AIRPORT LAND USE PLAN

MARIN COUNTY AIRPORT
GNOSS FIELD

Prepared by

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in association with
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1.0 - INTRODUCTION

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This report presents an Airport Land Use Plan for the environs of Marin County Airport (Gnoss Field). The study includes background on State of California airport land use legislation and the basis of Airport Land Use Commissions, a review of the Airport Master Plan for Gnoss Field, and an evaluation of the aviation safety, aircraft noise, and airspace/height compatibility considerations for planning future land uses in the Airport environs. A Referral Area Boundary is also established within which all qualifying development projects must be submitted to the Airport Land Use Commission for review and approval before implementation.

The document sets forth policies which the Marin County Airport Land Use Commission will use to evaluate land use plans and proposed development in the vicinity of Gnoss Field. The Airport Land Use Commission review is required to assure that future actions involving land use decisions in the Airport environs take into account compatibility with the Airport and aviation activities.

The Airport Land Use Commission is an advisory body to the County Planning Commission and Board of Supervisors, as well as the cities, other governmental agencies, home owners associations, real estate developers, individual land owners, and others who control and/or develop property within the Airport environs.

The Airport Land Use Commission's function is limited to review and approval on proposed new development within the established Referral Area. It has no authority over existing land uses even if they are inconsistent and/or incompatible with airport actual airport management, aircraft operations, nor airport master planning or activities. In addition, the Airport Land Use Commission does not have authority over development. These functions are the responsibility of the County General Services Department and the Marin County Aviation Commission, as well as the Caltrans Division of Aeronautics and the Federal Aviation Administration. As required by State law, this Airport Land Use Plan is based on the Master Plan for Gnoss Field adopted by the County in 1989.

This study and Airport Land Use Plan were prepared as a cooperative effort of the Marin County Planning Department and Cortright & Seibold, Airport/Aviation Consultants, in association with Brown-Buntin Associates, Inc., Acoustical Consultants. The draft Airport Land Use Plan was prepared by the consultants and the final report was (will be) prepared by Planning Department staff.

1.1 - BACKGROUND

The State law creating Airport Land Use Commissions was enacted in 1967 and has been amended several times over the intervening years, including the 1989 revisions upon which this report and plan are based. Originally, Airport Land Use Commissions were required only in counties that had an air carrier airport, but current State law requires them to be established in all counties with an airport open to the general public, with limited exceptions.

The statutory authority for the Airport Land Use Commission is contained in the California Public Utilities Code, Sections 21760 et seq. (Chapter 4, Article 3.5) of the State Aeronautics Act. The purpose of the article and the reason for creating an Airport Land Use Commission are expressed as follows:

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

Appendix A presents the Airport Land Use Commission law. Appendices B through F present additional reference information. Appendix G provides a Glossary of Aviation Terms. Appendix H presents the airport development program from the Gnoss Field Master Plan.

1.2 - AIRPORT LAND USE COMMISSION

In the past, the Marin County Planning Commission has acted as the Airport Land Use Commission. Under the latest revision of the law, a designated body, such as the Planning Commission which functions as the Airport Land Use Commission, must be augmented by two members who have expertise in aviation. The Marin County Board of Supervisors appointed two additional members to serve on the Airport Land Use Commission to fulfill this requirement.

The Airport Land Use Commission has as the following powers and duties, subject to the limitations upon its jurisdiction set forth in Section 21676:

a. to assist local agencies in ensuring compatible land uses in the vicinity of all new airports and in the vicinity of existing airports to the extent that the land in the vicinity of those airports is not already devoted to incompatible uses;

b. to coordinate planning at the State, Regional, and Local levels so as to provide for the orderly development of air transportation, while at the same time protecting the public health, safety, and welfare;

c. to prepare and adopt an Airport Land Use Plan pursuant to Section 21675;

d. to review the plans, regulations, and other actions of local agencies and airport operators pursuant to Section 21676;

e. the powers of the Commission shall in no way be construed to give the Commission jurisdiction over the operation of any airport; and

f. in order to carry out its responsibilities, the Commission may adopt rules and regulations consistent with this article.

The land use plan that the Airport Land Use Commission adopts must conform with the following provisions of the State Aeronautics Law (Section 21675).

(a.) Each Commission shall formulate a comprehensive land use plan that will provide for the orderly growth of each public airport and the area surrounding the airport within the jurisdiction of the Commission and will safeguard the general welfare of the inhabitants within the vicinity of the airport and the public in general. The Commission's plan shall include a long-range Master Plan that reflects the anticipated growth of the airport during at least the next 20 years. In formulating a land use plan, the Commission may develop height restrictions on buildings, may specify use of land, and may determine building standards, including soundproofing adjacent to airports, within the planning area. The comprehensive land use plan shall be reviewed as often as necessary in order to accomplish its purposes, but shall not be amended more than once in any calendar year.

(b.) The Commission may include, within its plan formulated pursuant to subdivision (a), the area within the jurisdiction of the Commission surrounding any Federal military airport for all the purposes specified in subdivision (a). This subdivision does not give the Commission any jurisdiction or authority over the territory or operations of any military airport.

(c.) The planning boundaries shall be established by the Commission after hearing and consultation with the involved agencies.

(d.) The Commission shall submit to the Division of Aeronautics one copy of the plan and each amendment to the plan.

The present State law requires that the Airport Land Use Commission adopt a comprehensive land use plan by June 30, 1991. Until the Airport Land Use Commission adopts a plan, a city or county shall first submit all actions, regulations, and permits within the vicinity of a public airport to the Airport Land Use Commission for review and approval. If the Airport Land Use Commission has not designated a study area, the vicinity means the area within two miles of the airport boundary.

In Marin County, if the city or county disagrees with an ALUC action, (i.e., disapproval of an action, regulation, or permit), the jurisdiction can override the ALUC by a majority vote. In all other counties, a two-thirds vote is required. For example, the Novato City Council can override a decision by the Airport Land Use Commission. The Board of Supervisors may also override a decision by the ALUC.

If a jurisdiction overrides the Airport Land Use Commission with respect to a publicly-owned airport that the jurisdiction does not operate, the operator of the airport is immune from liability for damages to property or personal injury resulting from the jurisdiction's decision to proceed with the action, regulation, or permit.

The Airport Land Use Commission may adopt regulations exempting any ministerial permit for single-family dwellings from its review under certain conditions but may not exempt either of the following:

1. more than two single-family dwellings by the same applicant within a subdivision prior to June 30, 1991; and/or

2. single-family dwellings in a subdivision where 25% or more of the parcels are undeveloped.

Prior to the amendment of a General Plan or Specific Plan, or the adoption or approval of a zoning ordinance or building regulation within the planning boundary established by the Airport Land Use Commission, the local agency must refer the proposed action to the Airport Land Use Commission. If the Airport Land Use Commission determines that the action is inconsistent with the commission's plan, the agency must override the Airport Land Use Commission and comply with other requirements before proceeding.

1.3 - SCOPE OF AIRPORT LAND USE PLAN

The Airport Land Use Plan is limited to the environs of the Marin County Airport (Gnoss Field). This is the only public use airport within the county which meets the legal requirements for mandatory development of a plan. Marin Ranch Airport is a private airport and the preparation of an Airport Land Use Plan is not required for private airports. The development of an airport land use plan is optional for military airports, therefore a land use plan was not prepared for Hamilton Air Force Base.

The Airport Land Use Plan is based upon the 20-year Airport Master Plan adopted for Gnoss Field by the County Board of Supervisors on June 27, 1989. Specifically, the Airport Land Use Plan is based on the "Airport Layout Plan - Stage 3" long-range development plan (Sheet 4 of 6) and the "Approach and Clear Zone Plan" (Sheet 6 of 6), as presented in Appendix B.

The geographic planning boundary for the Airport Land Use Plan is tentatively established as two miles from the future Airport boundary. This conforms to the default planning boundary in the Airport Land Use Commission State law and other provisions of State law such as those requiring the Division of Aeronautics to study the proposed location of any public school within two miles of an airport.

2.0 - AIRPORT MASTER PLAN SUMMARY

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This Chapter presents a summary and review of the Gnoss Field Airport Master Plan adopted by Marin County in 1989.

2.1 - INTRODUCTION

The Master Plan includes an airport inventory, aviation forecasts, airport planning evaluation, development recommendations, financial evaluation, and an updated Airport Layout Plan. In addition, a Program Environmental Impact Report/Environmental Assessment conforming to State and Federal requirements was prepared. The airport development program is included in Appendix H.

The Master Plan provides guidelines for future development at the Airport over the next 20 years in response to Marin County's long-range aviation requirements. Technical studies were documented in six Working Paper reports published between February, 1987 and June, 1988. The draft Master Plan and draft Program Environmental Impact Report/Environmental Assessment were approved by the Planning Commission in May, 1989. The Marin County Board of Supervisors adopted the final Master Plan and certified the Program Environmental Impact Report/Environmental Assessment on June 27, 1989.

2.2 - EXISTING CONDITIONS

The Airport is owned by Marin County. It was formerly operated by the Department of Public Works but is currently the responsibility of the General Services Department. Information on the Airport is summarized below:

2.2.1 - Location

The Marin County Airport is located in an unincorporated area of Marin County three nautical miles north of the City of Novato between Highway 101 and the Petaluma River, north of Black John Slough on 91.4 acres at an elevation of approximately one foot above mean sea level.

2.2.2 - Physical Facilities

The Airport is a basic utility category facility per the Federal Aviation Administration's National Plan of Integrated Airport Systems. A basic utility airport can handle 75% to 95% of small general aviation aircraft (12,500 pounds gross weight maximum).

The Federal Aviation Administration also designates the Airport as a "Reliever" for other San Francisco Bay Area commercial service airports. This means that the Marin County Airport is expected to handle some of the general aviation aircraft that would otherwise use San Francisco and/or Oakland International Airports.

The existing northwest-southeast runway, Runway 13-31, is 3,300 feet long and 60 feet wide. This runway was constructed by Marin County after purchase of the Airport in 1965. The runway surface is asphalt concrete and the gross weight strength is rated at 26,000 pounds for single-wheel landing gear aircraft. The pavement condition is good.

Medium intensity runway lights, threshold lights, and taxiway lights are installed. Runway markings are "basic" and are in good condition. Two box visual approach slope indicators are installed on each end of the runway. The glide angles for the visual approach slope indicators are 3.5 degrees and 4.0 degrees for Runway 13 and 31, respectively. There are no approach lights.

The obstruction clearance approach surface slope for Runway 31 is 27:1 and for Runway 13 is 40:1. There are no close-in obstructions for either approach. A slope of 20:1 is adequate for the Airport per Federal Aviation Regulations Part 77 criteria.

The aircraft parking apron includes 281 tiedowns. Some tiedowns are occupied by 82 individually-owned portable hangars. Two fixed-base operator maintenance hangars exist (the largest is 100' x 100'). Approximately ten more tiedowns and eight individual hangars are located in the fixed-base operator leasehold area. The total parking capacity of Gnoss Field is about 300 aircraft, including both County and fixed-base operator tiedowns and portable hangars.

Twenty additional portable hangars are currently (June, 1990) under construction on the existing tiedown apron.

2.2.3 - Based Aircraft and Operations

In 1986, when the Master Plan study began, there were 253 single-engine aircraft, 28 twins, and 2 helicopters based at Marin County Airport for a total of 283 aircraft. The total number of based aircraft has decreased to 230 as of June, 1990. However, a hangar waiting list of approximately 100 aircraft owners currently exists. This includes aircraft presently on the Airport, as well as others such as those based at Marin Ranch Airport.

Annual operations are estimated to range from 135,000 to 160,000 per estimates provided by the Federal Aviation Administration Form 5010 (Airport Master Record) and the Airport Manager. No actual aircraft operational counts have been recorded.

An aircraft operation is defined as either a landing or a takeoff. A touch-and-go counts as two operations.

2.2.4 - Air Traffic Procedures

The Airport's traffic pattern is a standard "box" configuration on the east side of the runway. The pattern altitude is 1,000 feet above ground level. During calm wind conditions, the preferential runway for landing is Runway 13. During westerly crosswinds, the preferential runway for landing is Runway 31. Visual flight rule procedures apply at this Airport.

No instrument flight rule approach procedures currently exist. However, the Master Plan recommends establishing a non-precision instrument flight rule procedure. It is possible to make an instrument departure (a departure in accordance with an IFR flight plan filed with FAA). All actual landings and takeoffs must be made in visual flight rule conditions.

The County has recently instituted a recommended noise abatement 45 degree departure/arrival flight track to the southeast over Black John Slough to minimize straight-in and/or straight-out flights over the existing residential area south of the Airport.

2.3 - AVIATION FORECASTS

Aviation forecasts indicate that the number of aircraft based at Gnoss Field will eventually grow to about 500 over the next 20 years if economic trends continue and Marin Ranch Airport closes and most of these aircraft shift to Gnoss Field by 1991. The Master Plan forecasts are as follows:

Year	Based Aircraft	Incremental Increase
1986 actual	283	
		102
1991	385	
		35
1996	420	
		40
2001	460	
		50
2006	510	

It is noted that since the forecasts were prepared in 1986, the actual number of based aircraft at Gnoss Field has decreased to about 230. However, if a higher percentage of Marin Ranch aircraft transfer to Gnoss Field than assumed (70%), the above forecasts could still actually be realized. In addition, if more hangars are available, this will attract more aircraft to the Airport.

Utilizing the historical Gnoss Field aircraft type distribution, as well as Federal Aviation Administration national forecasts, a projection of aircraft type distribution was prepared. The results are presented below. The predominate type will continue to be single-engine piston aircraft, making up 89% of the total in 1991 and decreasing (but still predominate) to 83% of the total in 2006. Multi-engine aircraft are expected to be 10% by 1991 and increasing to 16% by the year 2006. The number of helicopters is forecast to be five by the year 2006.

FORECAST AIRCRAFT TYPE DISTRIBUTION
Gnoss Field Airport
1986-2006

Year	Single engine	Multi-engine	Helicopter	Total
1986	253	28	2	283
1991	342	40	3	385
1996	366	50	4	420
2001	386	70	4	460
2006	425	80	5	510

Historical Marin County aircraft operations data are not available. Estimates of annual operations for Gnoss Field and other non-tower airports are available from airport management or from the Federal Aviation Administration Form 5010 (Airport Master Record). Actual operations counts are only available at airports with Federal Aviation Administration control towers.

"General aviation" aircraft operations are predominantly (but not exclusively) conducted by aircraft under 12,500 pounds gross weight. "Local" operations are conducted by aircraft which take off and land at the same airport. "Itinerant" operations are conducted by aircraft which takeoff at one airport and land at another airport. "Touch-and-go" operations are considered to be local operations.

A forecast of general aviation aircraft operations was developed using the based aircraft forecast presented earlier and estimates of annual operations per based aircraft. The operations forecast is as follows:

FORECAST GENERAL AVIATION AIRCRAFT OPERATIONS
Gnoss Field Airport
1986-2006

Year	Aircraft	Operations Per Aircraft	Annual Operations	Operations Distribution Itinerant	Local
1986	283	500	142,000	64,000	75,000
1991	385	475	183,000	82,000	101,000
1996	420	450	189,000	85,000	104,000
2001	460	425	196,000	88,000	108,000
2006	510	400	204,000	92,000	112,000

2.4 - AIRPORT DEVELOPMENT PROGRAM

The facility development program for Gnoss Field, as outlined in the Master Plan final report, calls for construction of improved facilities in three stages. The first and second stages cover a 10-year time period (5 years each) and the third stage would cover an additional 10 years. The construction projects of the staged development plan are outlined below:

Stage 1 - (first 5 years)

- o runway repairs (completed in April, 1988)
- o water system and washrack improvements
- o apron and taxiway repairs and upgrades
- o land acquisition
- o new hangars
- o widen and lengthen existing Runway 13-31
- o access road to east side of airport property

Stage 2 - (second 5 years)

- o Runway 13-31 repairs, as needed
- o land acquisition
- o construct crosswind runway

Stage 3 - (last 10 years)

- o land acquisition
- o apron expansion

- o fixed-base operator expansion
- o access road improvements
- o new hangars
- o runway repairs and extension, as needed

Based on the recommended improvement program and Marin County decisions, the Master Plan and development staging drawings for Marin County Airport were prepared by Cortright & Seibold. The Master Plan for Gnoss Field is a long-range conceptual plan which provides guidelines and sets priorities for future Airport development. The Master Plan includes the following drawings:

- o Airport Layout Plan
  - Airport Data
  - Stage 1 Development
  - Stage 2 Development
  - Stage 3 Development
- o Terminal Area Plan
- o Approach and Clear Zone Plan

The updated Airport Layout Plan for Marin County Airport is a graphic presentation of existing and proposed facilities and their location on the Airport in conformance with the recommended development program. The pertinent clearance and dimensional information required to show compliance with the applicable standards established by the Federal Aviation Administration is also indicated on the Airport Layout Plan. The Airport Layout Plan has been prepared in a multi-drawing format which illustrates each of the three stages of the development program independently.

The Terminal Area Plan for Marin County Airport provides a more detailed layout for proposed aircraft basing, apron, hangar, and commercial fixed-base operator facilities than shown on the Airport Layout Plan.

An updated Approach and Clear Zone Plan for Marin County Airport is also provided. This drawing supplements the Airport Layout Plan and shows plan and profile information for the runway approach areas. A key function of the Approach and Clear Zone Plan is to identify obstructions in the vicinity of the Airport which may have an impact on the use of the runway(s) and adjacent airspace.

The Approach and Clear Zone Plan identifies three areas of terrain penetration of the Federal Aviation Regulations Part 77 obstruction surfaces which are significant for purposes of the Airport Land Use Plan. These areas are:

- Mount Burdell (west of the Airport)
- Pinheiro Ridge (south of the Airport)
- Bahia Hilltop area (southeast of the Airport)

The Mount Burdell area tops out at an elevation of 1,558 feet and greatly exceeds Part 77 height limit criteria. The Pinheiro Ridge line significantly penetrates Part 77 just west of the approach to Runway 31. A single hilltop in the Bahia area, also in the Runway 31 approach area, slightly penetrates Part 77.

3.0 - LAND USE ISSUES

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This Chapter documents planning factors considered in developing the Airport Land Use Plan for Gnoss Field. The key issues are: 1) aviation safety for persons on the ground and aircraft occupants, 2) aircraft noise versus land use/zoning compatibility, and 3) airspace/height limits and/or obstructions to air navigation. Overall environs compatibility for the Airport vicinity is determined by combining these factors.

The evaluations are based on established technical references, plus information from studies conducted by the Federal Aviation Administration and the Division of Aeronautics, as well as aviation safety, airport master planning, and other aviation technical investigations relating specifically to Gnoss Field. Where possible, the information and/or data from these references has been summarized or included in an appendix to minimize repeating information in the main body of the report which comes from standard documents. Technical information sources and references are listed in Appendix C.

3.1 - AIRSPACE/HEIGHT RESTRICTIONS

This section focuses on height restrictions that should be applied in the vicinity of Gnoss Field to control obstructions to airspace used by aircraft arriving and departing from the Airport. This measure is needed for the operational safety of avigation in Marin County and also to comply with existing Federal Aviation Regulations and State aviation law as administered by the Division of Aeronautics, as well as to comply with State law requirements. Protecting air space by implementing height restrictions provides safety benefits for aviators, as well as persons on the ground.

3.1.1 - Height Limit Standards

The universally accepted standard in the United States for determining obstructions to air navigation (avigation) is FAR Part 77, "Objects Affecting Navigable Airspace". This standard is used by the FAA in undertaking aeronautical studies to determine if an object is an "obstruction" and if the object constitutes a "hazard" to avigation. It is possible for an object to be an obstruction and not be a hazard per Part 77 criteria.

Appendix D summarizes the technical aspects of FAR Part 77 which are referenced in this discussion. The appendix illustrates the geometric configuration of civil airport imaginary surfaces. Additional criteria apply for military airports and heliports, (but are not discussed in this report). An isometric view that illustrates the FAR Part 77 surfaces is presented in the figure entitled "77.25 Civil Airport Imaginary Surfaces".

The normal procedure in preparing Airport Land Use Plans is to adopt the criteria from FAR Part 77 into the plan. These criteria define the acceptable height limits for man-made structures in the airport environs.

In addition to Federal Aviation Regulations Part 77, the Federal Aviation Administration has another basic airspace operational planning and design document entitled "Terminal Instrument Procedures." This reference is used to design and evaluate instrument approach and departure procedures. Since no instrument procedures are published for Gnoss, this reference would not be applicable until such time as instrument flight rule procedures existed. However, it should be pointed out that in some cases it is possible for Terminal Instrument Procedures criteria to be more limiting than Federal Aviation Regulations Part 77 depending upon the operational circumstances. But since no instrument flight rule procedures have been designed, this factor can not be dealt with at this time.

3.1.2 - Gnoss Field Analysis

As part of developing the recently adopted Gnoss Field Master Plan, the "Approach and Clear Zone Plan" for the Airport was prepared using Federal Aviation Regulations Part 77 criteria as it applies to this Airport. Sheet 6 of 6 of the Airport Layout Plan drawings presents the Approach and Clear Zone Plan for Gnoss Field (see Appendix B).

The Approach and Clear Zone Plan was prepared using "utility runway non-precision instrument" dimensional standards to protect the future instrument approach capability for Gnoss Field. This is because the Master Plan recommended establishing an instrument approach landing procedure for use during instrument flight rule weather conditions at the Airport. Currently, only visual flight rule procedures exist. However, the Airport Land Use Plan must protect the Airport for a 20-year timeframe and this includes developing instrument flight rule procedures.

Federal Aviation Regulations Part 77 sets forth dimensional standards for various imaginary surfaces around the runway(s) based upon the category of airport and runway under consideration. The criteria for Gnoss Field are outlined below:

1. Primary Surface. A horizontal surface centered on the runway(s) and extending 200 feet beyond each end. The width for a non-precision instrument runway is 500 feet.

2. Horizontal Surface. A horizontal surface 150 feet above the airport elevation is defined laterally by arcs from the end of the primary surface at each runway end. For Gnoss Field, these arcs have a radius of 5,000 feet.

3. Transitional Surface. Surfaces that extend out at right angles from the runway, starting at the edge of the primary surface and ending at the horizontal surface with a slope of 7:1 (run/raise).

4. Approach Surface. A surface centered on the extended runway centerline, beginning at the end of the primary surface (200 feet from the runway end) and extending out and up at a specified slope and distance, increasing in width as it gets further from the runway. For Gnoss Field, the slope is 20:1 (run/raise), the inner width is 500 feet, the outer width is 2,000 feet, and the length is 5,000 feet.

5. Conical Surface. A sloping surface surrounding the horizontal surface increasing in elevation as it gets farther from the airport. For Gnoss Field, the slope is 20:1 (run/raise) and the outer horizontal distance is 4,000 feet from the edge of the horizontal surface (a total of 9,000 feet from the primary surface).

In addition, Federal Aviation Regulations Part 77 contains notice requirements for structures near airports that are more restrictive than those discussed above as part of the Approach and Clear Zone Plan for the Gnoss Field Master Plan. The specific requirements are summarized below. (See Appendix D and/or the full text of FAR Part 77 for additional information.)

"77.13 Construction or alteration requiring notice.

(a) Except as provided in 77.15, each sponsor who proposes any of the following construction or alteration shall notify the Administrator in the form and manner prescribed in 77.17.

(1) Any construction or alteration of more than 200 feet in height above the ground level at its site.

(2) Any construction or alteration of greater height than an imaginary surface extending outward and upward at one of the following slopes:

(i) 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport specified in subparagraph (5) of this paragraph with at least one runway more than 3,200 feet in actual length, excluding heliports. . . .

(3) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway . . . 15 feet for any other public roadway, 10 feet or the height of the highest mobile object

that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway . . . .

(4) When requested by the FAA, any construction or alteration that would be in an instrument approach area (defined in the FAA standards governing instrument approach procedures) and available information indicates it might exceed a standard of Subpart C of this part."

3.1.3 - Planning Considerations

Referring to the Approach and Clear Zone Plan for Gnoss Field specifically, there are three areas of existing terrain and one set of radio towers that penetrate the Federal Aviation Regulations Part 77 imaginary surfaces as illustrated by the shaded areas on the Approach and Clear Zone Plan drawing (see Sheet 6 of 6 in Appendix B). These are:

1. Mount Burdell. The entire east side and top of Mount Burdell exceeds the Federal Aviation Regulations Part 77 height criteria, but this is a natural condition and can not be avoided. This is not a problem for current aircraft operating procedures at Gnoss. However, a Federal Aviation Administration airspace study would be required as part of the approval process for the proposed new crosswind runway per the Airport Master Plan. This aeronautical study would ultimately determine if the traffic pattern for the new runway would be on the south or north sides.

   The Board of Supervisors adopted a north side traffic pattern as a condition of Master Plan adoption by the County for noise mitigation reasons. The north side traffic pattern has been used in preparing this plan.

2. Pinheiro Ridge. The top line of Pinheiro Ridge penetrates the Federal Aviation Regulations Part 77 surfaces south of Gnoss Field. Again, this is a natural condition that can not be avoided and does not present any significant problem for current visual flight rule aircraft operations. Please refer to Section 3.4.2 for a discussion of development proposed in the Pinheiro Ridge area (Rush Creek Estates).

3. Bahia Area. One small hill top in the undeveloped part of the Bahia area, north of Bahia Drive, slightly penetrates the Federal Aviation Regulations Part 77 surfaces for Gnoss. Again, this is a natural condition and does not significantly affect visual flight rule aircraft operations at the Airport. Please refer to Section 3.4.2 for a discussion of the Bahia Master Plan.

4. KCBS Towers. The KCBS radio towers extend up to an elevation of 511 feet above ground level and penetrate the Federal Aviation Regulations Part 77 horizontal surface for Gnoss Field. The Federal Aviation Administration has previously done an aeronautical study and determined that the towers are an obstruction but not a hazard for visual flight rule operations. The towers are marked and lighted according to Federal Aviation Administration requirements (Advisory Circular 70/7460-1, "Obstruction Marking and Lighting").

Development which penetrates the Federal Aviation Regulations Part 77 surfaces may not be a hazard to avigation. A good example would be structures that are protected or overshadowed by existing terrain or structures. In addition, structures which do not exceed existing zoning height limits (typically 25 to 45 feet above ground level) might not create a potential hazard. At the time development is proposed, the FAA will determine whether the development would be an obstruction and whether it would constitute a hazard to avigation. The shaded areas on the Approach and Clear Zone Plan (Sheet 6 of 6, Appendix B) illustrate the existing terrain penetrations and the location of the radio towers.

3.2 - AVIATION SAFETY

This section focuses on potential risk to users of property because of its proximate location to Gnoss Field.

Aviation safety includes both the safety of persons on the ground and the safety of aircraft occupants. The safety of persons on the ground in the Airport environs is addressed in this section. The safety of aircraft occupants is addressed in the previous section on airspace use and obstruction/height limits.

3.2.1 - National Statistics

Areas near airports are subject to differing levels of accident risk from an aircraft crash depending on a variety of factors, many of which are not well defined in analytical and/or technical terms. The number of annual aircraft accidents is very small in terms of actual crashes and in statistical terms considering the total number of flight hours and/or total takeoffs and landings performed nationally. Historically, the risk of being killed or injured on the ground near an airport is quite small.

National Transportation Safety Board and the Federal Aviation Administration data for aircraft accidents were reviewed to assess accident risk on the basis of activity levels. This information was compared to actual history of aircraft accidents at Gnoss Field to evaluate the potential risk of accidents affecting persons in the Airport environs.

Table 3.1 presents historical accident data for general aviation for the period 1975-1989. The general aviation accident rates varied from 13.89 to 7.25 per 100,000 flight hours. The trend for general aviation accidents is consistently down.

The number of fatalities in general aviation has been less than 1,000 per year nationally since 1985. In 1989, an estimated 763 persons died as a result of general aviation accidents. This is the lowest figure ever recorded by the National Transportation Safety Board.

