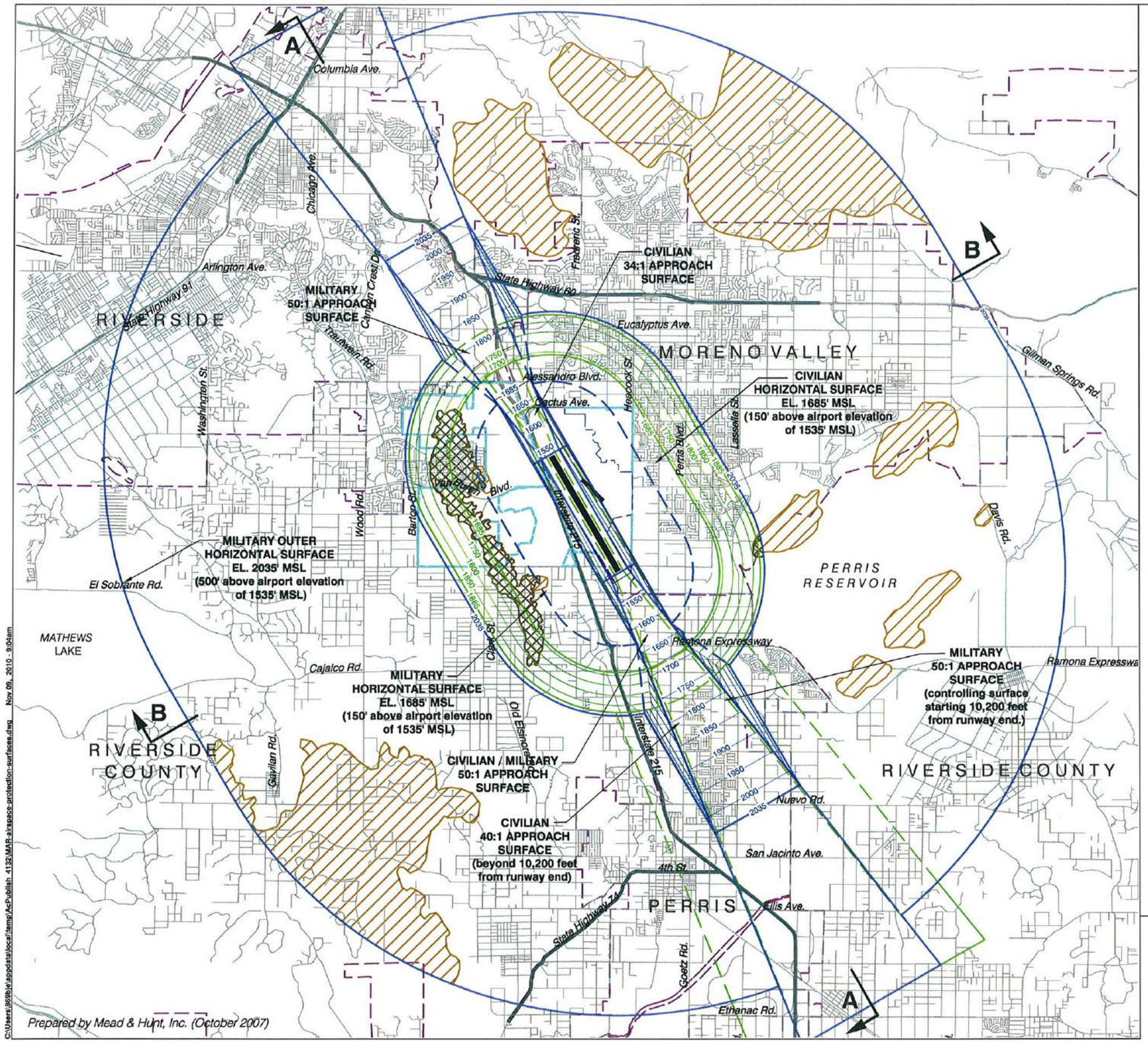
N

0 2 4 MILES
MILES

March Air Reserve Base / Inland Port Airport Land Use Study
(December 2010)

Exhibit 2-14

Accident Potential Zones
March Air Reserve Base / Inland Port Airport



LEGEND

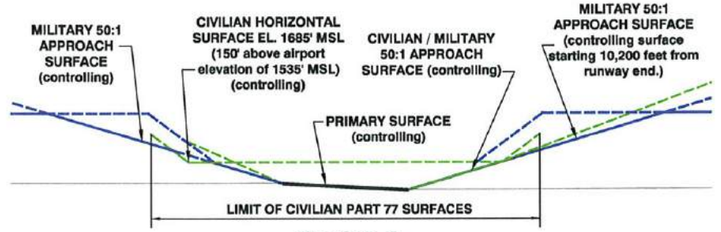
FAR Part 77

Military Surfaces
Civilian Surfaces
} Dashed line indicates other set of surfaces is controlling

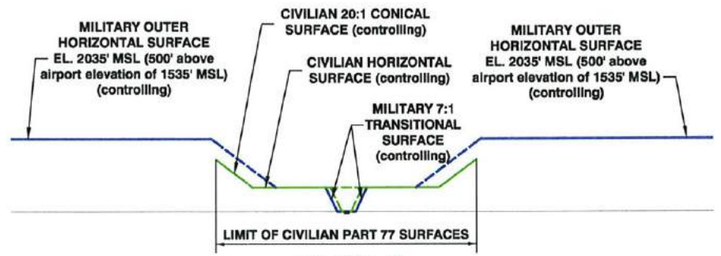
Terrain Penetration of FAR Part 77 Surfaces
Military
Civilian

Boundary Lines

March Air Reserve Base / Inland Port Airport
March Joint Powers Authority Property Line
City Limits



Profile A



Profile B

Source:
Civilian airspace protection surfaces from March Air Force Base Joint Use Feasibility Study (January 1997). Military airspace protection surfaces from Air Installation Compatible Use Study for March Air Reserve Base (August 2005).

N

0 2 4 MILES

1"= 2 MILES

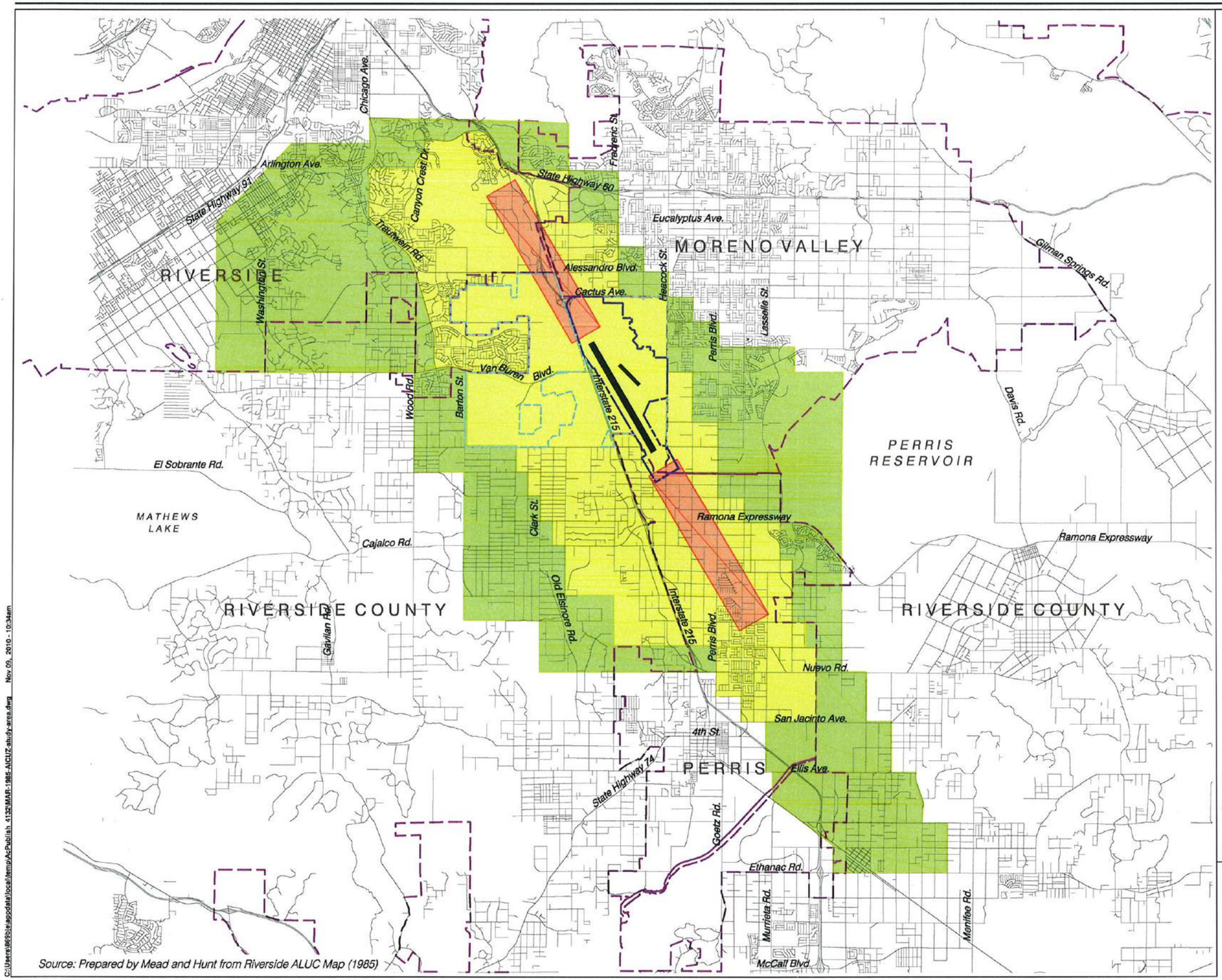
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 2-15

Airspace Protection Surfaces

March Air Reserve Base / Inland Port Airport



Source: Prepared by Mead and Hunt from Riverside ALUC Map (1985)

C:\Users\969\b\appdata\local\temp\AcPublish_4132\MAR-1985-ALUZ-study-area.dwg Nov 09, 2010 - 10:34am

LEGEND

- Area 1
- Area 2
- Area 3

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Source:
Airport Land Use Compatibility Study for March Air Reserve Base (1985). Adopted by Riverside County ALUC.

N

0 2 4 MILES

MILES

March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 2-16

ALUC Study Area Zones (1985)

March Air Reserve Base / Inland Port Airport

Chapter 3

Airport Land Use Compatibility

3

Airport Land Use Compatibility

INTRODUCTION

The previous two chapters examined the basic foundations of airport land use compatibility planning and the aeronautical features and usage of March Air Reserve Base/Inland Port Airport (ARB/IPA). This chapter looks at the land uses around the airport and the relationship of these land uses to the impact created by aircraft operations. A set of compatibility zones and associated criteria are provided for use in long-range land use planning in the airport's environs.

COMPATIBILITY PLANNING

Basic Approach

There are four types of compatibility concerns that must be taken into account in developing airport land use compatibility criteria. These aeronautical factors include: noise, overflight, safety, and airspace protection. The location of the airport-related impact is mostly determined by the location of runways, flight routes, and other aviation-related factors. The traditional method of addressing these concerns is to have a separate set of criteria and an associated map for each of the four factors. This is the approach utilized in the *Air Installation Compatible Use Zones (AICUZ) Study* for March ARB. In this way, each of the factors can be examined individually and thus the land use restriction can be more specific.

An alternative method involves the creation of a composite set of criteria and zones that address the compatibility concerns in a combined manner. This approach is one adopted by many airport land use commissions (ALUCs) in California, including the Riverside County ALUC. Advantages to this technique include greater flexibility in delineating the compatibility zones and greater ease in implementation. For instance, although zone boundaries must be based upon noise contours, flight paths, and areas of high risk, they can be drawn to follow roads and other geographic features. Implementation is facilitated because, for the most part, parcels are not split by the compatibility zones and reference need only be made to a single map and set of criteria for determination of compatibility.

Although there are tradeoffs between the two methods, the composite-factors approach is utilized for the purposes of long-range compatibility planning around March ARB/IPA. In this manner, countywide policies established by the Riverside County ALUC can be utilized to the extent that they are applicable. Also, because Riverside County and the city of Riverside both have other airports within

their jurisdictions, maintaining the same approach used elsewhere simplifies their compatibility planning efforts.

Although the combined-factor approach to compatibility planning differs from the method used in the *March ARB AICUZ Study*, the results achieve similar ends. As indicated in Chapter 1, the function of the *JLUS* is to help local government agencies understand and incorporate the AICUZ technical data into local planning programs. Additionally, the compatibility plan component of the *JLUS* which would be adopted by the Riverside County ALUC and ultimately implemented by the affected jurisdictions is required by California state law (Public Utilities Code Section 21675(b)) to be consistent with the relevant AICUZ study. Thus, consideration is given to the *AICUZ Study* recommendations as to what types of land uses are or are not compatible within various portions of the airport environs. The intent of this *JLUS* is to provide compatibility measures that are comparable to or slightly more stringent than those indicated in the *AICUZ Study*.

Compatibility Factors

Compatibility between the airport and its environs is evaluated in terms of four aeronautical factors: noise, overflight, safety, and airspace protection. The character and magnitude of the impact generated by aircraft activity at March ARB/IPA is unique from that experienced at other airports in Riverside County. This difference needs to be reflected both in the compatibility zone delineation and in the compatibility criteria to be applied within each zone.

The primary inputs to the compatibility mapping process are discussed below. Exhibit 3–1, *Compatibility Factors* map, depicts the geographic extent of each of the four compatibility factors in a combined manner. This same information is illustrated on individual maps in the background data chapter (Chapter 2) of this *JLUS* document and is specifically referenced below.

Noise

Noise is one of the most basic airport land use compatibility concerns as it receives the majority of the attention. Noise generated by the operation of aircraft to, from, and around an airport is primarily measured in terms of the cumulative noise levels of all aircraft operations. The Community Noise Equivalent Level (CNEL) is the noise metric used in California. This metric provides a single measure of the average sound level in decibels (dB) to which any point near an airport is exposed. The CNEL metric averages the noise events of all aircraft operations over a 24-hour period, but weights nighttime (10:00 p.m. to 7:00 a.m.) and evening (7:00 to 10:00 p.m.) operations to account for the lower tolerance of people to noise during these periods. Each nighttime operation is counted the same as 10 daytime (7:00 a.m. to 7:00 p.m.) operations. This weighting is mathematically equal to adding 10 dB to each noise event. Similarly, evening operations are counted the same as 3 daytime operations, or the equivalent of a 4.77 dB weighting on each event.

Cumulative noise levels are usually illustrated on airport area maps as contour lines connecting points of equal noise exposure. Mapped noise contours primarily show areas of significant noise exposures—ones affected by high concentrations of aircraft takeoffs and landings. Important to note, though, is that the peak sound level (Lmax) of individual aircraft noise events measure significantly above the CNEL value at any given location. Thus, locations exposed to a CNEL of 65 dB may experience individual noise events that briefly reach a maximum of 75 to 80 dBA and, for some aircraft, nearly 90 dBA. At the outer ends of the 60 dB CNEL contour—roughly 4 miles from the runway end to the north and 8 miles from the south end of the runway—maximum single-event noise levels are still mostly in the 65-to-80 dBA range, with some aircraft being even louder. Whether arrival or departure noise

is loudest at any given point depends upon the aircraft type and the distance from the runway. Most aircraft are louder on takeoff than on arrival because the power settings are higher, but this sound level diminishes as the aircraft climb out. Thus, farther from the runway, arriving aircraft, especially older models or high-performance aircraft (such as fighters), will be the loudest because of the relatively low altitude at which they overfly the affected locations.

The noise contours used for compatibility planning purposes around March ARB/IPA are the CNEL contours depicted in the 2005 *AICUZ Study* and reproduced in Chapter 2 of this report (Exhibit 2–9).

Overflight

At many airports, including March ARB/IPA, complaints often come from locations beyond any of the defined noise contours. Some individuals are sensitive to the frequent presence of aircraft overhead even at low noise levels. Overflight impacts are a combination of single-event noise impacts (e.g., speech interference or sleep disturbance) and the subjective experience of annoyance. The basis for noise complaints may be a desire and expectation that outside noise sources not be intrusive—or, in some circumstances, even distinctly audible—above ambient (background) noise levels.

The areas of overflight concern for March ARB/IPA are considered to be locations where aircraft commonly fly at less than approximately 3,000 feet above the airport elevation (1,535 feet above mean sea level), while approaching or departing the airport or conducting closed circuit flight training there. The flight track data from the 2005 *AICUZ Study* (Exhibit 2–4) and the radar images recorded by the Federal Aviation Administration air traffic control facilities (Exhibits 2–5 and 2–6) which provide altitude information is used to define the traffic pattern envelop. Exhibit 3–1 depicts the general approach/departure courses in blue and the closed-circuit traffic pattern envelope in yellow. These areas indicate where approximately 80% of all aircraft operations occur.

Safety

Although rare, the potential exists that aircraft accidents will occur. Thus, protecting against these events is essential to airport land use safety compatibility. Based upon aircraft accident data collected over a nearly 30-year period, the Air Force has defined a set of accident potential zones (APZs) for use in AICUZ studies for individual air bases. The three zones—Clear Zone, APZ I, and APZ II—extend a total of 15,000 feet beyond the runway end at a width of 3,000 feet. According to Air Force data, over 70% of near-airport military aircraft accidents (within 10 nautical miles, but not on the runway) take place within these zones.

As noted in Exhibit 2–14, Air Force facilities normally depict the APZs aligned with the extended runway centerline. Conversely, the Navy modifies the APZs to follow primary flight routes which may result in a curved APZ. At March ARB/IPA, to the north, essentially all aircraft make a left turn after takeoff, generally at a distance of about 7,000 to 10,000 feet beyond the north end of the runway. Thus, for safety compatibility, consideration is given to the potential safety impacts to the areas underlying the curving departure route to the north. The APZs depicted in Exhibit 3–1 reflect those shown in the 2005 *AICUZ Study*.

Airspace Protection

Airspace protection requirements for airports are defined by Part 77 of the Federal Aviation Regulations (FAR). As discussed in Chapter 2 (Exhibit 2–15), the Part 77 surfaces for military installations differ from those for civilian facilities. Exhibit 2–15 combines both sets of airspace surfaces to reflect

the controlling (more restrictive) surface in the different areas around March ARB/IPA. The controlling airspace surface establishes the limits on the allowable heights of nearby structures. The outer limits of the military and civilian airspace surfaces are shown in Exhibit 3–1.

Compatibility Zone Delineation

The compatibility map for March ARB/IPA is comprised of nine compatibility zones. The aeronautical factors used to establish the compatibility zone boundaries are described below and summarized in Exhibit 3–2, *Compatibility Zone Factors*. The *Compatibility Map* (Exhibit 3–3) depicts the compatibility zones for March ARB/IPA.

Note that these compatibility zones and the factors upon which they are based are similar in concept to the compatibility zones adopted by the Riverside County ALUC for other airports in the county. However, the different character of aircraft activity at March ARB/IPA compared to the primarily general aviation activity at the other airports in the county results in the zones being based upon somewhat different factors. Table 3A in the *Riverside County Airport Land Use Compatibility Plan* (ALUCP) is not applicable to March ARB/IPA.

- **Zone M** includes all lands owned by the U.S. Air Force. By law, neither local governments nor the ALUC have jurisdiction over federal lands.

- **Zone A** contains lands within the Clear Zone (CZ) at each end of the runway, but not on the base property. As defined by the *AICUZ*, the clear zones are 3,000 feet wide and 3,000 feet long beginning at the runway ends. Zone A at the north end of the runway encompasses a detention basin on March JPA property. The detention basin is required to drain within 6 hours after a rainfall. Zone A at the south end of the runway includes privately owned land. The Air Force has acquired restrictive use easements preventing the development of this property.

- **Zone B1** encompasses areas of high noise and high risk within the inner portion of the runway approach and departure corridors. The zone is defined by the boundaries of APZs I and II, adjusted on the north to take into account the turning departure flight tracks. The majority of the zone also is exposed to projected noise levels in excess of 65 dB CNEL.

- **Zone B2** is similar to Zone B1 in terms of noise impact, but is subject to less risk. The projected 65 dB CNEL contour forms the basis for the zone boundary. The actual boundary follows roads, parcel lines or other geographic features that lie generally just beyond the contour line. Lands within the APZs are excluded from Zone B2. Most of the zone lies adjacent to the runway. To the north, portions extend along the sides of Zone B1. To the south, a small area borders the sides of Zones A and B1 and a larger area extends 2 miles beyond the south end of Zone B1

- **Zone C1** encompasses most of the projected 60 dB CNEL contour plus immediately adjoining areas. The zone boundary follows geographic features. Risks are moderate in that aircraft fly at low altitudes over or near the zone. To the south, an area beginning just beyond Nuevo Road—approximately 5 miles from the runway end—is excluded from the zone. Even though exposed to projected noise above 60 dB CNEL, the risks at this distance from the runway are reduced by the altitude at which aircraft fly over the area. On instrument approaches to Runway 14, aircraft are typically at about 2,000 feet above the runway on descent and departing aircraft are generally 3,000 feet or higher above the runway elevation. Single-event noise levels are nevertheless potentially disruptive in this zone.

- **Zone C2** contains the remainder of the lands within the 60 dB CNEL contour to the south. Although aircraft overflying this area are at 2,000 feet or more above the runway on descent and generally 3,000 feet or more on takeoff, single-event noises levels combined with the frequency of overflights, including at night, make noise a moderate compatibility concern. A larger portion of Zone C2 is situated to the west of the airport and includes locations above which most of the military closed-circuit flight training aircraft activity takes place. Aircraft overfly this area at about the same or somewhat lower altitudes as in the south portion of Zone C2, but high terrain in some locations makes the flight altitude above ground level comparatively lower. Single-event noise levels in this area are high enough to be intrusive. However, at present, nearly all of the flight training activity takes place on weekdays during daylight hours, thus reducing the significance of the noise impact on residential land uses. Risk levels in both portions of Zone C2 are judged to be moderate to low with the low altitudes and flight training aspect of the aircraft activity being the primary concerns.

- **Zone D** is intended to encompass other places where aircraft fly below about 3,000 feet above the airport elevation either on arrival or departure. Additionally, it includes locations near the primary flight paths where aircraft noise may regularly be loud enough to be disruptive. Direct overflights of these areas may occur occasionally. Risk levels in this zone are low.

- **Zone E** contains the remainder of the airport influence area. Airspace protection is the major concern in that aircraft sometimes pass over these areas while flying to, from, or around the airport.

- The **High Terrain Zone** serves a more focused purpose than the preceding eight zones. It is intended to identify locations where even relatively short objects may be hazards to the airport airspace and require careful review. Within the zone are areas where the ground penetrates or lies within 35 feet beneath the airport's FAR Part 77 surfaces.

The outer limits of *Zone E* and the areas within the *High Terrain Zone* define the proposed **airport influence area** for March ARB/IPA. As can be seen in Exhibit 3–3, compatibility zones east of the airport are not as extensive as those in other areas around the airport. This is primarily due to high terrain to the north and east which generally restricts overflights of this area and, thus, airport land use compatibility is less of a concern.

Note also that the compatibility zone boundaries are very similar to the ALUC zone boundaries (see Exhibit 2–16). Slight adjustments are made in various locations to better reflect the noise contours and current flight track data. For the most part, the boundaries have been moved inward.

Compatibility Criteria

Development Standards

The *Basic Compatibility Criteria* table (Exhibit 3–4) provides a concise set of criteria by which compatibility assessments of land use classifications or individual development proposals can be made. The table establishes land use conditions and development standards for each compatibility zone for March ARB/IPA.

As with the compatibility zones, the criteria in Exhibit 3–4 are comparable to ones adopted by the Riverside County ALUC for the other airports in the county. However, the criteria have been modified to fit the operational and environs conditions at March ARB/IPA. Tables 2A, "Basic Compatibility Criteria," and 2B, "Supporting Compatibility Criteria: Noise," in the *Riverside County ALUCP* are not applicable to March ARB/IPA. Certain of the countywide compatibility policies set forth in Chapter 2

of the *ALUCP* are also not applicable to March ARB/IPA. Policy changes specific to March ARB/IPA are listed in Appendix A of this *JLUS*. Appendix B contains excerpts of the countywide *ALUCP* policies, most of which would apply to March ARB/IPA.

Several key points regarding the compatibility criteria proposed for March ARB/IPA are worth noting.

- **Zone A**—All development not required for aeronautical use is prohibited within Zone A. As noted previously, the Air Force and March JPA control all property within this zone either through fee title ownership or with restrictive use easements. The compatibility criteria thus have essentially no added effect.

- **Zone B1**
  - *Residential Development:* Residential development is deemed incompatible with the cumulative noise exposure above 65 dB CNEL experienced throughout this zone. This standard is consistent with FAA, AICUZ, and California Division of Aeronautics guidelines for airports like March ARB/IPA. ALUC policy for other airports allows exceptions to this restriction only for a single-family residence on an existing legal lot of record where local zoning allows residential uses. Application of the same policy to the March ARB/IPA environs is proposed.
  - *Non-Residential Development:* The 2005 March ARB *AICUZ Study* recommends limiting non-residential uses within APZs I and II, which together comprise Compatibility Zone B1, to low-intensity activities. Neither the *AICUZ Study* nor other Air Force guidance defines "low-intensity." However, the U.S. Navy establishes intensity limits 25 people per acre in APZ I and 50 per acre in APZ II. Usage intensity calculations include all people (employees, customers, visitors, etc.) who may be on the property at a single point in time, whether indoors or outdoors. This *JLUS* recommends these intensity restrictions for Zone B1.

    As additional means of risk reduction, the *AICUZ Study* indicates that "for most nonresidential usage, buildings [in APZ II] should be limited to one story and the lot coverage should not exceed 20 percent." The 20 percent lot coverage limit in particular makes impractical the development of low-intensity uses such as warehouses that the *AICUZ* notes as being reasonable not just in APZ II, but APZ I as well. When this issue was discussed with Department of Defense and Air Force personnel, they acknowledged that the criteria contained in the March AICUZ are not absolute criteria. Rather, the AICUZ contains built-in flexibility regarding the recommended limitations on nonresidential development in APZII. The Air Force has willingly invoked that flexibility for this JLUS and concurs with the relaxing the lot coverage provisions as proposed in the JLUS provided that the standards of 25 people per acre in APZ I and 50 people per acre in APZ II are maintained. Accordingly, the *JLUS* criteria for Zone B1 allow up to 50 percent lot coverage. Within the APZ I portion of the zone, however, site designs should to the extent possible avoid placement of buildings within 100 feet of the extended runway centerline. Also, any proposed development in the APZ I area that exceeds 20 percent lot coverage must not provide on-site services to the public. Zoned fire sprinklers are required. Furthermore, new buildings in the APZ I area are to be limited to a single story and, in the APZ II area, to a maximum of two stories above ground.

- **Zone B2**
  - *Residential Development:* Same criteria as Zone B1.
  - *Non-Residential Development:* Lying just beyond the Air Force defined APZs, the areas within this zone and Zone C1 are subject to sufficient risk to warrant restrictions on the intensity of non-residential development. The risk levels are judged to be relatively similar and thus the same in-

tensity limits are proposed for both zones. Specifically, nonresidential uses would be limited to maximums of 100 people per acre average over a site and 250 people in any single acre. These limits are designed to preclude intensive uses such as major shopping centers and large restaurants. Light industrial uses and office buildings up to three stories are typically consistent with the criteria.

- **Zone C1**
  - *Residential Development:* Lands within this zone are exposed to noise levels of approximately 60 to 65 dB CNEL as well as to a moderate degree of risk. For both reasons, limiting residential development to a density of no more than 3.0 dwelling units per acre is proposed. Individual aircraft flights over and near this zone are loud enough to cause disruption of outdoor activities as well as indoor activities when windows are open. A density limit will minimize the number of homes affected. A low-density is also appropriate with regard to risk in the event that an aircraft accident should occur in this area. Although even a higher residential density would not result in as many people being exposed to accident risk as would be present with the 100 people per acre allowed for nonresidential uses, society generally affords a higher degree of protection for homes—as well as schools and hospitals—than for most other land uses. The preferred land usage of Zone C1 is nonresidential. Limiting the residential density will encourage more compatible uses.
  - *Nonresidential Development:* Same criteria as Zone B2.
- **Zone C2**
  - *Residential Development:* The noise and risks associated with the flight training activity over the Zone C2 area west of the airport and in outer portion of the approach zone to the south both warrant limitations on residential development, but not a high degree of restrictiveness. Residential densities up to 6.0 dwelling units per gross acre are deemed acceptable provided that an avigation easement is dedicated to the March JPA. Although the cumulative noise level to which lands in this zone are exposed is below 60 dB CNEL and thus added sound attenuation is not necessary to meet the 45 dB CNEL standard (see below), an extra 5 dB of noise level reduction above normal construction is nevertheless required for new residential and other noise-sensitive development. The extra noise level reduction to CNEL 40 dB will help reduce the intrusiveness of individual loud noise events common to these areas.
  - *Non-Residential Development:* As with residential uses, the noise and risk conditions in Zone C2 warrant only moderate limitations on most types of non-residential development. For most uses, risk is the greater concern. Very-high intensity uses such as regional shopping centers and large sports stadiums are not recommended, but typical office, industrial park, and neighborhood commercial uses are acceptable. Avoiding placement of schools in Zone C2 is desirable for both noise and safety reasons. However, to the extent that residential development is permitted, a total ban on schools is recognized as impractical. High schools with their sports stadiums should not be located in this zone if any other suitable alternatives are available. The Air Force should be consulted with regard to proposed school sites to assess whether some locations are comparatively less subject to aircraft overflight.
- **Zones D and E Residential and Non-Residential Development**—Lands within Zones D and E are subject to noise and risks associated with aircraft operations at March ARB/IPA, but the impacts are sufficiently minimal that land use restrictions are generally unnecessary. Highly noise-sensitive uses such as an outdoor amphitheater should be avoided or carefully sited in locations where aircraft overflights are relatively infrequent. Residential development is compatible; however, the loudness of individual overflights may be annoying to some people. A deed notice, as described below, is

therefore appropriate for new development. Also, in Zone D, very-high intensity outdoor stadiums are best avoided because of the risk, however small.

- **Residential Development, Summary**—A geographic depiction of where the various the residential development criteria described above apply is presented in Exhibit 3–5.

- **Open Land Requirement**—This compatibility criterion, which is included for other airports in the *Riverside County Airport Land Use Compatibility Plan*, requires that portions of the land in the airport environs be kept open to facilitate emergency aircraft landings. However, open land is useful only for small general aviation aircraft, not the large planes operated at March ARB/IPA. This provision is therefore omitted from the recommended compatibility criteria. In its place is a requirement that structures in Zone B1 occupy no more than 50% of the development site. Within the APZ 1 portion of this zone, site designs should to the extent possible avoid placement of buildings within 100 feet of the extended runway centerline.

- **Infill**—Where development not in conformance with the criteria set forth in this *JLUS* already exists, additional infill development of similar land uses is acceptable even if its prohibition is recommended elsewhere in the zone. This exception does not apply within Compatibility Zones A or B1. The *Riverside County Airport Land Use Compatibility Plan* provides criteria defining what land qualifies as infill development. Among these criteria is one that requires infill sites to be at least 65% bounded by existing uses similar to or more intensive than those proposed. For the purposes of the *JLUS*, the bounding requirement for infill residential development is reduced to 50%. (See Appendix A for excerpts of the Riverside County ALUC policies. The entire *Riverside Compatibility Plan* is available on the ALUC's website at www.rcaluc.org).

- **Avigation Easement and Deed Notice Requirements**—Avigation easements transfer certain property rights from the owner of the property to the owner of an airport. With respect to military installations, the federal government does not accept avigation easement dedications, but they can purchase them. It would be appropriate, however, for the March JPA or the local government agency to hold the easement on behalf of the federal government. The *JLUS* recommends that dedication of an avigation easement be made a condition for approval of development in Zones B1 and B2, as well as the High Terrain Zone. The deed notice requirement is a way to ensure that prospective buyers of airport area property, particularly residential property, that the property is located within the airport influence area and subject to impact of airport operations. Unlike easements, deed notices are not encumbrances on the land and do not transfer property rights from the property owner to the easement holder. Deed notices should be required for new residential development in Zones C1, C2, and D. Exhibit 3–6 maps the locations where each of these buyer awareness measures apply.

- **Noise Level Reduction**—State law requires that multi-family residences, lodging, and other similar uses proposed to be located where the exterior noise level exceeds 60 dB CNEL be designed to incorporate noise level reduction (NLR) sufficient to reduce the exterior noise to no more than 45 dB CNEL indoors. Most local governments extend this requirement to single-family residential development. The ALUC includes this criterion in the compatibility plans for other airports. Even at a 45 dB CNEL, though, individual noise events will be intrusive. Nighttime events may be particularly so. In recognition of this fact, the *JLUS* recommends that new structures housing residential and other noise-sensitive uses be sound attenuated to 40 dB CNEL in locations subject to frequent aircraft overflights. Specifically, this requirement applies within Zones B1, B2, and C1.

Specific Land Uses

Exhibit 3–7, *Compatibility Determinations for Specific Land Uses*, is intended to facilitate implementation of the compatibility criteria in Exhibit 3–4 by making determinations as to the appropriate types of land use permitted within each compatibility zone. This list is similar to the list of permitted land uses provided in the *AICUZ Study*. The advantage of the detailed listing approach is that it minimizes the need for interpretation of the compatibility standards. Each use is denoted as either *incompatible, conditionally compatible*, or *compatible* within the respective compatibility zones. For uses listed as conditionally compatible, the conditions that must be met to make the use acceptable are cited. In some cases, the conditions refer back to the intensity criteria in Exhibit 3–4, but various other conditions associated with the specific use and the noise, safety, or airspace protection concerns it poses are noted as well.

For the most part, the land use compatibility determinations listed in Exhibit 3–5 should be consistent with the basic criteria in Exhibit 3–4 for any given land use development proposal. However, instances will arise where an unusual project could be found consistent with the specific determinations and conflict with the basic criteria or vice versa. For example, a type of development that is generally compatible with the airport could contain features that would result in the overall intensity being in excess of the basic criteria for that zone or would create some other form of compatibility conflict. Conversely, a land use listed as incompatible in Exhibit 3–5 might be designed with special features or mitigation measures that would make it a compatible land use.

The March JPA, and the four general land use jurisdictions with the March ARB/IPA influence area, as well as the Riverside County ALUC for those consistency determinations in which it will be involved, will need to decide whether the basic criteria or the specific determinations take precedence in the event of conflicting outcomes. The recommendation of this *JLUS* is that the specific determinations in Exhibit 3–5 be relied upon for initial review of all projects. For those projects that are straightforward and contain no unusual features—presumed to be the great majority—the initial evaluation should be sufficient. Large projects, such as those that ALUC policies list as major land use actions, as well as any project for which the determination is *conditionally compatible*, should additionally be reviewed with respect to the basic criteria in Exhibit 3–4.

Site-Specific Exceptions

Four development projects near March ARB have received or are expected to receive entitlements in the form of Development Agreements or Disposition and Development Agreements from the respective jurisdictions prior to adoption of the *JLUS* by the Riverside County ALUC and the jurisdictions. As such, the exceptions to the compatibility criteria outlined in the preceding subsections are granted for these projects provided that they meet the conditions indicated below. (The locations of these exceptions are shown on Exhibit 4-3 in Chapter 4 and the numbers below correspond to the numbering on that map.)

These exceptions are valid only as long as the indicated specific plans and associated development agreements remain in effect. Any changes to the specific plans must be reviewed by the ALUC to ensure that increases in intensity of the proposed development would not result from the changes. Further, if the development agreements should expire, the criteria applicable to the property for which these exceptions apply shall revert to the underlying compatibility criteria indicated in this JLUS.

- **(1) March Business Center Specific Plan (SP-1), March Joint Powers Authority**
  - Situated in Compatibility Zones B1, B2, C1, and C2.

- A 1,032-acre, non-residential business park located at the southwest corner of Alessandro Boulevard and I-215 freeway within the March Joint Powers Authority, approved with specific airport compatibility provisions, subject to March JPA Resolution JPA 08-01 limiting development within the Accident Potential Zones and vested through a development agreement recorded on June 7, 2004.
- Agreement expires on December 27, 2016. After that, the agreement provides for two more 5-year automatic extensions. The developer must request the Development Agreement extension and the Authority must make findings that the development is still in substantial conformance.

(2) Harvest Landing Specific Plan, City of Perris

- Situated in Compatibility Zone C2.
- A 341-acre mixed-use Specific Plan located south of Placentia Avenue and west of Interstate 215 within the City of Perris and authorizing 1,860 residential units and 1,306,582 square feet of business/commercial uses which is scheduled for final Council approval of the Specific Plan and Development Agreement in January 2011.
- Agreement will expire 15 years from the approval date plus extensions in 5-year increments subject to City Council approval.

(3) Park West Specific Plan, City of Perris

- Situated in Compatibility Zones C1 and C2.
- A 534.3-acre residential Specific Plan located south of Nuevo Rd and east of the Perris Valley Storm Channel within the City of Perris and authorized for a maximum of 2,027 residential units as identified in the Specific Plan and Development Agreement approved by Council on January 30, 2007.
- Agreement for Phase I expires 10 years from the approval date. Phases II and III extend the agreement to 2027 or 10 years after the developer submits an application for approval of a tentative tract map for any portion of these phases.

(4) Day/Alessandro Affordable Housing Site, City of Moreno Valley

- Situated in Compatibility Zone C1.
- A planned 8.43-acre multifamily site located at the northeast corner of Day Street and Alessandro Boulevard within the City of Moreno Valley approved as a maximum 225 unit multifamily development through an existing Disposition and Development Agreement approved on May 26, 2009.
- The city owns the site, thus an expiration date is not applicable.

Conclusion

Together, the *Compatibility Map* (Exhibit 3–3), *Basic Compatibility Criteria* (Exhibit 3–4), *Compatibility Determinations for Specific Land Uses* (Exhibit 3–5), *Airspace Map* (Exhibit 2–15) and the *2005 AICUZ Study Noise Contours* (Exhibit 2–9) address the compatibility concerns associated with operations at March ARB/IPA. The *Compatibility Map* depicts the extent of the airport influence area in which certain land use restrictions are necessary to protect the health, safety, and welfare of individuals that live and work within the vicinity of March ARB/IPA. The *Basic Compatibility Criteria* table and the list of *Specific Land Uses* will serve to set basic compatibility parameters by which the affected jurisdictions will use to make assessments of land use classifications or individual development proposals. These exhibits make up

the airport land use compatibility tools recommended for adoption by the March JPA and affected jurisdictions. For the Riverside County ALUC, this information is provided in Appendix A in a format consistent with the ALUC's *Airport Land Use Compatibility Plan*. Chapter 4 reviews the land use plans of the affected jurisdictions to determine the extent to which they are consistent or conflict with the land use compatibility criteria contained in this *JLUS*. A comparison between the proposed criteria and those currently in use by the ALUC is included as well.

