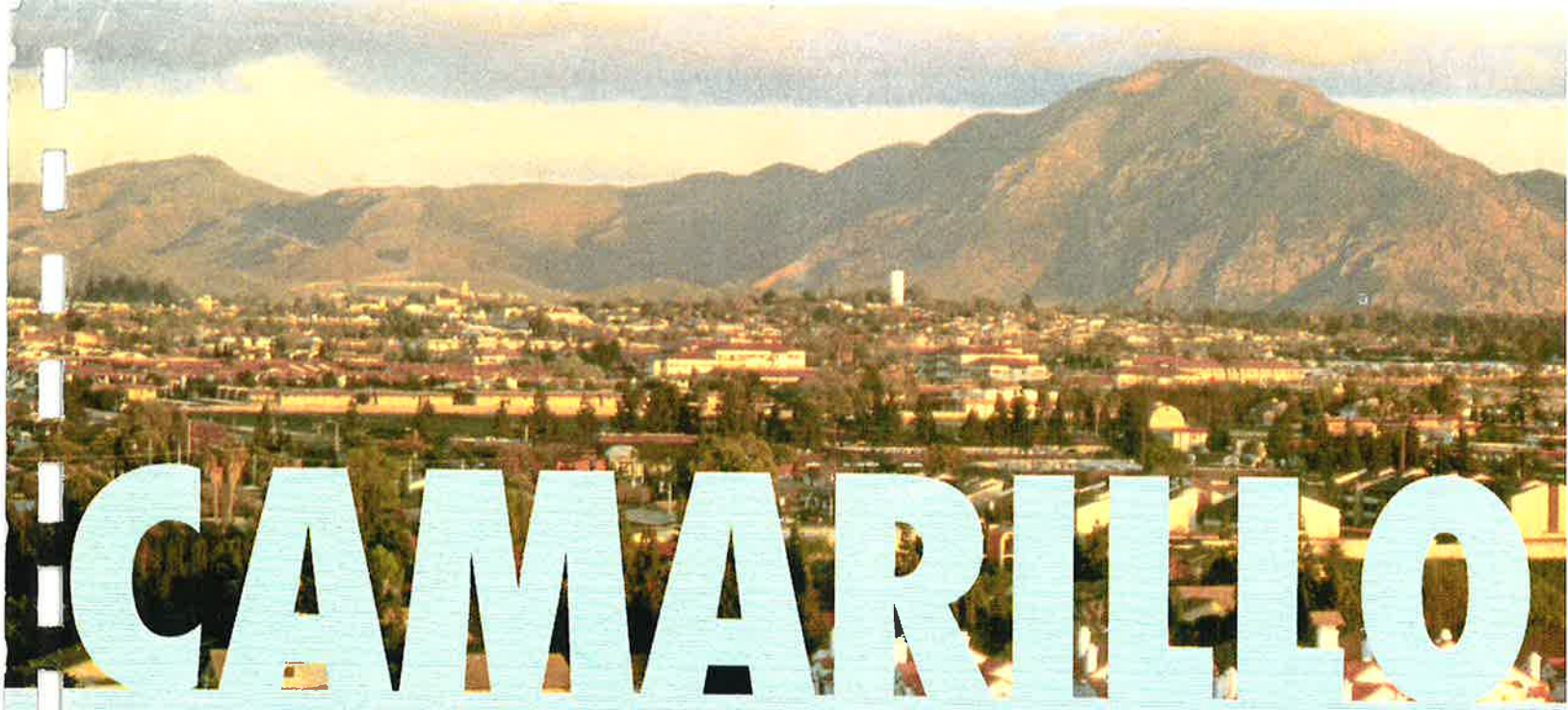

CAMARILLO AIRPORT

F.A.R. PART 150 NOISE COMPATIBILITY STUDY

Noise Compatibility Program

CAMARILLO AIRPORT

F.A.R. Part 150
Noise Compatibility Study

NOISE COMPATIBILITY PROGRAM

Prepared For
The County of Ventura Department of Airports

By
Coffman Associates, Inc.

In Association With
CommuniQuest

November 1999

The preparation of this document was financed in part through a planning grant from the Federal Aviation Administration (FAA) as approved under the Airport and Airway Improvement Act of 1982, as amended. The contents of this report do not necessarily reflect the official views or policy of the FAA. Acceptance of this report 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 environmental acceptable in accordance with applicable public laws.

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NOISE COMPATIBILITY PROGRAM

INTRODUCTION

This document is the Noise Compatibility Program (NCP) for Camarillo Airport, owned and operated by Ventura County, California. The NCP is the second of two parts required in a Federal Aviation Regulation (F.A.R.) Part 150 Noise Compatibility Study. It includes Chapters Four, Five, and Six of the study in addition to six appendices. The first volume, the Noise Exposure Maps (NEM) document, which includes the first three chapters of the study, was published in May 1998 and officially accepted by the Federal Aviation Administration (FAA) in September 1998.

Chapter Four of the Noise Compatibility Program, Noise Abatement Alternatives, discusses and analyzes potential methods for reducing or shifting aircraft noise to be less disturbing on residential areas.

Chapter Five, Land Use Alternatives, analyzes potential land use planning and zoning techniques to prevent the development of new noise-sensitive land uses in areas exposed to aircraft noise. It also examines alternative ways of mitigating noise impacts on existing residential areas that will remain exposed to aircraft noise in the future.

Chapter Six presents the Noise Compatibility Program. This includes the Camarillo Airport Authority's airport noise compatibility policies. The program is organized into three elements: noise abatement, land use management, and program management. The first two elements are based on the findings of Chapters Four and Five. The program

management element includes measures to administer, refine, and update the overall program as needed in the future.

Appendix A lists the members of the Planning Advisory Committee who were consulted throughout the planning process.

Appendix B, Coordination, Consultation, and Public Involvement, summarizes the planning process, local coordination, and public involvement process.

Appendix C, Peak Day Noise Analysis, describes the methodology and assumptions used to develop the noise exposure contours and delineates the effects of the noise exposure pattern during peak day aircraft activity at Camarillo Airport.

Materials for use in the implementation of the Noise Compatibility Program are presented in Appendix D. These materials include: a list of monitoring system suppliers; a model agreement for noise disclosure and a fair disclosure statement; a list of Aircraft Owners and Pilot's Association (A.O.P.A.) noise awareness steps; and National Business Aviation Association (N.B.A.A.) standard noise abatement departure procedures.

Appendix E, Grid Point Analysis, provides supporting information for the preservation of an area of compatible land use in the vicinity of the airport through an analysis of 2003 aircraft noise at selected points.

Appendix F, Aircraft Separation With and Without a Parallel Runway, provides a written and graphic description of aircraft operating procedures with and without the addition of a 3,500-foot parallel runway.

For the convenience of FAA reviewers, the FAA's official Noise Compatibility Program Checklist is presented on pages iii through vii. The Airport Authority's certification statement is on page viii.

F.A.R. PART 150
NOISE COMPATIBILITY PROGRAM CHECKLIST

AIRPORT NAME: ***Camarillo Airport***
Camarillo, California

REVIEWER: _____

	Yes/No/NA	Page No./ Other Reference
I. IDENTIFICATION AND SUBMISSION OF PROGRAM:		
A. Submittal is properly identified:		
1. F.A.R. 150 NCP?	Yes	Title Page; p. i
2. NEM and NCP together?	No	
3. Program revision?	No	
B. Airport and Airport Operator's name identified?	Yes	Title Page; p. i
C. NCP transmitted by airport operator cover letter?	Yes	
II. CONSULTATION: [150.23]		
A. Documentation includes narrative of public participation and consultation process?	Yes	Appendices A & B; and supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
B. Identification of consulted parties:		
1. all parties in 150.23(c) consulted?	Yes	Appendices A & B; and supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
2. public and planning agencies identified?	Yes	Appendices A & B; and supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
3. agencies in 2, above, correspond to those indicated on the NEM?	Yes	Appendices A & B; and supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
C. Satisfies 150.23(d) requirements?		
1. documentation shows active and direct participation of parties in B, above?	Yes	Appendices A & B; and supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
2. active and direct participation of general public?	Yes	Appendices A & B; and supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"

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	Yes/No/NA	Page No./ Other Reference
3. participation was prior to and during development of NCP and prior to submittal to FAA?	Yes	Appendices A & B; and supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
4. indicates adequate opportunity afforded to submit views, data, etc.?	Yes	Appendices A & B; and supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
D. Evidence included of notice and opportunity for a public hearing on NCP?	Yes	Appendices A & B; and supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
E. Documentation of comments:		
1. includes summary of public hearing comments, if hearing was held?	Yes	Appendices A & B; and supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
2. includes copy of all written material submitted to operator?	Yes	Supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
3. includes operator's responses/disposition of written and verbal comments?	Yes	Supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
F. Informal agreement received from FAA on flight procedures?	Yes	The local tower manager indicated qualified acceptance of noise abatement measures and was involved in the Planning Advisory Committee (PAC) meetings. FAA representative from Airports Division of the Western Pacific Region also attended PAC meetings and indicated qualified agreement with abatement measures.

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	Yes/No/NA	Page No./ Other Reference
III. **NOISE EXPOSURE MAPS: [150.23, B150.3, 150.35(f)]** (This section of the checklist is not a substitute for the Noise Exposure Map Checklist. It deals with maps in the context of the Noise Compatibility Program submission.)		
A. Inclusion of NEMs and supporting documentation:		
1. Map documentation either included or incorporated by reference?	N/A	
2. Maps previously found in compliance by FAA?	N/A	
3. Compliance determination still valid?	N/A	
4. Does 180-day period have to wait for map compliance finding?	N/A	
B. Revised NEMs submitted with program: (Review using NEM checklist if map revisions included in NCP submittal?		
1. Revised NEMs included with program?	N/A	
2. Has airport operator requested FAA to make a determination on the NEM(s) when NCP approval is made?	N/A	
C. If program analysis uses noise modeling:		
1. INM, HNM, or FAA-approved equivalent?	N/A	
2. Monitoring in accordance with A150.5?	N/A	
D. Existing condition and 5-year maps clearly identified as the official NEMs?	N/A	
IV. **CONSIDERATION OF ALTERNATIVES: [B150.7, 150.23(e)]**		
A. At a minimum, are the alternatives below considered?		
1. land acquisition and interests therein, including air rights, easements, and development rights?	Yes	Chapter 5, pp. 5-8, 5-9 - 5-10, 5-12
2. barriers, acoustical shielding, public building soundproofing?	Yes	Chapter 4, p. 4-19
3. preferential runway system?	Yes	Chapter 4, pp. 4-4 - 4-5

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	Yes/No/NA	Page No./ Other Reference
4. flight procedures?	Yes	Chapter 4, pp. 4-5 - 4-9, 4-13 - 4-17, 4-20
5. restriction on type/class of aircraft (at least one restriction below must be checked)		
a. deny use based on Federal standards?	Yes	Chapter 4, pp. 4-9 - 4-11
b. capacity limits based on noisiness?	Yes	Chapter 4, p. 4-12
c. noise abatement takeoff/approach procedures?	Yes	Chapter 4, pp. 4-13 - 4-17
d. landing fees based on noise or time of day?	Yes	Chapter 4, p. 4-11
e. nighttime restrictions?	Yes	Chapter 4, p. 4-11
6. other actions with beneficial impact?	Yes	Chapter 4, pp. 4-12 - 4-13, 4-14 - 4-19
7. other FAA recommendations?	N/A	
B. Responsible implementing authority identified for each considered alternative?	Yes	Chapter 4, pp. 4-6, 4-7, 4-9 - 4-10, 4-15, 4-20 Chapter 6, pp. 6-19 - 6-21
C. Analysis of alternative measures: 1. measures clearly described?	Yes	Chapter 4, pp. 4-10 - 4-20 Chapter 5, pp. 5-2 - 5-13 Chapter 6, pp. 6-19 - 6-22
2. measures adequately analyzed?	Yes	Chapter 4, pp. 4-4 - 4-19 Chapter 5, pp. 5-2 - 5-12

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	Yes/No/NA	Page No./ Other Reference
3. adequate reasoning for rejecting alternatives?	Yes	Chapter 4, pp. 4-4 - 4-19 Chapter 5, pp. 5-2 - 5-12
D. Other actions recommended by the FAA: Should other actions be added? (list separately or on back of this form actions and discussions with airport operator to have them included prior to the start of the 180-day cycle)	N/A	
V. **ALTERNATIVES RECOMMENDED FOR IMPLEMENTATION: [150.23(e), B150.7(c); 150.35(b), B150.5]**		
A. Document clearly indicates:		
1. alternatives recommended for implementation?	Yes	Chapter 6, pp. 6-2 - 6-18 Table 6A, p. 6-19
2. final recommendations are airport operators, not those of consultant or third party?	Yes	Sponsor's Certification, p. x
B. Do all program recommendations:		
1. relate directly or indirectly to reduction of noise and noncompatible land uses?	Yes*	Chapter 6, pp. 6-2 - 6-14
2. contain description of contribution to overall effectiveness of program?	Yes*	Chapters 4, 5, 6
3. noise/land use benefits quantified to extent possible?	Yes*	Chapter 4, pp. 4-14 - 4-19 Chapter 5, pp. 5-2 - 5-13 Chapter 6, pp. 6-2 - 6-14 Table 6A, p. 6-19
4. include actual/anticipated effect on reducing noise exposure within noncompatible area shown on NEM?	Yes*	Chapters 4, 5, 6
5. effects based on relevant and reasonable expressed assumptions?	Yes*	Chapters 4, 5, 6
6. have adequate supporting data to support its contribution to noise/land use compatibility?	Yes*	Chapters 4, 5, 6
C. Analysis appears to support program standards set forth in 150.35 (b) and B150.5?	Yes	Chapters 4, 5, 6

* *No noise-sensitive land uses or population are affected.*

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NOISE COMPATIBILITY PROGRAM CHECKLIST

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	Yes/No/NA	Page No./ Other Reference
D. When use restrictions are recommended:		
1. are alternatives with potentially significant noise/compatible land use benefits thoroughly analyzed so that appropriate comparisons and conclusions can be made?	N/A	No use restrictions recommended
2. use restrictions coordinated with APP-600 prior to making determination on start of 180-days?	N/A	
E. Do the following also meet Part 150 analytical standards:		
1. formal recommendations which continue existing practices?	N/A	
2. new recommendations or changes proposed at end of Part 150 process?	Yes	Chapter 6, pp. 6-2 - 6-18
F. Documentation indicates how recommendations may change previously adopted plans?	Yes	Chapter 4, p. 4-6 Chapter 5, pp. 5-4 - 5-12 Chapter 6, pp. 6-4, 6-8, 6-9 - 6-10, 6-13 - 6-14
G. Documentation also:		
1. identifies agencies which are responsible for implementing each recommendation?	Yes	Chapter 6, pp. 6-2 - 6-18, Table 6A, p. 6-19
2. indicates whether those agencies have agree to implement?	Yes	Sponsor's Certification on p. x. By approving NCP, Airport Authority has agreed to seriously consider implementation of the measures for which it has sole responsibility, provided that funding is available. It has also agreed to encourage other organizations and agencies to take any recommended actions per NCP.
3. indicates essential government actions necessary to implement recommendations?	Yes	Chapter 6, pp. 6-2 - 6-18
H. Timeframe:		
1. includes agreed-upon schedule to implement alternatives?	Yes	Chapter 6, pp. 6-2 - 6-18, Table 6A, p. 6-19

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NOISE COMPATIBILITY PROGRAM CHECKLIST

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REVIEWER: _____

	Yes/No/NA	Page No./ Other Reference
H. Timeframe:		
1. includes agreed-upon schedule to implement alternatives?	Yes	Chapter 6, pp. 6-2 - 6-18, Table 6A, p. 6-19
2. indicates period covered by the program?	Yes	Chapter 6, pp. 6-2 - 6-18, Table 6A, p. 6-19
I. Funding/Costs:		
1. includes costs to implement alternatives?	Yes	Chapter 6, pp. 6-2 - 6-18, Table 6A, p. 6-19
2. includes anticipated funding sources?	Yes	Chapter 6, pp. 6-2 - 6-18, Table 6A, p. 6-19
VI. **PROGRAM REVISION [150.23(e)(9)] Supporting documentation includes provision for revision?**	Yes	Chapter 6, pp. 6-14 - 6-18

SPONSOR'S CERTIFICATION

The Noise Compatibility Plan and accompanying documentation for Camarillo Airport, including the description of consultation and opportunity for public involvement, submitted in accordance with F.A.R. Part 150, are hereby certified as true and complete to the best of my knowledge and belief. It is hereby certified that adequate opportunity has been afforded interested persons to submit views, data and, comments on the Noise Compatibility Plan and supporting data are fair and reasonable representations of existing conditions at the airport.

3-10-00

Date of Signature

Rod Murphy, CAE
Director of Airports
County of Ventura

CAMARILLO AIRPORT
Part 150 Noise Compatibility Program

Chapter Four
NOISE ABATEMENT ALTERNATIVES

Chapter Four

NOISE ABATEMENT ALTERNATIVES

The DOT/FAA Aviation Noise Abatement Policy of 1976, the Airport Safety and Noise Abatement Act of 1979, and the Airport Noise and Capacity Act of 1990 have outlined the framework needed to assure a coordinated approach to tackling the difficult task of noise abatement and mitigation of noise impacts. Responsibilities are shared among the airport users, aircraft manufacturers, airport proprietors, federal, state, and local governments, and residents of communities near the airport. The following is a brief synopsis of each participant's unique role and responsibility in this effort.

- The federal government has the authority and responsibility to control aircraft noise sources, implement and enforce flight operational procedures, and manage the air traffic control system in ways that minimize noise impacts on populated areas.

- The aircraft manufacturers have the responsibility for incorporating quiet engine technology into the new aircraft designs in order to meet federal noise standards.

- Airport proprietors are responsible for planning and implementing airport development actions designed to reduce noise. Such actions include improvements in airport design and noise abatement ground procedures, in addition to evaluating and recommending restrictions on airport use that do not unjustly discriminate against any user, impede the federal interest in safety and management of the air navigation system, or

unreasonably interfere with interstate commerce.

- Local government and planning agencies have the responsibility for providing land use planning, zoning, and housing regulation that will encourage development or redevelopment of land that is compatible with present and projected airport operations.

- General aviation operators have the responsibility to use proper aircraft maintenance and good neighbor flying techniques to minimize their noise output.

- Air travelers and shippers generally should bear the cost of noise reduction, consistent with established federal economic and environmental policy which states that the adverse environmental conse-quences of a service or product should be reflected in its price.

- Residents and prospective residents in areas surrounding airports should seek to understand the aircraft noise problem and what steps can and cannot be taken to minimize its effect on people. Prospective residents of areas impacted by aircraft noise should be aware of the effect of noise on their quality of life and make their locational decisions with that in mind.

The development of a noise abatement program has three primary objectives:

1. To reduce the noise in the study area, within practical cost constraints.

2. To minimize, where practical, the exposure of the local population to noise events of very high levels. These high levels, which are often manifested by single event noise levels outside of the CNEL contours, can be an annoyance to airport neighbors and warrant attention.

3. To insure maximum compatibility of existing and future land uses with noise generated by aircraft using the airport.

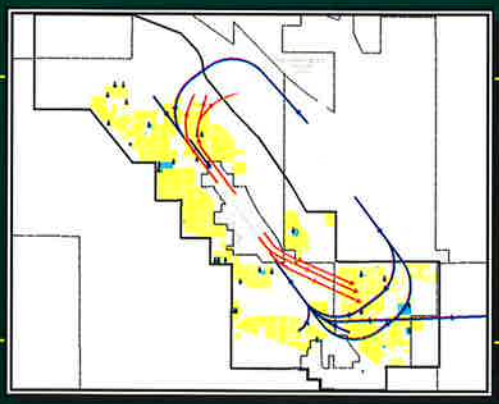
If the level of aircraft noise impacts in the airport vicinity is to be reduced, good-faith efforts are required from all responsible parties including airport and aviation system managers, owners and operators of aircraft, and land use regulatory agencies. While Chapter Five reviews the alternative measures that the land use regulatory agencies should consider, this chapter is concerned with measures that would alter the use or configuration of air space, flight tracks, and airport facilities to reduce or shift the location of noise. These potential measures are listed in **Exhibit 4A**.

The techniques tend to produce one of two general effects. They either reduce the overall size of the noise contours, or they move the noise to other areas.

97SP05-4A-4/2/98

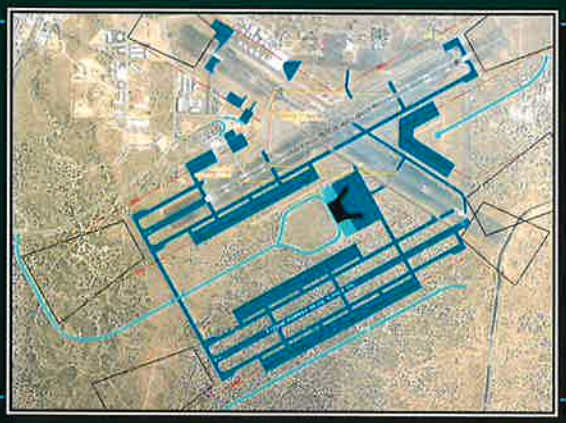
RUNWAY USE AND FLIGHT ROUTES

- Noise - Compatible Corridors
- Departure Turns
- Visual Final Approaches
- Preferential Runway Use
- Nighttime Preferences



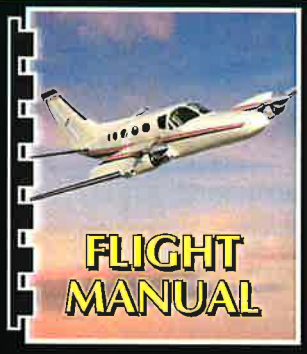
FACILITIES DEVELOPMENT

- Runway Lengthening
- New Runways
- Displaced / Relocated Thresholds
- High Speed Exits
- Terminal Relocation
- Ground Activity Relocation
- Acoustical Shielding
- Navigational Aids



AIRCRAFT OPERATING PROCEDURES

- Reduced Thrust Takeoffs
- Thrust Cutback Departures
- Maximum Climb Departures
- Minimum Approach Altitude
- Approach Flap Adjustments
- Two-Stage Descents
- Raised Glide Slope Angle
- Limited Reverse Thrust



AIRPORT RESTRICTIONS & REGULATIONS

- Nighttime Curfews
- Aircraft Type Restrictions Based On Noise Level
- Capacity Limitations (Operational Cap or Noise Budget)
- Variable Landing Fees Based on Noise Level or Time of Day
- Ground Activity Restrictions
- Training Activity Restrictions

CAMARILLO AIRPORT

Exhibit 4A
POSSIBLE NOISE ABATEMENT TECHNIQUES

In order to reduce the overall noise levels around the airport it is necessary to reduce the total sound energy emitted by the aircraft activity at the airport. This can be accomplished through either the modification of aircraft operating procedures or the imposition of restrictions on the number or type of aircraft allowed to operate at the airport. These measures are often difficult to implement and enforce as they can erode aircraft operational safety margins or discriminate against certain operators and cause an undue burden on interstate commerce.

As a result, it is often more effective and less disruptive to try to move the noise to areas that either are compatible or contain a minimum of noise-sensitive land uses. This opportunity is usually realized through runway use and flight routing techniques or airport facility development.

The subsequent sections of this chapter will review and evaluate a variety of potential noise abatement techniques. To judge the effectiveness and appropriateness of a particular technique, it is important to consider the magnitude of the noise impacts around the Camarillo Airport. The previous chapter of this study has evaluated the impact and effects of noise on population around the airport. Based on the current conditions, there are no persons exposed to noise of 60 CNEL or greater. In the future, the impacts and effects of noise are not expected to increase. Noise at the 65 CNEL level and higher is of special note because it is the impacts at this level that the FAA customarily uses to determine the acceptability of any proposed noise abatement measures. It should also be noted that FAA only considers the current and five-year noise contours when evaluating noise abatement recommendations.

While the current noise exposure around Camarillo Airport indicates a need for concern and proper planning, it does not constitute a dramatic problem by most standards. The fact that there are no persons exposed to noise levels above 60 CNEL in five years should be considered when formulating expectations regarding the potential benefits of noise abatement techniques. Simply put, the smaller the problem, the smaller the potential benefit that a particular procedure will yield. Furthermore, the cost of the solution must be commensurate with the magnitude of the problem.

Nevertheless, public meetings held as part of this study have revealed that some residents beyond the 60 CNEL contours are disturbed by aircraft noise at times. This chapter considers possible ways of improving these situations.

POTENTIAL NOISE ABATEMENT MEASURES

A variety of measures for noise abatement merit investigation and should be reviewed for possible application at Camarillo Airport. A preliminary review of a number of these measures was conducted during the Aviation Technical Conference held on January 6, 1998. This conference was a gathering of aviation professionals who are responsible for the administration,

control, and operation of aircraft and facilities at and around Camarillo Airport. During the conference, experts in air traffic control, airspace, safety, airports, noise, and aircraft piloting provided guidance on what is and is not technically feasible at Camarillo. The insights from this discussion have been incorporated into the subsequent alternatives analysis.

This discussion provides a comprehensive evaluation of all reasonable noise abatement techniques that deserve consideration. The extent to which these measures might apply at Camarillo depends on the probable noise reduction over developed or developing areas, the extent to which the measures would compromise safety margins and the ability of the airport to perform its intended function, and their apparent ability to be implemented considering the legal, political and financial climate of the area. If a measure fails to be viable for one of the above reasons, its inclusion in a final program at Camarillo would not be warranted.

All analyses of noise abatement alternatives are conducted for the year 2003 to provide a consistency of evaluation and a look at the worst case future conditions within the FAA's five-year planning scope for a Part 150 document.

Noise abatement measures considered in this study are procedures that have the potential to reduce the noise exposure of persons living in the airport environs. The evaluation of most of these alternatives is required under F.A.R. Part 150, even if they may have little utility for local application. These measures fall into four categories:

- Runway Use and Flight Routing
- Airport Regulations
- Aircraft Operating Procedures
- Airport Facilities Development

Measures in the first three categories generally may be implemented within a relatively short period of time, while those in the last category usually require a longer time to implement due to environmental assessment and construction activities.

RUNWAY USE AND FLIGHT ROUTING

The pattern of land use around the airport provides clues to the design of arrival and departure patterns for noise abatement. By redirecting air traffic over areas with more compatible land uses, noise effects may often be significantly reduced.

Runway Use Programs

FAA Order 8400.9 describes national safety and operational criteria for establishing runway use programs. It defines two classes of programs: informal and formal. A formal program must be defined and acknowledged in a Letter of Understanding between FAA's Flight Standards Division and Air Traffic Service, the airport proprietor, and the airport users. Once established, participation by aircraft operators is mandatory. Formal programs can be extremely difficult to establish, especially at airports with many different users.

An informal program is an approved runway use system that does not require the Letter of Understanding. Informal programs are typically implemented through a Tower Order and publication of the procedure in the *Airport/Facility Directory*. Participation in the program is voluntary.

There are two general types of runway use programs, rotational and preferential. Rotational runway use is intended to distribute aircraft noise equally off all runway ends. Preferential runway use programs are intended to direct as much aircraft noise as possible in one direction.

Camarillo Airport is bordered by extensive residential development to the north and northeast. The overall development pattern in this area tends to parallel the runway centerline and lies north of U.S. Highway 101. Residential development has started south of U.S. Highway 101 east of the airport and is close to the extended runway centerline.

Current runway use patterns favor departures to the west approximately 85 percent of the time at Camarillo. This is mainly due to predominant winds coming from the ocean. For noise abatement, a western flow is desired because louder departure operations are sent to the west and away from residential development off the extended runway centerline to the east.

Conclusion. Camarillo currently operates to the west 85 percent of the time. This is the best operating configuration to promote noise abatement. Therefore, a special preferential runway use program is not needed.

Departure Turns

The turning of departing aircraft to avoid populated areas is an accepted method of noise abatement that has been implemented in numerous areas. At Camarillo, with the populated areas generally located to the north side of the extended runway centerline, noise abatement departure turns away from the populated areas might be beneficial for noise reduction.

When considering noise abatement departure turns for Camarillo, recalling how aircraft operate in the surrounding area is necessary. Departure turns to the south from Runway 26 are limited due to the location of NAWS Point Mugu Navy/Marine base airspace and Oxnard Airport to the west.