To present a perspective that relates more closely to the situation at hand, the total of non-occupant fatalities from general aviation accidents over the 1975-1987 period indicates that an average of 6.4 non-occupants were injured or killed per year in the entire United States. However, a few recent accidents, such as the shopping mall crash in 1988 at Concord, may have caused the current average to increase. (More recent data has not been published by the NTSB.)

General aviation accidents for fixed-wing aircraft are fairly evenly divided between landing and takeoff. Engine failure on takeoff is the most common type of general aviation accident.

Landing accidents are most likely to be short landings (undershoot, stalls, fuel starvation, hitting obstructions, and engine failure). Midair general aviation accidents are most common in the traffic pattern at uncontrolled airports (airports without an FAA air traffic control tower).

General aviation accident statistics nationally for 1982-1987 are summarized below. Major accidents are those in which the aircraft was destroyed or substantially damaged.

Table 3.1

ACCIDENTS AND RATES
U.S. GENERAL AVIATION 1/
1975-1989

Year	Total Accidents	Accident Rates Per 100,000 Flight Hours
1975	4,001	13.89
1976	4,018	13.17
1977	4,079	12.91
1978	4,216	12.08
1979	3,818	9.88
1980	3,590	9.86
1981	3,500	9.51
1982	3,233	10.06
1983	3,075	9.90
1984	3,010	9.54
1985	2,745	8.97
1986	2,568	8.46
1988	2,363	7.97
1989	2,167	7.25

1/ All operations other than those operated under 14 CFR 121 and 14 CFR 135.

Source: National Transportation Safety Board - National totals

MAJOR GENERAL AVIATION ACCIDENTS
BY TAKEOFF AND LANDING

		Percent of Accidents
Takeoff:	On-airport	11
	Near airport	21
Landing:	On-airport	48
	Near airport	20
		100%

Source: Technical Reference 9, Appendix C.

The data indicate that about 59% of general aviation accidents are on the airport and another 41% are near the airport. (This is generally within one mile of the airport.)

According to a 1981 National Transportation Safety Board report, the principal difference in accidents between fixed-wing aircraft and helicopters was a higher rate of mechanical failures in rotorcraft, specifically engine and rotor systems. Nationally, data show that 20% of helicopter accidents occur on-airport and another 7% occur within one mile of the airport. The percentage which occur from one to five miles from the airport is also 7%. Accidents beyond five miles account for 66%. In summary, areas near airports are exposed to various levels of accident potential depending on the type of aircraft using the airport, the frequency of aircraft overflights, and weather conditions. Historically, the risk of being injured or killed on the ground near an airport is quite small, but not zero.

3.2.2 - Gnoss Field Statistics

The 1985 Draft Environmental Assessment for the Gnoss Field Master Plan evaluated information regarding accidents and safety at the Airport over the period 1973-1982. This evaluation indicated that virtually all accidents occurred on the Airport (96%) and that 65% occurred during landing. No injuries were sustained in 91% of the accidents and no fatalities occurred at all. Pilot error was cited as a cause or factor in 87% of the accidents and mechanical failure in 13%. Adverse weather and/or crosswind conditions were cited as a factor in 61% of the accidents.

As indicated in the official reports from the National Transportation Safety Board/Federal Aviation Administration for the period January, 1980 through June, 1986, crosswinds were a factor in 26% of the accidents. It is suspected that crosswinds may be a contributing factor (even though not stated) in a larger percentage of the

accidents at Gnoss Field based on discussions with the fixed-base operator and evaluation of the National Transportation Safety Board/Federal Aviation Administration accident reports.

The aircraft accident pattern since 1986 appears to have remained the same as above. Discussion with the Airport Manager about recent accidents indicates that no off-airport crashes have occurred since 1986 and no one has been seriously injured or killed at Gnoss Field. However, there have been a few minor on-airport accidents, possibly relating to crosswind landings.

The pattern of Gnoss Field aircraft accidents does not appear to follow the national trend. At Gnoss, there are a higher percentage of on-airport landing accidents than expected based on the national averages. This may be in part due to the frequent crosswinds.

The national accident rate per operation for general aviation is difficult to determine since actual operations counts are not recorded at most (non-tower) airports. However, the estimated annual rates are as follows:

Type of Operation	Estimated Accidents per Million Operations
Air Carrier	2 - 3
Commuter	7 - 10
General Aviation	23 - 50

Source: Cortright & Seibold

Of particular interest is the probability for an off-airport aircraft accident. The most often cited reference on the probability of an accident off the airport, but within one mile of the airport, is the McElroy Report, as discussed in the Division of Aeronautic's Airport Land Use Planning Handbook. This report was derived from National Transportation Safety Board data and provides a method to predict the probability of a specified number of accidents in the vicinity of an airport given the airport activity level. Application of this method led to the estimates below which bracket the current and forecast operations at Gnoss Field.

Annual Operations	Probability of Off-Airport Accident
100,000	0.14
200,000	0.23

Source: Cortright & Seibold

Given the low probability of off-airport accidents and the historically very low number of actual off-airport aircraft accidents at Gnoss (about 4%), it is difficult to assess the risk of an aircraft crashing off the Airport and impacting a certain piece of property.

Considering that the probabilities for off-airport accidents are for areas within one mile of the Airport and virtually no developments are within this distance from Gnoss Field, the risk at present appears to be very low, but not zero.

The risk could increase significantly if development is allowed within one mile of the Airport and/or under the arrival/departure flight tracks in the Airport vicinity. This is particularly the case in areas where aircraft are at or below 1,000 feet above ground level as part of their normal takeoff climbout and/or descent for landing. The risk factor is higher closer to the Airport due to more limited options available for the pilot in an emergency situation close to the ground.

3.2.3 - Planning Considerations

Airport Land Use Commissions have employed a wide variety of methods for establishing safety zones around airports. These zones define the areas in which land use and/or zoning restrictions are established to protect public safety on the ground. This approach has been used because of the difficulty in assigning risk factors, so the risks are minimized by limiting exposure.

These areas have generally been established based on one of two criteria: 1) projecting Federal Aviation Regulations Part 77 Imaginary Surfaces on the ground to define geometric safety zone areas or 2) establishing rectangular safety zones (at least in part) determined using military Accident Potential Zones. Figure IV-2 and Figure IV-6 from the Division of Aeronautic's Airport Land Use Planning Handbook illustrate the concepts (see Appendix E). This plan utilizes the Part 77 standards to establish the Gnoss Field safety zones.

The purpose for establishing land use restrictions in safety zones is to minimize the number of people exposed to aircraft crash hazards. Given the limited usefulness of statistical methods, the two principal techniques for reducing the risks are: 1) to limit the number of persons in an area and 2) to limit the area covered by buildings/structures to maximize the chances that an aircraft crash landing would occur on vacant land. Table IV-13 from the above Handbook (see Appendix E) provides examples of land use guidelines for safety zones based on other Airport Land Use Commission's planning efforts throughout California. Airport land use plans vary in the density restrictions, but it is common to see a restriction between two and four units per acre in the Overflight Zone.

Based upon technical evaluations prepared for this study and review of Airport Land Use Plans for other airports, the following safety zones have been established. These safety zones are illustrated on Figure 3.1.

1. Clear Zone. The Clear Zones are defined on the Airport Layout Plan and are part of the adopted Airport Master Plan. The Clear Zones are trapezoidal areas on the ground which start 200 feet from the runway(s) and end 1,000 feet out. The current Clear Zone inner width is 250 feet and the outer width is 450 feet. The future inner width is 500 feet and the outer width is 800 feet.

2. Approach Zone. The Approach Zone safety area is trapezoidal and extends out 2,000 feet from the end of the Clear Zone. The inner width is 800 feet and the outer width is 1,400 feet.

   The overall length of the inner (i.e., Clear Zone) and outer (i.e., Approach Zone) approach safety area is 3,200 feet from the end of the runway(s) and corresponds closely to the suggested length of 3,500 feet for general aviation airports serving single- and twin-engine aircraft as defined on page 98 of the Division of Aeronautics Handbook.

3. Traffic Pattern Zone. The Traffic Pattern Zone includes the area under the flight paths of aircraft as they prepare for landing or perform initial departure flight from the Airport. The Federal Aviation Regulations Part 77 Horizontal Surface is designed to protect this area from obstructions and generally encompasses the traffic pattern area. This area extends 5,200 feet from the runway(s) end as defined on the Approach and Clear Zone Plan (see Sheet 6 of 6, Appendix B).

4. Overflight Zone. The Overflight Zone is immediately outside the Traffic Pattern Zone and is located under the Federal Aviation Regulations Part 77 Conical Surface. Aircraft are still climbing out and/or descending in this area, but the risks this far from the Airport appear to be minimal.

5. Referral Area. The Referral Area extends 2 miles from the future boundary of Gnoss Field.

   Various sections of State law, including the Airport Land Use Commission law, specify a distance of two miles from the airport as an area for considering certain types of public facility development such as new schools. Establishing the Referral Area two miles from the future boundary of Gnoss Field requires all significant development projects to be directed to the Airport Land Use Commission for review and comment before approval. However, it is not

necessary for the Airport Land Use Commission to review all projects within the two-mile referral distance from the Airport. Minor developments that are not likely to create significant future environs compatibility problems or other projects far enough away not to conflict with airport operations can be excluded. The exceptions are specified in Policy SZ-7.2.

LEGEND AND GENERAL NOTES

ZONING DESIGNATIONS		
COUNTY	CITY	
X	X	A2 = Limited Agriculture (2–acre minimum)
X	X	A2:B4 = Limited Agriculture (1–acre minimum)
	X	A2:B10 = Agriculture (10–acre minimum)
X		A10 = Agriculture (10–acre minimum)
X		A60 = Agriculture (60–acre minimum)
	X	A60:CP = Agriculture (60–acre minimum)/Planned Commercial
X	X	AP = Administrative/Professional
X		ARP1.5 = Planned Agriculture, Residential (1 unit/1.5 acres)
X		ARP2 = Planned Agriculture, Residential (1 unit/2 acres)
X		ARP60 = Planned Agriculture, Residential (1 unit/60 acres)
X	X	C1 = Retail Business
	X	C2 = General Commercial
	X	CP = Planned Commercial (20,000–sf minimum)
X		H1 = Limited Roadside Business
	X	M1 = Light Industrial
	X	M2 = Heavy Industrial
X		M3 = Planned Industrial
	X	MP = Planned Industrial
	X	PC = Planned Community
	X	R1 = Single–Family Residential
	X	R1:B1 = Single–Family Residential (6,000–sf minimum)
	X	R1:B2 = Single–Family Residential (10,000–sf minimum)
	X	R1:B3 = Single–Family Residential (20,000–sf minimum)
	X	R1:B4 = Single–Family Residential (1–acre minimum)
	X	R3 = Multi–Family Residential
	X	R3:G1' = Multi–Family Residential (not–to–exceed building site/1,500)
	X	RA = Suburban Agriculture
	X	RA:B1 = Suburban Agriculture (6,000–sf minimum)
X		RCR = Resort and Commercial Recreation
X		RMP = Planned Multi–Family Residential
	X	RP = Planned Residential
X	X	RSP = Planned Single–Family Residential
X		RSP.85 = Planned Single–Family Residential (0.85–acre minimum)
X		RX = Mobile Home Park (10–acre minimum)

NOTE: Areas which have been pre–zoned by the City of Novato are not shown. Please refer to City of Novato zoning maps.

AVIATION SAFETY ZONES

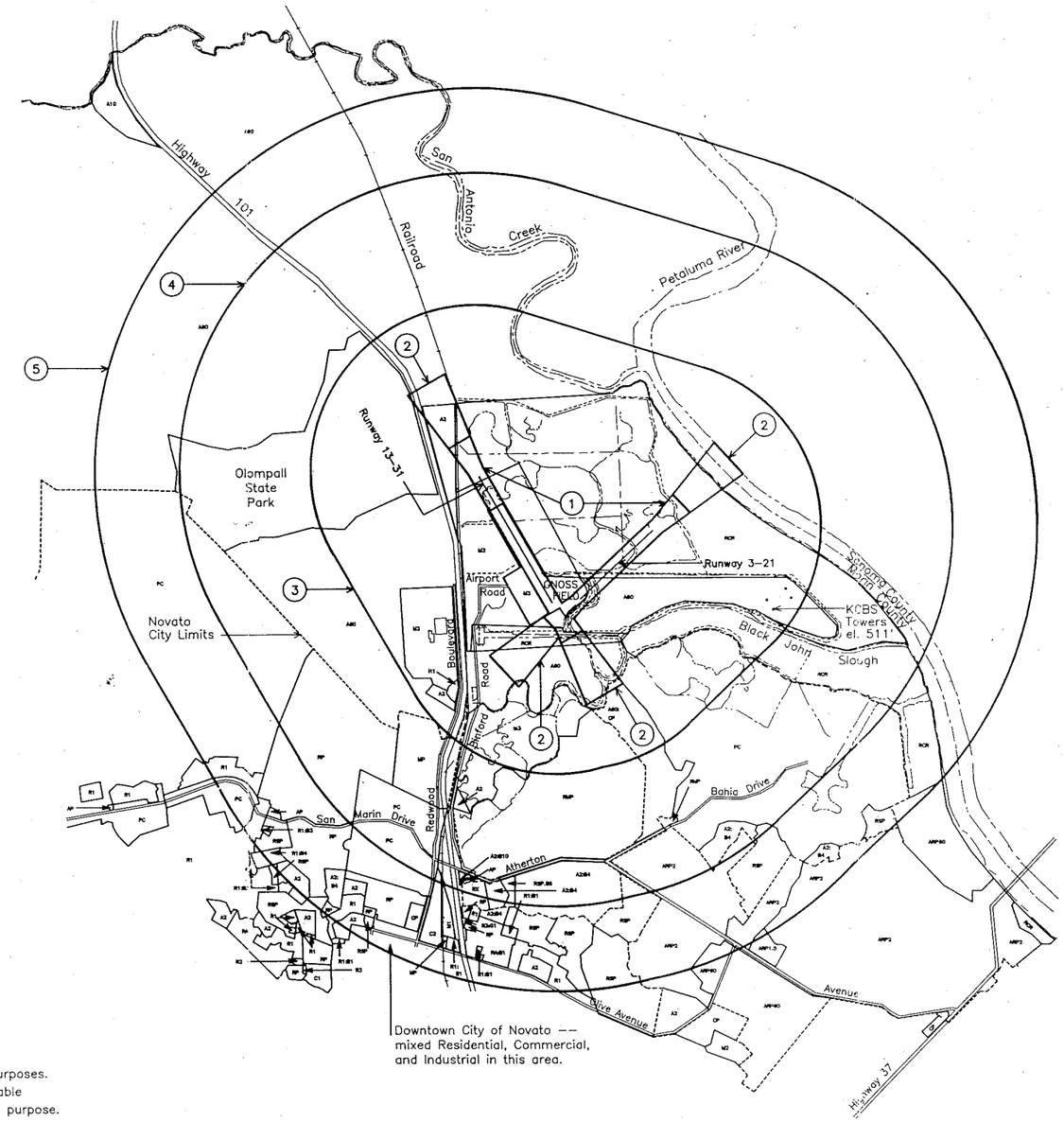
(1) = Clear Zone, Primary Surface, and Approach Area to 1,000' out

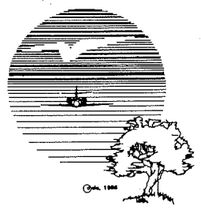
(2) = Approach Zone from Clear Zone to 3,000' out

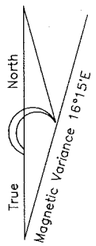
(3) = Traffic Zone / FAR Part 77 Horizontal Surface

(4) = Overflight Zone / FAR Part 77 Conical Surface

(5) = Referral Area Boundary, 2 miles from future Airport property line







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Airport Consulting / Engineering / Planning

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SCALE	1" = 2,000'
REVISED:	31 August, 1990

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County of Marin
Planning Department

Safety Zones
Gnoss Field

FIGURE 3.1

3.3 - AIRCRAFT NOISE COMPATIBILITY

The control of aircraft noise and its impacts on airport environs land use is a very complex undertaking involving Federal, State, and local governments in various facets of the problem. This section addresses the issue for the Gnoss Field Airport Land Use Plan.

3.3.1 - Noise Standards

The Federal government has established noise limits for aircraft under Federal Aviation Regulations Part 36, "Noise Standards: Aircraft Type and Airworthiness Certification". This Federal Aviation Regulation sets forth upper limits to the noise an aircraft can make under certain test conditions which are applied as part of the airworthiness certification process for new and/or modified aircraft. This process is applied at the national level by the Federal Aviation Administration and is out of the control of local governments. Significant steps have been taken in recent years to limit aircraft noise at the source, particularly for the loudest aircraft categories. It is expected that this process will have some noise reduction benefit in the future when most operating general aviation aircraft comply with Federal Aviation Regulations Part 36 standards. Presently, most general aviation aircraft in service were certified prior to Federal Aviation Regulations Part 36 requirements.

In addition, the Federal Aviation Administration has published Federal Aviation Regulations Part 150, "Airport Noise Compatibility Planning". Part 150 deals with airport noise control programs and operational restrictions to control and reduce noise levels in the community. Federal Aviation Regulations Part 150 prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluation and approving or disapproving those programs by the FAA.

Federal Aviation Regulations Part 150 is applicable to "public use airports". However, as a practical matter, Gnoss Field would be given a very low priority for program funding by the Federal Aviation Administration because no significant aircraft noise problems exist per the criteria contained in this Federal Aviation Regulation. The program is aimed mainly at air carrier airports and high activity general aviation airports with major incompatible existing residential development in the environs. Part 150 also focuses on noise exposures at and above 65 Ldn (essentially the same as 65 CNEL).

At the State level, Title 21 of the California Administrative Code provides noise regulations that govern the operation of aircraft and aircraft engines for all airports

operating under a valid permit issued by the Division of Aeronautics. The State Airport Noise Standards are based on two separate legal grounds: 1) the power of airport proprietors to impose ceilings and other limitations on the use of the airport to the extent not prohibited by Federal law and 2) the police powers of the State of California in those areas not subject to Federal preemption. The regulations are designed to cause an airport proprietor, aircraft operator, local governments, pilots, and the Division of Aeronautics to work cooperatively to diminish the problem of aircraft noise. The regulations are designed to accomplish this end by controlling and reducing the impacts of aircraft noise on nearby communities.

The Community Noise Equivalent Level is the noise measurement required by the Division of Aeronautics for establishing an airport's noise impact boundary. A CNEL value of 65 decibels is the noise impact criterion for noise-sensitive land uses, such as single- and multi-family dwellings, trailer parks, and schools. Such uses are considered compatible with airport/aircraft noise exposures of 65 dB CNEL or less.

The CNEL descriptor is also employed by the California Office of Noise Control as a means of specifying compatible land uses for other community noise sources. The ONC "Guidelines for the Preparation and Content of Noise Elements of the General Plan" indicate that residential land uses are normally acceptable where the noise exposure is 60 dB CNEL or less, and that such uses are conditionally acceptable where the noise exposure does not exceed 70 dB CNEL.

As of January 1, 1986, the 65 dB CNEL noise contour is the criterion for establishing the noise impact boundary for all civil airports in California. The area of noncompatible land uses within an airport's 65 dB CNEL noise contour is utilized by the State in determining the magnitude of the noise problem for a given airport.

The Airport Land Use Planning Handbook published by the Division of Aeronautics suggests land use compatibility guidelines which can be applied by the Airport Land Use Commission. These guidelines and the Handbook discussion of them is summarized below. (See Table III-3 from the Handbook contained in Appendix F.)

> "The suggested land use criteria in Table III-3 were developed after reviewing all available plans and considering the merits of individual approaches. The key suggestions involve residential and institutional uses. For air carrier and military airports it is strongly recommended that there be no new residential development in areas exposed to noise above 70 CNEL, and single-family units are discouraged in the 65-70 CNEL noise impact area. All mobile homes should be prohibited above 65 CNEL. No institutional uses should be constructed in area above 70 be discouraged in the 65-70 CNEL noise impact area. . .

For general aviation airports the same land use compatibility recommendations apply, but for a lower CNEL range. New residential development should not be undertaken above 65 CNEL, and single-family units are discouraged in the 60-65 CNEL noise impact area. Differences in land use criteria for general aviation airports result from the fact that the 65 CNEL noise contour for most general aviation airports lies fairly close to the airport boundary and does not sufficiently explain the annoyance area. The frequency of operations from some airports, visibility of aircraft at low altitudes and typically lower background noise levels around many general aviation airports are all believed to create a heightened awareness of general aviation activity and, hence, potential for annoyance outside of the 65 CNEL contour. . . .

Noise complaints can originate considerably outside the 60 and 65 CNEL contours for an airport and hence are particularly troublesome from a land use planning standpoint. The vast majority of these complaints are related to single aircraft flyovers and not airport operations in general. There are several possible explanations for complaints received from areas beyond the 60 an 65 CNEL contours. Several factors act together to determine an individual's response to aircraft noise events: the loudness, the duration, the time of occurrence, the number of repeat occurrences, prior history of the event, and individual sensitivity. . . .

If a significant number of individual complaints exist in areas outside the calculated noise impact boundary it would be important to pinpoint the specific nature of the problem. Noise problems from individual aircraft overflights (single event noise levels) can be addressed through aircraft noise limits and changes in airport operating practices and flight procedures. With increasing distance from an airport, meteorological and topographic effects can influence noise transmission and may not be totally accounted for by predictive noise models. Additional noise insulation for structures might be suggested for new residential land uses in selected areas, if in fact local topography and climate are creating a higher perception of noise as indicated by neighborhood reaction. In these special situations the sound insulation requirements would be justified based on the noise history of the neighborhood rather than on the generalized land use compatibility criteria recommended for the entire airport."

3.3.2 - Gnoss Field Aircraft Noise Analysis

Aircraft noise at Gnoss Field was analyzed as part of the Environmental Impact Report/Environmental Assessment for the Gnoss Field Master Plan adopted by the County in 1989. This study was based on 1986 conditions. The noise analysis was updated for this report due to changes in operating procedures that have been adopted at

the Airport since the Master Plan was completed. The noise update is summarized below. (The complete report is presented in Appendix F.)

The noise measurement program used for the Gnoss Field noise impact analysis was designed to quantify cumulative CNEL and single event noise levels produced by aircraft in the Airport vicinity with emphasis on the residential area immediately south of the Airport because most noise complaints have come from this area.

Three noise measurement locations were used during the study. Sites 1 and 2 were used for long-term noise measurements to record single event and cumulative noise levels. Site 3 was used for single event noise measurements and aircraft observations. (See Figure 2, Appendix F, for location of the noise monitoring sites.)

An additional aircraft observation site (Site 4) was established south of the airfield. This site was not useful for aircraft noise measurements but was selected because it afforded a good view of aircraft operational procedures south of the Airport. This site was used to record flight track use and aircraft operations which had the potential to produce noise levels which would be recorded by the monitoring units at Sites 1 and 2.

The noise measurement program was conducted at Sites 1 and 2 from May 8 to May 16, 1990. Aircraft operations were observed at Sites 3 and 4 on May 8-10; automated noise measurements were performed from May 8-16 at Sites 1 and 2. Weather conditions during the measurement period included light wind with temperatures in the range of 75 degrees to 85 degrees F, no clouds and low humidity.

Table 3.2 summarizes measured CNEL values at Sites 1 and 2. Data collected during the aircraft observation period was used to separate probable aircraft noise events from other noise events such as local traffic, barking dogs, lawn care, etc. The data Table 3.2 indicated that typical aircraft noise events exceeded 60 dB for 10 to 45 seconds. After the probable non-aircraft noise events were separated, CNEL values were recalculated to describe the noise contribution of aircraft noise impacts. These values are also shown in Table 3.2.

According to the data, the overall CNEL values recorded in the residential area south of the Airport during the study period were generally within acceptable limits for residential noise exposures. The CNEL values due to presumed aircraft operations were well within acceptable limits as defined by California and Federal Aviation Administration regulations, and by the guidelines of the Airport Land Use Planning Handbook for general aviation airports. The mean presumed aircraft CNEL values were also below the most stringent interpretation of the Handbook guidelines for exceptionally quiet areas.

Maximum single event aircraft noise levels observed were in the range of 68 to 72 dB at Site 1, and from 72 to 74 dB at Site 2. These noise levels are similar in magnitude to those produced during the passage of automobiles at 50 feet. Coincidentally, many of the noise events recorded at both locations which could not be correlated to aircraft operations were probably due to vehicles on local streets.

Nighttime noise events were determined from the automated noise monitoring system data. At Site 1, there were up to five noise events during the hours of 8 p.m. to 7 a.m., while at Site 2 there were as many as four during that time period. Maximum nighttime noise levels due to presumed aircraft ranged from 68 to 85 dB at Site 1 and from 64 to 74 dB at Site 2.

Table 3.2

MEASURED CNEL VALUES
Residential Area
South of Gnoss Field
9-15 May, 1990

Date	Site 1		Site 2	
	Overall	Aircraft*	Overall	Aircraft*
05-09-90	60.3	55.3	----	----
05-10-90	61.1	56.4	58.7	47.7
05-11-90	61.3	57.2	57.5	42.6
05-12-90	60.3	49.0	56.7	39.0
05-13-90	54.7	43.4	57.9	37.7
05-14-90	55.9	34.8	58.9	41.7
05-15-90	57.3	43.5	60.2	44.3

NOTE: See Figure 2, Appendix F, for noise monitoring site locations.

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* Calculated from noise events presumed to be aircraft overflights.

Source: Brown-Buntin Associates, Inc.

Only two presumed nighttime aircraft noise events could be correlated at Sites 1 and 2, which means that most presumed aircraft noise events affected only a narrow area immediately adjacent to the flight tracks. The two exceptions occurred at nighttime and produced maximum noise levels of about 69 dB at both sites.

During the daytime hours of May 8-10, 1990, 59 aircraft operations were observed south of Gnoss Field. Of these aircraft, 81% used Runway 31 and the majority were arrivals. The observed Runway 13 operations were departures. A small percentage of Runway 31 arrivals were straight-in. The observations indicated that most of the Runway 13 departures used the recommended 45 degree left turn noise abatement departure pattern.

The CNEL contours developed previously for the Gnoss Field Master Plan do not reflect the use of the noise abatement departure flight track or any straight-in arrivals. To better describe the projected noise impacts of future operations at Gnoss Field, new CNEL contours depicting 2006 operations were prepared (see Appendix F). The noise contours and generalized flight tracks are illustrated on Figure 3.2.

Given that it was possible to confirm only 11 noise-significant aircraft overflights of the area south of the Airport on May 8-10, 1990, it is unlikely that all of the noise events which were presumed to be due to aircraft overflights were actually produced by aircraft. In fact, several noise events in morning and evening hours were identified as being due to vehicles passing on local roadways, which were about 150 feet from the microphone at Site 1 and at least 500 feet from Site 2. Therefore, the estimated aircraft CNEL exposures at Sites 1 and 2 are conservative, worst-case estimates.

3.3.3 - Planning Considerations

Marin County is apparently in the unusual good situation of having no existing incompatible noise sensitive uses within the immediate Airport environs based on any recognized noise/land use compatibility standards used in the State of California.

The principal criteria are residential uses within the 65 dB and/or 60 dB CNEL noise contours. As shown by the noise contours, no residential areas exist within either 60 dB or 65 dB noise contour footprints for Gnoss Field based on projected operations 20 years in the future.

The County can preserve this desirable situation by adopting standards as part of the Airport Land Use Plan which will maintain the high degree of environs land use compatibility for Gnoss Field. In order to do this, residential development should be prohibited within the 60 dB CNEL noise contour. Noise easements should be obtained for development within the 55 dB CNEL noise contour.