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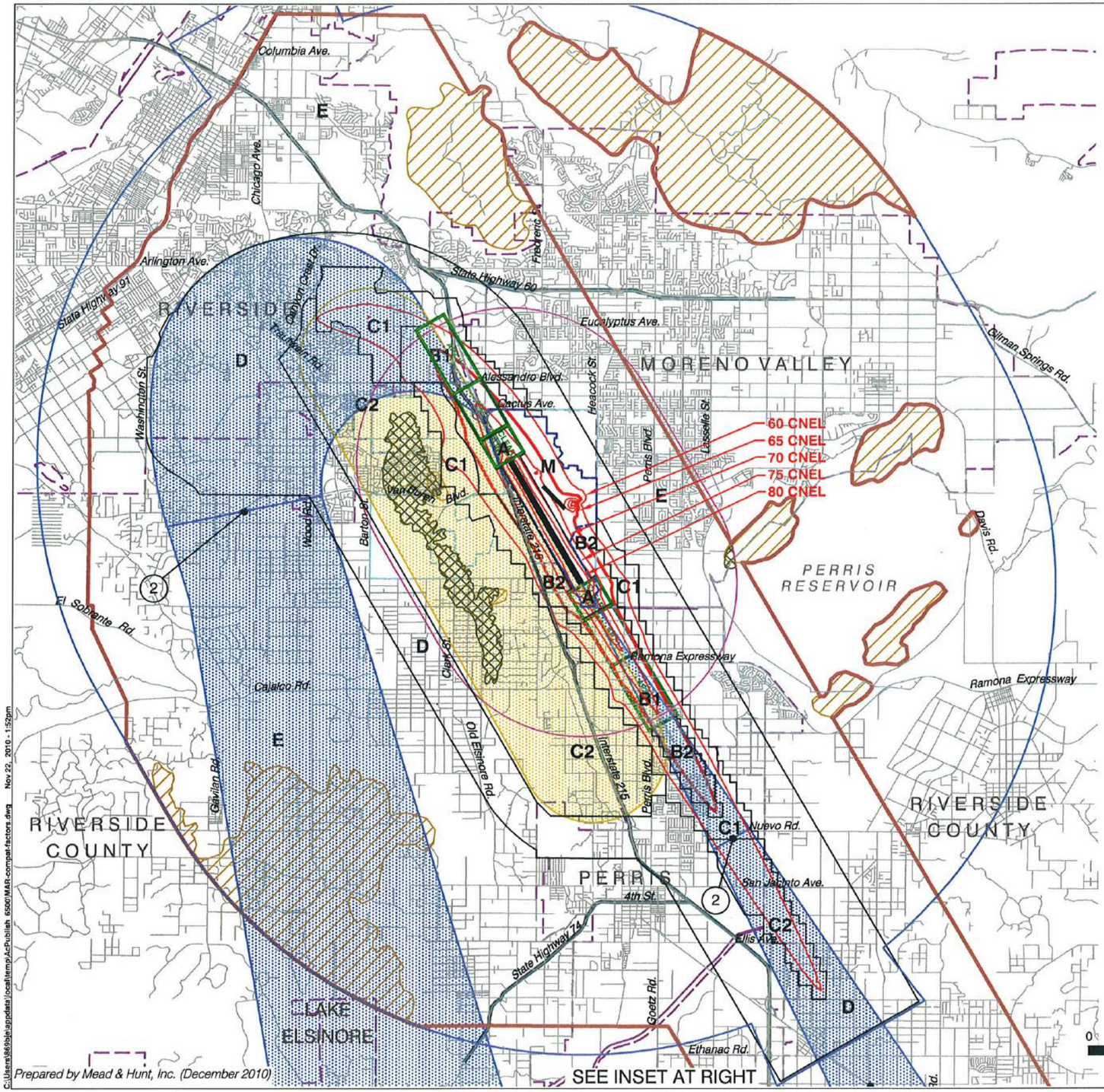


LEGEND

Compatibility Zones

- Airport Influence Area Boundary
- Zone A
- Zone B1
- Zone B2
- Zone C1
- Zone C2
- Zone D
- Zone E
- Zone M

Noise and Overflight Compatibility Factors

2005 AICUZ Future Mission
- 75 dB CNEL
- 70 dB CNEL
- 65 dB CNEL
- 60 dB CNEL

General Approach/Departure Traffic Pattern Envelope (approximately 80% of aircraft overflights estimated to occur within these limits)

Closed Circuit Traffic Pattern Envelope (approximately 80% of large aircraft overflights estimated to occur within these limits)

Safety and Airspace Compatibility Factors

- Accident Potential Zones

FAR Part 77 Surface Limits
- Military Outer Horizontal Surface
- Civilian Conical Surface

Terrain Penetration of FAR Part 77 Surfaces
- Military
- Civilian

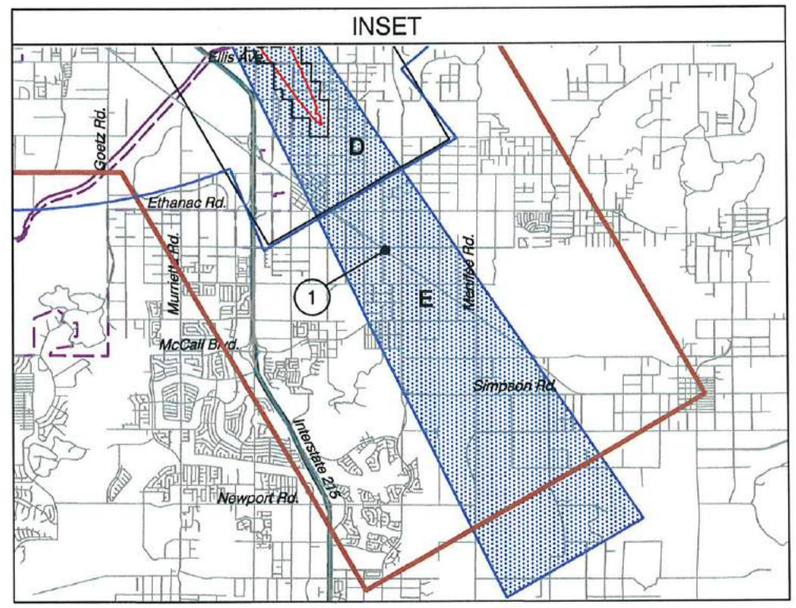
Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

(1) Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

(2) Point at which departing aircraft typically reach 3,000 feet above runway end.

INSET



March Air Reserve Base / Inland Port Airport
Joint Land Use Study
(December 2010)

Exhibit 3-1

Compatibility Factors Map

March Air Reserve Base / Inland Port Airport

N

0 2 4 MILES

Prepared by Mead & Hunt, Inc. (December 2010)

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Zone	Noise and Overflight Factors	Safety and Airspace Protection Factors
M *(Military)*	*Federal Lands* ▸ No ALUC authority	*Federal Lands* ▸ No ALUC authority
A *Clear Zone (if not on base)*	*Noise Impact: Very High* ▸ High CNEL and single-event noise levels	*Risk Level: Very High* ▸ Dimensions set to include Clear Zone as indicated in Air Installation Compatible Use Zone (AICUZ) study for airport ▸ Generally on air base property or controlled by easements
B1 *Inner Approach/ Departure Zone*	*Noise Impact: High* ▸ Within or near 65-CNEL contour ▸ Single-event noise sufficient to disrupt many land use activities including indoors if windows open	*Risk Level: High* ▸ Within Accident Potential Zone I or II ▸ Zone boundary to north reflects turning flight tracks
B2 *High Noise Zone*	*Noise Impact: High* ▸ Within or near 65-CNEL contour ▸ Single-event noise sufficient to disrupt many land use activities including indoors if windows open	*Risk Level: Moderate* ▸ Beneath or adjacent to final approach and initial departure flight corridors or adjacent to runway ▸ Not within Accident Potential Zones
C1 *Primary Approach/ Departure Zone*	*Noise Impact: Moderate to High* ▸ Within or near 60-CNEL contour ▸ Single-event noise may be disruptive to noise-sensitive land use activities; aircraft <2,000 feet above runway elevation on arrival and generally <3,000 feet above runway elevation on departure	*Risk Level: Moderate* ▸ Beneath or adjacent to low altitude overflight corridors
C2 *Flight Corridor Zone*	*Noise Impact: Moderate* ▸ Within 60 CNEL contour, but more than 5 miles from runway end; or ▸ Outside 60-CNEL contour, but regularly overflown in mostly daytime flight training ▸ Single-event noise may be disruptive to noise-sensitive land use activities; aircraft <3,000 feet above runway elevation on arrival	*Risk Level: Moderate to Low* ▸ Distant (beyond 5 miles) portion of instrument arrival corridor; or ▸ Closed-circuit flight training activity corridors
D *Flight Corridor Buffer*	*Noise Impact: Moderate to Low* ▸ Mostly within 55-CNEL contour ▸ More concern with respect to individual loud events than with cumulative noise contours	*Risk Level: Low* ▸ On periphery of flight corridors ▸ Risk concern primarily with uses for which potential consequences are severe (e.g. very-high-intensity activities in a confined area)
E *Other Airport Environs*	*Noise Impact: Low* ▸ Beyond 55-CNEL contour ▸ Occasional overflights intrusive to some outdoor activities	*Risk Level: Low* ▸ Within outer or occasionally used portions of flight corridors
******* *High Terrain Zone*	*Noise Impact: Low* ▸ Individual noise events slightly louder because high terrain reduces altitude of overflights	*Risk Level: Moderate* ▸ Moderate risk because high terrain constitutes airspace obstruction ▸ Concern is tall single objects (e.g., antennas)

Exhibit 3–2

Compatibility Zone Factors

March Air Reserve Base / Inland Port Airport

Zone	Locations	Density / Intensity Standards				Additional Criteria	
		Residential (d.u./ac) [1]	Other Uses (people/ac) [2]		Req'd Open Land	Prohibited Uses [3]	Other Development Conditions [4]
			Average [5]	Single Acre [6]			
M	Military					› No ALUC authority	
A	Clear Zone [7]	No new dwellings allowed	0	0	All Remaining	› All non-aeronautical structures › Assemblages of people › Objects exceeding FAR Part 77 height limits › All storage of hazardous materials › Hazards to flight [8]	› Electromagnetic radiation notification [9] › Avigation easement dedication and disclosure [4]
B1	Inner Approach/ Departure Zone	No new dwellings allowed [10]	25 or 50 [11]	100	Max. 50% lot coverage [12]	› Children's schools, day care centers, libraries › Hospitals, congregate care facilities, hotels/ motels, restaurants, places of assembly › Bldgs with >1 aboveground habitable floor in APZ I or > 2 floors in APZ II [13] › Manufacture/storage of hazardous materials [14] › Noise sensitive outdoor nonresidential uses [15] › Critical community infrastructure facilities [16] › Hazards to flight [8]	› Locate structures maximum distance from extended runway centerline › Sound attenuation as necessary to meet interior noise level criteria [17] Zoned fire sprinkler systems required › Airspace review req'd for objects >35 ft. tall [18] › Electromagnetic radiation notification [9] › Avigation easement dedication and disclosure [4]
B2	High Noise Zone	No new dwellings allowed [10]	100	250	No Req't	› Children's schools, day care centers, libraries › Hospitals, congregate care facilities, hotels/ motels, places of assembly › Bldgs with >3 aboveground habitable floors › Noise-sensitive outdoor nonresidential uses [15] › Critical community infrastructure facilities [16] › Hazards to flight [8]	› Locate structures maximum distance from runway › Sound attenuation as necessary to meet interior noise level criteria [17] › Aboveground bulk storage of hazardous materials discouraged [14] › Airspace review req'd for objects >35 ft. tall [18] › Electromagnetic radiation notification [9] › Avigation easement dedication and disclosure [4]
C1	Primary Approach/ Departure Zone	≤3.0	100	250	No Req't	› Children's schools, day care centers, libraries › Hospitals, congregate care facilities, places of assembly › Noise-sensitive outdoor nonresidential uses [15] › Hazards to flight [8]	› Critical community infrastructure facilities discouraged [16,19] › Aboveground bulk storage of hazardous materials discouraged [14, 19] › Sound attenuation as necessary to meet interior noise level criteria [17] › Airspace review req'd for objects >70 ft. tall [20] › Electromagnetic radiation notification [9] › Deed notice and disclosure [4]
C2	Flight Corridor Zone	≤ 6.0	200	500	No Req't	› Highly noise-sensitive outdoor nonresidential uses [15] › Hazards to flight [8]	› Children's schools discouraged › Airspace review req'd for objects >70 ft. tall [20] › Electromagnetic radiation notification › Deed notice and disclosure [4]
D	Flight Corridor Buffer	No Limit	No restriction [21]		No Req't	› Hazards to flight [8]	› Major spectator-oriented sports stadium, amphitheaters, concert halls discouraged [21] › Electromagnetic radiation notification › Deed notice and disclosure [4]
E	Other Airport Environs	No Limit	No Restriction [21]		No Req't	› Hazards to flight [8]	› Disclosure only [4]
*	High Terrain	Same as Underlying Compatibility Zone			Not Applicable	› Hazards to flight [8] › Other uses restricted in accordance with criteria for underlying zone	› Airspace review req'd for objects >35 ft. tall [18] › Avigation easement dedication and disclosure [4]

Exhibit 3-4

Basic Compatibility Criteria

March Air Reserve Base / Inland Port Airport

NOTES:

Policies referenced here are from the *Riverside County Airport Land Use Compatibility Plan* (adopted by Riverside County ALUC for other airports beginning October 2004) and are reproduced in Appendix B of this JLUS document. A complete copy of the *Compatibility Plan* is available on the Riverside County Airport Land Use Commission website at www.rcaluc.org.

[1] Residential development must not contain more than the indicated number of dwelling units (excluding secondary units) per gross acre. Clustering of units is encouraged provided that the density is limited to no more than 4.0 times the allowable average density for the zone in which the development is proposed.. Gross acreage includes the property at issue plus a share of adjacent roads and any adjacent, permanently dedicated, open lands. Mixed-use development in which residential uses are proposed to be located in conjunction with nonresidential uses in the same or adjoining buildings on the same site shall be treated as nonresidential development for the purposes of usage intensity calculations; that is, the occupants of the residential component must be included in calculating the overall number of occupants on the site. A residential component shall not be permitted as part of a mixed use development in zones where residential uses are indicated as incompatible. See ALUC Policy 3.1.3(d). All existing residential development, regardless of densities, is not subject to ALUC authority.

[2] Usage intensity calculations shall include all people (e.g., employees, customers/visitors, etc.) who may be on the property at a single point in time, whether indoors or outside.

[3] The uses listed here are ones that are explicitly prohibited regardless of whether they meet the intensity criteria. In addition to these explicitly prohibited uses, other uses will normally not be permitted in the respective compatibility zones because they do not meet the usage intensity criteria. See Exhibit 3-7 for a full list of compatibility designations for specific land uses.

[4] As part of certain real estate transactions involving residential property within any compatibility zone (that is, anywhere within an airport influence area), information regarding airport proximity and the existence of aircraft overflights must be disclosed. This requirement is set by state law. See ALUC Policy 4.4.2 for details. Easement dedication and deed notice requirements indicated for specific compatibility zones apply only to new development and to reuse if discretionary approval is required. Avigation easements are to be dedicated to the March JPA; the federal government is precluded from receiving easement dedications. See sample language in JLUS Appendix 8.

[5] The total number of people permitted on a project site at any time, except rare special events, must not exceed the indicated usage intensity times the gross acreage of the site. Rare special events are ones (such as an air show at the airport) for which a facility is not designed and normally not used and for which extra safety precautions can be taken as appropriate.

[6] Clustering of nonresidential development is permitted. However, no single acre of a project site shall exceed the indicated number of people per acre. See ALUC Policy 4.2.5 for details.

[7] Clear zone (equivalent to runway protection zone at civilian airports) limits that delineate Zone A are derived from locations indicated in the March Air Reserve Base AICUZ study. Zone A is on Air Base property or otherwise under military control.

[8] Hazards to flight include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Land use development that may cause the attraction of birds to increase is also prohibited. Man-made features must be designed to avoid heightened attraction of birds. In Zones A, B1, and B2, flood control facilities should be designed to hold water for no more than 48 hours following a storm and be completely dry between storms (see FAA Advisory Circular 150/5200-33B). Additionally, certain farm crops and farming practices that tend to attract birds are strongly discouraged. These include: certain crops (e.g., rice, barley, oats, wheat – particularly durum – corn, sunflower, clover, berries, cherries, grapes, and apples); farming activities (e.g., tilling and harvesting); confined livestock operations (i.e., feedlots, dairy operations, hog or chicken production facilities, or egg-laying operations); and various farming practices (e.g., livestock feed, water, and manure). Fish production (i.e., catfish, trout) conducted outside of fully enclosed buildings may require mitigation measures (e.g., netting of outdoor ponds, providing covered structures) to prevent bird attraction. Also see ALUC Policy 4.3.7.

[9] March ARB must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include microwave transmission in conjunction with a cellular tower, radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers and other similar EMR emissions.

[10] Other than in Zone A, construction of a single-family home, including a second unit as defined by state law, on a legal lot of record is exempted from this restriction where such use is permitted by local land use regulations. Interior noise level standards and avigation easement requirements for the compatibility zone in which the dwelling is to be located are to be applied.

[11] Non-residential uses are limited to 25 people per gross acre in Accident Potential Zone (APZ) I and 50 people per acre elsewhere in Zone B1.

[12] In APZ I, any proposed development having more than 20% lot coverage must not provide on-site services to the public. Zoned fire sprinklers are required. Also, in APZ I, site design of proposed development should to the extent possible avoid placement of buildings within 100 feet of the extended runway centerline; this center strip should be devoted to parking, landscaping, and outdoor storage.

[13] Within APZ II, two-story buildings are allowed.

[14] Storage of aviation fuel and other aviation-related flammable materials on the airport is exempted from this criterion. In APZ I, manufacture or bulk storage of hazardous materials (toxic, explosive, corrosive) is prohibited unless storage is underground; small quantities of materials may be stored for use on site. In APZ II, aboveground storage of more than 6,000 gallons of nonaviation flammable materials per tank is prohibited.

Exhibit 3–4, continued

[15] Examples of noise-sensitive outdoor nonresidential uses that should be prohibited include major spectator-oriented sports stadiums, amphitheaters, concert halls and drive-in theaters. Caution should be exercised with respect to uses such as poultry farms and nature preserves.

[16] Critical community facilities include power plants, electrical substations, and public communications facilities. See ALUC Policy 4.2.3(d).

[17] All new residences, schools, libraries, museums, hotels and motels, hospitals and nursing homes, places of worship, and other noise-sensitive uses must have sound attenuation features incorporated into the structures sufficient to reduce interior noise levels from exterior aviation-related sources to no more than CNEL 40 dB. This requirement is intended to reduce the disruptiveness of loud individual aircraft noise events upon uses in this zone and represents a higher standard than the CNEL 45 dB standard set by state, local, and ALUC regulations. Office space must have sound attenuation features sufficient to reduce the exterior aviation-related noise level to no more than CNEL 45 dB. To ensure compliance with these criteria, an acoustical study shall be required to be completed for any development proposed to be situated where the aviation-related noise exposure is more than 20 dB above the interior standard (e.g., within the CNEL 60 dB contour where a the interior standard is CNEL 40 dB). Standard building construction is presumed to provide adequate sound attenuation where the difference between the exterior noise exposure and the interior standard is 20 dB or less.

[18] Objects up to 35 feet in height are permitted. However, the Federal Aviation Administration may require marking and lighting of certain objects. See ALUC Policy 4.3.6 for details.

[19] Discouraged uses should generally not be permitted unless no feasible alternative is available.

[20] This height criterion is for general guidance. Shorter objects normally will not be airspace obstructions unless situated at a ground elevation well above that of the airport. Taller objects may be acceptable if determined not to be obstructions. See ALUC Policies 4.3.3 and 4.3.4.

[21] Although no explicit upper limit on usage intensity is defined for *Zone D and E*, land uses of the types listed—uses that attract very high concentrations of people in confined areas—are discouraged in locations below or near the principal arrival and departure flight tracks.

Exhibit 3-4, continued

LEGEND

Compatibility Zones

- Airport Influence Area Boundary
- Zone A
- Zone B1
- Zone B2
- Zone C1
- Zone C2
- Zone D
- Zone E
- Zone M
- High Terrain Zone
- FAR Part 77 Military Outer Horizontal Surface Limits
- FAR Part 77 Notification Area

Boundary Lines

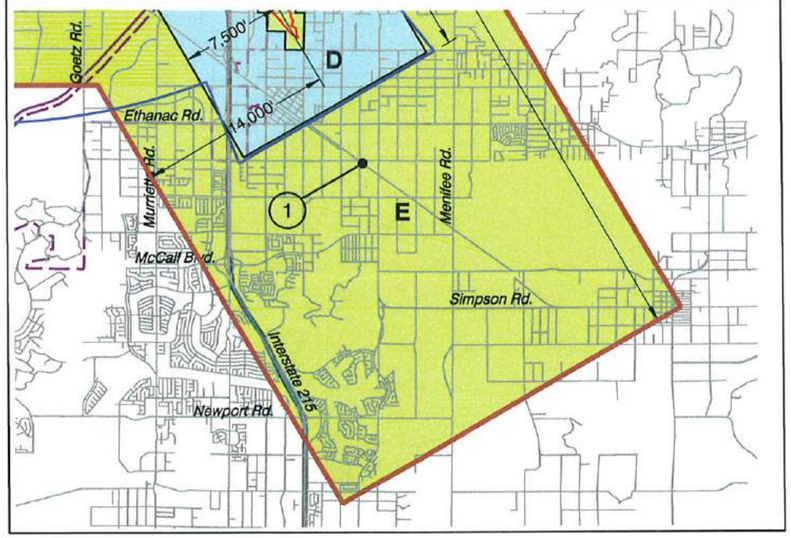
- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

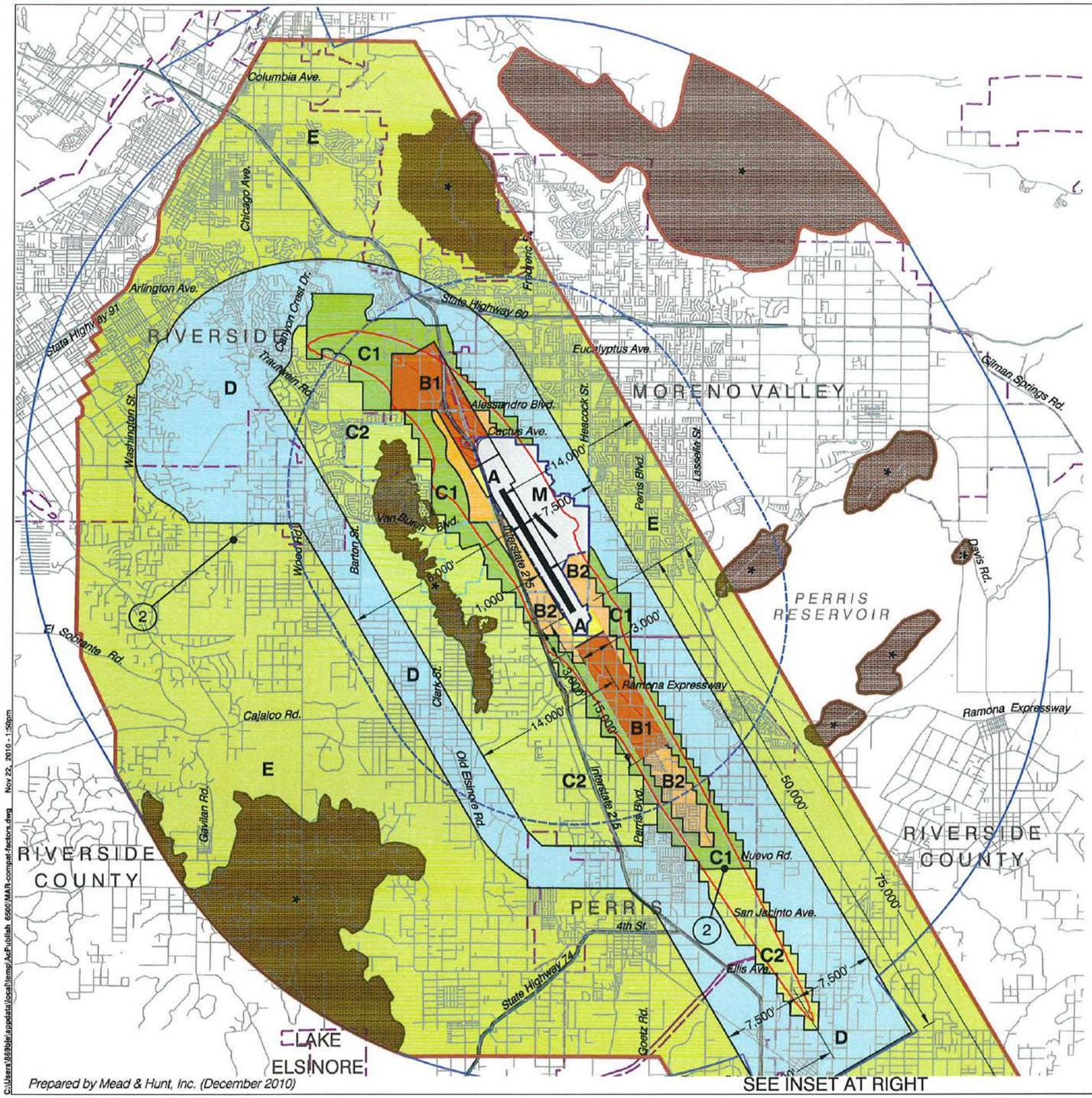
(1) Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

(2) Point at which departing aircraft typically reach 3,000 feet above runway end.

Note:
All dimensions are measured from runway ends and centerlines.

INSET





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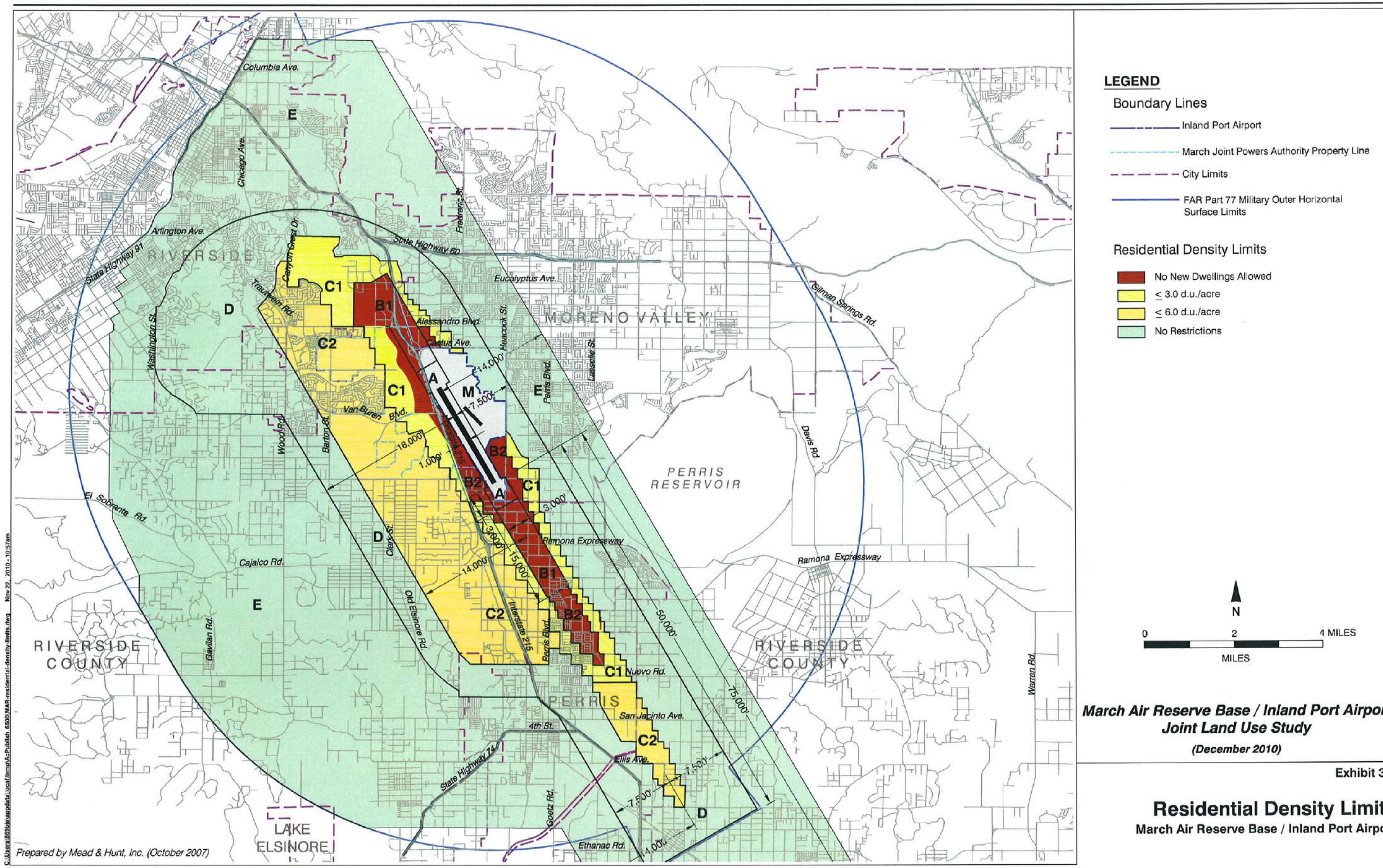
March Air Reserve Base / Inland Port Airport
Joint Land Use Study
(December 2010)

Exhibit 3-3

Compatibility Map

March Air Reserve Base / Inland Port Airport


LEGEND
Boundary Lines
Inland Port Airport
March Joint Powers Authority Property Line
City Limits
FAR Part 77 Military Outer Horizontal Surface Limits
Residential Density Limits
No New Dwellings Allowed
≤ 3.0 d.u./acre
≤ 6.0 d.u./acre
No Restrictions
N
0
2
4 MILES
MILES
Columbia Ave.
Chicago Ave.
Arlington Ave.
State Highway 91
RIVERSIDE
Washington St.
Trautwein Rd.
Canyon Crest Dr.
State Highway 60
Frederick St.
Eucalyptus Ave.
Alessandro Blvd.
Cactus Ave.
Heacock St.
MORENO VALLEY
Lasselle St.
Perris Blvd.
Van Buren Blvd.
Wood Rd.
Barton St.
Interstate 215
PERRIS RESERVOIR
Davis Rd.
Gilman Springs Rd.
El Sobrante Rd.
Cajalco Rd.
Clark St.
Old Elsinore Rd.
Ramona Expressway
Gavilan Rd.
RIVERSIDE COUNTY
Nuevo Rd.
PERRIS
San Jacinto Ave.
4th St.
State Highway 74
Ellis Ave.
Goetz Rd.
Ethanac Rd.
Warren Rd.
LAKE ELSINORE
A
B1
B2
C1
C2
D
E
M
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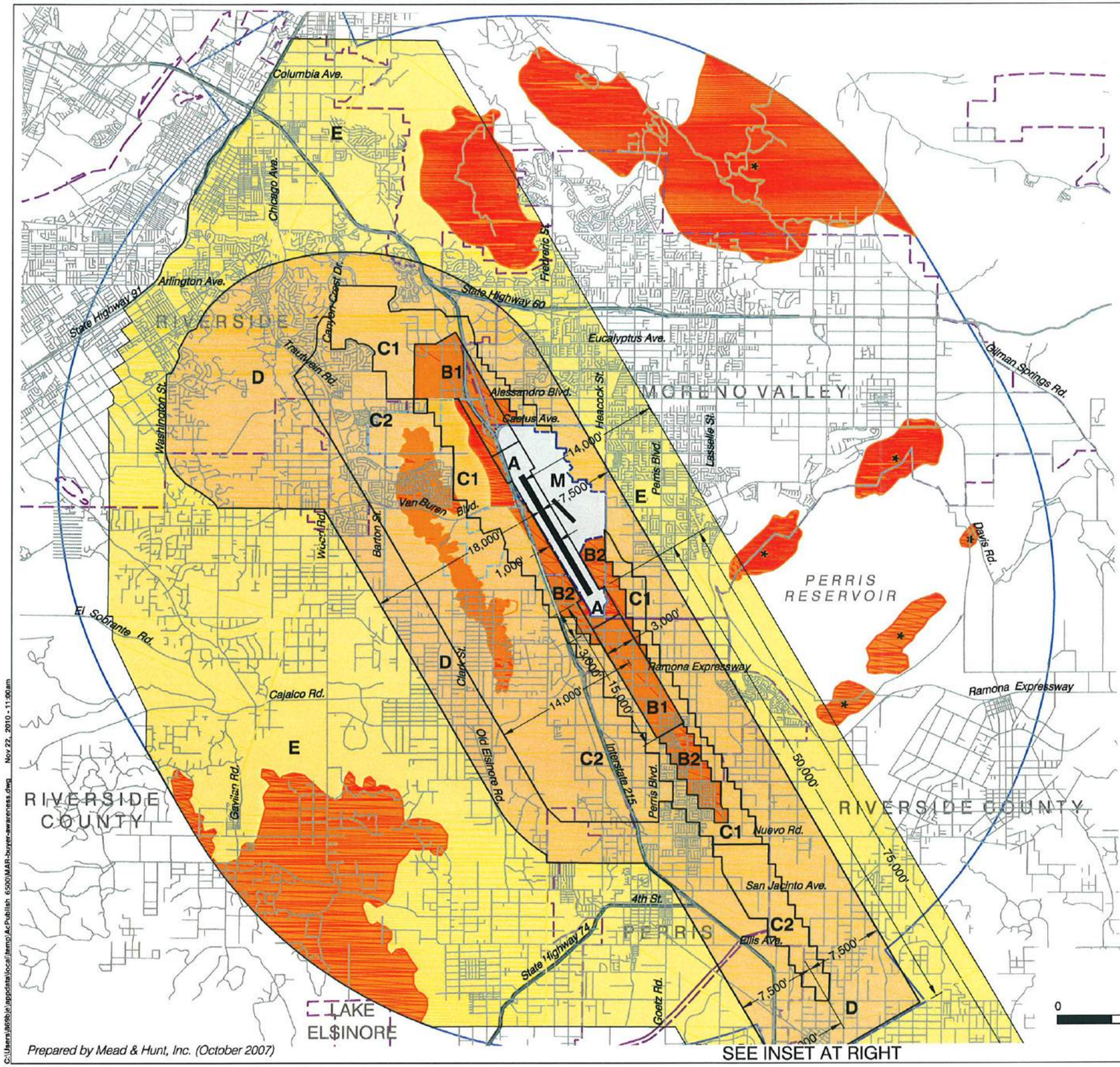
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 3-5

Residential Density Limits

March Air Reserve Base / Inland Port Airport



LEGEND

Boundary Lines

- Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits
- FAR Part 77 Military Outer Horizontal Surface Limits

Buyer Awareness

- Avigation Easement & Disclosure
- Deed Notice & Disclosure
- Disclosure Only

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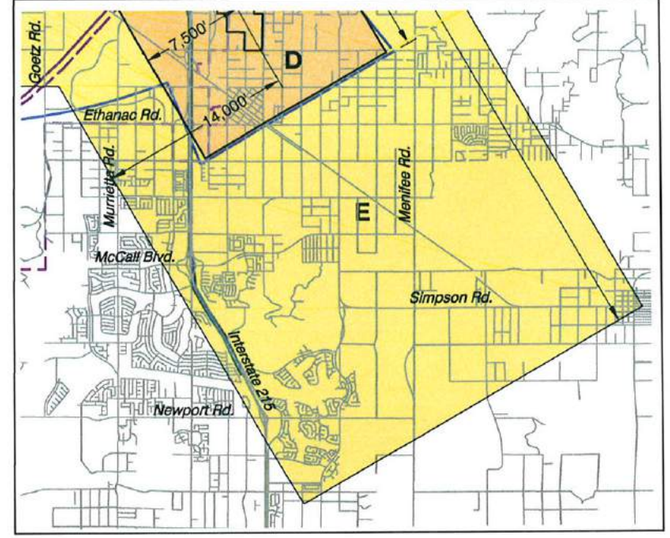

March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 3-6

Buyer Awareness

March Air Reserve Base / Inland Port Airport

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The compatibility determinations listed below for specific types of land uses are based on and consistent with the compatibility criteria listed in Exhibit 3-4. Determinations reflect a combination of noise, safety, and airspace protection concerns. Multiple land use categories and compatibility criteria may apply to a development project. Up to 10% of floor space in a building may be devoted to a use ancillary to the primary use, including an ancillary use that is more intensive than the primary use, provided that the ancillary use is not an assembly room having more than 750 square feet of floor area or a risk-sensitive use (such as a school or day care center) that is incompatible in the zone where the primary use is to be located.

	Compatibility Zones							Note
Land Use	**A**	**B1**	**B2**	**C1**	**C2**	**D**	**E**	**#**
Natural Uses								
Wooded Areas	–	0	0	+	+	+	+	*1*
Open Space, Areas of Low Vegetation (no uses that attract birds)	0	0	0	+	+	+	+	*1*
Fish and Game Preserves	–	–	–	0	0	+	+	*2*
Waterways (e.g., rivers, creeks, canals, wetlands, bays, lakes)	–	–	–	0	0	+	+	*2*
Reservoirs	–	–	–	0	+	+	+	*2*
Flood Control Areas	0	0	0	0	+	+	+	*2*
Agricultural Uses (excluding residential dwellings)								
Pasture, Rangeland, and Fallow Lands	+	+	+	+	+	+	+	
Field & Grain Crops, Dry Farm (excluding crops that attract birds)	+	+	+	+	+	+	+	*3*
Other Crops (crops that attract birds)	–	–	–	–	0	0	+	*3*
Orchards, Tree Farms	–	0	0	0	0	+	+	*1*
Vineyard Crops (no buildings)	–	0	0	0	0	0	+	*3*
Nurseries, Greenhouses, Wineries (no retail uses)	–	0	+	+	+	+	+	*1*
Feed Lots, Stockyards, Dairies, Barns	–	–	0	0	+	+	+	*4*
Poultry Farms	–	–	0	0	0	0	+	*4*
Fish Farms	–	–	0	0	0	0	+	*5*
Recreational Uses								
Golf Courses (no clubhouse)	–	+	+	+	+	+	+	
Golf Course Clubhouses (capacity <300 people)	–	–	0	+	+	+	+	*6,7,8*
Parks: low intensity (no group activities)	–	+	+	+	+	+	+	
Playgrounds, Picnic Areas	–	–	+	+	+	+	+	
Tennis Courts, Community Swimming Pools	–	–	–	+	+	+	+	
Athletic Fields (seating capacity <50 people)	–	–	+	+	+	+	+	
Athletic Fields (seating capacity 50-299 people)	–	–	0	0	+	+	+	*9*
Recreational Athletic Field (seating capacity ≥ 300 people)	–	–	–	–	0	+	+	*9*
Spectator-Oriented Sports Facilities (for professional, semi-pro, college, or high school sports; seating capacity ≥300 people)	–	–	–	–	–	0	+	*9*
Riding Stables	–	–	–	+	+	+	+	
Marinas, Water Recreation	–	–	+	+	+	+	+	
Health Clubs, Spas	–	–	–	0	+	+	+	*8*

Exhibit 3-7

Compatibility Determinations for Specific Land Uses

March Air Reserve Base / Inland Port Airport

Land Use	Compatibility Zones A	B1	B2	C1	C2	D	E	Note #
Recreational Uses, continued								
Specialty Schools (e.g., dance, karate studios)	–	–	–	0	+	+	+	*8*
Fairgrounds, Race Tracks	–	–	–	–	–	0	+	*9*
Resorts, Group Camps	–	–	–	–	0	+	+	*6,7,8*
Shooting Ranges	–	–	–	+	+	+	+	
Residential Uses								
Residential: ≤1.0 du/acre	–	–	–	+	+	+	+	*7,10*
Residential: >1.0, ≤3.0 d.u. / acre	–	–	–	+	+	+	+	*7,10*
Residential: >3.0, ≤6.0 d.u. / acre	–	–	–	–	+	+	+	*7,10*
Residential: >6.0 d.u. / acre	–	–	–	–	–	+	+	*7,10*
Mobile Home Parks	–	–	–	–	–	+	+	*7,10*
Educational, ~~and Institutional~~, and Assembly Uses								
Family Day Care Homes (≤14 children)	–	–	–	0	+	+	+	*11*
Day Care Centers (>14 children)	–	–	–	–	0	+	+	*6,7,12*
Children Schools: K – 12	–	–	–	–	0	+	+	*6,7,12*
Colleges, Universities: main campus	–	–	–	–	–	0	+	*9*
Colleges, Universities: satellite campus	–	–	0	0	0	+	+	*6,7,8*
Congregate Care Facilities (>5 clients)	–	–	–	0	0	+	+	*8*
Hospitals, In-Patient Health Facilities	–	–	–	–	0	+	+	*7,9*
Out-Patient Health Facilities (no overnight stays)	–	–	–	0	0	+	+	*7,9*
Memorial Parks / Cemeteries (no places of assembly)	–	+	+	+	+	+	+	
Indoor Small Assembly (capacity <300 people) (e.g., libraries, conference centers, fraternal organizations, places of worship)	–	–	–	0	0	+	+	*6,7,8*
Indoor Large Assembly (capacity ≥300 people) (e.g., assembly halls, theaters, auditoriums, places of worship)	–	–	–	–	0	+	+	*8*
Outdoor Theaters	–	–	–	–	–	0	+	*7*
Critical Community Infrastructure Facilities	–	–	–	0	+	+	+	*13*
Commercial, Office, Service, and Lodging Uses								
Small Eating/Drinking Establishment (free-standing building; capacity <50 people)	–	–	0	+	+	+	+	*8*
Mid-Size, Large Eating/Drinking Establishments (capacity 50-299 people)	–	–	0	0	+	+	+	*8*
Low-Intensity or Outdoor-Oriented Retail (e.g., furniture, building materials, autos, heavy equipment)	–	0	+	+	+	+	+	*8,14*
Retail Shopping Centers (mixture of uses; ≤3 floors)	–	–	0	+	+	+	+	*8*
Wholesale Trade, Mini-Storage	–	0	+	+	+	+	+	*8,14*
Office Buildings: professional, financial, government (≤3 floors)	–	–	0	0	+	+	+	*8*
Office Buildings (>3 floors)	–	–	–	0	0	+	+	*6,8*
Auto, Aircraft, Marine, Misc. Repair Services	–	0	+	+	+	+	+	*8,14*
Gas Stations	–	–	+	+	+	+	+	

Exhibit 3-7, continued

Land Use	Compatibility Zones A	B1	B2	C1	C2	D	E	Note #
Commercial, Office, Service, and Lodging Uses, continued								
Hotels, Motels (no conference facilities; ≤3 floors)	–	–	0	+	+	+	+	*7,8*
Hotels (with conference facilities or >3 floors)	–	–	–	0	0	+	+	*6,8*
Bed & Breakfast Establishments	–	–	0	0	0	+	+	*7*
Industrial Uses								
Oil Refineries, Chemical Plants (process/store >10,000 gal. hazardous materials)	–	–	–	–	–	0	+	*9,15*
Research & Development, Manufacturing (≤10,000 gal. hazardous materials storage)	–	–	0	0	+	+	+	*6,8*
Light Industries (≤1,000 gal. hazardous materials storage)	–	0	0	+	+	+	+	*6,8,14*
Warehouses, Distribution Facilities	–	0	+	+	+	+	+	*8,14*
Industrial Outdoor Storage (≤1,000 gal. hazardous materials storage)	–	+	+	+	+	+	+	
Transportation, Communications, and Utilities								
Airport Terminals, Aircraft Museums	–	–	+	+	+	+	+	
Aircraft Storage	–	+	+	+	+	+	+	
Major Transportation Terminals (rail, bus)	–	0	+	+	+	+	+	*8*
Small Transportation Hubs (e.g., bus stops)	–	+	+	+	+	+	+	
Automobile Parking Structures	–	0	+	+	+	+	+	*8*
Automobile Parking Surface Lots	–	+	+	+	+	+	+	
Truck Terminals	–	–	+	+	+	+	+	
Highway and Street Right-of-Ways (without structures)	0	+	+	+	+	+	+	*1*
Railroad and Public Transit Lines	–	+	+	+	+	+	+	
Primary Power Plants	–	–	–	–	–	+	+	
Peaking Power Plants, Wind Turbines	–	–	–	0	+	+	+	*1, 16*
Electrical Substations	–	–	–	0	+	+	+	*16*
Solar Thermal Power Plants	–	–	–	–	–	0	+	*17*
Solar Photovoltaic Arrays	–	0	+	+	+	+	+	*1, 17*
Power Lines (>70 feet tall)	–	–	–	–	0	+	+	*1*
Emergency Communications Call Centers	–	–	–	–	–	+	+	
Emergency Communications Antennas	–	–	–	–	+	+	+	
Cell Phone Towers	–	–	0	0	+	+	+	*1*
Wastewater Treatment Facilities	–	–	–	–	0	0	0	*2*
Sanitary Landfills	–	–	–	–	–	0	0	*2*

Legend

– Incompatible
0 Conditionally compatible: Use is acceptable only if it meets conditions noted and local conditions of approval
\+ Normally compatible

See Exhibit 3-4 for basic compatibility criteria used in these compatibility determinations

Exhibit 3-7, continued

Notes Applicable to All Development

The following criteria apply to all proposed development of the general type indicated (residential or nonresidential) regardless of whether the specific use is listed in this table as Normally Compatible or Conditionally Compatible.

a. Residential development must not contain more than the indicated number of dwelling units (excluding secondary units) per gross acre. Clustering of units is encouraged. See Policy 4.2.5 for limitations. Gross acreage includes the property at issue plus a share of adjacent roads and any adjacent, permanently dedicated, open lands.

b. As part of certain real estate transactions involving residential property within any compatibility zone (that is, anywhere within an airport influence area), information regarding airport proximity and the existence of aircraft overflights must be disclosed. This requirement is set by state law. See ALUC Policy 4.4.2 for details. Easement dedication and deed notice requirements indicated for specific compatibility zones apply only to new development and to reuse if discretionary approval is required. Avigation easements are to be dedicated to the March JPA; the federal government is precluded from receiving easement dedications. See sample language in JLUS Appendix B.

c. For nonresidential uses, the total number of people permitted on a project site at any time, except rare special events, must not exceed the usage intensity indicated in Exhibit 3-4 for the Compatibility Zone in which the use is to be located times the gross acreage of the site. Land uses listed as normally compatible are presumed to meet these limits in most circumstances, but unusual examples of a particular use may require further evaluation to ensure compliance with the usage intensity criteria. Rare special events are ones (such as an air show at the airport) for which a facility is not designed and normally not used and for which extra safety precautions can be taken as appropriate. Usage intensity calculations shall include all people (e.g., employees, customers/visitors, etc.) who may be on the property at a single point in time, whether indoors or outside.

d. Each component of a mixed use development must be normally compatible or satisfy the criteria for conditional compatibility. Mixed-use development in which residential uses are proposed to be located in conjunction with non-residential uses in the same or adjoining buildings on the same site shall be treated as nonresidential development for the purposes of usage intensity calculations; that is, the occupants of the residential component must be included in calculating the overall number of occupants on the site. A residential component shall not be permitted as part of a mixed use development in zones where residential uses are indicated as incompatible. Also see ALUC Policy 3.1.3(d).

e. Clustering of nonresidential development is permitted. However, no single acre of a project site shall exceed the indicated number of people per acre. See ALUC Policy 4.2.5 for details.

f. The height of structures, antennas, trees, and other objects associated with any development must not exceed the allowable heights established by the airspace protection surfaces shown in Exhibit 2-15 except that no object shall be restricted to a height of less than 35 feet. Marking and lighting of certain objects may be required in accordance with Federal Aviation Administration standards.

g. March ARB must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include microwave transmission in conjunction with a cellular tower, radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers and other similar EMR emissions.