A noise abatement turn from Runway 26 turning right before the Revolon Slough was discussed during the Aviation Technical Conference held January 3, 1998. Tower staff indicated that a turn before the Revolon Slough would direct departing aircraft into the primary arrival corridor to Camarillo from the northwest and would not be practical on a routine basis.

The current published noise abatement departure procedure from Runway 26 requests pilots to remain on runway heading until beyond the departure end of the runway and 700 feet AGL before proceeding on course.

Complaints have been generated by aircraft departing Runway 26 and turning right to a east heading over the City. During the Aviation Technical Conference it was suggested that aircraft departing Runway 26 with an eastern destination fly north of Camarillo. This procedure could be added to the noise abatement procedures and included in pilot education literature.

Noise abatement departure turns from Runway 8 are limited by the City of Camarillo to the north and NAWS Point Mugu airspace to the south. Early left turns from aircraft departing Runway 8 and flying over the City have generated complaints. The current published noise abatement departure procedure from Runway 8 requests pilots to avoid overflight of residential areas before proceeding on course. Reenforcing this procedure with taxiway signage or a pilot guide outlining the procedure and mapping noise-sensitive land use could be considered.

Conclusion. In addition to the established noise abatement procedures for VFR departures, the airport should consider requesting aircraft fly north of the City when departing Runway 26 and turning right to an east heading. Additional reenforcement of current procedures, taxiway signage and pilot guides, should be used by airport management to educate pilots of VFR noise abatement departure procedures.

Visual Approach Procedures

Approaches involving turns relatively close to the airport can sometimes be defined over noise-compatible areas for use under VFR conditions. However, most aircraft typically require a stabilized approach of one to three miles. The greatest advantage of visual approach procedures is to utilize a noise-compatible corridor when an airport is more or less surrounded by noise-sensitive uses.

Noise abatement VFR approach procedures are established for both runways at Camarillo Airport. Aircraft approaching Runway 26 from the east are directed to fly over Runway 26, enter the pattern south and west of the airport, and turn to the base leg of the approach at or west of Los Posas Road. Aircraft approaching from the west and north are requested to enter the downwind leg of the pattern at a 45-degree angle and turn to the base leg at or west of Los Posas Road.

For noise abatement on Runway 8 approaches, aircraft are to avoid overflights of residential areas to the north when entering the downwind leg of the pattern.

Conclusion. The airport has established noise abatement procedures for VFR approaches. These procedures generally direct aircraft away from residential areas north and northeast of the airport. Due to the location of NAWS Point Mugu Navy/Marine base, Oxnard Airport, and the existing land use pattern, additional VFR arrival procedures are not suggested.

Instrument Approach Procedures

Utilizing the Camarillo VOR/DME or the global positioning system (GPS), one published nonprecision approach is available to Runway 26. The VOR/GPS approach is angled from the northeast to avoid topography along the extended runway centerline to the east. The angle of the instrument approach causes aircraft to overfly residential areas north and south of the Ventura Highway (Highway 101).

A stand alone straight-in GPS approach is being reviewed by the Flight Standards division of the Federal Aviation Administration. If this straight-in GPS approach is feasible and safe, overflights of the residential areas east of the airport along the Ventura Highway could be reduced.

Exhibit 4B depicts noise contours developed assuming a straight-in instrument approach procedure. For modeling, approximately 75 percent of the operations using the VOR/GPS approach were moved to the potential straight-in instrument approach. As seen on **Exhibit 4B**, only a small change can be seen at the 60 CNEL contour level to the east of the airport.

Table 4A depicts the grid point analysis results. The grid point locations are depicted on **Exhibit 4B**. The Lmax noise metric represents the loudest noise event during an average 24-hour period. No changes were present between the 2003 baseline and the alternative with the straight-in approach.

The time above (TA) noise metric calculates the time that the noise level is above 70 decibels during a 24-hour period. Noise generated in a busy convenience store is about 70 decibels. Grid point 1 has a small time increase of 0.2 minutes above 70 decibels due to the shift in operations to the area. Grid points 2 and 3 are the only point to decrease due to the shift in operations to the south. Both decrease 0.1 minutes due to the shift in activity.

The sound exposure level (SEL) noise metric combines the loudness and duration of the aircraft noise event. Grid point 1 increases slightly reflecting the higher number of operations on runway centerline. Grid points 2, 3, and 4 all decrease slightly due to the movement of operations further south.

The CNEL value was calculated at each grid point for the 2003 baseline and straight-in approach alternative. This cumulative noise metric considers the average annual daily operations over a 24-hour period with a 4.77 dB penalty for evening operations and 10 dB penalty for nighttime operations. As seen on **Table 4A**, grid point 1 increases slightly from 44.8 CNEL to 46.8 CNEL reflecting the higher number of operations on runway centerline. Grid points 2 and 3 decreases slightly due to the decrease in operations flying the angled VOR/GPS instrument approach.

TABLE 4A
Alternative 1 Grid Point Analysis
Runway 26 Straight-in Instrument Approach

Grid Point	2003 Baseline				Runway 26 Straight-in Instrument Approach			
	Lmax[1]	TA[2]	SEL[3]	CNEL[4]	Lmax	TA	SEL	CNEL
1	91.1	0.4	93.1	44.8	91.1	*0.6*	*94.7*	*46.4*
2	98.0	2.2	102.0	53.7	98.0	*2.1*	*101.8*	*53.5*
3	91.3	0.2	92.0	43.7	91.3	*0.1*	*91.1*	*42.8*
4	82.3	0.0	87.4	39.0	82.3	0.0	*87.3*	39.0
5	80.9	0.0	89.5	41.2	80.9	0.0	89.5	41.2
6	72.8	0.0	89.0	40.7	72.8	0.0	89.0	40.7
7	84.4	2.6	101.8	53.6	84.4	2.6	101.8	53.6
8	96.4	0.8	99.0	50.4	96.4	0.8	99.0	50.4
9	91.6	1.1	99.4	51.5	91.6	1.1	99.4	51.5
10	83.2	1.5	98.6	50.3	83.2	1.5	98.6	50.3
11	84.9	0.3	93.9	45.7	84.9	0.3	93.9	45.7

1 The peak noise level (dBA) during the 24-hour period.
2 Time in minutes that the noise level is above 70 decibels during a 24-hour period.
3 Maximum sound exposure level during the 24-hour period.
4 Community Noise Equivalent Level.

Conclusion. A straight-in approach may be possible using GPS technology to move instrument approaches further south and away from residential areas north of the Ventura Highway. The benefits of a straight-in approach, from a noise abatement standpoint, are negligible.

Traffic Pattern Changes

The current traffic pattern altitude for both runways is 800 feet above field level (AFL) for single engine aircraft and 1,000 feet AFL for twin engine/ turbine engine aircraft. Raising the pattern altitude results in a larger traffic pattern due to the increased distance needed to climb and descend from the designated pattern altitude. The net result of raising the pattern altitude would be to extend the pattern over residential areas. Therefore increasing the pattern altitude is not suggested.

Currently the established traffic pattern for both runways is to the south. Pilots are requested to turn to the base leg of the Runway 26 traffic pattern at or west of Los Posas Road when traffic permits. For the Runway 8, pilots are requested to turn to the crosswind leg of the traffic pattern at or west of Los Posas Road when traffic permits.

Aircraft approaching from the north/ northwest are directed to fly over the airport and enter the downwind portion of the pattern at a 45-degree angle. When traffic aircraft approaching the airport from the northwest fly a

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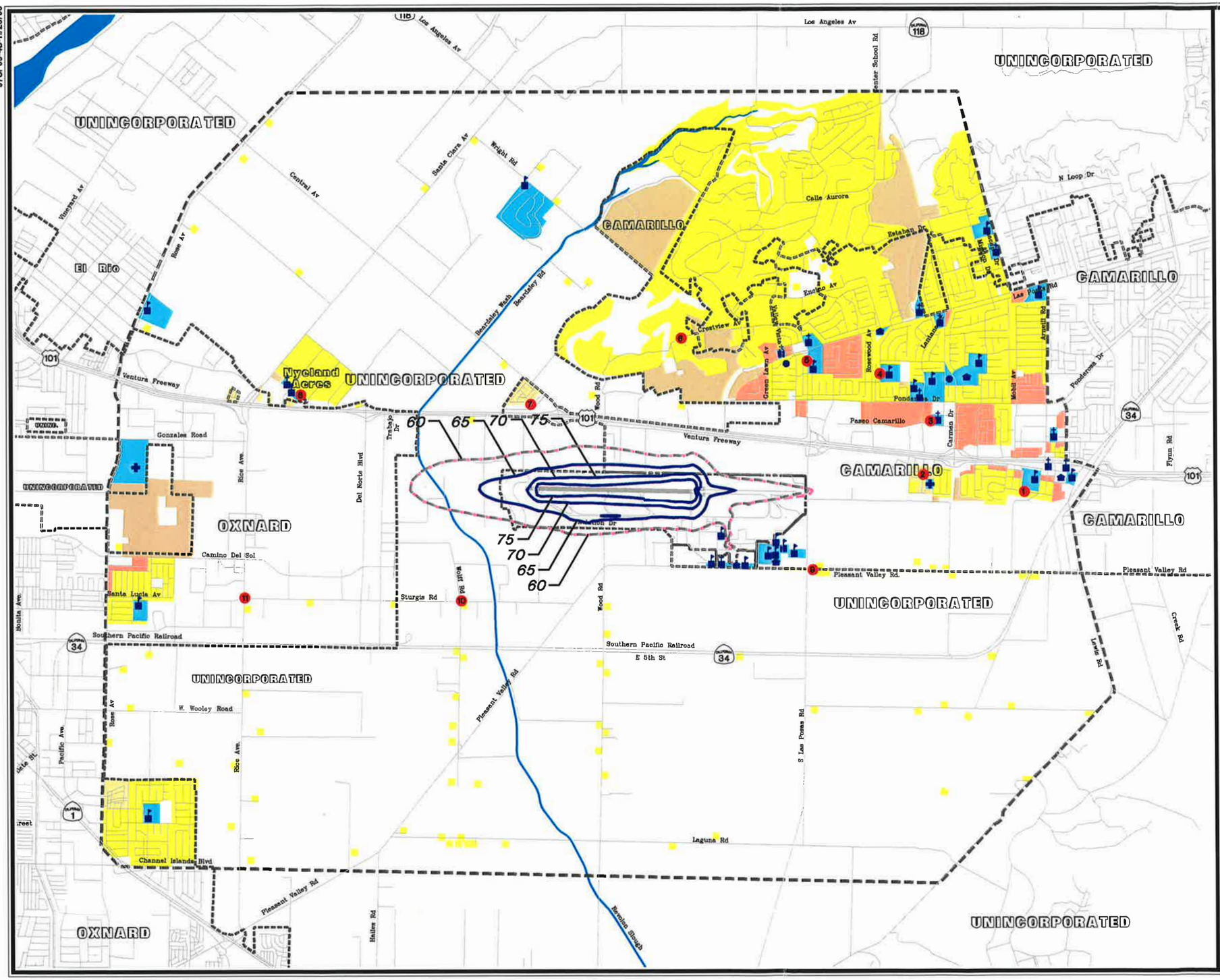


Exhibit 4B

RUNWAY 26 STRAIGHT-IN APPROACH ALTERNATIVE 1

northern pattern when several aircraft are in the southern traffic pattern.

Moving the current pattern to the north side of the airport would move a majority of the aircraft operations over the City of Camarillo. Changing the current traffic pattern location is not recommended.

Conclusion. The current traffic pattern altitude and location have been established to keep a majority of the aircraft operations south of the airport and away from the highest concentration of residential units in the area. Changes to the traffic pattern are not suggested.

AIRPORT REGULATIONS

The courts traditionally have recognized the right of airport proprietors to reduce their liability for aircraft noise by imposing restrictions that are reasonable, nondiscriminatory, and do not interfere with interstate commerce or violate a contractual agreement with the FAA made as a condition of receiving federal aid.

With the passage of the Airport Noise and Capacity Act of 1990, Congress not only established a national phase-out policy for large Stage 2 aircraft, but it also set forth the analytical requirements that must be met in order for an individual airport to establish noise or access restrictions on Stage 2 or Stage 3 aircraft beyond the national policy. Although the act does not require the phase-out of Stage 2 aircraft under 75,000 pounds, as would typically utilize Camarillo Airport, it does specifically require special analysis for any measure that restricts these aircraft. The requirements that must be met by an individual airport to further restrict these aircraft are set forth in F.A.R. Part 161.

The actions required by F.A.R. Part 161 in order to establish a local restriction on Stage 2 aircraft include the following:

- A technical analysis that evaluates costs and benefits of the proposed restriction, alternative restrictions, and alternative measures that do not include restrictions.

- Notice of the proposed restriction and opportunity for comment on the analysis.

While implementation of a Stage 2 aircraft operating restriction does not require FAA approval, the FAA does determine whether adequate analysis and notification have been conducted.

In order to establish a local restriction on Stage 3 aircraft, Part 161 requires a much more rigorous analysis as well as final FAA approval of the restriction. The conditions for approval of a Stage 3 restriction require that the analysis provide evidence of the following:

- The restriction is reasonable, nonarbitrary, and nondiscriminatory.

- The restriction does not create an undue burden on interstate or foreign commerce.

- The restriction maintains safe and efficient use of navigable airspace.

- The restriction does not conflict with any existing federal statute or regulation.

- The restriction does not create an undue burden on the national aviation system.

These requirements clearly indicate that restrictions on either Stage 2 or Stage 3 aircraft are considered as methods of last resort for noise abatement. The analytical requirements alone ensure that all other noise abatement alternatives should be exhausted before pursuing these types of restrictions. Since virtually any regulatory alternative at Camarillo Airport would result in limiting either Stage 2 or Stage 3 aircraft access, it is certain that the requirements in Part 161 would have to be met.

The relationship of F.A.R. Part 150 to Part 161 deserves some explanation. Part 150 specifically requires that airport operators discuss the potential use of operating restrictions for noise abatement purposes in noise compatibility studies. If, through the Part 150 process, an airport operator decides to pursue an airport operating restriction, the proper procedure is to describe it as a proposed noise abatement measure, noting that a Part 161 study would have to be undertaken before the restriction could be implemented. The FAA will then review the final Part 150 Noise Compatibility Program, which includes the proposed restriction. If the FAA decides that adequate documentation is provided to show that the proposed restriction has merit, it may approve the proposed restriction *for purposes of Part 150.* A Part 150 approval is not sufficient to implement the restriction. It merely represents the clearing of the first hurdle. Completion of a Part 161 study then becomes the next step.

The FAA has made it clear that the approval of an operating restriction in an F.A.R. Part 150 document would be predicated on the noise abatement benefit of the restriction at noise levels of 65 CNEL or higher. These benefits would have to be demonstrated for the current or five-year conditions that are officially required in the document. With no persons currently exposed to noise levels of 65 CNEL or higher, and no one expected to be within the 65 CNEL noise contour in five years, operating restrictions are not likely to be approved by the FAA at Camarillo Airport.

Despite the extremely remote possibility that operating restrictions at Camarillo could be approved by the FAA, F.A.R. Part 150 requires that restrictions be discussed in noise compatibility studies. Types of operating restrictions include the following:

- Nighttime curfews.

- Landing fees based on noise or time of arrival.

- Airport capacity limitations based on relative noisiness.
- Restriction of aircraft based on F.A.R. Part 36 noise levels.
- Restrictions on engine run-ups.
- Restrictions on touch-and-go activity.

Curfews

FAA Advisory Circular 150/5020-1 indicates that curfews may be an effective though potentially costly method of controlling airport noise. Since unwanted noise intrusions are most pronounced in the late evening or early morning hours, curfews are usually implemented to restrict operations during those periods.

Curfews are not without costs. They can have economic impacts upon airport users, upon those providing airport-related services, and upon the community as a whole.

A blanket prohibition on air traffic during the noise-sensitive hours can place undue constraints on users of the airport who are not major contributors to the noise contours. Not only would the loudest operations be prohibited, but operations by quiet aircraft also would be banned.

Conclusion. At Camarillo Airport, the low percentage of nighttime operations and lack of noise impacts in the critical 65 CNEL noise contour precludes any significant benefit from a curfew. Given the likelihood of FAA disapproval, curfews need not be considered further.

Landing Fees

The initiation of differential landing fees based on either the noise level or the time of arrival have been used at some airports as incentives to use quieter aircraft or to operate at less sensitive times. A variable schedule of landing fees would be established based on the relative loudness of the aircraft, with arrivals by loud aircraft at night being charged the most and arrivals by quiet aircraft during the day being charged the least. To avoid being discriminatory, the fee must relate to both the time of day and certificated approach noise levels. Fees from such a program can finance noise abatement activities. This restriction does not provide a noise abatement benefit unless the fees are high enough to actually discourage use of the airport by the loudest aircraft.

Conclusion. Camarillo Airport currently charges landing fees for aircraft weighing more than 12,500 pounds. Adding a noise-based landing fee would require a Part 161 analysis. Given the high cost of a Part 161 study and the lack of noise impacts within the 65 CNEL contour, development of a differential landing fee schedule does not warrant further consideration.

Capacity Limitations

Capacity limits based on either total operations or relative noisiness of aircraft have been used by severely impacted airports as a method of controlling the total cumulative noise exposure. Due to the unscheduled nature of the operations at Camarillo, the airport could not enforce a capacity limit to control noise.

Conclusion. Given that no people exposed to noise above 65 CNEL and the impracticality of enforcing capacity limits, they do not deserve further consideration at Camarillo.

Restrictions Based On F.A.R. Part 36

Outright restrictions on the use of aircraft exceeding certain noise levels can reduce cumulative noise exposure at an airport. Aircraft producing noise above certain thresholds, as defined in F.A.R. Part 36, could be prohibited from operating at the airport at all or certain times of the day. A variation is to impose a non-addition rule, prohibiting the addition of new flights by aircraft exceeding the threshold level at all or certain times of the day. These restrictions would be subject to the special analysis procedures of F.A.R. Part 161. Any restrictions affecting Stage 3 aircraft would have to receive FAA approval.

Noise limits based on F.A.R. Part 36 certification levels have the virtue of being fixed national standards understood by all in the industry. They are average values, however, and do not consider variations in noise levels based on different methods of operating the aircraft. As an alternative, restrictions could be based on measured noise levels at the airport. This has the advantage of focusing on noise produced in a given situation and, in theory, gives aircraft operators increased flexibility to comply with the restrictions by designing special approach and departure procedures to minimize noise. It has the disadvantage of requiring the installation of noise monitoring equipment and extra administrative effort to design testing procedures, monitor tests, interpret monitoring data, and design the restrictions.

Conclusion. Since no people are exposed to noise above 65 CNEL, this restriction would produce no benefits recognized by the FAA. It does not merit further consideration.

Engine Run-up Restrictions

Engine run-ups are a necessary and critical part of aircraft operation and maintenance. Engine run-ups are often more annoying than aircraft overflight noise because they are more unpredictable and usually last longer than overflights.

Because there are no large maintenance facilities at Camarillo Airport, engine maintenance run-ups are limited to the general aviation fixed based operators. Currently an average of two maintenance runups occur per week at Camarillo Airport.

Pre-flight run-ups are a necessary part of the aircraft safety check process before departing. These run-ups generally do not at high power settings and do not last more than a few minutes. Historically, pre-flight run-ups have not generated complaints from area residents.

Conclusion. Maintenance run-up activity is not common at Camarillo and has not been a problem. Neither have pre-flight engine run-ups been cited as significant annoyances. Thus, restrictions on run-ups are not warranted.

Touch-and-Go Restrictions

Restrictions on touch-and-go or multiple approach operations can be effective in reducing noise when those operations are extremely noisy, unusually frequent, or occur at very noise-sensitive times of the day. At many airports, touch-and-goes are associated with primary pilot training, although this type of operation is also done by licensed pilots practicing approaches.

Touch-and-goes and multiple approaches are frequently done at Camarillo Airport. In 1998, there were 96,764 local general aviation operations (generally involving multiple approaches or touch-and-goes). The touch-and-go operations were done mainly by light, single-engine aircraft.

The high frequency of touch-and-go activity on the weekends has been a concern for area residents. While the traffic pattern is normally south of the runway, arrival traffic is routed to a north pattern when the south pattern is densely occupied by aircraft doing touch-and-goes. If the north pattern becomes busy or is occupied by aircraft of widely differing speeds, the north pattern spreads out, extending far to the east, to maintain safe distances between aircraft. This affects residential areas northeast of airport.

While a prohibition on touch-and-go operations would certainly reduce this concern in the future, it would also seriously reduce the business and revenues generated at the airport. Also a prohibition of this nature would have legal ramifications as it could put any flight schools or pilot training services that are currently at the airport out of business.

Conclusion. Given that no people are within the 65 CNEL contour, the FAA would be unlikely to approve restrictions on touch-and-go operations. This measure should not be considered further.

AIRCRAFT OPERATING PROCEDURES

Aircraft operating procedures that may reduce noise impacts may apply to either departures or arrivals. They include:

- Reduced thrust takeoffs.
- Thrust cutbacks after takeoff.

- Maximum climb departures.
- Minimum approach altitude.
- Use of minimum flaps during approaches.
- Steeper approach angles.
- Limits the use of reverse thrust during landings.

Reduced Thrust Takeoffs

Reduced thrust takeoffs involve the use of a reduced power setting throughout both takeoff roll and climb. Use of the procedure depends upon aircraft weight, weather and wind conditions, pavement conditions and available runway length. Since these conditions vary considerably, it is not possible to mandate safely the use of reduced thrust departures.

In fact, aircraft operators often use reduced thrust departures to conserve fuel, minimize engine wear, and abate noise when the safe use of the procedure is indicated. Additional efforts by airport management to encourage the use of deeper thrust reductions are unlikely to yield significant noise abatement benefits.

Requiring takeoff thrust settings to be reduced beyond the normal settings appropriate for the aircraft type, weight, temperature, etc., not only can erode safety margins but also tend to drag noise out further from the airport.

Conclusion. Because of the safety implications of these procedures, they are best left to the discretion of aircraft operators. An airport policy mandating the use of reduced thrust takeoffs is not considered an effective noise abatement measure for Camarillo Airport.

Thrust Cutbacks For Business Jets

As a service to the general aviation industry, the National Business Aircraft Association (NBAA) prepared a series of noise abatement takeoff and arrival procedures for its membership in 1967. This program has virtually become an industry standard for operators of business jet aircraft since that time. The departure procedures are of two types: the **standard departure procedure** and the **close-in departure procedure**. The selection of the applicable noise abatement departure procedure depends on the proximity of the nearest noise-sensitive area.

The NBAA standard departure procedure calls for a thrust cutback at 1,000 feet above ground level (AGL) and a 1,000 feet per minute climb to 3,000 feet altitude during acceleration and clean-up. The close-in procedure is similar but calls for a thrust cutback at 500 feet AGL. While both procedures are effective in reducing noise impacts on surrounding land uses, the locations of the reduction vary with each. The standard procedure will result in lower noise levels over down-range locations,

while the close-in procedure will result in lower noise levels near the airport. Neither NBAA procedure is intended to supplant a procedure recommended by the manufacturer, when one is included in the aircraft operating manual.

An attempt to actively enforce a procedure of this nature requires some type of verification of usage by the airport management. In order to ensure the promised changes in noise exposure, a permanent system of noise and flight track data acquisition is necessary. These systems typically cost in the $500,000 to $1,000,000 range and are also expensive to maintain. Additionally, a specialized staff is necessary to analyze and interpret the data, again, a substantial cost.

Conclusion. At Camarillo Airport, with no noise impacts within the 65 CNEL level and a relatively low level of business jet operations, aggressive promotion of these thrust cutback procedures is not necessary; however, the airport should encourage and remind pilots to use quiet flying procedures whenever possible.

Maximum Climb Departures

The use of maximum climb, or best angle, departure procedures can, in some cases, help reduce noise exposure over populated areas some distance from the airport. The procedure requires the use of maximum thrust with no cutback on departure. Consequently, the potential noise reductions in the outlying areas are at the expense of dramatic noise increases closer to the airport.

This type of procedure can also be costly to aircraft operators. The use of maximum climb procedures can increase fuel usage and wear and tear on engines and equipment.

Airspace conflicts with Oxnard Airport and NAWS Point Mugu are a concern when considering a maximum climb departure procedure. A maximum climb procedure from Runway 26 would send aircraft into the Runway 25 instrument approach stream at Oxnard. A maximum climb procedure from Runway 8 would conflict with NAWS Point Mugu arrivals from the north.

Conclusion. The negligible benefits of maximum climb departures at Camarillo Airport are coupled with by the increased danger of airspace conflicts with aircraft approaching nearby airports. The procedure is not considered effective or safe and has been dropped from further consideration.

Minimum Approach Altitudes

A minimum approach altitude procedure would entail an ATC requirement that all positively-controlled aircraft approaches be conducted at a specified minimum altitude until the aircraft must begin its descent to land. Currently the pattern altitude at Camarillo Airport is 875 feet MSL for propeller aircraft and 1,075 feet MSL for jet aircraft. This translates to about 800 feet and 1,000 feet above field level (AFL) respectively. Minimum altitudes would apply to aircraft some distance from the airport and well outside the noise contour area. Increases in

approach altitude can yield only small reductions in noise. It would require the doubling of the altitude of an aircraft in a downwind or circling approach to achieve a noise the reduction of four to six decibels. Additionally, raising the pattern altitude would enlarge the pattern as departing aircraft have to extend their upwind and crosswind legs to achieve the pattern altitude as they turn on the downwind leg of the pattern.

Conclusion. The raising of approach altitudes does not significantly reduce cumulative noise levels because takeoff noise normally dominates the situation. Thus, the measure is not considered further.

Noise Abatement Approach Procedures

Approach procedures to reduce noise impacts were attempted in the early days of noise abatement, but are no longer favorably received. The procedures include the minimal use of flaps in order to reduce power settings and airframe noise, the use of increased approach angles, and two stage descent profiles. Follow-up studies have found that all of these techniques cause concern for safety because they are nonstandard and require an aircraft to be operated outside of its optimal safe operating configurations. Unfortunately, some of these procedures actually were found to increase noise because of power applications required to arrest high sink rates.

Conclusion. Noise abatement approaches tend to increase landing speeds. These higher sink rates and faster speeds associated with steeper descent approaches can reduce pilot reaction time and erode safety margins. This is particularly a concern with inexperienced student pilots. Noise abatement approach procedures for Camarillo Airport are not considered further.

Reverse Thrust Restrictions

Thrust reversal is routinely used to slow jet aircraft immediately after touchdown. This is an important safety procedure that has the added benefit of reducing brake wear. Restrictions on the use of thrust reversal can reduce noise impacts off the sides of the runways, although they would not significantly reduce the size of the noise contours. Enforced restrictions on the use of reverse thrust, however, are not considered fully safe.

Given the location of noise-sensitive uses in the Camarillo Airport vicinity, a restriction on thrust reversal would not result in significant benefits. Reverse thrust restrictions tend to erode landing safety margins, increase runway occupancy time, and increase brake wear on aircraft.

Conclusion. Limitations on the use of reverse thrust are inadvisable at Camarillo because of the likelihood for minimal benefits and decreased safety margins.

AIRPORT FACILITIES DEVELOPMENT

The development of on-airport facilities to improve off-airport noise levels is an accepted technique in noise abatement. Airport facilities can be constructed or modified to reduce aircraft noise or shift it to compatible areas. Other facility changes that may offer some degree of noise abatement are displaced runway thresholds and acoustical barriers or shielding.

Runway Extensions And New Runways

New runways aligned with compatible land development, or runway extensions shifting aircraft operations further away from residential areas are a proven means of noise abatement. New runways are most effective where there are large compatible areas near an airport, and existing runways are aligned with residential areas. Runway extensions are usually beneficial where there is substantial residential development very close to one end of a runway and not the other.

With no noise-sensitive land uses or housing within the 60 CNEL contour at Camarillo, new runways and runway extensions cannot be justified to the FAA based solely on noise abatement.

Conclusion. This option is no longer considered in this F.A.R. Part 150 Study.

Displaced And Relocated Thresholds

A displaced threshold can provide some measure of noise abatement. To displace a threshold means that the touchdown zone for landing aircraft is moved further down the runway. The determination of the amount of displacement must consider the required runway lengths for landing as well as the amount of noise reduction associated with the displacement. For example, if the threshold of a runway were displaced 1,000 feet, the altitude of an aircraft along the approach path would be increased by only 50 feet. The single event noise levels associated with displaced thresholds would decrease slightly along the flight track.