LEGEND AND GENERAL NOTES

ZONING DESIGNATIONS		
COUNTY	CITY	
X	X	A2 = Limited Agriculture (2–acre minimum)
X	X	A2:B4 = Limited Agriculture (1–acre minimum)
	X	A2:B10 = Agriculture (10–acre minimum)
X		A10 = Agriculture (10–acre minimum)
X		A60 = Agriculture (60–acre minimum)
	X	A60:CP = Agriculture (60–acre minimum)/Planned Commercial
X	X	AP = Administrative/Professional
X		ARP1.5 = Planned Agriculture, Residential (1 unit/1.5 acres)
X		ARP2 = Planned Agriculture, Residential (1 unit/2 acres)
X		ARP60 = Planned Agriculture, Residential (1 unit/60 acres)
X	X	C1 = Retail Business
	X	C2 = General Commercial
	X	CP = Planned Commercial (20,000–sf minimum)
X		H1 = Limited Roadside Business
	X	M1 = Light Industrial
	X	M2 = Heavy Industrial
X		M3 = Planned Industrial
	X	MP = Planned Industrial
	X	PC = Planned Community
	X	R1 = Single–Family Residential
	X	R1:B1 = Single–Family Residential (6,000–sf minimum)
	X	R1:B2 = Single–Family Residential (10,000–sf minimum)
	X	R1:B3 = Single–Family Residential (20,000–sf minimum)
	X	R1:B4 = Single–Family Residential (1–acre minimum)
	X	R3 = Multi–Family Residential
	X	R3:G1 = Multi–Family Residential (not–to–exceed building site/1,500)
	X	RA = Suburban Agriculture
	X	RA:B1 = Suburban Agriculture (6,000–sf minimum)
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X		RMP = Planned Multi–Family Residential
	X	RP = Planned Residential
X	X	RSP = Planned Single–Family Residential
X		RSP.85 = Planned Single–Family Residential (0.85–acre minimum)
X		RX = Mobile Home Park (10–acre minimum)

NOTE: Areas which have been pre–zoned by the City of Novato are not shown. Please refer to City of Novato zoning maps.

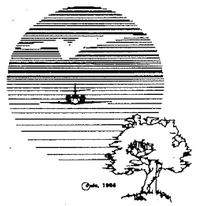
FLIGHT TRACKS / NOISE CONTOURS

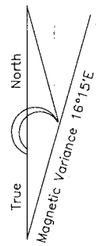
(1) = Flight Track (generalized)

(2) = 55 dB CNEL Contour

(3) = 60 dB CNEL Contour

(4) = 65 dB CNEL Contour





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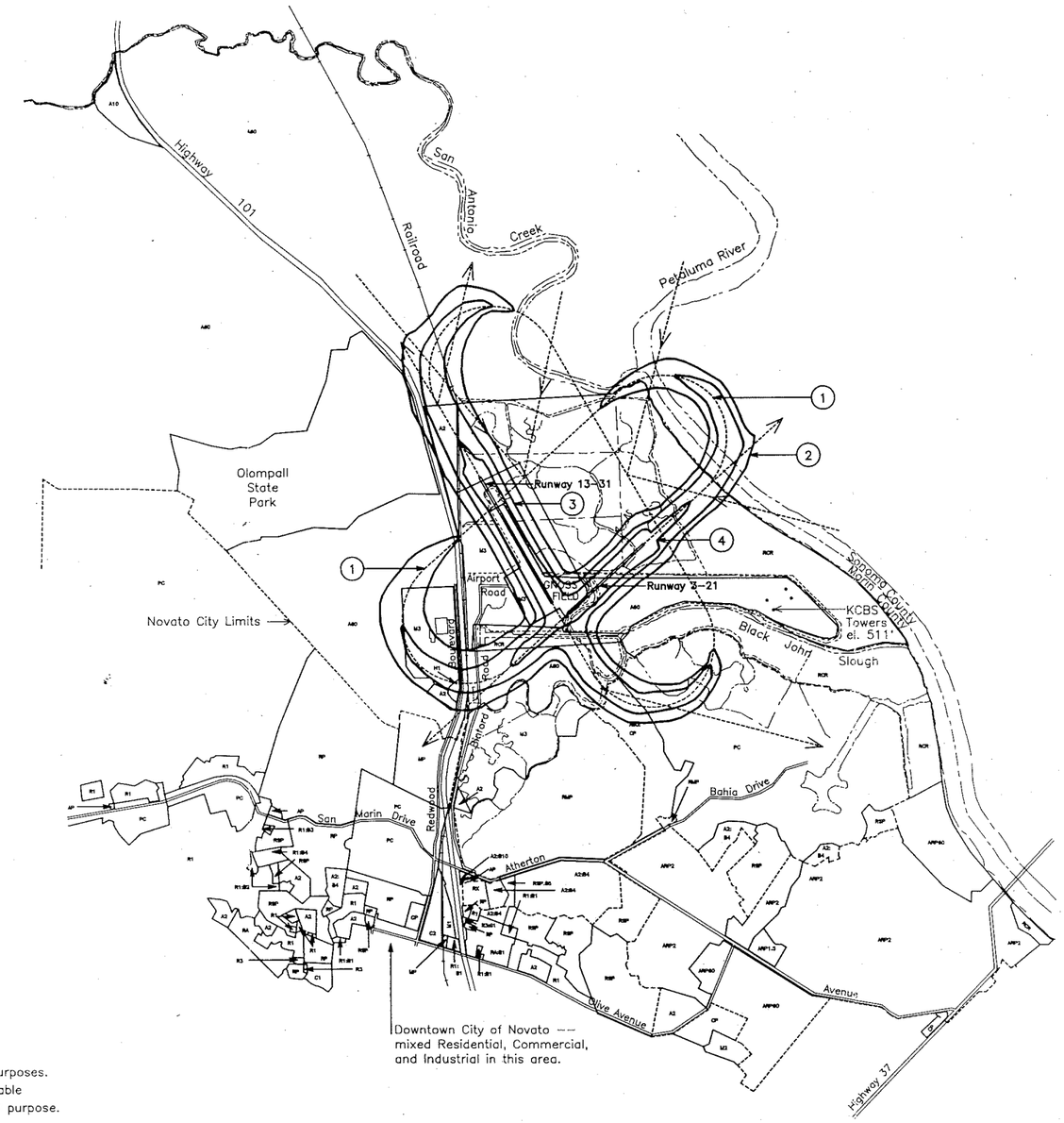

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Cortright & Seibold
Airport Consulting / Engineering / Planning

County of Marin
Planning Department

Flight Tracks / Noise Contours
Gnoss Field

FIGURE 3.2

In addition, the land use guidelines for noise compatibility, presented in Table 3.3 will aid in determining the acceptability of other types of land uses in the Airport environs.

3.4 - ENVIRONS LAND USE COMPATIBILITY

This section reviews existing and future Airport environs land use compatibility based upon existing zoning and pending development project information from the City of Novato Community Development Department and the County of Marin Planning Department.

3.4.1 - Existing Zoning

Airport environs zoning information is presented on Figure 3.3. This graphic is a composite of County and City of Novato land zoning information which is current as of June, 1990. As indicated, the areas immediately around Gnoss Field are in various categories of agricultural, industrial, and resort/commercial recreation zoning classifications. All of these zoning categories are highly compatible with the Airport and aircraft operations.

No residential zoning nor homes exist within approximately one mile of the Airport. This is a desirable situation and should be maintained if possible.

The closest residential developments within the Novato city limits to the Airport are: 1) the Partridge Knolls planned residential area west of Highway 101 and north of San Marin Drive, southwest of the Airport and 2) the existing Bahia residential area south of Bahia Drive and northeast of Atherton Avenue, southeast of the Airport.

Within the County area, the closest residential development to the Airport is the single-family and limited agricultural/ residential land uses along Atherton Avenue, south of the Airport.

Table 3.3

LAND USE GUIDELINES FOR NOISE COMPATIBILITY
GNOSS FIELD

Land Use	55-60 dB CNEL	60-65 dB CNEL	65-70 dB CNEL	70-75 dB CNEL	75-80 dB CNEL	80+ dB CNEL
Residential/ Lodgings	- Potential for annoyance exists; identify high complaint areas - Determine whether sound insulation requirements should be established for these areas - Noise easements should be required for new construction - Limit residential use underneath the flight pattern	- No new single family dwellings - Prohibit mobile homes - New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation is included in the design - Noise easements should be required	- No new construction or development of residential uses - New hotels and motels may be permitted after an analysis of noise reduction requirements is made and needed noise insulation is included in the design	- No hotels, motels, or residential development	- Same as 70-75 dB CNEL	- Same as 70-75 dB CNEL
Public/ Institutional	- Satisfactory	- Satisfactory	- Discourage institutional uses - If no other alternative location is available, new construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation is included in the design	- No institutional uses	- Same as 70-75 dB CNEL	- Same as 70-75 dB CNEL
Commercial	- Satisfactory	- Satisfactory	- Satisfactory	- New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation features included in the design - Noise reduction levels of 25-30 dB will be required	- Same as 70-75 CNEL	- No new construction or development unless related to airport activities or services. Conventional construction will generally be inadequate and special noise insulation features should be included in the construction.
Industrial	- Satisfactory	- Satisfactory	- Satisfactory	- Satisfactory	- New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation features included in the design. - Measures to achieve noise reduction of 25-35 dB must be incorporated in portions of building where the public is received and in office areas.	- No new construction or development unless related to airport activities or services. Conventional construction will generally be inadequate and special noise insulation features should be included in the construction.
Recreation/ Open Space	- Satisfactory	- Satisfactory, with little noise impact and requiring no special noise insulation requirements for new construction. - Outdoor music shells and amphitheaters should not be permitted.	- Satisfactory, with little noise impact and requiring no special noise insulation requirements for new construction. - Outdoor music shells and amphitheaters should not be permitted.	- Parks, spectator sports, golf courses, and agricultural generally satisfactory with little noise impact. - Nature areas for wildlife and zoos should be permitted.	- Land uses involving concentrations of people (spectator sports and some recreational facilities) or of animals (livestock farming and animal breeding) should not be permitted.	- Same as 75-80 dB CNEL

Source: Adopted and modified from Table III-3, Technical Reference 9, by Cortright & Seibold

ws:gflint33

LEGEND AND GENERAL NOTES

ZONING DESIGNATIONS		
COUNTY	CITY	
X	X	A2 = Limited Agriculture (2–acre minimum)
X	X	A2:B4 = Limited Agriculture (1–acre minimum)
	X	A2:B10 = Agriculture (10–acre minimum)
X		A10 = Agriculture (10–acre minimum)
X		A60 = Agriculture (60–acre minimum)
	X	A60:CP = Agriculture (60–acre minimum)/Planned Commercial
X	X	AP = Administrative/Professional
X		ARP1.5 = Planned Agriculture, Residential (1 unit/1.5 acres)
X		ARP2 = Planned Agriculture, Residential (1 unit/2 acres)
X		ARP60 = Planned Agriculture, Residential (1 unit/60 acres)
X	X	C1 = Retail Business
	X	C2 = General Commercial
	X	CP = Planned Commercial (20,000–sf minimum)
X		H1 = Limited Roadside Business
	X	M1 = Light Industrial
	X	M2 = Heavy Industrial
X		M3 = Planned Industrial
	X	MP = Planned Industrial
	X	PC = Planned Community
	X	R1 = Single–Family Residential
	X	R1:B1 = Single–Family Residential (6,000–sf minimum)
	X	R1:B2 = Single–Family Residential (10,000–sf minimum)
	X	R1:B3 = Single–Family Residential (20,000–sf minimum)
	X	R1:B4 = Single–Family Residential (1–acre minimum)
	X	R3 = Multi–Family Residential
	X	R3:G1 = Multi–Family Residential (not–to–exceed building site/1,500)
	X	RA = Suburban Agriculture
	X	RA:B1 = Suburban Agriculture (6,000–sf minimum)
X		RCR = Resort and Commercial Recreation
X		RMP = Planned Multi–Family Residential
	X	RP = Planned Residential
X	X	RSP = Planned Single–Family Residential
X		RSP.85 = Planned Single–Family Residential (0.85–acre minimum)
X		RX = Mobile Home Park (10–acre minimum)

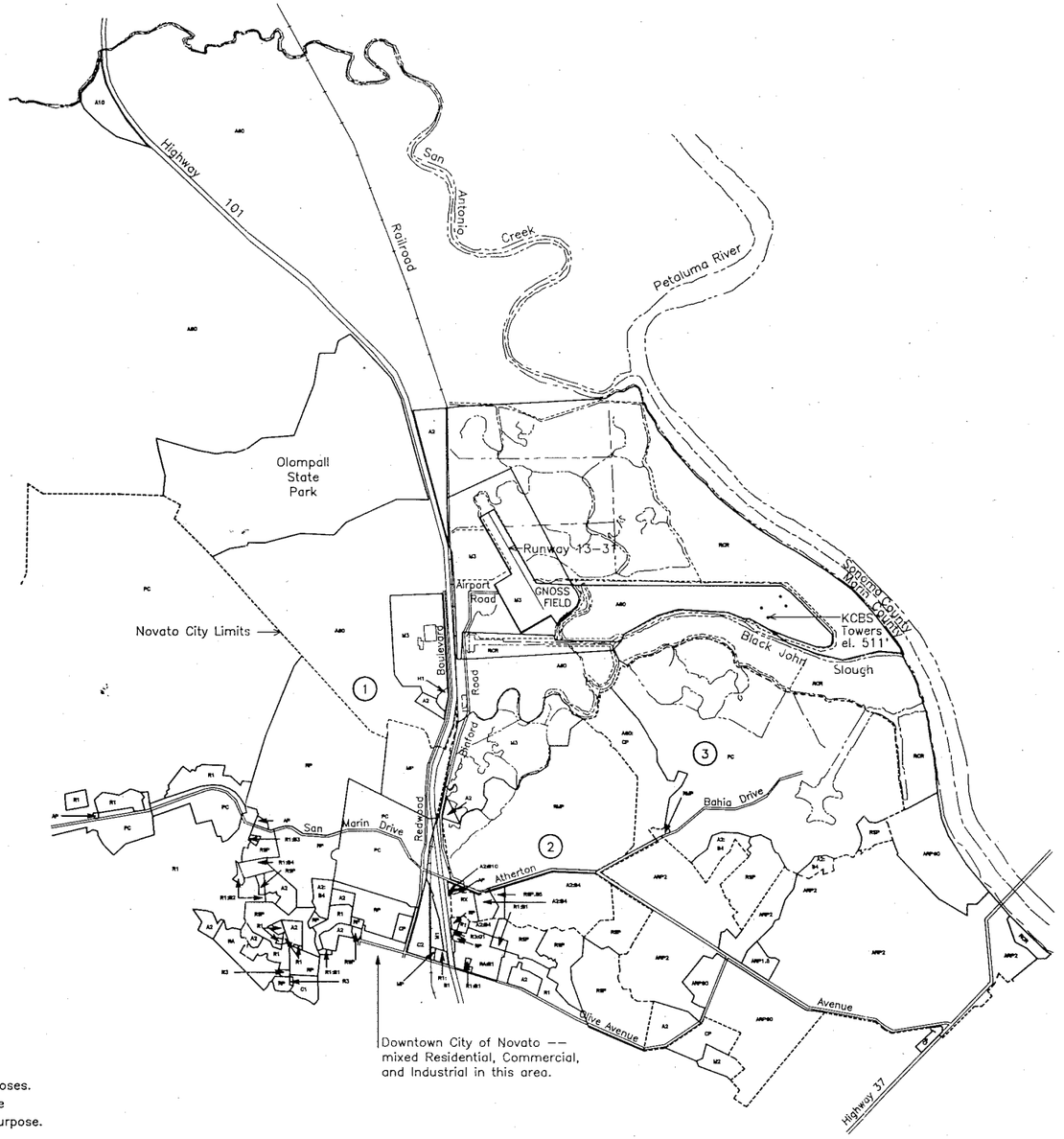
NOTE: Areas which have been pre–zoned by the City of Novato are not shown. Please refer to City of Novato zonging maps.

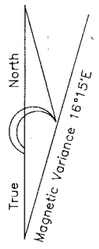
PENDING MAJOR DEVELOPMENTS

(1) = Buck Medical / Research Center

(2) = Rush Creek Estates Residential

(3) = Bahia Residential Expansion





This map was developed for General Plan purposes. The County of Marin is not responsible or liable for the use of this map beyond its intended purpose.

Cortright & Seibold
Airport Consulting / Engineering / Planning

CAD FILE	GFLUP1:2,000
DRAWN	SLS
CHECKED	DJC/SLS
DATE	13 June, 1990
SCALE	1" = 2,000'
REVISED:	31 August, 1990

REVISIONS			
NO.	DATE	DESCRIPTION	BY
7			
6			
5			
4			
3			
2			
1			

County of Marin
Planning Department

Airport Environs Zoning
Gnoss Field

FIGURE 3.3

3.4.2 - Proposed Major Developments

Based on discussions with City of Novato and Marin County planners, there are three major development projects pending for the Airport environs that may have a significant negative impact on the status quo regarding Airport environs land use compatibility. All of these projects will be reviewed by the Airport Land Use Commission. These pending projects are indicated on Figure 3.3 and are listed as follows:

1. The Buck Center project is located in unincorporated Marin County. The Buck Center includes medical research facilities and on-site residential units. The preliminary plan calls for a 280,000-square foot research center built in two phases with 130 apartments. Although a large portion of the property is within the Traffic Pattern Zone, the residential development is proposed for an area within the Overflight Zone. The residential density proposed is consistent with the policies in this plan.

2. The Rush Creek Estates project is located in unincorporated Marin County. The Rush Creek Estates (Pinheiro Ridge) is a single-family residential development along the north side of Atherton Avenue and south of the Pinheiro Ridge line, east of Highway 101. This proposal is for developing 99 single-family residences on 74.8 acres of the southern portion of the property contiguous to Atherton Avenue. The remainder of the property would be given to open space uses. Pinheiro Ridge penetrates Part 77 airspace. However, since all of the proposed development will be located on the south side of the ridge, outside the Traffic Pattern Zone, this project should be compatible with the policies in this plan.

3. The Bahia Master Plan project is located in Novato. The 1990 Bahia Master Plan proposes further expansion of the Bahia residential complex into the undeveloped hilltop area on the north side of Bahia Drive for approximately 729 additional residential units bring the development to a maximum of 1,032 units. A portion of this project lies within the Part 77 airspace, the Traffic Pattern Zone, and the 60 dB noise contour. There are safety issues and noise issues which will need to be resolved.

3.4.3 - Local Plans

Both the Marin Countywide Plan and the City of Novato General Plan address the Airport environs. It is noted that both plans are currently (June, 1990) undergoing major updates and revisions. This section will need to be revised to reflect the new versions of these planning documents when they are completed and adopted. This process is unlikely to be completed until after the initial Gnoss Field ALUP is adopted by the Marin County ALUC. Therefore, this section is based upon information contained in the EIR/EA prepared for the Marin County Airport Master Plan.

The Transportation Element of the Countywide Plan (adopted in 1982) contains the following policy statement concerning Gnoss Field:

> "The County Airport at Gnoss Field should be the only civilian airport facility in Marin County and shall be for general aviation only. All other civilian facilities should be phased out with the exception of the heliport and sea plane base on Richardson Bay which may be maintained for water oriented visitor/commercial use."

The City of Novato General Plan (1981) contains the following statement regarding Gnoss Field:

> "The General Plan designates Gnoss Field as the single aviation facility in the Novato Planning area. Policy 8 of the Circulation Element states that maintenance and expansion of Gnoss Field is desirable for the business community and the general aviation."

The above statements clearly indicate that it is County and City policy to continue the use of Gnoss Field and that the Airport should be maintained. It is assumed that this policy would continue and be reflected in the updated General Plans.

4.0 - FINDINGS AND POLICIES

4.0 - FINDINGS AND POLICIES

This Chapter summarizes the major findings from the planning evaluations undertaken as part of developing the airspace, safety, and noise compatibility components of the Airport Land Use Plan for Gnoss Field. It also provides an overall land use/zoning compatibility matrix for the Airport environs and presents the policies needed to put the Airport Land Use Plan (ALUP) in place as part of the Countywide planning guidelines.

4.1 - KEY FINDINGS

The key findings from the Airport Land Use Plan evaluations are summarized as follows:

4.1.1 - Airspace/Height Restrictions

Three natural features and one man-made object penetrate the Federal Aviation Regulations Part 77 surfaces for Gnoss Field as shown on the Approach and Clear Zone Plan (see Sheet 6 of 6 in Appendix B). None of these objects present a significant airspace operational problem for visual flight rule activity at the Airport.

Future construction of man-made structures that would exceed the height limits of local zoning requirements or Federal Aviation Regulations Part 77 should not be allowed in the Airport environs. The intent of the airspace height restrictions is to ensure that land use is compatible with airport operations. The safety of aircraft operators as well as safety of people on the ground should be considered. Structures that penetrate the FAR Part 77 may be allowed if the FAA has determined the structure is not a hazard. There may be a variety of land uses which would not only be compatible with aircraft operations, but are desirable.

4.1.2 - Aviation Safety

Both national statistics and historical experience at Gnoss Field indicate that the risks of a non-aircraft occupant being killed or injured from an aircraft crash in the Airport environs is very small, but not zero. The best way to preserve this low risk situation is by not allowing development near the Airport that would compromise this compatibility factor.

The Aviation Safety Zones for the Airport environs defined on Figure 3.1 preserve the current compatibility and restrict incompatible future development near the Airport. Restricting land uses in Safety Zones minimizes the number of people exposed to crash hazards. Each additional person becomes subject to a crash hazard risk by virtue of

being located in a Safety Zone. Airport Land Use Plans generally us a density of between three and four units per acre in the Overflight Zone.

Residential development should not be allowed within the Traffic Pattern Zone and should be limited to four dwelling units per gross acre in the Overflight Zone. This policy is based on a review of other Airport Land Use Plans, as well as the existing zoning in the area.

4.1.3 - Aircraft Noise Compatibility

Marin County is presently in the desirable and unusual situation of having no incompatible noise sensitive uses close to Gnoss Field. The Airport Land Use Commission can preserve this status quo by adopting standards that will continue this high degree of airport environs compatibility in the future.

New residential development should not be allowed within the 60 dB CNEL contour. An acoustical investigation and noise insulation should be required within the 55 dB CNEL contour as presented on Figure 3.2.

Noise easements should be granted to the County as part of the approval of any new residential or other noise sensitive development. The guidelines for aircraft noise/land use compatibility contained in Table 3.3 and Table 4.1 regarding land uses near the Airport within various CNEL contour boundaries should be considered in reviewing future development proposals.

4.1.4 - Referral Area Boundary

As stated earlier in the report, the default distance from the Airport's future boundary for Airport Land Use Commission evaluations and review of proposed development projects is a minimum of two miles per State law. However, the ALUC can adopt a different Referral Boundary, if desired.

Because the evaluations conducted for this study did not determine the need to extend the Referral Boundary beyond two miles nor to reduce it to less than the Federal Aviation Regulations Part 77 outer limit of 9,000 feet from the Airport, the two-mile distance should be used as the Referral Boundary for review of any proposed developments and zoning changes within the environs of Marin County Airport.

It is noted that the northeast sector of this area is in Sonoma County; however, it is still in the jurisdiction of the Marin County Airport Land Use Commission. There are seventeen property owners in this area and Sonoma County will refer any development proposals to the Airport Land Use Commission for review. The number of referrals is

expected to be quite small since most of the land is owned by the state or is in agricultural zoning.

4.2 - OVERALL AIRPORT ENVIRONS LAND USE COMPATIBILITY MATRIX

As a planning aid for use by the Airport Land Use Commission and County staff in reviewing proposed development projects and zoning changes within the Referral Area, a composite City/County zoning and land use compatibility matrix has been prepared. The matrix includes all basic County land use zoning categories and all of the City of Novato zoning categories that are present within the two-mile Referral Area.

The matrix focuses on noise and safety compatibility factors and is presented on Table 4.1. The various zoning categories are indicated as "not compatible" by the letter "N", as "conditionally compatible" by the letter "C", and as "compatible" by the letter "Y" on the matrix. Conditional uses would be approved only after a specific study and review of the individual development proposal and a determination by the Airport Land Use Commission that the project would not reduce environs land use compatibility for Gnoss Field.

Table 4.1

COMPATIBILITY MATRIX
Marin County Airport
Environs Zoning

Zoning Designations (1)				CNEL Area (2)				ALUP Safety Zone (3)					
County	City	Zone	Category	70dB	65dB	60dB	55dB	1	2	3	4	5	Restrictions / Conditions
X	X	A2	= Limited Agriculture (2-acre minimum)	Y(4)	Y	Y	Y	N	C	C	Y	Y	No buildings/structures/stockpiles in Zone 1
X	X	A2:B4	= Limited Agriculture (1-acre minimum)	Y	Y	Y	Y	N	C	C	Y	Y	No residential uses in Zones 1 and 2
	X	A2:B10	= Agriculture (10-acre minimum)	Y	Y	Y	Y	N	C	C	Y	Y	No uses requiring a permit without special study in Zones 1, 2, and 3
X		A10	= Agriculture (10-acre minimum)	Y	Y	Y	Y	C	C	C	Y	Y	No buildings/structures/stockpiles in Zone 1
X		A60	= Agriculture (60-acre minimum)	Y	Y	Y	Y	C	C	C	Y	Y	No residential uses in Zones 1 and 2
	X	A60:CP	= Agriculture (60-acre minimum)/Planned Commercial	Y	Y	Y	Y	C	C	C	Y	Y	No uses requiring a permit without special study in Zones 1, 2, and 3
X	X	AP	= Administrative/Professional	N	Y	Y	Y	N	N	C	Y	Y	Subject to approved Master Plan Special study required in Zone 3
X		ARP1.5	= Planned Agriculture, Residential (1 unit/1.5 acres)	N	N	N	C	N	N	N	Y	Y	Subject to approved Master Plan
X		ARP2	= Planned Agriculture, Residential (1 unit/2 acres)	N	N	N	C	N	N	N	Y	Y	Special study required in Zone 3
X		ARP60	= Planned Agriculture, Residential (1 unit/60 acres)	N	N	Y	Y	N	N	C	Y	Y	
X	X	C1	= Retail Business	N	N	Y	Y	N	N	C	Y	Y	Uses permitted in Zone 3 subject to restrictions for similar uses in other Safety Zones conditional uses permitted subject to special study in Zone 3
	X	C2	= General Commercial	N	Y	Y	Y	N	N	C	Y	Y	Uses permitted in Zone 3 subject to restrictions for similar uses in other Safety Zones conditional uses permitted subject to special study in Zone 3
	X	CP	= Planned Commercial (20,000-sf minimum)	N	Y	Y	Y	N	N	C	Y	Y	Same as applied for respective land use/zoning category or as adopted by ordinance in accordance with approved Master Plan
X		H1	= Limited Roadside Business	Y	Y	Y	Y	N	N	C	Y	Y	No uses allowing storage of flammable materials or uses allowing assembly of 50 or more people without special study
	X	M1	= Light Industrial	Y	Y	Y	Y	N	C	Y	Y	Y	No uses in Zone 2 that involve storage and/or use of flammable substances or explosives or other hazardous materials, or which produce light, glare, and/or smoke or any other substance/emission that would interfere with aviation activities at Gnoss Field
	X	M2	= Heavy Industrial	Y	Y	Y	Y	N	C	Y	Y	Y	No uses in Zone 2 that involve storage and/or use of flammable substances or explosives or other hazardous materials, or which produce light, glare, and/or smoke or any other substance/emission that would interfere with aviation activities at Gnoss Field
X		M3	= Planned Industrial	Y	Y	Y	Y	N	C	Y	Y	Y	Subject to approved Master Plan Special study required in Zone 2
	X	MP	= Planned Industrial	Y	Y	Y	Y	N	N	C	Y	Y	Subject to approved Master Plan Special study required in Zone 2
X		OA	= Open Area	Y	Y	Y	Y	C	C	Y	Y	Y	No uses requiring a permit without special study in Zone 1 and 2
X		OP	= Planned Office	N	Y	Y	Y	N	N	C	Y	Y	Subject to approved Master Plan Special study required in Zone 3
	X	PC	= Planned Community	N	N	N	Y	N	N	N	C	Y	Subject to approved Master Plan Special study required in Zone 4