Notes Applicable to Conditionally Compatible Uses:

Conditionally compatible uses are acceptable only if they meet the applicable conditions listed below.

1 Use is acceptable provided that no penetrations of FAR Part 77 surfaces result.

2 Man-made features must be designed to avoid heightened attraction of birds. Uses, including wastewater treatment facilities and sanitary landfills, that attract birds are not permitted within 10,000 feet of the runway. Bird-attracting uses should be avoided as much as 5 miles from the runway if they would tend to cause birds to fly through the runway approach or departure airspace. In Zones A, B1, and B2, flood control facilities should be designed to hold water for no more than 48 hours following a storm and be completely dry between storms. For more detailed guidance, see FAA Advisory Circular 150/5200-33B.

Exhibit 3-7, continued

Notes Applicable to Conditionally Compatible Uses, continued:

3 Certain crops (e.g., rice, barley, oats, wheat – particularly durum – corn, sunflower, clover, berries, cherries, grapes, and apples) and farming activities (e.g., tilling and harvesting) attract birds, thus potentially causing bird strike hazards for aircraft in flight. Crops less likely to attract birds are preferable in areas near where aircraft fly at low altitudes (e.g., rye, buckwheat, flax, canola, timothy, alfalfa, and vegetables – except potatoes). If farming practices become a hazard, plowing and cultivating activities should be relegated to hours of darkness or periods when the problem species are less active.

4 Confined livestock operations (i.e., feedlots, dairy operations, hog or chicken production facilities, or egg-laying operations) can attract flocking birds, such as starlings, that pose a hazard to aviation. Various practices, including livestock feed, water, and manure may attract birds. Mitigation measures may be necessary to reduce the attractiveness of the site (e.g., use of feed storage buildings, tarps to cover manure piles). Also, loud aircraft noise may agitate some livestock, particularly birds—caution should be exercised with regard to location of these uses.

5 Fish production (i.e., catfish, trout) conducted outside of fully enclosed buildings is attractive to many types of birds. Mitigation requirements may be necessary (e.g., netting of outdoor ponds, providing covered structures).

6 Assembly facilities, indoor or outdoor, seating 300 or more people are not allowed.

7 All new residences, schools, libraries, museums, hotels and motels, hospitals and nursing homes, places of worship, and other noise-sensitive uses must have sound attenuation features incorporated into the structures sufficient to reduce interior noise levels from exterior aviation-related sources to no more than CNEL 40 dB. This requirement is intended to reduce the disruptiveness of loud individual aircraft noise events upon uses in this zone and represents a higher standard than the CNEL 45 dB standard set by state, local, and ALUC regulations. Office space must have sound attenuation features sufficient to reduce the exterior aviation-related noise level to no more than CNEL 45 dB. To ensure compliance with these criteria, an acoustical study shall be required to be completed for any development proposed to be situated where the aviation-related noise exposure is more than 20 dB above the interior standard (e.g., within the CNEL 60 dB contour where a the interior standard is CNEL 40 dB). Standard building construction is presumed to provide adequate sound attenuation where the difference between the exterior noise exposure and the interior standard is 20 dB or less.

8 Intensity criteria specified in Exhibit 3-4 must be met.

9 Use is allowed only if a site outside the zone would not serve the intended function.

10 Construction of a dwelling, including a secondary unit where permitted in accordance with state law and local zoning, is allowed on any existing legal lot of record including within zones where residential uses are considered incompatible. See ALUC Policy 3.3.4. Dedication of an avigation easement to the JPA is required for any new residential development in Zones B1, B2, C1, and C2 and the High Terrain Zone. A deed notice is required for any new residential development in Zone D.

11 Use is acceptable only in existing residential neighborhoods.

12 New schools and day care centers should not be located in Zone C2 unless alternatives outside the zone are not available or would not serve the intended function. Building replacement or expansion of existing facilities is allowed.

13 Critical community facilities (e.g., power plants, electrical substations, and public communications facilities) are incompatible in Zones A, B1, and B2 and should not be constructed in Zone C1unless no other feasible alternative site exists and the facility is designed in a manner that minimizes its susceptibility to damage from an aircraft accident. See ALUC Policy 4.2.3(d).

14 Buildings must have no more than one habitable, aboveground floor in APZ I and no more than two floors in APZ II. Maximum lot coverage can be no more than 50% for the APZ I portion of the zone. Uses in APZ I must not provide on-site service to the public. Zoned fire sprinkler systems are required. To the extent possible, site design should avoid placement of APZ I buildings within 100 feet of the extended runway centerline; this strip should be devoted to parking, landscaping, and outdoor storage.

15 Storage of aviation fuel and other aviation-related flammable materials on the airport is exempted in all zones. In APZ I, manufacture or bulk storage of hazardous materials (toxic, explosive, corrosive) is prohibited unless storage is underground; small quantities of materials may be stored for use on site. In APZ II, aboveground storage of up to 6,000 gallons of nonaviation flammable materials per tank is also exempted. See ALUC Policy 4.2.3(c) for details.

16 Transmission lines must be underground.

17 All new facilities must be designed so as not to create physical, visual, or electronic hazards for aircraft in flight.

Exhibit 3-7, continued

Chapter 4

Local Plans Consistency Review

4

Local Plans Consistency Review

Introduction

The basic function of airport land use compatibility plans is to promote compatibility between airports and the land uses that surround them. The compatibility map and criteria provided in Chapter 3 is intended to serve as a tool for use by the March JPA, affected jurisdictions and, indirectly by the Riverside County ALUC in fulfilling their duty to review future land use projects. This chapter evaluates where significant conflicts are apparent between the compatibility criteria and planned land use development in the airport environs.

Land Use Jurisdictions

March Air Reserve Base/Inland Port Airport is located in northwestern Riverside County, approximately 70 miles east of Los Angeles. The March ARB/IPA facility is bordered by the city of Riverside to the northwest, the city of Moreno Valley to the east/northeast, the city of Perris to the south, and unincorporated county of Riverside to the west. The operations of the March ARB/IPA affect these four jurisdictions as well as lands controlled by the March Joint Powers Authority (JPA).

The March ARB/IPA, which is operated under a joint use agreement with the Department of Defense, comprises some 2,300 acres and consists of the airfield and areas designated for aviation-related uses. The March JPA property, not related to the airport, includes approximately 4,400 acres of land which were deemed excess to military needs by the 1993 Defense Base Realignment and Closure Commission (BRAC). The March JPA, which is considered a local government body similar to a county or city agency, has land use and redevelopment authority over this area, referenced here as the March JPA area. As noted previously, the JPA is comprised of members representing the four surrounding land use jurisdictions: the county of Riverside and the cities of Moreno Valley, Perris, and Riverside. Exhibit 4–1 depicts the March ARB/IPA and March JPA areas and the neighboring land use jurisdictions. Exhibit 4–2 summarizes in tabular form the existing and planned land use information for each of the five affected land use jurisdictions as of 2006.

EXISTING AND PLANNED LAND USES

Based on aerial photography and with the assistance of the local jurisdictions, Exhibit 4–3 depicts areas where major development exists within the airport influence area for March ARB/IPA as of 2010. The map reflects where a land use "physically" exists or where local government commitments for a proposed development (e.g., tentative maps, development agreements, discretionary entitlements, etc.) have been made. As can be seen in this map, the majority of the lands within the cities of Riverside and Moreno Valley to the northwest and northeast of March ARB/IPA, respectively, are primarily devoted to existing land uses. The only large areas that remain relatively undeveloped are located on the March JPA property, within the unincorporated areas of the county, and within the city of Perris. Based on the existence of entitlements granted through Development Agreements received from the respective jurisdictions prior to JLUS adoption by the Riverside County ALUC, several of these properties as identified on the map are considered exceptions for the purposes of compliance with the JLUS (see additional discussion at the end of Chapter 3.)

A composite land use map depicting the planned land uses in the vicinity of the March ARB/IPA is provided in Exhibit 4–4. The map is a simplified representation of each jurisdiction's planned land uses as indicated in the current (as of 2006) general plans of the affected jurisdictions, with the exception of the city of Riverside. For the city of Riverside, the simplified land use map is based on the city's draft General Plan 2025 data. The cities of Moreno Valley and Perris are also currently undergoing updates to their general plans which were adopted over a decade ago. Land use information for the city of Moreno Valley is based on available GIS data from the county. The county's general plan and airport-vicinity community area plans were adopted in October 2003.

A comparison between the existing and general plan maps results in Exhibit 4–5. This map shows where development is currently planned in the airport vicinity, but does not now exist. As noted later in this chapter, land use compatibility policies recommended in this *JLUS* only apply to future land uses. The majority of planned, but not yet existing, land uses in the immediate airport environs include commercial, office, and industrial uses. Residential land uses of varying densities exist or are planned along the extended runway centerline to the south. Rural residential and low-density residential uses are planned to the west.

COMPATIBILITY STATUS REVIEW

A review of available land use documents and maps, both adopted and draft plans, has been conducted to determine the extent to which they are consistent or conflict with the recommended land use compatibility criteria contained in this *JLUS*. This is a preliminary review. It is anticipated that each jurisdiction will conduct an in depth evaluation of its respective land use plans at the time that they implement the land use compatibility recommendations of this *JLUS*. Major findings are noted below.

The types of land uses planned in the vicinity of March ARB/IPA are generally compatible with base operations, with some exceptions to the west and south. However, most of the respective general plans or zoning ordinances contain little reference to airport land use compatibility policies. Some of the land use policies limit residential uses in certain areas and others regulate height of structures. No one jurisdiction has a complete set of compatibility policies that would address all of the compatibility concerns for the areas within the proposed March ARB/IPA airport influence area. Thus, each jurisdiction will need to make some embellishments to their respective plans. Note also that policy information for the city of Moreno Valley is not available at the time of preparation of the *JLUS*. Although most of

city lands within the airport influence area is already developed, the city of Moreno Valley will need to ensure that compatibility concerns are addressed in regards to future planned land uses.

With regard to the general plan land use maps of the affected jurisdictions, the following consistency status is noted:

- **Zone A**—As noted in Chapter 3, Zone A includes the portions within the Clear Zone (CZ) beyond the airport property. The CZ at the north end of the airport lies within the March JPA property boundary. This area is zoned Open Space and has a CZ overlay that requires consistency with the AICUZ. The Open Space designation is consistent with the compatibility criteria of this JLUS.

  Incompatible uses such as commercial property exist in areas within the south CZ. To prevent further incompatible growth, the U.S. Air Force has purchased restrictive use easements for this area which prevents development of future buildings or incompatible uses.

- **Zone B1**—Most of the zone is planned for light industrial, commercial, office or other potentially compatible land use. However, restrictions on usage intensity, limits on height, dedication of aviagation easements, and other development conditions will be necessary in order to ensure that a fully consistent status is attained.

- **Zone B2**—The indicated industrial and other nonresidential uses are compatible provided that usage intensities and other development conditions are established in accordance with the compatibility criteria.

- **Zone C1**—Except for JPA lands, much of this zone is already developed. Some future residential development is indicated in the outer portions of the zone to the south within the city of Perris. A mix of low-density and medium-density residential uses are planned along the extended runway centerline. Based upon both noise and safety considerations, this *JLUS* limits residential densities to no more than 3.0 dwelling units per acre. The planned densities within Zone C1 generally exceed this limit.

- **Zone C2**—Low-density and rural residential uses are depicted within the unincorporated area of Riverside County which comprises most of Zone C2 west of the airport. The compatibility criteria recommended herein indicate that, because of safety concerns and noise impacts, residential development would be limited to 6.0 dwelling units per acre in this area. Limits on usage intensity are needed for nonresidential uses in this zone. Additionally, the *JLUS* discourages schools within Zone C2. A discouraged use should generally not be permitted unless no feasible alternative is available.

- **Zone D**—No obvious conflicts are noted. It is important to note, however, that a substantial percentage of noise complaints regarding aircraft operations at March ARB/IPA come from residents of this zone, especially to the northwest. While this status does not suggest that additional residential should be prevented, it does support the importance of buyer awareness measures as proposed in Chapter 3.

- **Zone E**—Conflicts are unlikely unless very tall structures or uses which create a hazard to flight are proposed.

- **High Terrain Zone**—All jurisdictions will need to establish airspace protection zoning and be particularly cognizant of construction on the high terrain areas represented by this zone.

PLAN IMPLEMENTATION

To address airport land use compatibility issues around the March ARB/IPA, the March JPA, the four-member jurisdictions, and the Riverside County ALUC will each need to act to adopt and implement the *JLUS* recommendations. Each land use entity may incorporate the recommended compatibility policies into their respective land use plans in a different manner. Although the methods may differ, incorporation of the *JLUS* compatibility criteria will ensure consistency among all these entities and their respective plans.

Role of March JPA and Member Jurisdictions

The purpose of this *JLUS* is to prevent encroachment of incompatible uses around March ARB/IPA. The *JLUS* promotes this objective by providing the land use jurisdictions that surround the airport—the county of Riverside, the cities of Moreno Valley, Perris, and Riverside, and the March JPA—with a set of criteria by which to evaluate whether proposed development will be compatible with the airport operations. In conjunction with OEA funding of the *JLUS* program, the JPA member jurisdictions were asked to make good faith commitments that the *JLUS* recommendations will be accepted and incorporated into local planning and decision making. Modification of the respective general plans and specific plans for consistency with applicable *JLUS* compatibility criteria is the major step in this process. Other types of documents also serve to implement the *JLUS* policies. These approaches are described later in this chapter.

Role of the ALUC

The Riverside County ALUC will play an important role in ensuring implementation of the *JLUS* criteria. In accordance with state law, the ALUC has two responsibilities: (1) to adopt a compatibility plan for each public-use and military airport within its jurisdiction; and (2) to review certain plans and individual development actions contemplated for approval by local land use jurisdictions to determine if the proposed actions are consistent with the compatibility plan for the airport involved.

It is anticipated that the ALUC will adopt the compatibility measures recommended in this *JLUS*, perhaps with some modifications, and incorporate the criteria as part of the *Riverside County Airport Land Use Compatibility Plan*. The compatibility materials in Appendix A are intended to comprise the *Compatibility Plan* for March ARB/IPA. It is structured in a manner that builds upon the countywide planning effort already established by the ALUC and enables the March ARB/IPA data and policies to readily be added to the countywide plan. The character of the airport's aircraft activity, though, is such that certain of the ALUC's countywide policies are not suitable to the airport's environs. The countywide plan allows for airport-specific compatibility policies and includes them for several airports in the Individual Airport Policies and Compatibility Maps chapter (Chapter 3) of the document. Modifications to the countywide policies applicable specifically to March ARB/IPA are indicated in Appendix A.

ALUC adoption of the compatibility criteria in the *JLUS* would add a formality to those criteria that does not exist in the *JLUS* format. As presented in the *JLUS*, the criteria are only recommendations to the affected land use jurisdictions. Appendix B contains excerpts from the countywide ALUC policies that would potentially be applicable to the March ARB/IPA environs if the ALUC adopts the *JLUS* recommendations.

Once the *Compatibility Plan* for March ARB/IPA is adopted by the ALUC, the relationship between the ALUC and the affected jurisdictions will change. At that point, the jurisdictions are required by state

law to modify their general plans and affected specific plans for consistency with the ALUC's plan or to take certain steps, as specified in the law, to overrule the ALUC. If the ALUC and jurisdictions all adopt the *JLUS* recommendations as proposed, then the respective general plans will be consistent with the ALUCP. Methods of making a general plan consistent with the ALUC plan are described in the next section. State law says that the local agency must act to modify its general plan and specific plans within 180 days of when the ALUC adopts or amends its plan. In practice, this schedule is seldom met, but local jurisdictions expose themselves to legal challenges over controversial actions if they are not at least pursuing amendment of their plans.

The only other course of action available to local agencies is for the agency to overrule the ALUC by a two-thirds vote of its governing body after making findings that the agency's plans are consistent with the intent of state airport land use planning statutes. Additionally, the local agency must notify both the ALUC and the California Division of Aeronautics at least 45 days in advance of its decision to overrule and must hold a public hearing on the proposed overruling (Public Utilities Code Section 21676(a) and (b)).

The ALUC's second role, as noted above, is to review certain proposed land use actions for consistency with the ALUC plan. By state law, local jurisdictions must submit proposed general plan amendments, specific plans, zoning ordinances and variances, and building codes to the ALUC for review. Individual development proposals are also subject to ALUC review, but only until such time as the local jurisdiction has made its plans consistent with the ALUC's plan. Afterward, such reviews are optional. The Riverside County ALUC policy is to request that local jurisdictions submit only certain types of major land use actions for review. The specific types of actions covered are itemized in the ALUC policy excerpted in Appendix B of this *JLUS* document.

Consistency Approaches

General Plan Consistency

A general plan does not need to be identical with the ALUC plan, or in this case, the *JLUS* criteria in order to be consistent with it. To meet the consistency test, a general plan must do two things:

- It must specifically address compatibility planning issues, either directly or through reference to a zoning ordinance or other policy document; and
- It must avoid direct conflicts with compatibility planning criteria.

Not all of the measures necessary for achievement of airport land use compatibility are necessarily included in general plans. Many community general plans pay little attention to the noise and safety factors associated with airport land use compatibility. Also, some of the designated land uses of property near an airport frequently are contrary to good compatibility planning. It is anticipated that each of the land use jurisdictions affected by this *JLUS* will need to make some modification to its general plan and/or other land use policy documents in order to meet the plan consistency requirements.

Compatibility planning issues can be reflected in a general plan in several ways:

- **Incorporate Policies into Existing General Plan Elements**—One method of achieving the necessary planning consistency is to modify existing general plan elements. For example, airport land use noise policies could be inserted into the noise element, safety policies could be placed into a safety element and the primary compatibility criteria and associated maps plus the procedural policies might fit into the land use element. With this approach, direct conflicts would be eliminated

and the majority of the mechanisms and procedures necessary to ensure compliance with compatibility criteria could be fully incorporated into a local jurisdiction's general plan.

- **Adopt a General Plan Airport Element**—Another approach is to prepare a separate airport element of the general plan. Such a format may be advantageous when a community's general plan also needs to address on-airport development and operational issues. Modification of other plan elements to provide cross-referencing and eliminate conflicts would still be necessary. Although not a likely option for the affected jurisdictions, this may be an option for the March JPA.

- **Adopt Compatibility Plan as Stand-Alone Document**—Jurisdictions selecting this option would simply adopt as a local policy document the relevant portions of the *JLUS*—specifically, Chapter 3 with the policies and maps for the airport. Applicable background information could be included as well if desired. Changes to the community's existing general plan would be minimal. Limited discussion of compatibility planning issues could be included in the general plan, but the substance of most compatibility policies would appear only in the stand-alone document.

Airport Combining District or Overlay Zoning Ordinance

Another approach is similar to the stand-alone document except that the local jurisdiction would not explicitly adopt the *Compatibility Plan* of the *JLUS* as policy (i.e., the compatibility map and criteria tables). Instead, the compatibility policies would be restructured as an airport combining or overlay zoning ordinance. A combining zone serves as an overlay of standard community-wide land use zones and modifies or limits the uses permitted by the underlying zone. Flood hazard combining zoning is a common example.

An airport combining zone ordinance can serve as a convenient means of bringing various airport compatibility criteria into one place. Airport-related height-limit zoning can be adopted as a means of protecting the airport's airspace. Noise and safety compatibility criteria, together with procedural policies, also would need to be added to create a complete airport compatibility zoning ordinance. Other than where direct conflicts need to be eliminated from the local plans, implementation of the compatibility policies would be accomplished solely through the zoning ordinance. Policy reference to airport compatibility in the general plan could be as simple as stating that policy implementation is by means of the combining zone. An outline of topics that could be addressed in an airport combining zone is provided below.

- **Airspace Protection**—A combining district can establish restrictions on the height of buildings, antennas, trees, and other objects as necessary to protect the airspace needed for operation of the airport. These restrictions should be based upon the current version of the Federal Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspace, Subpart C. Additions or adjustment to take into account instrument approach (TERPS) surfaces should be made as necessary. Provisions prohibiting smoke, glare, bird attractions, and other hazards to flight should also be included. Exhibit 2–15 depicts the military and civilian airspace surfaces for March ARB/IPA.

- **FAA Notification Requirements**—Combining districts also can be used to ensure that project developers are informed about the need for compliance with the notification requirements of FAR Part 77. Subpart B of the regulations requires that the proponent of any project that exceeds a specified set of height criteria submit a Notice of Proposed Construction or Alteration (Form 7460-1) to the Federal Aviation Administration prior to commencement of construction. The height criteria associated with this notification requirement are lower than those spelled out in Part 77, Subpart C, which define airspace obstructions. The purpose of the notification is to determine if the proposed

construction would constitute a potential hazard or obstruction to flight. Notification is not required for proposed structures that would be shielded by existing structures or by natural terrain of equal or greater height, where it is obvious that the proposal would not adversely affect air safety.

- **State Regulation of Obstructions**—State law prohibits anyone from constructing or altering a structure or altering a structure or permitting an object of natural growth to exceed the heights established by FAR Part 77, Subpart C, unless the FAA has determined the object would or does not constitute a hazard to air navigation (Public Utilities Code, Section 21659). Additionally, a permit from the Department of Transportation is required for any structure taller than 500 feet above the ground unless the height is reviewed and approved by the Federal Communications Commission or the FAA (Public Utilities Code, Section 21656).

- **Designation of High Noise-Impact Areas**—California state statutes require that multi-family residential structures in high-noise exposure areas be constructed so as to limit the interior noise to a Community Noise Equivalent Level of no more than 45 dB. A combining district could be used to indicate the locations where special construction techniques may be necessary in order to ensure compliance with this requirement. The combining district also could extend this criterion to single-family dwellings. To further reduce the intrusiveness of aircraft noise, the *JLUS* recommends that habitable interior spaces of new residential and other noise-sensitive uses be exposed to no more than 40 dB CNEL from aircraft sources. Incorporation of extra noise level reduction (NLR) features in structures housing these uses is necessary in Zones B1, B2, and C1.

- **Maximum Densities/Intensities**—Airport noise and safety compatibility criteria are frequently expressed in terms of dwelling units per acre (density) for residential uses and people per acre (intensity) for other land uses. These standards can either be directly included in a combining zone or used to modify the underlying land use designations. For residential land uses, the correlation between the compatibility criteria and land use designations is direct. For other land uses, the method of calculating the intensity limitations needs to be defined. Appendix D identifies methods by which determining concentrations of people can be made. Alternatively, a matrix can be established indicating whether each specific type of land use is compatible with each compatibility zone. To be useful, the land use categories need to be more detailed than typically provided by general plan or zoning ordinance land use designations. Exhibit 3–7 identifies the list of land uses permitted within each of the compatibility zones for March ARB/IPA. This list of specific land uses is intended to be one of the primary land use compatibility tools to be adopted by the March JPA and its member jurisdictions.

- **Open Areas for Emergency Landing of Aircraft**—Preserving open land for emergency aircraft landing is primarily a safety concern with small aircraft, not the large planes operated at March ARB/IPA. However, for nonresidential uses, the *AICUZ Study* recommends that buildings located within APZ I should be limited to one story and the lot coverage should not exceed 20 percent. The *JLUS* incorporates the same criterion.

- **Real Estate Disclosure Policies**—The geographic extent and specific language of recommended real estate disclosure statements can be described in an airport combining zone ordinance. Each jurisdiction would establish a policy indicating that information about the airport's influence area should be disclosed to prospective buyers of all airport-vicinity properties prior to transfer of title. For March ARB/IPA, the airport influence area is shown in Exhibit 3–3. The advantage of this type of program is that it applies to previously existing land uses as well as to new development.

The requirement for disclosure of information about the proximity of an airport has been present in state law for some time, but legislation adopted in 2002 and effective in January 2004 explicitly ties the requirement to the airport influence areas established by airport land use commissions. With certain exceptions, these statutes require disclosure of a property's location within an airport influence area under any of the following three circumstances: (1) sale or lease of subdivided lands; (2) sale of common interest developments; and (3) sale of residential real property. In each case, the disclosure statement to be used is defined by state law as follows:

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

The function of ALUCs is to define the airport influence area within which the above disclosure statement is to be made. ALUC adoption of the *JLUS* recommendations would mean that the disclosure should be provided within the airport influence area shown in Exhibit 3–3. Also, the ALUC policy extends the disclosure requirement to apply to all residential real estate transactions. See Appendix B herein for the ALUC policy.

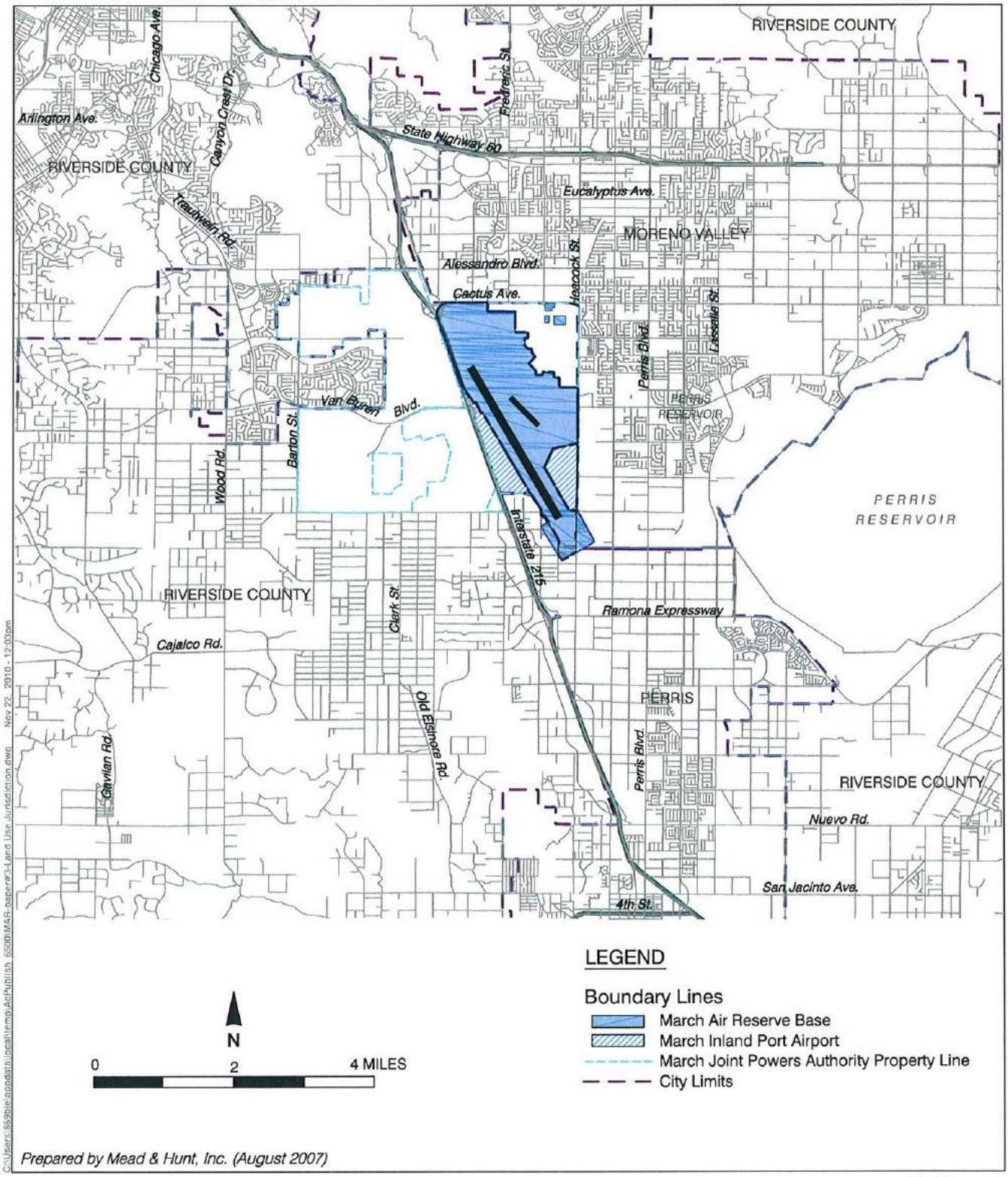


Exhibit 4-1

Land Use Jurisdictions

March Air Reserve Base / Inland Port Airport

AIRPORT SITE

- *Location*
  - Northwestern section of Riverside County
  - 10 miles southeast of central Riverside
  - Situated on high valley floor of Perris Valley
- *Nearby Terrain*
  - Relatively flat in immediate vicinity
  - Santa Ana and San Jacinto Mountain Ranges located to the west and east, respectively
  - Terrain greater than 150 ft. above the airport elevation (1,538 ft. MSL) exists several miles to the northeast (Box Springs Mts.), southwest (Santa Ana Mts.) and southeast (Lakeview Mts.)

AIRPORT ENVIRONS LAND USE JURISDICTIONS

- *March Joint Powers Authority*
  - Has land use authority over March JPA property
- *Riverside County*
  - Airport lies entirely within unincorporated area
- *City of Moreno Valley*
  - Borders airport to the east
- *City of Perris*
  - Borders airport to the south and lies beneath primary airport approach routes
- *City of Riverside*
  - Borders airport to the west-northwest and lies beneath primary airport departure routes

STATUS OF COMMUNITY PLANS

- *Riverside County*
  - General Plan adopted by Board of Supervisors October 2003
  - Reche Canyon, Mead Valley and Lake Mathews Area Plans Final Drafts (October 2003)
- *March Joint Powers Authority*
  - General Plan adopted by March JPA (1999)
  - General Plan Land Use Map adopted August 2004
  - March Business Center Specific Plan adopted February 2003
  - Development Code adopted July 1997
  - Zoning Map adopted May 2004
- *City of Moreno Valley*
  - General Plan adopted by City Council in 1988
  - General Plan Update in progress; pending adoption mid 2006
- *City of Perris*
  - General Plan adopted by City Council October 1991
  - General Plan 2030 Update in progress; pending adoption late 2006
- *City of Riverside*
  - General Plan 2025 adopted by City Council November 2007

EXISTING AIRPORT AREA LAND USES

- *General Character*
  - Immediate area lies within the March JPA boundary and is primarily developed to the northeast and undeveloped west of Highway 215
  - Lands within the cities of Riverside and Moreno Valley are primarily devoted to existing land uses
  - Urban development encroaches airport to the south (City of Perris) and west (County of Riverside)
  - Scattered rural residential development to the north (City of Riverside) and south (City of Perris)
  - Perris reservoir located 3 mi. southeast
- *Runway Approaches*
  - Northwest (Runway 14): Sycamore Canyon Park with residential neighborhoods, Sycamore Canyon and Canyon Springs neighborhoods with major activity centers
  - Southeast (Runway 32): Industrial, commercial and business park uses; residential uses 2 mi.

PLANNED AIRPORT AREA LAND USES

- *March Joint Powers Authority*
  - Northeast: Low Density Residential, Mixed Use, Business Park, Office and Recreational area
  - West: Industrial, Business Park, Mixed Use and Commercial uses with scattered Recreational uses west of Highway 215
  - South: Aviation-related uses
- *Riverside County*
  - Southwest: Very low density residential, Business Park and Light Industrial
- *City of Moreno*
  - Northeast: Office, Commercial, Specific Plan areas and Residential uses
  - East: Low density residential uses with scattered commercial uses and public facilities
- *City of Perris*
  - South: Industrial and commercial uses
- *City of Riverside*
  - Northwest: Industrial/Business Parks and Sycamore Canyon Park facility
  - West: Medium residential uses with scattered commercial uses and parks

Exhibit 4–2

Airport Environs Information

March Air Reserve Base / Inland Port Airport

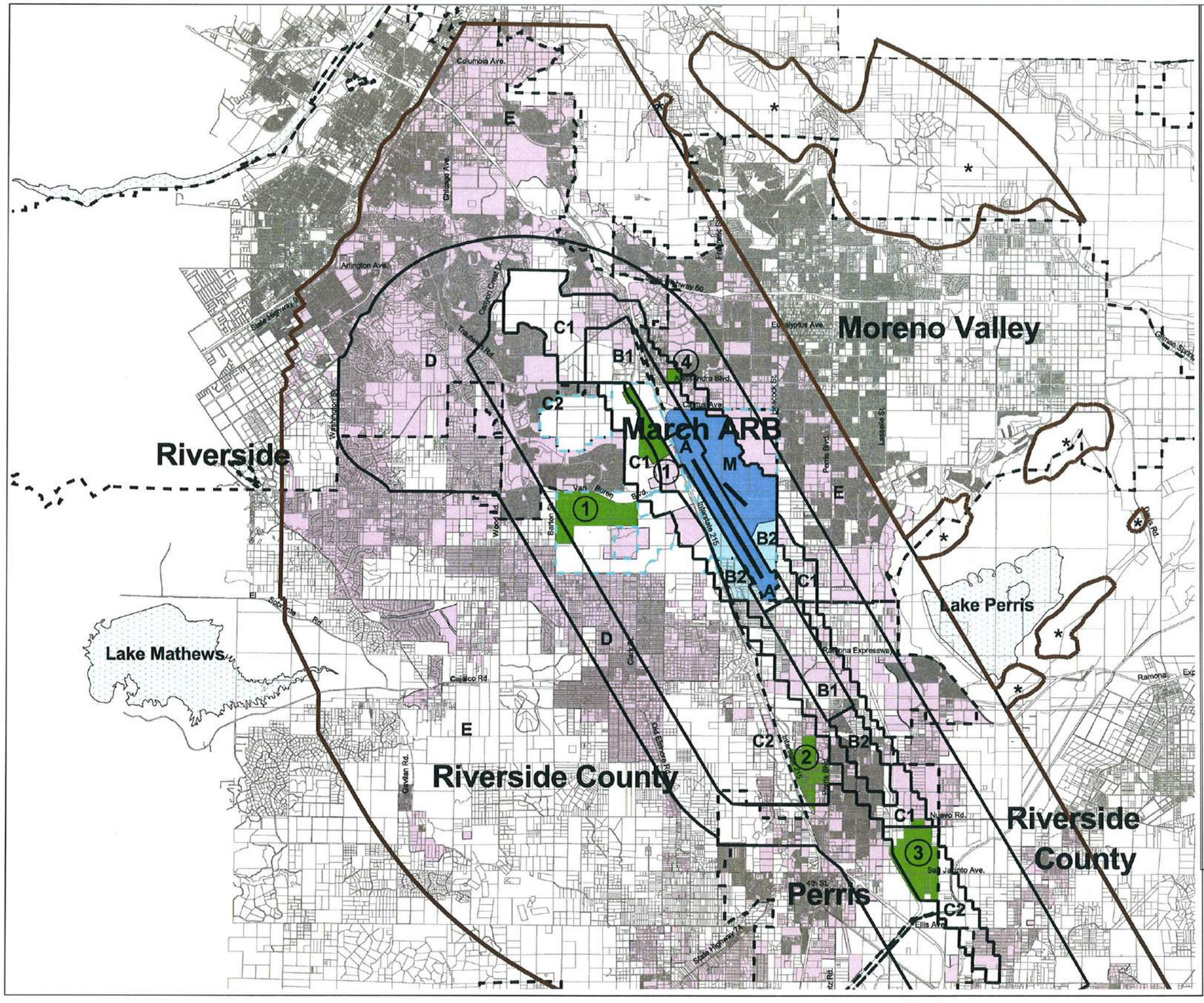
Established Airport Compatibility Measures

- *Riverside County General Plan (October 2003)*
  - Prohibit new residential uses, except single-family dwellings on legal residential lots of record, within airports' 60 dB CNEL contour as defined by ALUC (Policy N 7.3)
  - Submit proposed actions to ALUC as required by state law (Policy LU 1.8); other actions and projects may be submitted on voluntary and advisory basis (LU 14.8)
- *City of Riverside General Plan (September 1994)*
  - Residential development and noise sensitive uses deemed conditionally acceptable in 60-70 CNEL range; normally unacceptable at 70-75 CNEL; clearly unacceptable above 75 CNEL
  - Transportation Element Policy T 3.8 states that city "should limit building heights and land use intensities beneath airport approach and departure paths to protect public safety"
- *City of Riverside Zoning Codes*
  - Airport zone (AIR) and airport industrial (AI) zone restrict types of uses and heights of structures on and near airports
  - No FAR Part 77 height limit zoning
- *City of Perris General Plan (1991)*
  - Residential development and noise sensitive uses (e.g., schools) deemed conditionally acceptable in 60-70 CNEL range; low density residential deemed conditionally acceptable in 55-70 CNEL range; residential uses normally unacceptable at 70-75 CNEL; clearly unacceptable above 75 CNEL
  - Perris Municipal Code (Chapter 16.22) regulates new development located near airports and requires noise mitigations on residential uses exposed to exterior noise levels of 60 dBA CNEL or greater
- *City of Moreno Valley General Plan (1988)*
  - Data not available at this time
- *City of Moreno Valley Zoning*
  - Air Installation Compatibility Use Overlay District (AICUZ) limits types of uses within the airport's accident potential zones I and II

Draft Airport Compatibility Measures

- *City of Riverside General Plan 2025 Update*
  - Limit building heights and land use intensities beneath airport approach and departure paths to protect public safety (Policy CCM 11.2)
  - Utilize the Airport Protection Overlay Zone to advise landowners of special noise considerations associated with their development (Policy N 2.5)
  - Ensure development within airport influence area is consistent with Airport Protection Overlay Zone (Policy PS 4.6)
- *City of Perris General Plan 2030 Update*
  - Low density residential uses are deemed conditionally acceptable within Accident Potential Zone II; all other residential uses are restricted. All residential uses are deemed conditionally acceptable in 60-70 dB DNL range; strongly discouraged in 70-75 DNL; not acceptable above 75 DNL
  - Consult AICUZ and ALUP guidelines when considering development proposed projects (Policy I.D)
  - Consider recommendations of the ALUC regarding potential land uses or projects affecting the Perris Valley Airport Environs Area (Policy VI.B.2); March ARB / IPA influence area not specifically referenced
- *City of Moreno Valley General Plan Update*
  - Data not available at this time

Exhibit 4–2, continued



Legend

- City Limits
- Runway
- Airport Influence Area Boundary
- Compatibility Zones
- March Air Reserve Base
- Inland Port Airport Property
- March Joint Powers Authority Property
- * High Terrain Zone
- Existing Development
- Site-Specific Exceptions (existing local agency commitments to development projects)
  - (1) March Business Center (March JPA)
  - (2) Harvest Landing (Perris)
  - (3) Park West (Perris)
  - (4) Low-Income housing (Moreno Valley)

Note: This map depicts land where major development exists or has been approved by local jurisdictions.