Threshold relocation, where the point of touchdown and the point of takeoff are both shifted, can offer some small additional noise benefits to areas near a runway end by shifting takeoff noise associated with the start of the takeoff roll away from the former runway end.

Camarillo has a relocated threshold on Runway 26. Further threshold displacements or relocations would decrease the runway length available for landings, increasing the need for thrust reversal and potentially increasing aircraft brake wear and decreasing safety margins. The additional reductions in noise would be quite small.

Conclusion. Threshold displacement and relocation generally offer only small noise reduction benefits in exchange for some erosion in safety margins. They are most helpful to residential areas located very near the end of the runway. Displaced or relocated runway thresholds would provide little or no benefit at Camarillo Airport and are not considered further.

Acoustical Barriers

Acoustical barriers include noise walls, berms, and hush houses or run-up pens for containing engine maintenance run-up noise. Acoustical barriers are only useful for attenuating noise from aircraft activity on the ground. They have very limited application in special situations, act best over relatively short distances, and their benefits are greatly affected by surface topography and wind conditions. Furthermore, the effectiveness of a barrier is directly related to the distance of the noise source from the receiver and the distance of each from the barrier itself, as well as the angle between the ends of the berm and the receiver.

While noise berms and noise walls can attenuate noise, they are often criticized by airport neighbors because they obstruct views. Another frequent complaint is that airport noise can become more alarming, particularly noise from unusual events, because people are unable to see the cause of the noise.

Conclusion. Noise berms or walls are ineffective for attenuation of aircraft overflight noise. Given the location of the residential areas around the airport, acoustical barriers also would be ineffective in significantly attenuating noise from aircraft on the ground. As such, this measure is not considered further.

SUMMARY

The previous sections have reviewed and analyzed noise abatement techniques for Camarillo Airport. A straight-in instrument approach to off-set Runway 26, instead of the current VOR approach, would reduce the number of overflights for residents east of the airport along the Ventura Highway. Based on the grid point analysis, however, the residents in this area would receive very little noise benefit from a straight-in procedure.

Aircraft departing Runway 26 with east or northeast destinations should be requested to fly north of the City before turning east. This procedure should be added to the noise abatement procedures literature and pilot guides. Posters and informational brochures also could be posted in the pilot lounges at the FBOs.

The planned parallel runway to the south of existing Runway 8-26 would provide very small noise reductions to noise-sensitive areas north of the airport. A new parallel runway would reduce the number of overflights of the City during peak periods by shifting the touch-and-go activity further south. These benefits are not great enough, however for the parallel runway to be

offered as an official noise abatement measure for FAA Part 150 approval.

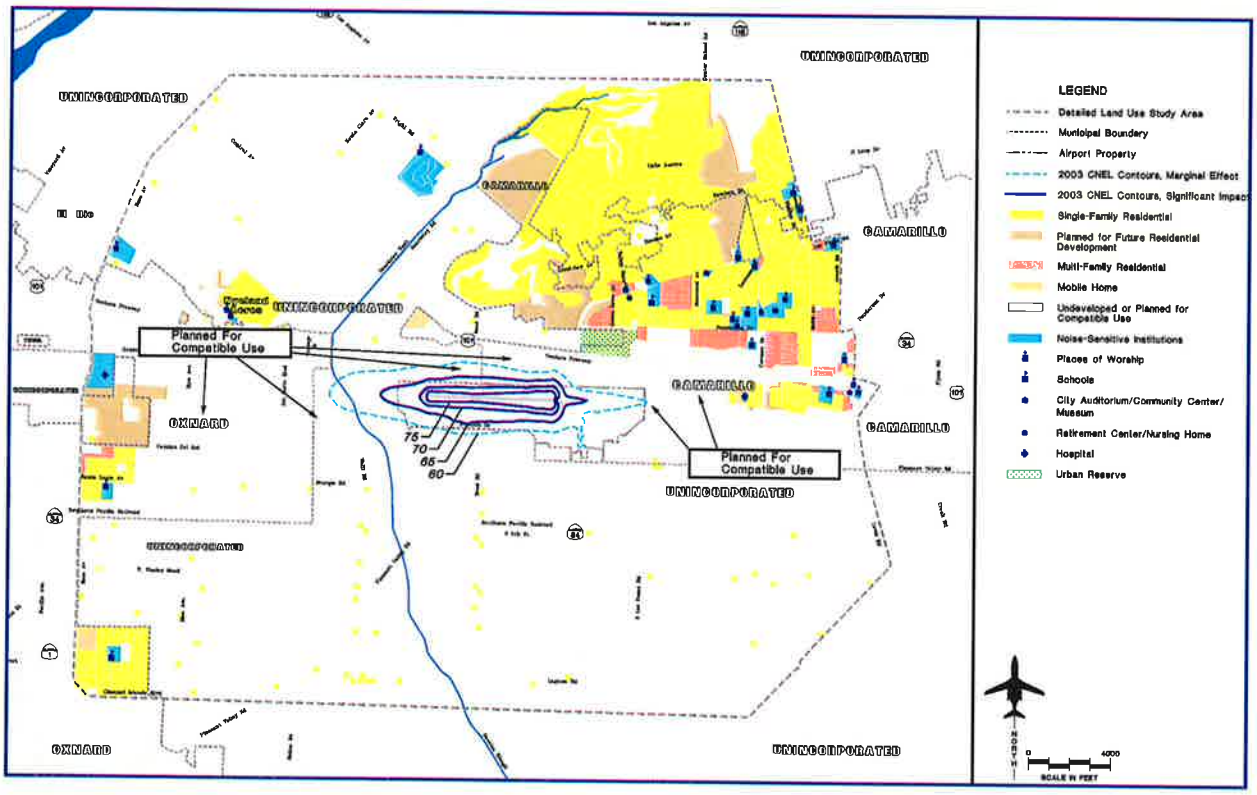
The results of this analysis must be reviewed by the Planning Advisory Committee, airport management, and the general public before final recommendations can be made. Final recommendations will be presented in Chapter Six, the Noise Compatibility Program.

CAMARILLO AIRPORT
Part 150 Noise Compatibility Program

Chapter Five
LAND USE ALTERNATIVES

Chapter Five

LAND USE ALTERNATIVES



INTRODUCTION

This chapter covers land use management alternatives intended to prevent future noise impacts. It begins by identifying broad planning issues to be addressed by the Noise Compatibility Program. Land use management techniques are then evaluated to determine their potential usefulness in the Camarillo Airport study area. Finally, land use alternatives deserving serious consideration are summarized. The final land use management and noise abatement recommendations will be presented in Chapter Six, Noise Compatibility Program.

LAND USE ISSUE

Exhibit 5A shows the projected noise contours for the year 2003 and existing and planned future noise-sensitive land uses. The situation at Camarillo is quite favorable since no noise-sensitive land uses are in the 60 CNEL noise contour, nor are any future noise-sensitive uses planned within the noise contours. As noted in **Exhibit 5A**, the areas east and west of the airport for some distance beyond the 60 CNEL noise contour are designated in the Camarillo General Plan for future airport-compatible development.

Residential development lies 8,500 feet east of the airport and north of the airport beyond Ponderosa Drive, well outside the 60 CNEL noise contours. Nevertheless, the complaint history at the airport indicates that people in these areas can be disturbed by aircraft noise and low overflights. This indicates that the City may be well advised to plan conservatively for airport compatibility in areas off the runway ends and beneath common traffic patterns, even if they are outside the 60 CNEL noise contour. This issue is considered in the evaluation of alternative land use techniques which follows.

LAND USE MANAGEMENT TECHNIQUES

Land use management techniques to promote noise compatibility are discussed in this section. These techniques are grouped under three headings: **policy** and **regulatory** techniques that guide future development, and **expenditure** techniques which involve potential payments for mitigation assistance. They are listed in **Exhibit 5B.**

The potential suitability of each technique is discussed in this chapter and evaluated based on effectiveness and feasibility. The criteria for judging effectiveness include near and long-term effectiveness in addressing the land use issue discussed in the previous section.

If a technique appears to be effective and does not create undesirable side effects, the feasibility of implementing it is evaluated. The feasibility criteria include cost to local governments and citizens, eligibility for FAA financial aid, political acceptability, state statutory authorization, and administrative ease or complexity.

POLICY TECHNIQUES

Policy techniques which can be used to guide future development include:

- General Planning
- Project Review Guidelines

General Planning

A General Plan establishes policies for the development and improvement of the community. It provides the basis for the local zoning ordinance, the regulations governing the use and development of land.

The City of Camarillo's General Plan was reviewed in Chapter One and shown in Exhibit 1K. The General Plan currently promotes airport-compatible development in undeveloped areas around the airport. Areas directly north and east of the airport are designated for future industrial and commercial use. Areas south and west of the airport are designated for agriculture. One area on the north side of the Ventura Freeway and west of Las Posas Road is designated in the General Plan as "urban reserve." This means that, for the time-being, it will remain designated for agriculture. In the longer term future, however, the City intends to re-designate it for urban use. It would be helpful if the City

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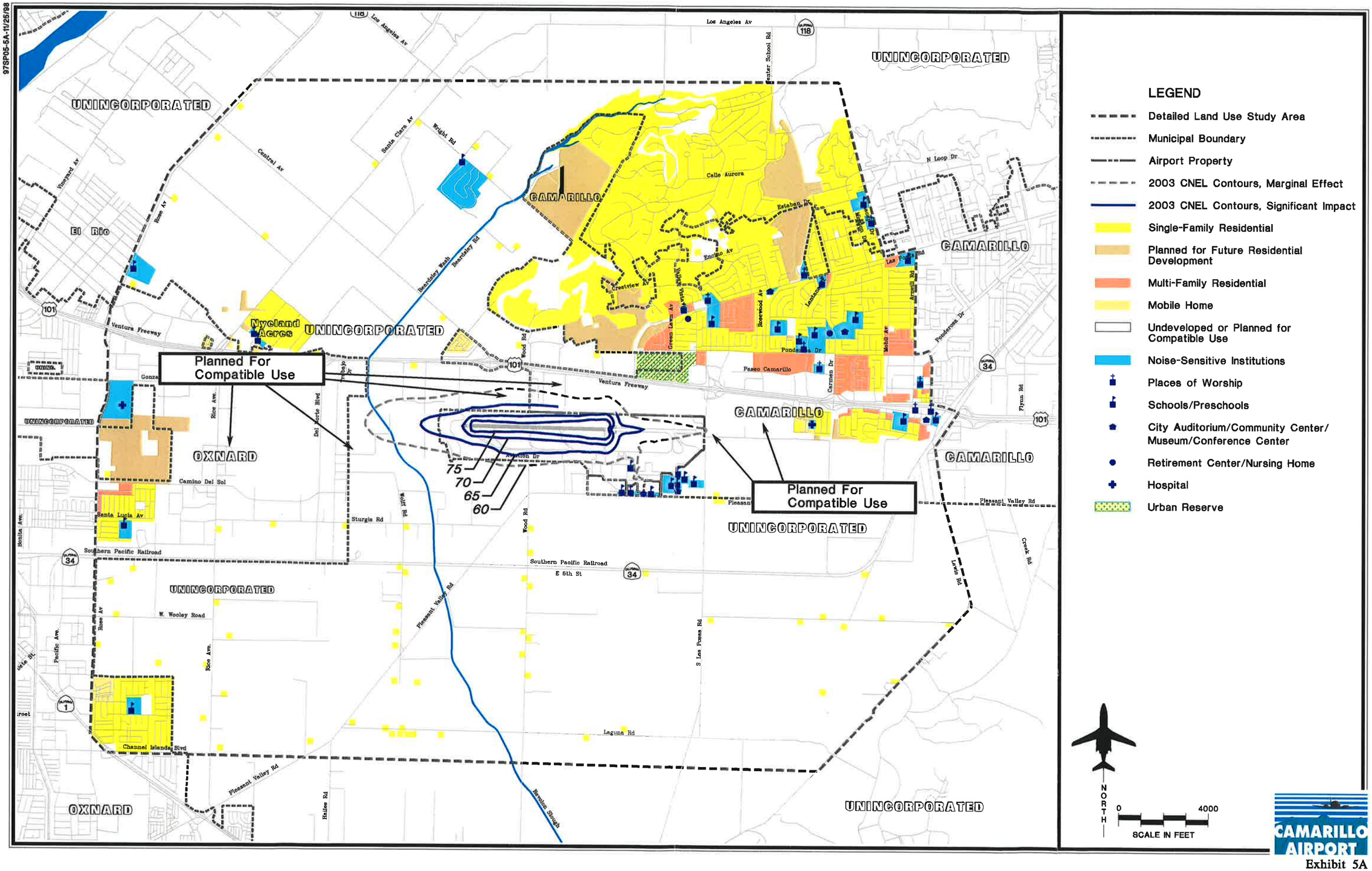


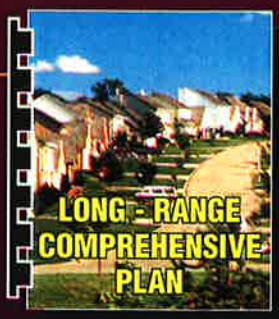
CAMARILLO AIRPORT

Exhibit 5A
LAND USE ISSUES

97SP05-5B-4/28/98

POLICIES

- Comprehensive / General Plan
- Project Review Guidelines



CHECKLIST FOR REVIEW OF NOISE-SENSITIVE DEVELOPMENT PROJECTS

✓ 1. Is proposed land use "noise-sensitive"?

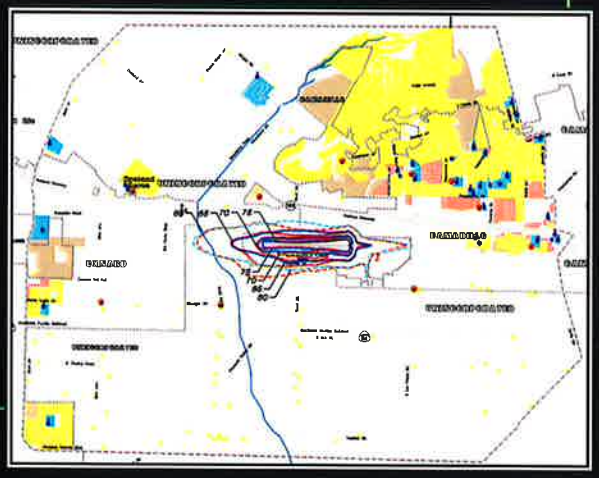
✓ 2. If yes, is proposed land use in 60 CNEL contour? *(If so, route application to Airport Manager.)*

_ 3. Is sound insulation proposed?

_ 4. Can site be arranged to reduce noise exposure?

REGULATIONS

- Compatible Use Zoning
- Zoning Changes - Residential Density
  - Large Lots, Planned Unit Development
- Airport Noise Overlay Zoning
- Subdivision Regulations
- Building Codes
- Transfer of Development Rights
- Environmental Zoning
- Fair Disclosure By Sellers



EXPENDITURES

- Property Acquisition
- Noise and Avigation Easement Purchase
- Development Rights Purchase
- Purchase Assurance
- Sales Assistance
- Sound Insulation

CAMARILLO AIRPORT

Exhibit 5B
LAND USE TECHNIQUES TO PROMOTE NOISE COMPATIBILITY

97SP05-5B-4/28/98

TECHNIQUES FOR GUIDING NEW DEVELOPMENT TO PREVENT FUTURE NOISE IMPACTS

POLICY TECHNIQUES - Non-regulatory governmental actions to encourage noise-compatible development near airport.

Comprehensive Planning: Policies supporting land use compatibility near airport. Involves land use plans and policies to guide consideration of rezonings, variances, conditional uses, public projects.

Project Review Guidelines: Adoption of guidelines which ensure that noise compatibility issues are considered during reviews of development proposals.

REGULATORY TECHNIQUES - Local land use regulations requiring compatible development in airport area.

Compatible Use Zoning: Commercial, industrial, agriculture, or open space zoning.

Zoning Changes, Residential Density: Large-lot zoning or planned unit development.

Noise Overlay Zoning: Special regulations within high-noise areas.

Subdivision Regulations: Require dedication of noise and avigation easements, plat notes.

Building Codes: Require sound insulation in new construction.

Transfer of Development Rights: Zoning framework to authorize private sale of development rights to encourage sparse development in high-noise areas.

Environmental Zoning: Environmental protection zoning to support airport land use compatibility.

Fair Disclosure Regulations: Require seller to notify buyer of aircraft noise.

TECHNIQUES FOR MITIGATING EXISTING NOISE IMPACTS

EXPENDITURE TECHNIQUES - Because of high costs, these techniques are usually applied only within 65 DNL contour where Federal funding assistance may be available.

Property Acquisition: Outright purchase of property.

Noise and Avigation Easement Purchase: Purchase of easement only.

Development Rights Purchase: Purchase of rights to develop property.

Purchase Assurance: Airport acts as buyer of last resort, then resells property and retains easements.

Sales Assistance: Provide assistance to property owners in selling homes. Airport retains noise easements.

Sound Insulation: Installation of sound insulation in existing homes and noise-sensitive institutions.

CAMARILLO AIRPORT

Exhibit 5B (Continued)
LAND USE TECHNIQUES TO PROMOTE
NOISE COMPATIBILITY

could adopt policy language in the General Plan indicating that this area should be re-designated only for urban uses that are compatible with the airport, as shown in **Exhibit 5C**. Even though this area is well outside the 60 CNEL contour, it is subject to low overflights from aircraft in the north arrival pattern for approaches to Runway 26. (It is also subject to significant noise from the Ventura Freeway.)

Unincorporated land south and west of the airport is currently designated in the Ventura County General Plan for agricultural use. Again, this promotes airport compatibility and is especially important west of the airport under the predominant departure corridor. If at all possible, the land between the airport and the Oxnard city limits should be preserved for future compatible uses as shown in **Exhibit 5C**. Even though much of this area is outside the 60 CNEL contour, experience at Camarillo and many other airports has demonstrated that many people who are exposed to frequent low overflights and noise, even at levels below 60 CNEL, can be extremely annoyed by aircraft noise and activity. Since this area west of the airport will remain a critical departure corridor throughout the future, it should remain free of residential and other noise-sensitive development if at all possible.

The City and County also have a variety of policies in the General Plan promoting airport-compatible development. These are reviewed in Chapter One. Current policies for Ventura County prohibit new noise-sensitive uses in areas exposed to noise above 65 CNEL. It would be helpful if this policy could be revised to prohibit new noise-sensitive uses within the 60 CNEL contour at Camarillo Airport. (This policy could conceivably be applied at other general aviation airports in the County.) The City of Camarillo could consider the adoption of a similar policy in its General Plan. These policies would be consistent with the actual future land use designations for undeveloped areas around Camarillo Airport.

The City and County should amend their general plans to reflect the updated noise contours at Camarillo Airport. For land use planning purposes, the airport noise scenario they use should reflect the area at risk of noise exposure through the near and long-term future. For that reason, they should seriously consider using a composite of the 2003 and 2018 noise contours as a "land use planning scenario." (The composite noise contours are shown in **Exhibit 5C**.) While those contours do not differ greatly, in some areas the 2003 noise contours are larger than the 2018 contours, and vice versa. A combination of both sets of contours would define a total noise exposure risk area based on the most up-to-date information.

Conclusion: The General Plans of both the City of Camarillo and Ventura County designate undeveloped areas within the airport noise contours for compatible development. It is important that these noise compatibility policies and land use designations be continued in the future. If at all possible, buffer areas beyond the 60 CNEL contour also should

continue to be preserved for compatible uses. It would also be helpful if Camarillo would consider adopting language in its General Plan noting that the "urban reserve" area on the north side of the Ventura Freeway, east of Las Posas Road, will be re-designated in the future only for airport-compatible urban uses.

Both the City and County should consider using the combined 2003 and 2018 noise contours as a "land use planning scenario" in their general plans. The County should consider amending its current land use compatibility policy to prohibit new noise-sensitive land uses within the 60 CNEL contour at Camarillo Airport rather than only within the 65 CNEL contour. Camarillo should consider adopting a similar policy. This is, in fact, consistent with the actual land use planning designations of their general plans in the Camarillo Airport area.

Project Review Guidelines

Planning commissions and local governing bodies are often required to use their own discretion and judgement in making recommendations and decisions on community development issues such as general plan amendments and rezonings, variances, conditional use applications, subdivision applications, and proposed public improvement projects. The exercise of this discretion is constrained by the legal requirements of the applicable ordinances. Where opportunities remain for planning commissions and governing bodies to use their own discretion in the review of development proposals, it may be appropriate to adopt procedures ensuring the consideration of noise compatibility issues in their deliberations.

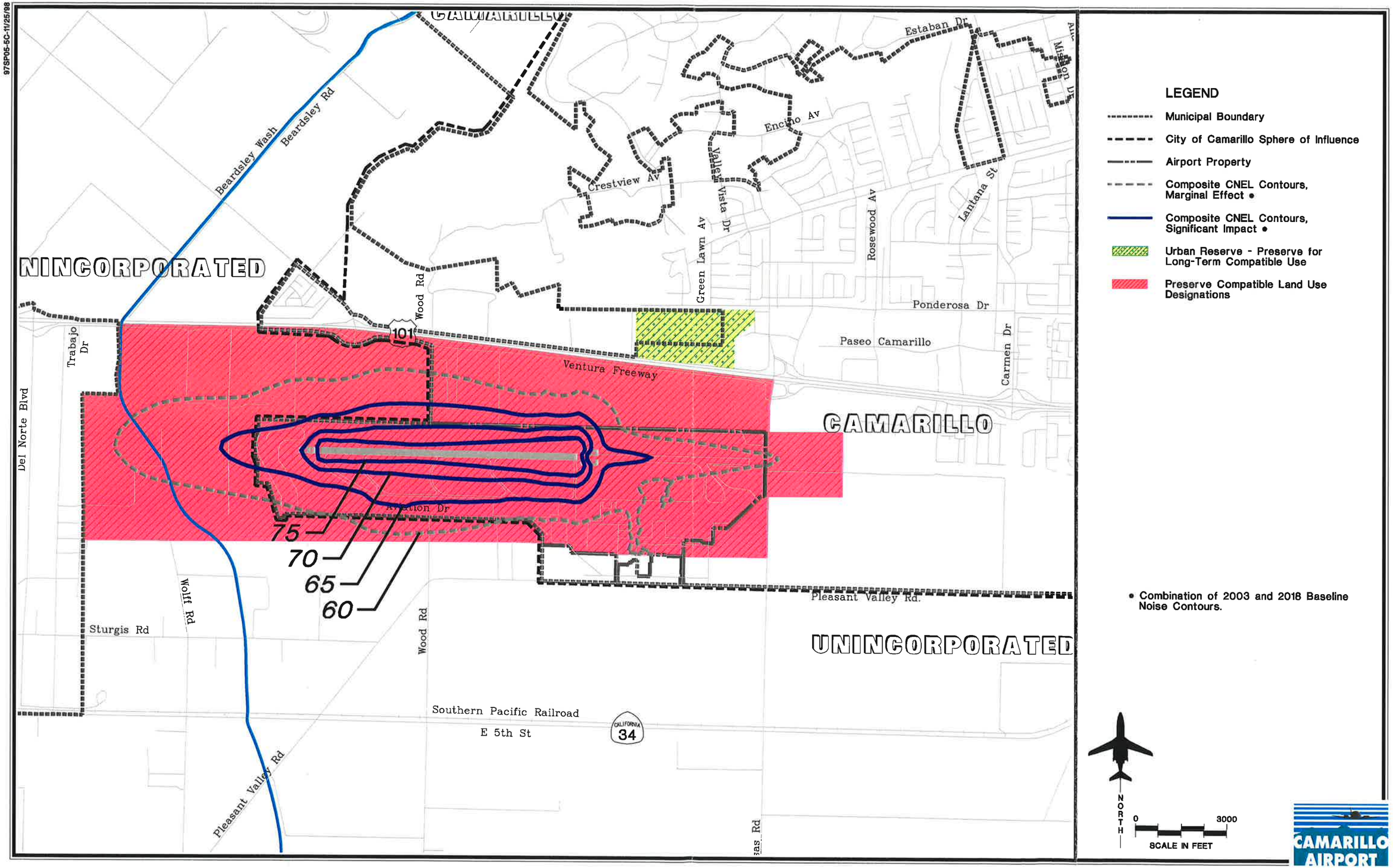
Ventura County and the City of Camarillo could consider adopting airport land use compatibility guidelines for discretionary review of development projects within the 60 CNEL contour. These would be most appropriately contained in the general plans. This process would add little cost or administrative burden to the review process. A simple checklist could be prepared listing the important factors to consider in reviewing development proposals within the 60 CNEL noise contour. The following criteria are suggested:

A. Determine the sensitivity of the subject land use to aircraft noise levels. The F.A.R. Part 150 land use compatibility table can be used for this purpose. (See Exhibit 3A in Chapter Three.)

B. Advise the airport management of development proposals involving noise-sensitive land uses within the 60 CNEL noise contour.

C. Locate noise-sensitive public facilities outside the 60 CNEL contour, if possible. Otherwise, require building construction to provide an outdoor to indoor noise level reduction of 25 decibels. Also, require the dedication of noise and avigation easements to the County as airport proprietor and the recording of a fair disclosure agreement and covenant noting the

97SP05-5C-11/25/98



LEGEND

- Municipal Boundary
- City of Camarillo Sphere of Influence
- Airport Property
- Composite CNEL Contours, Marginal Effect •
- Composite CNEL Contours, Significant Impact •
- Urban Reserve - Preserve for Long-Term Compatible Use
- Preserve Compatible Land Use Designations

• Combination of 2003 and 2018 Baseline Noise Contours.

CAMARILLO AIRPORT

Exhibit 5C

POTENTIAL LAND USE PLANNING MEASURES

proximity of the airport and the existing and projected airport noise contours.

D. Discourage the approval of rezonings, exceptions, variances, and conditional uses which introduce noise-sensitive development into areas impacted by noise exceeding 60 CNEL.

E. Where development within the 60 CNEL contour must be permitted, encourage developers to incorporate the following measures into their site designs.

   (1) Where noise-sensitive uses will be inside a larger, mixed use building, locate noise-sensitive activities on the side of the building opposite the airport or, if the building is beneath a flight track, opposite the prevailing direction of aircraft flight.

   (2) Where noise-sensitive uses are part of a larger mixed use development, use the height and orientation of compatible uses, and the height and orientation of landscape features such as natural hills, ravines and manmade berms, to shield noise-sensitive uses from ground-noise generated at the airport.

Conclusion: Ventura County and the City of Camarillo could consider adopting airport land use compatibility guidelines for review of development projects within the 60 CNEL contour. These would be appropriately included in each jurisdiction's general plan. (These guidelines would not be necessary if the two jurisdictions enact general plan policies to completely prohibit new noise-sensitive land uses within the 60 CNEL contour, as discussed in the previous section.)

REGULATORY TECHNIQUES

Regulatory techniques are land use and development controls established through local legislation. These include:

- Compatible Use Zoning
- Zoning Changes/ Residential Density
- Noise Overlay Zoning
- Subdivision Regulations
- Building Codes
- Transfer of Development Rights
- Environmental Zoning
- Fair Disclosure Regulations

Compatible Use Zoning

The most common zoning technique in noise compatibility planning is to eliminate residential zoning from the noise-impacted area and replace it with commercial, industrial, open space, or other compatible zoning designation.

In California, the zoning ordinance and map are required to be consistent with the community's general plan. As noted above, the general plans of Ventura County and the City of Camarillo call for compatible uses in undeveloped areas exposed to aircraft noise above 60 CNEL. Thus, the zoning maps also provide for compatible uses.

Conclusion: Since the undeveloped part of the noise-impacted area around the airport is already planned and zoned for compatible use, there is no need for further compatible use rezonings in the area.

Zoning Changes – Residential Density

Another way of using conventional zoning to promote noise compatibility is to reduce the permitted housing density in an undeveloped area exposed to noise, thus reducing the number of future residents, rather than preventing residential development altogether. This is definitely a second-best approach and should be used only if compatible use planning and zoning are not feasible.

"Planned unit development" (PUD) is another technique which may offer some of the benefits of low-density (or large-lot) zoning. It allows development without having to follow the standard lot layout and siting requirements of the zoning ordinance. Planned unit developments can involve the clustering of buildings and the reservation of open space, as long as the overall dwelling unit density in the development is basically the same as the density permitted in the underlying zoning district. In addition, a variety of housing types, including townhouses, apartments, and condominiums, are often permitted. This could conceivably allow open space and parking areas to be placed within the noise impact area and housing to be clustered outside the area.