(1) X = Applicable Zoning
(2) CNEL = Community Noise Equivalent Level per Title 21
(3) 1 = Clear Zone, 2 = Approach Zone, 3 = Traffic Pattern Zone, 4 = Overflight Zone, and 5 = Referral Area
(4) N = Not Compatible, C = Conditionally Compatible, and Y = Compatible

Table 4.1

COMPATIBILITY MATRIX
Marin County Airport
Environs Zoning

Zoning Designations (1)				CNEL Area (2)				ALUP Safety Zone (3)					
County	City	Zone	Category	70dB	65dB	60dB	55dB	1	2	3	4	5	Restrictions / Conditions
X		PF	= Public Facility	Y	Y	Y	Y	N	N	C	Y	Y	Subject to approved Master Plan Special study required in Zone 3
	X	R1	= Single-Family Residential	N(4)	N	N	C	N	N	N	C	Y	No schools, hospitals, libraries, day-care centers, or other
	X	R1:B1	= Single-Family Residential (6,000-sf minimum)	N	N	N	C	N	N	N	C	Y	institutions in Zone 4 without special study
	X	R1:B2	= Single-Family Residential(10,000-sf minimum)	N	N	N	C	N	N	N	C	Y	No uses requiring a permit without special study in Zone 4
	X	R1:B3	= Single-Family Residential (20,000-sf minimum)	N	N	N	C	N	N	N	C	Y	
	X	R1:B4	= Single-Family Residential (1-acre minimum)	N	N	N	C	N	N	N	C	Y	
X		R2	= Two-Family Residential	N	N	N	C	N	N	N	C	Y	No uses requiring a permit without special study in Zone 4
	X	R3	= Multi-Family Residential	N	N	N	C	N	N	N	C	Y	No uses requiring a permit without special study in Zone 4
	X	R3:G1	= Multi-Family Residential (not-to-exceed building site/1,500)	N	N	N	C	N	N	N	C	Y	
	X	RA	= Suburban Agriculture	N	N	N	C	N	N	N	C	Y	No uses requiring a permit without special study in Zone 4
	X	RA:B1	= Suburban Agriculture (6,000-sf minimum)	N	N	N	C	N	N	N	C	Y	
X		RCR	= Resort and Commercial Recreation	N	Y	Y	Y	N	N	C	Y	Y	Subject to approved Master Plan Special study required in Zone 3
X		RE	= Residential Estates	N	N	N	C	N	N	N	C	Y	No schools, hospitals, libraries, day-care centers, or other institutions in Zone 4 without special study No uses requiring a permit without special study in Zone 4
X		RF	= Floating Home Marina	N	N	N	C	N	N	N	C	Y	Subject to approved Master Plan Special study required in Zone 4
X		RMP	= Planned Multi-Family Residential	N	N	N	C	N	N	N	C	Y	Same as applied for respective land use/zoning category or as adopted by ordinance in accordance with approved Master Plan
X		RMPC	= Residential/Commercial Multiple Planned	N	N	N	C	N	N	N	C	Y	Same as RMP and/or CP zoning
	X	RP	= Planned Residential	N	N	N	C	N	N	N	C	Y	Same as applied for respective land use/zoning category or as adopted by ordinance in accordance with approved Master Plan
X		RR	= Restricted Residential	N	N	N	C	N	N	N	C	Y	No uses requiring a permit without special study in Zone 4
X	X	RSP	= Planned Single-Family Residential	N	N	N	C	N	N	N	C	Y	Same as applied for respective land use/zoning category or as
X		RSP.85	= Planned Single-Family Residential (0.85-acre minimum)	N	N	N	C	N	N	N	C	Y	adopted by ordinance in accordance with approved Master Plan
X		RX	= Mobile Home Park (10-acre minimum)	N	N	N	C	N	N	N	C	Y	Subject to approved Master Plan Special study required in Zone 4
X		VCR	= Village Commercial Residential	N	N	C	Y	N	N	C	Y	Y	Uses permitted in Zone 3 subject to restrictions for similar uses in other Safety Zones Conditional uses permitted subject to special study in Zone 3

(1) X = Applicable Zoning
(2) CNEL = Community Noise Equivalent Level per Title 21
(3) 1 = Clear Zone, 2 = Approach Zone, 3 = Traffic Pattern Zone, 4 = Overflight Zone, and 5 = Referral Area
(4) N = Not Compatible, C = Conditionally Compatible, and Y = Compatible

Source: Cortright & Seibold

123:gflupt4

4.3 - POLICY STATEMENTS

The policy statements in this plan are designed to minimize aircraft crash hazards, (on the ground and in the air), and to limit the exposure of people to noise impacts. Implementation of the policies in this plan will help to ensure the continued use of Gnoss Field as the general aviation facility in Marin County. These policies were examined to determine the impact on individual properties in the vicinity of Gnoss Field. This preliminary assessment indicates that all properties will continue to have a reasonable economic use. When a development proposal is received, the Airport Land Use Commission will determine if the project is consistent with the Airport Land Use Plan. At that time, the County will decide whether the purchase of avigation easements and/or land (as described in Appendix H) is necessary. Refer to Appendix H for a description of the airport expansion plans and associated property acquisition.

The adoption of the plan will result in the following procedure:

a. The Airport Land Use Commission will review projects proposed within the referral boundary.

b. The Airport Land Use Commission will make a finding that the project is consistent with the plan or is not consistent. They do not approve or deny the project.

c. If the project is found to be inconsistent with the Plan, the decision making body (Novato City Council or Marin County Board of Supervisors) can either overrule the Airport Land Use Commission by a majority vote or ask that the project be redesigned to be consistent with the Airport Land Use Plan. The Sonoma County Board of Supervisors can overrule the Airport Land Use Commission by a two-thirds vote.

4.3.1 - Airspace/Height Restriction Policies

The airspace/height restriction policies are:

Policy AH-1.1 **Approach and Clear Zone Plan.** The Airport Land Use Commission shall adopt the airspace/height limits shown on the Approach and Clear Zone Plan (Appendix B, Sheet 6 of 6) approved by the Board of Supervisors as part of the Gnoss Field Master Plan update in 1989.

Policy AH-1.2 **FAR Part 77 Penetration Areas.** No new structures should be allowed in the FAR Part 77 penetration areas as defined by

the shaded topographic areas on the adopted Approach and Clear Zone Plan (see Appendix B, Sheet 6 of 6).

Policy AH-1.3 **FAR Part 77 Non-penetration Areas.** No new structures should be allowed within the limits of the adopted Approach and Clear Zone Plan that would penetrate the FAR Part 77 surfaces (see Appendix B, Sheet 6 of 6). This includes both shaded and non-shaded areas.

Exceptions: Structures would be allowed that are protected or overshadowed by existing structures and/or terrain. In addition, structures would be allowed if they do not create any new hazard to avigation based on an aeronautical study by the Federal Aviation Administration.

4.3.2 - Safety Zone Policies

The safety zone policies are:

Policy SZ-1.1 **Adoption of Aviation Safety Zones.** The Airport Land Use Commission shall adopt the aviation safety zones shown on Figure 3.1, entitled "Safety Zones, Gnoss Field" dated June 13, 1990.

Policy SZ-2.1 **Development in Clear Zones.** No development or uses shall be permitted in the Clear Zone(s) (see Figure 3.1) that would allow construction of any building or structures.

Policy SZ-2.2 **Activity in Clear Zones.** No activity shall be allowed within the Clear Zone(s) that would allow use by persons on a regular basis and in no case more than ten persons per acre at any one time.

Policy SZ-2.3 **Referral in Clear Zones.** All proposed development of any type and/or size in the Clear Zone(s) requiring City and/or County approval or building permits shall be referred to the Airport Land Use Commission for review regardless of the land area and/or building height or size.

Policy SZ-2.4 **Residential Use in Clear Zones.** No residential uses shall be permitted within the Clear Zone(s).

Policy SZ-3.1 **Residential Use in Approach Zones.** No residential development shall be allowed within the Approach Zone(s) (see Figure 3.1).

Policy SZ-3.2 **Institutional Uses in Approach Zones.** No schools, hospitals, places of public assembly for more than 100 people, and other similar institutional uses shall be allowed within the Approach Zone(s).

Policy SZ-3.3 **Development in Approach Zones.** All proposed development within the Approach Zone(s) of any type and/or size requiring City and/or County approval or building permits shall be referred to the Airport Land Use Commission (ALUC) for review regardless of the land area and/or building height or size.

Policy SZ-4.1 **Residential Use in Traffic Pattern Zone.** No new residential development shall be allowed within the Traffic Pattern Zone (see Figure 3.1).

Exceptions:

A. A development proposal which demonstrates to the Airport Land Use Commission that the housing units proposed in the traffic pattern zone cannot be located on a portion of the property outside the traffic pattern zone and, exclusion would deny the property owner a reasonable use of the property and,

B. Any development which is permitted in the traffic pattern zone shall be limited to two units per acre of land within the project development area or the density allowed by zoning, whichever is less. The project development area will be defined as lands which are primarily planned for development and excludes areas not planned for development.

Policy SZ-4.2 **Institutional Uses in Traffic Pattern Zone.** No schools, hospitals, places of public assembly for more than 100 people, and other similar institutional uses shall be allowed in the Traffic Pattern Zone.

Policy SZ-5.1 **Residential Use in Overflight Zone.** New residential uses in the Overflight Zone (see Figure 3.1) should be limited to a maximum of four dwelling units per gross acre.

Policy SZ-6.1 **Easements in the Clear Zone and Approach Zone.** As a condition of approval for development permits, avigation easements should be granted to the County for any zoning change or new development allowed within the Clear Zone, and Approach Zone. The restrictions in the easement will vary depending on the type of project proposed and the location of structures. These restrictions shall be determined at the time a development project is proposed. When the county proceeds with the airport expansion, easements will be purchased as outlined in the Gnoss Field Master Plan and shown in Appendix H.

Policy SZ-6.2 **Easements-Traffic Pattern Zone and Overflight Zone.** As a condition of approval for development permits, avigation easements should be granted to the County for any zoning change or new development allowed within the Traffic Pattern Zone, and Overflight Zone. The restrictions shall be determined at the time a development project is proposed.

Policy SZ-7.1 **Referral Area.** The Airport Land Use Commission shall establish a Referral Area extending two miles from the future airport boundary of Gnoss Field. The Referral Area boundary is illustrated on Figure 3.1 entitled "Safety Zones, Gnoss Field."

Policy SZ-7.2 **Project/Zoning Approvals in Referral Area.** All proposed development projects, including subdivisions, City and County General and Specific Plans, General Plan amendments, and zoning changes shall be directed to the Airport Land Use Commission for review and comment before approval if located in the Referral Area.

Exceptions: Minor development projects and zoning changes that are unlikely to create airport environs compatibility problems are excepted from ALUC review. Specific exceptions are as noted below:

A. Additions. Additions to existing single-family residential structures which do not increase the number of living units on the property.

B. Replacement. Replacement of existing single-family residences destroyed by fire, earthquake, or other natural causes which do not increase the original number of living units on the property.

C. Single-Family. Single residential structures by owner/builders on individual lots outside the Traffic Pattern Zone.

D. Two Units or Less. Residential subdivisions of two or less units per gross acre outside the Traffic Pattern Zone.

E. Non-Residential. All non-residential developments of 10,000 square feet building area or less outside the Traffic Pattern Zone, but within the Overflight Zone, except schools, hospitals, places of public assembly for more than 100 people or other similar institutional uses.

F. Outside Overflight Zone. All non-residential (i.e., commercial, industrial) developments outside the Overflight Zone but within the Referral Area boundary except schools, hospitals, places of public assembly for more than 100 people, and other similar institutional uses.

G. Within Traffic Pattern Zone. Additions of less than 500 square feet (sf) to existing non-residential structures that do not exceed adopted zoning height limits or the FAR Part 77 height limits within the Traffic Pattern Zone.

Policy SZ-8.1 **Wetland Restoration Projects.** Wetland restoration or enhancement projects must take into consideration the proximity of the airport and should provide information to the Airport Land Use Commission to determine whether the increase in the number of birds will pose safety problem.

4.3.3 - Noise/Land Use Compatibility Policies

The Noise/Land Use Compatibility Policies are:

Policy NC-1.1 **Land Use Compatibility.** The Airport Land Use Commission shall adopt the guidelines contained in Tables 3.3 and 4.1 for considering various types of land uses and zoning changes in the environs of Gnoss Field.

Policy NC-1.2 **CNEL Contours.** The Airport Land Use Commission shall adopt the CNEL noise contours illustrated on Figure 3.2, entitled "Flight Tracks/Noise Contours" for Gnoss Field as the criteria for noise/land use compatibility decisions.

Policy NC-1.3 **CNEL Contour Updates.** The noise contours may be updated and/or revised as warranted based on changes in aircraft technology, flight operational patterns, noise characteristics, and methodology for calculating CNELs.

Policy NC-1.4 **Residential Land Use.** New residential development should be prohibited within the 60 dB CNEL noise contour.

Policy NC-1.5 **Noise Easements.** As a condition of approval, noise easements should be granted to the County or any zoning change or new residential development within the 55 dB or higher CNEL noise contour.

Policy NC-1.6 **Acoustical Study.** As a condition of approval, an acoustical study shall be required for any proposed new residential development within the 55 dB CNEL noise contour. Recommendations in the study regarding sound insulation shall be implemented.

Policy NC-1.7 **Noise/Land Use Compatibility.** The County General Services Department should work with the Aviation Commission to set up a reporting system for noise and safety complaints. A log of these complaints should be maintained and quarterly reports issued at meetings of the Aviation Commission.

4.3.4 - Special Circumstances

The Special Circumstances Policy is:

Policy SC-1.1 **Special Circumstances.** Any project or proposed development of any type which in the opinion of the Airport Manager, Aviation Commission, Division of Aeronautics, and/or the Federal Aviation Administration would have the potential to decrease aviation safety shall be referred to the Airport Land Use Commission for review. Further, any citizen shall be allowed to bring to the attention of the ALUC any project or development proposal which in his or her opinion warrants the ALUC's consideration.

APPENDIX A

California Airport Land Use Commission Law

AERONAUTICS LAW

STATE AERONAUTICS ACT

PUBLIC UTILITIES CODE

(CHAPTER 4, ARTICLE 3.5)

AIRPORT LAND USE COMMISSION

Creation; Membership; Selection

21670. (a) The Legislature hereby finds and declares that:

(1) It is in the public interest to provide for the orderly development of each public use airport in this state and the area surrounding these airports so as to promote the overall goals and objectives of the California airport noise standards adopted pursuant to Section 21669 and to prevent the creation of new noise and safety problems.

(2) It is the purpose of this article to protect public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses.

(b) In order to achieve the purposes of this article, every county in which there is located an airport which is served by a scheduled airline shall establish an airport land use commission. Every county, in which there is located an airport which is not served by a scheduled airline, but is operated for the benefit of the general public, shall establish an airport land use commission, except that the board of supervisors of the county may, after consultation with the appropriate airport operators and affected local entities and after a public hearing, adopt a resolution finding that there are no noise, public safety, or land use issues affecting any airport in the county which require the creation of a commission and declaring the county exempt from that requirement. The board shall, in this event, transmit a copy of the resolution to the Director of Transportation. For purposes of this section, "commission" means an airport land use commission. Each commission shall consist of seven members to be selected as follows:

(1) Two representing the cities in the county, appointed by a city selection committee comprised of the mayors of all the cities within that county, except that if there are any cities contiguous or adjacent to the qualifying airport, at least one representative shall be appointed therefrom. If there are no cities within a county, the number of representatives provided for by paragraphs (2) and (3) shall each be increased by one.

(2) Two representing the county, appointed by the board of supervisors.

(3) Two having expertise in aviation, appointed by a selection committee comprised of the managers of all of the public airports within that county.

(4) One representing the general public, appointed by the other six members of the commission.

(c) Public officers, whether elected or appointed, may be appointed and serve as members of the commission during their terms of public office.

(d) Each member shall promptly appoint a single proxy to represent him or her in commission affairs and to vote on all matters when the member is not in attendance. The proxy shall be designated in a signed written instrument which shall be kept on file at the commission offices, and the proxy shall serve at the pleasure of the appointing member. A vacancy in the office of proxy shall be filled promptly by appointment of a new proxy.

(e) A person having an "expertise in aviation" means a person who, by way of education, training, business, experience, vocation, or avocation has acquired and possesses particular knowledge of, and familiarity with, the function, operation,

and role of airports, or is an elected official of a local agency which owns or operates an airport. The commission shall be constituted pursuant to this section on and after March 1, 1988.

Action by Designated Body Instead of Commission

21670.1. (a) Notwithstanding any other provision of this article, if the board of supervisors and the city selection committee of mayors in the county each makes a determination by a majority vote that proper land use planning can be accomplished through the actions of an appropriately designated body, then the body so designated shall assume the planning responsibilities of an airport land use commission as provided for in this article, and a commission need not be formed in that county.

(b) A body designated pursuant to subdivision (a) which does not include among its membership at least two members having an expertise in aviation, as defined in subdivision (e) of Section 21670, shall, when acting in the capacity of an airport land use commission, be augmented so that that body, as augmented, will have at least two members having that expertise. The commission shall be constituted pursuant to this section on and after March 1, 1988.

Applicability to Counties Having Over 4 Million Population

21670.2. Sections 21670 and 21670.1 do not apply to counties of more than 4 million population. In such counties, the county regional planning commission has the responsibility for coordinating the airport planning of public agencies within the county. In instances where impasses result relative to this planning, an appeal may be made to the county regional planning commission by any public agency involved. The action taken by the county regional planning commission on such an appeal may be overruled by a four-fifths vote of the governing body of a public agency whose planning led to the appeal.

Airport Owned by a City, District, or County; Appointment of Certain Members by Cities and Counties

21671. In any county where there is an airport operated for the general public which is owned by a city or district in another county or by another county, one of the representatives provided by paragraph (1) of subdivision (b) of Section 21670 shall be appointed by the city selection committee of mayors of the cities of the county in which the owner of that airport is located, and one of the representatives provided by paragraph (2) of subdivision (b) of Section 21670 shall be appointed by the board of supervisors of the county in which the owner of that airport is located.

Term of Office; Removal of Members; Vacancies; Compensation; Staff Assistance; Meetings

21671.5. (a) Except for the terms of office of the members of the first commission, the term of office of each member shall be four years and until the appointment and qualification of his or her successor. The members of the first commission shall classify themselves by lot so that the term of office of one member is one year, of two members is two years, of two members is three years, and of two members is four years. The body which originally appointed a member whose term has expired shall appoint his or her successor for a full term of four years. Any member may be removed at any time and without cause by the body appointing him or her. The expiration date of the term of office of each member shall be the first Monday in May in the year in which his or her term is to expire.

Any vacancy in the membership of the commission shall be filled for the unexpired term by appointment by the body which originally appointed the member whose office has become vacant. The chairperson of the commission shall be selected by the members thereof.

(b) Compensation, if any, shall be determined by the board of supervisors.

(c) Staff assistance, including the mailing of notices and the keeping of minutes, and necessary quarters, equipment, and supplies shall be provided by the county. The usual and necessary operating expenses of the commission shall be a county charge.

(d) Notwithstanding any other provisions of this article, the commission shall not employ any personnel either as employees or independent contractors without the prior approval of the board of supervisors.

(e) The commission shall meet at the call of the commission chairperson or at the request of the majority of the commission members. A majority of the commission members shall constitute a quorum for the transaction of business. No action shall be taken by the commission except by the recorded vote of a majority of the full membership.

(f) The commission may establish a schedule of fees for reviewing and processing proposals and for providing the copies of land use plans, as required by subdivision (d) of Section 21675. Those fees shall be charged to the proponents of actions, regulations, or permits, shall not exceed the estimated reasonable cost of providing the service, and shall be imposed pursuant to Chapter 13 (commencing with Section 54990) of Part 1 of Division 2 of Title 5 of the Government Code. After June 30, 1991, a commission which has not adopted the comprehensive land use plan required by Section 21675 shall not charge fees pursuant to this subdivision until the commission adopts the plan.

Rules and Regulations

21672. Each commission shall adopt rules and regulations with respect to the temporary disqualification of its members from participating in the review or adoption of a proposal because of conflict of interest and with respect to appointment of substitute members in such cases.

Initiation of Proceedings for Creation by Owner of Airport

21673. In any county not having a commission or a body designated to carry out the responsibilities of a commission, any owner of a public airport may initiate proceedings for the creation of a commission by presenting a request to the board of supervisors that a commission be created and showing the need therefor to the satisfaction of the board of supervisors.

Powers and Duties

21674. The commission has the following powers and duties, subject to the limitations upon its jurisdiction set forth in Section 21676:

(a) To assist local agencies in ensuring compatible land uses in the vicinity of all new airports and in the vicinity of existing airports to the extent that the land in the vicinity of those airports is not already devoted to incompatible uses.

(b) To coordinate planning at the state, regional, and local levels so as to provide for the orderly development of air transportation, while at the same time protecting the public health, safety, and welfare.

(c) To prepare and adopt an airport land use plan pursuant to Section 21675.

(d) To review the plans, regulations, and other actions of local agencies and airport operators pursuant to Section 21676.

(e) The powers of the commission shall in no way be construed to give the commission jurisdiction over the operation of any airport.

(f) In order to carry out its responsibilities, the commission may adopt rules and regulations consistent with this article.

Land Use Plan

21675. (a) Each commission shall formulate a comprehensive land use plan that will provide for the orderly growth of each public airport and the area surrounding the airport within the jurisdiction of the commission, and will safeguard the general welfare of the inhabitants within the vicinity of the airport and the public in general. The commission plan shall include a long-range master plan that reflects the anticipated growth of the airport during at least the next 20 years. In formulating a land use plan, the commission may develop height restrictions on buildings, may specify use of land, and may determine building standards, including soundproofing adjacent to airports, within the planning area. The comprehensive land use plan shall be reviewed as often as necessary in order to accomplish its purposes, but shall not be amended more than once in any calendar year.

(b) The commission may include, within its plan formulated pursuant to subdivision (a), the area within the jurisdiction of the commission surrounding any federal military airport for all the purposes specified in subdivision (a). This subdivision does not give the commission any jurisdiction or authority over the territory or operations of any military airport.

(c) The planning boundaries shall be established by the commission after hearing and consultation with the involved agencies.

(d) The commission shall submit to the Division of Aeronautics of the department one copy of the plan and each amendment to the plan.

Date of adoption; review of actions; approval or disapproval

21675.1. (a) By June 30, 1991, each commission shall adopt the comprehensive land use plan required pursuant to Section 21675.

(b) Until a commission adopts a comprehensive land use plan, a city or county shall first submit all actions, regulations, and permits within the vicinity of a public airport to the commission for review and approval. Before the commission approves or disapproves any actions, regulations, or permits, the commission shall give public notice in the same manner as the city or county is required to give for those actions, regulations, or permits. As used in this section, "vicinity" means land which will be included or reasonably could be included within the plan. If the commission has not designated a study area for the plan, then "vicinity" means land within two miles of the boundary of a public airport.

(c) The commission may approve an action, regulation, or permit if it finds, based on substantial evidence in the record, all of the following:

(1) The commission is making substantial progress toward the completion of the plan.

(2) There is a reasonable probability that the action, regulation, or permit will be consistent with the plan being prepared by the commission.

(3) There is little or no probability of substantial detriment to or interference with the future adopted plan if the action, regulation, or permit is ultimately inconsistent with the plan.

(d) If the commission disapproves an action, regulation, or permit, the commission shall notify the city or county. The city or county may overrule the commission, by a two-thirds vote of its governing body, if it makes specific findings that the proposed action, regulation, or permit is consistent with the purposes of this article, as stated in Section 21670.

(e) If a city or county overrules the commission pursuant to subdivision (d), that action shall not relieve the city or county from further compliance with this article after the commission adopts the plan.

(f) If a city or county overrules the commission pursuant to subdivision (d) with respect to a publicly owned airport that the city or county does not operate, the operator of the airport shall be immune from liability for damages to property or personal injury from the city's or county's decision to proceed with the action, regulation, or permit.

(g) A commission may adopt rules and regulations which exempt any ministerial permit for single-family dwellings from the requirements of subdivision (b) if it makes the findings required pursuant to subdivision (c) for the proposed rules and regulations, except that the rules and regulations may not exempt either of the following:

(1) More than two single-family dwellings by the same applicant within a subdivision prior to June 30, 1991.

(2) Single-family dwellings in a subdivision where 25 percent or more of the parcels are undeveloped.

Failure to approve or disapprove

21675.2. (a) If a commission fails to act to approve or disapprove any actions, regulations, or permits within 60 days of receiving the request pursuant to Section 21675.1, the applicant or his or her representative may file an action pursuant to Section 1094.5 of the Code of Civil Procedure to compel the commission to act, and the court shall give the proceedings preference over all other actions or proceedings, except previously filed pending matters of the same character.

(b) The action, regulation, or permit shall be deemed approved only if the public notice required by this subdivision has occurred. If the applicant has provided seven days advance notice to the commission of the intent to provide public notice pursuant to this subdivision, then, not earlier than the date of the expiration of the time limit established by Section 21675.1, an applicant may provide the required public notice. If the applicant chooses to provide public notice, that notice shall include a description of the proposed action, regulation, or permit substantially similar to the descriptions which are commonly used in public notices by the commission, the location of any proposed development, the application number, the name and address of the commission, and a statement that the action, regulation, or permit shall be deemed approved if the commission has not acted within 60 days. If the applicant has provided the public notice specified in this subdivision, the time limit for action by the commission shall be extended to 60 days after the public notice is provided. If the applicant provides notice pursuant to this section, the commission shall refund to the applicant any fees which were collected for providing notice and which were not used for that purpose.

(c) Failure of an applicant to submit complete or adequate information pursuant to Sections 65943 to 65946, inclusive, of the Government Code, may constitute grounds for disapproval of actions, regulations, or permits.

(d) Nothing in this section diminishes the commission's legal responsibility to provide, where applicable, public notice and hearing before acting on an action, regulation, or permit.

Review of Local General Plans

21676. (a) Each local agency whose general plan includes areas covered by an airport land use commission plan shall, by July 1, 1983, submit a copy of its plan or specific plans to the airport land use commission. The commission shall determine by August 31, 1983, whether the plan or plans are consistent or inconsistent with the commission's plan. If the plan or plans are inconsistent with the commission's plan, the local agency shall be notified and that local agency shall have another hearing to reconsider its plans. The local agency may overrule the commission after such hearing by a two-thirds vote of its governing body if it makes specific findings that the proposed action is consistent with the purposes of this article stated in Section 21670.

(b) Prior to the amendment of a general plan or specific plan, or the adoption or approval of a zoning ordinance or building regulation within the planning boundary established by the airport land use commission pursuant to Section 21675, the local agency shall first refer the proposed action to the commission. If the commission determines that the proposed action is inconsistent with the commission's plan, the referring agency shall be notified. The local agency may, a public hearing, overrule the commission by a two-thirds vote of its ning body if it makes specific findings that the proposed action is consistent the purposes of this article stated in Section 21670.

c) Each public agency owning any airport within the boundaries of an airport land use commission plan shall, prior to modification of its airport master plan, refer such proposed change to the airport land use commission. If the commission determines that the proposed action is inconsistent with the commission's plan,

the referring agency shall be notified. The public agency may, after a public hearing, overrule the commission by a two-thirds vote of its governing body if it makes specific findings that the proposed action is consistent with the purposes of this article stated in Section 21670.

(d) Each commission determination pursuant to subdivision (b) or (c) shall be made within 60 days from the date of referral of the proposed action. If a commission fails to make the determination within that period, the proposed action shall be deemed consistent with the commission's plan.

Review of Local Plans

21676.5. (a) If the commission finds that a local agency has not revised its general plan or specific plan or overruled the commission by a two-thirds vote of its governing body after making specific findings that the proposed action is consistent with the purposes of this article as stated in Section 21670, the commission may require that the local agency submit all subsequent actions, regulations, and permits to the commission for review until its general plan or specific plan is revised or the specific findings are made. If, in the determination of the commission, an action, regulation, or permit of the local agency is inconsistent with the commission plan, the local agency shall be notified and that local agency shall hold a hearing to reconsider its plan. The local agency may overrule the commission after the hearing by a two-thirds vote of its governing body if it makes specific findings that the proposed action is consistent with the purposes of this article as stated in Section 21670.