Sources:
Google Earth (2007)
County of Riverside (2005)
City of Riverside (2006)
City of Perris (2006)

10000 0 10000 Feet

N

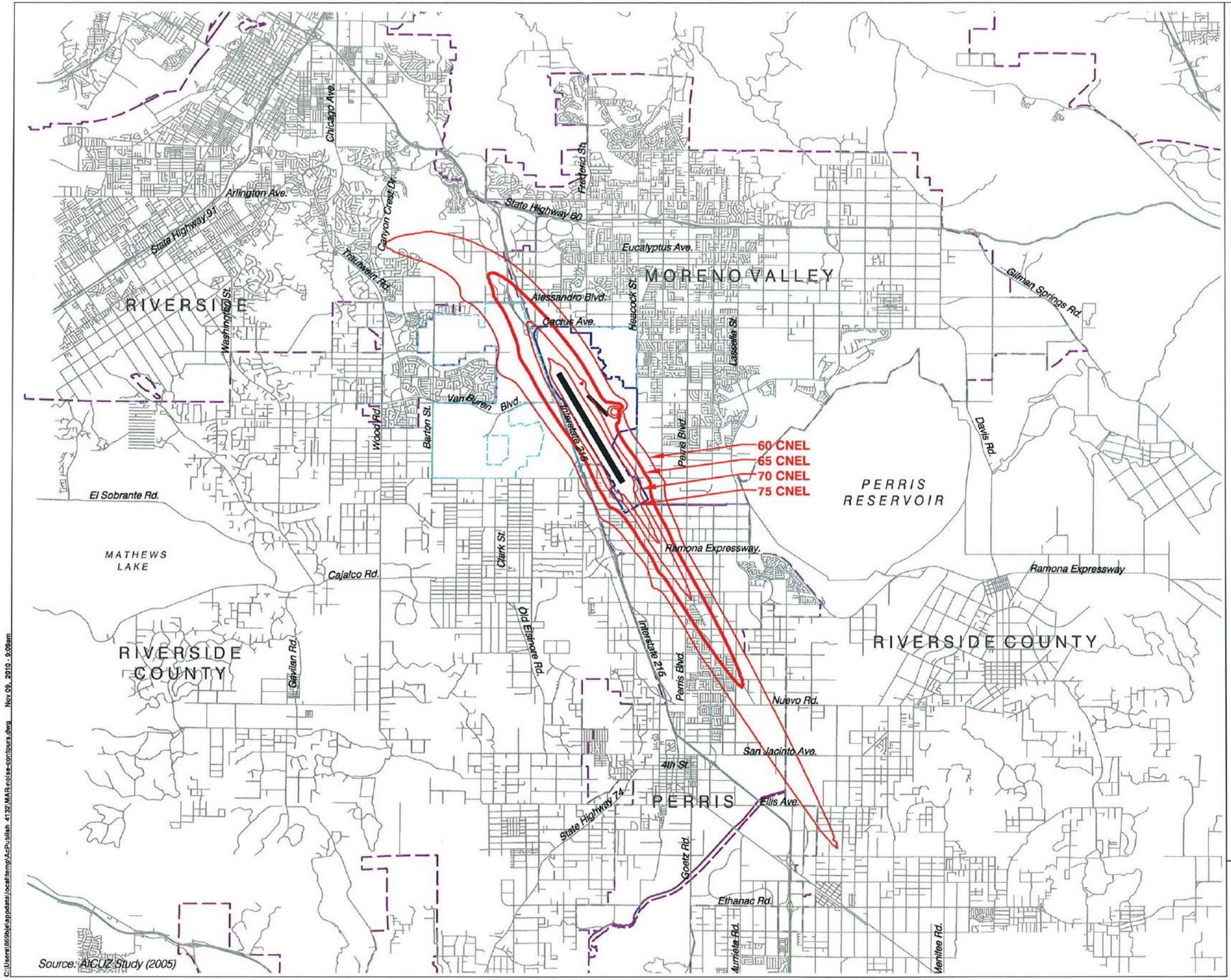
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 4-3

Existing Development

March Air Reserve Base / Inland Port Airport



Source: AICUZ Study (2005)

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LEGEND

Noise Contours

- 60 dB CNEL
- 65 dB CNEL
- 70 dB CNEL
- 75 dB CNEL

} 2005 AICUZ Future Mission Average Annual Day*

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Forecast (2010)*	
Annual Operations	69,600
Average Annual Day	191

Source:
Forecasts and noise contours from Air Installation Compatible Use Zone Study for March Air Reserve Base (August 2005).

N

2 MILES

0 MILES 4 MILES

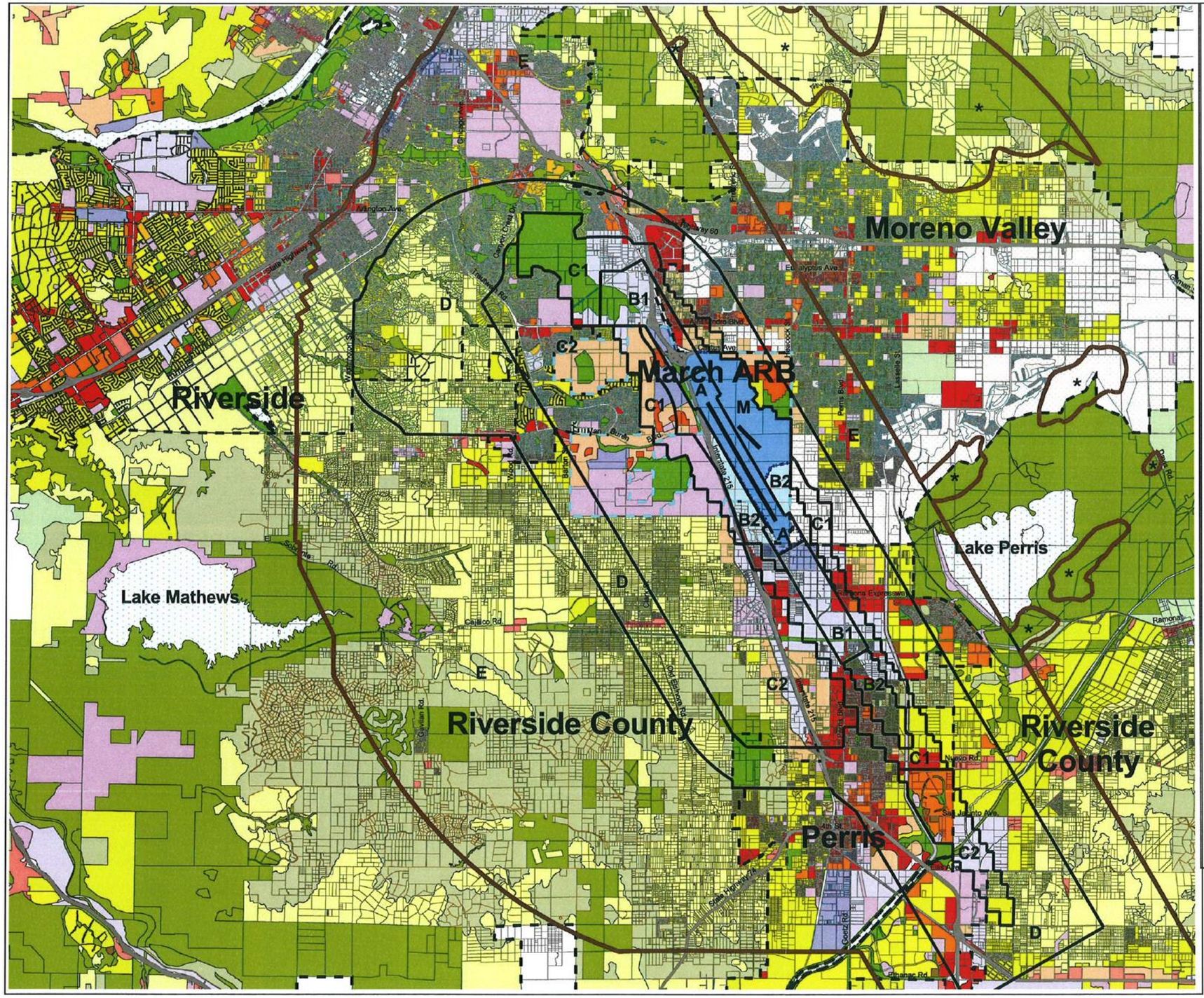
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit MA-4

Noise Contours (2005 AICUZ)

March Air Reserve Base / Inland Port Airport



Legend

- City Limits
- Runway
- Airport Influence Area Boundary
- Compatibility Zones
- March Air Reserve Base
- Inland Port Airport Property
- March Joint Powers Authority Property
- * High Terrain Zone

- Residential >20 du/ac
- Residential 8.1-20.0 du/ac
- Residential 4.1-8.0 du/ac
- Residential 1.1-4.0 du/ac
- Residential ≤1.0 du/ac
- Mobile Home Park
- High-Intensity Commercial/Office
- Low-Intensity Commercial /Office
- Office/Business Park
- Heavy Industrial
- Light Industrial/Warehousing
- Mixed Use
- School
- Other Public/Institutional
- Parks & Recreation
- Rural Residential
- Agriculture
- Open Space/Conservation
- Federal Lands
- State Lands
- Indian Lands
- Unclassified
- Specific Plan Area

Note: This map is combined and simplified from the following map sources:
Riverside County General Plan (October 2003)
City of Riverside General Plan 2025 Update (August 2005)
City of Moreno Valley General Plan (October 2006)
City of Perris General Plan (April 2005)

10000 0 10000 Feet

N

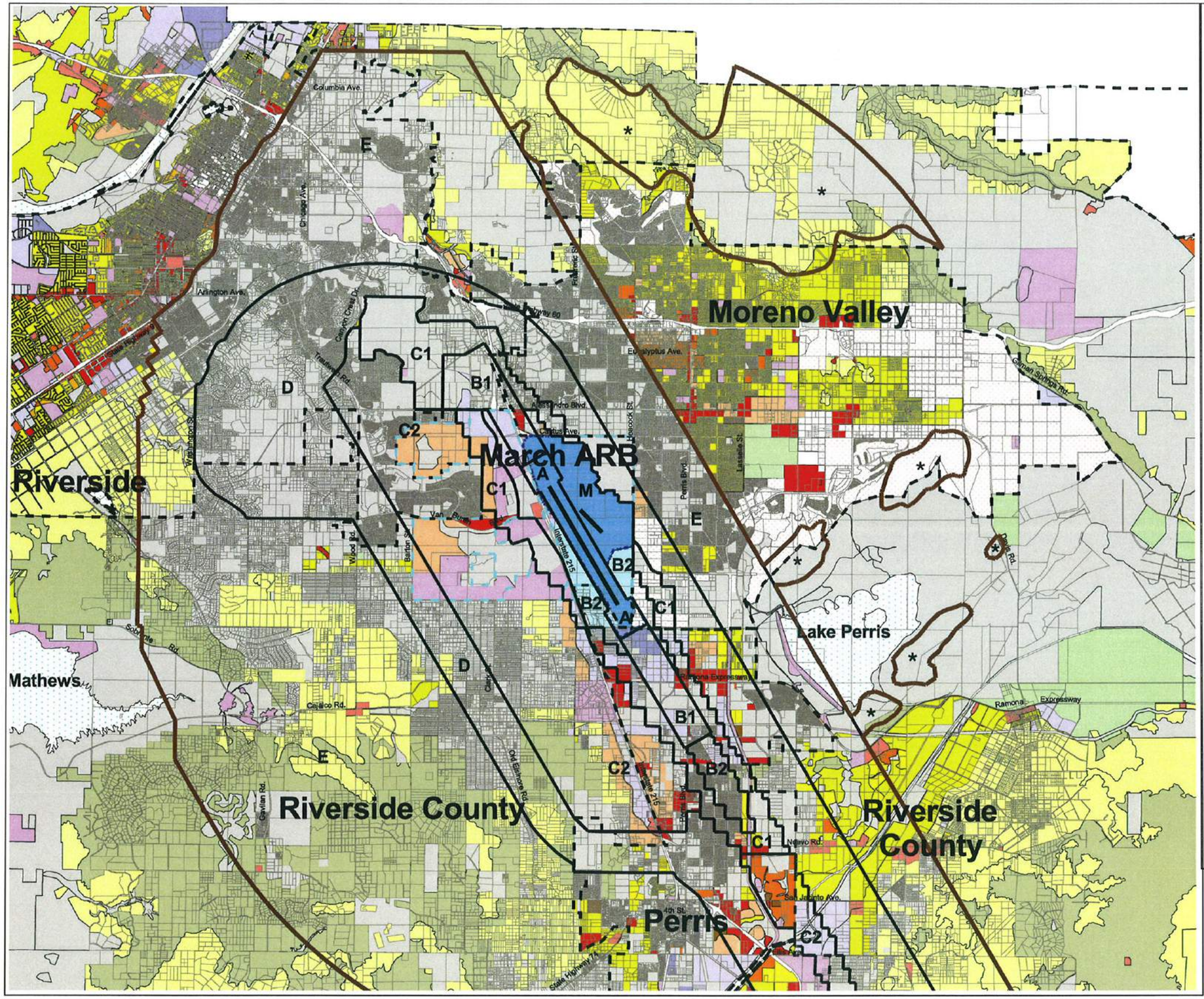
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 4-4

General Plan Land Use Designations

March Air Reserve Base / Inland Port Airport



Legend

- City Limits
- Runway
- Airport Influence Area Boundary
- Compatibility Zones
- March Air Reserve Base
- Inland Port Airport Property
- March Joint Powers Authority Property
- * High Terrain Zone

- Residential >20 du/ac
- Residential 8.1-20.0 du/ac
- Residential 4.1-8.0 du/ac
- Residential 1.1-4.0 du/ac
- Residential ≤1.0 du/ac
- Mobile Home Park
- High-Intensity Commercial/Office
- Low-Intensity Commercial /Office
- Office/Business Park
- Heavy Industrial
- Light Industrial/Warehousing
- Mixed Use
- School
- Other Public/Institutional
- Parks & Recreation
- Rural Residential
- Agriculture
- Open Space/Conservation
- Federal Lands
- State Lands
- Indian Lands
- Unclassified
- Specific Plan Area
- Existing or Entitled Development, Undevelopable or Vacant Lands as of December 2010

Note: This map is combined and simplified from the following map sources:
Riverside County General Plan (October 2003)
City of Riverside General Plan 2025 Update (August 2005)
City of Moreno Valley General Plan (October 2006)
City of Perris General Plan (April 2005)

10000 0 10000 Feet

N

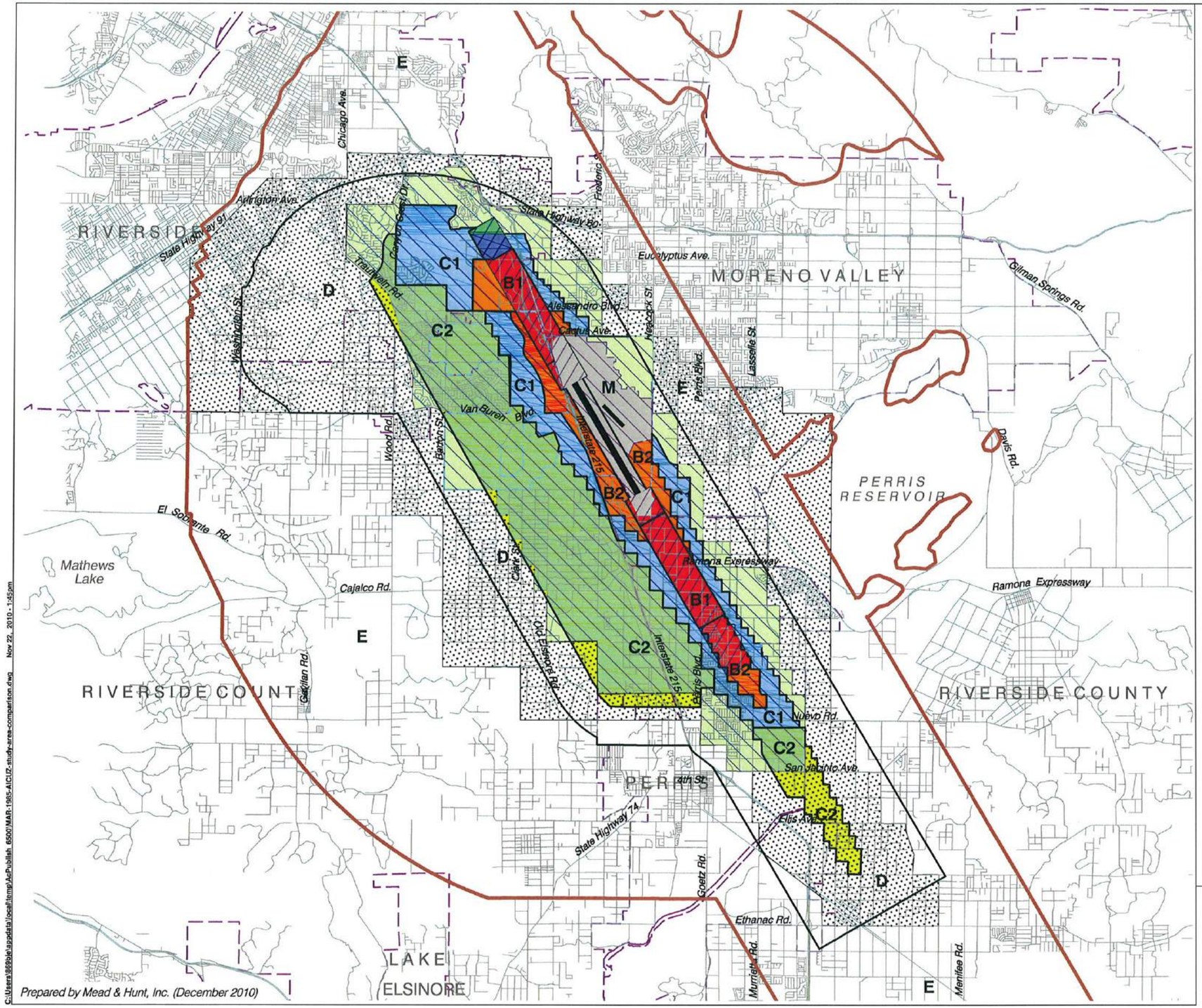
March Air Reserve Base / Inland Port Airport Joint Land Use Study

(December 2010)

Exhibit 4-5

Future Development

March Air Reserve Base / Inland Port Airport



LEGEND

Draft JLUS Criteria	Zones		1984 ALUC Criteria		
			Area I	Area II	Area III
			No New Residential	2-1/2 acre min. lots	No Restrictions
	A	No New Dwellings		N/A	N/A
	B1	No New Dwellings			N/A
	B2	No New Dwellings			N/A
	C1	≤ 3.0 d.u./ac			
	C2	≤ 6.0 d.u./ac			
	D	No Limits			
	E	No Limits			
	M	Federal Land			

No Limits
Red/Orange/Yellow - JLUS more restrictive
Blue/Green - JLUS less restrictive

Boundary Lines
- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits
- Airport Influence Area Boundary

N

0 2 4 MILES
MILES

March Air Reserve Base / Inland Port Airport Joint Land Use Study
(December 2010)

Exhibit 4-6

Comparison of JLUS and ALUC Zones
March Air Reserve Base / Inland Port Airport

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Appendices

APPENDIX **A**

Recommended Compatibility Plan for March Air Reserve Base / Inland Port Airport

OVERVIEW

The *Riverside County Airport Land Use Compatibility Plan (ALUCP)* is a single document containing multiple individual compatibility plans separately adopted by the Riverside County Airport Land Use Commission (ALUC) beginning in October 2004. Chapter 2 of the document sets forth policies applicable to each of the airports for which the ALUC adopted a compatibility plan during this period. Chapter 3 provides policies unique to each individual airport including policies that establish exceptions to the Chapter 2 countywide policies. Compatibility maps associated with each individual airport are also included in Chapter 3.

The ALUC has not yet adopted for March ARB/IPA either the Chapter 2 countywide policies or Chapter 3 airport-specific policies. This appendix to the *March Air Reserve Base/Inland Port Airport (March ARB/IPA) Joint Land Use Study (JLUS)* contains airport-specific compatibility policies and background data for March ARB/IPA recommended for adoption by the Riverside County ALUC. The material is formatted here so that it can readily be inserted into the *Riverside County Airport Land Use Compatibility Plan.*

Volume 1—Policy Document, Chapter 3, *Individual Airport Policies and Compatibility Maps*

Most of the countywide policies listed in Chapter 2 of the ALUCP are applicable to March ARB/IPA. However, more so than with other airports in the county, features unique to March ARB/IPA—particularly its military activity—mean that special policies, including exceptions to the countywide policies, are essential. Policies proposed by the JLUS for ALUC consideration are listed in the first section of this appendix. Among these policies is a basic compatibility criteria table specifically for March ARB/IPA that would take the place of the countywide criteria identified in Table 2A for the areas within the March ARB/IPA influence area.

Volume 2—Background Data, Chapter W7, *West County Airports*

This chapter includes background data such as airfield configuration, activity level, and other airport-related data which would serves as the basis for the compatibility criteria and maps for March ARB/IPA.

Insert for Riverside County ALUCP, Volume 1, Chapter 3, Individual Airport Policies and Compatibility Maps

MA. MARCH AIR RESERVE BASE/INLAND PORT AIRPORT

MA.1 Compatibility Map Delineation

1.1 *Airport Master Plan Status:* The Compatibility Plan for March ARB/IPA is based upon the U.S. Air Force's Air Installation Compatibility Use Zones Study for March Air Reserve Base (AICUZ) dated August 2005.

1.2 *Airfield Configuration:* The airfield consists of two runways. The primary runway (Runway 14-32)—oriented north-northwest/south-southwest—is 13,300 feet in length and is the longest runway open to civilian use in the state. The second smaller runway, Runway 12-30, is just over 3,000 feet and its use is restricted to light aircraft. The airport has straight-in instrument approach capabilities to Runway 32 and a non-precision approach to Runway 14. No changes in the existing configuration of the airport runways and approaches are anticipated.

1.3 *Airport Activity:* The *Compatibility Plan* reflects the 2005 *AICUZ Study's* future mission level of 69,600 annual aircraft operations by 2010. The joint use agreement and the terms of the related air quality conformity determination limit civilian operations to no more than 21,000 per year. Military operations are anticipated to account for nearly 65 percent (44,860 annual operations) of the total airport activity. Total airport activity is not anticipated to change over the 20-year time horizon of this *Compatibility Plan.*

1.4 *Airport Influence Area:* The outer limits of *Zone E* and the areas within the *High Terrain Zone* define the airport influence area for March ARB/IPA. On the east side of the airfield, Zone E is established at 14,000 feet from the runway centerline. This distance is equivalent to the outer limits of the civilian airport conical surface, as established by FAR Part 77. The compatibility zones on the west side of the airport are more extensive as those areas are routinely overflown by both military and civilian aircraft.

MA.2 Additional/Specific Compatibility Policies

Policies set forth in Chapter 2, Countywide Policies, shall be modified or supplemented for the March ARB/IPA influence area as follows. Additionally, information and guidance presented in the appendices to this ALUCP document may not be fully applicable to March ARB/IPA.

2.1 *Basic Land Use Compatibility Criteria:*

(a) Countywide Table 2A: The basic compatibility criteria listed in Table 2A do not apply to the environs of March ARB/IPA. See Exhibit MA-1 for compatibility criteria that shall be applicable to the March ARB/IPA influence area. For the purposes of land use compatibility matters involving the March ARB/IPA influence area, any reference to Table 2A in the policies of Chapter 2 shall instead be taken as a reference to Table MA-1.

(b) Countywide Policy 3.1.3(b): The policy concerning residential densities in Compatibility Zone D is not applicable to March ARB/IPA.

(c) Countywide Policy 3.1.4(b): The reference to special risk-reduction building design measures is not applicable to March ARB/IPA.

2.2 *Infill:* Countywide Policy 3.3.1(a)(2) notwithstanding, infill residential development in the vicinity of March ARB/IPA need only be 50% bounded by similar uses to qualify as infill. All other provisions of Countywide Policy 3.3.1 apply.

2.3 *Supporting Compatibility Criteria for Noise:*

(a) Countywide Policy 4.1.5: The CNEL considered normally acceptable for new residential land uses in the vicinity of March ARB/IPA is 65 dB. Table 2B is not applicable.

(b) Countywide Policy 4.1.6: Single-event noise levels from aircraft operations can be particularly intrusive at night. Compared to other airports in the county, extensive nighttime activity by large aircraft at March ARB/IPA warrants a greater degree of sound attenuation for the interiors of buildings housing certain uses as cited below.

(1) The maximum, aircraft-related, interior noise level that shall be considered acceptable shall be CNEL 40 db for all new residences, schools, libraries, museums, hotels and motels, hospitals and nursing homes, places of worship, and other noise-sensitive uses. For office uses the interior standard shall be CNEL 45 db, the same as the countywide criterion.

(2) To ensure compliance with these criteria, an acoustical study shall be required to be completed for any development proposed to be situated where the aviation-related noise exposure is more than 20 dB above the interior standard (e.g., within the CNEL 60 dB contour where a the interior standard is CNEL 40 dB). Standard building construction is presumed to provide adequate sound attenuation where the difference between the exterior noise exposure and the interior standard is 20 dB or less.

2.4 *Supporting Compatibility Criteria for Safety:*

(a) Countywide Policy 4.2.3: The acceptability of land uses of special concern within certain compatibility zones around March ARB/IPA shall be evaluated in accordance with the criteria indicated in Table MA-1. The criteria listed in Countywide Policy 4.2.3 do not apply.

(b) Countywide Policy 4.2.4: The requirements for open land do not apply to the vicinity of March ARB/IPA except with regard to Compatibility Zones A and B1.

(c) Countywide Policy 4.2.5: For the vicinity of March ARB/IPA, new nonresidential development shall not be clustered in a manner that would result in a usage intensity within any one acre (the number of people per single acre) exceeding the limits specified in Table MA-1. Clustering of residential development is encouraged, but the density within any one acre shall be limited to no more than 4.0 times the allowable average density for the zone in which the development is proposed.

(d) Countywide Policy 4.2.6: The policy concerning risk reduction through building design is not applicable to the March ARB/IPA influence area.

2.5 *Supporting Compatibility Criteria for Airspace Protection:*

(a) Countywide Policy 4.3.3: For proposed objects in the March ARB/IPA vicinity, the heights requiring ALUC review shall be as specified in Table MA-1.

(b) Countywide Policy 4.3.4: Heights of objects shall be restricted in accordance with the airspace protection surfaces depicted in Table MA-2

(c) Countywide Policy 4.3.5: The compatibility zones within which dedication of an avigation easement shall be required as a condition of development is as indicated in Table MA-1. Easements shall be dedicated to the March Joint Powers Authority or other civilian agency that may supersede it.

(d) Countywide Policy 4.3.7: Additional hazards to flight as listed in Table MA-1 are to be avoided in the vicinity of March ARB/IPA.

2.6 *Supporting Compatibility Criteria for Overflight:*

(a) Countywide Policy 4.4.3: The compatibility zones within which a deed notice shall be required as a condition of development are as indicated in Table MA-1.

2.7 *Site-Specific Exceptions:*

Four development projects near March ARB have received or are expected to receive entitlements in the form of Development Agreements or Disposition and Development Agreements from the respective jurisdictions prior to adoption of the *JLUS* by the Riverside County ALUC and the jurisdictions. As such, the exceptions to the compatibility criteria outlined in the preceding subsections are granted for these projects provided that they meet the conditions indicated below. (The locations of these exceptions are shown on Exhibit 4-3 in Chapter 4 and the numbers below correspond to the numbering on that map.)

These exceptions are valid only as long as the indicated specific plans and associated development agreements remain in effect. Any changes to the specific plans must be reviewed by the ALUC to ensure that increases in intensity of the proposed development would not result from the changes. Further, if the development agreements should expire, the criteria applicable to the property for which these exceptions apply shall revert to the underlying compatibility criteria indicated in this JLUS.

(a) *(Exception Site 1) March Business Center Specific Plan (SP-1), March Joint Powers Authority*

(1) Situated in Compatibility Zones B1, B2, C1, and C2.

(2) A 1,032-acre, non-residential business park located at the southwest corner of Alessandro Boulevard and I-215 freeway within the March Joint Powers Authority, approved with specific airport compatibility provisions, subject to March JPA Resolution JPA 08-01 limiting development within the Accident Potential Zones and vested through a development agreement recorded on June 7, 2004.

(3) Agreement expires on December 27, 2016. After that, the agreement provides for two more 5-year automatic extensions. The developer must request the Development Agreement extension and the Authority must make findings that the development is still in substantial conformance.

(b) *(Exception Site 2) Harvest Landing Specific Plan, City of Perris*

(1) Situated in Compatibility Zone C2.

(2) A 341-acre mixed-use Specific Plan located south of Placentia Avenue and west of Interstate 215 within the City of Perris and authorizing 1,860 residential units and 1,306,582 square feet of business/commercial uses which is scheduled for final Council approval of the Specific Plan and Development Agreement in January 2011.

(3) Agreement will expire 15 years from the approval date plus extensions in 5-year increments subject to City Council approval.

(c) *(Exception Site 3) Park West Specific Plan, City of Perris*

(1) Situated in Compatibility Zones C1 and C2.

(2) A 534.3-acre residential Specific Plan located south of Nuevo Rd and east of the Perris Valley Storm Channel within the City of Perris and authorized for a maximum of 2,027 residential units as identified in the Specific Plan and Development Agreement approved by Council on January 30, 2007.

(3) Agreement for Phase I expires 10 years from the approval date. Phases II and III extend the agreement to 2027 or 10 years after the developer submits an application for approval of a tentative tract map for any portion of these phases.

(d) *(Exception Site 4) Day/Alessandro Affordable Housing Site, City of Moreno Valley*

(1) Situated in Compatibility Zone C1.

(2) A planned 8.43-acre multifamily site located at the northeast corner of Day Street and Alessandro Boulevard within the City of Moreno Valley approved as a maximum 225 unit multifamily development through an existing Disposition and Development Agreement approved on May 26, 2009.

(3) The city owns the site, thus an expiration date is not applicable.

Zone	Locations	Density / Intensity Standards			Additional Criteria		
		Residential (d.u./ac) [1]	Other Uses (people/ac) [2]		Req'd Open Land	Prohibited Uses [3]	Other Development Conditions [4]
			Average [5]	Single Acre [6]			
M	Military					› No ALUC authority	
A	Clear Zone [7]	No new dwellings allowed	0	0	All Remaining	› All non-aeronautical structures › Assemblages of people › Objects exceeding FAR Part 77 height limits › All storage of hazardous materials › Hazards to flight [8]	› Electromagnetic radiation notification [9] › Avigation easement dedication and disclosure [4]
B1	Inner Approach/ Departure Zone	No new dwellings allowed [10]	25 or 50 [11]	100	Max. 50% lot coverage [12]	› Children's schools, day care centers, libraries › Hospitals, congregate care facilities, hotels/ motels, restaurants, places of assembly › Bldgs with >1 aboveground habitable floor in APZ I or > 2 floors in APZ II [13] › Manufacture/storage of hazardous materials [14] › Noise sensitive outdoor nonresidential uses [15] › Critical community infrastructure facilities [16] › Hazards to flight [8]	› Locate structures maximum distance from extended runway centerline › Sound attenuation as necessary to meet interior noise level criteria [17] Zoned fire sprinkler systems required › Airspace review req'd for objects >35 ft. tall [18] › Electromagnetic radiation notification [9] › Avigation easement dedication and disclosure [4]
B2	High Noise Zone	No new dwellings allowed [10]	100	250	No Req't	› Children's schools, day care centers, libraries › Hospitals, congregate care facilities, hotels/ motels, places of assembly › Bldgs with >3 aboveground habitable floors › Noise-sensitive outdoor nonresidential uses [15] › Critical community infrastructure facilities [16] › Hazards to flight [8]	› Locate structures maximum distance from runway › Sound attenuation as necessary to meet interior noise level criteria [17] › Aboveground bulk storage of hazardous materials discouraged [14] › Airspace review req'd for objects >35 ft. tall [18] › Electromagnetic radiation notification [9] › Avigation easement dedication and disclosure [4]
C1	Primary Approach/ Departure Zone	≤3.0	100	250	No Req't	› Children's schools, day care centers, libraries › Hospitals, congregate care facilities, places of assembly › Noise-sensitive outdoor nonresidential uses [15] › Hazards to flight [8]	› Critical community infrastructure facilities discouraged [16,19] › Aboveground bulk storage of hazardous materials discouraged [14, 19] › Sound attenuation as necessary to meet interior noise level criteria [17] › Airspace review req'd for objects >70 ft. tall [20] › Electromagnetic radiation notification [9] › Deed notice and disclosure [4]
C2	Flight Corridor Zone	≤ 6.0	200	500	No Req't	› Highly noise-sensitive outdoor nonresidential uses [15] › Hazards to flight [8]	› Children's schools discouraged › Airspace review req'd for objects >70 ft. tall [20] › Electromagnetic radiation notification › Deed notice and disclosure [4]
D	Flight Corridor Buffer	No Limit	No restriction [21]		No Req't	› Hazards to flight [8]	› Major spectator-oriented sports stadium, amphitheaters, concert halls discouraged [21] › Electromagnetic radiation notification › Deed notice and disclosure [4]
E	Other Airport Environs	No Limit	No Restriction [21]		No Req't	› Hazards to flight [8]	› Disclosure only [4]
★	High Terrain	Same as Underlying Compatibility Zone			Not Applicable	› Hazards to flight [8] › Other uses restricted in accordance with criteria for underlying zone	› Airspace review req'd for objects >35 ft. tall [18] › Avigation easement dedication and disclosure [4]

Table MA-1

Basic Compatibility Criteria

March Air Reserve Base / Inland Port Airport

NOTES:

Policies referenced here are from the *Riverside County Airport Land Use Compatibility Plan* (adopted by Riverside County ALUC for other airports beginning October 2004) and are reproduced in Appendix B of this JLUS document. A complete copy of the *Compatibility Plan* is available on the Riverside County Airport Land Use Commission website at www.rcaluc.org.

[1] Residential development must not contain more than the indicated number of dwelling units (excluding secondary units) per gross acre. Clustering of units is encouraged provided that the density is limited to no more than 4.0 times the allowable average density for the zone in which the development is proposed.. Gross acreage includes the property at issue plus a share of adjacent roads and any adjacent, permanently dedicated, open lands. Mixed-use development in which residential uses are proposed to be located in conjunction with nonresidential uses in the same or adjoining buildings on the same site shall be treated as nonresidential development for the purposes of usage intensity calculations; that is, the occupants of the residential component must be included in calculating the overall number of occupants on the site. A residential component shall not be permitted as part of a mixed use development in zones where residential uses are indicated as incompatible. See ALUC Policy 3.1.3(d). All existing residential development, regardless of densities, is not subject to ALUC authority.

[2] Usage intensity calculations shall include all people (e.g., employees, customers/visitors, etc.) who may be on the property at a single point in time, whether indoors or outside.

[3] The uses listed here are ones that are explicitly prohibited regardless of whether they meet the intensity criteria. In addition to these explicitly prohibited uses, other uses will normally not be permitted in the respective compatibility zones because they do not meet the usage intensity criteria. See Exhibit 3-7 for a full list of compatibility designations for specific land uses.

[4] As part of certain real estate transactions involving residential property within any compatibility zone (that is, anywhere within an airport influence area), information regarding airport proximity and the existence of aircraft overflights must be disclosed. This requirement is set by state law. See ALUC Policy 4.4.2 for details. Easement dedication and deed notice requirements indicated for specific compatibility zones apply only to new development and to reuse if discretionary approval is required. Avigation easements are to be dedicated to the March JPA; the federal government is precluded from receiving easement dedications. See sample language in JLUS Appendix B.

[5] The total number of people permitted on a project site at any time, except rare special events, must not exceed the indicated usage intensity times the gross acreage of the site. Rare special events are ones (such as an air show at the airport) for which a facility is not designed and normally not used and for which extra safety precautions can be taken as appropriate.

[6] Clustering of nonresidential development is permitted. However, no single acre of a project site shall exceed the indicated number of people per acre. See ALUC Policy 4.2.5 for details.

[7] Clear zone (equivalent to runway protection zone at civilian airports) limits that delineate Zone A are derived from locations indicated in the March Air Reserve Base AICUZ study. Zone A is on Air Base property or otherwise under military control.

[8] Hazards to flight include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Land use development that may cause the attraction of birds to increase is also prohibited. Man-made features must be designed to avoid heightened attraction of birds. In Zones A, B1, and B2, flood control facilities should be designed to hold water for no more than 48 hours following a storm and be completely dry between storms (see FAA Advisory Circular 150/5200-33B). Additionally, certain farm crops and farming practices that tend to attract birds are strongly discouraged. These include: certain crops (e.g., rice, barley, oats, wheat – particularly durum – corn, sunflower, clover, berries, cherries, grapes, and apples); farming activities (e.g., tilling and harvesting); confined livestock operations (i.e., feedlots, dairy operations, hog or chicken production facilities, or egg-laying operations); and various farming practices (e.g., livestock feed, water, and manure). Fish production (i.e., catfish, trout) conducted outside of fully enclosed buildings may require mitigation measures (e.g., netting of outdoor ponds, providing covered structures) to prevent bird attraction. Also see ALUC Policy 4.3.7.

[9] March ARB must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include microwave transmission in conjunction with a cellular tower, radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers and other similar EMR emissions.

[10] Other than in Zone A, construction of a single-family home, including a second unit as defined by state law, on a legal lot of record is exempted from this restriction where such use is permitted by local land use regulations. Interior noise level standards and avigation easement requirements for the compatibility zone in which the dwelling is to be located are to be applied.

[11] Non-residential uses are limited to 25 people per gross acre in Accident Potential Zone (APZ) I and 50 people per acre elsewhere in Zone B1.