Conclusion: As already noted, the general plans and zoning maps of Ventura County and the City of Camarillo already provide for future compatible uses in undeveloped parts of the noise-impacted area. Thus, there is no need to consider low-density zoning or planned unit development as second best alternatives to compatible use designations.

Noise Overlay Zoning

Overlay zoning (sometimes called "combining zoning") is intended to provide a layer of special purpose regulations to address special environmental constraints or problems, setting performance standards to protect the public. Overlay zoning involves the creation of one or more special zoning districts supplementing or combining with the regulations of the general purpose zoning districts.

Noise overlay zoning is used around many airports in the country to establish special land use controls to protect the public health, safety, and welfare from conflicts which may arise between aviation and urban development. These controls often are used, for example, to regulate the height of structures within runway approach areas and in other areas near the airport, or to promote development which is compatible with aircraft noise levels.

Noise overlay zoning regulations are usually established as "combining" regulations in that the underlying zoning, (i.e., residential, commercial,

industrial, etc.) remains in place and is supplemented by the noise overlay zone. The land within the noise overlay zone is subject to the requirements of two zoning districts -- the underlying zone and the overlay zone. The strictest requirements of both zones apply to the affected property.

Noise overlay zoning is intended to avoid the problems associated with incompatible development in high noise areas. Regulations in noise overlay zones can prohibit noise-sensitive uses, as long as the underlying zone permits enough other land uses to provide an opportunity for the economically viable use of the land. The regulations also can require sound insulation in the construction of noise-sensitive uses.

The boundaries of noise overlay zones are usually determined by the critical noise contours based on local perceptions -- often the 65, 70, and 75 CNEL contours, but with increasing emphasis on the 60 CNEL. The boundary may follow the actual contours or, for the sake of simplified administration, nearby streets, property lines, or natural features.

Noise overlay zoning is administered by the local land use regulatory agency. In areas where noise crosses jurisdictional boundary lines, as in the Camarillo Airport area, it is helpful to local developers if the jurisdictions cooperate with a unified approach to overlay zoning.

Among the advantages of noise overlay zoning are the simplicity of the required amendments, the simplicity of administration, the clear relationship of the regulations to their purpose, and the minimal impact of the regulations on the application of the zoning ordinance in other parts of the community.

In the Camarillo Airport area, all of the undeveloped land exposed to noise above 60 CNEL is designated for compatible use in the City and County general plans and zoning ordinances. In addition, the general plans establish performance standards, including sound insulation, that must be met for new noise-sensitive development within the airport noise contours.

Conclusion: Because Camarillo and Ventura County have designated the area around Camarillo Airport, including all of the undeveloped area within the 60 CNEL contour, for compatible use in the general plans and zoning ordinances, there is no particular need for airport noise compatibility zoning in the area. The purposes that would be achieved by overlay zoning are already being achieved by conventional zoning and the performance standards set in the general plans.

Subdivision Regulations

Subdivision regulations control the platting of land by setting standards for site planning, lot layout, and the design of utilities and public improvements. They can encourage compatible development around an airport by requiring the consideration of aircraft noise during the plat review by public officials. This might take the form of requiring further noise attenuation

features in the site plan or a decrease or shift in the density of portions of the development, although subdivision regulations are not well-suited to addressing needs for noise attenuation.

Subdivision regulations also can be used to inform prospective future property owners of the risk of aircraft noise. In some communities, noise levels are shown on the final subdivision plats either by drawing the noise contours on the plats or by assigning noise levels to the lots. This makes the noise information a matter of public record. An important disadvantage is that, while the plat is recorded and on file forever, noise levels can change.

Another approach is to write a note on the plat, or record a covenant with the plat, stating that the property is subject to potentially disruptive aircraft noise and advising consultation with local planning officials and the airport proprietor to get current information about the noise situation. As a practical matter, however, buyers of property rarely look at the plats.

Subdivision regulations can help protect the airport from the risk of noise damage suits while providing for notice to potential buyers of property by requiring, as a condition of subdivision approval, the dedication of noise and avigation easements and non-suit covenants in high-noise areas. This is similar to requirements for the dedication of street right-of-way or utility easements usually found in subdivision regulations. An easement is a limited right to use property owned by another. A noise and avigation easement gives the airport, as owner of the easement, the right to direct aircraft over the property and thus to make noise. These easements serve notice that the property is subject to significant aircraft noise which may, at times, infringe on a resident's enjoyment of property and may, depending on the degree of acoustical treatment of the dwelling and the individual's sensitivity to noise, affect his or her well-being. The easement should state clearly that noise levels might increase in the future and that flight patterns or operating times might change. A noise and avigation easement often includes a covenant waiving the property owner's right to sue the airport proprietor for disturbances caused by aircraft noise.

Conclusion: Since the undeveloped area within the 60 CNEL is designated in the Camarillo and Ventura County general plans for compatible uses, there is no particular need for amendments to subdivision regulations to promote noise compatibility.

Building Codes

Building codes regulate the construction of buildings, setting standards for materials and construction techniques to protect the health, welfare, and safety of residents. Codes address structural concerns, ventilation, and insulation, each of which influences the noise attenuation capabilities of a building. Building codes commonly apply to both new construction and major alterations.

Building codes can require sound insulation in the construction of noise-

sensitive uses in areas subject to high aircraft noise levels. Although they are sometimes used within the 60 CNEL, requirements for sound insulation customarily are applied within the 65 CNEL contour with increasingly stringent standards in the 70 and 75 CNEL contours. Most sound insulation code standards describe in detail the required improvements needed to achieve a given level of noise reduction. The building inspector must see that the improvements have been properly made. If so, the builder is presumed to have met the sound insulation target without being required to do any special noise measurement tests.

Noise insulation standards for the State of California are in Title 24, Part 6, Division T25, Chapter 1, Subchapter 1, Article 4 of the California Administrative Code. They establish uniform minimum noise insulation standards for new multi-family dwellings and hotels, requiring that the CNEL shall not exceed 45 CNEL in any habitable room with all windows and doors closed.

In addition, the construction standards of the California building and energy conservation codes have been found through experience throughout the State to achieve a significant level of sound attenuation. Numerous acoustical tests have found that structures built to these standards can achieve an outdoor to indoor noise level reduction of at least 25 decibels. This is significant because these standards apply to all types of construction, including single-family residential.

Conclusion: For a variety of reasons, local building code amendments to establish sound insulation standards are not needed. The State noise insulation standards already provide for sound insulation of multi-family dwellings and hotels. In addition, the California building and energy codes achieve adequate outdoor to indoor noise level reductions for other types of construction, including single-family homes, given the magnitude of the noise levels around the airport.

Transfer of Development Rights

Land ownership actually includes a bundle of rights to the use of that land. These include rights of access, mineral rights, rights to the airspace above the land, and rights to develop the land. Transfer of development rights (TDR) is based on the idea that each right has a market value which can be separated and sold without selling the entire property.

TDR was developed as a way to preserve environmentally important areas without having to buy them with public funds. The technique begins by dividing the municipality into sending and receiving zones. The sending zones are areas where environmental preservation and minimal development are desired, and the receiving zones are areas where additional development is desired. Development rights, measured in terms of development density, are assigned through the zoning ordinance. If developers in the receiving areas can get additional development rights, they

are allowed to build to higher densities than nominally allowed by the zoning ordinance. They would buy these rights from landowners in the sending zones. In this way, the public can benefit from preserving environmentally valuable land, the owner of that land can be paid for preserving it, and developers can reap higher profits.

Based on experience with these programs around the country, several conditions for the successful use of TDR have been identified. The receiving districts must be capable of immediate development, the regulatory process must have integrity and be trusted by developers, the regulatory agency must be able to inform and help property owners and developers, and programs must be as simple as possible and facilitate the self-interest of all involved parties. (See "Making TDR Work," by Peter J. Pizor, in the *Journal of the American Planning Association*, Vol. 52, No. 2, Spring 1986.)

A variation of TDR is density transfer zoning. This allows developers of several large tracts of land to move their allotted densities among tracts to reduce densities in areas worthy of preservation. This differs from TDR because only one owner is involved in the transfer, and a system for sale and purchase of development rights is not required. Density transfer zoning often can be achieved through creative use of the planned unit development process.

In rapidly growing areas with large amounts of vacant land, TDR can be an effective tool for airport land use compatibility planning. At no cost to the taxpayers, it can neatly deal with the problem of what to do with land in high noise zones when there are no practical alternatives to residential development.

TDR is a very complicated technique that is difficult to justify solely for the purposes of airport land use compatibility. If a local jurisdiction is already using or considering TDR, airport compatibility criteria could be included with other environmental criteria in the design of the program.

Conclusion: TDR is not currently being used by Camarillo or Ventura County nor is it needed for airport compatibility purposes. As already noted, undeveloped areas within the noise contours are already designated by the general plans and zoning ordinances for compatible uses.

Environmental Zoning

Special zoning regulations to preserve environmentally sensitive areas or protect development from environmental hazards also can promote land use compatibility near airports. Floodplain overlay zoning, which restricts or prohibits development in all or part of the floodplain, is the most common form of environmental zoning. Other environmental zoning regulations may include steep slope zoning requiring low development densities and special construction standards, wetland preservation zoning limiting densities and the design of drainage facilities, and groundwater recharge zones limiting building density and lot coverage. All can be used to restrict the development of noise-sensitive uses in

environmentally sensitive areas that are also impacted by aircraft noise.

Conclusion: Various forms of environmental zoning regulations are already being used in the area. They do not directly lend themselves to also promoting airport noise compatibility. This technique does not deserve further consideration.

Fair Disclosure Regulations

Fair disclosure regulations are not actually land use regulations. They are intended to ensure that prospective buyers of property are informed that the property is or will be exposed to potentially disruptive aircraft noise. It is not uncommon around even major airports for newcomers to report having bought property without having been informed about airport noise levels.

At the most formal level, fair disclosure can be implemented through regulations requiring the seller or his agent to provide a notice of aircraft noise exposure on the real estate listing sheet and at the time that a sales contract is executed. In addition, any easements should be revealed at the time of closing. Although these measures are intended to protect buyers of property from being unaware of aircraft noise, a potential problem is that they can be difficult to enforce.

Fair disclosure regulations can place a serious responsibility on real estate agents and lenders. If the regulations are properly drafted, however, the responsibilities of real estate agents and sellers should be clearly defined and should be limited simply to disclosing the airport noise levels affecting the property and directing buyers to airport officials for more information. It should not be their legal responsibility to explain the meaning of these noise levels nor to predict a buyer's reaction to the noise level.

Another approach to fair disclosure is to require the recording of a fair disclosure agreement and covenant at the time of rezoning or subdivision plat approval. The agreement would require the property owner to disclose the airport noise situation to prospective buyers. As a covenant running with the land, this requirement would bind all future property owners.

A less direct approach to fair disclosure is to require the dedication of avigation easements as a condition of development approval within high-noise areas. The easements become a restriction on the deed to the property that must be revealed at the closing on subsequent sales. A more limited approach to fair disclosure is to require the recording of a notice with the plats of new subdivisions in the noise-impacted area. It would identify the subdivision as potentially impacted by aircraft noise and would advise that local planners and airport officials be contacted for the most recent information about noise levels impacting the property. These approaches have been discussed in the noise overlay zoning and subdivision regulations sections.

Article 1.5 of the California Civil Code establishes strict real estate disclosure standards. It requires the seller to fill

out a detailed form regarding the condition of the property and various influences on the property and neighborhood. Among the things that must be disclosed is the presence of any "neighborhood noise problems or nuisances." Presumably, this requirement should apply to aircraft noise that the seller considers troublesome. This requirement, however, is subjective, and does not mandate the disclosure of noise information based on an objective standard. (For example, it does not require disclosure that a property is within a specific noise contour level.) Disclosure is required only if the seller considers noise a problem.

Conclusion: California law establishes certain requirements promoting fair disclosure of airport noise problems, as perceived by a property seller. This law falls short, however, of an air-tight guarantee of the disclosure of airport noise and overflight conditions in areas near an airport. If Camarillo and Ventura County are interested in more complete disclosure, they could amend their general plans to require the recording of fair disclosure agreements and covenants for new development within the 60 CNEL contour or possibly even a larger area considered subject to airport influences.

EXPENDITURE TECHNIQUES

Land use management techniques involving direct expenditures include the following:

- Property Acquisition
- Noise and Avigation Easement Purchase
- Development Rights Acquisition
- Purchase Assurance
- Sales Assistance
- Sound Insulation

These measures are usually considered as a last resort because they are expensive, often disruptive, and sometimes controversial. They are most often justified when aircraft noise impacts are severe and cannot be mitigated through noise abatement alone. These measures are potentially eligible for FAA funding assistance through the noise set-aside of the Airport Improvement Program if they are part of an FAA-approved Part 150 Noise Compatibility Program. In general, these programs can apply only within the 65 CNEL contour based on existing conditions or the five-year forecast condition to be eligible for FAA approval.

Because no noise-sensitive uses are located inside the 65 CNEL contour, or even the 60 CNEL contour, based on 1998 and 2003 noise levels, none of these expenditure techniques is appropriate at Camarillo Airport. They are not considered further.

PRELIMINARY PREFERRED LAND USE ALTERNATIVES

Table 5A shows the preliminary preferred list of land use management alternatives. These are to be reviewed

by the Planning Advisory Committee, the airport management, and the public. Refinements to these preliminary measures may be necessary before the final program is developed. In addition, more detailed consideration of the implementation of these recommend-ations may be necessary.

Table 5A
Preliminary Preferred List of Land Use Management Alternatives
Camarillo Airport

Description	Cost	Implementing Agency
General Plan Amendment: Consider adopting a policy that the noise contours to be used for airport compatibility planning in the Camarillo Airport area shall be a composite of the 2003 and 2018 noise contours.	Administrative	City of Camarillo Ventura County
General Plan Amendment: Consider noting that the goal of the City and County is to retain compatible land use designations for undeveloped land within the 60 CNEL contour.	Administrative	City of Camarillo Ventura County
General Plan Amendment: Consider enacting a policy that the "urban reserve" area north of the Ventura Freeway and west of Las Posas Road will be reserved for airport-compatible uses.	Administrative	City of Camarillo
General Plan Amendment: Consider enacting guidelines specifying noise compatibility criteria for the review of development projects within the 60 CNEL contour.	Administrative	City of Camarillo Ventura County
General Plan Amendment: Consider requiring the recording of fair disclosure agreements and covenants for any new noise-sensitive development approved within the 60 CNEL contour.	Administrative	City of Camarillo Ventura County

Chapter Six
NOISE COMPATIBILITY PROGRAM

Chapter Six

NOISE COMPATIBILITY PROGRAM

The Noise Compatibility Program for Camarillo Airport includes measures to abate aircraft noise, control land development, and implement and update the program. F.A.R. Part 150 requires that the program apply to a period of no less than five years into the future, although it may apply to a longer period if the sponsor so desires. This Noise Compatibility Program has been developed based on a 20-year planning period.

The objective of the noise compatibility planning process is to improve the compatibility between aircraft operations and noise-sensitive land uses in the area, while allowing the airport to continue to serve its role in the community, state, and nation. The Noise Compatibility Program includes three elements which are aimed at satisfying this objective.

- The **Noise Abatement Element** includes noise abatement measures selected from the alternatives evaluated in Chapter Four, Noise Abatement Alternatives.

- The **Land Use Management Element** includes measures to prevent noise impacts on future land use development in the airport environs. Potential land use management techniques were evaluated in Chapter Five, Land Use Alternatives.

- The **Program Management Element** includes procedures and documents for implementing the recommended noise abatement and land use measures, monitoring the progress of the program, and updating the Noise Compatibility Program.

Each measure of the Noise Compatibility Program is summarized in **Table 6A** at the end of the chapter. That table includes a brief description of the noise abatement, land use, and program management measures, the entity responsible for implementing each measure, the cost of each measure, the proposed timing for implementation of the measure, and potential sources of funding.

NOISE ABATEMENT ELEMENT

The recommended noise abatement measures are described in this section.

1. Continue prohibiting formation takeoffs and landings without prior permission from the Director of Airports (County Department of Airports).

Description. This is an existing policy at Camarillo Airport which promotes both noise abatement and safety. Formation takeoffs and landings produce significantly greater single event noise than do operations by single aircraft. For example, a formation takeoff by two identical aircraft will produce single event noise three decibels louder than a takeoff by a single aircraft. The difference is clearly noticeable by a person with normal hearing.

Implementation Actions. As an existing policy, no specific implementation actions are necessary. The County Department of Airports should continue to reflect this procedure in its policy manuals. Any new pilot guides produced by the Department of Airports should also reflect this policy. The Department of Airports also should ensure that notice of this policy remains in future editions of the *Airport / Facility Directory*.

Costs and Funding. Since this is an existing policy, no significant new costs would be involved for the County Department of Airports or airport users. The Department would incur administrative costs to disseminate information about the policy and publish a pilot guide.

Timing. This is an existing measure which is recommended to be continued through the future.

2. Continue advising north traffic to fly the downwind leg along U.S. Highway 101 (County Department of Airports).

Description. This is an existing policy at Camarillo. U.S. Highway 101 (the Ventura Freeway) is nearly parallel to Runway 8-26. By flying along the highway, aircraft will avoid residential areas to the north. While this has no effect on the CNEL noise contours, it does reduce the number of annoying single events and low overflights of these residential areas.

Implementation Actions. The Department of Airports should ensure that this procedure continues to be reflected in airport policy manuals and in future airport pilot guides.

Costs and Funding. As an existing procedure, no additional costs would be borne by the Department of Airports or airport users.

Timing. This is an existing procedure which is recommended to continue.

3. Continue advising Runway 26 arrivals to make base leg turns west of Las Posas Road (County Department of Airports).

Description. This is an existing airport policy which should be continued. This policy is intended to keep the traffic pattern as compact as possible and avoid overflights of residential areas to the east. Although it has no effect on the CNEL noise contours, it does help prevent annoying single events and low aircraft overflights of residential areas.

While this has been airport policy for many years, it is not always possible for aircraft to observe this procedure, especially when air traffic is heavy. As the number of aircraft in the traffic pattern increases, the pattern enlarges to ensure safe separation between aircraft. This problem is exacerbated if aircraft of widely varying speeds must share the pattern at the same time. Separation distances must increase to ensure that fast aircraft do not overtake slower aircraft.

Implementation Actions. The Department of Airports should continue to notify airport users of this advisement through its policy manuals and in future published pilot guides.

Costs and Funding. As an existing procedure, no additional costs would be borne by airport users or the Department of Airports. The Department may incur additional administrative costs for informational efforts.

Timing. This is an existing procedure which is recommended to continue.

4. Continue advising pattern traffic on Runway 8 to turn to the crosswind leg prior to Las Posas Road (County Department of Airports).

Description. This is a continuation of an existing noise abatement measure. This is essentially the reverse of the previous noise abatement measure. The intent is to ensure that aircraft taking off to the east on Runway 8 turn to the crosswind leg quickly before reaching neighborhoods east of the airport. Again, this has no effect on the CNEL noise contours, but it does avoid annoying single events and low overflights of residential areas.

Implementation Actions. As an existing policy, no specific implementation actions are required. The Department of Airports should continue to notify pilots of this procedure, noting it in future published pilot guides.

Costs and Funding. Since this is an existing policy, no additional costs would be borne by the airport users. The Department of Airports may incur additional administrative costs for informational efforts.

Timing. This is an existing policy which is recommended to continue.

5. Continue advising right traffic on Runway 8 so as to avoid low overflights of the City (County Department of Airports).

Description. This is a continuation of an existing policy. A right traffic pattern on Runway 8 helps to avoid low overflights of residential areas north of the airport. Because of the potential for conflicts with traffic using Oxnard Airport and Point Mugu, this policy may not be able to be observed at all times.

Although this has no influence on the CNEL noise contours, it helps prevent low overflights of residential areas north of the airport and annoying single event noise.

Implementation Actions. The Department of Airports should inform pilots of this policy through future published pilot guides. It should also ensure that this policy continues to be reflected in the *Airport/Facility Directory*. The Department should also request the Airport Traffic Control Tower to note this procedure in a Tower Order or in its internal operating policies.

Costs and Funding. As this is an existing policy, no significant costs would be borne by the Department of Airports, the Airport Traffic Control Tower, or airport users. Administrative costs may be incurred by the Department of Airports in distributing information about this measure. These costs will be covered by the airport operating budget.

Timing. This is an existing policy which is proposed to continue.

6. Advise straight-in VFR approaches to Runway 26 to remain south of U.S. Highway 101 and south of housing areas (County Department of Airports).

Description. This policy is intended to ensure that approaches from the east to Runway 26 remain south of residential areas east of the airport. If aircraft stay south of U.S. Highway 101 (the Ventura Freeway) as they approach the airport from the east, they will avoid direct overflights of residential neighborhoods in the east part of the City. As they near the airport, aircraft should make their final approaches immediately south of the neighborhood south of the Freeway on the north side of the extended runway centerline.

This policy will not affect the CNEL noise contours but it will help to avoid low aircraft overflights and annoying single event noise over residential areas.

Implementation Actions. The Department of Airports should reflect this policy in its policy manual and note it in future published pilot guides. The preferred final approach near the airport also should be illustrated in the pilot guide.

Costs and Funding. The Department of Airports will incur administrative

costs in distributing information about this policy.

Timing. This is proposed for implementation in 1999.

7. Advise Runway 26 departures to fly west and north of City when turning right (County Department of Airports).

Description. This policy is intended to ensure that takeoffs to the west on Runway 26 fly past the City before turning north and that if they are headed back to the east or northeast that they avoid direct overflights of the City.

This policy will not affect the CNEL noise contours but it will help to avoid low aircraft overflights and annoying single event noise over residential areas.

Implementation Actions. The Department of Airports should reflect this policy in its policy manual and note it in future published pilot guides.

Costs and Funding. The Department of Airports will incur administrative costs in distributing information about this policy.

Timing. This is proposed for implementation in 1999.

8. Require aircraft over 80,000 pounds to land on Runway 8 and depart on Runway 26 whenever safe and practicable (County Department of Airports).

Description. This policy is intended to ensure that takeoffs and landings by large aircraft are made to and from the west whenever possible. This would avoid overflights of residential areas east of the airport. It would apply to aircraft certificated for 80,000 pounds maximum gross takeoff weight.

Aircraft of this size rarely use Camarillo. It is possible, however, that they could use the airport from time to time. In fact, a company is currently considering using Camarillo as a base for modifying B-727 aircraft. If it materializes, this business would generate approximately four operations per month by light B-727 aircraft. (The aircraft would arrive and depart without any payload. They would not fly while they were at Camarillo undergoing modifications.) Whether or not this enterprise is successful in starting operations at Camarillo, it points out the possibility of similar facilities possibly being developed in the future. Accordingly, operations forecasts for 2003 and 2018 were revised to reflect this possibility.

Based on the very small projection of future activity by heavy aircraft (60 annual operations in 2003 and 120 operations in 2018), this policy will not affect the CNEL noise contours. It will help to avoid low aircraft overflights and potentially loud single event noise over residential areas.

Implementation Actions. The Department of Airports should reflect this policy in its policy manual and note it in future published pilot guides. It should also reflect this policy in any future lease agreements with any operators of heavy aircraft. The Department should coordinate with the local Tower Manager to ensure that controllers issue advisories to pilots when appropriate.

Costs and Funding. The Department of Airports will incur administrative costs in distributing information about this policy.

Timing. This is proposed for implementation in 1999.

9. When landings on Runway 26 are necessary, require aircraft over 80,000 pounds to make offset visual approaches from the southeast over farmland (County Department of Airports).

Description. This is intended to work together with the previous noise abatement measure to ensure that large aircraft approaches avoid direct overflights of residential areas. Because of winds, weather, or traffic, it will not always be possible for large aircraft to land on Runway 8 as required by the previous Noise Abatement Measure. In such cases, large aircraft should make visual approaches to Runway 26 over the farmland southeast of the airport and make short, straight-in final approaches to avoid the homes east of the airport.

Implementation Actions. The Department of Airports should reflect this policy in its policy manual and note it in future published pilot guides. It should also reflect this policy in any future lease agreements with any operators of heavy aircraft. The Department should coordinate with the local Tower Manager to ensure that controllers issue advisories to pilots when appropriate.

Costs and Funding. The Department of Airports will incur administrative costs in distributing information about this policy.

Timing. This is proposed for implementation in 1999.

10. Promote use of NBAA standard noise abatement departure procedures by jets (County Department of Airports).

Description. The Department of Airports should actively encourage jet operators to use the National Business Aviation Association (NBAA) Standard Noise Abatement Departure Procedures or equivalent quiet flying procedures developed by aircraft manufacturers. The NBAA standard procedure involves the management of thrust, flap settings, speed, and climb rate to reduce noise quickly after takeoff. (A description of the procedure is in Appendix D.) Several aircraft manufacturers have also developed and published similar procedures specifically for their own aircraft.

Given the small number of business jets using Camarillo, this procedure will not

have a great effect on the CNEL noise contours. Nevertheless, it will reduce single event noise from jet departures and should be actively pursued.

Implementation Actions. The airport should notify pilots of this requested procedure in future airport pilot guides. In addition, signs should be installed on the exit/entrance taxiways requesting this procedure. The airport management should prepare materials for posting in pilot lounges which explain the benefits of noise abatement departure procedures. The airport should also distribute through the pilot shops and FBO's copies of the NBAA procedure suitable for inserting into pilot manuals. Copies of the procedures are available from the NBAA.

Costs and Funding. These procedures impose no significant costs on aircraft operators. The Department of Airports would incur costs for publication of pilot guides, posters, and other promotional information. The cost of two signs, one near each runway end, is estimated at $10,000. Up to 90 percent may be eligible for FAA funding through the noise set aside of the Airport Improvement Program. The balance would be covered through the Department of Airports' capital budget.

Timing. This is recommended to be implemented in 1999.

11. Promote use of AOPA Noise Awareness Steps by light single and twin-engine aircraft (County Department of Airports).

Description. The Aircraft Owners and Pilots Association (AOPA) encourages quiet and neighborly flying by distributing generalized noise abatement procedures for use by propeller aircraft. These "Noise Awareness Steps" have recommendations on how to fly the aircraft, as well as where and when to fly. Most of the steps provide guidance on pilot technique when maneuvering near noise-sensitive areas. The steps also encourage cooperation with the airport staff on noise abatement issues. These procedures are listed in Appendix D of this document.

It is not possible to predict how often these procedures would be used, so it is not possible to quantify the effects of these procedures. Nevertheless, any use of these procedures will help the overall noise conditions around the airport. Consequently, the airport staff should encourage their use.

Implementation Actions. The airport management should encourage airport users to follow these procedures whenever possible. They should be published in a convenient format for insertion into pilot manuals. They could be included in future published pilot guides, or they could be published separately.

Costs and Funding. No specific costs, other than production and printing of flyers or pilot guides, are involved. The cost of publishing a pilot guide is included in Program Management Measure 3, discussed later in this chapter.

Timing. Implementation should begin in 1999 and should be an ongoing process.

12. Continue promoting a standard left hand traffic pattern on Runway 26 (Department of Airports).

Description. Currently, a standard left hand traffic pattern is used on Runway 26 by approximately 75 percent of the traffic at the airport. This promotes noise abatement by keeping the aircraft on the south side of the airport, away from the neighborhoods north of the Freeway. The south side traffic pattern is unable to be used by all aircraft all the time because of the high traffic volumes at certain times and the need to provide safe sequencing and separation of aircraft.

Implementation Actions. The Department of Airports should publish a notice of this preferred procedure in a pilot guide and in future policy publications. It should also coordinate with the Airport Traffic Control Tower to ensure the Tower remains aware that this is an important procedure for noise abatement.

Costs and Funding. As this is an existing policy, no specific costs are involved, other than production and printing of a pilot guides.

Timing. This is an existing procedure which should be continued.

13. Designate Runway 26 as the calm wind runway (Department of Airports).

Description. Runway 26 is currently used approximately 85 percent of the time, primarily because of the prevailing winds from the west. Since the area west of the airport is undeveloped, in contrast with the residential development about one and one-half miles to the east, this runway use pattern promotes noise abatement. This is because departures tend to be louder than approaches. This runway use program should be continued, and it should be specifically promoted as a noise abatement procedure.