(b) Whenever the local agency has revised its general plan or specific plan or has overruled the commission pursuant to subdivision (a), the proposed action of the local agency shall not be subject to further commission review, unless the commission and the local agency agree that individual projects shall be reviewed by the commission.

Marin County Override Provisions

21677. Notwithstanding Section 21676, any public agency in the County of Marin may overrule the Marin County Airport Land Use Commission by a majority vote of its governing body.

Airport Owner's Immunity

21678. With respect to a publicly owned airport that a public agency does not operate, if the public agency pursuant to Section 21676 or 21676.5 overrides a commission's action or recommendation, the operator of the airport shall be immune from liability for damages to property or personal injury caused by or resulting directly or indirectly from the public agency's decision to override the commission's action or recommendation.

Court Review

21679. (a) In any county in which there is no airport land use commission or other body designated to assume the responsibilities of an airport land use commission, or in which the commission or other designated body has not adopted an airport land use plan, an interested party may initiate proceedings in a court of competent jurisdiction to postpone the effective date of a zoning change, a zoning variance, the issuance of a permit, or the adoption of a regulation by a local agency, which directly affects the use of land within one mile of the boundary of a public airport within the county.

(b) The court may issue an injunction which postpones the effective date of the zoning change, zoning variance, permit, or regulation until the governing body of the local agency which took the action does one of the following:

(1) In the case of an action which is a legislative act, adopts a resolution declaring that the proposed action is consistent with the purposes of this article stated in Section 21670.

(2) In the case of an action which is not a legislative act, adopts a resolution making findings based on substantial evidence in the record that the proposed action is consistent with the purposes of this article stated in Section 21670.

(3) Rescinds the action.

(4) Amends its action to make it consistent with the purposes of this article stated in Section 21670, and complies with either paragraph (1) or (2) of this subdivision, whichever is applicable.

(c) The court shall not issue an injunction pursuant to subdivision (b) if the local agency which took the action demonstrates that the general plan and any applicable specific plan of the agency accomplishes the purposes of an airport land use plan as provided in Section 21675.

(d) An action brought pursuant to subdivision (a) shall be commenced within 30 days of the decision or within the appropriate time periods set by Section 21167 of the Public Resources Code, whichever is longer.

(e) If the governing body of the local agency adopts a resolution pursuant to subdivision (b) with respect to a publicly owned airport that the local agency does not operate, the operator of the airport shall be immune from liability for damages to property or personal injury from the local agency's decision to proceed with the zoning change, zoning variance, permit, or regulation.

(f) As used in this section, "interested party" means any owner of land within two miles of the boundary of the airport or any organization with a demonstrated interest in airport safety and efficiency.

Action to postpone effective date of zoning change, etc.

21679.5. (a) Until June 30, 1991, no action pursuant to Section 21679 to postpone the effective date of a zoning change, a zoning variance, the issuance of a permit, or the adoption of a regulation by a local agency, directly affecting the use of land within one mile of the boundary of a public airport, shall be commenced in any county in which the commission or other designated body has not adopted an airport land use plan, but is making substantial progress toward the completion of the plan.

(b) If a commission has been prevented from adopting the comprehensive land use plan by June 30, 1991, or if the adopted plan could not become effective, because of a lawsuit involving the adoption of the plan, the June 30, 1991, date in subdivision (a) shall be extended by the period of time during which the lawsuit was pending in a court of competent jurisdiction.

(c) Any action pursuant to Section 21679 commenced prior to January 1, 1990, in a county in which the commission or other designated body has not adopted an airport land use plan, but is making substantial progress toward the completion of the plan, which has not proceeded to final judgment, shall be held in abeyance until June 30, 1991. If the commission or other designated body adopts an airport land use plan on or before June 30, 1991, the action shall be dismissed. If the commission or other designated body does not adopt an airport land use plan on or before June 30, 1991, the plaintiff or plaintiffs may proceed with the action.

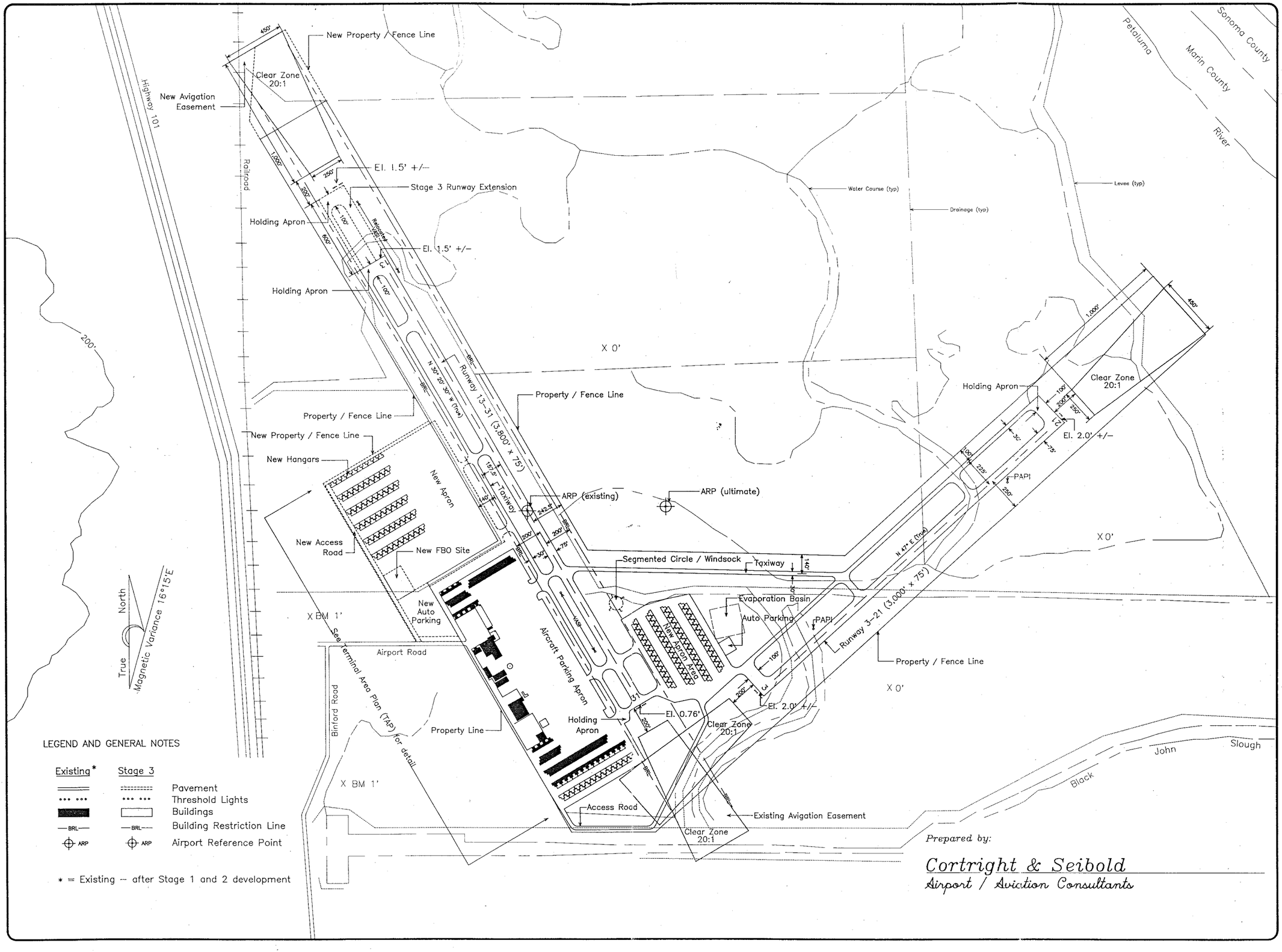
(d) An action to postpone the effective date of a zoning change, a zoning variance, the issuance of a permit, or the adoption of a regulation by a local agency, directly affecting the use of land within one mile of the boundary of a public airport for which an airport land use plan has not been adopted by June 30, 1991, shall be commenced within 30 days of June 30, 1991, or within 30 days of the decision by the local agency, or within the appropriate time periods set by Section 21167 of the Public Resources Code, whichever date is later.

APPENDIX B

Gnoss Field Airport Layout Plan Drawings

AIRPORT LAYOUT PLAN – STAGE 3
Gnoss Field
Marin County, California

REVISIONS	BY
CAD:GFALPC:11,542	



LEGEND AND GENERAL NOTES

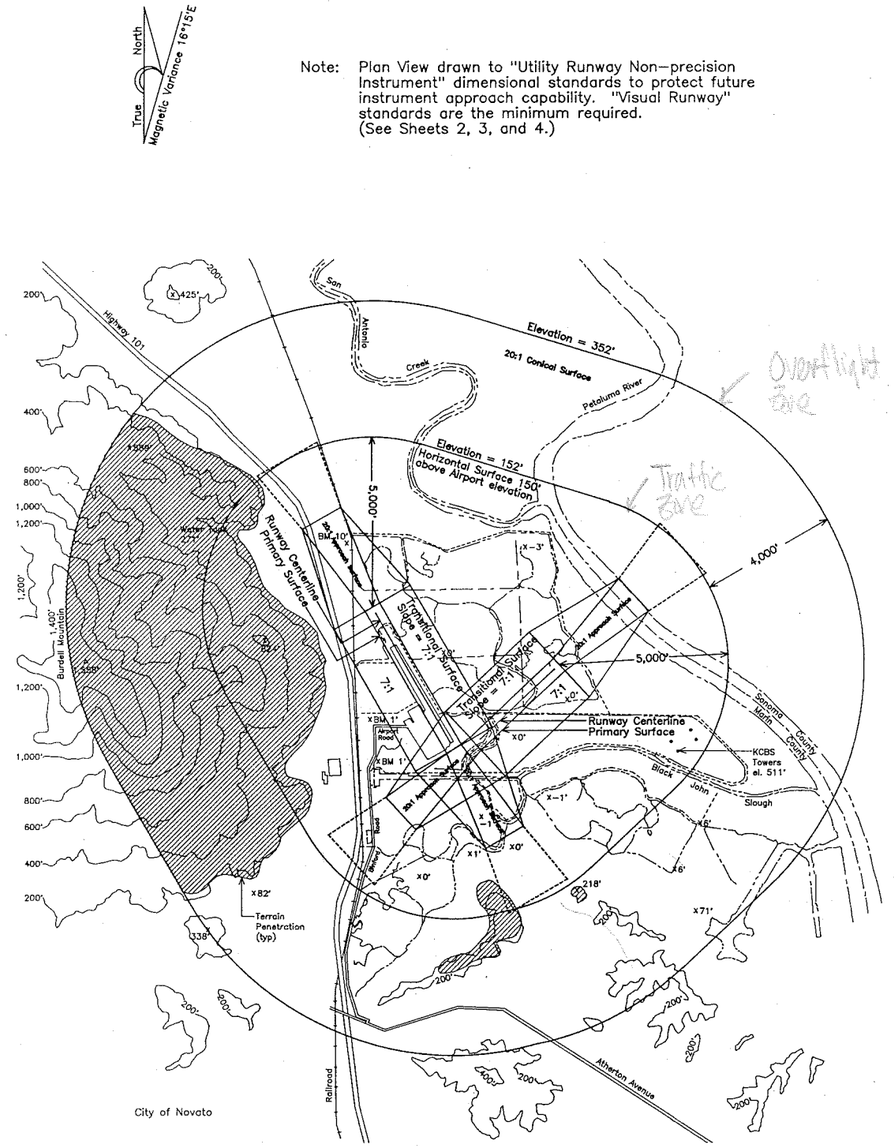
Existing*	Stage 3	
		Pavement
		Threshold Lights
		Buildings
BRL	BRL	Building Restriction Line
ARP	ARP	Airport Reference Point

* = Existing – after Stage 1 and 2 development

Prepared by:

Cortright & Seibold
Airport / Aviation Consultants

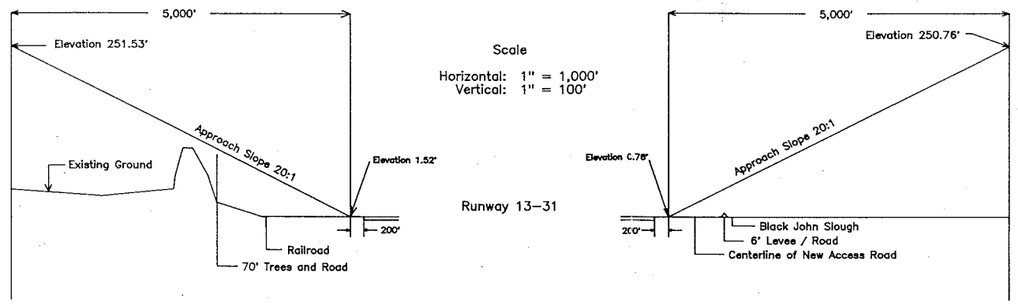
DRAWN	emr
CHECKED	djc/sla
DATE	31 July, 1989
SCALE	1" = 300'
JOB NO.	CS-111
SHEET	4
OF	6 SHEETS



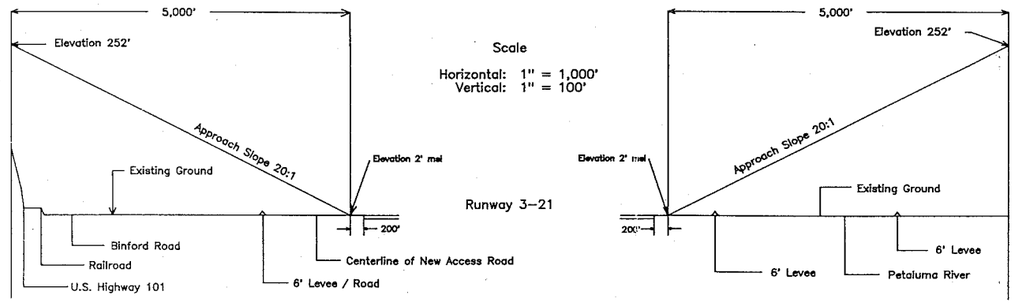
PLAN VIEW
FAR PART 77 SURFACES

Scale: 1" = 2,000'

APPROACH PROFILES



APPROACH PROFILES



Prepared by:

Cortright & Seibold
Airport / Aviation Consultants

REVISIONS	BY
CAD:GFACZP:12,000	

APPROACH AND CLEAR ZONE PLAN
Gnoss Field
Marin County, California

DRAWN	emr
CHECKED	djc/ele
DATE	31 July, 1989
SCALE	as shown
JOB NO.	CS-111
SHEET	6
OF	6 SHEETS

APPENDIX C

Technical References List

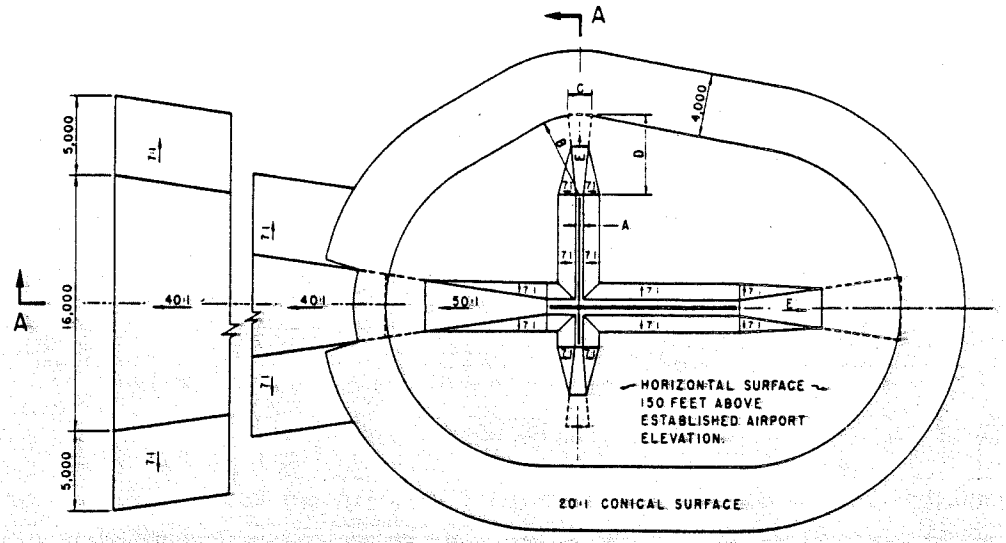
Appendix C

TECHNICAL REFERENCES

- Federal Aviation Administration (FAA) Advisory Circular (AC) No. 150/5020-1, "Noise Control and Compatibility Planning for Airports," 5 August, 1983.
- Federal Aviation Administration (FAA) Advisory Circular (AC) No. 150/5070-6A, "Airport Master Plans," June, 1985.
- Federal Aviation Administration (FAA) Advisory Circular (AC) No. 150/5380-13, "Airport Design," 29 September, 1989.
- Federal Aviation Administration (FAA) Advisory Circular (AC) No. 70/7460-1G, "Obstruction Marking and Lighting," 27 October, 1985.
- Federal Aviation Administration (FAA) Handbook 8260.3B, "United States Standards for Terminal Instrument Procedures (TERPS)," July, 1976.
- Federal Aviation Administration (FAA) "Airport Environmental Handbook," Order 5050.4A
- State of California, "State CEQA Guidelines," January, 1986.
- Federal Aviation Administration (FAA), FAR Part 77, "Objects Affecting Navigable Airspace," January, 1985.
- Division of Aeronautics, Caltrans, "Airport Land Use Planning Handbook," July, 1983.
- Airport Master Plan, Marin County Airport, Cortright & Seibold, 31 July, 1989.
- Environmental Impact Report/Environmental Assessment (EIR/EA), Marin County Airport, Cortright & Seibold, 28 April, 1989.

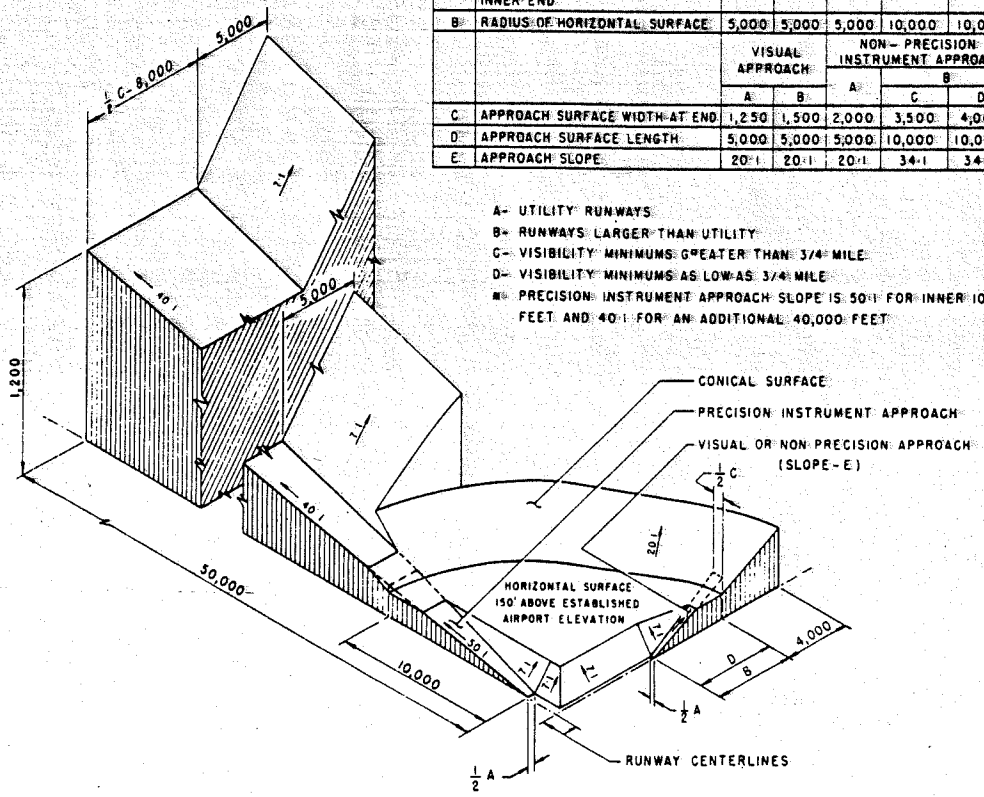
APPENDIX D

Federal Aviation Regulations Part 77 Criteria



DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B		
					C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B		
					C	D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

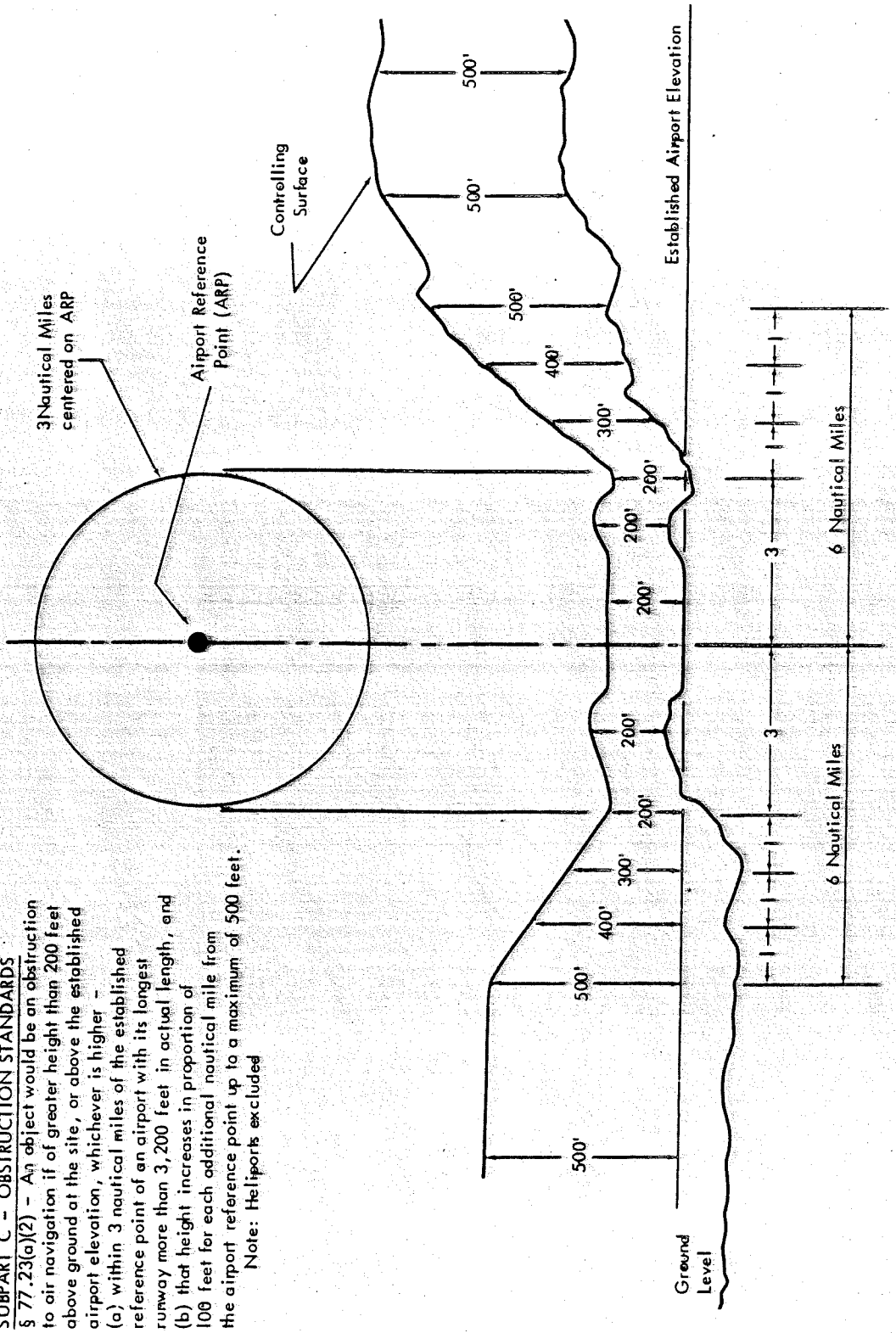
A- UTILITY RUNWAYS
B- RUNWAYS LARGER THAN UTILITY
C- VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D- VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
* PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



ISOMETRIC VIEW OF SECTION A-A

§ 77.25 CIVIL AIRPORT IMAGINARY SURFACES

§ 77.23(a)(2) - NEAR AIRPORTS



SUBPART C – OBSTRUCTION STANDARDS

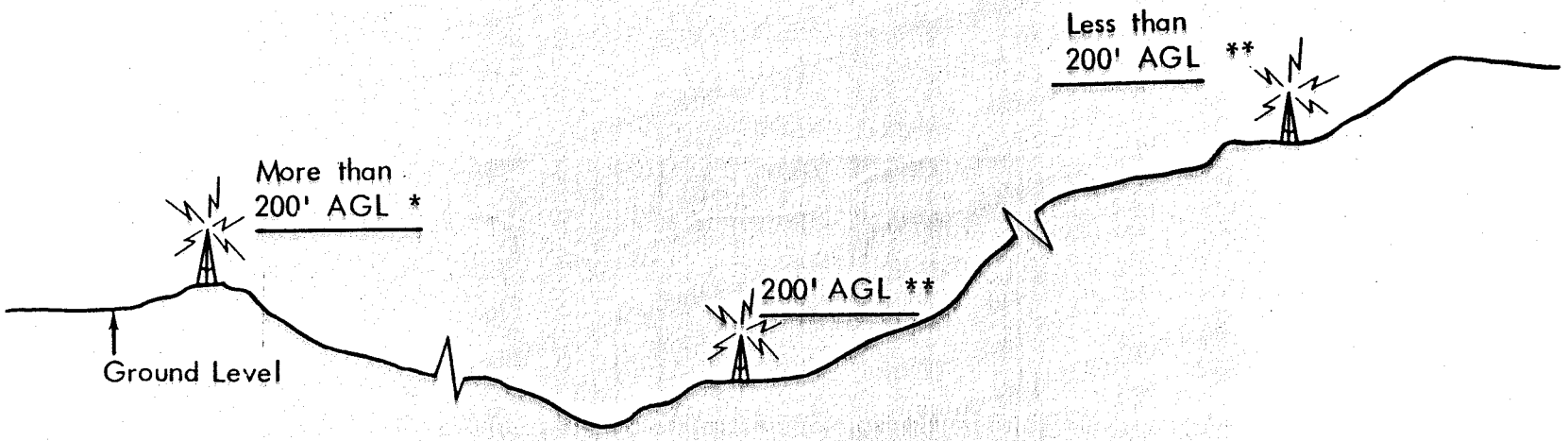
§ 77.23(a)(2) – An object would be an obstruction to air navigation if of greater height than 200 feet above ground at the site, or above the established airport elevation, whichever is higher –

(a) within 3 nautical miles of the established reference point of an airport with its longest runway more than 3,200 feet in actual length, and

(b) that height increases in proportion of 100 feet for each additional nautical mile from the airport reference point up to a maximum of 500 feet.