[12] In APZ I, any proposed development having more than 20% lot coverage must not provide on-site services to the public. Zoned fire sprinklers are required. Also, in APZ I, site design of proposed development should to the extent possible avoid placement of buildings within 100 feet of the extended runway centerline; this center strip should be devoted to parking, landscaping, and outdoor storage.

[13] Within APZ II, two-story buildings are allowed.

[14] Storage of aviation fuel and other aviation-related flammable materials on the airport is exempted from this criterion. In APZ I, manufacture or bulk storage of hazardous materials (toxic, explosive, corrosive) is prohibited unless storage is underground; small quantities of materials may be stored for use on site. In APZ II, aboveground storage of more than 6,000 gallons of nonaviation flammable materials per tank is prohibited.

Table MA–1, continued

[15] Examples of noise-sensitive outdoor nonresidential uses that should be prohibited include major spectator-oriented sports stadiums, amphitheaters, concert halls and drive-in theaters. Caution should be exercised with respect to uses such as poultry farms and nature preserves.

[16] Critical community facilities include power plants, electrical substations, and public communications facilities. See ALUC Policy 4.2.3(d).

[17] All new residences, schools, libraries, museums, hotels and motels, hospitals and nursing homes, places of worship, and other noise-sensitive uses must have sound attenuation features incorporated into the structures sufficient to reduce interior noise levels from exterior aviation-related sources to no more than CNEL 40 dB. This requirement is intended to reduce the disruptiveness of loud individual aircraft noise events upon uses in this zone and represents a higher standard than the CNEL 45 dB standard set by state, local, and ALUC regulations. Office space must have sound attenuation features sufficient to reduce the exterior aviation-related noise level to no more than CNEL 45 dB. To ensure compliance with these criteria, an acoustical study shall be required to be completed for any development proposed to be situated where the aviation-related noise exposure is more than 20 dB above the interior standard (e.g., within the CNEL 60 dB contour where a the interior standard is CNEL 40 dB). Standard building construction is presumed to provide adequate sound attenuation where the difference between the exterior noise exposure and the interior standard is 20 dB or less.

[18] Objects up to 35 feet in height are permitted. However, the Federal Aviation Administration may require marking and lighting of certain objects. See ALUC Policy 4.3.6 for details.

[19] Discouraged uses should generally not be permitted unless no feasible alternative is available.

[20] This height criterion is for general guidance. Shorter objects normally will not be airspace obstructions unless situated at a ground elevation well above that of the airport. Taller objects may be acceptable if determined not to be obstructions. See ALUC Policies 4.3.3 and 4.3.4.

[21] Although no explicit upper limit on usage intensity is defined for *Zone D and E*, land uses of the types listed—uses that attract very high concentrations of people in confined areas—are discouraged in locations below or near the principal arrival and departure flight tracks.

Table MA-1, continued

LEGEND

Compatibility Zones

- Airport Influence Area Boundary
- Zone A
- Zone B1
- Zone B2
- Zone C1
- Zone C2
- Zone D
- Zone E
- Zone M
- High Terrain Zone
- FAR Part 77 Military Outer Horizontal Surface Limits
- FAR Part 77 Notification Area

Boundary Lines

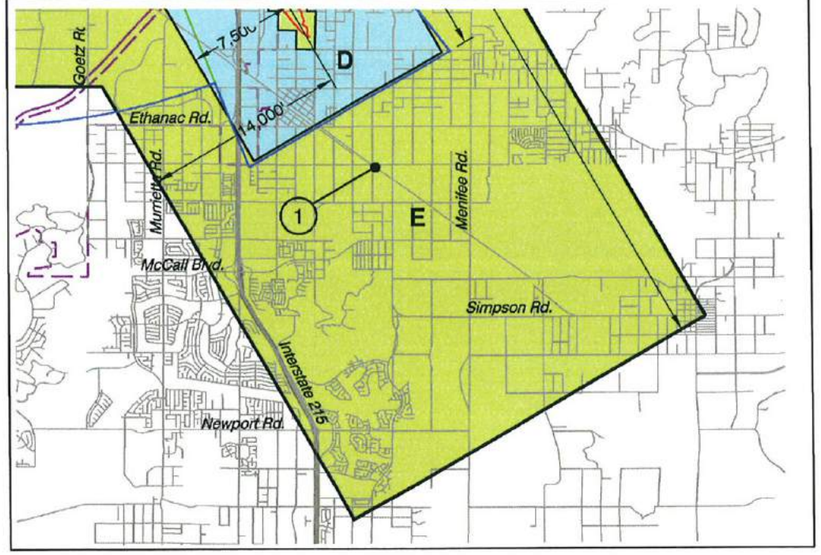
- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

(1) Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

(2) Point at which departing aircraft typically reach 3,000 feet above runway end.

Note:
All dimensions are measured from runway ends and centerlines.

INSET



Prepared by Mead & Hunt, Inc. (August 2007)

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N

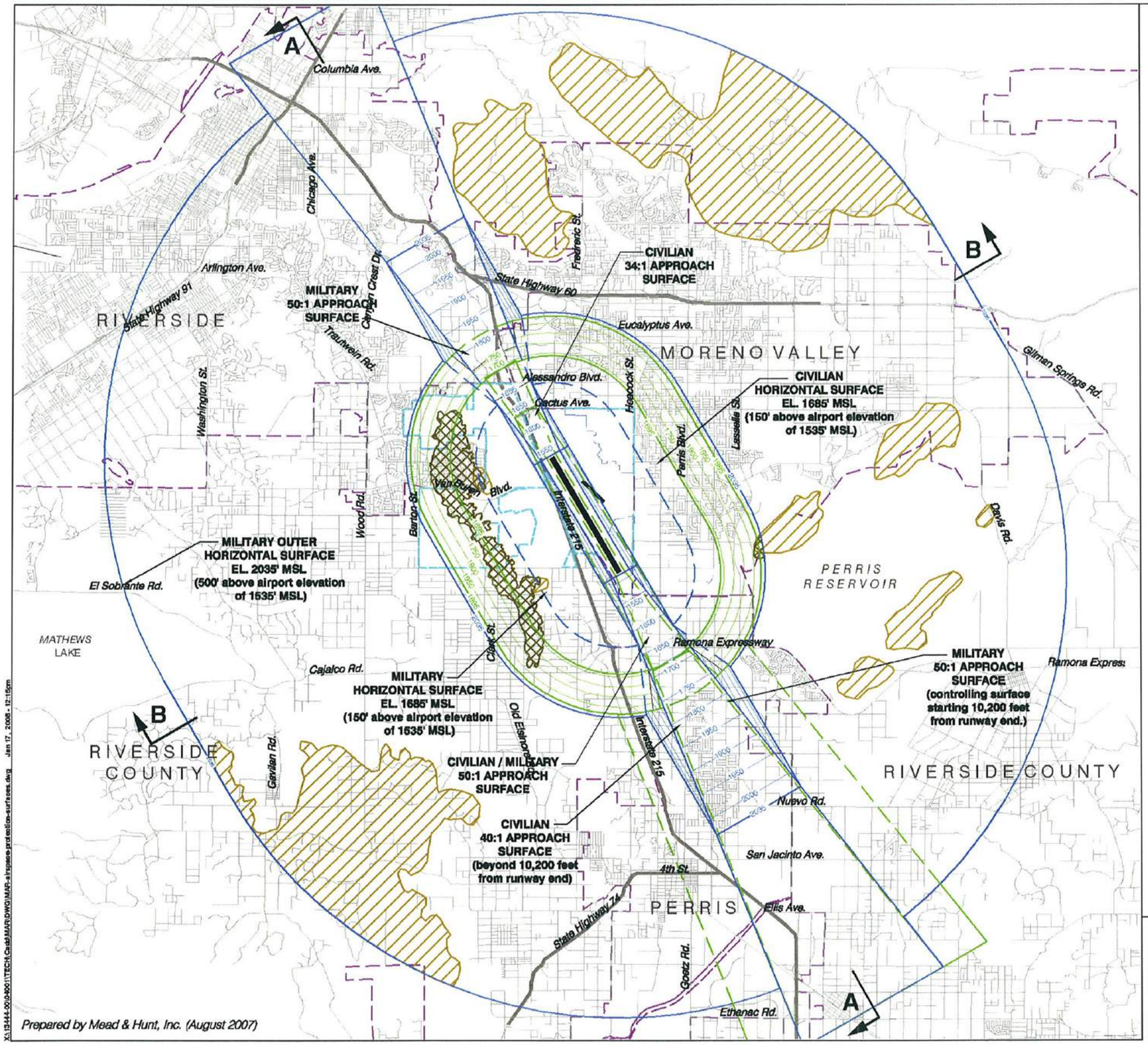
0 2 4 MILES

March Air Reserve Base / Inland Port Airport
Land Use Compatibility Plan
(December 2007 Draft)

Map MA-1

Compatibility Map

March Air Reserve Base / Inland Port Airport



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LEGEND

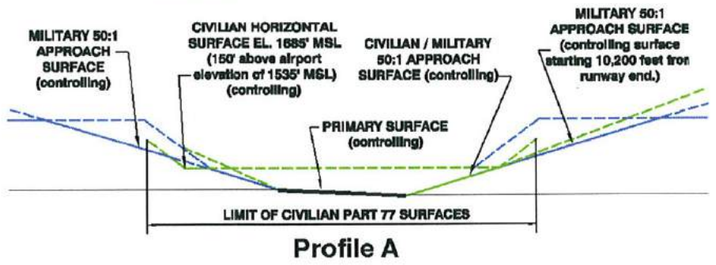
FAR Part 77

- Military Surfaces
- Civilian Surfaces

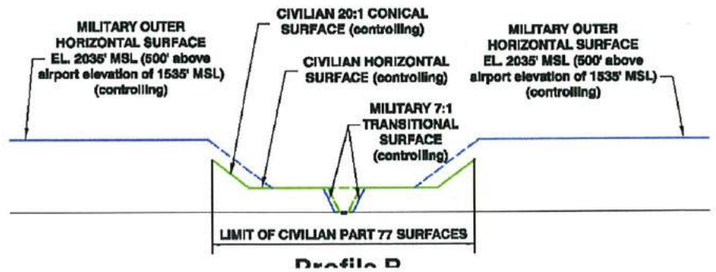
} Dashed line indicates other set of surfaces is controlling

Terrain Penetration of FAR Part 77 Surfaces
- Military
- Civilian

Boundary Lines
- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line



Profile A



Profile B

Source:
Civilian airspace protection surfaces from March Air Force Base Joint Use Feasibility Study (January 1997). Military airspace protection surfaces from Air Installation Compatible Use Zone Study for March Air Reserve Base (August 2005).

N

0 2 4 MILES

MILES

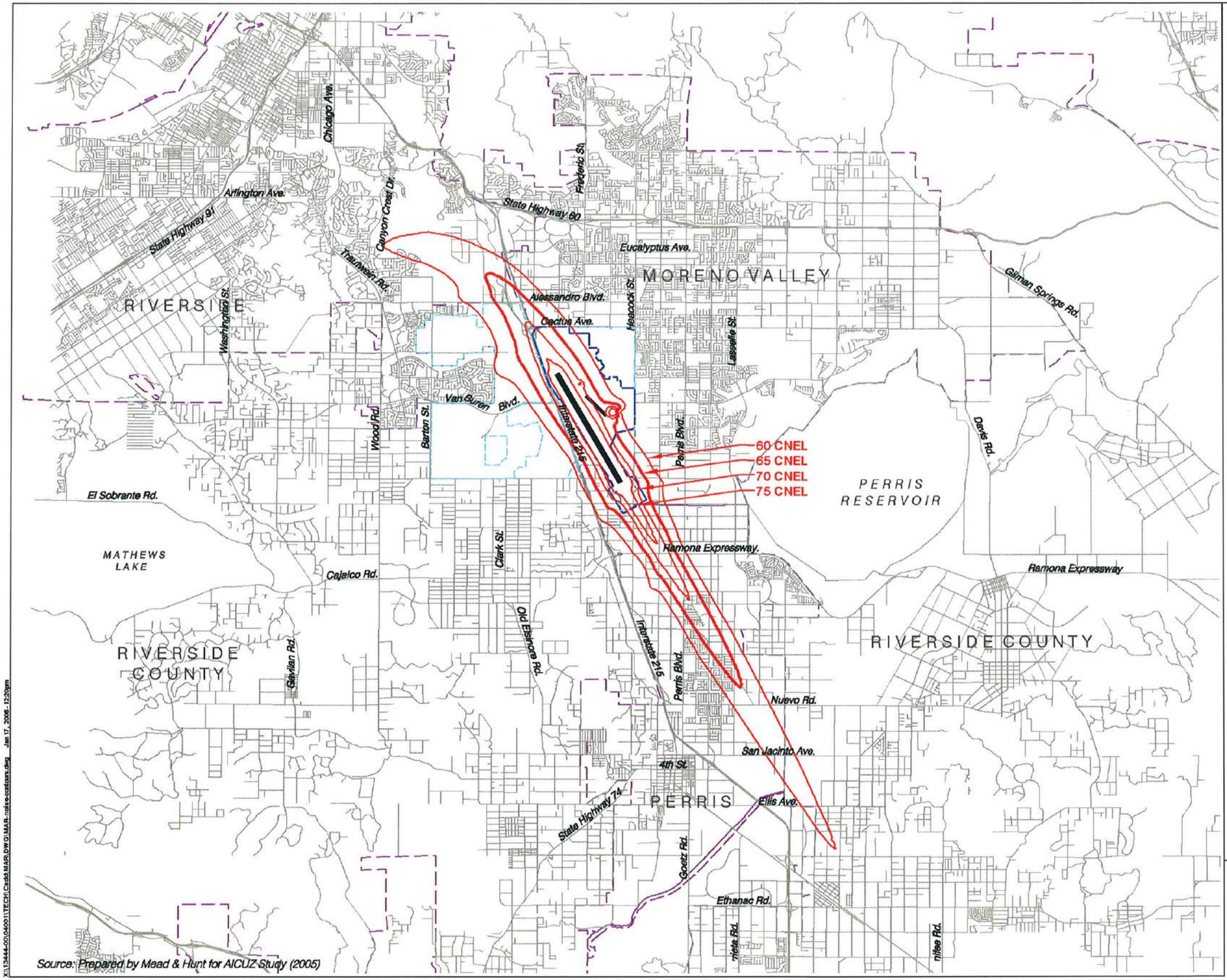
March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan

(December 2007 Draft)

Map MA-2

Airspace Protection Surfaces

March Air Reserve Base / Inland Port Airport



Source: Prepared by Mead & Hunt for AICUZ Study (2005)

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LEGEND

Noise Contours

- 60 dB CNEL
- 65 dB CNEL
- 70 dB CNEL
- 75 dB CNEL

2005 AICUZ Future Mission Average Annual Day*

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Forecast (2010)*

Annual Operations	69,600
Average Annual Day	191

Source:
Forecasts and noise contours from Air Installation Compatible Use Zone Study for March Air Reserve Base (August 2005).

N

2 MILES

0 MILES 4 MILES

March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan

(December 2007 Draft)

Map MA-3

Noise Contours (2005 AICUZ)

March Air Reserve Base / Inland Port Airport

W7

Background Data: March Air Reserve Base / Inland Port Airport and Environs

INTRODUCTION

March Air Reserve Base/Inland Port Airport is located in northwestern Riverside County, approximately 70 miles east of Los Angeles. For most of the second half of the twentieth century, the base was known as March Air Force Base. The current March Air Reserve Base (ARB) name became official in 1996 as a result of recommendations of the 1993 Defense Base Realignment and Closure Commission (BRAC). Although the role of March ARB has evolved over time, the runway system and other basic aeronautical components of the base have existed in largely their present configuration since the World War II era. The airport's primary runway (Runway 14-32)—oriented north-northwest/south-southeast—is 13,300 feet in length, making it one of the longest in the state. The length, width, and pavement strength of Runway 14-32 enable it to accommodate nearly any type of military or civilian aircraft. The smaller secondary runway—Runway 12-30—was once the primary runway, but its length is now reduced to just over 3,000 feet and its use restricted to light aircraft. Exhibit MA-1 summarizes major airport features and Exhibit MA-2 depicts the overall layout of the airport.

Compared to the years when March operated as an Air Force Base, aircraft activity levels are substantially lower. Activity counts maintained by the Air Force air traffic control tower personnel at the base indicate a total of 34,230 aircraft operations took place during calendar year 2006 compared to approximately 125,000 during the peak years as an Air Force Base. The following tabulation summarizes how this activity was split among military, air carrier, and general aviation users. Additional data is contained in Exhibit MA-3. Although noted as potential 2010 activity levels, the current air quality controls under the joint use agreement will limit activity to these levels indefinitely. Exhibit MA-3 summarizes the aircraft activity data for March ARB/IPA and the resulting noise contours are depicted in Exhibit MA-4. These noise contours and other compatibility factors contributing to the compatibility map delineation are depicted in Exhibit MA-5.

The March ARB/IPA facility is bordered by the City of Riverside to the northwest; the City of Moreno Valley to the northeast; the City of Perris to the south; and the County of Riverside to the west. The land uses in the vicinity of March ARB/IPA are generally compatible with base operations. Development continues to occur in the airport vicinity, however, and a potential for increased conflicts is apparent. Exhibits MA-6 through MA-8 reflects existing and planned land use information.

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General Information

- *Airport Ownership:* United States Air Force
  - Airfield maintenance and usage shared with March Joint Powers Authority (JPA) by means of joint use agreement last amended June 2008
- *Year Opened:* 1918
- *Airport Property Size*
  - Air Force property: 2,300 acres
  - JPA property: 360 acres
- *Airport Classification:* Joint Use
- *Airport Elevation:* 1,538 feet MSL

Airport Planning Documents

- *Joint Use Agreement*
  - Between March JPA and U.S. Air Force
  - Amended February 2001
- *Air Installation Compatible Use Zone (AICUZ) Study*
  - Prepared by U.S. Air Force, 2005
  - Prior versions: 1985, 1992, 1998
- *March Inland Port Air Cargo Development Plan*
  - Prepared for March JPA, April 1997

Runway/Taxiway Design

Runway 14-32

- *Critical Aircraft:* Military transport
- *Airport Reference Code:* D-VI
- *Dimensions:* 13,300 ft. long, 200 ft. wide
- *Pavement Strength (main landing gear configuration)*
  - 65,000 lbs (single wheel)
  - 260,000 lbs (dual wheel)
  - 530,000 lbs (dual-tandem wheel)
- *Average Gradient:* 0.35%
- *Runway Lighting*
  - High-intensity runway edge lights (HIRL)
  - Rwy 32: standard 2,400-foot high-intensity approach lighting system with centerline sequenced flashers

Runway 12-30

- *Critical Aircraft:* Small single- and twin-engine piston
- *Airport Reference Code:* B-I (small)
- *Dimensions:* 3,010 ft. long, 100 ft. wide
- *Pavement Strength (main landing gear configuration)*
  - 12,500 lbs (single wheel)
- *Average Gradient:* 0.44%
- *Runway Lighting:* None

Approach Protection

- *Runway Clear Zones*
  - Runways 14 and 32: 3,000-ft. long; mostly on-airport
  - Runway 12 and 30: 1,000-ft. long; all on-airport
- *Approach Obstacles:* None

Building Area

- *Aircraft Parking Locations*
  - Military: Northeast side of airport
  - Civilian: Northeast of Runway 32 threshold
- *Other Major Facilities*
  - Air Traffic Control Tower
  - Extensive military facilities including military passenger terminal; aircraft maintenance facilities; alert aprons/ hangars; munitions storage
  - Former DHL air cargo facility
- *Services*
  - No public services

Traffic Patterns and Approach Procedures

- *Airplane Traffic Patterns*
  - All runways: Left traffic
  - Pattern altitude:
    - Rectangular 3,000 ft. MSL (1,465 ft. above runway elevation)
    - Overhead 3,500 ft. (1,965 ft. above runway elevation)
- *Instrument Approach Procedures (best minimums)*
  - Runway 32 ILS (CAT II):
    - Straight-in (1,600 ft. visibility; 100 ft. descent height)
  - Runway 32 ILS:
    - Straight-in (½ mi. visibility; 200 ft. descent height)
    - Circling (1 mi. visibility; 600 ft. descent height)
  - Runway 32 TACAN:
    - Straight-in (½ mi. visibility; 400 ft. descent height)
    - Circling (1 mi. visibility; 600 ft. descent height)
  - Runway 32 VOR:
    - Straight-in (½ mi. visibility; 400 ft. descent height)
    - Circling (1 mi. visibility; 600 ft. descent height)
  - Runway 14 TACAN (offset 29° west of straight in):
    - Straight-in (1 mi. visibility; 700 ft. descent height)
    - Circling (1 mi. visibility; 700 ft. descent height)
  - No circling northeast of runway on any procedure
- *Standard Instrument Departure Procedures (SKYES-ONE)*
  - Rwy 14: straight out to 20 NM, then right turn
  - Rwy 32: left turn to at 2.0± mile beyond runway end south to DIAMD intersection (south of Lake Elsinore)
- *Visual Approach Aids*
  - Airport: Rotating beacon
  - Runways 14 and 32: PAPI
- *Operational Restrictions / Noise Abatement Procedures*
  - Prior permission required for all transient aircraft
  - General Aviation provisions currently being negotiated by March ARB and March JPA

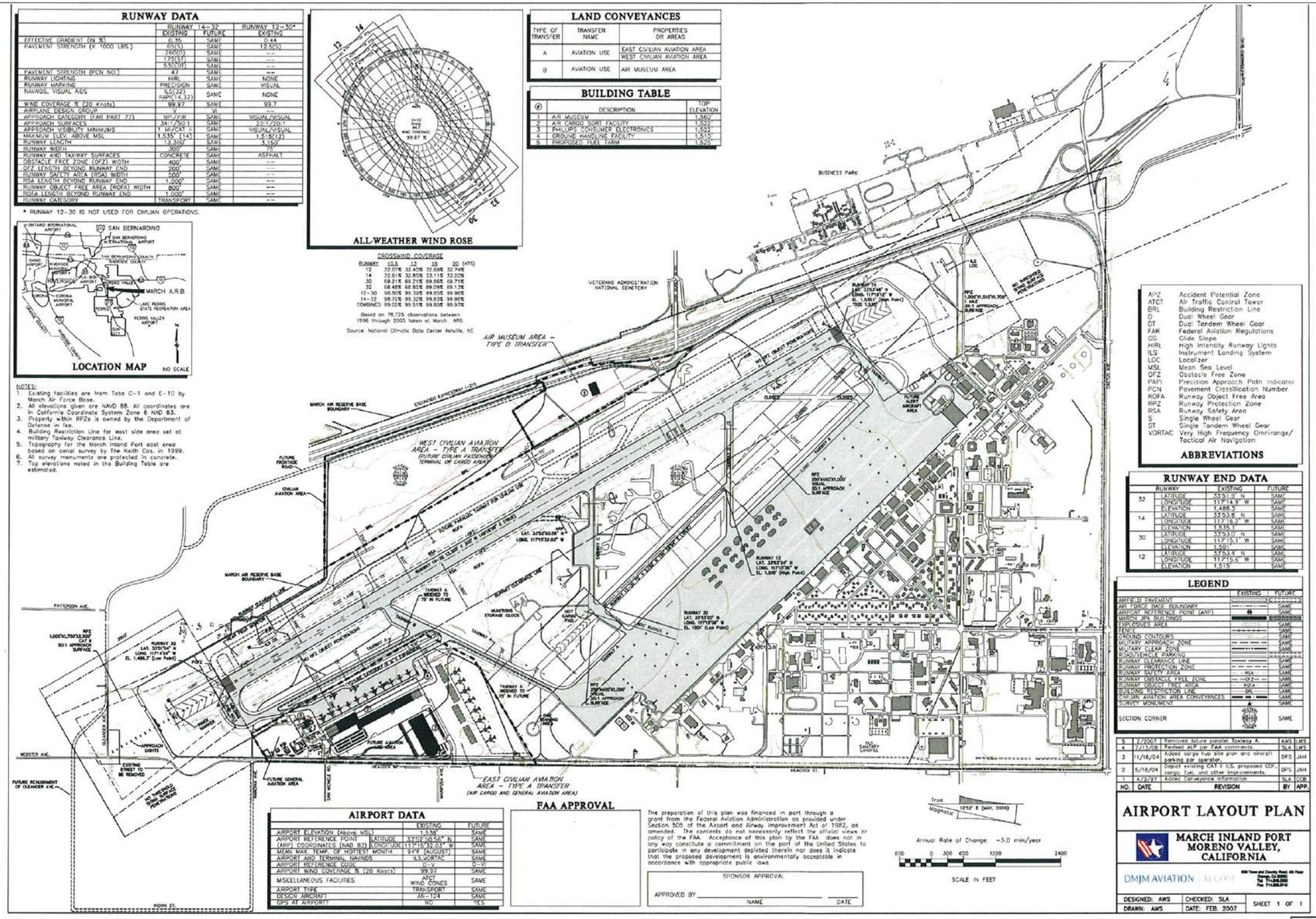
Planned Facility Improvements

- *Airfield*
  - Construct full-length west parallel taxiway for civilian use
  - Civilian fuel farm
- *Building Area*
  - Air cargo facilities expansion northeast and northwest of Runway 32 approach end
- *Property*
  - No fee acquisition planned

Exhibit MA–1

Airport Features Summary

March Air Reserve Base / Inland Port Airport



RUNWAY DATA

	RUNWAY 14–32 EXISTING	RUNWAY 14–32 FUTURE	RUNWAY 12–30* EXISTING
EFFECTIVE GRADIENT (IN %)	0.35	SAME	0.44
PAVEMENT STRENGTH (X 1000 LBS.)	65(S)	SAME	12.5(S)
	260(D)	SAME	--
	175(ST)	SAME	--
	530(DT)	SAME	--
PAVEMENT STRENGTH (PCN NO.)	47	SAME	--
RUNWAY LIGHTING	HIRL	SAME	NONE
RUNWAY MARKING	PRECISION	SAME	VISUAL
NAVAIDS, VISUAL AIDS	ILS(32) PAPI(14,32)	SAME	NONE
WIND COVERAGE % (20 Knots)	99.97	SAME	99.7
AIRPLANE DESIGN GROUP	V	VI	--
APPROACH CATEGORY (FAR PART 77)	NPI/PIR	SAME	VISUAL/VISUAL
APPROACH SURFACES	34:1/50:1	SAME	20:1/20:1
APPROACH VISIBILITY MINIMUMS	1 MI/CAT II	SAME	VISUAL/VISUAL
MAXIMUM ELEV. ABOVE MSL	1,535' (14)	SAME	1,515(12)
RUNWAY LENGTH	13,300'	SAME	3,150'
RUNWAY WIDTH	300'	SAME	75'
RUNWAY AND TAXIWAY SURFACES	CONCRETE	SAME	ASPHALT
OBSTACLE FREE ZONE (OFZ) WIDTH	400'	SAME	--
OFZ LENGTH BEYOND RUNWAY END	200'	SAME	--
RUNWAY SAFETY AREA (RSA) WIDTH	500'	SAME	--
RSA LENGTH BEYOND RUNWAY END	1,000'	SAME	--
RUNWAY OBJECT FREE AREA (ROFA) WIDTH	800'	SAME	--
ROFA LENGTH BEYOND RUNWAY END	1,000'	SAME	--
RUNWAY CATEGORY	TRANSPORT	SAME	--

* RUNWAY 12–30 IS NOT USED FOR CIVILIAN OPERATIONS.

NOTES:
1. Existing facilities are from Tabs C-1 and E-10 by March Air Force Base.
2. All elevations given are NAVD 88. All coordinates are in California Coordinate System Zone 6 NAD 83.
3. Property within RPZs is owned by the Department of Defense in fee.
4. Building Restriction Line for east side area set at military Taxiway Clearance Line.
5. Topography for the March Inland Port east area based on aerial survey by The Keith Cos. in 1999.
6. All survey monuments are protected in concrete.
7. Top elevations noted in the Building Table are estimated.

ALL-WEATHER WIND ROSE

CROSSWIND COVERAGE

RUNWAY	10.5	13	16	20 (KTS)
12	32.07%	32.40%	32.68%	32.74%
14	32.61%	32.85%	33.11%	33.20%
30	69.21%	69.21%	69.66%	69.71%
32	68.48%	68.85%	69.09%	69.13%
12–30	98.80%	99.33%	99.85%	99.96%
14–32	98.72%	99.32%	99.83%	99.96%
COMBINED	99.02%	99.51%	99.90%	99.97%

Based on 76,725 observations between 1996 through 2005 taken at March ARB.

Source: National Climatic Data Center Ashville, NC

LAND CONVEYANCES

TYPE OF TRANSFER	TRANSFER NAME	PROPERTIES OR AREAS
A	AVIATION USE	EAST CIVILIAN AVIATION AREA WEST CIVILIAN AVIATION AREA
B	AVIATION USE	AIR MUSEUM AREA

BUILDING TABLE

#	DESCRIPTION	TOP ELEVATION
1	AIR MUSEUM	1,560'
2	AIR CARGO SORT FACILITY	1,522'
3	PHILLIPS CONSUMER ELECTRONICS	1,522'
4	GROUND HANDLING FACILITY	1,510'
5	PROPOSED FUEL FARM	1,525'

ABBREVIATIONS

APZ	Accident Potential Zone
ATCT	Air Traffic Control Tower
BRL	Building Restriction Line
D	Dual Wheel Gear
DT	Dual Tandem Wheel Gear
FAR	Federal Aviation Regulations
GS	Glide Slope
HIRL	High Intensity Runway Lights
ILS	Instrument Landing System
LOC	Localizer
MSL	Mean Sea Level
OFZ	Obstacle Free Zone
PAPI	Precision Approach Path Indicator
PCN	Pavement Classification Number
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
S	Single Wheel Gear
ST	Single Tandem Wheel Gear
VORTAC	Very High Frequency Omnirange/Tactical Air Navigation

RUNWAY END DATA

RUNWAY		EXISTING	FUTURE
32	LATITUDE	33°51.9' N	SAME
	LONGITUDE	117°14.9' W	SAME
	ELEVATION	1,488.3'	SAME
14	LATITUDE	33°53.8' N	SAME
	LONGITUDE	117°16.2' W	SAME
	ELEVATION	1,535.1'	SAME
30	LATITUDE	33°53.0' N	SAME
	LONGITUDE	117°15.1' W	SAME
	ELEVATION	1,501'	SAME
12	LATITUDE	33°53.4' N	SAME
	LONGITUDE	117°15.6' W	SAME
	ELEVATION	1,515'	SAME

LEGEND

	EXISTING	FUTURE
AIRFIELD PAVEMENT	▭	⬚
AIR FORCE BASE BOUNDARY	— · · — · · —	SAME
AIRPORT REFERENCE POINT (ARP)	⊕	SAME
MARCH JPA BUILDINGS	■	▨
EXPLOSIVES AREA		SAME
FENCE	—x—x—x—	SAME
GROUND CONTOURS		SAME
MILITARY APPROACH ZONE	— — — —	SAME
MILITARY CLEAR ZONE	—— · · · ——	SAME
ROAD/VEHICLE PARKING	═══	- - - -
RUNWAY CLEARANCE LINE	—— ——	SAME
RUNWAY PROTECTION ZONE	— — — — —	SAME
RUNWAY SAFETY AREA	— RSA —	SAME
RUNWAY OBSTACLE FREE ZONE	— OFZ —	SAME
RUNWAY OBJECT FREE AREA	— ROFA —	SAME
BUILDING RESTRICTION LINE	— BRL —	SAME
CIVILIAN AVIATION AREA CONVEYANCES	━ ━ · ━	SAME
SURVEY MONUMENT	▲	SAME
SECTION CORNER	⊕	SAME

NO.	DATE	REVISION	BY	APP.
5	2/2007	Removed future parallel Taxiway A.	AWS	LMS
4	7/13/06	Revised ALP per FAA comments.	SLA	LMS
3	11/18/04	Added cargo hub site plan and aircraft parking per operator.	DPS	JAH
2	5/18/04	Depict existing CAT II ILS, proposed CDF, cargo, fuel, and other improvements.	DPS	JAH
1	4/3/97	Added Conveyance information	SLA	CCB

AIRPORT DATA

		EXISTING	FUTURE
AIRPORT ELEVATION (Above MSL)		1,538'	SAME
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	LATITUDE	33°52'50.56" N	SAME
	LONGITUDE	117°15'32.03" W	SAME
MEAN MAX. TEMP. OF HOTTEST MONTH		94°F (AUGUST)	SAME
AIRPORT AND TERMINAL NAVAIDS		ILS,VORTAC	SAME
AIRPORT REFERENCE CODE		D-V	D-VI
AIRPORT WIND COVERAGE % (20 Knots)		99.97	SAME
MISCELLANEOUS FACILITIES		ATCT WIND CONES	SAME
AIRPORT TYPE		TRANSPORT	SAME
DESIGN AIRCRAFT		AN-124	SAME
GPS AT AIRPORT?		NO	YES

FAA APPROVAL

The preparation of this plan was financed in part through a grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

SPONSOR APPROVAL

APPROVED BY ______________________ ________
NAME DATE

AIRPORT LAYOUT PLAN

MARCH INLAND PORT
MORENO VALLEY,
CALIFORNIA

DMJM AVIATION | AECOM

DESIGNED: AWS	CHECKED: SLA	SHEET 1 OF 1
DRAWN: AWS	DATE: FEB. 2007	

C:\Users\8569ble\appdata\local\temp\AcPublish 6500\MAR-airport diagram.dwg Nov 22, 2010 - 2:35pm

Source: DMJM Aviation (February 2007)

Exhibit MA-2

Airport Diagram

March Air Reserve Base / Inland Port Airport

BASED AIRCRAFT [a]

	Current Mission	Future Mission
Aircraft Type		
KC-135 Tanker	10	no
C-17 Transport	8	change
F-16 Fighter/Attack	4	
UH-60 Helicopter	2	
Cessna	1	
Total	25	

AIRCRAFT OPERATIONS [a]

	Current Mission [b]	Future Mission [c]
Annual Operations [d]		
Military	33,637 [d]	44,860
Civilian	7,176	21,000
CalFire	0	3,740 [e]
Total Annual Operations	*40,813* [f]	*69,600*
Average Per Day	*181*	*305*
Distribution by Aircraft Type		
Military		*(64.4%)*
Transport	33.9%	29.3%
Fighter/Attack	5.0%	3.2%
Helicopter	3.5%	3.0%
Tanker	37.6%	27.3%
Contract Air Carrier	2.4%	1.6%
Aero Club	?? [d]	??
Civilian		*(30.2%)*
Commercial Cargo	0.0%	18.1%
Business Jet	0.0%	2.6%
Propeller (singles & twins)	0.0%	9.3%
CalFire	0.0%	5.4%
Distribution by Type of Operation		
Local Operations		
Military	50%	43%
Civilian	0%	0%
CalFire	—	0%
Itinerant Operations		
Military	50%	57%
Civilian	100%	100%
CalFire	—	100%

TIME OF DAY DISTRIBUTION [a]

	Current	Future
All Aircraft (Military & Civilian)		
Day (7:00a.m. – 7:00 p.m.)	72%	67%
Evening (7:00p.m. – 10:00p.m.)	13%	20%
Night (10:00 p.m. – 7:00a.m.)	15%	13%
Military Aircraft Only		
Day	77%	77%
Evening	13%	13%
Night	10%	10%
Civilian Aircraft Only (Commercial Cargo)		
Day	42%	37%
Evening	13%	35%
Night	45%	28%

RUNWAY USE DISTRIBUTION [a]

	Current	Future
All Aircraft – Day/Evening/Night		
Takeoffs & Landings		
Runway 14	10%	no
Runway 32	90%	change
Runway 12	Restricted Use	
Runway 30	Restricted Use	

FLIGHT TRACK USAGE [a]

Current and Future

- Departures, Runway 32
  - Aircraft make immediate left turn for southbound departure or left turn to eastbound departure.
- Approaches, Runway 32
  - Most aircraft enter wide right-traffic pattern from north
  - Straight in approach from the south
- Departures, Runway 14
  - Straight out departure
- Approaches, Runway 14
  - Aircraft use close in right traffic
- Closed Traffic Pattern
  - Departing Runway 32 use left traffic procedures
  - Departing Runway 14 use right traffic procedures

Notes

[a] Source: March ARB AICUZ Study (August 2005)

[b] "Current Mission" represents 2004 military and military-related contract carrier activity as itemized in the 2005 AICUZ Study plus anticipated civilian air cargo operations beginning late Autumn 2005.

[c] "Future Mission" is 2005 AICUZ projected activity for 2010, including both military and civilian aircraft operations. Per the Joint Use Agreement, civilian operations are capped at 21,000 annually, excluding CalFire. The March Operations Assurance Task Force (MOATF) has determined that this 69,600 annual operations projection is representative of a 20-year forecast for compatibility planning purposes.

[d] Air Force Aero Club operations on the secondary runway are not included in the AICUZ data.

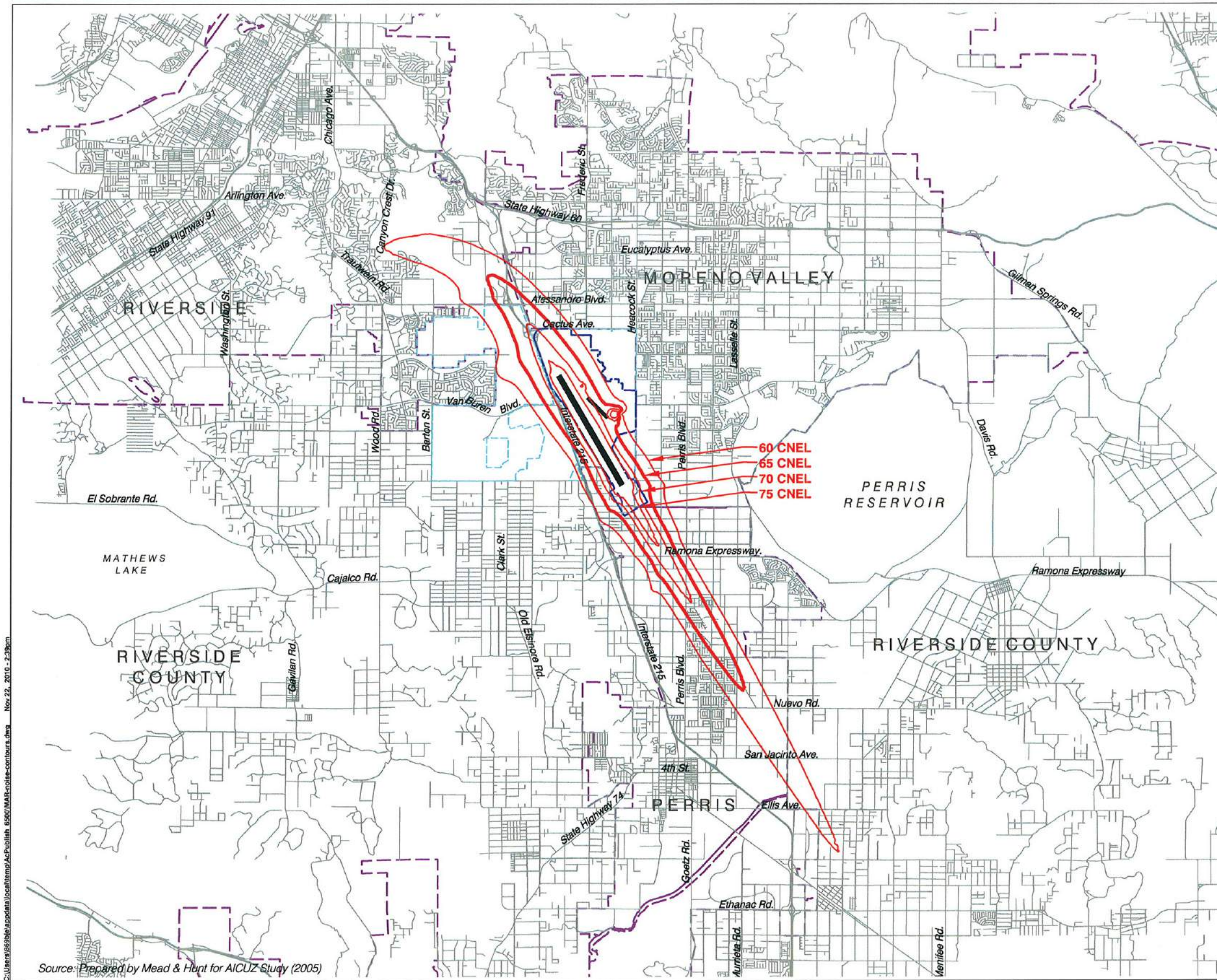
[e] California Department of Forestry and Fire Protection no longer plans to establish a fire attack base at March ARB.

[f] Total activity level for CY 2006 equaled 34,230 operations: military 16,201; general aviation 13,421; and air carrier 4,608. This data is from air traffic control tower and includes Aero Club aircraft operations on the secondary runway. Unlike AICUZ data, the tower counts contract military transport operations as air carrier rather than military and Air Force Aero Club operations as general aviation.