Implementation Actions. The Department of Airports should adopt a policy noting that Runway 26 is the calm wind runway and the preferred runway for noise abatement. The Department should request the Tower Manager to reflect this policy in the local Tower Order or internal operating procedures.

Costs and Funding. This would involve administrative costs for the Department of Airports and the Airport Traffic Control Tower.

Timing. This policy should be implemented in 1999.

14. Advise departures on Runway 8 to make right turns to avoid overflights of City (Department of Airports).

Description. Runway 8 is used approximately 15 percent of the time.

Departures on Runway 8 should be advised to turn right to avoid overflights of residential areas in Camarillo north of the extended runway centerline. While this policy will have no effect on the CNEL noise contours, it would help avoid annoying single events and low departure overflights in residential areas.

Implementation Actions. The Department of Airports should establish this policy and publish it in its policy advisories and in future pilot guides. It should coordinate with and communicate this policy to the Tower Manager.

Costs and Funding. This will involve only administrative costs for the Department of Airports. These will be covered through the Department's operating budget.

Timing. This policy should be established in 1999.

NOISE CONTOURS

The recommended noise abatement measures do not involve any changes that would alter the existing noise contours presented in Chapters Two and Three. The 1998 noise contours are shown in **Exhibit 6A**. No noise-sensitive land uses are within the 60 CNEL noise contour based on current conditions.

For purposes of accounting for the possibility of future operations by large jet aircraft, the forecasts for 2003 and 2018 were revised to include 60 and 120 annual operations, respectively, by these aircraft. (Hush-kitted Stage 3 B-727 aircraft were used for noise modeling.) These refined noise contours are shown in **Exhibits 6B** and **6C**. The noise contours for 2003 and 2018 are only slightly different than the baseline noise contours presented in Chapters Two and Three. No noise-sensitive land uses are within the 60 CNEL noise contour based on the projected noise conditions in 2003 and 2018.

LAND USE MANAGEMENT ELEMENT

The recommended land use management measures for the Camarillo Airport vicinity are presented below. They are summarized in **Table 6A** at the end of this chapter.

1. Use combined 2003 and 2018 noise contours as basis for noise compatibility planning (Camarillo, Ventura County).

Description. Camarillo and Ventura County should amend their general plans to show the updated noise contours for Camarillo Airport. It is recommended that they use the 2003 and 2018 noise contours presented in **Exhibits 6B** and **6C** as a basis for noise compatibility planning. This can be accomplished by preparing a combined noise contour, as shown in **Exhibit 6D**. This is justified because the noise contours are subject to change over time as the use of the airport changes. By defining a reasonable "worst case" noise contour for land use planning purposes, the boundaries of the compatible land use planning area can be kept constant over a longer period of time instead of

being subject to small variations due to periodic changes in the noise contours.

Implementation Actions. This policy can be established by each jurisdiction (Camarillo and Ventura County) amending their general plans.

Cost and Funding. Adoption of this measure would involve administrative expenses for both Camarillo and Ventura County. These would have to be borne by the operating budgets of each city.

Timing. Amendments to general plans take time to prepare and process. The required general plan amendments are projected for 1999 to 2000.

2. Set 60 CNEL as the threshold for promoting airport-compatible development (Camarillo, Ventura County).

Description. It is recommended that Camarillo and Ventura County amend their general plans to establish 60 CNEL as the threshold for compatible land use planning around the airport. This is desirable to ensure that the airport is adequately buffered by compatible uses and to prevent future residents from locating in areas where noise is liable to be considered disturbing.

Two Technical Information Papers prepared for this study and included in the Noise Exposure Maps documentation provide the rationale for using 60 CNEL as a noise compatibility threshold – *Effects of Noise Exposure*, and *Noise and Land Use Compatibility Guidelines*. Key reasons are summarized here.

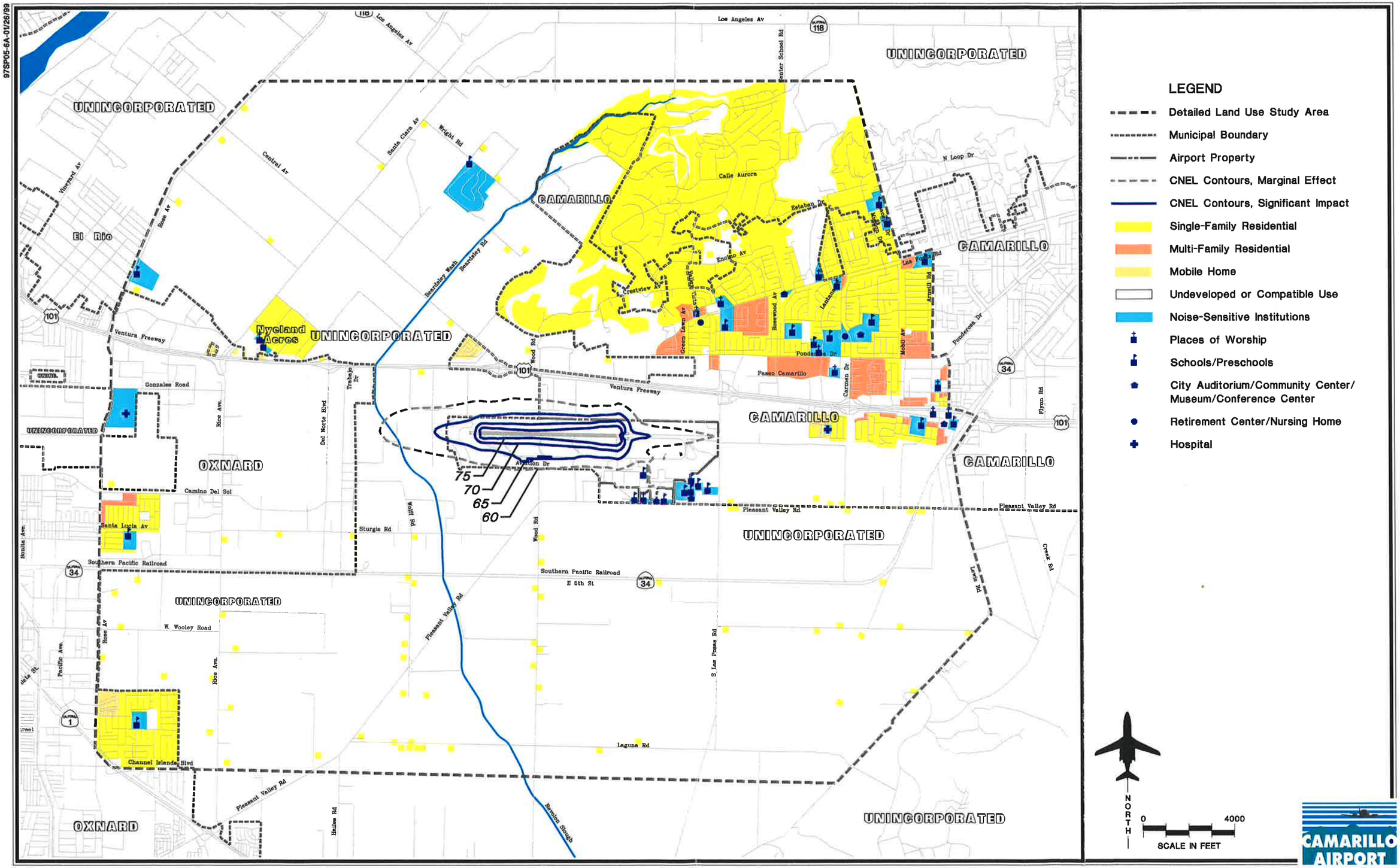
- Research on the effects of noise clearly demonstrates that noise of 60 CNEL causes disturbances for a measurable proportion of people in communities.

- Since as long ago as 1974, noise and land use compatibility guidelines developed by U.S. Government agencies and government-sponsored study committees have recognized the potential for adverse noise impacts on residential areas at levels as low as 55 CNEL.

- While land use compatibility guidelines of the Federal government in F.A.R. Part 150 and noise standards established in California law both define 65 CNEL (or DNL) as incompatible with housing, both standards tend to be focused on the effect of noise on *existing housing* and the need for and cost of mitigation actions or special aircraft noise abatement actions.

- Land use compatibility guidelines published by the California Department of Transportation in the 1993 edition of the *Airport Land Use Planning Handbook* advise that in quiet communities, 60 CNEL should be used as the maximum permissible noise level for residential uses. In rural areas, it advises that 55 CNEL may be a justifiable threshold. This guidance was a continuation of recommendations provided in the previous edition of the *Handbook* (1983).

97SP05-6A-01/26/99



LEGEND

- Detailed Land Use Study Area
- Municipal Boundary
- Airport Property
- CNEL Contours, Marginal Effect
- CNEL Contours, Significant Impact
- Single-Family Residential
- Multi-Family Residential
- Mobile Home
- Undeveloped or Compatible Use
- Noise-Sensitive Institutions
- Places of Worship
- Schools/Preschools
- City Auditorium/Community Center/ Museum/Conference Center
- Retirement Center/Nursing Home
- Hospital

NORTH

0 4000

SCALE IN FEET

CAMARILLO AIRPORT

Exhibit 6A
1998 AIRCRAFT NOISE AND LAND USE

97SP05-6B-01/26/99

UNINCORPORATED
CAMARILLO
OXNARD
Nyeland Acres
El Rio
Los Angeles Av
Santa Clara Av
Wright Rd
Central Av
Vineyard Av
Rose Av
Beardsley Wash
Beardsley Rd
Venture Freeway
Gonzales Road
Rice Ave
Del Norte Blvd
Trabajo Dr
Wood Rd
Aviation Dr
Calle Aurora
Esteban Dr
Encino Av
Crestview Av
Green Lawn Av
Rosewood Av
Lantana Dr
Mohill Av
Armell Rd
Las Posas Rd
N Loop Dr
Ponderosa Dr
Paseo Camarillo
Carmen Dr
Flynn Rd
Lewis Rd
Creek Rd
Pleasant Valley Rd
Sturgis Rd
Wolff Rd
Southern Pacific Railroad
E 5th St
W. Wooley Road
Pacific Ave.
Monita Ave.
Camino Del Sol
Santa Lucia Av
Channel Islands Blvd
Laguna Rd
S Las Posas Rd
Hailes Rd
Revolon Slough
75
70
65
60
118
101
34
1

LEGEND

- Detailed Land Use Study Area
- Municipal Boundary
- Airport Property
- CNEL Contours, Marginal Effect
- CNEL Contours, Significant Impact
- Single-Family Residential
- Planned for Future Residential Development
- Multi-Family Residential
- Mobile Home
- Undeveloped or Planned for Compatible Use
- Noise-Sensitive Institutions
- Places of Worship
- Schools/Preschools
- City Auditorium/Community Center/ Museum/Conference Center
- Retirement Center/Nursing Home
- Hospital

NORTH

0 4000

SCALE IN FEET

CAMARILLO AIRPORT

Exhibit 6B
2003 AIRCRAFT NOISE AND LAND USE

97SP05-6C-01/26/99

UNINCORPORATED
CAMARILLO
OXNARD
El Rio
Nyeland Acres
Los Angeles Av
Santa Clara Av
Wright Rd
Central Av
Vineyard Av
Rose Av
Beardsley Rd
Beardsley Wash
Ventura Freeway
Gonzales Road
Rice Ave.
Del Norte Blvd
Trebajo Dr
Wood Rd
Camino Del Sol
Santa Lucia Av
Sturgis Rd
Wolff Rd
Southern Pacific Railroad
W. Wooley Road
Pacific Ave.
Channel Islands Blvd
Pleasant Valley Rd
Heiler Rd
Revolon Slough
Laguna Rd
E 5th St
S Lee Poseas Rd
Lewis Rd
Creek Rd
Flynn Rd
Center School Rd
Calle Aurora
Esteban Dr
Encino Av
Crestview Av
Rosewood Av
Lantana
Arnell Rd
Mobil Av
Ponderosa Dr
Paseo Camarillo
Carmen Dr
Lee Dr
N Loop Dr
Dawson Dr
75
70
65
60

LEGEND

- Detailed Land Use Study Area
- Municipal Boundary
- Airport Property
- CNEL Contours, Marginal Effect
- CNEL Contours, Significant Impact
- Single-Family Residential
- Planned for Future Residential Development
- Multi-Family Residential
- Mobile Home
- Undeveloped or Planned for Compatible Use
- Noise-Sensitive Institutions
- Places of Worship
- Schools/Preschools
- City Auditorium/Community Center/ Museum/Conference Center
- Retirement Center/Nursing Home
- Hospital

NORTH

0 4000

SCALE IN FEET

CAMARILLO AIRPORT

Exhibit 6C
2018 AIRCRAFT NOISE AND LAND USE

97SP05-6D-01/26/99

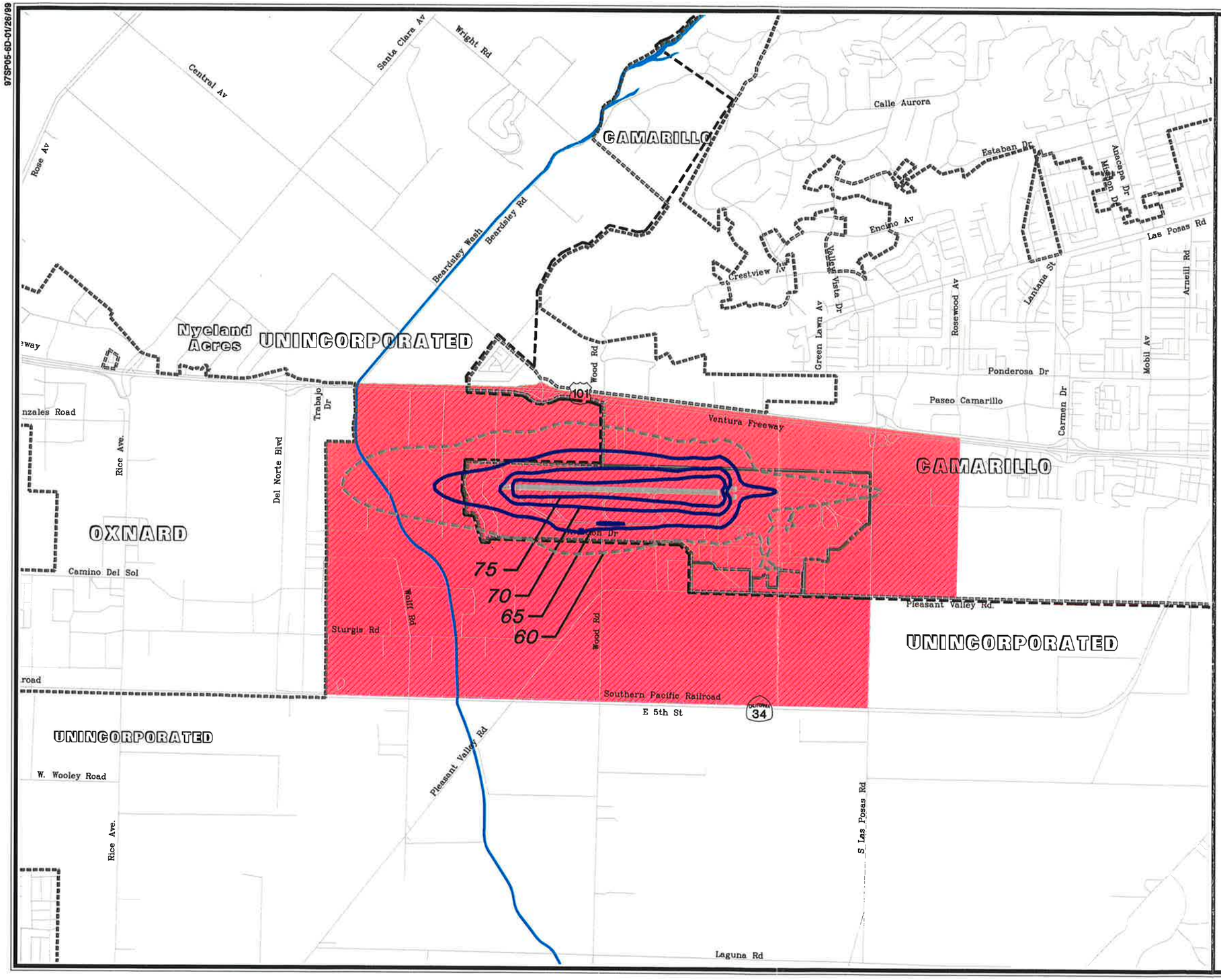


Exhibit 6D
RECOMMENDED LAND USE PLANNING MEASURES

- The 60 CNEL contour has been used by many other communities in California as a threshold for land use compatibility planning.

- In 1992, the Federal Interagency Committee on Noise (FICON) issued a report advising the analysis of noise down to 60 DNL in environmental assessments and impact statements under certain conditions. FICON further recommended that *mitigation actions* were justified and should be taken if the analysis found that the project under study would increase noise by three decibels or more within the 60 DNL contour.

- In 1992, an arbitration proceeding between the Raleigh-Durham International Airport and airport neighbors awarded residents between the 55 and 65 DNL contours compensation for noise damages. This was apparently the first time damages had been awarded below the 65 DNL level in the United States.

- The FAA has acknowledged the importance of promoting compatible land use planning down to the 60 DNL (or CNEL) level. In 1994, the FAA explicitly endorsed a proposal by Fairfax County, Virginia to prohibit new housing within the 60 DNL contour around Dulles International Airport.

- The consultant's experience in noise compatibility studies around the country has revealed that noise complaints around airports of all sizes and in widely different environments are quite common from residential areas exposed to noise well below 65 CNEL. This is true of small general aviation airports, busy general aviation airports used heavily by jets, and large commercial service airports. (Examples of airports in each category with which the consultant is directly familiar include Glendale and Scottsdale, Arizona; Burbank, California; and Milwaukee, Wisconsin.)

- Experience in Ventura County indicates that local residents exposed to aircraft noise well below 65 CNEL can become quite concerned and file complaints. This situation occurs at both Camarillo and Oxnard Airports.

Implementation Actions. This measure would be implemented through general plan amendments by the City of Camarillo and Ventura County.

Cost and Funding. This measure would involve administrative expenses. Funding would come from the operating budgets of each jurisdiction.

Timing. For planning purposes, implementation is projected for 1999 to 2000 to allow time for preparation and processing of the amendments.

3. Preserve airport-compatible land use designations within 60 CNEL and beneath the close-in traffic pattern (Camarillo, Ventura County).

Description. This land use measure is closely related to Land Use Measure 2. The general plans of the City of

Camarillo and Ventura County currently designate the area within the 60 CNEL contour and the land near the airport under close-in traffic patterns for airport-compatible uses. (These include commercial, offices, industrial, parks and open space, and agriculture. See Chapter Three for more information about compatible and noise-sensitive land uses.) The City and County should retain compatible land use designations in these areas. **Exhibit 6D** shows the areas where this policy is proposed to apply. This area can be referred to as an "airport-compatible land use preservation area."

This policy should conveniently mesh with the current and planned uses of the land in this area. Most of the land east of the airport is currently designated for commercial and industrial development. Most of the land to the west and south is designated for agriculture. If desired, the City and County may change the general plan land use designations within this compatible land use preservation area as long as the new designation also provides for some kind of airport-compatible use.

The area beneath the close-in traffic patterns is important to preserve for compatible uses because low aircraft overflights routinely occur in this area. Based on current activity on an average day, 265 touch-and-go approaches and departures on both runways, 105 itinerant approaches to Runway 26, and 20 itinerant departures on Runway 8 occur over the areas immediately east of the airport within the "compatible land use preservation area." This is a total of 390 aircraft movements. This is projected to increase to about 465 in 2003 and 650 in the year 2018.

Approximately 235 operations per average day are in the south side traffic pattern over the area within the "compatible land use preservation area." Approximately 80 operations are in the north pattern within the "compatible land use preservation area" on an average day. These numbers are projected to increase to 280 on the south and 95 on the north in the year 2003. By the year 2018, they are expected to reach 390 on the south and 130 on the north.

Single event noise in these areas can be loud. Operations by Stage 2 business jets can cause peak noise levels (Lmax) of approximately 89 to 104 decibels in the part of the area outside the 60 CNEL contour. Stage 3 business jets can range from 75 to 88 decibels. Propeller aircraft can range from 75 decibels for the very light single engine aircraft to 92 decibels for larger turboprops. (A detailed analysis of CNEL and single event noise at selected points in the compatible land use preservation area is in Appendix E.)

(For purposes of comparison, a typical quiet conversation is at 55 to 60 decibels. Television viewing can be interrupted at levels above 65 decibels. People can carry on conversations with loud or shouted voices at levels up to 80 or 85 decibels.)

Implementation Actions. Since this would involve a continuation of current land use planning policy, no specific implementation actions would be absolutely necessary. It would be

helpful, however, if the City of Camarillo and Ventura County would amend their general plans to point out the importance of ensuring long-term land use compatibility in this area.

Cost and Funding. This measure would involve administrative expenses if the City and County decide to amend their general plans. Funding would come from the operating budgets of each jurisdiction.

Timing. This is an ongoing effort. If Camarillo and Ventura County decide to amend their general plans, this would be projected for 1999 to 2000.

4. **Establish noise compatibility guidelines for the review of development projects within the "compatible land use preservation area" and require fair disclosure agreements and covenants for noise-sensitive uses granted a development permit. (Camarillo, Ventura County).**

Description. This policy is proposed to apply throughout the 60 CNEL contour and the area shown in **Exhibit 6D** where airport-compatible land use designations should be preserved. This is proposed as a supplement to Measure 3. The clear intent of this Program is to promote the preservation of the area shown in **Exhibit 6D** for airport-compatible land uses. This measure is a back-up policy to provide guidance in making decisions when projects are proposed which might conflict with Measure 3.

Situations may arise from time to time where proposals are filed for development within the "compatible land use preservation area." The adoption of special project review criteria, specifically addressing airport land use compatibility needs, would help provide guidance to land use decision-makers as they review project proposals.

The following project review criteria should be included in the local general plans or as checklists for consideration of local planners, planning commissions, and governing bodies. These criteria are specifically suggested for use in reviewing general plan amendment, planned development, rezoning, special use, conditional use and variance applications within the compatible land use preservation area.

A particularly important requirement of these guidelines would be the recording of fair disclosure agreements and covenants for any noise-sensitive uses granted development permits within the "compatible land use preservation area." (This is noted in Criterion E below.)

A. Determine whether the subject land use is "noise-sensitive." Land uses defined as not compatible with aircraft noise between 65 and 80 CNEL in the Federal Aviation Administration's land use compatibility guidelines shall be considered "noise-sensitive." (See Exhibit 3A in Chapter Three of the Noise Exposure Maps document.)

B. Advise the County Department of Airports of development proposals involving noise-sensitive land uses

within the 60 CNEL contour and the compatible land use preservation area.

C. If possible, locate noise-sensitive public facilities outside the 60 CNEL contour and the compatible land use preservation area. Otherwise, encourage the buildings to be constructed to achieve an outdoor-to-indoor noise level reduction of at least 25 dBA.

D. Discourage the approval of general plan amendments, rezonings, exceptions, special uses, conditional uses, and variances that introduce noise-sensitive development into the 60 CNEL contour and the compatible land use preservation area.

E. Where noise-sensitive development within the 60 CNEL and the compatible land use preservation area must be permitted, require the recording of fair disclosure agreements and covenants. These agreements and covenants would require that property owners inform buyers of the presence of the airport and the potential for annoyances, including noise. The covenant would run with the land, binding all future property owners to make the same disclosure. (A model fair disclosure agreement is in Appendix D.)

F. Where noise-sensitive development within the 60 CNEL and the compatible land use preservation area must be permitted, encourage developers to incorporate the following measures into their site designs:

(1) Where noise-sensitive uses will be inside a mixed use building, locate noise-sensitive activities on the side of the building opposite the airport or, if the building is beneath a flight track, opposite the prevailing direction of aircraft flight.

(2) Where noise-sensitive uses are part of a larger mixed use development, use the height and orientation of compatible uses, and the height and orientation of landscape features such as natural hills, ravines and manmade berms, to shield noise-sensitive uses from ground noise generated at the airport.

Implementation Actions. The City of Camarillo and Ventura County would adopt these project review criteria either through general plan amendments.

Cost and Funding. This measure would involve administrative expenses. Funding would come from the operating budgets of each jurisdiction.

Timing. For planning purposes, this is projected for 1999 to 2000 to allow time for the preparation and processing of general plan amendments.

PROGRAM MANAGEMENT ELEMENT

The success of the Noise Compatibility Program requires a continuing effort to monitor compliance and identify new or unanticipated problems and changing conditions. Five program management measures are recommended at Camarillo Airport. The Ventura County Department of Airports is responsible for implementing these measures. They are discussed below and summarized in **Table 6A**.

1. Maintain and enhance system for receiving, analyzing, and responding to noise complaints.

Description. The airport has a system of recording and responding to noise complaints. In addition to recording and filing complaints, it is important for the airport management to respond to complaints, even if it is not possible to take remedial action. The airport management should map the noise complaints to see if any geographic patterns emerge which may deserve special attention.

Complaints are only an imperfect indicator of noise problems. The tendency of an individual to file a complaint depends on many personal variables including socioeconomic status, housing tenure, sensitivity to noise, feelings about the aviation industry, and expectations about overall neighborhood livability. Recognizing that complaints are limited in their ability clearly to reveal the existence and scope of noise problems, the staff should nevertheless periodically analyze the complaint records. If the geographic pattern of complaints, or the causes of complaints, indicate that consistent problems exist, the airport management should investigate and, if possible, seek corrective action.

Implementation Actions. This is an existing activity. No special implementation efforts are required.

Cost and Funding. This will involve administrative costs financed through the airport operating budget.

Timing. This is an ongoing activity that should be continued.

2. Review Noise Compatibility Program implementation.

Description. The airport management must monitor compliance with the Noise Abatement Element. This will involve checking periodically with the Tower Manager regarding compliance with the procedures. Where appropriate, the airport management also should check occasionally with airport users.

The airport management should develop informational and promotional materials explaining the noise abatement program to pilots. These materials should include an updated pilot guide, a detailed description of the NBAA standard noise abatement departure procedures, and an explanation of AOPA's noise awareness steps. These materials should be prepared in a format allowing for insertion into a standard Jeppesen manual. The airport management also could print a series of eye-catching

posters for display in pilot lounges and at the FBOs explaining different aspects of the noise abatement program.

It may be necessary from time to time to arrange for noise monitoring, noise modeling, or flight track analysis to study issues that may arise in the future.

The Department of Airports also should maintain communications with Camarillo and Ventura County planning officials to follow their progress in implementing the relevant measures of the Land Use Management Element.

Implementation Actions. The administrative actions discussed above in the "Description" will be necessary.

Costs and Funding. This measure will require considerable administrative time and staff support. Expenditures for posters, promotional materials, and special noise monitoring or modeling studies could be necessary from time to time. For budgeting purposes, this cost is estimated at $30,000 every three years. This would be covered through the airport operating budget.

Timing. This is an ongoing activity that should begin as soon as the Noise Compatibility Program is approved.

3. Publish a pilot guide.

Description. A pilot guide describing airport noise abatement information should be prepared for wide distribution to pilots using Camarillo Airport. The guide should include an aerial photo showing the airport and the surrounding area, pointing out noise-sensitive land uses and preferred noise abatement procedures. It could also include other information about the airport that pilots would find useful. The guide should be suitable for insertion into a Jeppesen manual so that pilots will be able to conveniently use it.

Airport management should distribute copies to all owners of aircraft based at the airport and to the fixed base operators so they can offer them to transient pilots.

Implementation. The Department of Airports is responsible for arranging for publication of a pilot guide.

Cost and Funding. The cost of a pilot guide is estimated at $5,000. It is currently budgeted as part of this F.A.R. Part 150 Study. The pilot guide should be revised and reissued as needed. For planning purposes, it is estimated that it will need to be republished every three years at a cost of approximately $8,000.

Timing. Publication of a pilot guide is planned for 1999.

4. Update Noise Exposure Maps and Noise Compatibility Program.

Description. The airport management should review the Noise Compatibility Program (NCP) and consider revisions and refinements as necessary. A complete program update will be needed periodically to respond to changing conditions in the local area and in the aviation industry. This can be

anticipated every five to ten years. An update may be needed sooner, however, if major changes occur. An update may not be needed until later if conditions at the airport and in the surrounding area remain stable.