Note: Heliports excluded

§77.13(a)(1) - Notice Requirement Anywhere



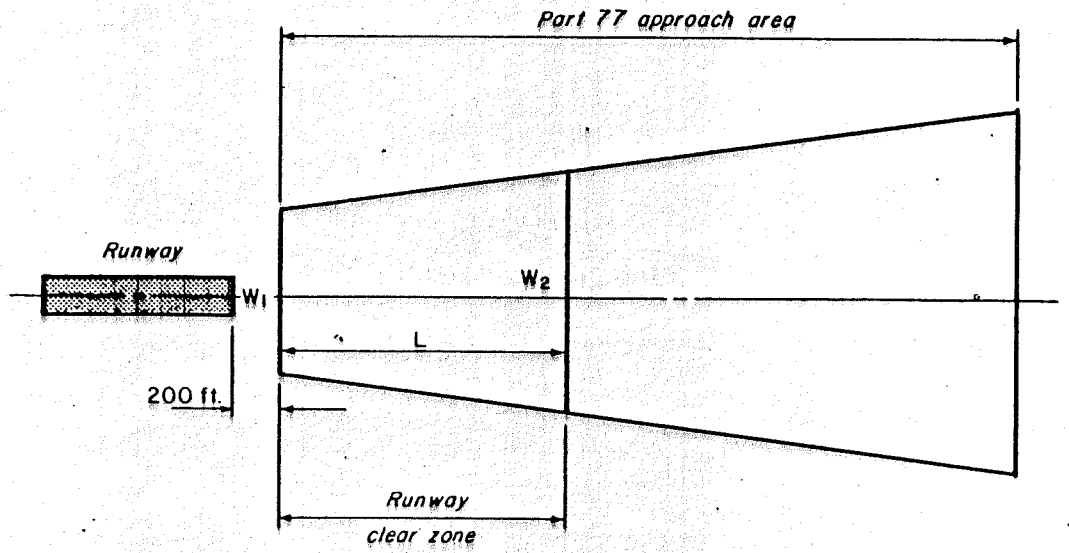
* Notice Required
** Notice Not Required

SUBPART B - NOTICE OF CONSTRUCTION OR ALTERATION

§77.13(a)(1) - A notice is required for any proposed construction or alteration that would be more than 200 feet in height above the ground level at its site.

APPENDIX E

Figures and Tables from California Airport Land Use Planning Handbook



CATEGORY	W1	W2	L
1. Precision instrument	1,000	1,750	2,500
2. Nonprecision instrument for larger than utility with visibility minimums as low as ¾ mi	1,000	1,510	1,700
3. Nonprecision instrument for larger than utility with visibility minimums greater than ¾ mi	1,000	1,425	1,700
4. Visual approach for larger than utility	1,000	1,100	1,000
5. Nonprecision approach for utility	500	800	1,000
6. Visual approach utility	250	450	1,000

SOURCE: Federal Aviation Administration.

Figure IV - 2

RUNWAY CLEAR ZONES

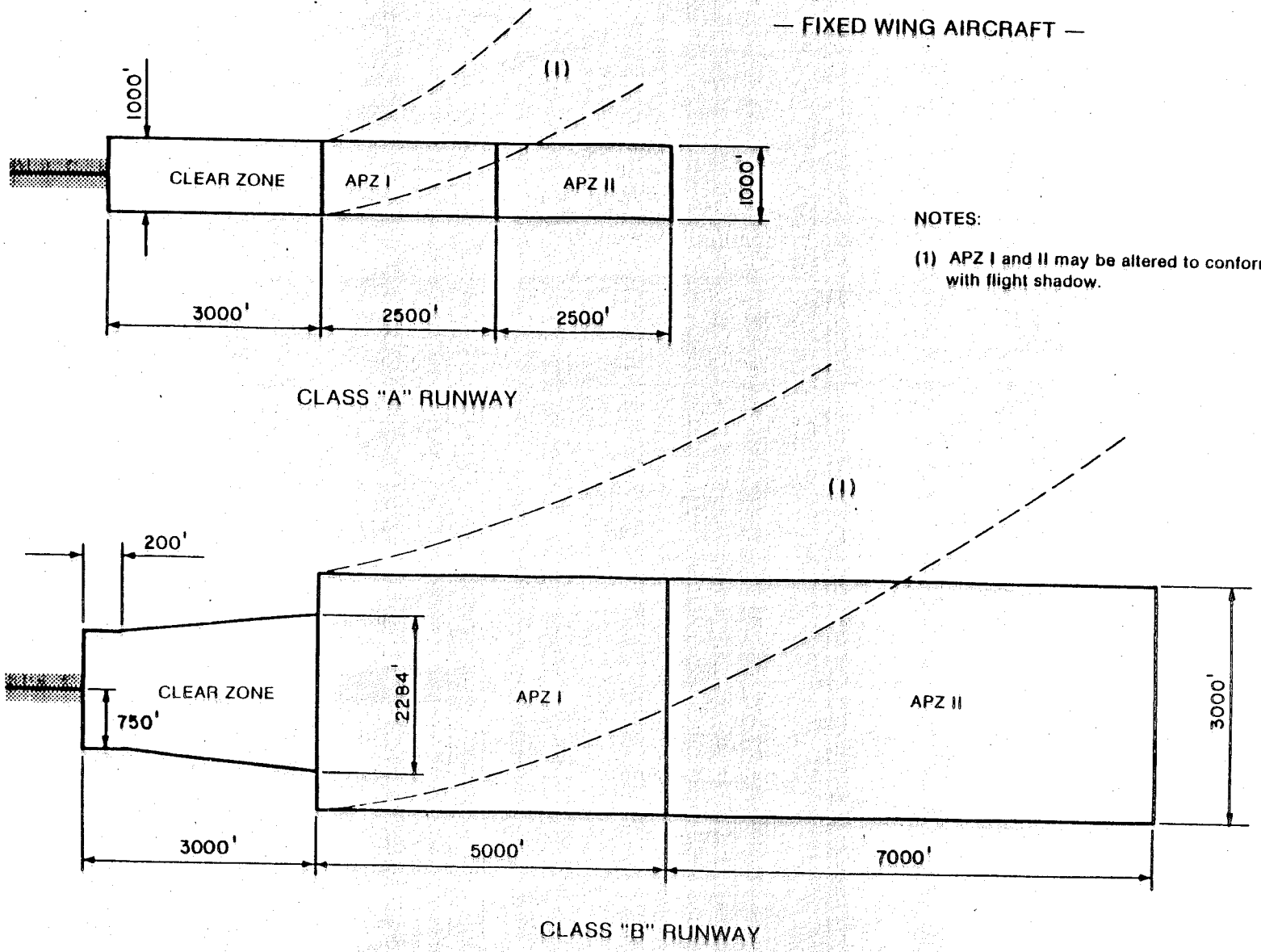


Figure IV - 6

MILITARY ACCIDENT POTENTIAL ZONES

Category A & B Aircraft

Table IV-13

Examples Of Land Use Guidelines For Safety Zones
(Source: Various ALUC Plans)

SAFETY AREA	DENSITY	COVERAGE	LAND USE
o Clear Zone o Inner Rectangular Safety Area	No people No more than 10 persons per acre - "at any one time" - "on a regular basis" - "over long periods" No more than 25 persons per acre at any time	No structures	No residential No petroleum or explosives No above grade power lines
o Part 77 Approach Surface o Outer Rectangular Safety Area o APZ I	No more than 10 people "on an annual average" " per acre" No more than 25 persons "per acre" - "at any time" - "over long periods" - "over 24 hours" No more than 50 persons per acre - "for 2 hours" - "at any time" Residential: no more than - 1 du per 5 acres - 1 du per acre - 1 du per 3 acres - 2 s.f. du per acre - 2 du per 3 acres - 4 du per gross acre - 2 1/2 acre lots, minimum No more than 100-150 people in a single building (AICUZ)	Maximum structural coverage must be less than: - 20% - 25% - 30% - 50% (AICUZ)	Low density residential No multi-family No hotels or motels No restaurants or bars No schools, hospitals or government services No concert halls or auditoriums No industries involved in flammable materials or processes Commercial and industrial generally OK if density and lot coverage restrictions applied
o Outer Part 77 Approach Surface o APZ II	No more than 50 persons over long periods No more than 4 du per acre No more than 200-300 people in a single building (AICUZ)*	Maximum structural coverage must be less than: - 30% - 50% - 75% (AICUZ)	Generally same as above.
o Overflight Zone o Traffic Pattern	No more than 3 du per acre (under Traffic Pattern)	Maximum structural coverage must be less than - 20% (Traffic Pattern)	No schools, sports arenas, auditoriums, or outdoor amphitheaters No industries involved with flammable materials or processes

Legend

du-dwelling unit(s)

*most recent guidelines do not specify numbers of persons per building; however, intent is to avoid large concentrations of persons in a single structure

Table III-3

Suggested Land Use Criteria For Noise Compatibility

TYPE OF AIRPORT/ LAND USE	CNEL Range 55-60	60-65	65-70	70-75	75-80
Air Carrier and Military					
Residential/ Lodgings		- Potential for annoyance exists; identify high complaint areas - Determine whether sound insulation requirements should be established for these areas. - Require acoustical reports for all new construction. - Noise easements should be required for new construction.	- Discourage new single family dwellings - Prohibit mobile homes - New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation is included in the design. - Noise easements should be required for new construction - Develop policies for "infill"	- New construction or development of residential uses should not be undertaken. - New hotels and motels may be permitted after an analysis of noise reduction requirements is made and needed noise insulation is included in the design.	- New hotels and motels should be discouraged.
General Aviation					
Residential/ Lodgings	- Potential for annoyance exists; identify high complaint areas - Determine whether sound insulation requirements should be established for these areas - Noise easements should be required for new construction. - Discourage residential use underneath the flight pattern.	- Discourage new single family dwellings - Prohibit mobile homes. - New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation is included in the design. - Noise easements should be required. - Develop policies for "infill"	- New construction or development of residential uses should not be undertaken. - New hotels and motels may be permitted after an analysis of noise reduction requirements is made and needed noise insulation is included in the design.	- New hotels and motels should be discouraged.	
All Airports					
Public/ Institutional		- Satisfactory with little noise impact and requiring no special noise insulation requirements for new construction.	- Discourage institutional uses. - If no other alternative location is available, new construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation is included in the design.	- No new institutional uses should be undertaken.	

Table III-3 (Cont.)

CNEL Range

TYPE OF AIRPORT/ LAND USE	65-70	70-75	75-80	80 +
Commercial	- Satisfactory, with little noise impact and requiring no special noise insulation for new construction.	- New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation features included in the design. Noise reduction levels of 25-30db will be required.	- Same as 70-75 CNEL.	- New construction or development should not be undertaken unless related to airport activities or services. Conventional construction will generally be inadequate and special noise insulation features should be included in the construction.
Industrial		- Satisfactory, with little noise impact and requiring no special noise insulation requirements for new construction.	- New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation features included in the design. - Measures to achieve noise reduction of 25-35db must be incorporated in portions of building where the public is received and in office areas.	- New construction or development should not be undertaken unless related to airport activities or services. Conventional construction will generally be inadequate and special noise insulation features should be included in the construction.
Recreation/ Open Space	- Satisfactory, with little noise impact and requiring no special noise insulation requirements for new construction. - Outdoor music shells and amphitheater should not be permitted	- Parks, spectator sports, golf courses and agricultural generally satisfactory with little noise impact. - Nature areas for wildlife and zoos should not be permitted.	- Land uses involving concentrations of people (spectator sports and some recreational facilities) or of animals (livestock farming and animal breeding) should not be permitted	

APPENDIX F

Noise Analysis of Aircraft/Airport Operations

ANALYSIS OF AIRCRAFT/AIRPORT OPERATIONS

GNOSS FIELD AIRPORT

MARIN COUNTY, CALIFORNIA

PREPARED FOR

CORTRIGHT & SEIBOLD
760 DOMAINE COURT
OAKLEY, CA 94561

REVISED
SEPTEMBER 13, 1990

PREPARED BY

BROWN-BUNTIN ASSOCIATES, INC.
FAIR OAKS, CALIFORNIA

BBA

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INTRODUCTION:

Brown-Buntin Associates, Inc. (BBA) has completed an analysis of aircraft/airport operations and related noise levels for Gnoss Field to determine the noise impacts of straight-in arrivals on runway 31. This analysis has been prepared in response to a proposal to restrict straight-in arrivals based upon perceived noise problems south of Gnoss Field.

CRITERIA FOR ACCEPTABLE NOISE EXPOSURE:

The noise descriptors used in this analysis are the Community Noise Equivalent Level (CNEL[1]), the Sound Exposure Level (SEL) and the maximum A-weighted noise level due to a single aircraft noise event (L_{max}). The CNEL descriptor is a method of averaging single event noise levels over a typical 24-hour day, applying penalties to noise events occurring during evening (7 p.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) hours. CNEL is usually defined in terms of average annual conditions, so that the CNEL measured on a given day may be either less than or greater than the annual average.

CNEL is used by the California Division of Aeronautics to describe the noise impact boundary of California airports. A CNEL value of 65 decibels (dB) is the noise impact criterion for noise-sensitive land uses, such as single and multi-family dwellings, trailer parks and schools. Such uses are considered compatible with airport/aircraft noise exposures of 65 dB CNEL or less.

The Federal Aviation Administration (FAA) uses the Day-Night Average Level (L_{dn}) to describe land use compatibility with respect to aircraft noise exposures. Like CNEL, the L_{dn} descriptor is a method of averaging aircraft noise levels over an annual average 24-hour period, except that the evening period defined by CNEL is included into the daytime hours, with no penalties assigned to those hours. The FAA airport/aircraft noise compatibility criterion for residential land uses is 65 dB L_{dn}.

The Airport Land Use Planning Handbook (Ref. 1), prepared for the California Division of Aeronautics as a reference and guide for local agencies, suggests that single family development should not be allowed within the 60 dB CNEL contour around general aviation airports. Where the existing background noise

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1. For explanation of these terms, see Appendix A.

levels are relatively low, the Airport Land Use Planning Handbook notes that the CNEL criterion may be "normalized" to account for the relative intrusiveness of aircraft noise over the quiet background conditions. On this basis, some jurisdictions have discouraged residential land use within the 55 dB CNEL contour for general aviation airports.

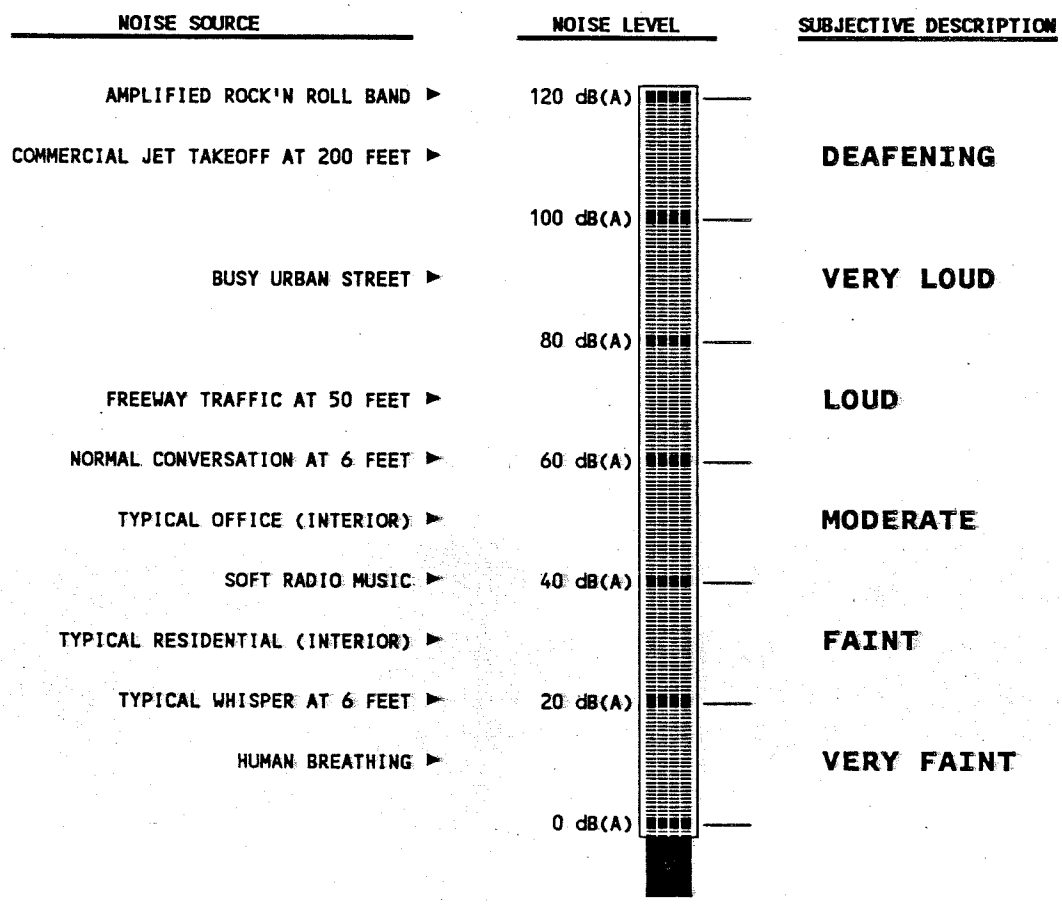
The maximum A-weighted noise level associated with a given noise event (L_{max}) is expressed in terms of decibels, A-weighted (dBA). The L_{max} is useful as an index of the relative noisiness of a given event, easily compared to other noise sources, such as passing trucks, lawnmowers, or ordinary conversation. Figure 1 illustrates typical maximum A-weighted noise levels of several community noise sources.

The importance of the L_{max} values described in this report to persons exposed to noise from aircraft operations can be judged by comparison to Figure 1. For example, an L_{max} exceeding 60 dBA could be expected to interfere with speech. Indoors, maximum noise levels exceeding 45 to 50 dBA could result in sleep disturbance. Levels of 80 to 90 dBA are comparable to the noise of a passing truck at a distance of about 50 feet.

L_{max} is used in this analysis to report noise levels experienced during a single aircraft operation to noise levels an individual may observe using a hand-held sound level meter. Estimated L_{max} values for civil aircraft at reference measurement locations have been reported by the FAA in Advisory Circular 36-3E.

The Sound Exposure Level (SEL) is a measure of the total noise level accumulated during a noise event. Defined as the level of the time-integrated A-weighted sound pressure level for a given time interval, based upon a reference of duration of one second, the SEL represents the total noise energy of a noise event as though it occurred in a one-second period. For noise events longer than one second, the SEL is a higher level than the L_{max}. For typical aircraft takeoffs and landings in the near vicinity of airports, the SEL would be 5 dB to 10 dB higher than the L_{max} for a given noise event.

FIGURE 1
EXAMPLES OF NOISE LEVELS



AIRCRAFT NOISE MEASUREMENT PROGRAM:

The noise measurement program used for the Gnoss Field noise impact analysis was designed to quantify cumulative (CNEL) and single event noise levels produced by aircraft in the vicinity immediately south of the airport.

A total of three (3) noise measurement locations were used during the study as shown by Figure 2. Sites 1 and 2 were used as long-term noise measurement sites to record single event and cumulative noise levels. Site 3 was used for single event noise measurements and aircraft observations.

At sites 1 and 2, noise measurements were made using Metrosonics Model dB604 Sound Level Analyzers fitted with Bruel & Kjaer (B&K) Type 4176 microphones.

At site 3, BBA staff used a B&K Type 2218 precision integrating sound level meter fitted with a B&K Type 4165 microphone. All instrumentation complied with specifications of the American National Standards Institute (ANSI) for Type 1 sound level measurement systems. Acoustical calibration was performed on each system prior to use with B&K Type 4230 calibrators certified to be within specified tolerances of reference calibration standards maintained by the National Bureau of Standards (NBS).

An additional aircraft observation site was established south of the airfield. This site was not useful for aircraft noise measurements, but was selected because it afforded a good view of aircraft operational procedures south of the airport. This site was used to record flight track use and aircraft operations which had the potential to produce noise levels which would be recorded by the monitoring units at sites 1 and 2.

The noise measurement program was conducted at sites 1 and 2 from May 8 to May 16, 1990. BBA staff observed aircraft operations at sites 3 and 4 on May 8-10; automated noise measurements were performed from May 8-16 at sites 1 and 2. Weather conditions during the measurement period included light wind with temperatures in the range of 75 to 85 degrees F, no clouds and low humidity.

RESULTS:

Table I summarizes measured CNEL values at sites 1 and 2. BBA used data collected during the aircraft observation period to separate probable aircraft noise events from other noise events such as local traffic, barking dogs, lawn care, etc. These data indicated that typical aircraft noise events exceeded 60 dB for 10 to 45 seconds. After the probable non-aircraft noise events were separated, CNEL values were recalculated to describe the noise contribution of aircraft noise impacts. These values are also shown by Table I.

TABLE I

MEASURED CNEL VALUES
South of Gnoss Field
May 9-15, 1990

Date	Site 1 CNEL, dB Overall	Site 1 CNEL, dB Aircraft*	Site 2 CNEL, dB Overall	Site 2 CNEL, dB Aircraft*
5/09/90	60.3	55.3	----	----
5/10/90	61.1	56.4	58.7	47.7
5/11/90	61.3	57.2	57.5	42.6
5/12/90	60.3	49.0	56.7	39.0
5/13/90	54.7	43.4	57.9	37.7
5/14/90	55.9	34.8	58.9	41.7
5/15/90	57.3	43.5	60.2	44.3

* Calculated from noise events presumed to be aircraft overflights.

Table II shows the measured single event noise levels due to aircraft as observed to affect sites 1, 2 and 3. An additional 48 aircraft operations were observed which failed to register as noise events at sites 1 and 2.

TABLE II

SINGLE EVENT NOISE LEVELS
For Identified Aircraft Overflights
At Monitoring Sites 1 and 2

Date	Time	RW	A/D	Aircraft	L_{max}, dB	SEL, dB	Comments
Site 1:							
5/09/90	14:11	31	A	Twin	73.8	82.0	Straight In
5/10/90	13:37	31	A	Twin	72.5	79.5	Straight In*
Site 2:							
5/09/90	12:20	13	D	Single	62.6	73.4	
	13:15	13	D	Single	59.2	70.4	
	13:37	13	A	Single	62.9	75.2	Uncertain data
	17:09	13	A	Single	70.1	78.8	
	17:27	13	D	Single	65.5	76.6	
	18:42	31	A	Single	62.3	69.7	Late Pattern Turn
5/10/90	12:22	13	D	Twin	65.8	70.8	Pattern Turn
	12:28	13	D	Twin	68.8	77.7	45^{o} Turn
	13:38	31	A	Twin	68.4	76.3	Straight In*

* Same Aircraft

The observed distribution of daytime aircraft operations on various flight tracks are given on Table III.

TABLE III

OBSERVED AIRCRAFT OPERATIONS
On Different Runways and Flight Tracks
Gnoss Field
May 8-10, 1990

Runway:	31	31	31	13	13	13
Operation:	Departure	Arrival	Arrival	Departure	Departure	Departure
Flight Track:	--	Pattern	Straight	Straight	45°	Pattern
No. Observed:	8	37	3	1	8	2

ANALYSIS:

According to the data in Table I, the overall CNEL values recorded at sites 1 & 2 during the study period were generally within acceptable limits for residential noise exposures. The CNEL values due to presumed aircraft operations were well within acceptable limits as defined by California and FAA regulations, and by the guidelines of the Airport Land Use Planning Handbook for general aviation airports. The mean presumed aircraft CNEL values were also below the most stringent interpretation of the Handbook guidelines for exceptionally quiet areas.

Maximum single event aircraft noise levels observed to be due to aircraft overflights were in the range of 68 to 72 dB at site 1, and from 72 to 74 dB at site 2. These noise levels are similar in magnitude to those produced during the passage of automobiles at 50 feet, as shown by Figure 1. Coincidentally, many of the noise events recorded at both locations which could not be correlated to aircraft operations were probably due to vehicle passages on local streets.

Nighttime noise events were determined from the automated noise monitoring system data. These data are summarized by Table IV. At site 1, there were up to 5 noise events during the hours of 8 p.m. to 7 a.m., while at site 2 there were as many as 4 during that time period. Maximum nighttime noise levels due

to presumed aircraft overflights ranged from 68 to 85 dB at site 1, and from 64 to 74 dB at site 2.

Only 2 presumed nighttime aircraft noise events could be correlated at sites 1 and 2, which means that most presumed aircraft noise events affected only a narrow area immediately adjacent to the flight tracks. The two exceptions occurred at nighttime, and produced maximum noise levels of about 69 dB at both sites.

TABLE IV

PRESUMED NIGHTTIME* AIRCRAFT NOISE EVENTS
South of Gnoss Field
May 8-16, 1990

Date	No. of Events Site 1	L_{max} Range, dB	No. of Events Site 2	L_{max} Range, dB	Correlation
5/08/90	5	68-85	--	----	No
5/09/90	3	69-72	0	----	No
5/10/90	3	69-70	1	69	No
5/11/90	3	69-70	2	69-74	2 Events
5/12/90	0	---	1	65	No
5/13/90	1	72	1	71	No
5/14/90	0	---	2	64-68	No
5/15/90	1	72	4	64-67	No

* For this analysis, nighttime hours were defined as 8 p.m. to 7 a.m.

During the daytime hours of May 8-10, 1990, BBA staff observed 59 aircraft operations south of Gnoss Field. Of these aircraft, 81% used runway 31, the majority of which were arrivals. The observed runway 13 operations were departures. A small percentage of runway 31 arrivals were straight-in. The observations indicated that most of the runway 13 departures used the recently-implemented 45 degree left turn noise abatement departure pattern.

The CNEL contours recently developed for the current Gnoss Field Master Plan did not reflect the use of the noise abatement departure flight track or any straight-in arrivals. To better describe the projected noise impacts of future operations at Gnoss Field, new CNEL contours depicting Year 2006 operations were prepared as part of this study. Flight tracks used in the modeling process are shown by Figure 2.

The Integrated Noise Model (INM) Version 3.9 (Reference 2) was used to prepare the revised noise exposure maps for the airport based upon the airport operational factors described in the Master Plan. The INM was developed for the FAA, and represents the federally-sanctioned and preferred method for analyzing aircraft/airport noise exposure. Version 3.9 is the most recent version of the INM available, and incorporates an updated data base of aircraft performance parameters and noise levels.

The INM was also used to determine if predicted noise levels were consistent with the single event noise levels measured during this study. The detailed grid analysis feature of the INM was used for to compare predicted and measured noise levels at sites 1-3, and it was determined that the INM reasonably predicted aircraft noise levels at sites 1 & 2.

Given that BBA was able to confirm only 11 noise-significant aircraft overflights at sites 1 & 2 on May 8-10, 1990, it is unlikely that all of the noise events which were presumed to be due to aircraft overflights were actually produced by aircraft. In fact, several noise events in morning and evening hours were identified by BBA staff as being due to vehicles passing on local roadways, which were about 150 feet from the microphone at site 1, and at least 500 feet from site 2. Therefore the estimated aircraft CNEL exposures at sites 1 and 2 are conservative, worst-case estimates.

CONCLUSIONS:

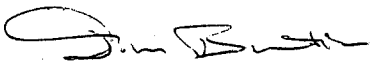
Overall CNEL values measured at sites 1 & 2 during the period of May 8-16, 1990, were within acceptable limits. The contribution of presumed aircraft noise events to those values was at most equal to the noise levels produced by non-aircraft noise sources, and in most cases was significantly less.

Single event noise levels attributed to aircraft operations during the period of May 8-16, 1990, were within the range of noise levels produced by other sources. None of the observed aircraft noise events was exceptional in terms

of sound level or frequency of occurrence. Although unusually loud aircraft noise events may occur, none was observed during the study period.

The observed distribution of aircraft operations on a noise abatement departure flight track and on straight-in approach and departure flight tracks indicated that the CNEL contours previously prepared for the Gnoss Field Master Plan required revision. The revised Year 2006 contours are attached to this report. Comparison of measured single event noise levels to those predicted by the Integrated Noise Model indicated that the revised CNEL contours reasonably describe anticipated future noise levels in the Gnoss Field environs.

Respectfully submitted,



Jim Buntin
Vice President

JOB/JMB: 90-250

REFERENCES

1. Metropolitan Transportation Commission and Association of Bay Area Governments, Airport Land Use Planning Handbook - A Reference and Guide for Local Agencies, July 1983.

2. U.S. Department of Transportation, Federal Aviation Administration; Integrated Noise Model, Version 3.9, 1988.

APPENDIX A

ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

DECIBEL, dB: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

L_{dn}: Day-Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

NOTE: CNEL and L_{dn} represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the average noise exposure for a shorter time period, typically one hour.

L_{max}: The maximum sound level recorded during a noise event.

L_n: The sound level exceeded "n" percent of the time during a sample interval. L_{10} equals the level exceeded 10 percent of the time (L_{90}, L_{50}, etc.)