Exhibit MA-3

Airport Activity Data Summary

March Air Reserve Base / Inland Port Airport



LEGEND

Noise Contours

- 60 dB CNEL
- 65 dB CNEL
- 70 dB CNEL
- 75 dB CNEL

2005 AICUZ Future Mission Average Annual Day*

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits

Forecast (2010)*	
Annual Operations	69,600
Average Annual Day	191

Source:
Forecasts and noise contours from Air Installation Compatible Use Zone Study for March Air Reserve Base (August 2005).

N

0 — 2 MILES — 4 MILES
MILES

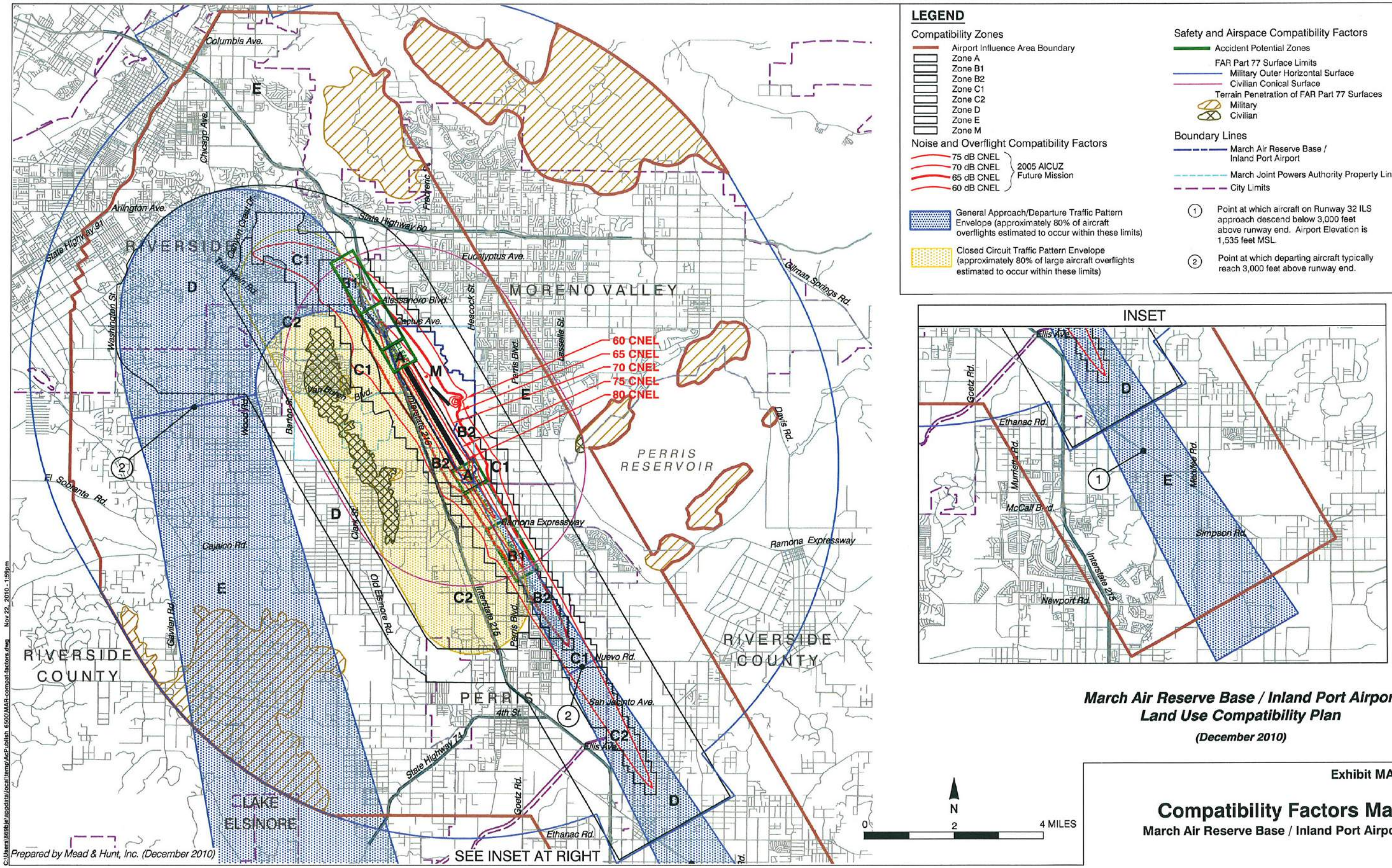
March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan

(December 2010)

Exhibit MA-4

Noise Contours (2005 AICUZ)

March Air Reserve Base / Inland Port Airport


LEGEND
Compatibility Zones
Airport Influence Area Boundary
Zone A
Zone B1
Zone B2
Zone C1
Zone C2
Zone D
Zone E
Zone M
Noise and Overflight Compatibility Factors
75 dB CNEL
70 dB CNEL
65 dB CNEL
60 dB CNEL
2005 AICUZ Future Mission
General Approach/Departure Traffic Pattern Envelope (approximately 80% of aircraft overflights estimated to occur within these limits)
Closed Circuit Traffic Pattern Envelope (approximately 80% of large aircraft overflights estimated to occur within these limits)
Safety and Airspace Compatibility Factors
Accident Potential Zones
FAR Part 77 Surface Limits
Military Outer Horizontal Surface
Civilian Conical Surface
Terrain Penetration of FAR Part 77 Surfaces
Military
Civilian
Boundary Lines
March Air Reserve Base / Inland Port Airport
March Joint Powers Authority Property Line
City Limits
Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.
Point at which departing aircraft typically reach 3,000 feet above runway end.
INSET
60 CNEL
65 CNEL
70 CNEL
75 CNEL
80 CNEL
RIVERSIDE
MORENO VALLEY
PERRIS RESERVOIR
RIVERSIDE COUNTY
PERRIS
LAKE ELSINORE
SEE INSET AT RIGHT
Prepared by Mead & Hunt, Inc. (December 2010)
0
2
4 MILES
N

March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan

(December 2010)

Exhibit MA-5

Compatibility Factors Map

March Air Reserve Base / Inland Port Airport

AIRPORT SITE

- *Location*
  - Northwestern section of Riverside County
  - 10 miles southeast of central Riverside
  - Situated on high valley floor of Perris Valley
- *Nearby Terrain*
  - Relatively flat in immediate vicinity
  - Santa Ana and San Jacinto Mountain Ranges located to the west and east, respectively
  - Terrain greater than 150 ft. above the airport elevation (1,538 ft. MSL) exists several miles to the northeast (Box Springs Mts.), southwest (Santa Ana Mts.) and southeast (Lakeview Mts.)

AIRPORT ENVIRONS LAND USE JURISDICTIONS

- *March Joint Powers Authority*
  - Has land use authority over March JPA property
- *Riverside County*
  - Airport lies entirely within unincorporated area
- *City of Moreno Valley*
  - Borders airport to the east
- *City of Perris*
  - Borders airport to the south and lies beneath primary airport approach routes
- *City of Riverside*
  - Borders airport to the west-northwest and lies beneath primary airport departure routes

STATUS OF COMMUNITY PLANS

- *Riverside County*
  - General Plan adopted by Board of Supervisors October 2003
  - Reche Canyon, Mead Valley and Lake Mathews Area Plans Final Drafts (October 2003)
- *March Joint Powers Authority*
  - General Plan adopted by March JPA (1999)
  - General Plan Land Use Map adopted August 2004
  - March Business Center Specific Plan adopted February 2003
  - Development Code adopted July 1997
  - Zoning Map adopted May 2004
- *City of Moreno Valley*
  - General Plan adopted by City Council in 1988
  - General Plan Update in progress; pending adoption mid 2006
- *City of Perris*
  - General Plan adopted by City Council October 1991
  - General Plan 2030 Update in progress; pending adoption late 2006
- *City of Riverside*
  - General Plan 2025 adopted by City Council November 2007

EXISTING AIRPORT AREA LAND USES

- *General Character*
  - Immediate area lies within the March JPA boundary and is primarily developed to the northeast and undeveloped west of Highway 215
  - Lands within the cities of Riverside and Moreno Valley are primarily devoted to existing land uses
  - Urban development encroaches airport to the south (City of Perris) and west (County of Riverside)
  - Scattered rural residential development to the north (City of Riverside) and south (City of Perris)
  - Perris reservoir located 3 mi. southeast
- *Runway Approaches*
  - Northwest (Runway 14): Sycamore Canyon Park with residential neighborhoods, Sycamore Canyon and Canyon Springs neighborhoods with major activity centers
  - Southeast (Runway 32): Industrial, commercial and business park uses; residential uses 2 mi.

PLANNED AIRPORT AREA LAND USES

- *March Joint Powers Authority*
  - Northeast: Low Density Residential, Mixed Use, Business Park, Office and Recreational area
  - West: Industrial, Business Park, Mixed Use and Commercial uses with scattered Recreational uses west of Highway 215
  - South: Aviation-related uses
- *Riverside County*
  - Southwest: Very low density residential, Business Park and Light Industrial
- *City of Moreno*
  - Northeast: Office, Commercial, Specific Plan areas and Residential uses
  - East: Low density residential uses with scattered commercial uses and public facilities
- *City of Perris*
  - South: Industrial and commercial uses
- *City of Riverside*
  - Northwest: Industrial/Business Parks and Sycamore Canyon Park facility
  - West: Medium residential uses with scattered commercial uses and parks

Exhibit MA–6

Airport Environs Information

March Air Reserve Base / Inland Port Airport

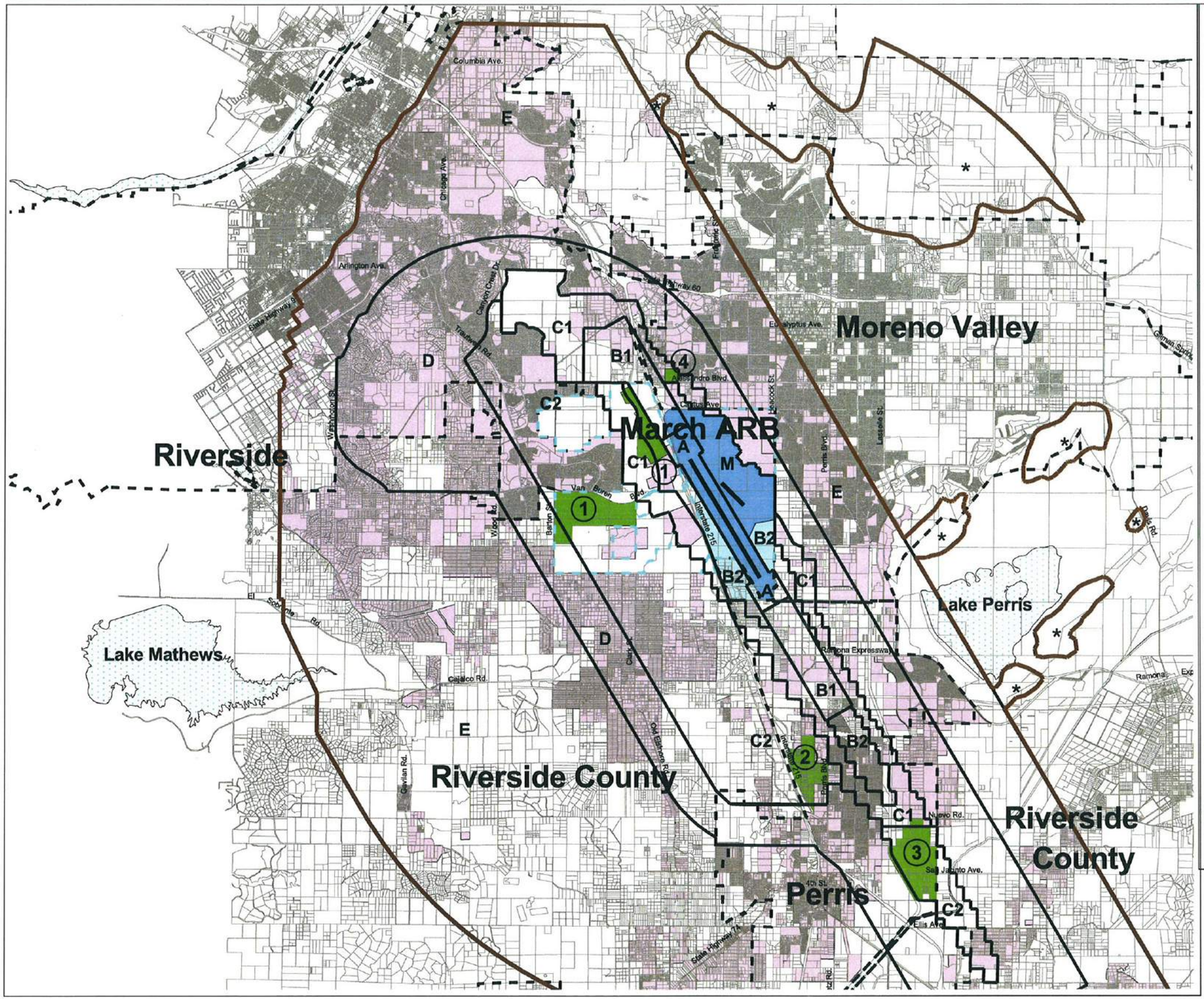
ESTABLISHED AIRPORT COMPATIBILITY MEASURES

- *Riverside County General Plan (October 2003)*
  - Prohibit new residential uses, except single-family dwellings on legal residential lots of record, within airports' 60 dB CNEL contour as defined by ALUC (Policy N 7.3)
  - Submit proposed actions to ALUC as required by state law (Policy LU 1.8); other actions and projects may be submitted on voluntary and advisory basis (LU 14.8)
- *City of Riverside General Plan (September 1994)*
  - Residential development and noise sensitive uses deemed conditionally acceptable in 60-70 CNEL range; normally unacceptable at 70-75 CNEL; clearly unacceptable above 75 CNEL
  - Transportation Element Policy T 3.8 states that city "should limit building heights and land use intensities beneath airport approach and departure paths to protect public safety"
- *City of Riverside Zoning Codes*
  - Airport zone (AIR) and airport industrial (AI) zone restrict types of uses and heights of structures on and near airports
  - No FAR Part 77 height limit zoning
- *City of Perris General Plan (1991)*
  - Residential development and noise sensitive uses (e.g., schools) deemed conditionally acceptable in 60-70 CNEL range; low density residential deemed conditionally acceptable in 55-70 CNEL range; residential uses normally unacceptable at 70-75 CNEL; clearly unacceptable above 75 CNEL
  - Perris Municipal Code (Chapter 16.22) regulates new development located near airports and requires noise mitigations on residential uses exposed to exterior noise levels of 60 dBA CNEL or greater
- *City of Moreno Valley General Plan (1988)*
  - Data not available at this time
- *City of Moreno Valley Zoning*
  - Air Installation Compatibility Use Overlay District (AICUZ) limits types of uses within the airport's accident potential zones I and II

DRAFT AIRPORT COMPATIBILITY MEASURES

- *City of Riverside General Plan 2025 Update*
  - Limit building heights and land use intensities beneath airport approach and departure paths to protect public safety (Policy CCM 11.2)
  - Utilize the Airport Protection Overlay Zone to advise landowners of special noise considerations associated with their development (Policy N 2.5)
  - Ensure development within airport influence area is consistent with Airport Protection Overlay Zone (Policy PS 4.6)
- *City of Perris General Plan 2030 Update*
  - Low density residential uses are deemed conditionally acceptable within Accident Potential Zone II; all other residential uses are restricted. All residential uses are deemed conditionally acceptable in 60-70 dB DNL range; strongly discouraged in 70-75 DNL; not acceptable above 75 DNL
  - Consult AICUZ and ALUP guidelines when considering development proposed projects (Policy I.D)
  - Consider recommendations of the ALUC regarding potential land uses or projects affecting the Perris Valley Airport Environs Area (Policy VI.B.2); March ARB / IPA influence area not specifically referenced
- *City of Moreno Valley General Plan Update*
  - Data not available at this time

Exhibit MA-6, continued



Legend

- City Limits
- Runway
- Airport Influence Area Boundary
- Compatibility Zones
- March Air Reserve Base
- Inland Port Airport Property
- March Joint Powers Authority Property
- * High Terrain Zone
- Existing Development
- Site-Specific Exceptions (existing local agency commitments to development projects)
  - (1) March Business Center (March JPA)
  - (2) Harvest Landing (Perris)
  - (3) Park West (Perris)
  - (4) Low-Income housing (Moreno Valley)

Note: This map depicts land where major development exists or has been approved by local jurisdictions.

Sources:
Google Earth (2007)
County of Riverside (2005)
City of Riverside (2006)
City of Perris (2006)

10000 0 10000 Feet

N

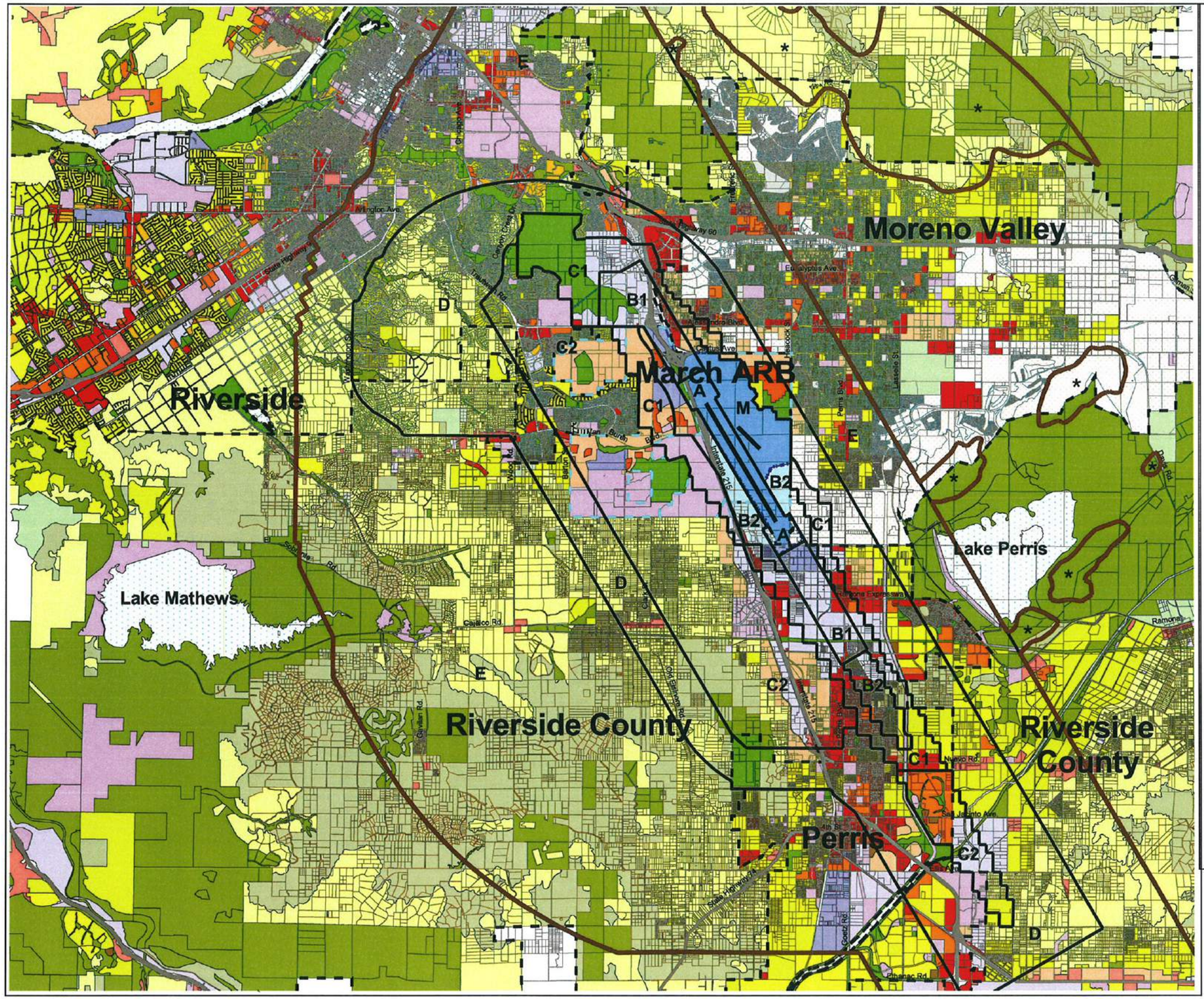
March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan

(December 2010)

Exhibit MA-7

Existing Development

March Air Reserve Base / Inland Port Airport



Legend

- City Limits
- Runway
- Airport Influence Area Boundary
- Compatibility Zones
- March Air Reserve Base
- Inland Port Airport Property
- March Joint Powers Authority Property
- * High Terrain Zone

- Residential >20 du/ac
- Residential 8.1-20.0 du/ac
- Residential 4.1-8.0 du/ac
- Residential 1.1-4.0 du/ac
- Residential ≤1.0 du/ac
- Mobile Home Park
- High-Intensity Commercial/Office
- Low-Intensity Commercial /Office
- Office/Business Park
- Heavy Industrial
- Light Industrial/Warehousing
- Mixed Use
- School
- Other Public/Institutional
- Parks & Recreation
- Rural Residential
- Agriculture
- Open Space/Conservation
- Federal Lands
- State Lands
- Indian Lands
- Unclassified
- Specific Plan Area

Note: This map is combined and simplified from the following map sources:
Riverside County General Plan (October 2003)
City of Riverside General Plan 2025 Update (August 2005)
City of Moreno Valley General Plan (October 2006)
City of Perris General Plan (April 2005)

10000 0 10000 Feet

N

March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan

(December 2010)

Exhibit MA-8

General Plan Land Use Designations

March Air Reserve Base / Inland Port Airport

APPENDIX **B**

Policy Excerpts from Riverside County ALUCP

Note: The following are excerpts from Chapter 2, Countywide Policies, as found in the "Riverside County Airport Land Use Compatibility Plan, Volume 1, Policy Document" adopted by the Riverside County Airport Land Use Commission beginning in October 2004 for 11 of the 14 public-use or military airports in or affecting the county. The March Air Reserve Base / Inland Port Airport (ARB/IPA) is not among the airports for which the countywide policies have been adopted. The March Joint Land Use Study (JLUS) is intended to serve as the basis for the Airport Land Use Compatibility Plan for this airport. Except where specific exceptions are proposed as listed in Appendix A of this JLUS, the countywide policies are anticipated to be applicable to March ARB/IPA.

1. GENERAL APPLICABILITY

1.5. Types of Actions Reviewed

1.5.1. *Actions Which Always Require ALUC Review:* As required by state law, the following types of actions shall be referred to the Airport Land Use Commission for determination of consistency with the Commission's *Plan* prior to their approval by the local jurisdiction:

(a) The adoption or approval of any amendment to a general or specific plan affecting the property within an airport influence area (Public Utilities Code Section 21676(b)).

(b) The adoption or approval of a zoning ordinance or building regulation which (1) affects property within an airport influence area, and (2) involves the types of airport impact concerns listed in Section 1.4 (Public Utilities Code Section 21676(b)).

(c) Adoption or modification of the master plan for an existing public-use airport (Public Utilities Code Section 21676(c)).

(d) Any proposal for expansion of an existing airport or heliport if such expansion will require an amended airport permit from the state of California (Public Utilities Code Section 21664.5).

(e) Any proposal for a new airport or heliport whether for public use or private use (Public Utilities Code Section 21661.5) if the facility requires a state airport permit.

1.5.2. *Other Land Use Actions Subject to ALUC Review:* In addition to the above types of land use actions for which ALUC review is mandatory, other types of land use actions are subject to review under the following circumstances:

(a) Until such time as (1) the Commission finds that a local agency's general plan or specific plan is consistent with the *Airport Land Use Compatibility Plan*, or (2) the local agency has overruled the Commission's determination of inconsistency,

state law provides that the ALUC may require the local agency to refer all actions, regulations, and permits involving land within an airport influence area to the Commission for review (Public Utilities Code Section 21676.5(a)). Only those actions that the ALUC elects not to review are exempt from this requirement. Commission policy is that only the *major land use actions* listed in Policy 1.5.3 shall be submitted for review.

(b) After a local agency has revised its general plan or specific plan (see Section 3.2) or has overruled the Commission, the Commission no longer has authority under state law to require that all actions, regulations, and permits be referred for review. However, the Commission and the local agency can agree that the Commission should continue to review individual projects in an advisory capacity.

(1) The Commission requests local agencies to continue to submit *major land use actions* as listed in Policy 1.5.3. ALUC review of these types of projects can serve to enhance their compatibility with airport activity.

(2) Review of these actions is requested only if a review has not previously been conducted as part of a general plan, specific plan, or zoning ordinance action or if sufficient project-level detail to enable a full assessment of compatibility was not available at the time of a previous review.

(3) Because the ALUC acts in an advisory capacity when reviewing projects under these circumstances, local jurisdictions are not required to adhere to the overruling process if they elect to approve a project without incorporating design changes or conditions suggested by the Commission.

(c) Proposed redevelopment of a property for which the existing use is consistent with the general plan and/or specific plan, but nonconforming with the compatibility criteria set forth in this plan, shall be subject to ALUC review. This policy is intended to address circumstances that arise when a general or specific plan land use designation does not conform to ALUC compatibility criteria, but is deemed consistent with the compatibility plan because the designation reflects an existing land use. Proposed redevelopment of such lands voids the consistency status and is to be treated as new development subject to ALUC review even if the proposed use is consistent with the local general plan or specific plan. (Also see Policies 3.3.2 and 3.3.3.)

(d) Proposed land use actions covered by Paragraphs (a), (b), and (c) above shall initially be reviewed by the ALUC Executive Director. If the Executive Director determines that significant compatibility issues are evident, the proposal shall be forwarded to the Commission for review and decision. The Commission authorizes the Executive Director to approve proposed actions having no apparent compatibility issues of significance.

1.5.3. *Major Land Use Actions:* The scope or character of certain *major land use actions,* as listed below, is such that their compatibility with airport activity is a potential concern. Even though these actions may be basically consistent with the local general plan or specific plan, sufficient detail may not be known to enable a full airport compatibility evaluation at the time that the general plan or specific plan is reviewed. To enable better assessment of compliance with the compatibility criteria set forth herein, ALUC review of these actions may be warranted. The circumstances under which ALUC review of these actions is to be conducted are indicated in Policy 1.5.2 above.

(a) Actions affecting land uses within any compatibility zone.

(1) Any proposed expansion of the sphere of influence of a city or special district.

(2) Proposed pre-zoning associated with future annexation of land to a city.

(3) Proposed development agreements or amendments to such agreements.

(4) Proposed residential development, including land divisions, consisting of five or more dwelling units or lots.

(5) Any discretionary development proposal for projects having a building floor area of 20,000 square feet or greater unless only ministerial approval (e.g., a building permit) is required.

(6) Major capital improvements (e.g., water, sewer, or roads) which would promote urban uses in undeveloped or agricultural areas to the extent that such uses are not reflected in a previously reviewed general plan or specific plan.

(7) Proposed land acquisition by a government entity for any facility accommodating a congregation of people (for example, a school or hospital).

(8) Any off-airport, nonaviation use of land within *Compatibility Zone A* of any airport.

(9) Proposals for new development (including buildings, antennas, and other structures) having a height of more than:

- 35 feet within *Compatibility Zone B1*, *B2*, or a *Height Review Overlay Zone*;
- 70 feet within *Compatibility Zone C*; or
- 150 feet within *Compatibility Zone D* or *E*.

(10) Any obstruction reviewed by the Federal Aviation Administration in accordance with Part 77 of the Federal Aviation Regulations that receives a finding of anything other than "not a hazard to air navigation."

(11) Any project having the potential to create electrical or visual hazards to aircraft in flight, including:

- Electrical interference with radio communications or navigational signals;
- Lighting which could be mistaken for airport lighting;
- Glare in the eyes of pilots of aircraft using the airport; and
- Impaired visibility near the airport.

(12) Projects having the potential to cause attraction of birds or other wildlife that can be hazardous to aircraft operations to be increased within the vicinity of an airport.

(b) Proposed nonaviation development of airport property if such development has not previously been included in an airport master plan or community general plan reviewed by the Commission. (See Policy 1.2.5 for definition of *aviation-related use*.)

(c) Regardless of location within Riverside County, any proposal for construction or alteration of a structure (including antennas) taller than 200 feet above the ground level at the site. (Such structures also require notification to the Federal Aviation Administration in accordance with Federal Aviation Regulations, Part 77, Paragraph 77.13(a)(1).)

(d) Any other proposed land use action, as determined by the local planning agency, involving a question of compatibility with airport activities.

3. COMPATIBILITY CRITERIA FOR LAND USE ACTIONS

3.1 Basic Criteria

3.1.3. *Residential Development:* The following criteria shall be applied to evaluation of the compatibility of proposed residential development.

(a) Any subdivision of land for residential uses within *Compatibility Zones A*, *B1*, *B2*, and *C* shall not result in a density greater than that indicated in the Compatibility Criteria matrix, Table 2A.

(1) Secondary units, as defined by state law, shall be excluded from density calculations.

(2) Clustering of development shall be limited in accordance with Policy 4.2.5(a)(2).

(b) Within *Compatibility Zone D*, local land use jurisdictions have two options. The basic option is to limit densities to no more than 0.2 dwelling units per acre. Additionally, a high-density option is provided. This option requires that densities be *greater than* 5.0 dwelling units per acre (i.e., an average parcel size *less than* 0.2 gross acres). See Table 3A for an explanation of the rationale behind these options.

(c) Other development conditions as also listed in Table 2A apply to sites within certain compatibility zones.

(d) Mixed use development in which residential uses are proposed to be located in conjunction with nonresidential uses in the same or adjoining buildings on the same site shall be treated as nonresidential development. The occupancy of the residential portion shall be added to that of the nonresidential portion and evaluated with respect to the nonresidential usage intensity criteria below.

(1) This mixed-use development policy is intended for dense, urban-type developments where the resultant ambient noise levels are relatively high. The policy is not intended to apply to projects in which the residential component is isolated from the nonresidential uses of the site.

(2) Noise attenuation and other requirements that may be specifically relevant to residential uses shall still apply.

3.1.4. *Nonresidential Development:* The compatibility of nonresidential development shall be assessed primarily with respect to its usage intensity (the number of people per acre) and the noise-sensitivity of the use. Additional criteria listed in Table 2A shall also apply.

(a) The total number of people permitted on a project site at any time, except for rare special events, must not exceed the indicated usage intensity times the gross acreage of the site.

(1) Usage intensity calculations shall include all people (e.g., employees, customers/visitors, etc.) who may be on the property at any single point in time, whether indoors or outside.

(2) Rare special events are ones (such as an air show at an airport) for which a facility is not designed and normally not used and for which extra safety precautions can be taken as appropriate.

(b) No single acre of a project site shall exceed the number of people per acre indicated in Policy 4.2.5(b) and listed in Table 2A unless special risk reduction building design measures are taken as described in Policy 4.2.6.

(c) The noise exposure limitations cited in Policy 4.1.4 and listed in Table 2B shall be the basis for assessing the acceptability of proposed nonresidential land uses relative to noise impacts. The ability of buildings to satisfy the interior noise level criteria noted in Policy 4.1.6 shall also be considered.

3.3. Special Conditions

3.3.1. *Infill:* Where development not in conformance with the criteria set forth in this *Compatibility Plan* already exists, additional infill development of similar land uses may be allowed to occur even if such land uses are to be prohibited elsewhere in the zone. This exception does not apply within *Compatibility Zones A* or *B1*.

(a) A parcel can be considered for *infill* development if it meets *all* of the following criteria plus the applicable provisions of either Sub-policy (b) or (c) below:

(1) The parcel size is no larger than 20.0 acres.

(2) At least 65% of the site's perimeter is bounded (disregarding roads) by existing uses similar to, or more intensive than, those proposed.

(3) The proposed project would not extend the perimeter of the area defined by the surrounding, already developed, incompatible uses.

(4) Further increases in the residential density, nonresidential usage intensity, and/or other incompatible design or usage characteristics (e.g., through use permits, density transfers, addition of second units on the same parcel, height variances, or other strategy) are prohibited.

(5) The area to be developed cannot previously have been set aside as open land in accordance with policies contained in this *Plan* unless replacement open land is provided within the same compatibility zone.

(b) For residential development, the average development density (dwelling units per gross acre) of the site shall not exceed the lesser of:

(1) The average density represented by all existing lots that lie fully or partially within a distance of 300 feet from the boundary of the parcel to be divided; or

(2) Double the density permitted in accordance with the criteria for that location as indicated in the Compatibility Criteria matrix, Table 2A.

(c) For nonresidential development, the average usage intensity (the number of people per gross acre) of the site's proposed use shall not exceed the lesser of:

(1) The average intensity of all existing uses that lie fully or partially within a distance of 300 feet from the boundary of the proposed development; or

(2) Double the intensity permitted in accordance with the criteria for that location as indicated in the Compatibility Criteria matrix, Table 2A.

(d) The single-acre and risk-reduction design density and intensity multipliers described in Policies 4.2.5 and 4.2.6 and listed in Table 2A are applicable to infill development.

(e) Infill development on some parcels should not enable additional parcels to then meet the qualifications for infill. The ALUC's intent is that parcels eligible for infill be determined just once. Thus, in order for the ALUC to consider proposed development under these infill criteria, the entity having land use authority (Riverside County or affected cities) must first identify the qualifying locations in its general plan or other adopted planning document approved by the ALUC. This action may take place in conjunction with the process of amending a general plan for consistency with the ALUC plan or may be submitted by the local agency for consideration by the ALUC at the time of initial adoption of this *Compatibility Plan*. In either case, the burden for demonstrating that a proposed development qualifies as infill rests with the affected land use jurisdiction and/or project proponent.

3.3.2. *Nonconforming Uses:* Existing uses (including a parcel or building) not in conformance with this *Compatibility Plan* may only be expanded as follows:

(a) Nonconforming residential uses may be expanded in building size provided that the expansion does not result in more dwelling units than currently exist on the parcel (a bedroom could be added, for example, but a separate dwelling unit could not be built). No ALUC review of such improvements is required.

(b) A nonconforming nonresidential development may be continued, leased, or sold and the facilities may be maintained or altered (including potentially enlarged), provided that the portion of the site devoted to the nonconforming use is not expanded and the usage intensity (the number of people per acre) is not increased above the levels existing at the time of adoption of this *Compatibility Plan*. No ALUC review of such changes is required.

(c) ALUC review is required for any proposed expansion of a nonconforming use (in terms of the site size or the number of dwelling units or people on the site). Factors to be considered in such reviews include whether the development qualifies as infill (Policy 3.3.1) or warrants approval because of other special conditions (Policy 3.3.6).

3.3.3. *Reconstruction:* An existing nonconforming development that has been fully or partially destroyed as the result of a calamity may be rebuilt only under the following conditions:

(a) Nonconforming residential uses may be rebuilt provided that the expansion does not result in more dwelling units than existed on the parcel at the time of the damage.

(b) A nonconforming nonresidential development may be rebuilt provided that it has been only partially destroyed and that the reconstruction does not increase the floor area of the previous structure or result in an increased intensity of use (i.e., more people per acre). Partial destruction shall be considered to mean

damage that can be repaired at a cost of no more than 75% of the assessor's full cash value of the structure at the time of the damage.

(c) Any nonresidential use that has been more than 75% destroyed must comply with all applicable standards herein when reconstructed.

(d) Reconstruction under Paragraphs (1) or (2) above must begin within 24 months of the date the damage occurred.

(e) The above exceptions do no apply within *Zone A* or where such reconstruction would be in conflict with a county or city general plan or zoning ordinance.

(f) Nothing in the above policies is intended to preclude work required for normal maintenance and repair.

3.3.4. *Development by Right:* Nothing in these policies prohibits:

(a) Construction of a single-family home, including a second unit as defined by state law, on a legal lot of record if such use is permitted by local land use regulations.

(b) Construction of other types of uses if local government approvals qualify the development as effectively existing (see Policy 1.2.10 for definition).

(c) Lot line adjustments provided that new developable parcels would not be created and the resulting gross density or intensity of the affected property would not exceed the applicable criteria indicated in the Compatibility Criteria matrix, Table 2A.

3.3.5. *Parcels Lying within Two or More Compatibility Zones:* For the purposes of evaluating consistency with the compatibility criteria set forth herein, any parcel that is split by compatibility zone boundaries shall be considered as if it were multiple parcels divided at the compatibility zone boundary line. However, the density or intensity of development allowed within the more restricted portion of the parcel can (and is encouraged to) be transferred to the less restricted portion. This transfer of development is permitted even if the resulting density or intensity in the less restricted area would then exceed the limits which would otherwise apply within that compatibility zone.

3.3.6. *Other Special Conditions:* The compatibility criteria set forth in this *Plan* are intended to be applicable to all locations within each airport's influence area. However, it is recognized that there may be specific situations where a normally incompatible use can be considered compatible because of terrain, specific location, or other extraordinary factors or circumstances related to the site.

(a) After due consideration of all the factors involved in such situations, the Commission may find a normally incompatible use to be acceptable.

(b) In reaching such a decision, the Commission shall make specific findings as to why the exception is being made and that the land use will not create a safety hazard to people on the ground or aircraft in flight nor result in excessive noise exposure for the proposed use. Findings also shall be made as to the nature of the extraordinary circumstances that warrant the policy exception.

(c) The burden for demonstrating that special conditions apply to a particular development proposal rests with the project proponent and/or the referring agency, not with the ALUC.

(d) The granting of a special conditions exception shall be considered site specific and shall not be generalized to include other sites.

(e) Special conditions that warrant general application in all or part of the influence area of one airport, but not at other airports, are set forth in Chapter 3 of this *Compatibility Plan.*

4. SUPPORTING COMPATIBILITY CRITERIA

4.1. Noise

4.1.1. *Policy Objective:* The purpose of noise compatibility policies is to avoid establishment of noise-sensitive land uses in the portions of airport environs that are exposed to significant levels of aircraft noise.

4.1.2. *Noise Contours:* The evaluation of airport/land use noise compatibility shall consider both the current and future Community Noise Equivalent Level (CNEL) contours of each airport as depicted in Chapter 3 of this *Plan.*

(a) At most airports in the county, anticipated growth in aircraft operations results in projected future noise contours being larger than current ones. However, in some instances, factors such as introduction of a quieter aircraft fleet mix, planned changes to the configuration of airport runways, or expected modifications to flight procedures can result in current contours being larger than the future contours in some or all of the airport environs. In these cases, a composite of the contours for the two time frames shall be considered in compatibility analyses.

(b) For airport at which aircraft activity has substantial seasonal or weekly characteristics, noise contours associated with the peak operating season or days of the week shall be taken into account in assessing land use compatibility.

(c) Projected noise contours included in Chapter 3 are calculated based upon forecasted aircraft activity as indicated in an airport master plan or that is considered by the Riverside County Airport Land Use Commission to be plausible (refer to activity data in the Background Data volumes). The Airport Land Use Commission or the entities that operate airports in Riverside County should periodically review these projected noise level contours and update them if appropriate.

4.1.3. *Application of Noise Contours:* The locations of CNEL contours are among the factors used to define compatibility zone boundaries and criteria. Because of the inherent variability of flight paths and other factors that influence noise emissions, the depicted contour boundaries are not absolute determinants of the compatibility or incompatibility of a given land use on a specific site or a portion thereof. Noise contours can only quantify noise impacts in a general manner. Except on large parcels or blocks of land (sites large enough to have 3 dB or more of variation in CNELs), they should *not* be used as site design criteria. (Note, though, that the airport noise contours set forth in this *Plan* are to be used as the basis for determining compliance with interior noise level criteria as listed in Policy 4.1.6.)

4.1.4. *Noise Exposure in Residential Areas:* Unless otherwise indicated in the airport-specific policies listed in Chapter 3, the maximum CNEL considered normally acceptable for

new residential land uses in the vicinity of the airports covered by this *Plan* is 60 dB for all airports except low-activity outlying airports (Chiriaco Summit and Desert Center) for which the criterion is 55 dB. These standards shall be based upon noise contours calculated as described above.

4.1.5. *Noise Exposure for Other Land Uses:* Noise level compatibility standards for other types of land uses shall be applied in the same manner as the above residential noise level criteria. The extent of outdoor activity associated with a particular land use is an important factor to be considered in evaluating its compatibility with airport noise. Examples of acceptable noise levels for other land uses in an airport's vicinity are presented in Table 2B of the Riverside County ALUCP.

4.1.6. *Interior Noise Levels:* Land uses for which interior activities may be easily disrupted by noise shall be required to comply with the following interior noise level criteria.

(a) The maximum, aircraft-related, interior noise level that shall be considered acceptable for land uses near airports is 45 dB CNEL in:

- Any habitable room of single- or multi-family residences;
- Hotels and motels;
- Hospitals and nursing homes;
- Churches, meeting halls, theaters, and mortuaries;
- Office buildings; and
- Schools, libraries, and museums.