Proposed changes to the NCP should be reviewed by the FAA and all affected aircraft operators and local agencies. Proposed changes should be submitted to the FAA for approval after local consultation and a public hearing to comply with F.A.R. Part 150.

Even if the NCP does not need to be updated, it may become necessary to update the Noise Exposure Maps (NEMs). F.A.R. Part 150 requires the NEMs to be updated if any change in the operation of the airport would create a substantial, new non-compatible use. The FAA interprets this to mean an increase in noise levels of 1.5 CNEL or more, above 65 CNEL, over non-compatible areas that had formerly been compatible.

As a rough rule of thumb, the trigger for determining the need for contour updating is a 17 percent change in equivalent operations by the loudest aircraft regularly using the airport. To calculate "equivalent operations," any nighttime operations, (between 10:00 p.m. and 7:00 a.m.) must be multiplied by ten and added to daytime operations.

Implementation Actions. No specific implementation actions, other than those discussed above, are required.

Cost and Funding. Costs of a complete update of the Noise Compatibility Program are estimated at $225,000. This would be eligible for up to 90 percent funding from the FAA. The County Department of Airports would be responsible for remaining 10 percent. This would come from the airport operating budget.

Timing. This should be done as necessary. Updates are typically needed every five to ten years, depending on how much change occurs at the airport and in the local area. For planning purposes, two updates can be expected over the next 20 years.

5. Acquire noise monitors.

Description. The County should acquire up to two noise monitors and consider installing them at permanent locations, one off each runway end. The installations should include a telephone connection allowing the data to be periodically downloaded to the Department of Airports' computer system. The permanent monitors would supplement the portable noise monitors which the Department of Airports already owns.

The noise monitoring system would serve the following primary purposes.

- To track changes in noise levels over time.
- To monitor noise levels for comparison with predictions of the Integrated Noise Model made in the F.A.R. Part 150 Study.
- To provide data to assist in investigating and responding to noise complaints.

The noise monitors could also be used as testing devices to provide information to local pilots. The Department could work with local aircraft operators to provide demonstrations of the effectiveness of various noise abatement measures, including NBAA noise abatement departure procedures and the AOPA noise awareness steps.

Implementation Actions: When the Department of Airports has the funding to buy the noise monitors, it should request cost proposals from qualified suppliers. Various system manufacturers and providers are listed in Appendix D.

Cost and Funding. For budgeting purposes, $25,000 should be set aside for acquisition of noise monitoring equipment. This will allow for the purchase and installation of up to two monitors.

Acquisition of the noise monitors would be eligible for Federal funding through the noise set-aside of the Airport Improvement Program. This would cover up to 90 percent of the costs. The balance would be covered through the airport capital budget.

Timing. Installation of the noise monitors will depend on the availability of funding. In addition, the system at Oxnard should be considered a higher priority because of the closer proximity of residential areas to that airport. For planning purposes, acquisition of noise monitors for use at Camarillo is projected for the year 2005.

SUMMARY

The Noise Compatibility Program for Camarillo Airport is summarized in **Table 6A** on the next page. The total cost of the program is estimated at $710,000. The most significant costs include future updates of the Program ($450,000) and miscellaneous special studies that may be needed to assist with monitoring Program implementation ($180,000).

Most of the cost ($441,000) would be eligible for FAA funding through the noise set-aside of the Federal Airport Improvement Program. Thirty-seven percent ($265,500) would be covered through the airport operating budget. Less than one percent ($3,500) would be covered through the County's airport capital budget.

The recommended noise abatement measures can reduce disturbing single event noise in the area. The land use planning measures also can help to limit the potential for future noise-sensitive development in the airport area. Continuing program management will provide for a timely response to conditions that may change over time and require a re-evaluation of future noise conditions. While the airport management must provide leadership and coordination of the entire program, success hinges on the cooperation of all involved parties.

TABLE 6A
Summary of Noise Compatibility Program, 1999-2018
Camarillo Airport

Measure	Cost to Airport or Government[1]	Direct Cost to Users[2]	Timing	Lead Responsibility[3]	Potential Funding Sources
NOISE ABATEMENT ELEMENT					
1. Continue prohibiting formation takeoffs and landings without prior permission of Director of Airports	None (existing measure)	None (existing measure)	Ongoing	County Department of Airports	N.A.
2. Continue advising north traffic to fly downwind leg along U.S. Hwy. 101.	None (existing measure)	None (existing measure)	Ongoing	County Department of Airports	N.A.
3. Continue advising Runway 26 arrivals to make base leg turn west of Las Posas Road.	None (existing measure)	None (existing measure)	Ongoing	County Department of Airports	N.A.
4. Continue advising pattern traffic on Runway 8 to turn to crosswind leg prior to Las Posas Road.	None (existing measure)	None (existing measure)	Ongoing	County Department of Airports	N.A.
5. Continue advising right traffic on Runway 8 so as to avoid low overflights of City.	None (existing measure)	None (existing measure)	Ongoing	County Department of Airports, Airport Traffic Control Tower	N.A.

TABLE 6A (Continued)
Summary of Noise Compatibility Program, 1999-2018
Camarillo Airport

Measure	Cost to Airport or Government[1]	Direct Cost to Users[2]	Timing	Lead Responsibility[3]	Potential Funding Sources
NOISE ABATEMENT ELEMENT					
6. Advise straight-in VFR approaches to Runway 26 to remain south of U.S. Hwy. 101 and south of housing areas.	Administrative	None	1999	County Department of Airports	Operating budgets
7. Advise Runway 26 departures to fly west and north of City when turning right.	Administrative	Very small cost due to greater flying distance	1999	County Department of Airports	Operating budget
8. Require aircraft over 80,000 pounds to land on Runway 8 and depart on Runway 26 whenever safe and practicable.	Administrative	Cost of fuel due to greater flying distance	1999	County Department of Airports, Airport Traffic Control Tower	Operating budget
9. When landings on Runway 26 are necessary, require aircraft over 80,000 pounds to make offset visual approaches from the southeast over farmland.	Administrative	Negligible	1999	County Department of Airports, Airport Traffic Control Tower	Operating budget
10. Promote use of NBAA noise abatement departure procedures by jets.	Administrative + $10,000	Negligible	1999 and ongoing	County Department of Airports	FAA (90%) Capital budget (10%)

TABLE 6A (Continued)
Summary of Noise Compatibility Program, 1999-2018
Camarillo Airport

Measure	Cost to Airport or Government[1]	Direct Cost to Users[2]	Timing	Lead Responsibility[3]	Potential Funding Sources
NOISE ABATEMENT ELEMENT					
11. Promote use of AOPA's "Noise Awareness Steps."	Administrative	Negligible	1999 and ongoing	County Department of Airports	Operating budget
12. Continue promoting a standard left hand traffic pattern on Runway 26.	Administrative	None	1999	County Department of Airports, Airport Traffic Control Tower	Operating budgets
13. Designate Runway 26 as the calm wind runway.	Administrative	None	1999	County Department of Airports, Airport Traffic Control Tower	Operating budgets
14. Advise departures on Runway 8 to make right turns to avoid overflights of City.	Administrative	Negligible	1999	County Department of Airports	Operating budget
LAND USE MANAGEMENT ELEMENT					
1. Use combined 2003 and 2018 noise contours as basis for noise compatibility planning.	Administrative	None	1999 - 2000	City of Camarillo Ventura County	Operating budget

TABLE 6A (Continued)
Summary of Noise Compatibility Program, 1999-2018
Camarillo Airport

Measure	Cost to Airport or Government[1]	Direct Cost to Users[2]	Timing	Lead Responsibility[3]	Potential Funding Sources
LAND USE MANAGEMENT ELEMENT (Continued)					
2. Set 60 CNEL as threshold for promoting airport-compatible development.	Administrative	None	1999 - 2000	City of Camarillo Ventura County	Operating budget
3. Preserve existing airport-compatible land use designations within 60 CNEL contour and beneath close-in traffic pattern.	None	None	Ongoing	City of Camarillo Ventura County	Operating budget
4. Establish noise compatibility guidelines for the review of development projects within the "compatible land use preservation area" and require fair disclosure agreements and covenants for noise-sensitive uses granted a development permit.	Administrative	None	1999 - 2000	City of Camarillo Ventura County	Operating budget

TABLE 6A (Continued)
Summary of Noise Compatibility Program, 1999-2018
Camarillo Airport

Measure	Cost to Airport or Government[1]	Direct Cost to Users[2]	Timing	Lead Responsibility[3]	Potential Funding Sources
PROGRAM MANAGEMENT ELEMENT					
1. Maintain and enhance system for receiving, analyzing, and responding to noise complaints.	Administrative	None	Ongoing	County Department of Airports	Operating budget
2. Review Noise Compatibility Program implementation .	$180,000 (assumes average of $30,000 every three years)	None	Ongoing	County Department of Airports	Operating budget
3. Publish pilot guide.	Initial edition: $5,000 Future editions: $40,000 (assumes $8,000 every three years)	None	1998	County Department of Airports	Initial edition: FAA (90%) Operating budget (10%) (already budgeted) Future editions: Airport operating budget
4. Update Noise Exposure Maps and Noise Compatibility Program	$450,000 (assumes $225,000 every 5 to 10 years)	None	Update every 5 to 10 years as needed	County Department of Airports	FAA (90%) Operating budget (10%)
5. Acquire noise monitors	$25,000	None	2006 (based on available funding)	County Department of Airports	FAA (90%) Capital budget (10%)

TABLE 6A (Continued)
Summary of Noise Compatibility Program, 1999-2018
Camarillo Airport

	Funding Sources	Funding Amount	Funding Percentage
Total Costs and Funding, 1999 - 2018	FAA	$441,000	62%
	Airport Operating Budget	$265,500	37%
	Airport Capital Budget	$3,500	1%
	Total	$710,000	100%

NOTES:

N.A. -- Not applicable.

[1] Where "administrative" costs are noted, it is expected that the necessary tasks can be handled by existing staff within existing budgets.

[2] Airport users will be indirectly responsible for at least part of County Department of Airports' share of funding through lease payments and user fees.

[3] Where Ventura County does not have direct responsibility for implementing a given measure, the County Department of Airports will encourage the listed jurisdictions to implement measures as described.

Appendix A
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CAMARILLO AIRPORT
NOISE COMPATIBILITY STUDY
PLANNING ADVISORY COMMITTEE

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Appendix B
COORDINATION, CONSULTATION, AND PUBLIC INVOLVEMENT

Appendix B
COORDINATION, CONSULTATION, AND PUBLIC INVOLVEMENT

As part of the planning process, the public, airport users, and local, state, and Federal agencies were given the opportunity to review and comment on the Noise Compatibility Program and supporting documentation. Materials prepared by the consultant were submitted for local review, discussion, and revision at several points during the process.

Much of the local coordination was handled through a special study committee formed specifically to provide advice and feedback on the Part 150 Noise Compatibility Study. Known as the Planning Advisory Committee (PAC), it included representatives of all affected groups, including local residents, airport users, the city planning departments of the cities of Camarillo and Oxnard, the County of Ventura, the State of California Department of Transportation, the local air traffic control manager, local businesses, and the Federal Aviation Administration. (A list of the PAC members is contained in Appendix A.)

The PAC reviewed and commented on the working papers prepared by the consultant and provided guidance for the next phases of the study. Most comments were made orally during the meetings, but some were followed by written confirmation. All comments were appropriately incorporated into this document or otherwise addressed.

The PAC met six times during the preparation of the Noise Compatibility Program. An introductory meeting was held for committee members by Ventura County Airport Staff July 8, 1997. On

December 2, 1997 a meeting was held to introduce the participants, describe the study process, discuss goals and objectives, review Chapter One, Inventory, and hear comments and views pertaining to conditions at the airport. A number of questions were raised pertaining to the forecast and methodologies that were used for the noise analysis. One question related to the potential impact of making NAWS Point Mugu a joint use facility.

Immediately preceding the third PAC meeting on January 6, 1998, two Technical Information Conferences were held to begin developing a range of noise abatement and land use alternatives to consider in the next part of the study. The Aviation Technical Conference was attended by representatives of the Department of Airports, the airport traffic control tower, local and surrounding airport users. A worksheet listing potential noise abatement techniques was distributed. Discussion included the enforcement of current noise abatement procedures and the impacts of a proposed parallel runway.

The land use technical conference was attended by representatives from the Department of Airports and the City of Camarillo. Discussions primarily focused on proposed land uses for agricultural land in the vicinity of the airport

Following the technical conferences the working papers on aviation noise and noise impacts were presented and discussed at the third PAC meeting. A number of questions were raised concerning noise analysis. These included questions about the relationship of the updated contours and those previously developed for the airport. Additional questions related to the potential impact of a proposed parallel runway shown on the airport layout plan.

The fourth PAC meeting, held on May 5, 1998, open with the distribution of the Noise Exposure Document to PAC members and introduced the Noise Compatibility Program as the second portion to a complete Part 150 Study. Appendix "C", an analysis of peak day noise conditions, was also distributed and discussed. The working papers for Noise Abatement Alternatives and Land Use Alternatives were presented. This facilitated a number of discussions about potential noise effects relating to a proposed parallel runway. Additional discussions focused on land use noise compatibility planning.

Chapter Six was the focus of discussion at the Fifth PAC meeting held on September 1, 1998. Much of the meeting was devoted to various noise abatement issues. The Land Use Management and Program Implementation elements of Chapter Six were also evaluated. The meeting commenced with a discussion about a proposed permanent monitoring system at the airport.

The sixth and final PAC meeting was held on January 12, 1999. The meeting concentrated on a final review and call for addition comments and concerns about the Noise Compatibility Plan. The vast majority of the meeting was dominated by discussions concerning the proposed preservation of

undeveloped land north of the Ventura Freeway, a permanent noise monitoring system, the need for additional environmental study.

After each Planning Advisory Committee Meeting, the general public was invited to three public information workshops. Structured as an open house, with display boards and information posted throughout the meeting room, the meetings were intended to encourage two-way communication between the airport staff, consultants, and local citizens.

The public information meetings were held on December 2, 1997, May 5, 1998, and September 1, 1998. The material presented was the same as that presented at the PAC meeting earlier in the day.

The Noise Compatibility Study process also included two public hearings: November 10, 1998 and May 13, 1999. The public hearings offered individuals an opportunity to provide testimony as a part of a public record in a controlled setting. The hearings discussed the study's proposed noise abatement, land use management, and implementation recommendations. Comments and questions via written or oral testimony were evaluated and responded to in the study's supporting documentation. The second public hearing, originally scheduled on December 10, 1998 in conjunction with the Airport Authority's regular meeting, was canceled due to Brown Act requirements and the absence of a quorum. This hearing was subsequently rescheduled and held on May 13, 1999 where the Noise Compatibility Program was adopted by the Airport Authority.

On June 8, 1999, the Noise Compatibility Program was presented in a public hearing before the Ventura County Board of Supervisors. Following an opportunity for public comment, the program was accepted by the county Board.

In addition to these formal meetings, many written and verbal contacts were made between project management staff and officials of local and Federal agencies, representatives of various aviation user groups, and local residents. These were related to the day-to-day management of the project, as well as the resolution of specific questions and concerns arising from the working papers.

A supplemental volume entitled "Supporting Information on Project Coordination and Local Consultation" contains detailed information in support of the Noise Compatibility Program document. It includes copies of meeting announcements, summary notes from the meetings, sign-in sheets, and all written comments received on the Noise Compatibility Program study.

CAMARILLO AIRPORT
Part 150 Noise Compatibility Program

Appendix C
PEAK DAY NOISE ANALYSIS

Appendix C
PEAK DAY NOISE ANALYSIS

This appendix describes the methodology and key input assumptions used to develop noise exposure contours for a peak day of operations at Camarillo Airport.

On any given day, aircraft activity at Camarillo can vary greatly. While the FAA requires the use of average daily operations in completing noise contours under F.A.R. Part 150, calculation of noise conditions on a typical peak day can offer additional insights into the local noise situation.

This aircraft noise analysis relies on complex analytical methods and uses numerous technical terms. A Technical Information Paper included in the last section of this document, *The Measurement and Analysis of Sound*, presents helpful background information on noise measurement and analysis.

INM INPUT

Version 5.1 of the FAA's Integrated Noise Model was used for this analysis. Input data for peak day conditions are discussed in this section.

ACTIVITY DATA

For this analysis, peak day activity provided by the Air Traffic Control Tower was used for noise modeling. Operations for the peak day and average day in 1998 are briefly summarized in **Table C1**.

TABLE C1
Daily Operation Summary -1998
Camarillo Airport

Operation Type	Average Day[1]	Peak Day[2]
Itinerant		
Air Taxi	5.0	7.8
General Aviation	245.8	381.0
Military	0.1	0.2
Subtotal	250.9	389.0
Local		
General Aviation - prop	204.8	317.6
Helicopter	32.9	51.0
Ultralight	27.4	42.4
Subtotal	265.1	411.0
TOTAL OPERATIONS	516.0	800

[1] Based on airport traffic control tower operation records from November 1996 through October 1997. The ultralight operations were estimated by Coffman Associates. They are not recorded in tower operation records.
[2] Total peak day operations level provide by Air Traffic Control Tower. Breakdown calculated by Coffman Associates.

Peak day operations represent the highest number of operations that have occurred at Camarillo Airport in a 24-hour period in thus far in 1998. The average daily aircraft operations were calculated by dividing total operations for the 12-month period ending October 1997 by 365 days.

FLEET MIX AND DATABASE SELECTION

The peak day fleet mix was developed using the same proportions computed for the average day fleet mix depicted in Table 2B from Chapter 2, Aviation Noise. **Table C2** summarizes the fleet mix data input into the noise analysis by average day and peak day aircraft operations for 1998.

The selection of INM designators to represent the peak day fleet mix is the same as the average day fleet mix described in Chapter 2, Aviation Noise, on page 2.5.

TABLE C2
Daily Operations by Aircraft Type -1998
Camarillo Airport

	Average Day	Peak Day
Itinerant Operations		
Air Taxi		
Beech Super King Air	2.7	4.2
Twin Engine Turboprop	1.5	2.3
Twin Engine	0.8	1.3
General Aviation		
Lear-25 - Stage 2 jet	0.5	0.8
Gulfstream III - Stage 2 jet	0.5	0.8
Lear-35 - Stage 3 jet	0.5	0.8
Citation 500 Series - Stage 3 jet	0.5	0.8
Gulfstream IV - Stage 3 jet	0.5	0.8
DC-6 (Constellation)	0.5	0.8
DC-3	2.0	3.0
Beech Super King Air	2.2	3.4
Twin Engine Turboprop	15.7	24.3
Twin Engine	41.0	63.6
Light Single -Variable Pitch Propeller	83.6	129.7
Light Single - Fixed Pitch Propeller	83.6	129.7
Bell-206 Helicopter	5.9	9.1
Robinson-22 Helicopter	5.8	9.1
UH-1 Helicopter	3.0	4.6
Military		
Twin Engine Turboprop	0.1	0.1
Bell-206 Helicopter	0.1	0.1
Subtotal Itinerant	250.9	389.0
Local Operations		
General Aviation		
Light Twin	12.3	19.1
Light Single - Variable Pitch Propeller	96.3	149.3
Light Single - Fixed Pitch Propeller	96.3	149.3
Bell-206 Helicopter	16.4	25.5
Robinson-22 Helicopter	16.4	25.5
Ultralight	27.4	42.5
Military		
Bell-206 Helicopter	0.1	0.1
Subtotal Local	265.1	411.0
TOTAL OPERATIONS	516.0	800.0

Note: Numbers may not add up due to rounding

TIME-OF-DAY

The time-of-day at which operations occur is important as input to the INM due to the extra weighting of evening (7:00 p.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) flights. The proportional distribution of peak day operations by time of day was the same as assumed for average daily operations. These assumptions are shown in **Table 3C**. See pages 2-5 and 2-6 in Chapter Two for more discussion.

TABLE C3
Operations by Time of Day- Average and Peak Day

	Evening Percentage[1]		Night Percentage[2]	
Aircraft Type	**Departure**	**Arrival**	**Departure**	**Arrival**
Air Taxi/Business Jet	1.0%	1.0%	1.0%	1.0%
General Aviation				
Multi-Engine	6.6%	6.6%	2.0%	2.0%
Single Engine	6.6%	6.6%	2.0%	2.0%
CAF/Constellation	5.0%	5.0%	5.0%	5.0%
Ultralight	5.0%	5.0%	0.0%	0.0%
Helicopter				
Agriculture	5.0%	5.0%	5.0%	5.0%
Sheriff	10.0%	10.0%	5.0%	5.0%
Transient	5.0%	5.0%	1.0%	1.0%
Local				
General Aviation	6.0%		2.0%	
Rotor	5.0%		1.0%	

[1] Airport control tower records
[2] Airport nighttime activity logs August 20 to November 11, 1997

RUNWAY USE

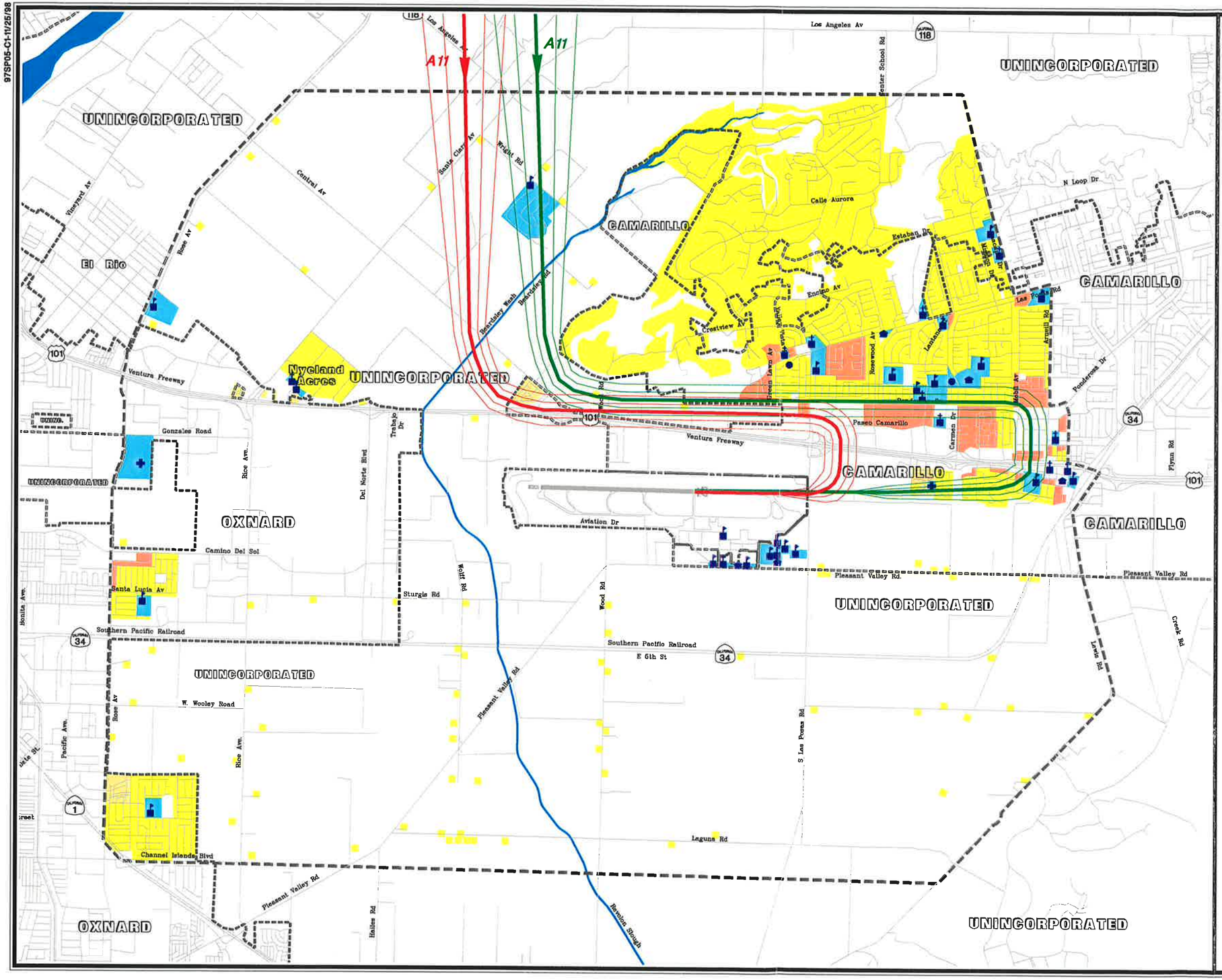
Runway use percentages for the peak day were assumed to be the same as for the average day. Approximately 85 percent of the aircraft arrive and depart on Runway 26.

FLIGHT TRACKS

Departure tracks were assumed to remain the same as the average day flight tracks. For a discussion of departure tracks see pages 2-6 and 2-7 in Chapter Two.

The arrival pattern north of the airport can be elongated during peak activity periods. As see on **Exhibit C1**, the arrival track A11 has been extended from east of Los Posas Road to east of Mobil Avenue. No other adjustments were made to the average day arrival tracks. For a complete discussion of the arrival tracks see pages 2-7 and 2-8 of Chapter Two.

97SP05-C1-11/25/98



LEGEND

- Detailed Land Use Study Area
- Municipal Boundary
- Airport Property
- Peak Day Consolidated Arrival Track Spine
- Peak Day Arrival Sub-Tracks
- Average Day Consolidated Arrival Track Spine
- Average Day Arrival Sub-Tracks
- Single-Family Residential
- Multi-Family Residential
- Mobile Home
- Noise-Sensitive Institutions
- Places of Worship
- Schools
- City Auditorium/Community Center/ Museum
- Retirement Center/Nursing Home
- Hospital

NORTH

0 4000

SCALE IN FEET

CAMARILLO AIRPORT

Exhibit C1

PEAK DAY AND AVERAGE DAY ARRIVAL TRACKS

During peak activity periods the touch-and-go pattern can increase in size due to the higher number of aircraft operating in the pattern. **Exhibit C2** depicts a comparison the peak day and average day touch-and-go pattern. The touch-and-go pattern was expanded from east of Los Posas Road to east of Carmen Drive to the east and from Del Norte Boulevard to Rice Avenue to the west.

No adjustments were made to the average day helicopter tracks. For a complete discussion of the helicopter and touch-and-go tracks see page 2-8 in Chapter Two.

ASSIGNMENT OF AIRCRAFT TO FLIGHT TRACKS

The distribution of peak day operations for each flight track was the same as assumed for average daily operations. See pages 2-8 and 2-9 in Chapter Two for a discussion of the methodology used to assign aircraft to flight tracks.

FLIGHT PROFILES

The aircraft flight profiles for peak day analysis is the same as assumed for average daily analysis. See page 2-9 and in Chapter Two for a complete discussion of the aircraft profiles selected for this analysis.

INM OUTPUT

This section presents the results of the contour analysis for the 1998 peak day noise exposure condition, as developed from the Integrated Noise Model, version 5.1.

1998 PEAK DAY NOISE EXPOSURE CONTOURS

Exhibit C3 presents the plotted results of the INM contour analysis for 1998 peak day and average day conditions using input data described in the preceding pages. The surface areas within each contour are presented in **Table C4**.

Generally the 1998 peak day noise contours are similar in shape to their average day counterparts. This is due to the use of similar modeling input assumptions. Operation levels and larger traffic patterns are the only adjustments made to the 1998 peak day analysis. The peak day contours are slightly larger than the average day contours due to the higher number of operations. No noise-sensitive uses are exposed to noise above 60 CNEL based on the peak day contours.

Table C5 depicts the grid point analysis results. The grid point locations are depicted on **Exhibit C3**. The Lmax noise metric represents the loudest noise event during an 24-hour period for an average day and a peak day. No changes occurred between the 1998 peak day and the average day.

The time above (TA) noise metric calculates the number of minutes that the noise level is above 70 decibels during a 24-hour period. Noise generated in a busy convenience store is about 70 decibels. Site 6 is the only site that remains unchanged with increased

operation levels and flight track adjustments. Grid point 2 had the highest increase in time, 3.5 minutes. The 3.5 minute increase is primarily due to the movement of both arrival and touch-and-go flight track close to grid point 2. The remaining grid points increased slightly, between 0.1 to 1.3 minutes, throughout the study area.