BBA

A-2

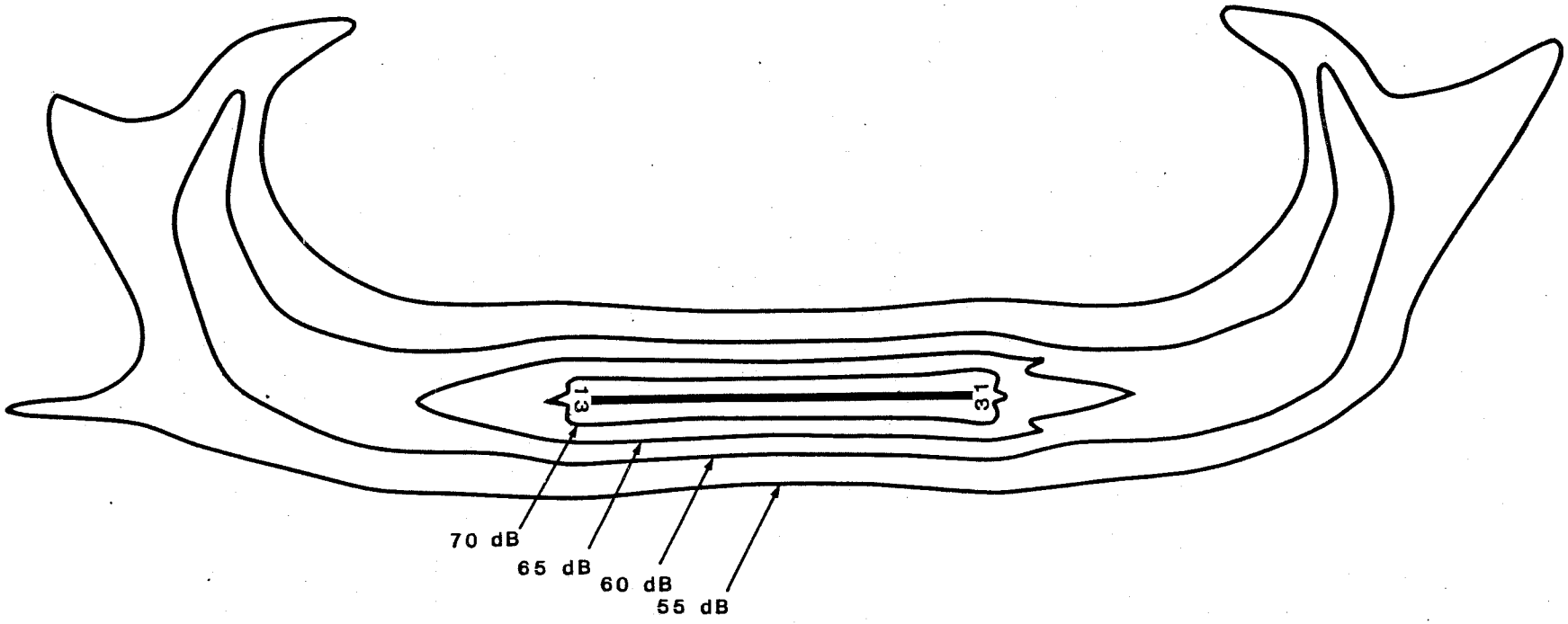
ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS: Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and L_{dn} contours are frequently utilized to describe community exposure to noise.

SEL or SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound level for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

SOUND LEVEL: The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

BBA



GNOSS FIELD: CNEL CONTOURS

Year 2006 with Extended Runway & New Tracks

GNOSS FIELD: CNEL CONTOURS

Year 2006 with Open V Runway & New Tracks

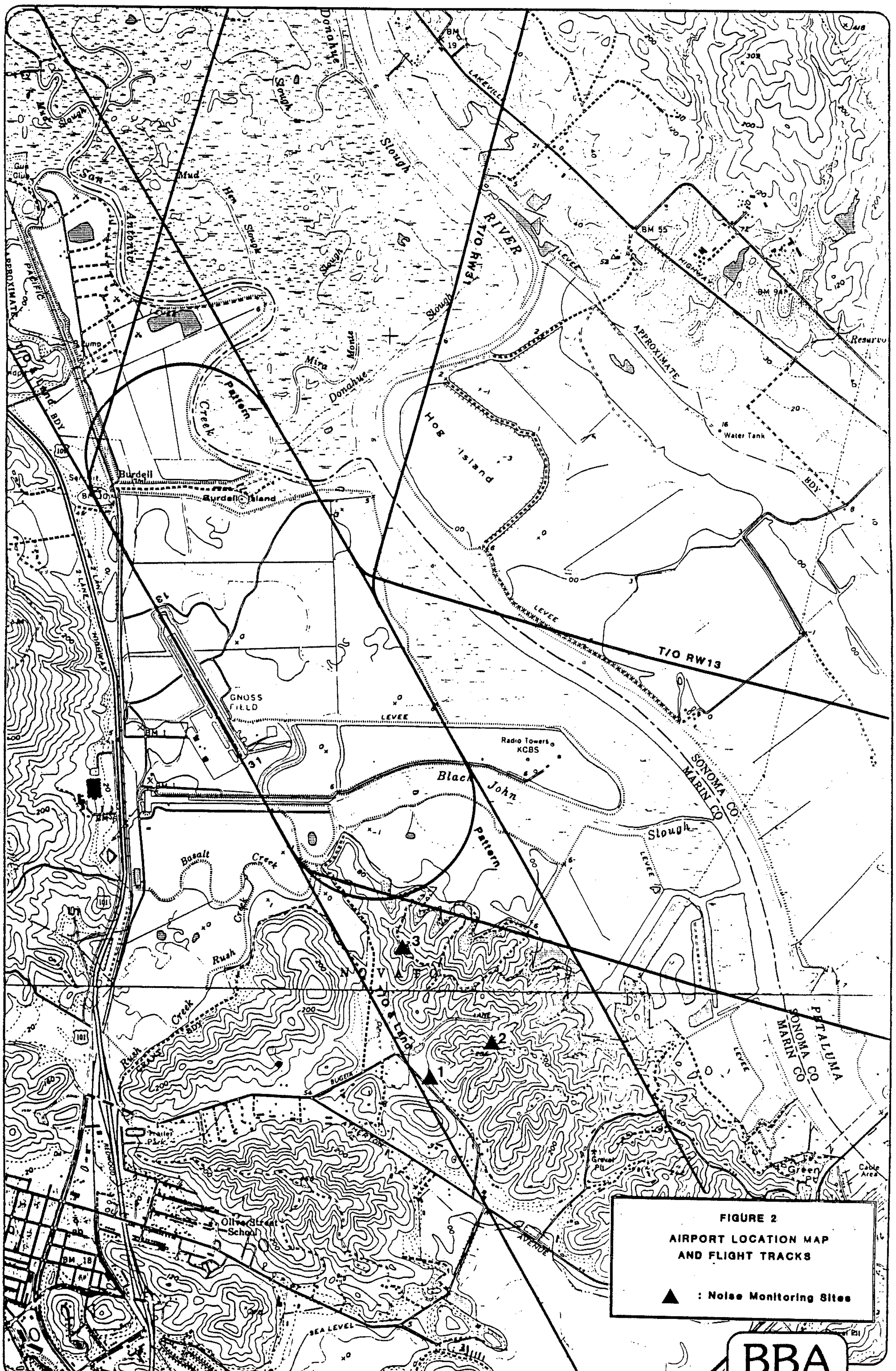


FIGURE 2
AIRPORT LOCATION MAP
AND FLIGHT TRACKS
▲ : Noise Monitoring Sites
T/O RW31
T/O RW13
T/O & Lndg
Pattern
GNOSS FIELD
Petaluma River
Sonoma Co
Marin Co
Novato
Hog Island
Burdell
Burdell Island
Black John Slough
San Antonio Creek
Radio Towers KCBS
Olive Street School
BBA

APPENDIX G

Glossary of Aviation Terms

Appendix G

GLOSSARY OF AVIATION TERMS

AGL. Above Ground Level.

AIM. Airman's Information Manual.

AIP (Airport Improvement Program). Federal Aviation Administration (FAA) airport planning and construction grant program.

Aircraft Approach Category. Aircraft approach category is based on 1.3 Vso (Vso is the aircraft stall speed at the maximum certificated landing weight in the landing configuration). The aircraft approach speed categories are:

Category A: less than 91 knots;
Category B: 91 knots to 121 knots;
Category C: 121 knots to 141 knots;
Category D: 141 knots to 166 knots; and
Category E: 166 knots or more.

Aircraft Delay. The difference between the actual time an aircraft takes to perform a given operation and the time it would take without interference from other sources.

Aircraft Parking Line Limit. An aircraft parking line limit is a line beyond which no part of a parked aircraft should protrude.

Airfield Capacity. The maximum number of aircraft operations that can take place in a given time under specific conditions of airspace, ceiling and visibility, runway layout and use, aircraft mix, and proportion of arrivals and departures.

Airplane Design Group. The airplane design group subdivides airplanes by wingspan. The Airplane Design Groups are:

Group I - Wingspan up to 49 feet (15 m);
Group II - Wingspan 49 feet (15 m) to 79 feet (24 m);
Group III - Wingspan 79 feet (24 m) to 118 feet (36 m);
Group IV - Wingspan 118 (36 m) to 171 feet (52 m);
Group V - Wingspan 171 feet (52 m) to 197 feet (60 m); and
Group VI - Wingspan 197 feet (60 m) to 262 feet (80 m).

Airport Hazard. An airport hazard is any structure, object, or any use of land on or near an airport that obstructs the airspace required for an aircraft flight in landing or taking off at the airport or is otherwise hazardous to aircraft landing, taking off, or taxiing at the airport.

Airport Type (general aviation). Runway length separates utility (general aviation) airports into basic and general utility types.

ALP (Airport Layout Plan). An airport layout plan is a scale drawing of the airport showing:

1. The boundaries of the airport and all its proposed additions, together with the boundaries of off-site areas owned or controlled by the airport authorities for airport purposes, including proposed additions;

2. The exact location, type, and dimensions of all existing and proposed airport facilities and structures such as runways, taxiways, aprons, terminal buildings, and roads, as well as all proposed extensions and reductions of existing airport facilities; and

3. The location of all existing and proposed non-aviation areas and all their existing improvements.

ALS. Approach Light System.

Annual Service Volume. A level of annual aircraft operations that may be used as a reference in preliminary planning. It is not a capacity figure. Rather, it is the annual volume of aircraft operations beyond which the average delay to each aircraft increases rapidly with relatively small increases in aircraft operations (and beyond which the levels of service on the airfield deteriorate).

Approach End of Runway. The approach end of runway is the near end of the runway as viewed from the cockpit of a landing airplane.

Approach Surface. An imaginary surface longitudinally centered on the extended centerline of the runway, beginning at the end of the primary surface and rising outward and upward to a specified height above the established airport elevation.

ARP (Airport Reference Point). An ARP is a point having equal relationship to all existing and proposed landing and takeoff areas which is used to locate the airport geographically.

ARSA. Airport Radar Service Area.

ARTCC (Air Route Traffic Control Center). An FAA facility providing air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight.

ASR (Airport Surveillance Radar). Approach control radar used to detect and display an aircraft's position in the terminal area. ASR provides range and azimuth information but does not provide elevation data. Coverage of the ASR can extend up to 60 miles.

ATA (Airport Traffic Area). Airspace within five statute miles of an airport up to an altitude of 3,000 feet.

ATC. Air Traffic Control.

ATCT (Air Traffic Control Tower). A terminal facility that uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the airfield area. Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the airport traffic area.

AWOS. Automated Weather Observation System.

Based Aircraft. General aviation, air carrier, and other aircraft which use an airport as a "residence" or home base.

Basic Utility - Stage I. This type of airport serves about 75% of the single-engine and small twin-engine airplanes used for personal and business purposes. Precision approach operations are not usually anticipated. This airport is designed for small airplanes in Airplane Design Group I.

Basic Utility - Stage II. This type of airport serves all the airplanes of Stage I, plus some small business and air taxi type twin-engine airplanes. Precision approach operations are not usually anticipated. This airport is also designed for small airplanes in Airplane Design Group I.

BRL. Building restriction line.

Circling Approach. A maneuver to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible after the pilot has established visual reference to the airport.

Clear Zone. An area at ground level that provides for the unobstructed passage of landing aircraft through the above airspace. The dimensions of a clear zone are determined by the approach surface dimensions of FAR Part 77 for the runway concerned. The clear zone always begins at the end of the runway primary surface.

Conical Surface. A surface extending from the periphery of the horizontal surface outward and upward at a slope of 20 to 1 for the horizontal distances and to the elevations above the airport elevation as prescribed by FAR Part 77.

Crosswind. The wind component at 90° to the runway.

Crosswind Runway. A runway additional to the primary runway to provide for wind coverage. A crosswind runway may be required if the orientation of the primary runway results in crosswinds exceeding 12 miles per hour (or 10 knots) more than 5% of the time, (i.e., less than 95% wind coverage).

DH. Decision Height.

Displaced Threshold. The runway threshold is the designated beginning of the runway that is available and suitable for the landing of aircraft. A displaced threshold is located other than at the physical beginning of the runway pavement. The displaced threshold indicates that the beginning of the runway is not to be used for landing, usually due to some obstruction in the approach path.

DME (Distance Measuring Equipment). Equipment used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid (see Tacan and Vortac).

FAA. Federal Aviation Administration.

FAF. Final Approach Fix.

FAR. Federal Aviation Regulation.

FAR Part 36. Federal Aviation Regulation Part 36 "Noise Standards: Aircraft Types and Airworthiness Certification."

FAR Part 77. Federal Aviation Regulation Part 77 "Objects Effecting Navigable Airspace."

FAR Part 91. Federal Aviation Regulation Part 91 "General Operating and Flight Rules."

FAR Part 103. Federal Aviation Regulation Part 103 "Ultralight Vehicles."

FAR Part 135. Federal Aviation Regulation Part 135 "Air Taxi Operators and Commercial Operators."

FAR Part 150. Federal Aviation Regulation Part 150 "Airport Noise Compatibility Plan."

FAR Part 152. Federal Aviation Regulation Part 152 "Airport Aid Program."

FAR Part 155. Federal Aviation Regulation Part 155 "Surplus Property."

FBO (Fixed Base Operator). An airport service operation, normally consisting of fuel sales, aircraft rentals, charter aircraft, aircraft sales, and maintenance with a fixed base of operation at the airport.

FSS (Flight Service Station). An FAA facility in the national flight advisory system for the collection and dissemination of NOTAMS, weather, administrative data; providing preflight and in-flight advisory service to pilots via air/ground communications facilities, processing IFR and VFR flight plans, and providing emergency assistance to pilots.

General Utility - Stage I. This type of airport serves all small airplanes. Precision approach operations are not usually anticipated. This airport is designed for small airplanes in Airplane Design Group I.

General Utility - Stage II. This type of airport serves large airplanes in Aircraft Approach Categories A and B and usually has the capability for precision approach operations. This airport is normally designed for aircraft in Airplane Design Groups I and II. It may also be designed to serve Aircraft Approach Category A large airplanes in Airplane Design Group II. While runways serving or expected to serve large airplanes may be built to utility airport standards, they are considered as other than utility runways in aeronautical studies.

GS (Glide Slope). Provides vertical guidance for aircraft during approach and landing. The glide slope consists of: 1) electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS, or 2) ground aids, such as VASI, which provide visual vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

HAA (Height Above Airport). The height of the MDA above airport elevation.

HAT (Height Above Touchdown). The height of the DH or MDA above the elevation of the runway touchdown zone.

Hazard to Air Navigation. Any object which has a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft or on the operation of air navigation facilities is a hazard to air navigation.

Heavy Aircraft. Aircraft with maximum takeoff weight of 300,000 pounds or more.

High Altitude (Jet) Airways. Those airways established from 18,000 feed above mean sea level (msl) to Flight Level (FL) 450, inclusive, used by jet aircraft and other IFR traffic en route between various terminal areas.

HIRL. High Intensity Runway Lights.

Horizontal Surface. A specified portion of a horizontal plane located 150 feet above the established airport elevation which establishes the height above which an object is determined to be an obstruction to air navigation. (See FAR Part 77.)

ICAO. International Civil Aviation Organization.

IFR (Instrument Flight Rule). FAR rules that govern the procedures for conducting instrument flight (FAR Part 91).

ILS (Instrument Landing System). (See Precision Instrument Approach System.)

IMC (Instrument Meteorological Conditions). Meteorological conditions expressed in terms of visibility, distance from clouds and ceiling less than the minimums specified for visual meteorological conditions.

Instrument Approach. An aircraft approach to an airport solely by reference to instruments.

Instrument Operation. A takeoff or landing of an aircraft while on an instrument flight clearance.

Large Aircraft. A large aircraft is an aircraft of more than 12,500 pounds (5,700 mg) maximum certificated takeoff weight.

LDA. Localizer-type Directional Aid.

LIRL. Low Intensity Runway Lights.

LOC. ILS localizer which provides lateral course guidance for an instrument approach.

LOC Backcourse. The ILS localizer signals extending outward from the airport in the direction opposite from the direction of an ILS approach. In some cases a nonprecision approach may be approved based on these signals.

Loran C (Long-range Navigational). Long-range navigation electronic equipment which gets its position information by analyzing signals from a chain of three or more low frequency stations. The receiver notes the difference in time of arrival of the signals from each station and translates them into lines of position (LOPs). When two LOPs intersect, a fix can be established and the receiver's computer translates this fix into the latitude and longitude coordinates of the aircraft's present position.

MAP (Missed Approach Point). A point in an instrument approach procedure at which a missed approach shall be executed if the required visual reference does not exist.

MDA (Minimum Descent Altitude). The lowest MSL altitude to which descent is authorized on final approach in a standard instrument approach procedure with no electronic glide slope information.

MEA. Minimum en route altitude.

MIRL. Medium Intensity Runway Lights.

MLS (Microwave Landing System). An advanced form of precision approach equipment with improved accuracy, and fewer siting problems than current ILS. MLS also has the useful potential to permit curved path approaches to the runway instead of the straight path limitations of ILS and PAR.

MOA (Military Operations Areas). MOA airspace is defined by vertical and lateral limits established for the purpose of separating certain military training activities from IFR traffic. Whenever a MOA is being used, nonparticipating IFR traffic may be cleared through a MOA if IFR separation can be provided by ATC. Otherwise, ATC will reroute or restrict nonparticipating IFR traffic. VFR aircraft can transit the MOA.

MSL. Mean sea level.

Navaid. Visual or electronic devise that provides point-to-point guidance information or position data to aircraft in flight.

NM (Nautical Mile). A nautical mile (nm) is 6,076 feet.

Nondirectional Beacon (NDB). A low- or medium-frequency radio beacon which transmits nondirectional signals whereby the pilot of an aircraft equipped with a loop antenna can determine his bearing and "home" on the station. (See Nonprecision Instrument Approach.)

Nonprecision Instrument Approach. An instrument approach procedure based on an electronic aid designed to provide an approach path for alignment of an aircraft on final approach to a runway. It generally lacks the high accuracy qualities of the precision approach equipment and does not provide vertical guidance. the VHF Omnirange (VOR) and the Nondirectional Homing Beacon (NDB) are two examples of the type of equipment used.

Nonprecision Instrument Runway. A nonprecision instrument runway is one with an instrument approach procedure utilizing air navigation facilities, with only horizontal guidance, or area-type navigation equipment for which a straight-in nonprecision instrument approach procedure has been approved or planned, and no precision approach facility or procedures is planned or indicated on an FAA or DOD approved airport layout plan, or on other FAA or DOD planning documents.

NOTAM (Notice to Airmen). A notice containing information concerning the establishment, condition, or change in any component (facility, service, or procedure) of, or hazard in the National Airspace System the timely knowledge of which is essential to personnel concerned with flight operations.

Obstruction to Air Navigation. An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of greater height than any of the heights or surfaces defined in FAR Part 77.

Overrun. (See Stopway.)

PAPI (Precision Approach Path Indicator). A visual approach aid light system providing glide slope information to the pilot on landing approach to the runway.

PAR. Precision Approach Radar.

PIC. Pilot in Command.

PLASI (Pulse Light Approach Slope Indicator). A visual approach aid light system providing glide slope information to the pilot on landing approach to the runway using a pulse light signal.

Precision Instrument Approach System. An instrument procedure based on electronic aids or voice communications designed to provide an approach path for exact alignment and descent of an aircraft on final approach to a runway. Instrument landing system (ILS), precision approach radar (PAR), and microwave landing system (MLS) are examples.

Precision Instrument Runway. A precision instrument runway is one with an instrument approach procedure utilizing an instrument landing system (ILS), microwave landing system (MLS), or precision approach radar (PAR). A planned precision instrument runway is one for which a precision approach system or procedure is indicated on an FAA or DOD approved airport layout plan or on other FAA or DOD planning documents.

Primary Surface. A rectangular area surrounding the runway at the same elevation as the runway which must be free of obstructions. (See FAR Part 77 for dimensions.)

RAIL. Runway Alignment Indicator Lights.

RCO. Remote Communications Outlet.

REILS. Runway End Identifier Lights.

Relocated Threshold. A relocated threshold is a permanent threshold located at the relocated runway end.

RNAV (Area Navigation). A method of navigation that permits aircraft operations on any desired course within the coverage of station referenced navigation signals or within the limits of self-contained system capability.

ROC. Required Obstacles Clearance.

Rotating Beacon. Visual navaid consisting of alternating white and green light flashes indicating the location of the airport.

Runway. A runway is a defined rectangular area on an airport prepared for the landing or takeoff of airplanes.

Runway Safety Area. A runway safety area is a rectangular area, centered on the runway centerline, which includes the runway (and stopway, if present) and the runway shoulders. The portion abutting the edge of the runway shoulders, runway ends, and stopways is cleared, drained, graded, and usually turfed.

RVR. Runway Visual Range.

Segmented Circle. A visual indicator providing traffic pattern information.

SID. Standard Instrument Departure.

Small Aircraft. A small aircraft is an aircraft of 12,500 pounds (5,700 kg) or less maximum certificated takeoff weight.

SSALR. Simplified, Short Approach Light System with Runway Indicator Lights.

STAR. Standard Terminal Arrival Route.

Stop End of Runway. The stop end of runway is the far runway end as viewed from the cockpit of a landing airplane.

Stopway. A stopway (or overrun) is an area beyond the stop end of the takeoff runway which is no less wide than the runway and is centered on the extended centerline of the runway. It is able to support an airplane during an aborted takeoff without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

Straight-in Landing. A landing made on a runway aligned within 30° of the final approach course.

Taxilane. A taxilane is the portion of the aircraft parking area used for access between taxiways, aircraft parking positions, hangars, storage facilities, etc. A taxilane is outside the movement area.

Taxiway. A taxiway is a defined path, from one part of an airport to another, selected or prepared for the taxiing of aircraft.

TCA (Terminal Control Area). Controlled airspace extending upward from the surface or higher to specified altitudes, within which all aircraft are subject to operating rules and pilot and equipment requirements specified in FAR Part 91. Generally, this requires two-way radio communication and VOR navigation equipment and a private pilot license or better.

TERPS (Terminal Instrument Procedures). Federal Aviation Administration (FAA) handbook for designing instrument approach procedures.

Threshold. The threshold is the beginning of that portion of the runway available and suitable for the landing of airplanes.

Touch-and-Go Operations. An operation by an aircraft that lands and takes off on a runway without stopping or exiting the runway.

Traffic Pattern. The aircraft traffic flow that is prescribed for landing and taking off from an airport. The components of a typical traffic pattern are upwind let (a flight path parallel to the landing runway in the direction of landing); crosswind leg (a flight path at right angles to the landing runway off its upwind end); downwind leg (a flight path parallel to the landing runway in the direction opposite to landing); base leg (a flight path at right angles to the landing runway off its approach end); and 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. An aircraft making a straight-in approach is also considered to be on final approach.

Transport Airport. A transport airport is an airport designed, constructed, and maintained to serve airplanes in Aircraft Approach Categories C and D.

TRSA. Terminal Radar Service Area.

TVOR (Terminal Very High Frequency Omnidirectional Range). A VOR located on or near an airport and used as an approach aid. (See VOR.)

Unicom. A private communication facility used to provide advisory-only airport information.

Utility Airport. A utility airport is an airport designed, constructed, and maintained to serve airplanes in Aircraft Approach Categories A and B.

VASI (Visual Approach Slope Indicator). Runway lighting system which provides visual glide slope information on final approach and used primarily under VFR conditions. VASI consists of at least two sets of lights alongside the approach end of a runway, one upwind of the other. If the pilot is too high, he sees all white lights. If too low, he will see all red lights. When on the proper glide slope, he will see red lights over white lights.

VDP. Visual Descent Point.

VFR (Visual Flight Rules). Rules that govern the procedures for conducting flight under visual conditions (FAR Part 91).

Victor Airway (Low Altitude Airways). Those airways designated from 1,200 feet above the surface (or in some instances higher) up to, but not including, 18,000 feet msl. The VOR airways are predicted solely on VOR or VORTAC navigation aids.

Visual Runway. A visual runway is a runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA or DOD approved airport layout plan or on other FAA or DOD planning documents.

VMC (Visual Meteorological Conditions). Meteorological conditions expressed in terms of visibility, distance from clouds and ceiling equal to or better than specified minimum. In VMC, aircraft can be flown by visual reference to the ground.

VOR (Very High Frequency Omnidirectional Range). A navigation ground station transmitting signals containing directional information in the very high frequency portion of the radio frequency.

VOR/DME. Co-located VOR and DME.

VORTAC. Very High Frequency Omnidirectional Range (VOR/Tactical Air Navigation (TACAN))). A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance measuring equipment (DME) at one site.

Wind Coverage. Wind coverage is the percent of time for which aeronautical operations are considered safe due to acceptable crosswind components.

Wind Indicator. A devise which visually indicates the wind direction.

APPENDIX H

Airport Development Program

6.0 - AIRPORT DEVELOPMENT PROGRAM

The proposed facility development program for Marin County Airport (Gnoss Field) is outlined in this Chapter based upon the aviation activity forecasts, alternatives evaluation, and environmental impact assessment studies (see associated EIR/EA).

The airport development program has been divided into Stages as follows:

Stage 1 - 1988 through 1992
Stage 2 - 1993 through 1997
Stage 3 - 1998 through 2007.

Stage 1 corresponds to Phase 1 of the alternatives analysis. Stage 2 and Stage 3 cover Phase 2 of the alternatives analysis (see Section 5.0). The original 20-year study period was from 1986 through 2006. However, the timeframe has been extended since the Master Plan is not being completed until 1989.

The thrust of Stage 1 is to add aircraft parking capacity, especially hangars. The thrust of Stage 2 is to provide a crosswind runway. Stage 3 focuses on providing additional aircraft parking, hangars, and fixed-base-operator (FBO) facilities on an as needed basis.

6.1 - AIRCRAFT PARKING REQUIREMENTS

The future aircraft parking requirements at Gnoss Field are driven by two factors:

1. the expected closure date for Smith Ranch (aka Marin Ranch) Airport which is currently projected to be about 1991; and

2. the actual increase or decrease in the number of aircraft based at Gnoss Field other than the Smith Ranch aircraft.

Both of these factors are discussed in the following paragraphs, as each will have an impact on the need to develop new Airport facilities.

6.1.1 - Smith Ranch Aircraft

The 1986 forecasts of aviation demand projected a modest growth in based aircraft at Gnoss Field except for the first 5-year period when it is expected that Smith Ranch Airport will be closed.

Over 100 aircraft currently located at Smith Ranch will have two alternatives: 1) move to Gnoss Field or 2) go to other airports outside of Marin County. The exact closure date for Smith Ranch is not certain, but it was assumed (based on the announced plans of the property owners) that the aircraft from this airport must relocate by 1991.

A special consideration regarding these aircraft is that each owner already has a portable hangar that would come with the aircraft to Gnoss Field. Thus, Marin County must provide facilities for these hangars in order to absorb the Smith Ranch aircraft.

6.1.2 - Based Aircraft

When the Master Plan study began in 1986, there were 283 aircraft based at Gnoss Field. The forecasts projected a small increase in based aircraft during the first five years, except for the significant transfer of aircraft from Smith Ranch.