(b) The noise contours depicted in Chapter 3 of this *Plan* shall be used in calculating compliance with these criteria. The calculations should assume that windows are closed.

(c) When reviewed as part of a general plan or zoning ordinance amendment or as a major land use action, evidence that proposed structures will be designed to comply with the above criteria shall be submitted to the ALUC under the following circumstances:

(1) Any mobile home situated within an airport's 55-dB CNEL contour. [A typical mobile home has an average exterior-to-interior noise level reduction (NLR) of approximately 15 dB with windows closed.]

(2) Any single- or multi-family residence situated within an airport's 60-dB CNEL contour. [Wood frame buildings constructed to meet 1990s standards for energy efficiency typically have an average NLR of approximately 20 dB with windows closed.]

(3) Any hotel or motel, hospital or nursing home, church, meeting hall, office building, mortuary, school, library, or museum situated with an airport's 65-dB CNEL contour.

4.1.7. *Engine Run-Up and Testing Noise:* ALUC consideration of noise from aircraft engine run-ups and testing activities shall be limited as follows:

(a) Aircraft noise associated with pre-flight engine run-ups, taxiing of aircraft to and from runways, and other operation of aircraft on the ground is considered part of airport operations and therefore is not subject to ALUC authority.

(1) Noise from these sources can be, but normally is not, represented in airport noise contours. It is not included in the noise contours prepared for this *Compatibility Plan*. Nevertheless, when reviewing the compatibility of pro-

posed land uses in locations near the airport where such noise may be significant, the Commission may seek additional data and may take into account noise from these ground-based sources.

(2) Noise from aircraft ground operations also should be considered by the Commission when reviewing airport master plans or development plans in accordance with Section 2.4 herein.

(b) Noise from the testing of aircraft engines on airport property is not deemed an activity inherent in the operation of an airport and thus it is not an airport-related impact addressed by this *Compatibility Plan*. Noise from these sources should be addressed by the noise policies of local agencies in the same manner as noise from other industrial sources. (Engine testing noise is not normally included in the noise contours prepared for an airport. However, aircraft noise modeling programs have the capability of including noise from this source. At airports where engine testing takes place or is proposed, the ALUC may need to ascertain whether the noise was or was not included in the noise contour calculations.)

4.1.8. *Construction of New or Expanded Airports or Heliports:* Any proposed construction of a new airport or heliport or expansion of facilities at an existing airport or heliport which would result in a significant increase in cumulative noise exposure (measured in terms of CNEL) shall include measures to reduce the exposure to a less-than-significant level. For the purposes of this plan, a noise increase shall be considered significant if:

(a) In locations having an existing ambient noise level of less than 60 dB CNEL, the project would increase the noise level by 5.0 dB or more.

(b) In locations having an existing ambient noise level of between 60 and 65 dB CNEL, the project would increase the noise level by 3.0 dB or more.

(c) In locations having an existing ambient noise level of more than 65 dB CNEL, the project would increase the noise level by 1.5 dB or more.

4.2. Safety

4.2.1. *Policy Objective:* The intent of land use safety compatibility criteria is to minimize the risks associated with an off-airport aircraft accident or emergency landing.

(a) Risks both to people and property in the vicinity of an airport and to people on board the aircraft shall be considered.

(b) The most stringent land use controls shall be applied to the areas with the greatest potential risks.

4.2.2. *Risks to People on the Ground:* The principal means of reducing risks to people on the ground is to restrict land uses so as to limit the number of people who might gather in areas most susceptible to aircraft accidents. The usage intensity criteria cited in the Basic Compatibility Criteria table reflect the risks associated with various locations in the environs of the airports in the county. (Methods for determining the concentration of people for various land uses are provided in Appendix C.)

4.2.3. *Land Uses of Special Concern:* Certain types of land uses represent special safety concerns irrespective of the number of people associated with those uses. Land uses of particular concern include:

(a) Uses Having Vulnerable Occupants: Uses in which the occupants have reduced effective mobility or are unable to respond to emergency situations shall be prohibited within all *Compatibility Zones* except *Zone E*. These uses include children's schools and day care centers (with 7 or more children), hospitals, nursing homes, and other uses in which the majority of occupants are children, elderly, and/or handicapped.

(1) This general policy may be superseded by airport specific policies (see Chapter 3).

(2) Hospitals are medical facilities which include provision for overnight stays by patients. Medical clinics are permitted in *Compatibility Zones C* and *D* provided that these facilities meet the maximum intensity standards listed in the Compatibility Criteria matrix, Table MA-1.

(b) Multi-story Buildings: In the event of an emergency resulting from an aircraft accident, low-rise buildings can be more readily evacuated than those with more floors. On this basis, the following limitations are established:

(1) Within *Compatibility Zone A*, new occupied structures are not permitted.

(2) Within *Compatibility Zones B1* and *B2*, new buildings shall be limited to no more than two occupied floors above ground.

(3) Within *Compatibility Zone C*, new buildings shall be limited to no more than three occupied floors above ground.

(c) Hazardous Materials Storage: Construction of facilities for the manufacture or storage of fuel, explosives, and other hazardous materials within the airport environs is restricted as follows:

(1) Within *Compatibility Zone A*, manufacture or storage of any such substance is prohibited.

(2) Within *Compatibility Zones B1* and *B2*, only the following is permitted:

- Fuel or hazardous substances stored in underground tanks.
- On-airport storage of aviation fuel and other aviation-related flammable materials.
- Aboveground storage of less than 6,000 gallons of nonaviation flammable materials (this limit coincides with a break-point used in the Uniform Fire Code to distinguish between different classes of tanks).

(3) Within *Compatibility Zone C*, manufacture or storage of hazardous materials other than the types listed in Sub-policy (2) above is prohibited unless no other feasible alternative site exists and the facility is designed in a manner that minimizes its susceptibility to damage from an aircraft accident.

(d) Critical Community Infrastructure: Construction of power plants, electrical substations, public communications facilities, and other critical community infrastructure shall be restricted as follows:

(1) Within *Compatibility Zone A*, all such uses are prohibited.

(2) Within *Compatibility Zones B1* and *B2*, such uses are prohibited unless no other feasible alternative site exists and the facility is designed in a manner that minimizes its susceptibility to damage from an aircraft accident.

4.2.4. *Open Land:* In the event that a light aircraft is forced to land away from an airport, the risks to the people on board can best be minimized by providing as much open land area as possible within the airport vicinity. This concept is based upon the fact that the majority of light aircraft accidents and incidents occurring away from an airport runway are controlled emergency landings in which the pilot has reasonable opportunity to select the landing site.

(a) To qualify as open land, an area should be:

(1) Free of most structures and other major obstacles such as walls, large trees or poles (greater than 4 inches in diameter, measured 4 feet above the ground), and overhead wires.

(2) Have minimum dimensions of approximately 75 feet by 300 feet.

(b) Roads and automobile parking lots are acceptable as open land areas if they meet the above criteria.

(c) Open land requirements for each compatibility zone are to be applied with respect to the entire zone. Individual parcels may be too small to accommodate the minimum-size open area requirement. Consequently, the identification of open land areas must initially be accomplished at the general plan or specific plan level or as part of large (10 acres or more) development projects.

(d) Clustering of development, subject to the limitations noted below, and providing contiguous landscaped and parking areas is encouraged as a means of increasing the size of open land areas.

(e) Building envelopes and the airport compatibility zones should be indicated on all development plans and tentative maps for projects located within the influence area of airports covered by this *Compatibility Plan.* Portraying this information is intended to assure that individual development projects provide the open land areas identified in the applicable general plan, specific plan, or other large-scale plan.

4.2.5. *Limitations on Clustering:* Policy 4.2.4(d) notwithstanding, limitations shall be set on the maximum degree of clustering or usage intensity acceptable within a portion of a large project site. These criteria are intended to limit the number of people at risk in a concentrated area.

(a) Clustering of new residential development shall be limited as follows:

(1) Within *Compatibility Zone A*, clustering is not applicable.

(2) Within *Compatibility Zones B1*, *B2*, and *C*, no more than 4 dwelling units shall be allowed in any individual acre. Buildings shall be located as far as practical from the extended runway centerline and normal aircraft flight paths.

(b) Unless special design measures as listed in Policy 4.2.6 are utilized, usage intensity of new nonresidential development shall be limited as follows:

(1) Within *Compatibility Zone A*, clustering is not applicable.

(2) Within *Compatibility Zone B1*, uses shall be limited to a maximum of 50 people per any individual acre (i.e., a maximum of double the average intensity crite-

rion set in Table MA-1). Theaters, restaurants, most shopping centers, motels, intensive manufacturing or office uses, and other similar uses typically do not comply with this criterion.

(3) Within *Compatibility Zone B2*, uses shall be limited to a maximum of 200 people per any individual acre (i.e., a maximum of double the average intensity criterion set in Table MA-1). Theaters, major shopping centers (500,000 or more square feet), large motels and hotels with conference facilities, and similar uses typically do not comply with this criterion.

(4) Within *Compatibility Zone C*, uses shall be limited to a maximum of 150 people per any individual acre (i.e., a maximum of double the average intensity criterion set in Table MA-1). Theaters, fast-food establishments, high-intensity retail stores or shopping centers, motels and hotels with conference facilities, and similar uses typically do not comply with this criterion.

(5) Within *Compatibility Zone D*, uses shall be limited to a maximum of 300 people per any individual acre (i.e., a maximum of triple the average intensity criterion set in Table MA-1).

(c) For the purposes of the above policies, the one-acre areas to be evaluated shall be rectangular (reasonably close to square, not elongated or irregular) in shape.

(d) In no case shall a proposed development be designed to accommodate more than the total number of dwelling units per acre (for residential uses) or people per acre (for nonresidential uses) indicated in Table MA-1 times the gross acreage of the project site. A project site may include multiple parcels. Appendix D lists examples of the types of land uses which are potentially compatible under these criteria and the types of land uses which are considered incompatible.

4.2.6. *Risk Reduction Through Building Design:* The number of people permitted to occupy a single nonresidential building may be increased by a factor of up to 1.3 times the limitations set by the preceding policy on clustering if special measures are taken to reduce the risks to building occupants in the event that the building is struck by an aircraft.

(a) This intensity bonus is not applicable within *Compatibility Zone A* (no buildings are permitted) or *E* (densities and intensities are not limited) and shall not be applied to buildings situated within *Compatibility Zones B1*, *B2*, or *C* for runways routinely used by large aircraft (aircraft having a maximum certificated takeoff weight of more than 12,500 pounds).

(b) Building design features which would enable application of an intensity bonus include, but are not limited to, the following:

- Using concrete walls;
- Limiting the number and size of windows;
- Upgrading the strength of the building roof;
- Avoiding skylights;
- Enhancing the fire sprinkler system;
- Limiting buildings to a single story; and
- Increasing the number of emergency exits.

(c) Project proponents who wish to request an intensity bonus must include appropriate details of the building design along with their project review application.

(d) Intensity bonuses shall be considered and approved by affected local jurisdictions on a case-by-case basis. The criteria to be used by each jurisdiction when considering intensity bonus requests shall be reviewed and approved by the ALUC as part of the general plan consistency process or subsequent action.

4.3. Airspace Protection

4.3.1. *Policy Objective:* Tall structures, trees, and other objects, particularly when located near airports or on high terrain, may constitute hazards to aircraft in flight. Federal regulations establish the criteria for evaluating potential obstructions. These regulations also require that the Federal Aviation Administration be notified of proposals for creation of certain such objects. The FAA conducts "aeronautical studies" of these objects and determines whether they would be hazards, but it does not have the authority to prevent their creation. The purpose of ALUC airspace protection policies, together with regulations established by local land use jurisdictions and the state government, is to ensure that hazardous obstructions to the navigable airspace do not occur.

4.3.2. *Basis for Height Limits:* The criteria for limiting the height of structures, trees, and other objects in the vicinity of an airport shall be based upon: Part 77, Subpart C, of the Federal Aviation Regulations (FAR); the United States Standard for Terminal Instrument Procedures (TERPS); and applicable airport design standards published by the Federal Aviation Administration. Airspace plans depicting the critical areas for airspace protection around each of the airports covered by this *Compatibility Plan* are depicted in Chapter 3.

4.3.3. *ALUC Review of Height of Proposed Objects:* Based upon FAA criteria, proposed objects that would exceed the heights indicated below for the respective compatibility zones potentially represent airspace obstructions issues. Development proposals that include any such objects shall be reviewed by the ALUC. Objects of lesser height normally would not have a potential for being airspace obstructions and therefore do not require ALUC review with respect to airspace protection criteria (noise, safety, and overflight concerns may still be present). Caution should be exercised, however, with regard to any object more than 50 feet high proposed to be located on a site that is substantially higher than surrounding terrain.

(a) Within *Compatibility Zone A*, the height of any proposed development, including vegetation, requires review.

(b) Within *Compatibility Zone B1*, ALUC review is required for any proposed object taller than 35 feet unless the airport controls an easement on the land on which the object is to be located and grants a waiver to height restrictions.

(c) Within *Compatibility Zone B2*, ALUC review is required for any proposed object taller than 35 feet.

(d) Within *Compatibility Zones C* and *D*, ALUC review is required for any proposed object taller than 70 feet.

(e) Within *Compatibility Zone E*, ALUC review is required for any proposed object taller than 100 feet.

(f) Within the *Height Review Overlay Zone*, ALUC review is required for any proposed object taller than 35 feet above the ground. The approximate extent of the *Height Review Overlay Zone* is indicated on the respective *Compatibility Map* included for each airport in Chapter 3.

4.3.4. *Height Restriction Criteria:* The height of objects within the influence area of each airport shall be reviewed, and restricted if necessary, according to the following criteria. The locations of these zones are depicted on the respective *Compatibility Map* for each airport.

(a) Within *Compatibility Zone A*, the height of all objects shall be limited in accordance with applicable Federal Aviation Administration criteria including FAR Part 77, TERPS, and/or airport design standards.

(b) Within *Compatibility Zones B1*, *B2*, or *Height Review Overlay Zone*:

(1) Objects up to 35 feet tall are acceptable and do not require ALUC review for the purposes of height factors.

(2) ALUC review is required for any proposed object taller than 35 feet.

(3) Federal Aviation Administration review may be necessary for proposed objects adjacent to the runway edges and the FAA may require marking and lighting of certain objects (the affected areas are generally on airport property).

(c) Within *Compatibility Zones C* and *D*, generally, there is no concern with regard to any object up to 70 feet tall unless it is located on high ground or it is a solitary object (e.g., an antenna) more than 35 feet taller than other nearby objects.

(d) Within *Compatibility Zone E*, generally, there is no concern with regard to any object up to 100 feet tall unless it is located on high ground or it is a solitary object (e.g., an antenna) more than 35 feet above the ground.

4.3.5. *Avigation Easement Dedication:* As a condition for development approval, the owner of any property proposed for development within *Compatibility Zones A*, *B1*, or *B2* or a *Height Review Overlay Zone* shall be required to dedicate an avigation easement to the entity owning the affected airport. The avigation easement shall:

(a) Provide the right of flight in the airspace above the property;

(b) Allow the generation of noise and other impacts associated with aircraft overflight;

(c) Restrict the height of structures, trees and other objects;

(d) Permit access to the property for the removal or aeronautical marking of objects exceeding the established height limit; and

(e) Prohibit electrical interference, glare, and other potential hazards to flight from being created on the property. An example of an avigation easement is provided in Appendix G.

4.3.6. *FAA Notification:* Proponents of a project involving objects that may exceed a Part 77 surface must notify the Federal Aviation Administration as required by FAR Part 77, Subpart B, and by the Public Utilities Code, Sections 21658 and 21659. (Notification to the Federal Aviation Administration under FAR Part 77, Subpart B, is required even for certain proposed construction that does not exceed the height limits

allowed by Subpart C of the regulations. Refer to Appendix B for the specific Federal Aviation Administration notification requirements.)

(a) Local jurisdictions shall inform project proponents of the requirements for notification to the Federal Aviation Administration.

(b) The requirement for notification to the Federal Aviation Administration shall not necessarily trigger an airport compatibility review of an individual project by the Airport Land Use Commission if the project is otherwise in conformance with the compatibility criteria established herein.

(c) FAA review is required for any proposed structure more than 200 feet above the surface level of its site. All such proposals also shall be submitted to the ALUC for review regardless of where in the county they would be located.

(d) Any project submitted to the ALUC for airport land use compatibility review for reason of height-limit issues shall include a copy of FAR Part 77 notification to the Federal Aviation Administration and the FAA findings if available.

4.3.7. *Other Flight Hazards:* New land uses that may cause visual, electronic, or increased bird strike hazards to aircraft in flight shall not be permitted within any airport's influence area. Specific characteristics to be avoided include:

(a) Glare or distracting lights which could be mistaken for airport lights;

(b) Sources of dust, steam, or smoke which may impair pilot visibility;

(c) Sources of electrical interference with aircraft communications or navigation; and

(d) Any proposed use, especially landfills and certain agricultural uses, that creates an increased attraction for large flocks of birds. (Refer to FAA Order 5200.5A, *Waste Disposal Sites on or Near Airports* and Advisory Circular 150/5200-33A, *Hazardous Wildlife Attractants On or Near Airports.)*

4.4. Overflight

4.4.1. *Policy Objective:* Noise from individual operations, especially by comparatively loud aircraft, can be intrusive and annoying in locations beyond the limits of the mapped noise contours. Sensitivity to aircraft overflights varies from one person to another. The purpose of overflight compatibility policies is to help notify people about the presence of overflights near airports so that they can make more informed decisions regarding acquisition or lease of property in the affected areas. Overflight compatibility is particularly important with regard to residential land uses.

4.4.2. *State Law Requirements Regarding Real Estate Transfer Disclosure:* Effective January 1, 2004, California state statutes (Business and Professional Code Section 11010 and Civil Code Sections 1102.6, 1103.4, and 1353) require as part of residential real estate transactions that information be disclosed regarding whether the property is situated within an airport influence area.

(a) With certain exceptions, these state requirements apply both to the sale or lease of newly subdivided lands and to the sale of existing residential property.

(b) The statutes define an *airport influence area* as "the area in which current or future airport-related noise, overflight, safety, or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses as determined by

an airport land use commission." The *airport influence area* for each of the airports in Riverside County subject to this *Compatibility Plan* is indicated on that airport's *compatibility map* contained in Chapter 3 herein.

(c) Where disclosure is required, the following statement shall be provided:

> NOTICE OF AIRPORT IN VICINITY: This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

(d) For the purposes of this *Compatibility Plan*, the above real estate disclosure provisions of state law shall continue in effect as Airport Land Use Commission policy with respect to new development even if the law is rescinded. Furthermore, each land use jurisdiction affected by this *Compatibility Plan* should adopt a policy designating the airport influence area as the area wherein disclosure of airport influences is required in conjunction with the transfer of residential real estate. Such local jurisdiction policies also should be applied to lease or rental agreements for existing residential property.

4.4.3. *Deed Notices:* In addition to the preceding real estate transfer disclosure requirements, a *deed notice* shall be recorded for each parcel associated with any discretionary land use action affecting property within an airport influence area. (Note that the *avigation easement* required by Policy 4.3.5 to be dedicated in conjunction with development in *Zones A, B1, B2,* and the *Height Review Overlay Zone* serves as a deed notice in those locations.) The notice shall include the language indicated above with respect to real estate transfer disclosures.

4.4.4. *Land Use Conversion:* The compatibility of uses in the airport influence areas shall be preserved to the maximum feasible extent. Particular emphasis should be placed on preservation of existing agricultural and open space uses.

(a) The conversion of land from existing or planned agricultural, open space, industrial, or commercial use to residential uses within *Compatibility Zones A, B1, B2,* and *C* is strongly discouraged.

(b) In *Compatibility Zone D*, general plan amendments (as well as other discretionary actions such as rezoning, subdivision approvals, use permits, etc.) that would convert land to residential use or increase the density of residential uses should be subject to careful consideration of overflight impacts.

Typical Avigation Easement

This indenture made this _____ day of _____, 20__, between _____ hereinafter referred to as Grantor, and the [Insert County or City name], a political subdivision in the State of California, hereinafter referred to as Grantee.

The Grantor, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does hereby grant to the Grantee, its successors and assigns, a perpetual and assignable easement over the following described parcel of land in which the Grantor holds a fee simple estate. [*For military airports:* Grantee shall hold said easement on behalf of the United States Government.] The property which is subject to this easement is depicted as _____ on "Exhibit A" attached and is more particularly described as follows:

[Insert legal description of real property]

The easement applies to the Airspace above an imaginary plane over the real property. The plane is described as follows:

The imaginary plane above the hereinbefore described real property, as such plane is defined by Part 77 of the Federal Aviation Regulations, and consists of a plane [describe approach, transition, or horizontal surface]; the elevation of said plane being based upon the _____ Airport official runway end elevation of _____ feet Above Mean Sea Level (AMSL), as determined by [Insert Name and Date of Survey or Airport Layout Plan that determines the elevation] the approximate dimensions of which said plane are described and shown on Exhibit A attached hereto and incorporated herein by reference.

The aforesaid easement and right-of-way includes, but is not limited to:

(1) For the use and benefit of the public, the easement and continuing right to fly, or cause or permit the flight by any and all persons, or any aircraft, of any and all kinds now or hereafter known, in, through, across, or about any portion of the Airspace hereinabove described; and

(2) The easement and right to cause or create, or permit or allow to be caused and created within all space above the existing surface of the hereinabove described real property and any and all Airspace laterally adjacent to said real property, such noise, vibration, currents and other effects of air illumination and fuel consumption as may be inherent in, or may arise or occur from or during the operation of aircraft of any and all kinds, now or hereafter known or used, for navigation of or flight in air; and

(3) A continuing right to clear and keep clear from the Airspace any portions of buildings, structures or improvements of any kinds, and of trees or other objects, including the right to remove or demolish those portions of such buildings, structures, improvements, trees, or other things which extend into or above said Airspace, and the right to cut to the ground level and remove, any trees which extend into or above the Airspace; and

(4) The right to mark and light, or cause or require to be marked and lighted, as obstructions to air navigation, any and all buildings, structures or other improvements, and trees or other objects, which extend into or above the Airspace; and

(5) The right of ingress to, passage within, and egress from the hereinabove described real property, for the purposes described in subparagraphs (3) and (4) above at reasonable times and after reasonable notice.

Table B–1

Typical Avigation Easement

Sample Deed Notice

A statement similar to the following should be included on the deed for any real property subject to the deed notice requirements set forth in the [Insert ALUC name] Airport Land Use Compatibility Plan. Such notice should be recorded by the county of [Insert County name]. Also, this deed notice should be included on any parcel map, tentative map, or final map for subdivision approval.

For military airports:

> The [Insert ALUC name] Airport Land Use Compatibility Plan and [Insert County / City Name] Ordinance (Ordinance No.) identify a [Insert Airport name] Airport Influence Area. Properties within this area are routinely subject to overflights by aircraft using this military airport and, as a result, residents may experience inconvenience, annoyance, or discomfort arising from the noise of such operations. State law (Public Utilities Code Section 21670 et seq.) supports the importance of military airports in protection of the public interest of the people of the United States and the state of California. Residents of property near such airports should therefore be prepared to accept the inconvenience, annoyance, or discomfort from normal aircraft operations. Residents also should be aware that the current volume of aircraft activity may increase in the future in response to federal military needs. Any subsequent deed conveying this parcel or subdivisions thereof shall contain a statement in substantially this form.

Table B–2

Sample Deed Notice

APPENDIX C

Federal Aviation Regulations Part 77

Objects Affecting Navigable Airspace

Subpart A

GENERAL

Amdt. 77-11, Sept. 25, 1989.

77.1 Scope.

This part:

(a) Establishes standards for determining obstructions in navigable airspace;

(b) Sets forth the requirements for notice to the Administrator of certain proposed construction or alteration;

(c) Provides for aeronautical studies of obstructions to air navigation, to determine their effect on the safe and efficient use of airspace;

(d) Provides for public hearings on the hazardous effect of proposed construction or alteration on air navigation; and

(e) Provides for establishing antenna farm areas.

77.2 Definition of Terms.

For the purpose of this part:

"Airport available for public use" means an airport that is open to the general public with or without a prior request to use the airport.

"A seaplane base" is considered to be an airport only if its sea lanes are outlined by visual markers.

"Nonprecision instrument runway" means a runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved, or planned, and for which no precision approach facilities are planned, or indicated on an FAA planning document or military service military airport planning document.

"Precision instrument runway" means a runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA approved airport layout plan; a military service approved military airport layout plan; any other FAA planning document, or military service military airport planning document.

"Utility runway" means a runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

"Visual runway" means a runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA approved airport layout plan, a military service approved military airport layout plan, or by any planning document submitted to the FAA by competent authority.

77.3 Standards.

(a) The standards established in this part for determining obstructions to air navigation are used by the Administrator in:

(1) Administering the Federal-aid Airport Program and the Surplus Airport Program;

(2) Transferring property of the United States under section 16 of the Federal Airport Act;

(3) Developing technical standards and guidance in the design and construction of airports; and

(4) Imposing requirements for public notice of the construction or alteration of any structure where notice will promote air safety.

(b) The standards used by the Administrator in the establishment of flight procedures and aircraft operational limitations are not set forth in this part but are contained in other publications of the Administrator.

77.5 Kinds of Objects Affected.

This part applies to:

(a) Any object of natural growth, terrain, or permanent or temporary construction or alteration, including equipment or materials used therein, and apparatus of a permanent or temporary character; and

(b) Alteration of any permanent or temporary existing structure by a change in its height (including appurtenances), or lateral dimensions, including equipment or materials used therein.

Subpart B
NOTICE OF CONSTRUCTION OR ALTERATION

77.11 Scope.

(a) This subpart requires each person proposing any kind of construction or alteration described in §77.13(a) to give adequate notice to the Administrator. It specifies the locations and dimensions of the construction or alteration for which notice is required and prescribes the form and manner of the notice. It also requires supplemental notices 48 hours before the start and upon the completion of certain construction or alteration that was the subject of a notice under §77.13(a).

(b) Notices received under this subpart provide a basis for:

(1) Evaluating the effect of the construction or alteration on operational procedures and proposed operational procedures;

(2) Determinations of the possible hazardous effect of the proposed construction or alteration on air navigation;

(3) Recommendations for identifying the construction or alteration in accordance with the current Federal Aviation Administration Advisory Circular AC 70/7460-1 entitled "Obstruction Marking and Lighting," which is available without charge from the Department of Transportation, Distribution Unit, TAD 484.3, Washington, D.C. 20590.

(4) Determining other appropriate measures to be applied for continued safety of air navigation; and

(5) Charting and other notification to airmen of the construction or alteration.

77.13 Construction or Alteration Requiring Notice.

(a) Except as provided in §77.15, each sponsor who proposes any of the following construction or alteration shall notify the Administrator in the form and manner prescribed in §77.17:

(1) Any construction or alteration of more than 200 feet in height above the ground level at its site.

(2) Any construction or alteration of greater height than an imaginary surface extending outward and upward at one of the following slopes:

(i) 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport specified in paragraph (a)(5) of this section with at least one runway more than 3,200 feet in actual length, excluding heliports.

(ii) 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport specified in paragraph (a)(5) of this section with its longest runway no more than 3,200 feet in actual length, excluding heliports.

(iii) 5 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport specified in paragraph (a)(5) of this section.

(3) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 15 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a) (1) or (2) of this section.

(4) When requested by the FAA, any construction or alteration that would be in an instrument approach area (defined in the FAA standards governing instrument approach procedures) and available information indicates it might exceed a standard of Subpart C of this part.

(5) Any construction or alteration on any of the following airports (including heliports):

(i) An airport that is available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement.

(ii) An airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and, except for military airports, it is clearly indicated that airport will be available for public use.

(iii) An airport that is operated by an armed force of the United States.

(b) Each sponsor who proposes construction or alteration that is the subject of a notice under paragraph (a) of this section and is advised by an FAA regional office that a supplemental notice is required shall submit that notice on a prescribed form to be received by the FAA regional office at least 48 hours before the start of the construction or alteration.

(c) Each sponsor who undertakes construction or alteration that is the subject of a notice under paragraph (a) of this section shall, within 5 days after that construction or alteration reaches its greatest height, submit a supplemental notice on a prescribed form to the FAA regional office having jurisdiction over the region involved, if -

(1) The construction or alteration is more than 200 feet above the surface level of its site; or

(2) An FAA regional office advises him that submission of the form is required.

77.15 Construction or Alteration Not Requiring Notice.

No person is required to notify the Administrator for any of the following construction or alteration:

(a) Any object that would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town, or settlement where it is evident beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation.

(b) Any antenna structure of 20 feet or less in height except one that would increase the height of another antenna structure.

(c) Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device, of a type approved by the Administrator, or an appropriate military service on military airports, the location and height of which is fixed by its functional purpose.

(d) Any construction or alteration for which notice is required by any other FAA regulation.

77.17 Form and Time of Notice.

(a) Each person who is required to notify the Administrator under §77.13 (a) shall send one executed form set (four copies) of FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area within which the construction or alteration will be located. Copies of FAA Form 7460-1 may be obtained from the headquarters of the Federal Aviation Administration and the regional offices.

(b) The notice required under §77.13(a) (1) through (4) must be submitted at least 30 days before the earlier of the following dates:

(1) The date the proposed construction or alteration is to begin.

(2) The date an application for a construction permit is to be filed.

However, a notice relating to proposed construction or alteration that is subject to the licensing requirements of the Federal Communications Act may be sent to FAA at the same time the application for construction is filed with the Federal Communications Commission, or at any time before that filing.

(c) A proposed structure or an alteration to an existing structure that exceeds 2,000 feet in height above the ground will be presumed to be a hazard to air navigation and to result in an inefficient utilization of airspace and the applicant has the burden of overcoming that presumption. Each notice submitted under the pertinent provisions of this Part 77 proposing a structure in excess of 2,000 feet above ground, or an alteration that will make an existing structure exceed that height, must contain a detailed showing, directed to meeting this burden. Only in exceptional cases, where the FAA concludes that a clear and compelling showing has been made that it would not result in an inefficient utilization of the airspace and would not result in a hazard to air navigation, will a determination of no hazard be issued.

(d) In the case of an emergency involving essential public services, public health, or public safety that requires immediate construction or alteration, the 30 day requirement in paragraph (b) of this section does not apply and the notice may be sent by telephone, telegraph, or other expeditious means, with an executed FAA Form 7460-1 submitted within 5 days thereafter. Outside normal business hours, emergency notices by telephone or telegraph may be submitted to the nearest FAA Flight Service Station.

(e) Each person who is required to notify the Administrator by paragraph (b) or (c) of §77.13, or both, shall send an executed copy of FAA Form 117-1, Notice of Progress of Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area involved.

77.19 Acknowledgment of Notice.

(a) The FAA acknowledges in writing the receipt of each notice submitted under §77.13(a).

(b) If the construction or alteration proposed in a notice is one for which lighting or marking standards are prescribed in the FAA Advisory Circular AC 70/7460-1, entitled "Obstruction Marking and Lighting," the acknowledgment contains a statement to that effect and information on how the structure should be marked and lighted in accordance with the manual.

(c) The acknowledgment states that an aeronautical study of the proposed construction or alteration has resulted in a determination that the construction or alteration:

(1) Would not exceed any standard of Subpart C and would not be a hazard to air navigation;

(2) Would exceed a standard of Subpart C but would not be a hazard to air navigation; or

(3) Would exceed a standard of Subpart C and further aeronautical study is necessary to determine whether it would be a hazard to air navigation, that the sponsor may request within 30 days that further study, and that, pending completion of any further study, it is presumed the construction or alteration would be a hazard to air navigation.

Subpart C
OBSTRUCTION STANDARDS

77.21 Scope.

(a) This subpart establishes standards for determining obstructions to air navigation. It applies to existing and proposed manmade objects, objects of natural growth, and terrain. The standards apply to the use of navigable airspace by aircraft and to existing air navigation facilities, such as an air navigation aid, airport, Federal airway, instrument approach or departure procedure, or approved off airway route. Additionally, they apply to a planned facility or use, or a change in an existing facility or use, if a proposal therefore is on file with the Federal Aviation Administration or an appropriate military service on the date the notice required by §77.13(a) is filed.

(b) At those airports having defined runways with specially prepared hard surfaces, the primary surface for each such runway extends 200 feet beyond each end of the runway. At those airports having defined strips or pathways that are used regularly for the taking off and landing of aircraft and have been designated by appropriate authority as runways, but do not have specially prepared hard surfaces, each end of the primary surface for each such runway shall coincide with the corresponding end of the runway. At those airports, excluding seaplane bases, having a defined landing and takeoff area with no defined pathways for the landing and taking off of aircraft, a determination shall be made as to which portions of the landing and takeoff area are regularly used as landing and takeoff pathways. Those pathways so determined shall be considered runways and an appropriate primary surface as defined in §77.25(c) will be considered as being longitudinally centered on each runway so determined, and each end of that primary surface shall coincide with the corresponding end of that runway.

(c) The standards in this subpart apply to the effect of construction or alteration proposals upon an airport if, at the time of filing of the notice required by §77.13(a), that airport is -

(1) Available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement; or

(2) A planned or proposed airport or an airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and, except for military airports, it is clearly indicated that that airport will be available for public use; or,

(3) An airport that is operated by an armed force of the United States.

77.23 Standards for Determining Obstructions.

(a) An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

(1) A height of 500 feet above ground level at the site of the object.

(2) A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 500 feet.

(3) A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance.

(4) A height within an en route obstacle clearance area, including turn and termination areas, of a Federal airway or approved off airway route, that would increase the minimum obstacle clearance altitude.

(5) The surface of a takeoff and landing area of an airport or any imaginary surface established under §77.25, §77.28, or §77.29. However, no part of the takeoff or landing area itself will be considered an obstruction.

(b) Except for traverse ways on or near an airport with an operative ground traffic control service, furnished by an air traffic control tower or by the airport management and coordinated with the air traffic control service, the standards of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:

(1) Seventeen feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance.

(2) Fifteen feet for any other public roadway.

(3) Ten feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.

(4) Twenty-three feet for a railroad, and,

(5) For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

77.25 Civil Airport Imaginary Surfaces.

The following civil airport imaginary surfaces are established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.

(a) Horizontal surface. A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

(1) 5,000 feet for all runways designated as utility or visual;

(2) 10,000 feet for all other runways. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000-foot arc is encompassed by tangents connecting two adjacent

10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

(b) Conical surface. A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

(c) Primary surface. A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of a primary surface is:

(1) 250 feet for utility runways having only visual approaches.

(2) 500 feet for utility runways having nonprecision instrument approaches.

(3) For other than utility runways the width is:

(i) 500 feet for visual runways having only visual approaches.

(ii) 500 feet for nonprecision instrument runways having visibility minimums greater than three-fourths statute mile.

(iii) 1,000 feet for a nonprecision instrument runway having a nonprecision instrument approach with visibility minimums as low as three-fourths of a statute mile, and for precision instrument runways.

The width of the primary surface of a runway will be that width prescribed in this section for the most precise approach existing or planned for either end of that runway.

(d) Approach surface. A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

(1) The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:

(i) 1,250 feet for that end of a utility runway with only visual approaches;

(ii) 1,500 feet for that end of a runway other than a utility runway with only visual approaches;

(iii) 2,000 feet for that end of a utility runway with a nonprecision instrument approach;

(iv) 3,500 feet for that end of a nonprecision instrument runway other than utility, having visibility minimums greater than three-fourths of a statute mile;

(v) 4,000 feet for that end of a nonprecision instrument runway, other than utility, having a nonprecision instrument approach with visibility minimums as low as three-fourths statute mile; and

(vi) 16,000 feet for precision instrument runways.

(2) The approach surface extends for a horizontal distance of:

(i) 5,000 feet at a slope of 20 to 1 for all utility and visual runways;

(ii) 10,000 feet at a slope of 34 to 1 for all nonprecision instrument runways other than utility; and,

(iii) 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1 for all precision instrument runways.

(3) The outer width of an approach surface to an end of a runway will be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.

(e) Transitional surface. These surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

77.27 [Reserved]

77.28 Military Airport Imaginary Surfaces.

(a) Related to airport reference points. These surfaces apply to all military airports. For the purposes of this section a military airport is any airport operated by an armed force of the United States.

(1) Inner horizontal surface. A plane is oval in shape at a height of 150 feet above the established airfield elevation. The plane is constructed by scribing an arc with a radius of 7,500 feet about the centerline at the end of each runway and interconnecting these arcs with tangents.

(2) Conical surface. A surface extending from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation.

(3) Outer horizontal surface. A plane, located 500 feet above the established airfield elevation, extending outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.

(b) Related to runways. These surfaces apply to all military airports.

(1) Primary surface. A surface located on the ground or water longitudinally centered on each runway with the same length as the runway. The width of the primary surface for runways is 2,000 feet. However, at established bases where substantial construction has taken place in accordance with a previous lateral clearance criteria, the 2,000 foot width may be reduced to the former criteria.

(2) Clear zone surface. A surface located on the ground or water at each end of the primary surface, with a length of 1,000 feet and the same width as the primary surface.

(3) Approach clearance surface. An inclined plane, symmetrical about the runway centerline extended, beginning 200 feet beyond each end of the primary surface at the centerline elevation

of the runway end and extending for 50,000 feet. The slope of the approach clearance surface is 50 to 1 along the runway centerline extended until it reaches an elevation of 500 feet above the established airport elevation. It then continues horizontally at this elevation to a point 50,000 feet from the point of beginning. The width of this surface at the runway end is the same as the primary surface, it flares uniformly, and the width at 50,000 is 16,000 feet.

(4) Transitional surfaces. These surfaces connect the primary surfaces, the first 200 feet of the clear zone surfaces, and the approach clearance surfaces to the inner horizontal surface, conical surface, outer horizontal surface or other transitional surfaces. The slope of the transitional surface is 7 to 1 outward and upward at right angles to the runway centerline.

77.29 Airport Imaginary Surfaces for Heliports.

(a) Heliport primary surface. The area of the primary surface coincides in size and shape with the designated takeoff and landing area of a heliport. This surface is a horizontal plane at the elevation of the established heliport elevation.(b)Heliport approach surface. The approach surface begins at each end of the heliport primary surface with the same width as the primary surface, and extends outward and upward for a horizontal distance of 4,000 feet where its width is 500 feet. The slope of the approach surface is 8 to 1 for civil heliports and 10 to 1 for military heliports.

(c) Heliport transitional surfaces These surfaces extend outward and upward from the lateral boundaries of the heliport primary surface and from the approach surfaces at a slope of 2 to 1 for a distance of 250 feet measured horizontally from the centerline of the primary and approach surfaces.

Subpart D
AERONAUTICAL STUDIES OF EFFECT OF PROPOSED CONSTRUCTION ON NAVIGABLE AIRSPACE

77.31 Scope.

(a) This subpart applies to the conduct of aeronautical studies of the effect of proposed construction or alteration on the use of air navigation facilities or navigable airspace by aircraft. In the aeronautical studies, present and future IFR and VFR aeronautical operations and procedures are reviewed and any possible changes in those operations and procedures and in the construction proposal that would eliminate or alleviate the conflicting demands are ascertained.

(b) The conclusion of a study made under this subpart is normally a determination as to whether the specific proposal studied would be a hazard to air navigation.

77.33 Initiation of Studies.

(a) An aeronautical study is conducted by the FAA:

(1) Upon the request of the sponsor of any construction or alteration for which a notice is submitted under Subpart B of this part, unless that construction or alteration would be located within an antenna farm area established under Subpart F of this part; or

(2) Whenever the FAA determines it appropriate.

77.35 Aeronautical Studies.

(a) The Regional Manager, Air Traffic Division of the region in which the proposed construction or alteration would be located, or his designee, conducts the aeronautical study of the effect of the proposal upon the operation of air navigation facilities and the safe and efficient utilization of the navigable airspace. This study may include the physical and electromagnetic radiation effect the proposal may have on the operation of an air navigation facility.

(b) To the extent considered necessary, the Regional Manager, Air Traffic Division or his designee:

(1) Solicits comments from all interested persons;

(2) Explores objections to the proposal and attempts to develop recommendations for adjustment of aviation requirements that would accommodate the proposed construction or alteration;

(3) Examines possible revisions of the proposal that would eliminate the exceeding of the standards in Subpart C of this part; and

(4) Convenes a meeting with all interested persons for the purpose of gathering all facts relevant to the effect of the proposed construction or alteration on the safe and efficient utilization of the navigable airspace.

(c) The Regional Manager, Air Traffic Division or his designee issues a determination as to whether the proposed construction or alteration would be a hazard to air navigation and sends copies to all known interested persons. This determination is final unless a petition for review is granted under §77.37.

(d) If the sponsor revises his proposal to eliminate exceeding of the standards of Subpart C of this part, or withdraws it, the Regional Manager, Air Traffic Division, or his designee, terminates the study and notifies all known interested persons.

77.37 Discretionary Review.

(a) The sponsor of any proposed construction or alteration or any person who stated a substantial aeronautical objection to it in an aeronautical study, or any person who has a substantial aeronautical objection to it but was not given an opportunity to state it, may petition the Administrator, within 30 days after issuance of the determination under §77.19 or §77.35 or revision or extension of the determination under §77.39 (c), for a review of the determination, revision, or extension. This paragraph does not apply to any acknowledgment issued under §77.19 (c) (1).

(b) The petition must be in triplicate and contain a full statement of the basis upon which it is made.

(c) The Administrator examines each petition and decides whether a review will be made and, if so, whether it will be:

(1) A review on the basis of written materials, including study of a report by the Regional Manager, Air Traffic Division of the aeronautical study, briefs, and related submissions by any inter-

ested party, and other relevant facts, with the Administrator affirming, revising, or reversing the determination issued under §77.19, §77.35 or §77.39 (c); or

(2) A review on the basis of a public hearing, conducted in accordance with the procedures prescribed in Subpart E of this part.

77.39 Effective Period of Determination of No Hazard.

(a) Unless it is otherwise extended, revised, or terminated, each final determination of no hazard made under this subpart or Subpart B or E of this part expires 18 months after its effective date, regardless of whether the proposed construction or alteration has been started, or on the date the proposed construction or alteration is abandoned, whichever is earlier.

(b) In any case, including a determination to which paragraph (d) of this section applies, where the proposed construction or alteration has not been started during the applicable period by actual structural work, such as the laying of a foundation, but not including excavation, any interested person may, at least 15 days before the date the final determination expires, petition the FAA official who issued the determination to:

(1) Revise the determination based on new facts that change the basis on which it was made; or

(2) Extend its effective period.

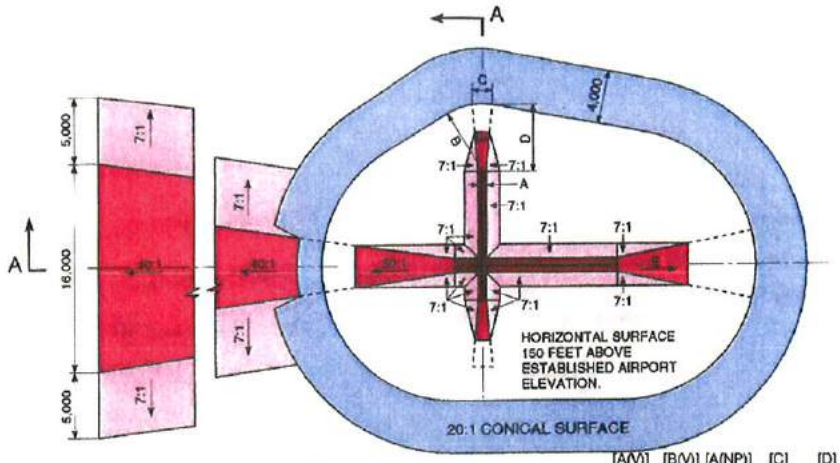
(c) The FAA official who issued the determination reviews each petition presented under paragraph (b) of this section, and revises, extends, or affirms the determination as indicated by his findings.

(d) In any case in which a final determination made under this subpart or Subpart B or E of this part relates to proposed construction or alteration that may not be started unless the Federal Communications Commission issues an appropriate construction permit, the effective period of each final determination includes -

(1) The time required to apply to the Commission for a construction permit, but not more than 6 months after the effective date of the determination; and

(2) The time necessary for the Commission to process the application except in a case where the Administrator determines a shorter effective period is required by the circumstances.

(e) If the Commission issues a construction permit, the final determination is effective until the date prescribed for completion of the construction. If the Commission refuses to issue a construction permit, the final determination expires on the date of its refusal.



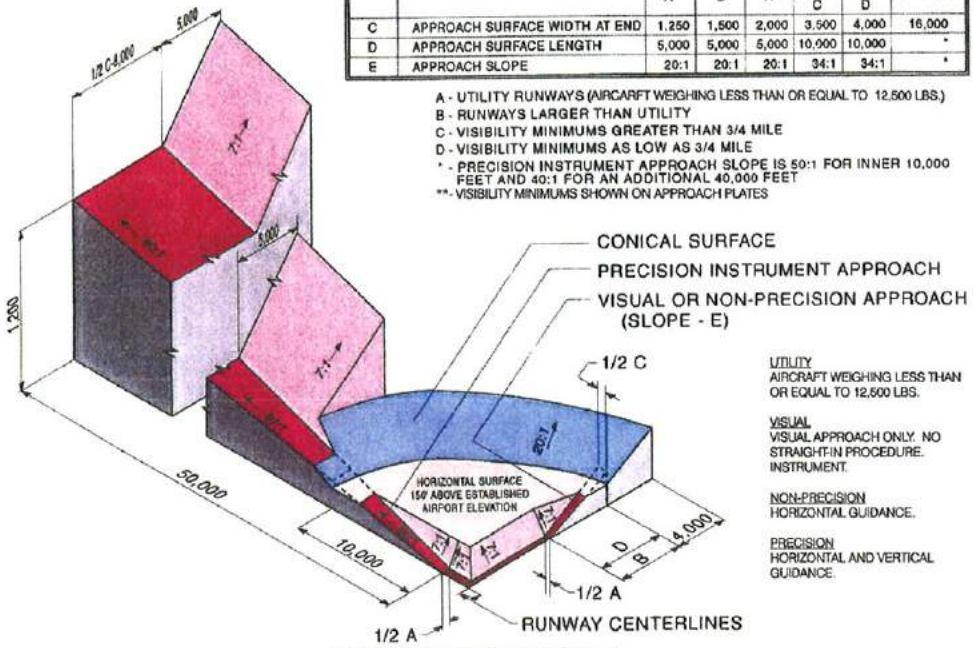
[A(V)] [B(V)] [A(NP)] [C] [D] [PIR]

FAA CATEGORIES

VISUAL	[A(V)]
VISUAL	[B(V)]
NON-PRECISION	[A(NP)]
NON-PRECISION	[C]
NON-PRECISION	[D]
PRECISION	[PIR]

DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B		
					C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B		
					C	D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A - UTILITY RUNWAYS (AIRCARFT WEIGHING LESS THAN OR EQUAL TO 12,500 LBS.)
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
* - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET
** - VISIBILITY MINIMUMS SHOWN ON APPROACH PLATES



ISOMETRIC VIEW OF SECTION A-A

Exhibit C–1

FAR Part 77 Imaginary Surfaces

U.S. Department of Transportation
Federal Aviation Administration

Failure To Provide All Requested Information May Delay Processing of Your Notice

Notice of Proposed Construction or Alteration

FOR FAA USE ONLY
Aeronautical Study Number
- - -

1. Sponsor *(person, company, etc. proposing this action)* :
Attn. of: _____
Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Telephone: _____ Fax: _____

2. Sponsor's Representative *(if other than #1)* :
Attn. of: _____
Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Telephone: _____ Fax: _____

3. Notice of: ☐ New Construction ☐ Alteration ☐ Existing

4. Duration: ☐ Permanent ☐ Temporary (months, days)

5. Work Schedule: Beginning _____ End _____

6. Type: ☐ Antenna Tower ☐ Crane ☐ Building ☐ Power Line
☐ Landfill ☐ Water Tank ☐ Other _____

7. Marking/Painting and/or Lighting Preferred:
☐ Red Lights and Paint ☐ Dual - Red and Medium Intensity White
☐ White - Medium Intensity ☐ Dual - Red and High Intensity White
☐ White - High Intensity ☐ Other _____

8. FCC Antenna Structure Registration Number *(if applicable)*:

9. Latitude: ____° ____' ____.____"

10. Longitude: ____° ____' ____.____"

11. Datum: ☐ NAD 83 ☐ NAD 27 ☐ Other_____

12. Nearest: City: _____ State:_____

13. Nearest Public-use (not private-use) or Military Airport or Heliport:

14. Distance from #13. to Structure: _____

15. Direction from #13. to Structure:_____

16. Site Elevation *(AMSL)*: _____ft.

17. Total Structure Height *(AGL)*: _____ft.

18. Overall height (#16. + #17.) *(AMSL)*: _____ft.

19. Previous FAA Aeronautical Study Number (if applicable):

20. Description of Location: (Attach a USGS 7.5 minute Quadrangle Map with the precise site marked and any certified survey.)

21. Complete Description of Proposal:

Frequency/Power (kW)	

Notice is required by 14 Code of Federal Regulations, part 77 pursuant to 49 U.S.C., Section 44718. Persons who knowingly and willingly violate the notice requirements of part 77 are subject to a civil penalty of $1,000 per day until the notice is received, pursuant to 49 U.S.C., section 46301 (a).

I hereby certify that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to mark and/or light the structure in accordance with established marking and lighting standards as necessary.

Date	Typed or Printed name and Title of Person Filing Notice	Signature

FAA Form 7460-1 (2-99) Supersedes Previous Edition NSN: 0052-00-012-0009

Exhibit C–2

FAR Part 77 Notification

FAA Form 7460

APPENDIX D

Methods for Determining Concentrations of People

INTRODUCTION

One criterion used in the *March Air Reserve Base/Inland Port Airport Joint Land Use Study (JLUS)* is the maximum number of people per acre that can be present in a given area at any one time. If a proposed use exceeds the maximum intensity, it is considered inconsistent with compatibility planning policies. It is recognized that people per acre is not a common measure in other facets of land use planning. This appendix, therefore, both provides guidance on how the people-per-acre determination can be made and defines the relationships between this measure and others found in land use planning.

In presenting this information, it is not the expectation that individual local land use jurisdictions must follow any of the exact methodologies or formulas outlined. Different jurisdictions will have their own particular approaches. As long as the results accomplish the basic objective of limiting usage intensities to levels close to those established in the *JLUS*, then the requirement of being consistent with the criteria in the *JLUS* will generally be met.

COUNTING PEOPLE

The most difficult part about calculating a use's intensity is estimating the number of people expected to use a particular facility under normal circumstances. All people—not just employees, but also customers and visitors—who may be on the property at a single point in time, whether indoors or outside, must be counted. The only exceptions are for rare special events. These are defined as events, such as an air show at an airport, for which a facility is not designed and normally not used and for which extra safety precautions can be taken as appropriate.

Ideally, the actual number of people for which the facility is designed would be known. The number of seats in a proposed movie theater can be determined with high accuracy once the theater size is decided. Other buildings, though, may be built as a shell and the eventual number of occupants not known until a specific tenant is found. Furthermore, even then, the number of occupants can change in the future as tenants change. Even greater uncertainty is involved with relatively open uses not having fixed seating—retail stores or sports parks, for example.

Absent clearly measurable occupancy numbers, other sources must be relied upon to estimate the number of people in a proposed development.

Survey of Similar Uses

A survey of similar uses already in existence is one option. Gathering data in this manner can be time-consuming and costly, however. Also, unless the survey sample is sufficiently large and conducted at various times, inconsistent numbers may result. Except for uncommon uses for which occupancy

levels cannot be estimated through other means, surveys are most appropriate as supplemental information.

Maximum Occupancy

A second option for estimating the number of people who will be on a site is to rely upon data indicating the maximum occupancy of a building measured in terms of the number of square feet per occupant. The number of people on the site, assuming limited outdoor or peripheral uses, can be calculated by dividing the total floor area of a proposed use by the square footage per occupant. The challenge of this methodology lies in establishing realistic figures for square feet per occupant. The number varies greatly from one use to another and, for some uses, has changed over time as well.

A commonly used source of maximum occupancy data is the standards set in the Uniform or California Building Code (UBC or CBC). The chart reproduced as Table D1 indicates the required number of square feet per occupant for various types of uses. The CBC, though, is intended primarily for purposes of structural design and fire safety and represents a legal maximum occupancy in most jurisdictions. A CBC-based methodology consequently results in occupancy numbers that are higher than normal maximum usage in most instances. The numbers also are based upon usable floor area and do not take into account corridors, stairs, building equipment rooms, and other functions that are part of a building's gross square footage. Surveys of actual occupancy levels conducted by various agencies have indicated that many retail and office uses are generally occupied at no more than 50% of their maximum occupancy levels, even at the busiest times of day. Therefore, the number of people calculated for office and retail uses can usually be divided in half to reflect the actual occupancy levels before making the final people-per-acre determination. Even with this adjustment, the CBC-based methodology typically produces intensities at the high end of the likely range.

Another source of data on square footage per occupant comes from the facility management industry. The data is used to help businesses determine how much building space they need to build or lease and thus tends to be more generous than the UBC/CBC standards. The numbers vary not only by the type of facility, as with the UBC/CBC, but also by type of industry. The following are selected examples of square footage per employee gathered from a variety of sources.

- Call centers 150 – 175
- Typical offices 180 – 250
- Law, finance, real estate offices 300 – 325
- Research & development, light industry 300 – 500
- Health services 500

The numbers above do not take into account the customers who may also be present for certain uses. For retail business, dining establishments, theaters, and other uses where customers outnumber employees, either direct measures of occupancy—the number of seats, for example—or other methodologies must be used to estimate the potential number of people on the site.

Parking Space Requirements

For many jurisdictions and a wide variety of uses, the number of people present on a site can be calculated based upon the number of automobile parking spaces that are required. Certain limitations and assumptions must be considered when applying this methodology, however. An obvious limitation is

that parking space requirements can be correlated with occupancy numbers only where nearly all users arrive by private vehicle rather than by public transportation, walking, or other method. Secondly, the jurisdiction needs to have a well-defined parking ordinance that lists parking space requirements for a wide range of uses. For most uses, these requirements are typically stated in terms of the number of parking spaces that must be provided per 1,000 square feet of gross building size or a similar ratio. Lastly, assumptions must be made with regard to the average number of people who will arrive in each car.

Both of the critical ratios associated with this methodology—parking spaces to building size and occupants to vehicles—vary from one jurisdiction to another even for the same types of uses. In deriving a methodology for determining usage intensities, each jurisdiction thus will need to define a set of numbers that best fit local conditions. Research of local ordinances and other sources, though, indicates that the following ratios can be used as a starting point.

- **Parking Space Ratios**—These examples of required parking space requirements are typical of those found in ordinances adopted by urban and suburban jurisdictions. The numbers are ratios of spaces required per 1,000 square feet of gross floor area. Gross floor area is normally measured to the outside surfaces of a building and includes all floor levels as well as stairways, elevators, storage, and mechanical rooms.
  - Small Restaurants 10.0
  - Medical Offices 4.0 – 5.7
  - Shopping Centers 4.0 – 5.0
  - Health Clubs 3.3 – 5.0
  - Business Professional Offices 3.3 – 4.0
  - Retail Stores 3.0 – 3.5
  - Research & Development 2.5 – 4.0
  - Manufacturing 2.0 – 2.5
  - Furniture, Building Supply Stores 0.7 – 1.0
- **Vehicle Occupancy**—Data indicating the average number of people occupying each vehicle parking at a particular business or other land use can be found in various transportation surveys. The numbers vary both from one community or region to another and over time, thus current local data is best if available. The following data represent typical vehicle occupancy for different trip purposes.
  - Work 1.05 – 1.2
  - Education 1.2 – 2.0
  - Medical 1.5 – 1.7
  - Shopping 1.5 – 1.8
  - Dining, Social, Recreational 1.7 – 2.3

CALCULATING USAGE INTENSITIES

Once the number of people expected in a particular development—both over the entire site and within individual buildings—has been estimated, the usage intensities can be calculated. The criteria in Chapter 3 of this *JLUS* are measured in terms of the average intensity over the entire project site.

- **Average Intensity**—The average intensity is calculated by dividing the total number of people on the site by the site size. A 10-acre site expected to be occupied by as many as 1,000 people at a time, thus would have an average intensity of 100 people per acre. The site size equals the total size of the parcel or parcels to be developed.

- **Single-Acre Intensity**—This number indicates the maximum number of people who will be concentrated in any one acre of a development. From a risk perspective, the single-acre intensity gives an indication of the number of people who would be exposed to an individual aircraft accident. The one-acre area is to be measured in a shape that is close to square; that is about 200 feet by 200 feet. For buildings having a footprint—generally the gross area of the ground floor—of an acre or less, the single-acre intensity equals the number of people in the building.

Having calculated the usage intensities of a proposed development, a comparison can be made with the criteria set forth in the *JLUS* to determine whether the proposal is consistent or inconsistent with the policies.

Table D2 shows sample calculations for a selection of different uses. For the purposes of the analyses presented, a use is considered consistent with the *JLUS* criteria if the usage intensity calculated by either of the two methods (parking or maximum occupancy) is less than the maximum allowable. However, both the sitewide average and single-acre intensity criteria must be met. Note as well, that different assumptions regarding parking space ratios, people per car, and maximum occupancy will result in different outcomes. Each jurisdiction will need to establish its own set of parameters to apply to the consistency determination process.

USAGE INTENSITY RELATIONSHIP TO FLOOR AREA RATIO

As noted earlier, usage intensity or people per acre is not a common metric in land use planning. Some jurisdictions consequently may wish to explore an alternative methodology that instead relies upon floor area ratios (FAR). FAR—the gross square footage of the buildings on a site divided by the site size—is a more common measure in land use planning. Some counties and cities adopt explicit FAR limits in their zoning ordinance or other policies. Those that do not, often set limits on the number of floors a building can have, thus effectively setting a floor area ratio as well.

The major shortcoming with FAR is that it does not directly correlate with risks to people because different types of buildings with the same FAR can have vastly different numbers of people inside. For FAR to be applied as a factor in setting development limitations, assumptions must be made as to how much space each person (employees and others) in the building will occupy. Additionally, the component values—the sizes of the buildings and the site—still must be known.

Nevertheless, if maximum occupancy numbers are assumed for a variety of uses, the maximum FAR that would be consistent with the usage intensity criteria in the *JLUS* can be calculated. The following is an example of this process.

- For Zone B1:
  - For an office use, assume 225 square feet per person
  - At 225 square feet per person, a building with 1.0 acre (43,560 square feet) of floor area could hold 194 people
  - The maximum allowable average sitewide usage intensity is 50 people per acre in the APZ II area
  - The maximum FAR for an office use in this zone therefore would be 50/194 or 0.26
- For other urban/suburban/military zones, the equivalent numbers for office uses are:
  - Zone B2, C1, and C2: 100 people per acre; FAR = 0.52
- For rural areas, allowable FARs for office uses would be limited as follows:
  - Zone B1: 40 people per acre; FAR =0.21
  - Zone B2: 100 people per acre; FAR = 0.52
  - Zone C: 80 people per acre; FAR = 0.41
  - Zone D: 150 people per acre; FAR = 0.77
- Light industrial or research and development uses, would have more square feet of floor area per person. Using 350 square feet per person yields the following results for urban/suburban/military zones:
  - Zone B1: 80 people per acre; FAR =0.64
  - Zone B2: 160 people per acre; FAR = 1.29
  - Zone C: 120 people per acre; FAR = 0.96

	Use	*Minimum Square Feet per Occupant*
1.	Aircraft Hangars (no repair)	500
2.	Auction Rooms	7
3.	Assembly Areas, Concentrated Use (without fixed seats)	7
	Auditoriums	
	Churches and Chapels	
	Dance Floors	
	Lobby Accessory to Assembly Occupancy	
	Lodge Rooms	
	Reviewing Stands	
	Stadiums	
	Waiting Areas	3
4.	Assembly Areas, Less Concentrated Use	15
	Conference Rooms	
	Dining Rooms	
	Drinking Establishments	
	Exhibit Rooms	
	Gymnasiums	
	Lounges	
	Stages	
	Gaming	11
5.	Bowling Alley (assume no occupant load for bowling lanes)	4
6.	Children's Homes and Homes for the Aged	80
7.	Classrooms	20
8.	Congregate Residences	200
9.	Courtrooms	40
10.	Dormitories	50
11.	Dwellings	300
12.	Exercising Rooms	50
13.	Garage, Parking	200
14.	Health-Care Facilities	80
	Sleeping Rooms	120
	Treatment Rooms	240
15.	Hotels and Apartments	200
16.	Kitchen – Commercial	200
17.	Library Reading Room	50
	Stack Areas	100
18.	Locker Rooms	50
19.	Malls	Varies
20.	Manufacturing Areas	200
21.	Mechanical Equipment Room	300
22.	Nurseries for Children (Daycare)	35
23.	Offices	100
24.	School Shops and Vocational Rooms	50
25.	Skating Rinks	50 on the skating area; 15 on the deck
26.	Storage and Stock Rooms	300
27.	Stores – Retail Sales Rooms	
	Basements and Ground Floors	30
	Upper Floors	60
28.	Swimming Pools	50 for the pool area; 15 on the deck
29.	Warehouses	500
30.	All Others	100

Source: California Building Code (2001), Table 10-A

Table D1

Occupant Load Factors

California Building Code

Project Data									
Type of Use	Office	Office	Office	Office	R&D	Light Industrial	"Big Box"	Furniture Store	Restaurant
Parcel Size (ac.)	2.50	4.50	4.50	5.00	5.00	3.00	5.00	4.00	1.65
Gross Building Floor Area (s.f.)	40,000	80,000	100,000	250,000	120,000	80,000	80,000	40,000	6,000
Number of Bldgs	1	2	1	3	4	1	1	1	1
Floors	2	3	2	5	2	1	1	1	1
Footprint of Largest Bldg (s.f.)	20,000	15,000	50,000	30,000	20,000	80,000	80,000	40,000	6,000
Standards and Assumptions									
Parking Space Ratio (spaces/1,000 s.f.)	3.50	3.50	3.50	3.50	2.50	2.00	4.50	1.00	10.00
People/Car	1.10	1.10	1.10	1.10	1.10	1.10	1.80	1.50	2.20
Typical Max. Occupancy (s.f./person)	225	225	225	225	400	500	100	400	40
Calculated Project Data									
Floor Area Ratio	0.37	0.41	0.51	1.15	0.55	0.61	0.37	0.23	0.08
Parking Spaces Required	140	280	350	875	300	160	360	40	60
Total Occupants [Parking]	154	308	385	963	330	176	648	60	132
Total Occupants [Max. Occupancy]	178	356	444	1,111	300	160	800	100	150
Usage Intensity Calculations									
People/Acre, Whole Site [Parking]	62	68	86	193	66	59	130	15	80
People/Acre, Whole Site [Max. Occ.]	71	79	99	222	60	53	160	25	91
People/Acre, 1-Acre [Parking]	154	154	335	321	83	96	353	60	132
People/Acre, 1-Acre [Max. Occ.]	178	178	387	370	75	87	436	100	150

Table D2

Sample People-Per-Acre Calculations

APPENDIX E

Glossary of Terms and Acronyms

Accident Potential Zone I (APZ I): At military airports, the area beyond the clear zone that possesses a significant potential for accidents.

Accident Potential Zone II (APZ II): At military airports, the area beyond APZ I having a measurable potential for accidents.

Air Carriers: The commercial system of air transportation, consisting of the certificated air carriers, air taxis (including commuters), supplemental air carriers, commercial operators of large aircraft, and air travel clubs.

Air Installation Compatible Use Zone (AICUZ): A land use compatible plan prepared by the U.S. Department of Defense for military airfields. AICUZ plans serve as recommendations to local governments bodies having jurisdiction over land uses surrounding these facilities.

Aircraft Accident: An occurrence incident to flight in which, as a result of the operation of an aircraft, a person (occupant or nonoccupant) receives fatal or serious injury or an aircraft receives substantial damage.

- Except as provided below, *substantial damage* means damage or structural failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component.
- Engine failure, damage limited to an engine, bent fairings or cowling, dented skin, small puncture holes in the skin or fabric, ground damage to rotor or propeller blades, damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered substantial damage.

Aircraft Incident: A mishap associated with the operation of an aircraft in which neither fatal nor serious injuries nor substantial damage to the aircraft occur.

Aircraft Mishap: The collective term for an aircraft accident or an incident.

Aircraft Operation: The airborne movement of aircraft at an airport or about an en route fix or at other point where counts can be made. There are two types of operations: local and itinerant. An operation is counted for each landing and each departure, such that a touch-and-go flight is counted as two operations. (FAA Stats)

Airport: An area of land or water that is used or intended to be used for the landing and taking off of aircraft, and includes its buildings and facilities if any. (FAR 1)

Airport Elevation: The highest point of an airport's useable runways, measured in feet above mean sea level. (AIM)

Airport Land Use Commission (ALUC): A commission authorized under the provisions of California Public Utilities Code, Section 21670 et seq. and established (in any county within which a

public-use airport is located) for the purpose of promoting compatibility between airports and the land uses surrounding them.

Airport Layout Plan (ALP): A scale drawing of existing and proposed airport facilities, their location on an airport, and the pertinent clearance and dimensional information required to demonstrate conformance with applicable standards.

Airport Master Plan (AMP): A long-range plan for development of an airport, including descriptions of the data and analyses on which the plan is based.

Airport Reference Code (ARC): A coding system used to relate airport design criteria to the operation and physical characteristics of the airplanes intended to operate at an airport. (Airport Design AC)

Airports, Classes of: For the purposes of issuing a Site Approval Permit, The California Department of Transportation, Division of Aeronautics classifies airports into the following categories: (CCR)

- *Agricultural Airport or Heliport:* An airport restricted to use only be agricultural aerial applicator aircraft (FAR Part 137 operators).

- *Emergency Medical Services (EMS) Landing Site:* A site used for the landing and taking off of EMS helicopters that is located at or as near as practical to a medical emergency or at or near an medical facility and
  (1) has been designated an EMS landing site by an officer authorized by a public safety agency, as defined in PUC Section 21662.1, using criteria that the public safety agency has determined is reasonable and prudent for the safe operation of EMS helicopters and
  (2) is used, over any twelve month period, for no more than an average of six landings per month with a patient or patients on the helicopter, except to allow for adequate medical response to a mass casualty event even if that response causes the site to be used beyond these limits, and
  (3) is not marked as a permitted heliport as described in Section 3554 of these regulations, and
  (4) is used only for emergency medical purposes.

- *Heliport on Offshore Oil Platform:* A heliport located on a structure in the ocean, not connected to the shore by pier, bridge, wharf, dock or breakwater, used in the support of petroleum exploration or production.

- *Personal-Use Airport:* An airport limited to the non-commercial use of an individual owner or family and occasional invited guests.

- *Public-Use Airport:* An airport that is open for aircraft operations to the general public and is listed in the current edition of the *Airport/Facility Directory* that is published by the National Ocean Service of the U.S. Department of Commerce.

- *Seaplane Landing Site:* An area of water used, or intended for use, for landing and takeoff of seaplanes.

- *Special-Use Airport or Heliport:* An airport not open to the general public, access to which is controlled by the owner in support of commercial activities, public service operations, and/or personal use.

- *Temporary Helicopter Landing Site:* A site, other than an emergency medical service landing site at or near a medical facility, which is used for landing and taking off of helicopters and
  (1) is used or intended to be used for less than one year, except for recurrent annual events and
  (2) is not marked or lighted to be distinguishable as a heliport and
  (3) is not used exclusively for helicopter operations.

Ambient Noise Level: The level of noise that is all-encompassing within a given environment for which a single source cannot be determined. It is usually a composite of sounds from many and varied sources near to and far from the receiver.

Approach Protection Easement: A form of easement which both conveys all of the rights of an avigation easement and sets specified limitations on the type of land uses allowed to be developed on the property.

Approach Speed: The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration. (AIM)

Aviation-Related Use: Any facility or activity directly associated with the air transportation of persons or cargo or the operation, storage, or maintenance of aircraft at an airport or heliport. Such uses specifically include runways, taxiways, and their associated protected areas defined by the Federal Aviation Administration, together with aircraft aprons, hangars, fixed base operations, terminal buildings, etc.

Avigation Easement: A type of easement which typically conveys the following rights:

- A right-of-way for free and unobstructed passage of aircraft through the airspace over the property at any altitude above a surface specified in the easement (usually set in accordance with FAR Part 77 criteria).
- A right to subject the property to noise, vibrations, fumes, dust, and fuel particle emissions associated with normal airport activity.
- A right to prohibit the erection or growth of any structure, tree, or other object that would enter the acquired airspace.
- A right-of-entry onto the property, with proper advance notice, for the purpose of removing, marking, or lighting any structure or other object that enters the acquired airspace.
- A right to prohibit electrical interference, glare, misleading lights, visual impairments, and other hazards to aircraft flight from being created on the property.

Based Aircraft: Aircraft stationed at an airport on a long-term basis.

California Environmental Quality Act (CEQA): Statutes adopted by the state legislature for the purpose of maintaining a quality environment for the people of the state now and in the future. The Act establishes a process for state and local agency review of projects, as defined in the implementing guidelines, which may adversely affect the environment.

Ceiling: Height above the earth's surface to the lowest layer of clouds or obscuring phenomena. (AIM)

Circling Approach/Circle-to-Land Maneuver: A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or not desirable. (AIM)

Clear Zone: An area situated immediately beyond the end of a military airport runway that possesses a high potential for accidents and has traditionally been acquired by the Federal Government in fee and kept clear of obstructions to flight.

Combining District: A zoning district which establishes development standards in areas of special concern over and above the standards applicable to basic underlying zoning districts.

Commercial Activities: Airport-related activities which may offer a facility, service or commodity for sale, hire or profit. Examples of commodities for sale are: food, lodging, entertainment, real estate, petroleum products, parts and equipment. Examples of services are: flight training, charter flights, maintenance, aircraft storage, and tiedown. (CCR)

Commercial Operator: A person who, for compensation or hire, engages in the carriage by aircraft in air commerce of persons or property, other than as an air carrier. (FAR 1)

Community Noise Equivalent Level (CNEL): The noise metric adopted by the State of California for evaluating airport noise. It represents the average daytime noise level during a 24-hour day, adjusted to an equivalent level to account for the lower tolerance of people to noise during evening and nighttime periods relative to the daytime period. (State Airport Noise Standards)

Compatibility Plan: As used herein, a plan, usually adopted by an Airport Land Use Commission, which sets forth policies for promoting compatibility between airports and the land uses which surround them. Often referred to as a *Comprehensive Land Use Plan (CLUP).*

Controlled Airspace: Any of several types of airspace within which some or all aircraft may be subject to air traffic control. (FAR 1)

Day-Night Average Sound Level (DNL): The noise metric adopted by the U.S. Environmental Protection Agency for measurement of environmental noise. It represents the average daytime noise level during a 24-hour day, measured in decibels and adjusted to account for the lower tolerance of people to noise during nighttime periods. The mathematical symbol is L_{dn}.

Decibel (dB): A unit measuring the magnitude of a sound, equal to the logarithm of the ratio of the intensity of the sound to the intensity of an arbitrarily chosen standard sound, specifically a sound just barely audible to an unimpaired human ear. For environmental noise from aircraft and other transportation sources, an *A-weighted sound level* (abbreviated dBA) is normally used. The A-weighting scale adjusts the values of different sound frequencies to approximate the auditory sensitivity of the human ear.

Deed Notice: A formal statement added to the legal description of a deed to a property and on any subdivision map. As used in airport land use planning, a deed notice would state that the property is subject to aircraft overflights. Deed notices are used as a form of buyer notification as a means of

ensuring that those who are particularly sensitive to aircraft overflights can avoid moving to the affected areas.

Designated Body: A local government entity, such as a regional planning agency or a county planning commission, chosen by the county board of supervisors and the selection committee of city mayors to act in the capacity of an airport land use commission.

Displaced Threshold: A landing threshold that is located at a point on the runway other than the designated beginning of the runway (see *Threshold*). (AIM)

Department of Defense (DoD): The U.S. department that is in charge of ensuring national security and regulating military moves.

Easement: A less-than-fee-title transfer of real property rights from the property owner to the holder of the easement.

Equivalent Sound Level (L_{eq}): The level of constant sound which, in the given situation and time period, has the same average sound energy as does a time-varying sound.

FAR Part 77: The part of the Federal Aviation Regulations which deals with objects affecting navigable airspace.

FAR Part 77 Surfaces: Imaginary airspace surfaces established with relation to each runway of an airport. There are five types of surfaces: (1) primary; (2) approach; (3) transitional; (4) horizontal; and (5) conical.

Federal Aviation Administration (FAA): The U.S. government agency which is responsible for ensuring the safe and efficient use of the nation's airports and airspace.

Federal Aviation Regulations (FAR): Regulations formally issued by the FAA to regulate air commerce.

Findings: Legally relevant subconclusions which expose a government agency's mode of analysis of facts, regulations, and policies, and which bridge the analytical gap between raw data and ultimate decision.

Fixed Base Operator (FBO): A business which operates at an airport and provides aircraft services to the general public including, but not limited to, sale of fuel and oil; aircraft sales, rental, maintenance, and repair; parking and tiedown or storage of aircraft; flight training; air taxi/charter operations; and specialty services, such as instrument and avionics maintenance, painting, overhaul, aerial application, aerial photography, aerial hoists, or pipeline patrol.

General Aviation: That portion of civil aviation which encompasses all facets of aviation except air carriers. (FAA Stats)

Glide Slope: An electronic signal radiated by a component of an ILS to provide vertical guidance for aircraft during approach and landing.

Global Positioning System (GPS): A navigational system which utilizes a network of satellites to determine a positional fix almost anywhere on or above the earth. Developed and operated by the U.S. Department of Defense, GPS has been made available to the civilian sector for surface, marine,

and aerial navigational use. For aviation purposes, the current form of GPS guidance provides en route aerial navigation and selected types of nonprecision instrument approaches. Eventual application of GPS as the principal system of navigational guidance throughout the world is anticipated.

Helipad: A small, designated area, usually with a prepared surface, on a heliport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters. (AIM)

Heliport: A facility used for operating, basing, housing, and maintaining helicopters. (HAI)

Infill: Development which takes place on vacant property largely surrounded by existing development, especially development which is similar in character.

Instrument Approach Procedure: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority (refer to *Nonprecision Approach Procedure* and *Precision Approach Procedure*). (AIM)

Instrument Flight Rules (IFR): Rules governing the procedures for conducting instrument flight. Generally, IFR applies when meteorological conditions with a ceiling below 1,000 feet and visibility less than 3 miles prevail. (AIM)

Instrument Landing System (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids: (1) Localizer; (2) Glide Slope; (3) Outer Marker; (4) Middle Marker; (5) Approach Lights. (AIM)

Instrument Operation: An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal control facility. (FAA ATA)

Instrument Runway: A runway equipped with electronic and visual navigation aids for which a precision or nonprecision approach procedure having straight-in landing minimums has been approved. (AIM)

Inverse Condemnation: An action brought by a property owner seeking just compensation for land taken for a public use against a government or private entity having the power of eminent domain. It is a remedy peculiar to the property owner and is exercisable by that party where it appears that the taker of the property does not intend to bring eminent domain proceedings.

Land Use Density: A measure of the concentration of land use development in an area. Mostly the term is used with respect to residential development and refers to the number of dwelling units per acre.

Land Use Intensity: A measure of the concentration of nonresidential land use development in an area. For the purposes of airport land use planning, the term indicates the number of people per acre attracted by the land use.

Large Airplane: An airplane of more than 12,500 pounds maximum certificated takeoff weight. (Airport Design AC)

Localizer (LOC): The component of an ILS which provides course guidance to the runway. (AIM)

Minimum Descent Altitude (MDA): The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided. (FAR 1)

Missed Approach: A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing. (AIM)

National Transportation Safety Board (NTSB): The U.S. government agency responsible for investigating transportation accidents and incidents.

Navigational Aid (Navaid): Any visual or electronic device airborne or on the surface which provides point-to-point guidance information or position data to aircraft in flight. (AIM)

Noise Contours: Continuous lines of equal noise level usually drawn around a noise source, such as an airport or highway. The lines are generally drawn in 5-decibel increments so that they resemble elevation contours in topographic maps.

Noise Level Reduction (NLR): A measure used to describe the reduction in sound level from environmental noise sources occurring between the outside and the inside of a structure.

Nonconforming Use: An existing land use which does not conform to subsequently adopted or amended zoning or other land use development standards.

Nonprecision Approach Procedure: A standard instrument approach procedure in which no electronic glide slope is provided. (FAR 1)

Nonprecision Instrument Runway: A runway with an approved or planned straight-in instrument approach procedure which has no existing or planned precision instrument approach procedure. (Airport Design AC)

Obstruction: Any object of natural growth, terrain, or permanent or temporary construction or alteration, including equipment or materials used therein, the height of which exceeds the standards established in Subpart C of Federal Aviation Regulations Part 77, *Objects Affecting Navigable Airspace.*

Overflight: Any distinctly visible and audible passage of an aircraft in flight, not necessarily directly overhead.

Overflight Easement: An easement which describes the right to overfly the property above a specified surface and includes the right to subject the property to noise, vibrations, fumes, and emissions. An overflight easement is used primarily as a form of buyer notification.

Overflight Zone: The area(s) where aircraft maneuver to enter or leave the traffic pattern, typically defined by the FAR Part 77 horizontal surface.

Overlay Zone: See *Combining District.*

Planning Area Boundary: An area surrounding an airport designated by an ALUC for the purpose of airport land use compatibility planning conducted in accordance with provisions of the State Aeronautics Act.

Precision Approach Procedure: A standard instrument approach procedure where an electronic glide slope is provided. (FAR 1)

Precision Instrument Runway: A runway with an existing or planned precision instrument approach procedure. (Airport Design AC)

Referral Area: The area around an airport defined by the planning area boundary adopted by an airport land use commission within which certain land use proposals are to be referred to the commission for review.

Runway Protection Zone (RPZ): An area (formerly called a *clear zone*) off the end of a civilian airport runway used to enhance the protection of people and property on the ground. (Airport Design AC)

Safety Zone: For the purpose of airport land use planning, an area near an airport in which land use restrictions are established to protect the safety of the public from potential aircraft accidents.

Single-Event Noise: As used in herein, the noise from an individual aircraft operation or overflight.

Single Event Noise Exposure Level (SENEL): A measure, in decibels, of the noise exposure level of a single event, such as an aircraft flyby, measured over the time interval between the initial and final times for which the noise level of the event exceeds a threshold noise level and normalized to a reference duration of one second. SENEL is a noise metric established for use in California by the state Airport Noise Standards and is essentially identical to *Sound Exposure Level (SEL).*

Site Approval Permit: A written approval issued by the California Department of Transportation authorizing construction of an airport in accordance with approved plans, specifications, and conditions. Both public-use and special-use airports require a site approval permit. (CCR)

Small Airplane: An airplane of 12,500 pounds or less maximum certificated takeoff weight. (Airport Design AC)

Sound Exposure Level (SEL): A time-integrated metric (i.e., continuously summed over a time period) which quantifies the total energy in the A-weighted sound level measured during a transient noise event. The time period for this measurement is generally taken to be that between the moments when the A-weighted sound level is 10 dB below the maximum.

Straight-In Instrument Approach: An instrument approach wherein a final approach is begun without first having executed a procedure turn; it is not necessarily completed with a straight-in landing or made to straight-in landing weather minimums. (AIM)

Taking: Government appropriation of private land for which compensation must be paid as required by the Fifth Amendment of the U.S. Constitution. It is not essential that there be physical seizure or appropriation for a *taking* to occur, only that the government action directly interferes with or substantially disturbs the owner's right to use and enjoyment of the property.

Terminal Instrument Procedures (TERPS): Procedures for instrument approach and departure of aircraft to and from civil and military airports. There are four types of terminal instrument procedures: precision approach, nonprecision approach, circling, and departure.

Threshold: The beginning of that portion of the runway usable for landing (also see *Displaced Threshold*). (AIM)

Touch-and-Go: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. (AIM)

Traffic Pattern: The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport. The components of a typical traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach. (AIM)

Visual Approach: An approach where the pilot must use visual reference to the runway for landing under VFR conditions.

Visual Flight Rules (VFR): Rules that govern the procedures for conducting flight under visual conditions. VFR applies when meteorological conditions are equal to or greater than the specified minimum-generally, a 1,000-foot ceiling and 3-mile visibility.

Visual Runway: A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved airport layout plan. (Airport Design AC)

Zoning: A police power measure, enacted primarily by units of local government, in which the community is divided into districts or zones within which permitted and special uses are established, as are regulations governing lot size, building bulk, placement, and other development standards. Requirements vary from district to district, but they must be uniform within districts. A zoning ordinance consists of two parts: the text and a map.

Glossary Sources

FAR 1: *Federal Aviation Regulations Part 1, Definitions and Abbreviations*

AIM: *Aeronautical Information Manual*

Airport Design AC: Federal Aviation Administration, *Airport Design* Advisory Circular 150/5300-13

CCR: California Code of Regulations, Title 21, Section 3525 et seq., *Division of Aeronautics*

FAA ATA: Federal Aviation Administration, *Air Traffic Activity*

FAA Stats: Federal Aviation Administration, *Statistical Handbook of Aviation*

HAI: Helicopter Association International

NTSB: National Transportation and Safety Board