TABLE C4
Comparative Areas of Noise Exposure
Camarillo Airport

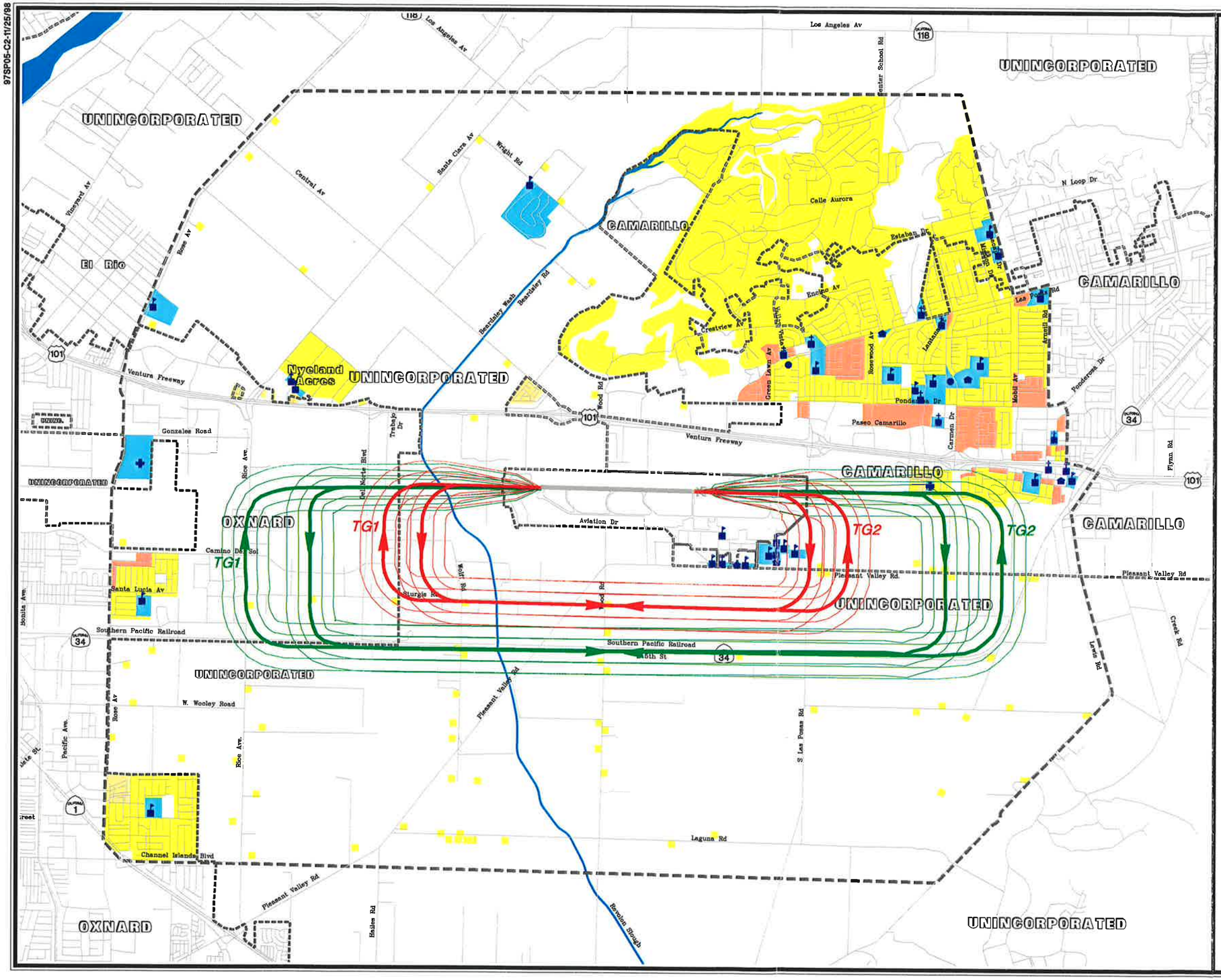
	Area in Square Miles	
CNEL Contour	**Average Day**	**1998 Peak Day**
60	1.11	1.53
65	0.51	0.67
70	0.23	0.30
75	0.11	0.15

The sound exposure level (SEL) noise metric combines the loudness and duration of the aircraft noise event. All the grid points increased reflecting the movement of the tracks and higher number of operations for the peak day noise analysis.

Grid points 3, 4, and 11 had the highest increases with 6.9, 6.1, and 5.2 SEL respectively. As previously mentioned, the peak noise level (Lmax) did not change at any of the grid points, but the closer proximity of aircraft noise events to grid points 3, 4, and 11 increased the duration of each event. Therefore, when calculating the SEL metric, the combination of the same loudness (Lmax) and longer duration increases the SEL value at grid points 3, 4, and 11.

The CNEL value was calculated at each grid point for the 1998 peak day and Average Day contours. This cumulative noise metric considers the daily operations over a 24-hour period with a 4.8 dB penalty for evening operations and 10 dB penalty for nighttime operations. As seen on **Table C5**, all the grid points increased reflecting the flight track movements and higher number of operations for the peak day noise analysis.

Grid points 3, 4, and 11 again had the highest increases. Grid point 3 increased from 42.2 CNEL to 49.3 CNEL and grid point 4 increased from 38.1 CNEL to 44.0 CNEL. Grid point 11 increase from 41.3 CNEL to 46.6 CNEL. As previously mentioned, the elongated tracks increased duration of noise events at these grid points. The duration of aircraft noise is also used to calculate the CNEL metric. Therefore, the CNEL values calculated for grid points 3, 4, and 11 increase.

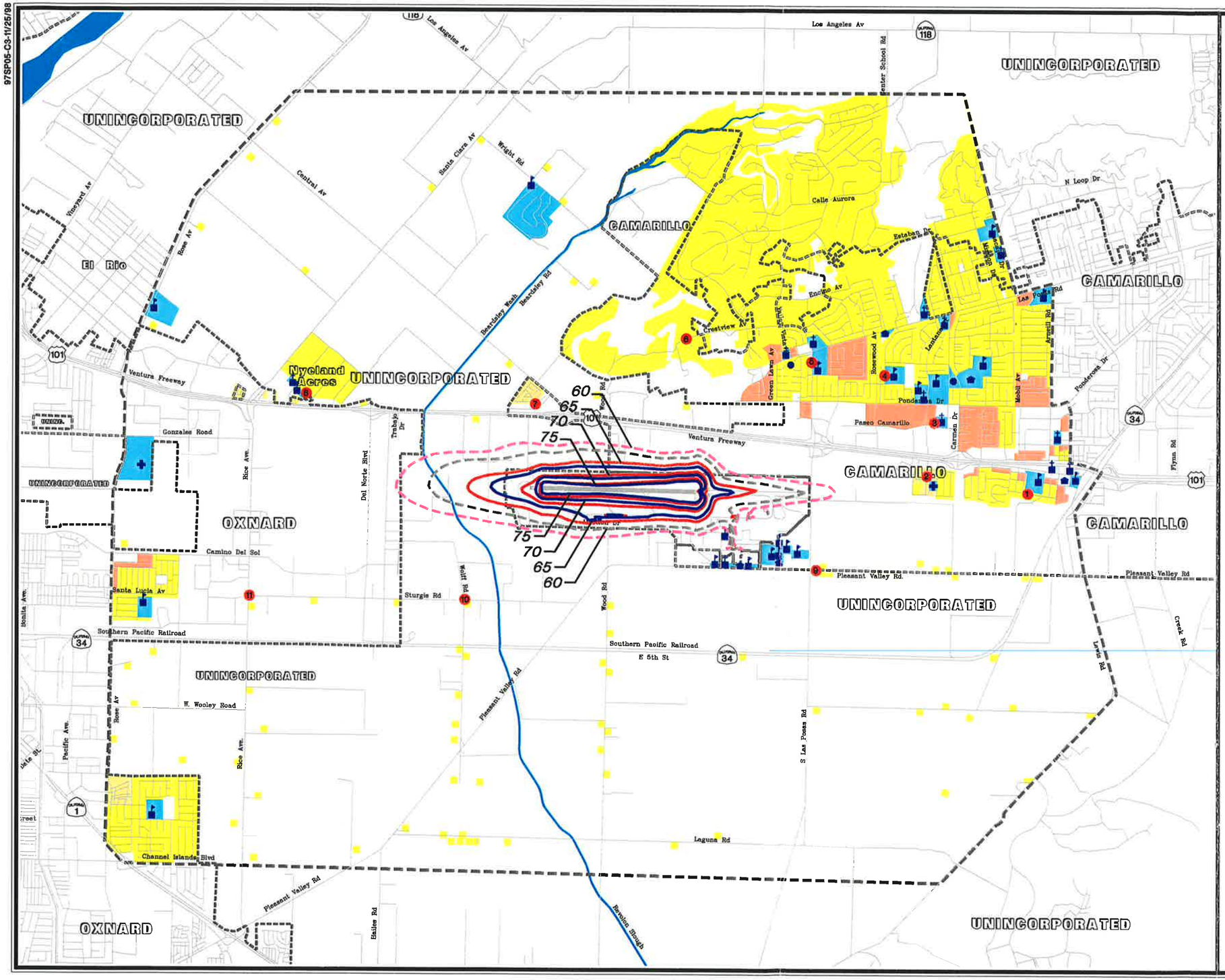


97SP05-C2-11/25/98

CAMARILLO AIRPORT

Exhibit C2
PEAK DAY AND AVERAGE DAY TOUCH-AND-GO TRACKS

97SP05-C3-11/25/98



LEGEND

- Detailed Land Use Study Area
- Municipal Boundary
- Airport Property
- 1998 Average Day CNEL Contours, Marginal Effect
- 1998 Average Day CNEL Contours, Significant Impact
- 1998 Peak Day CNEL Contours, Marginal Effect
- 1998 Peak Day CNEL Contours, Significant Impact
- Single-Family Residential
- Multi-Family Residential
- Mobile Home
- Undeveloped or Compatible Use
- Noise-Sensitive Institutions
- Places of Worship
- Schools
- City Auditorium/Community Center/ Museum
- Retirement Center/Nursing Home
- Hospital
- Noise Analysis Grid Points

NORTH

0 4000

SCALE IN FEET

CAMARILLO AIRPORT

Exhibit C3

COMPARISON OF 1998 AVERAGE DAY AND PEAK DAY AIRCRAFT NOISE EXPOSURE

TABLE C5
Peak Day and Average Day Grid Point Analysis -1998
Camarillo Airport

Grid Point	1998 Average Day				1998 Peak Day			
	Lmax[1]	TA[2]	SEL[3]	CNEL[4]	Lmax	TA	SEL	CNEL
1	91.1	0.3	91.7	43.4	91.1	0.5	94.4	46.1
2	98.0	1.9	100.1	51.7	98.0	5.4	104.0	55.7
3	91.3	0.2	90.6	42.2	91.3	1.6	97.5	49.3
4	82.3	0.0	86.4	38.1	82.3	0.1	92.3	44.0
5	80.9	0.0	88.8	40.6	80.9	0.1	92.1	43.9
6	72.8	0.0	88.4	40.1	72.8	0.0	90.7	42.4
7	84.4	2.3	101.2	53.0	84.4	3.6	102.9	54.7
8	96.4	0.7	98.3	49.8	96.4	1.1	100.3	51.8
9	91.6	1.0	99.9	51.9	91.6	1.5	100.7	52.8
10	83.2	1.7	99.8	51.6	83.2	2.0	99.9	51.7
11	84.9	0.2	89.6	41.3	84.9	0.4	94.8	46.6

[1] The peak noise level (dBA) during the 24-hour period.
[2] Time in minutes that the noise level is above 70 decibels during a 24-hour period.
[3] Maximum sound exposure level during the 24-hour period.
[4] Community Noise Equivalent Level

SUMMARY

The information presented in this appendix describes effects of the noise exposure pattern during peak day aircraft activity at Camarillo Airport.

The peak day noise exposure contours are larger than the average day contours due to the increase in operations levels. No noise-sensitive land uses however, are exposed to noise above 60 CNEL based on the larger peak day noise contours.

The larger traffic pattern to the north of the airport does not increase the peak noise levels actually heard by residents north of the airport (Lmax) but does increase duration of the aircraft noise events (SEL and CNEL).

CAMARILLO AIRPORT
Part 150 Noise Compatibility Program

Appendix D
IMPLEMENTATION MATERIALS

Appendix D
IMPLEMENTATION MATERIALS

The materials in this appendix are for use in implementing the Noise Compatibility Program for Camarillo Airport and include the following:

- A list of noise and flight track monitoring system suppliers;
- A model agreement for noise disclosure and a disclosure statement;
- "Noise Awareness Steps" published by the Aircraft Owners and Pilots Association (AOPA)."
- National Business Aviation Association (NBAA) Standard Noise Abatement Departure Procedure.

Note that the fair disclosure agreement has been drafted in anticipation of the establishment of an "Airport Influence Area" in the updated *Airport Comprehensive Land Use Plan for Ventura County*. Accordingly, the County Airport Land Use Commission is noted as a party to the fair disclosure agreement.

While care has been taken to ensure accuracy of the fair disclosure agreement and statement, the form and language of these instruments may need to be altered to conform with local laws and customs. They must be reviewed by attorneys representing local jurisdictions before their use or adoption.

NOISE AND FLIGHT TRACK MONITORING SYSTEM MANUFACTURERS AND SUPPLIERS

Noise Monitoring Equipment

01 dB, Inc.
1583 East Genesee Street
P.O. Box 796
Skaneateles, NY 13152
(315) 685-3141
FAX: (315) 685-3194

CEL Instruments
1 Winchester Drive
Milford, NH 03055-3056
(603) 672-7383
800-366-2966
FAX: (603) 672-7382

Larson Davis Laboratories
1681 West 820 North
Provo, UT 84601
(801) 375-0177

Scantek, Inc.
916 Gist Avenue
Silver Spring, MD 20910
(301) 495-7738

Software

Dimensions International
7127 Four Rivers Road
Boulder, CO 80301
(303) 530-3710
(ACES System for ARTS data collection and editing.)

Harris Miller Miller & Hanson, Inc.
15 New England Executive Park
Burlington, MA 01803
(617) 221-0024
(ANOMS System for ARTS data collection and editing.)

Noise Monitoring Equipment and Software

Bruel & Kjaer
DK-2850 Naerum
Denmark
California Office: (714) 978-8066

Lochard Environment Systems Corp.
40 Speen Street
Framingham, MA 01701
(508) 872-3600

Tracor, Inc.
6500 Tracor Lane
Austin, TX 78725
Contact: David Rohde
(512) 929-2010
FAX: (512) 929-4089

Passive Radar Detection System

Bruel & Kjaer
DK-2850 Naerum
Denmark
California Office: (714) 978-8066

MODEL AGREEMENT FOR NOISE DISCLOSURE

This Agreement made and entered into this _____ day of _____, 199__, by and between the Ventura County Airport Land Use Commission, hereinafter referred to as "ALUC", the ***[City of Camarillo; OR Ventura County]***, hereinafter referred to as ***["City" OR "County"]***, Ventura County Department of Airports, as proprietor of Camarillo Airport, hereinafter referred to as "Airport Proprietor," and _____, herein referred to as "Developer."

WITNESS, that

WHEREAS, Developer has an interest in a tract of land generally located at _____ in Ventura County, California, more specifically described in Exhibit "A" which is attached hereto and incorporated herein by reference, to be platted as _____, and referred to herein as "Developer's Property"; and

WHEREAS, Airport Proprietor owns and operates a certain airport known as Camarillo Airport located _____ of Developer's Property; and

WHEREAS, it is in the best interest of the ALUC, Airport Proprietor, ***[City OR County]***, and Developer to advise all future purchasers and lessees of the presence of the Airport and the potential for low-flying aircraft and noise attributable to aircraft operations at Camarillo Airport; and

WHEREAS, this Agreement is entered into for the purpose of advising said purchasers and lessees of the aircraft activity and potential for noise generation;

NOW, THEREFORE, for and in consideration of the mutual covenants and considerations herein contained, it is agreed as follows:

1. ALUC, ***[City OR County]***, Airport Proprietor, and Developer enter into this Agreement for the purpose of advising future purchasers and lessees of the activity, overflights, and noise attributable to aircraft operations at Camarillo Airport.

2. Developer agrees that in the sales listing information for each lot or separately transferrable property, he will include a notice that the property is in the Camarillo Airport Influence Area. The information shall include copies of a map showing the Airport Influence Area and the safety zones and noise contours taken from the most recent version of the ALUC's Airport Comprehensive Land Use Plan.

3. Developer agrees that as a part of closing of any real estate transaction conveying a fee simple interest or any lesser estate including leasehold interest that Developer will provide the transferee copies of the aforementioned map and further that Developer shall secure the acknowledgment on six copies of the Fair Disclosure Statement as set forth in Exhibit "B" attached hereto and incorporated herein by reference.

4. The ALUC shall provide Developer with copies of the most recent, official Airport Influence Area Map for Camarillo Airport at the request of Developer. Any request for said Map shall be in writing to the Ventura County Airport Land Use Commission, in care of the Ventura County Transportation Commission, 950 County Square Drive, Ventura, California, 93003, and shall be made not less than thirty (30) days before the date thereof.

5. After the execution of the Fair Disclosure Statement (Exhibit "B"), Developer shall record one copy at the County Recorder's office, file one copy with the City ***[OR County]*** Planning Department, one copy with the Airport Proprietor, one copy with the ALUC, retain one copy, and deliver the remaining copy to the transferee.

6. Developer further agrees that all transferees shall take subject to the terms of this Agreement and require the execution of the Fair Disclosure Statement as a part of any subsequent conveyance.

7. This Agreement shall be considered a covenant running with the land and be binding on all future transferees, assigns and successors of Developer inasmuch as the potential affects of the Airport operation is associated with the use of the land and indiscriminate of ownership.

8. This Agreement shall not be amended, modified, canceled, or abrogated without the written consent of the parties.

9. Invalidation of any part or parts of this Agreement by judgment or other court action shall in no way affect any of the other provisions which shall remain in full force and effect.

10. This contract shall be construed and enforced in accordance with the laws of the State of California.

11. Upon the effective date of this Agreement, the Agreement shall be recorded in the Office of the Recorder of Deeds, Ventura County, California.

12. This Agreement shall be binding on the parties hereto only after all legal requirements relating to ALUC and ***[City OR County]*** entering into this Agreement have been satisfied.

VENTURA COUNTY
DEPARTMENT OF AIRPORTS

By: _____
Director of Airports

ATTESTED TO:

_____

Approved as to form and legality:

_____
Legal Counsel

DEVELOPER

By: _____

ATTEST:

_____
Secretary

NOTARY'S CERTIFICATION:

_____
Notary Public

[CITY OF _____ OR VENTURA COUNTY]

By: _____
Chief Executive Officer

ATTESTED TO:

_____

Approved as to form and legality

_____
Legal Counsel

AIRPORT LAND USE COMMISSION

By: _____
Chairman

ATTESTED TO:

_____

Approved as to form and legality

_____
Legal Counsel

"EXHIBIT B"
MODEL FAIR DISCLOSURE STATEMENT

NOTICE TO PROSPECTIVE BUYERS OF REAL PROPERTY OR LESSEES OF RESIDENTIAL PROPERTY WITHIN CAMARILLO AIRPORT INFLUENCE AREA.

1. An Airport Influence Area exists in the environs of Camarillo Airport (herein referred to as the Airport). All land within the area is or may be at a future date exposed to low and frequent aircraft overflights or aircraft noise levels of 60 CNEL or higher. Low and frequent aircraft overflights and noise levels of 60 CNEL can be annoying or disturbing.

2. The undersigned acknowledges that he or she has been informed that the property being considered for ***[purchase OR lease]*** at:

_____

Address

_____

City State Zip Code

is within the Airport Influence Area for the Airport. He or she further acknowledges that he or she has been given copies of the Airport Influence Area map (a copy of which is attached hereto).

The undersigned has read and fully understands all of the provisions relating to this Fair Disclosure statement.

IN WITNESS WHEREOF, the parties have executed this Statement as of the day and year written below.

Date: _____, 19___.

_____	_____
PRINT NAME OF BUYER OR LESSEE	PRINT NAME OF SELLER, LESSOR, BROKER
_____	_____
Current Address	Company
_____	_____
City State Zip Code	Address
	_____
	City State Zip Code
_____	_____
Signature	Signature

State of _____)
) ss
County of _____)

BE IT REMEMBERED that on the _____ day of _____, 19___, before me, the undersigned notary public in and for the county and state aforesaid, came _____, to me personally known, who being by me duly sworn did say that he is the _____ _____ of _____, a corporation, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed on behalf of said corporation by authority of its board of directors and said _____ _____ acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

_____
Notary Public

My commission expires:

_____

AIRCRAFT OWNERS AND PILOTS ASSOCIATION (AOPA) NOISE AWARENESS STEPS

Following are some general guidelines and techniques to minimize the noise impact produced by aircraft operating near the ground:

1. If practical, avoid noise-sensitive areas such as residential areas; open-air assemblies (e.g., sporting events and concerts), and national park areas. Make every effort to fly at or above 2,000 feet over the surface of such areas when overflight cannot be avoided.

2. Consider using a reduced power setting if flight must be low because of cloud cover or overlying controlled airspace or when approaching the airport of destination. Propellers generate more noise than engines; flying with the lowest practical rpm setting will reduce the aircraft's noise level substantially.

3. Perform stalls, spins, and other practice maneuvers over uninhabited terrain.

4. Many airports have established specific noise abatement procedures. Familiarize yourself and comply with these procedures.

5. Work with airport managers and fixed-base operators to develop procedures to reduce the impact on noise-sensitive areas.

6. To contain aircraft noise within airport boundaries, avoid performing engine runups at the ends of runways near housing developments. Instead, select a location for engine runup closer to the center of the field.

7. On takeoff, gain altitude as quickly as possible without compromising safety. Being takeoffs at the start of a runway, not at an intersection.

8. Retract the landing gear either as soon as a landing straight ahead on the runway can no longer be accomplished or as soon as the aircraft achieves a positive rate of climb. If practical, maintain best-angle-of-climb airspeed until reaching 50 feet or an altitude that provides clearance from terrain or obstacles. Then accelerate to best-rate-of-climb airspeed. If consistent with safety, make the first power reduction at 500 feet.

9. Fly a tight landing pattern to keep noise as close to the airport as possible. Practice descent to the runway at low power settings and with as few power changes as possible.

10. If a VASI or other visual approach guidance system is available, use it. These devices will indicate a safe glidepath and allow a smooth, quiet descent to the runway.

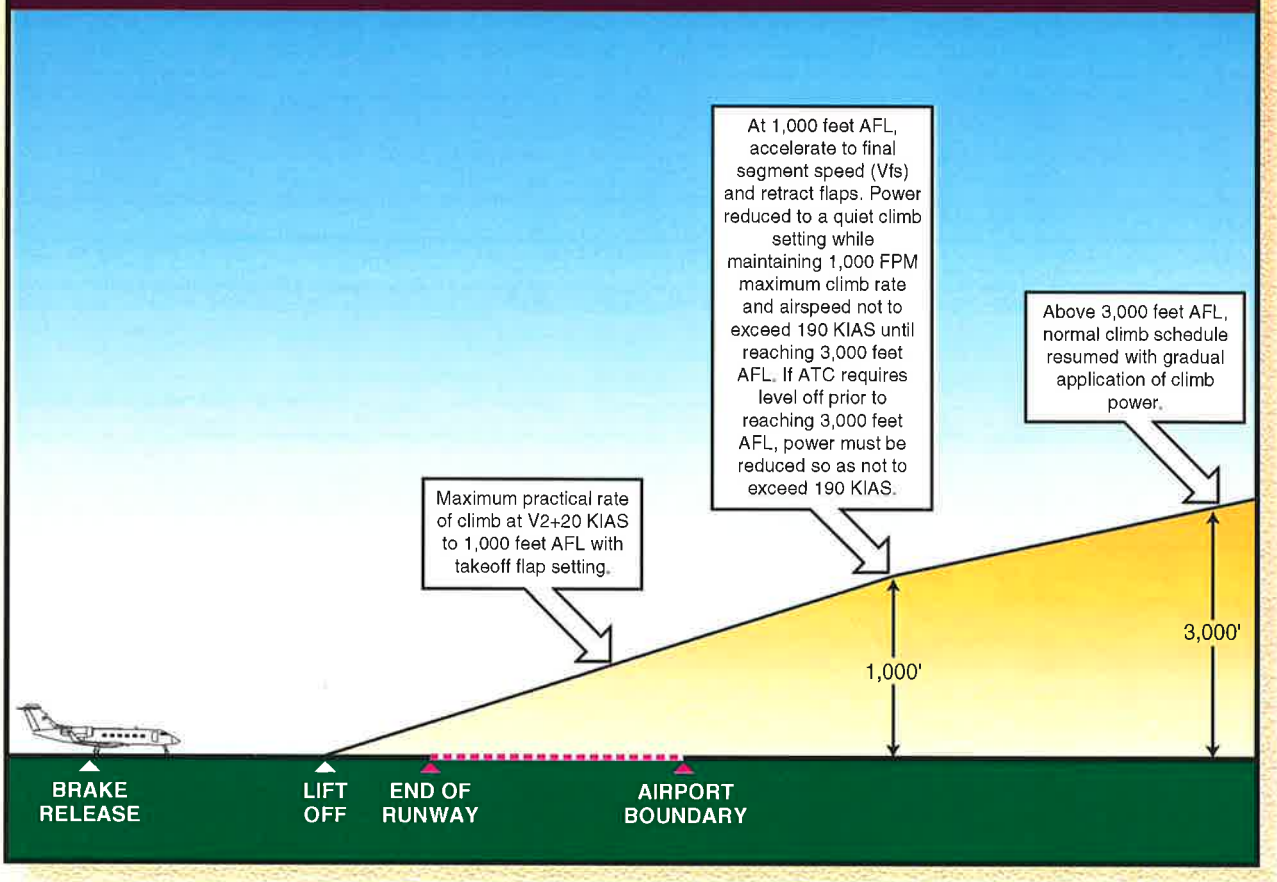
11. If possible, do not adjust the propeller control for flat pitch on the downwind leg; instead, wait until short final. This practice not only provides a quieter approach, but also reduces stress on the engine and propeller governor.

12. Avoid low-level, high-power approaches, which not only create high noise impacts, but also limit options in the event of engine failure.

Note: These recommendations are general in nature; some may not be advisable for every aircraft in every situation. No noise reduction procedure should be allowed to compromise flight safety.

Source: *AOPA's Aviation USA - 1994*

NATIONAL BUSINESS AVIATION ASSOCIATION (NBAA) STANDARD NOISE ABATEMENT DEPARTURE PROCEDURE



KEY

AFL - Above field elevation
ATC - Air traffic control
FPM - Feet per minute
KIAS - Knots, indicated airspeed

Note: It is recognized that aircraft performance will differ with aircraft type and takeoff conditions; therefore, the business aircraft operator must have the latitude to determine whether takeoff thrust should be reduced prior to, during, or after flap retraction.

Source: National Business Aviation Association (NBAA), "NBAA Noise Abatement Program," January 1, 1993.

For copies of the NBAA's noise abatement program, suitable for insertion into pilot flight manuals, contact:

NBAA, Inc.
1200 Eighteenth St., NW
Washington, D.C. 20036
Phone: 202-783-9000
FAX: 202-331-8364

CAMARILLO AIRPORT

Appendix E
GRID POINT ANALYSIS

Appendix E
GRID POINT ANALYSIS

This appendix provides the supporting data for Land Use Recommendation Three ("Preserve existing airport-compatible land use designations within the 60 CNEL and beneath the close-in traffic pattern") discussed in Chapter Six, Noise Compatibility Plan. This analysis presents aircraft noise data for the year 2003 at selected points throughout the area recommended to be preserved for airport-compatible land uses. It shows both cumulative aircraft noise data in terms of CNEL and single event noise for different types of aircraft using the airport.

Fourteen grid points, depicted on **Exhibit E1**, were defined in the affected area and the loudness range of single events was computed at each point. The Integrated Noise Model was used to generate the top noise events by aircraft type. A summary of the grid point analysis for 2003 with the Noise Compatibility Program is depicted in **Table E1**. Printouts of the detailed grid point analysis output files are also attached to the back of this appendix.

The grid point analysis is described in two noise metrics, CNEL and SEL. CNEL is a scale which takes account of all the A-weighted sound received at each grid point, from all aircraft noise events. A 4.77 decibel weighting factor is applied to noise events occurring during the evening hours (7:00 p.m. to 10:00 p.m.). A 10 decibel weighting factor is applied to noise events at night (10:00 p.m. to 7:00 a.m.) in the CNEL metric.

SEL is a mathematical construct designed to consider the duration of a noise event as well as the loudness of the noise event. When the duration and the loudness of the noise event are mathematically combined, the resultant

SEL is 5 to 10 decibels higher than the peak noise level (L_{max}) heard by the human ear for the same event.

As shown in **Table E1**, all grid points selected for analysis have noise levels above 50 CNEL. Four points, D7, D8, D11, and D12, are above 55 CNEL. Site D7 is particularly influenced by noise from approaches to Runway 26 while the other sites are influenced by aircraft in the traffic pattern. Experience in California and elsewhere around the country shows that serious aircraft noise concerns are often registered by residents of areas exposed to noise above 55 CNEL, especially in areas of quiet ambient noise.

Sound exposure levels (SELs) for individual overflights shown in **Table E1** range from about 79 to 110 decibels for Stage 2 business jets, 79 to 93 decibels for Stage 3 business jets, 62 to 101 for twin engine propeller aircraft, and 54 to 89 decibels for single engine propeller aircraft. For the business jets and twin engine aircraft, single event noise is loudest at Points D2, D3, D7, and D8. Peak noise at Point D2 is associated with departures from Runway 26, peak noise at Point D3 with aircraft powering up to takeoff on Runway 8, and peak noise at Point D7 with both approaches to Runway 26 and departures from Runway 8, depending on the type of aircraft. Peak noise at Point D8 is associated with departures on Runway 8. Single engine aircraft also tend to be loudest at these four sites in addition to Point D6.

At all grid points, the loudest SEL values for each aircraft type are great enough to disrupt residential activities at least on occasion. Interruptions of television viewing, phone conversations, indoor and outdoor conversations and relaxation are typical disturbances that would be expected.

For general interpretive purposes, one can assume that quiet conversation typically occurs at a maximum sound level of about 60 to 65 decibels. Television viewing typically occurs at about the same level. A shouted voice produces noise of about 85 decibels. A modern home can attenuate outdoor noise levels by about 25 decibels if doors and windows are closed and about 15 decibels with windows open.

Before comparing the aircraft single event noise with these disturbance criteria, we must adjust the SEL value to approximate the maximum sound a person will actually hear (L_{max}). This will be as much as 10 decibels lower than the SEL. Thus, at the eight grid points with the highest noise levels from Stage 2 jets, the maximum sound (L_{max}) will range from about 90 to 99 decibels. Noise of this magnitude would completely prevent any outdoor conversation. Aircraft noise indoors would be as high as 74 decibels, even with windows and doors closed, loud enough to interrupt television viewing and to require raised voices in conversation.

Stage 3 business jets and twin engine propeller aircraft would be considerably quieter, producing maximum sound (L_{max}) of about 75 to 91 decibels at most points. Single engine propeller aircraft would produce sound with an L_{max} ranging from 70 to 79 decibels. This is loud enough to disrupt outdoor

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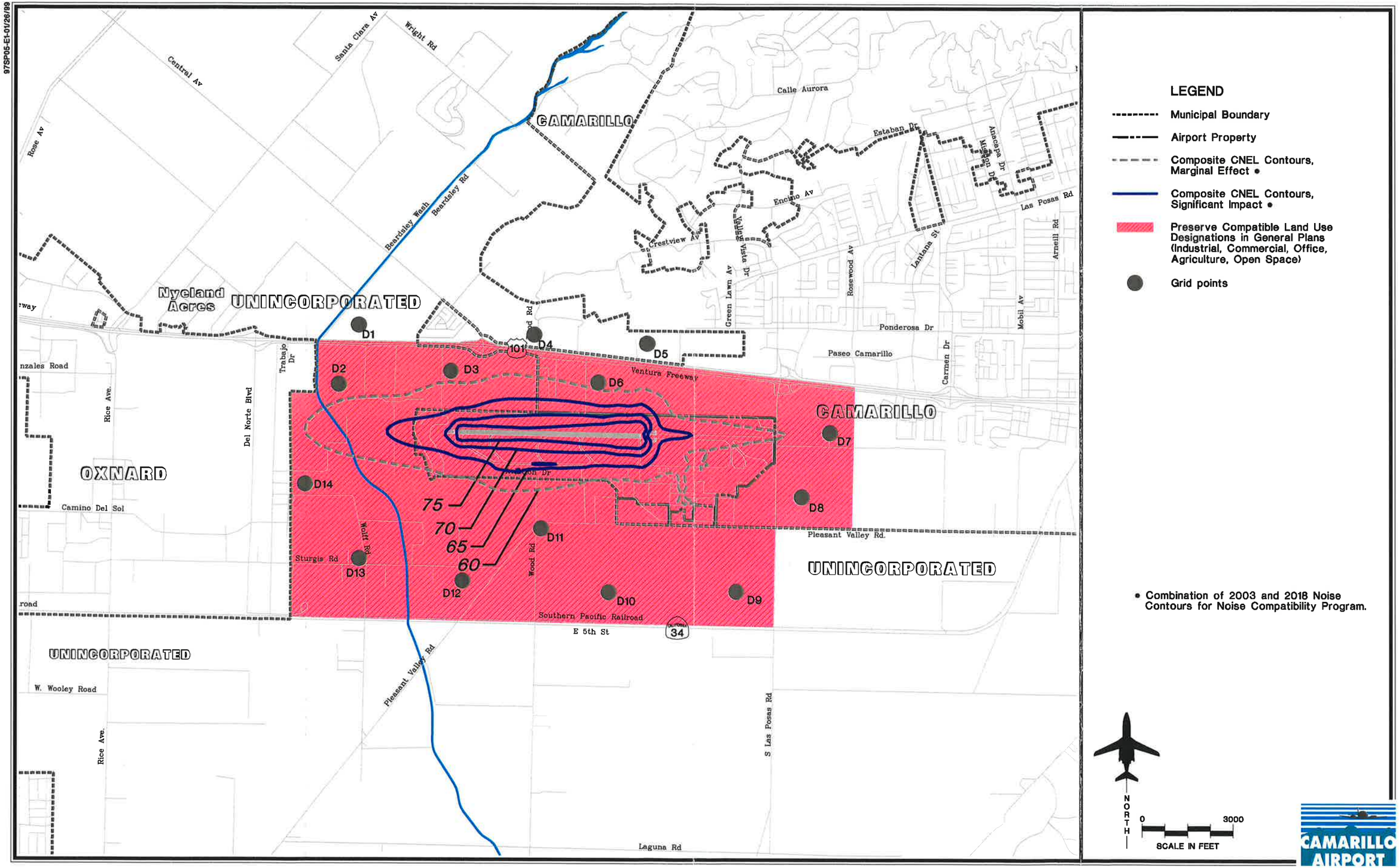


Exhibit E1

GRID POINT ANALYSIS FOR RECOMMENDED LAND USE PLANNING MEASURES

conversation and television viewing with windows and doors open. With windows and doors closed, the loudest twin engine aircraft noise events could disrupt conversations and television viewing at Points D2 and D7. At the other points, these noise levels should not create significant disturbances of indoor activities.

The computer printout of the noise model results, which begins on page E-6, shows detailed data for each aircraft operation in the model's input data batch for the year 2003 and shows the SEL for each operation at each grid point. The data in the table are explained in the "Legend" on the next page.

Table E1
2003 Grid Point Analysis Summary
Camarillo Airport

Grid Point	CNEL	Stage 2 Biz Jet SEL Range (dBA)	Stage 3 Biz Jet SEL Range (dBA)	Twin Engine SEL Range (dBA)	Single Engine SEL Range (dBA)
D1	52.4	103.1 - 87.4	86.9 - 79.8	92.4 - 65.8	83.3 - 60.5
D2	53.0	110.7 - 98.9	93.7 - 86.3	101.5 - 70.4	85.0 - 65.6
D3	53.9	106.5 - 93.9	89.9 - 87.6	95.5 - 70.8	88.2 - 62.9
D4	52.2	92.3 - 87.8	N/A	85.9 - 66.3	82.1 - 59.7
D5	50.6	95.7 - 90.3	80.7 - 79.5	85.8 - 62.9	82.6 - 54.4
D6	54.2	104.0 - 87.0	87.9 - 86.1	93.1 - 71.4	89.0 - 68.2
D7	56.3	109.9 - 89.3	93.9 - 84.5	101.2 - 74.5	85.1 - 67.3
D8	58.0	106.7 - 79.6	90.0 - 88.6	97.0 - 65.2	85.3 - 60.5
D9	54.1	100.1 - 80.7	N/A	92.6 - 65.1	81.7 - 58.5
D10	52.4	97.9 - 82.5	N/A	91.2 - 68.4	80.3 - 63.7
D11	59.5	96.7 - 87.9	N/A	85.5 - 68.9	81.6 - 61.8
D12	57.4	96.7 - 83.9	N/A	90.4 - 65.9	80.2 - 63.0
D13	52.6	95.3 - 84.2	N/A	89.2 - 62.0	81.5 - 59.9
D14	52.0	103.9 - 89.4	89.8 - 85.1	95.7 - 65.0	83.7 - 63.6

N/A- Data not provided by the grid point analysis.

Legend For Integrated Noise Model Grid Point Analysis Output File

Metric ID Identifies the noise metric selected in the Integrated Noise Model.

Grid ID Grid point number as shown on **Exhibit E1**.

Aircraft ID Aircraft identification taken from Integrated Noise Model database. The aircraft types are as follows:

B206 - Bell Jet Ranger helicopter

BEC58P - Twin-engine piston under 12,500 pounds, including Beech Baron 58P, Beech Duke, Piper Navajo, Piper Chieftain.

CNA441 - Cessna Conquest, twin-engine turboprop

DC3 - Twin-engine piston prop over 12,500 pounds, including DC-3, DHC-4.

DC6 - Large, four-engine piston transport, including DC-6, DC-4, DC-7, Constellation

DHC6 - DeHavilland Dash 6, twin-engine turboprop

GIIB - Gulfstream Aerospace GIIB and GIII, Stage 2 business jets

GIV - Gulfstream Aerospace IV, Stage 3 business jet.

GASEPF - General aviation single engine aircraft with fixed pitch propeller. Examples: Beechcraft Musketeer, Cessna 150, Cessna 172, Piper Super Cub, Piper Comanche, Piper Archer II, Piper Tomahawk, Rockwell Commander 112.

GASEPV - General aviation single engine aircraft with variable pitch propeller. Examples: Beechcraft Bonanza, Cessna Caravan I, Mooney 201LM, Mooney Pegasus, Piper Pawnee, Piper Cherokee, Piper Lance, Rockwell Commander 114.

H500D - Hughes 500D helicopter

LEAR25 - Lear 25, Stage 2 business jet

LEAR35 - Lear 36, Stage 3 business jet

UH-1 - Bell 212 helicopter

OP Type Operation type (A- arrival, D- departure, T- touch-and-go).

RWY ID Runway/helipad identification.

TRK ID1 Flight track identification as shown on Exhibits 2D, 2E, and 2F after page 2-8 in the *Noise Exposure Maps* document.

Distance Distance, in feet, from the noise source (aircraft) to the receiver location (grid point).

Altitude Altitude, in feet, of the noise source (aircraft) above the receiver location (grid point).

Speed Speed of the aircraft in nautical miles per hour (knots).

THR SET Thrust setting of the aircraft.

OPS EQUIV Number of operations on the flight track per average day.

SEL Sound Exposure Level. SEL expressed in dBA, is a measure of the combined duration and magnitude of a single-event. All noise of the event within 10 decibels of the maximum (Lmax) is mathematically compressed into one second. For aircraft noise events, the SEL typically ranges from 5 to 10 decibels above the Lmax.

NOTE: The output file for 2003 forecast conditions begins on the next page.

Appendix F
AIRCRAFT SEPARATION WITH AND WITHOUT A PARALLEL RUNWAY

Appendix F
AIRCRAFT SEPARATION WITH AND WITHOUT A PARALLEL RUNWAY

This appendix provides a written and graphic depiction of the aircraft operating scenarios on a busy day with the current single runway alignment and with a 3,500-foot parallel runway. Aircraft separation is based on Air Traffic Control Order 7110.65J, Section 3-10-3, Same Runway Separation. Separation standards for aircraft on approach to the same runway are as follows: single engine piston aircraft weighing less 12,500 pounds must be 3,000 feet behind similar size aircraft with single or twin engines when landing; a 4,500-foot separation is required if a twin engine aircraft weighing less than 12,500 pounds is landing behind a similar sized single engine aircraft; and a 6,000-foot separation is required if an aircraft weighing more than 12,500 pounds is landing behind a single engine aircraft weighing less than 12,500 pounds.

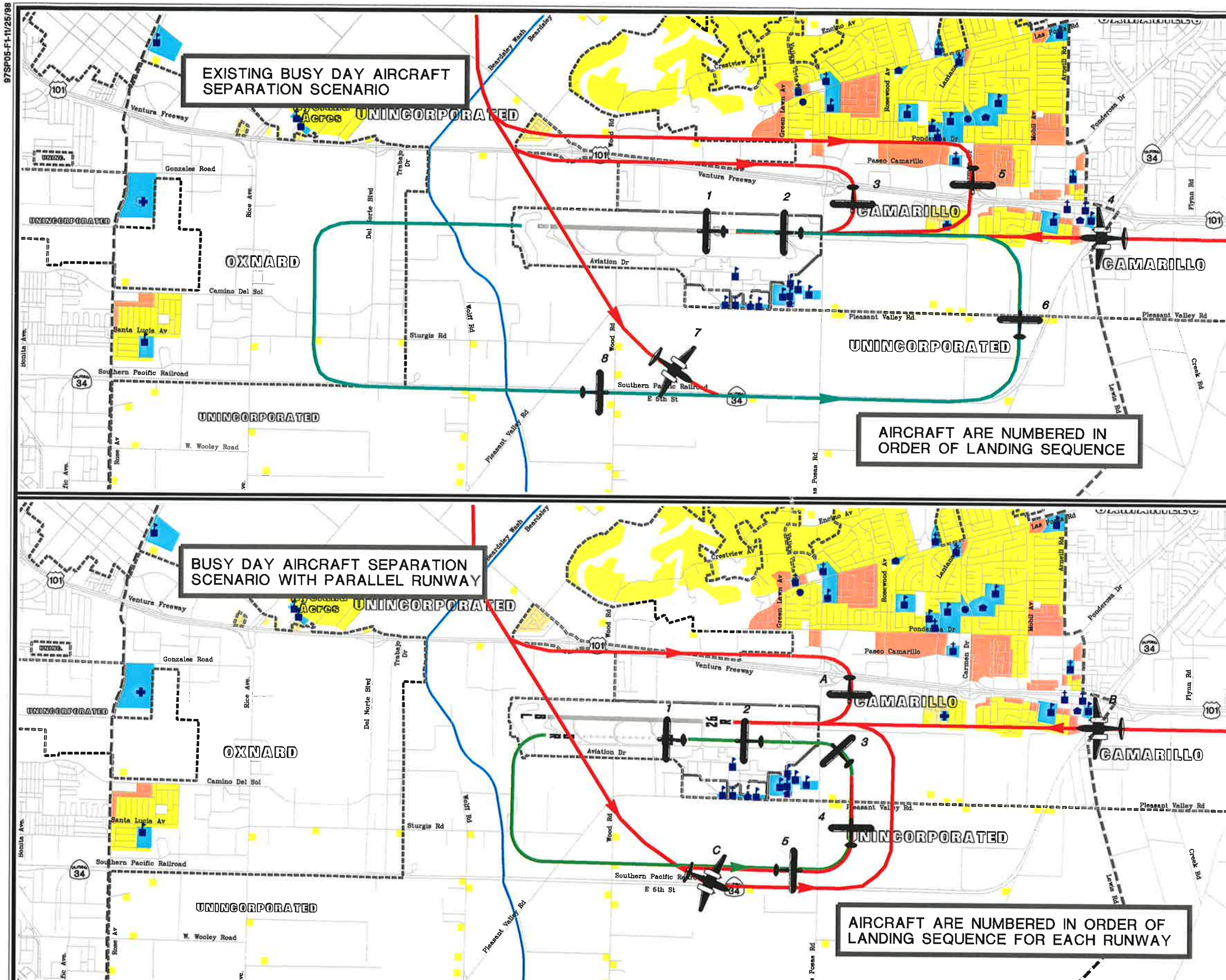
Exhibit F1 depicts a current busy day scenario and busy day scenario with the addition of the parallel runway. Separation distances on **Exhibit F1** are established by using a combination of the aircraft approach speed and separation standards from Air Traffic Control Order 7110.65J. The top graphic on **Exhibit F1** depicts eight aircraft in the pattern or on arrival to Runway 26. The aircraft are numbered to demonstrate the sequence in which they are arriving. As seen in the top graphic, when faster twin engine aircraft enter the pattern with slower aircraft on approach to the same

runway the pattern is stretched out to the east and north over the City. It should be noted that the separation distances for aircraft shown in the exhibit are optimal. In practice, separation distances will be somewhat greater because radar is not available and aircraft are controlled visually. The variability of aircraft performance, pilot capabilities and weather also contribute to increased separation of aircraft in the pattern. However, **Exhibit F1** validly reflects the principle of how the pattern expands as different aircraft types enter the pattern and how a parallel runway can help reduce the pattern size.

The bottom graphic on **Exhibit F1** depicts the use of the parallel runway system by the same eight aircraft. The short parallel runway is used by a majority of the slower single engine aircraft and the existing runway for the faster multi-engine aircraft. The faster twin engine aircraft will be able to maintain a much tighter traffic pattern when the slower single engine aircraft are moved to the parallel runway.

Conclusion

The development of a 3,500-parallel runway south of the existing runway will reduce the number of aircraft overflights of residential areas north of the Ventura Freeway by providing air traffic controllers an opportunity to segregate faster aircraft from slower aircraft. Segregation of faster from slower aircraft types will result in reduced separation requirements and tighter traffic patterns at Camarillo Airport.



LEGEND

- Detailed Land Use Study Area
- Municipal Boundary
- Airport Property
- Proposed Runway
- Arrival Tracks
- Touch and Go Arrival Track
- Single-Family Residential
- Multi-Family Residential
- Mobile Home
- Noise-Sensitive Institutions
- Places of Worship
- Schools
- City Auditorium/Community Center/ Museum
- Retirement Center/Nursing Home
- Hospital

Source: Air Traffic Control Order 7110.65J, Section 3-10-3, Same Runway Separation.

Note: Single engine piston aircraft weighing less than 12,500 pounds must be 3,000 feet behind similar size aircraft with single engines when landing. A 4,500-foot separation is required if a twin engine aircraft weighing less than 12,500 pounds is landing behind a similar sized aircraft. A 6,000-foot separation is required if an aircraft weighing more than 12,500 pounds is landing behind a single engine aircraft weighing less than 12,500 pounds.

The top graphic depicts a busy day scenario with six single engine Cessna 150's (1,600 pounds each with approach speeds of 55 kts) and two twin engine Beech Dukes (6,775 pounds each with approach speeds of 98 kts) in the pattern with the existing runway configuration.

The bottom graphic depicts a busy day scenario with six Cessna 150's and two Beech Dukes in the patterns with the addition of a parallel runway to the south of the existing runway.

The separation distances shown are optimal and will vary greatly depending on the number and type of aircraft in the pattern, pilot capabilities, and weather conditions.

NORTH

0 4000
SCALE IN FEET

CAMARILLO AIRPORT

Exhibit F1
BUSY DAY AIRCRAFT SEPARATION SCENARIOS

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TECHNICAL INFORMATION PAPER

GLOSSARY OF NOISE COMPATIBILITY TERMS

A-WEIGHTED SOUND LEVEL - A sound pressure level, often noted as dBA, which has been frequency filtered or weighted to quantitatively reduce the effect of the low frequency noise. It was designed to approximate the response of the human ear to sound.

AMBIENT NOISE - The totality of noise in a given place and time — usually a composite of sounds from varying sources at varying distances.

APPROACH LIGHT SYSTEM (ALS) - An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended centerline of the runway on the final approach for landing.

ATTENUATION - Acoustical phenomenon whereby a reduction in sound energy is experienced between the noise source and receiver. This energy loss can be attributed to atmospheric conditions, terrain, vegetation, and man-made and natural features.

AZIMUTH - Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

BASE LEG - A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

CNEL - The 24-hour average sound level, in A-weighted decibels, obtained after the addition of 4.77 decibels to sound levels between 7 p.m. and 10 p.m. and 10 decibels to sound levels between 10 p.m. and 7 a.m., as averaged over a span of one year. In California, it is the required metric for determining the cumulative exposure of individuals to aircraft noise. Also see "Leq" and "DNL".

COMMUNITY NOISE EQUIVALENT LEVEL - See CNEL.

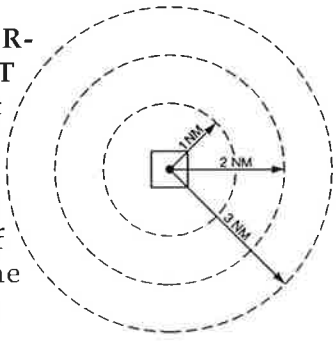
CROSSWIND LEG - A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

DAY-NIGHT AVERAGE SOUND LEVEL - See DNL.

DECIBEL (dB) - The physical unit commonly used to describe noise levels. The decibel represents a relative measure or ratio to a reference power. This reference value is a sound pressure of 20 micropascals which can be referred to as 1 decibel or the weakest sound that can be heard by a person with very good hearing in an extremely quiet room.

DISPLACED THRESHOLD - A threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME) - Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.



DNL - The 24-hour average sound level, in A-weighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise. Also see "Leq."

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DOWNWIND LEG - A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

DURATION - Length of time, in seconds, a noise event such as an aircraft flyover is experienced. (May refer to the length of time a noise event exceeds a specified dB threshold level.)

EASEMENT - The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

EQUIVALENT SOUND LEVEL - See Leq.

FINAL APPROACH - A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FIXED BASE OPERATOR (FBO) - A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair and maintenance.

GLIDE SLOPE (GS) - Provides vertical guidance for aircraft during approach and landing. The glide slope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS, or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM - See "GPS."

GPS - GLOBAL POSITIONING SYSTEM - A system of 24 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude. The accuracy of the system can be further refined by using a ground receiver at a known location to calculate the error in the satellite range data. This is known as Differential GPS (DGPS).

GROUND EFFECT - The attenuation attributed to absorption or reflection of noise by man-made or natural features on the ground surface.

HOURLY NOISE LEVEL (HNL) - A noise summation metric which considers primarily those single events which exceed a specified threshold or duration during one hour.

INSTRUMENT APPROACH - 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.

INSTRUMENT FLIGHT RULES (IFR) -Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

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.

Ldn - (See DNL). Ldn used in place of DNL in mathematical equations only.

Leq - Equivalent Sound Level. The steady A-weighted sound level over any specified period (not necessarily 24 hours) that has the same acoustic energy as the fluctuating noise during that period (with no consideration of a nighttime weighting.) It is a measure of cumulative acoustical energy. Because the time

interval may vary, it should be specified by a subscript (such as Leq 8) for an 8-hour exposure to workplace noise) or be clearly understood.

LOCALIZER - The component of an ILS which provides course guidance to the runway.

MERGE - Combining or merging of noise events which exceed a given threshold level and occur within a variable selected period of time.

MISSED APPROACH COURSE (MAC) - The flight route to be followed if, after an instrument approach, a landing is not effected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact, or

2. When directed by air traffic control to pull up or to go around again.

NOISE CONTOUR - A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NONDIRECTIONAL BEACON (NDB) -A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determined his bearing to and from the radio beacon and home on or track to or from the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NONPRECISION APPROACH - A standard instrument approach procedure providing runway alignment but no glide slope or descent information.

PRECISION APPROACH - A standard instrument approach procedure providing runway alignment and glide slope or descent information.

PRECISION APPROACH PATH INDICATOR (PAPI) - A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PROFILE - The physical position of the aircraft during landings or takeoffs in terms of altitude in feet above the runway and distance from the runway end.

PROPAGATION - Sound propagation refers to the spreading or radiating of sound energy from the noise source. Propagation characteristics of sound normally involve a reduction in sound energy with an increased distance from source. Sound propagation is affected by atmospheric conditions, terrain, and man-made and natural objects.

RUNWAY END IDENTIFIER LIGHTS (REIL) - Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY USE PROGRAM - A noise abatement runway selection plan designed to enhance noise abatement efforts with regard to airport communities for arriving and departing aircraft. These plans are developed into runway use programs and apply to all turbojet aircraft 12,500 pounds or heavier. Turbojet aircraft less than 12,500 pounds are included only if the airport proprietor determines that the aircraft creates a noise problem. Runway use programs are coordinated with FAA offices as outlined in Order 1050.11. Safety criteria used in these programs are developed by the Office of Flight Operations. Runway use programs are administered by the Air Traffic Service as "Formal" or "Informal" programs.

RUNWAY USE PROGRAM (FORMAL) - An approved noise abatement program which is defined and acknowledged in a Letter of Understanding between FAA - Flight Standards, FAA - Air Traffic Service, the airport proprietor, and the users. Once established, participation in the program is mandatory for aircraft operators and pilots as provided for in F.A.R. Section 91.87.

RUNWAY USE PROGRAM (INFORMAL) - An approved noise abatement program which does not require a Letter of Understanding and participation in the program is voluntary for aircraft operators/pilots.

SEL - Sound Exposure Level. SEL expressed in dB, is a measure of the effect of duration and magnitude for a single-event measured in A-weighted sound level above a specified threshold which is at least 10 dB below the maximum value. In typical aircraft noise model calculations, SEL is used in computing aircraft acoustical contribution to the Equivalent Sound Level (Leq), the Day-Night Sound Level (DNL), and the Community Noise Equivalent Level (CNEL).

SINGLE EVENT - An occurrence of audible noise usually above a specified minimum noise level caused by an intrusive source such as an aircraft overflight, passing train, or ship's horn.

SLANT-RANGE DISTANCE - The straight line distance between an aircraft and a point on the ground.

SOUND EXPOSURE LEVEL - See SEL.

TACTICAL AIR NAVIGATION (TACAN) - An ultra-high frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

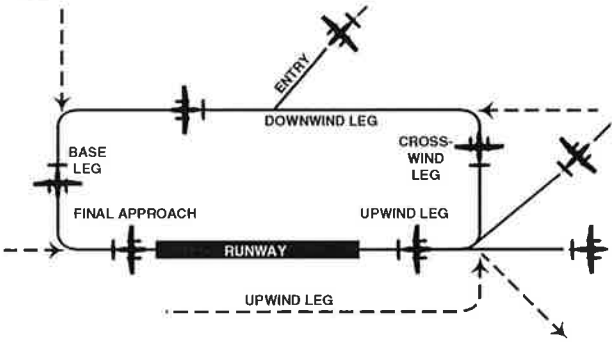
TERMINAL RADAR SERVICE AREA (TRSA) - Airspace surrounding designated airports wherein ATC provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. Service provided in a TRSA is called Stage III Service.

THRESHOLD - Decibel level below which single event information is not printed out on the noise monitoring equipment tapes. The noise levels below the threshold are, however, considered in the accumulation of hourly and daily noise levels.

TIME ABOVE (TA) - The 24-hour TA noise metric provides the duration in minutes for which aircraft-related noise exceeds specified A-weighted sound levels. It is expressed in minutes per 24-hour period.

TOUCHDOWN ZONE LIGHTING (TDZ) - Two rows of transverse light bars located symmetrically about the runway centerline normally at 100 foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN - The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.

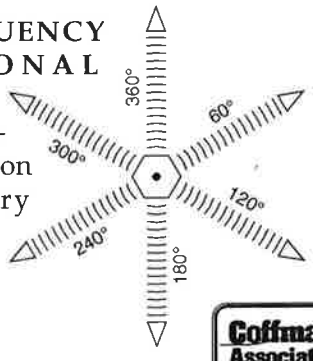


UNICOM - A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

UPWIND LEG - A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."

VECTOR - A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION (VOR) - A ground-based electric navigation aid transmitting very high frequency navigation signals, 360



degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION/TACTICAL AIR NAVIGATION (VORTAC) - A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

VICTOR AIRWAY - A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH - An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI) - An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating an directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR) - Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VOR - See "Very High Frequency Omnidirectional Range Station."

VORTAC - See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

YEARLY DAY-NIGHT AVERAGE SOUND LEVEL - See DNL.

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