Table 6.1 presents a recap of the aircraft forecasts assuming that the majority of Smith Ranch aircraft would relocate to Gnoss Field if aircraft and hangar parking capacity is available in a timely manner. The forecasts have been extended on a straight-line, year-by-year basis through 2007 for purposes of this analysis. As indicated, the projected number of based aircraft for 1988 is 285. However, by the middle of 1988 the actual number of based aircraft had decreased to 260.

Using 260 aircraft as a basis, a projection of aircraft parking requirements was prepared by reducing the forecasts by 25 aircraft in all years. The results are shown on Table 6.1 and indicate a total parking requirement of 280 for 1988, including an allowance of 20 transient positions. (There are currently only 10 transient aircraft parking positions.) The projected 1992 parking requirement is 390 aircraft, increasing to 535 by 2007. Gnoss Field currently has a total aircraft parking capacity of some 300 aircraft counting both County and FBO facilities.

6.1.3 - Hangar Requirements

Based on the desires of aircraft owners currently located at Gnoss Field, as expressed by the Aviation Commission, the primary interest is in developing more hangars to provide protected storage, instead of open tiedowns. This has been reflected in the projections shown on Table 6.1. Only additional hangar capacity as been added during Stage 1 (1988 - 1992).

As of Spring, 1988, 90 portable hangars were located at the Airport, including the hangars owned by the FBO. The proposed development program assumes that 40 new hangars are developed in 1989 and an additional 100 hangars would be installed in 1991 for a total of 230 hangars. Most of the hangars installed in 1991 would actually be transferred from Smith Ranch. This would provide protected storage for over half the based aircraft by the end of Stage 1.

Table 6.1

AIRCRAFT PARKING REQUIREMENTS
Marin County Airport

Year	Forecast Aircraft	Aircraft Parking: Based Aircraft	Aircraft Parking: Transient	Aircraft Parking: Total Parking	Hangars: Add	Hangars: Total	Tiedowns: Add(1)	Tiedowns: Total
Stage 1								
1988	285	260	20	280		90	-16	190
1989	290	265	20	285	40	130	-51	155
1990	295	270	20	290	0	130	-46	160
1991	385	360	20	380	100	230	-56	150
1992	395	370	20	390		230	-46	160
Stage 2								
1993	400	375	30	405		230	-31	175
1994	405	380	30	410		230	-26	180
1995	410	385	30	415		230	-21	185
1996	420	395	30	425		230	-11	195
1997	425	400	30	430		230	-6	200
Stage 3								
1998	430	405	40	445	20	250	-11	195
1999	440	415	40	455	20	270	-21	185
2000	450	425	40	465		270	-11	195
2001	460	435	40	475	20	290	-21	185
2002	470	445	40	485	20	310	-31	175
2003	480	455	40	495	30	340	-51	155
2004	490	465	40	505		340	-41	165
2005	500	475	40	515		340	-31	175
2006	510	485	40	525		340	-21	185
2007	520	495	40	535		340	-11	195

(1) Negative number indicates a surplus of tiedown spaces.
(2) Actual number of based aircraft in 1988.

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Based on the modest growth in based aircraft projected during Stage 2, the hangars developed during Stage 1 should also serve the expected demand through the end of Stage 2 (1997).

The development program assumes that 110 additional hangars will be provided during the last 10 years (1998 - 2007) in response to demand for further expansion during Stage 3. This would result in 340 aircraft in hangars on the Airport by the end of Stage 3.

6.1.4 - Tiedown Requirements

Table 6.1 also addresses the need for open tiedowns at Gnoss Field. The total number of tiedowns needed, assuming the hangar development occurs as discussed above, ranges from 190 downward to 150 during Stage 1.

The tiedown requirement then increases to 200 by the end of Stage 2 (1997), as no new hangars are assumed to be constructed during this period.

The tiedown requirement drops to 155 by the middle of Stage 3 and increases to 195 by the end of Stage 3 (2007) if only 110 new hangars are constructed during this timeframe as indicated on Table 6.1.

There are some 206 tiedowns currently available at Gnoss Field which are not already being utilized for portable hangars. If the new hangar development occurs as discussed above, there will be a surplus of tiedowns for the next 20 years. The surplus tiedowns are indicated by the negative numbers in the "Add" column under the "Tiedowns" heading. As indicated, the surplus tiedowns range from a low of 6 to a high of 56.

Given the fact that a significant surplus of tiedowns presently exists at Gnoss Field, and the demand for tiedowns is expected to remain soft for some years in the future, it would be more cost

effective for both Marin County and the FAA to allow some additional portable hangars to be installed on the existing apron rather than to undertake all new construction.

However, current FAA policy prevents this solution unless the County can show that the tiedowns upon which the hangars would be placed are not needed to provide public aircraft parking spaces and certain other administrative requirements are satisfied.

The aircraft parking requirements as shown on Table 6.1 project a significant over-supply of tiedowns and the Airport in fact currently has 47 vacant tiedowns as of mid-1988, as well as a 75-name waiting list for hangars. Thus, the true need is for more hangars, not tiedowns.

6.2 - STAGING PLAN

In response to the Airport facility requirements (see Section 4.0) and the projected need for aircraft parking and hangars discussed above, a staging plan was prepared to illustrate the recommended timing of future development at Gnoss Field.

Tables 6.2, 6.3, and 6.4 present the scheduling assumptions of the staging plan for developing physical facilities and accomplishing administrative actions to achieve development program implementation.

6.2.1 - Stage 1 Development

The Stage 1 (1988-1992) development program assumed that the Airport Master Plan and associated Program Environmental Impact Report/Environmental Assessment (EIR/EA) would be adopted and certified by the County Board of Supervisors during 1988. (In fact, this did not occur until June, 1989.)

Table 6.2

STAGE 1 DEVELOPMENT PROGRAM
Marin County Airport
1988-1992

Project	Description	1988	1989	1990	1991	1992
1.1	Adopt Airport Master Plan	xxxx				
1.2	Certify Eir	xxxx				
1.3	Corps fill permit(s)	xxxx	xxxx	xxxx		
1.4	FAA grant applications	xxxx				xxxx
1.5	runway 13-31 repairs	xxxx				
1.6	extend water lines/hydrants		xxxx			
1.7	existing apron repairs		xxxx			
1.8	land acquistion - - south end		xxxx			
1.9	new hangars - south end		xxxx			
1.10	wash rack modifications		xxxx			
1.11	widen runway 13-31 to 75'			xxxx		
1.12	eastside apron and taxiways			xxxx		
1.13	access road to east side			xxxx		
1.14	install eastside hangars			xxxx		
1.15	existing apron repairs				xxxx	
1.16	land acquistion - - runway extension				xxxx	
1.17	runway 13-31 extension 500'					xxxx
1.18	environmenal mitigation	xxxx	xxxx	xxxx	xxxx	xxxx

Source: Cortright & Seibold

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Table 6.3

STAGE 2 DEVELOPMENT PROGRAM
Marin County Airport
1993-1997

Project	Description	1993	1994	1995	1996	1997
2.1	review/update master plan	xxxx				
2.2	review/update EIR	xxxx				
2.3	Corps fill permit(s)		xxxx			
2.4	FAA grant applications					xxxx
2.5	runway 13-31 overlay	xxxx				
2.6	land acquistion - - crosswind runway		xxxx			
2.7	crosswind runway construction			xxxx	xxxx	
2.8	environmental mitigation	xxxx	xxxx	xxxx	xxxx	xxxx

Source: Cortright & Seibold

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Table 6.4

STAGE 3 DEVELOPMENT PROGRAM
Marin County Airport
1998-2007

Project	Description	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
3.1	review/update master plan	xxxx					xxxx				
3.2	review/update EIR	xxxx					xxxx				
3.3	Corps fill permit(s)	xxxx						xxxx			
3.4	FAA grant applications					xxxx					xxxx
3.5	land acquistion - north	xxxx									
3.6	apron expansion - north		xxxx	xxxx							
3.7	access road (new apron)		xxxx								
3.8	FBO site development		xxxx								
3.9	new hangars - north		xxxx	xxxx		xxxx		xxxx		xxxx	
3.10	runway/taxiway 13-31 overlay						xxxx				
3.11	overlay aprons							xxxx			
3.12	land acquistion - - runway extension								xxxx		
3.13	runway 13-31 extension 600'									xxxx	
3.14	environmental mitigation		xxxx	xxxx						xxxx	

Source: Cortright & Seibold

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It also assumes that Corps of Engineers fill permit(s) will be obtained in a timely manner to allow construction of improvements according to the schedule presented. (See the EIR/EA for discussion of the Corps' requirements.)

Federal Aviation Administration (FAA) and/or Caltrans Division of Aeronautics (DOA) construction grant applications (pre-applications) will also need to be submitted in support of funding requests to these agencies. Because it usually takes several years to obtain funding, the grant requests for Stage 1 projects should be submitted during 1988 even if project implementation is several years in the future. Funding applications for Stage 2 projects should be submitted by or before 1992 for similar reasons.

Projects 1.1 through 1.4 on Table 6.2 indicate the timing of the above administrative actions.

Construction projects assumed for Stage 1 include the following items.

Project 1.5. Repair low areas on Runway 13-31, seal coat parallel taxiway, and repaint markings. (This project is in the 1988 STIP program and was completed in April, 1988.)

Project 1.6. Extend the existing water lines and fire hydrant system to provide protection to the existing and new hangars.

Project 1.7. Repair the surface of the older center portion of the existing aircraft parking apron by overlaying the surface with asphalt.

Project 1.8. Acquire 13 acres of land on the south end of the existing apron to provide clear zone protection, as well as space for additional hangars and an access road to the County-owned property on the east side of the Airport.

Project 1.9. Install 40 new portable hangars on a southerly extension of the existing apron on some of the land obtained under Project 1.8.

(Note: An alternative location for some of these portable hangars is on the north end of the existing apron, pending FAA approval of a Marin County request to allow hangars on this area. This would allow some new hangars to be brought onto the Airport as early as 1988.)

Project 1.10. Construct modifications to the existing aircraft washrack and drainage system to bring it into compliance with current environmental regulations.

Project 1.11. Widen Runway 13-31 from 60 feet to 75 feet by adding 15 feet on the east side. This will provide a wider pavement area in response to the crosswind problem. Rewire runway and taxiway lights as part of this project.

Project 1.12. Construct a new aircraft parking apron, connecting taxiways, and hangar area on the County-owned property on the east side of the Airport.

Project 1.13. Construct an asphalt access road around the south end of the Airport between the existing road and the new apron built under Project 1.12.

Project 1.14. Install portable hangars on the new east side apron. This would be a combination of new hangars and relocated hangars from Smith Ranch.

Project 1.15. Repair existing west side apron areas not reconstructed during Project 1.7. This is assumed to be a slurry seal of the north and south areas using Caltrans/DOA grant funds. (This project is in the 1991 STIP program.)

Project 1.16. Acquire 20 acres of land on the north end of Runway 13-31 for an extension.

Project 1.17. Construct a 500-foot extension to Runway 13-31 on the north end.

Project 1.18. This project(s) involves the environmental mitigation(s) to offset the negative impacts of placing fill in "wetlands" areas and any other impacts caused during construction of the projects listed above. The scope and component costs associated with this project(s) are presented in the EIR/EA. A summary of mitigation costs has been included in this report.

Projects 1.1, 1.2, and 1.5 are assumed to be completed in 1988. Projects 1.6 through 1.10 are assumed to be completed in 1989. Projects 1.11 through 1.14 are assumed to be finished in 1990. Projects 1.15 and 1.16 are to be completed in 1991. Project 1.17 is to be accomplished in 1992. Projects 1.3, 1.4, and 1.18 are assumed to be accomplished as indicated on Table 6.2 in order to clear the way for the other projects in a timely manner.

6.2.2 - Stage 2 Development

Table 6.3 presents the proposed projects of the Stage 2 (1993-1997) development program.

As indicated, the administrative projects are a review and/or update of the Airport Master Plan and EIR, and a Corps of Engineers fill permit for the crosswind runway construction project. FAA and/or DOA grant applications must also be filed. These administrative projects are numbers 2.1, 2.2, 2.3, and 2.4.

The construction projects for Stage 2 are described as follows:

Project 2.5. Overlay Runway 13-31 and the parallel and connecting taxiways. Based on past experience at Gnoss Field, reconstruction of the pavements will be needed on a recurring basis due to settlement problems.

Project 2.6. Acquire 68 acres of land northeast of the Airport for development of the crosswind runway (Project 2.7).

Project 2.7. Construct a 3,000-foot long by 75-foot wide crosswind runway on a northeast-southwest alignment as illustrated on the ALP in Section 8.0. Also construct associated parallel and connecting taxiways, as well as dikes and drainage system modifications.

Project 2.8. As with the Stage 1 projects, the environmental mitigation items are discussed in the EIR/EA. A summary of mitigation costs has been included in this report.

Projects 2.1 and 2.2 are assumed to occur in 1993. Project 2.3 should be accomplished in 1994. Project 2.4 is for grant funding after the end of Stage 2 and is assumed to occur by or before 1997. Project 2.5 is assumed to be completed in 1993. Project 2.6 should be completed in 1994 to allow Project 2.7 (crosswind runway) to be constructed in 1995 and 1996. Project 2.8 (environmental mitigation) should be undertaken as indicated on Table 6.3.

6.2.3 - Stage 3 Development

The Stage 3 (1998-2007) development program projects include the following administrative items: review/update the Master Plan and EIR, obtain Corps fill permits, and file FAA/DOA grant applications. These are Projects 3.1 through 3.4 on Table 6.4.

The construction projects of Stage 3 are described as follows:

Project 3.5. Acquire 24 acres of land located northwest of the west side apron for future aircraft parking, FBO, and hangar areas.

Project 3.6. Construct expanded aircraft parking apron, FBO, and hangar areas on land acquired in Project 3.5.

Project 3.7. Concurrently construct a new access road to the areas developed under Project 3.6.

Project 3.8. Allow development of an additional FBO site subject to a lease agreement with the prospective operator.

Project 3.9. Install hangars on the north aircraft basing area. Up to 110 hangars are required based on the forecasts.

Project 3.10. Construct another asphalt overlay of Runway 13-31 to correct anticipated settlement problems.

Project 3.11. Construct an asphalt overlay of the aircraft parking aprons to repair anticipated age and settlement related problems.

Project 3.12. Acquire 6 acres of land and 1 acre of avigation easement on the north end of Runway 13-31 for an additional 600-foot extension.

Project 3.13. Construct a 600-foot extension to Runway 13-31, bringing the total length to 4,400 feet.

Project 3.14. Undertake environmental mitigation project(s) associated with the development of the above Stage 3 airport construction projects.. These items are decussed in the EIR/EA.

The possible timing of Stage 3 projects is indicated on Table 6.4. The exact staging is highly speculative and can be adjusted in response to the actual needs determined during the Master Plan reviews/updates throughout the 20-year planning period.

APPENDIX I

List of Parcels with Development Potential

Please Note: This list is for general information purposes only. It is important to check with the Planning Department if you have an inquiry about a specific parcel, since parcels may cross zone boundaries.

Gnoss Field Airport Safety Zones
Parcels with Development Potential

Date: 04/19/91

Safety Zone: Referral

Parcel	Owner	Zoning	City/ County
5324302	GNOSS GEORGE H JR 1/2		Novato
5304216	J M W ASSOCIATES		Novato
5304215	GRAHAM THOMAS V		Novato
5304101	COX ANNA B ETAL 1/3		Novato
5302308	BUTLER GARY A & LOIS M		Novato
5302228	MAGNISI KENNETH A &		Novato
5302227	NAYLOR KAY		Novato
5302153	BEEBE MARTIN C		Novato
5302146	BOWERS DOUGLAS J		Novato
5301148	REECE L CLAY &		Novato
5301139	MEDEIROS HELE & ROSALINA		Novato
5301136	GLASSMAKER JOHN R & MARGARET		Novato
5301133	A & P EQUITIES		Novato
5301127	WEDGE RALPH M &		Novato
5301126	ARNOLD RODNEY J		Novato
5301125	MEDEIROS HELE R & ROSALINA R		Novato
5301123	KING JOHN J TR 50% ETAL		Novato
5301112	ARNOLD RODNEY J		Novato
5301111	THORSSON GLENN A &		Novato
5301110	NORTH COAST DEV CORP		Novato
5301109	JOYCE JOSEPH M &		Novato
4344118	BICKENBACH ROBERT B &		Novato
4344117	SCHREUDER DONALD L &		Novato
4344111	CHEK DEVELOPMENT		Novato
4344101	CHEK DEVELOPMENT		Novato
4334035	KANE LAWRENCE J JR		Novato
4333086	LOVETT DAVID H &		Novato
4333074	MARIN VISTA CORPORATION		Novato
4333070	LAGUNA VISTA CEDAR INV CO		Novato
4333063	VEGVARY MILADA		Novato
4333059	LOVETT DAVID H &		Novato
4333055	ROBBON PROPERTIES		Novato
4333049	MOSS DONALD G	ARP-2	County
4333041	EAGAN MICHAEL P & JEANNE C	ARP-2	County
4333037	WASHBURN SHELTON A & DIANA J		Novato
4332123	DAVIS DIANA V		Novato
4314222	BARRICK GERALD R	ARP-2	County
4314220	BYARS KEVIN & 50% ETAL	ARP-2	County
4314214	BARRICK GERALD R	ARP-2	County
4314108	CLEMENTINO FERNANDO &	ARP-2	County
4311085	BENSON DONALD E &		County
4311084	BENSON DONALD E &		County
4311082	JONES EMERY &		County
4311081	JONES EMERY &		County
4311080	SCHON NEAL J	ARP-2	County
4311078	SCHON NEAL J	ARP-2	County
4311076	MC BAIL CO		Novato
4311075	MC BAIL CO		Novato
4311054	CLEMENTINO FERNANDO &		Novato

Gnoss Field Airport Safety Zones
Parcels with Development Potential

Date: 04/19/91
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Safety Zone: Referral

Parcel	Owner	Zoning	City/ County
14311051	BURTON SHARON L TR	ARP-2	County
14311048	RIVASPLATA ALFRED & EDITH	ARP-2	County
14311012	CHANG KUO POO	ARP-60	County
14310073	WALLACE DUANE &	A-2:B-4	County
14310046	MADJLESSI BIJAN & 50% ETAL		Novato
14310036	MONTGOMERY SCOTT D 1/2	A-2:B-4	County
14310034	GASPER GEORGE L & ALTA C	A-2:B-4	County
14310026	JACOB JOHN G & ELENA S		Novato
14309125	MADJLESSI BIJAN & 50% ETAL		Novato
14309111	PERRY DONALD & PATRICIA A TRS		Novato
14308128	EPIDENDIO RICHARD S TR		Novato
14308127	JACOB JOHN G & ELENA S		Novato
14307239	PETKER EVERETT F & TWILA		Novato
14307238	PETKER EVERETT F & TWILA		Novato
14307110	MUZINICH MICHAEL A &		Novato
14307105	ZAKIM NANCY L		Novato
14307102	CARNEY BILLY M & FLORENCE N		Novato
14306108	KOENIG WILLIAM R & LOUISE D		Novato
14306107	YATES EUGENE A &		Novato
14306106	BELLUCCI ALFRED &		Novato
14306101	SHAMROCK MATERIALS CO		Novato
14301106	DAIRYMENS MILLING CO		Novato
14301105	YOUNG DAVID ETAL		Novato
14301101	ARMOS HAROLD K 33.3% ETAL		Novato
14135019	WESTBROOK HOUSING GROUP		Novato
14135018	WESTBROOK HOUSING GROUP		Novato
14135017	WESTBROOK HOUSING GROUP		Novato
14135015	WESTBROOK HOUSING GROUP		Novato
14135014	WESTBROOK HOUSING GROUP		Novato
14135013	WESTBROOK HOUSING GROUP		Novato
14135012	WESTBROOK HOUSING GROUP		Novato
14135011	WESTBROOK HOUSING GROUP		Novato
14135010	WESTBROOK HOUSING GROUP		Novato
14135009	WESTBROOK HOUSING GROUP		Novato
14135008	WESTBROOK HOUSING GROUP		Novato
14135007	WESTBROOK HOUSING GROUP		Novato
14134017	HIDDEN OAKS LTD PTNRS		Novato
14134015	HIDDEN OAKS LTD PTNRS		Novato
14134014	HIDDEN OAKS LTD PTNRS		Novato
14134011	HIDDEN OAKS LTD PTNRS		Novato
14134007	HIDDEN OAKS LTD PTNRS		Novato
14134006	HIDDEN OAKS LTD PTNRS		Novato
14134005	HIDDEN OAKS LTD PTNRS		Novato
14134004	HIDDEN OAKS LTD PTNRS		Novato
14134003	HIDDEN OAKS LTD PTNRS		Novato
14134002	HIDDEN OAKS LTD PTNRS		Novato
14134001	HIDDEN OAKS LTD PTNRS		Novato
14132116	O DRISCOLL FINBAR		Novato
14132115	O DRISCOLL FINBAR		Novato
14132110	O DRISCOLL FINBAR		Novato

Gnoss Field Airport Safety Zones
Parcels with Development Potential

Date: 04/19/91
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Safety Zone: Referral

Parcel	Owner	Zoning	City/ County
.32109	O DRISCOLL FINBAR		Novato
4132108	O DRISCOLL FINBAR		Novato
4132106	O DRISCOLL FINBAR		Novato
132105	O DRISCOLL FINBAR		Novato
4124420	KIRKWOOD ENTRPS INC		Novato
4124419	NORTH MARIN INVESTORS		Novato
.24412	GALBREATH FRED B & JEAN D		Novato
24403	GALBREATH FRED B & JEAN D		Novato
4124334	MARIN HANDICAPPED HOUSING #5		Novato
.23416	HANLEY MARGARET R		Novato
.18127	OUNGOULIAN SEMIK & 75% ETAL		Novato
2536105	OWNERS OF VITARAZI OFFICE CMPLX		Novato
530009	PINHEIRO FRANK TR &		Novato
530008	PINHEIRO FRANK TR &		Novato
2520081	777 SAN MARIN ASSOC		Novato
2432321	DEL MONTE HIGHLANDS		Novato
432318	DEL MONTE HIGHLANDS		Novato
2432114	DEL MONTE HIGHLANDS		Novato
2431227	DEL MONTE HIGHLANDS		Novato
31122	DEL MONTE HIGHLANDS		Novato

Gnoss Field Airport Safety Zones
Parcels with Development Potential

Date: 04/19/91
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Safety Zone: Overflight

Parcel	Owner	Zoning	City/ County
14348106	TARRANT AND BELL PROPS	ARP-2	County
14345106	BANGART KEN &		Novato
14345105	NAJAFI HOMAYUN		Novato
14328105	JAMES DICK BUILDER INC		Novato
14327103	DEBRA HOMES INC		Novato
14327103	DEBRA HOMES INC		Novato
14317159	HOSSEINYOUN ABOLFATH 33.33% ETA	ARP-2	County
14317157	BARRICK GERALD R		Novato
14317154	MC COY ROBERT E 50% ETAL	ARP-2	County
14317127	SALAMEH FUAD 50% ETAL	ARP-2	County
14317108	BETTENCOURT RAY M &	ARP-2	County
14316022	SOUTHWEST DIVERSIFIED/COSCAN	RMP-0.1	County
14315111	DEBRA HOMES, INC		Novato
14315110	DEBRA HOMES INC		Novato
14315106	DEBRA HOMES INC		Novato
14315101	DEBRA HOMES INC		Novato
14310056	MARTIN LAWRENCE D TR &	A-2:B-4	County
12548026	WESTWORTH HOUSING GROUP		Novato
12548025	WESTWORTH HOUSING GROUP		Novato
12548024	WESTWORTH HOUSING GROUP		Novato
12548023	WESTWORTH HOUSING GROUP		Novato
12548022	PARK RONALD E &		Novato
12548021	WESTWORTH HOUSING GROUP		Novato
12548019	WESTWORTH HOUSING GROUP		Novato
12548018	WESTWORTH HOUSING GROUP		Novato
12548017	WESTWORTH HOUSING GROUP		Novato
12547202	WESTWORTH HOUSING GROUP		Novato
12547201	WESTWORTH HOUSING GROUP		Novato
12547108	M A J INVS I		Novato
12547107	L & L VENTURES		Novato
12547106	M A J INVS I		Novato
12546013	AFSHAR IRAJ G &		Novato
12546011	HERMAN JERRY R &		Novato
12520092	SAN MARIN BUINESS PARK		Novato
12520090	SAN MARIN COMMERCE PARK		Novato
12520072	MARIN COU EMPS RETIREMENT ASSN		Novato
12520070	RUSH LANDING		Novato
12518061	BUCK CTR FOR RESEARCH IN AGING	A-60	County
12518059	WRIGHT WILLIAM W & PATRICIA L	A-60	County

Gnoss Field Airport Safety Zones
Parcels with Development Potential

Date: 04/19/91
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Safety Zone: Traffic Pattern

Parcel	Owner	Zoning	City/ County
12519066	RANCHO DEL PANTANO	R-C-R	County
12519060	MOUNT BURDELL ENTERPRISES 50%	R-C-R;M-3	County
12519056	DIRKES GEORGE R TR	M-3	County
12519041	DIRKES GEORGE R TR	M-3	County
12519035	LEVERONI CLARENCE	A-60	County
12519029	DIRKES GEORGE R TR	M-3	County
12519019	RANCHO DEL PANTANO	A-60	County
12519008	LEVERONI DAVID & IDA	A-60	County

Gnoss Field Airport Safety Zones
Parcels with Development Potential

Date: 04/19/91
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Safety Zone: Approach and Clear Zones

Parcel	Owner	Zoning	City/ County
12519054	MARIN COUNTY OF	M-3	County
12519024	MARIN COUNTY OF	M-3	County

APPENDIX J

Resolution Adopting the Airport Land Use Plan

MARIN COUNTY AIRPORT LAND USE COMMISSION

RESOLUTION NO. PC - 91-0110

A RESOLUTION ADOPTING THE AIRPORT LAND USE PLAN FOR GNOSS FIELD

* *

I. WHEREAS the Marin County Airport Land Use Commission held a public hearing on May 22, 1989 and recommended that the Board of Supervisors approve the final Gnoss Field Master Plan and Final Program EIR/EA; and

II. WHEREAS the Marin County Board of Supervisors adopted the Program EIR/EA and Airport Master Plan for Gnoss Field, June 27, 1989; and

III. WHEREAS the State of California requires that the Airport Land Use Commission prepare and adopt an Airport Land Use Plan for each public use airport within their jurisdiction by June 30, 1991; and

IV. WHEREAS the Aviation Consultant firm of Cortright and Seibold was retained to prepare the Airport Land Use Plan; and

V. WHEREAS the Marin County Airport Land Use Commission finds that the Airport Land Use Plan will provide for the orderly growth of the area surrounding Gnoss Field; and

VI. WHEREAS the Airport Land Use Plan contains policies to ensure that future land use in the airport environs is consistent the aviation activities; and

VII. WHEREAS the Airport Land Use Commission finds that the Airport Land Use Plan is consistent with the current zoning for the airport and adjacent land; and

VIII. WHEREAS the Airport Land Use Plan is consistent with the Marin Countywide Plan Policies specifically Transportation Policy C-5, (CWP pg. 4 and 5) which states that Gnoss Field should be the only civilian airport facility in Marin County; and

IX. WHEREAS the Marin County Planning Department has held three public workshops to solicit public comment and changes to the draft plan are recommended accordingly; and

X. WHEREAS the Airport Land Use Commission held a duly noticed public hearing to consider the adoption of the Airport Land Use Plan for Gnoss Field.

NOW, THEREFORE, BE IT RESOLVED that the Marin County Airport Land Use Commission hereby approves and recommends that the Marin County Board of Supervisors adopt the Airport Land Use Plan for Gnoss Field.

PASSED AND ADOPTED at a meeting of the Marin County Airport Land Use Commission on the **10th** day of **June**, 1991 by the following vote:

AYES: Nave, Miller, Marinoff, Wiegel, Friedman, Fuchs, Garfien, Evans,Blackseth
NOYES:
ABSENT: