27 June 1974

DRAFT

ENVIRONMENTAL IMPACT STATEMENT

for the proposed

DISPOSAL OF THE FORMER OXNARD AIR FORCE BASE

D-CALIF-410-B-D

prepared for the

Office of Real Property
Public Buildings Service
GENERAL SERVICES ADMINISTRATION

URS RESEARCH COMPANY
A URS Company

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Section I

SUMMARY

Section I

SUMMARY

Draft Environmental Impact Statement
submitted by the
General Services Administration

1. Action:

   (X) Administrative

   ( ) Legislative

2. Description of Proposed Disposal Action and Purpose:

This Environmental Impact Statement has been prepared to assess the environmental impacts of the proposed disposal of the former Oxnard Air Force Base by the General Services Administration. The base is located in Ventura County, California, within the city limits of Camarillo.

The proposed disposal action consists of the following:

(a) 633 acres of land and 45 buildings will be conveyed to Ventura County for a commercial airport use, 40 acres to Ventura County for Airport Support uses.

(b) 16 acres and 15 buildings will be assigned to the Department of Health, Education and Welfare for conveyance to the Regional Occupational Program School for educational use.

(c) 9 acres and 8 buildings will be assigned to the Department of Health, Education and Welfare for conveyance to Oxnard High School for educational use.

(d) 40 acres and one building will be assigned to the Department of Health, Education and Welfare for conveyance to the Ventura County Community College District for educational use.

(e) 36 acres and 18 buildings will be assigned to the Bureau of Outdoor Recreation, Department of the Interior, for conveyance to the Pleasant Valley Park and Recreation District for public park and recreational use.

(f) The chapel building and underlying land will be sold to a religious organization for religious use.

(g) Approximately 1 acre and one building will be utilized by the U.S. Immigration and Naturalization Service, Department of Justice.

3. <u>Summary of Environmental Impacts and Adverse Environmental Effects:</u>

The following major environmental impacts and environmental effects will result if the proposed plan of disposal is implemented:

increased costs for schools [illegible]

- An increase in employment. but unlikely for those here
- An increase in land values. + decrease in other area
- An overall increase in safety as a result of the transfer of commercial jet operations from the existing Ventura County Airport to the proposed site. (With regard to safety, meteorological conditions and adjacent land use at the proposed site are more favorable than those at the existing site.)

Crit

no commercial jet at VCAD

increase in one area & decrease in other

- Utilization of existing facilities which lend themselves toward the establishment of an airport complex.
- An improvement of the visual quality of the proposed site as a result of upgraded appearance.
- Various educational and recreational facilities will be provided by the proposed project, in addition to the proposed airport.

undesirable near airport

- Incompatibility with the Oxnard and Camarillo General Plans, and the zoning of Camarillo.
- The air quality will be degraded due to significant increases in levels of particulates, although no standards will be exceeded.

- Increase problems in integrating the general area of the Colonia & joining it together with an area that can serve [illegible] & schools can be provided

- Will cause flight of the higher income people from Oxnard — lowering it's already low ~~average~~ income average

- Traffic demands will be in excess of capacity on one road, and a proportional increase in accidents will result.

- Noise levels from aircraft operations will disturb local residents in the vicinity of the airport.
Noise discussion very vague & doesn't discuss control of anything but scheduled airline

- An increase in stormwater runoff will tend to aggravate existing drainage problems and degrade water quality.

- Liquid wastes originating from the airport complex. especially aircraft washwater, may adversely affect the operation of the Camarillo Wastewater Treatment Plant.

- Unclear how noise control would be enforced

4. Alternatives Considered:

Alternatives to the proposed plan includes (1) utilization of the base as an educational complex, (2) public sale of the base, and (3) no action. The primary alternative examined was its use as an educational facility.

5. Comments on the Draft Environmental Statement have been requested from the following:

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Oxnard, CA 93030

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Ventura, CA 93001

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Malibu, CA 90265

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Camarillo Sanitary District
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6. This draft EIS was prepared on the date shown on the face page. Inquiries about this draft environmental statement may be directed to:

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Section II

INTRODUCTION

Section II
INTRODUCTION

The General Services Administration has prepared steps to dispose of the Oxnard Air Force Base which is located in the city limits of Camarillo, California. The general location of the base is described in Figure 0.1.

As required by the National Environmental Policy Act of 1969, an Environmental Impact Statement has been prepared to assess environmental impacts attributable to the proposed plan of disposal. In addition, three alternative plans of disposal have been assessed in light of potential environmental impacts.

The proposed plan of disposal consists of an "airport complex" which is shown in Figure 0.2. This plan is centered upon an application submitted to the GSA by Ventura County. The primary element of the proposed plan consists of turning over the major portion of the base to Ventura County for the expansion of their present airport facilities which are located in Oxnard, California. The elements of the proposed plan, which are described in Figure 0.2, include:

• Ventura County Airport	633± acres
• Regional Occupational Program School	16± acres
• Oxnard Union High School	9± acres
• Park and Recreation	36± acres
• Ventura Community College	40± acres
• Airport Support and Commercial	40± acres
• Immigration and Naturalization Service	1± acre
• Chapel	1± acre

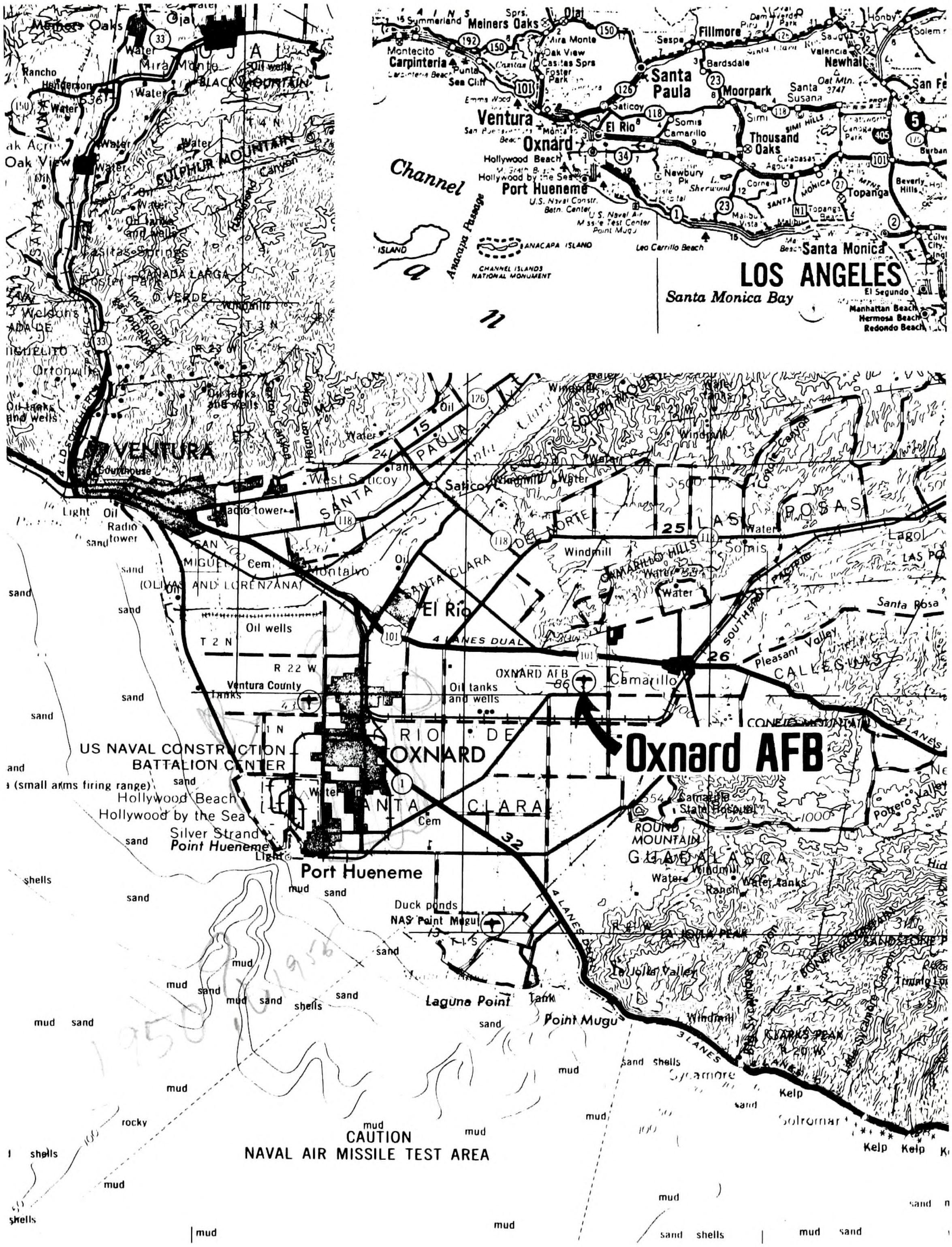


Figure 0.1 LOCATION OF OXNARD AIR FORCE BASE

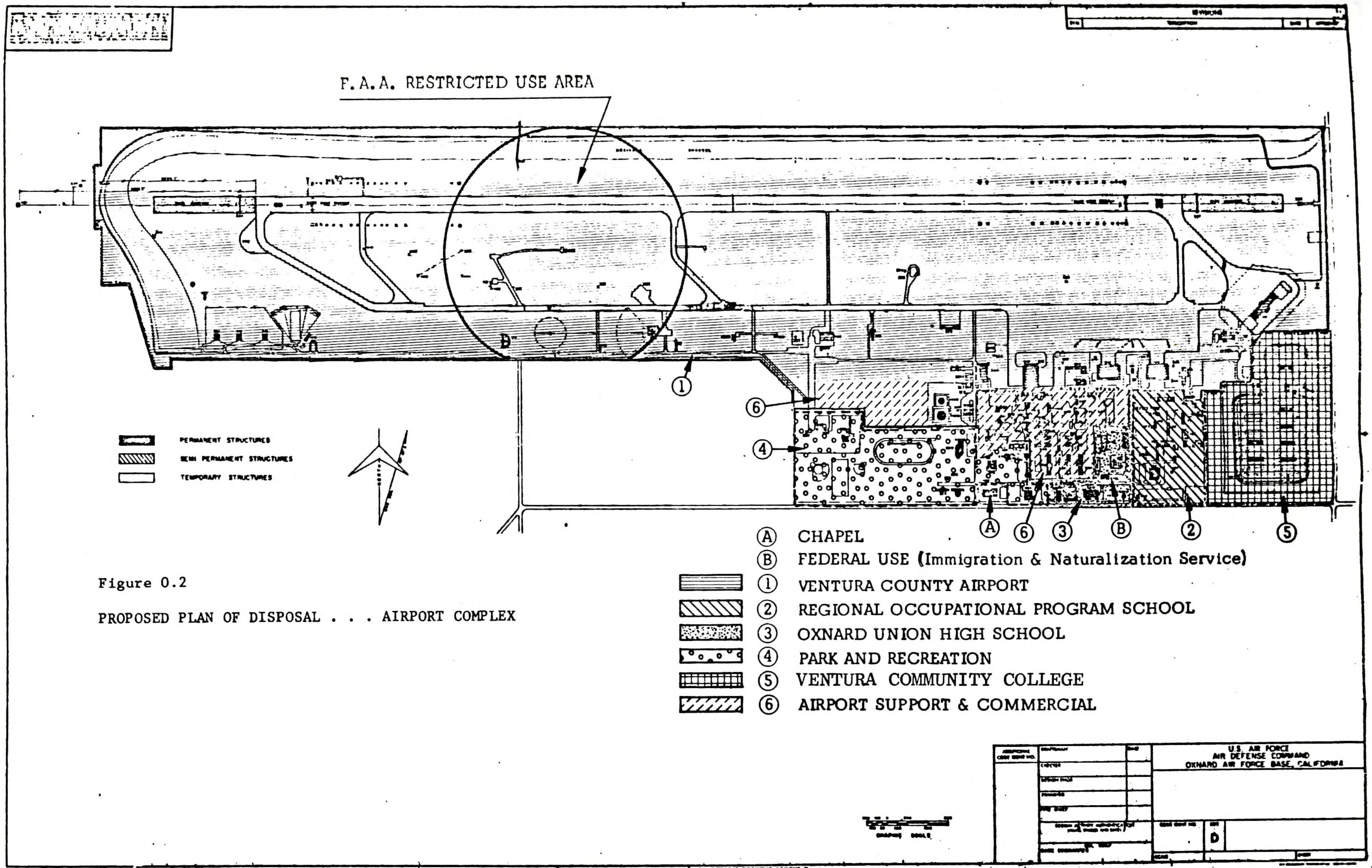


Figure 0.2

PROPOSED PLAN OF DISPOSAL . . . AIRPORT COMPLEX

The primary alternative to the proposed plan is centered upon an application submitted to the GSA by Pepperdine College to use the base as an "educational complex." The elements of this method of disposal, which are described in Figure 0.3, include:

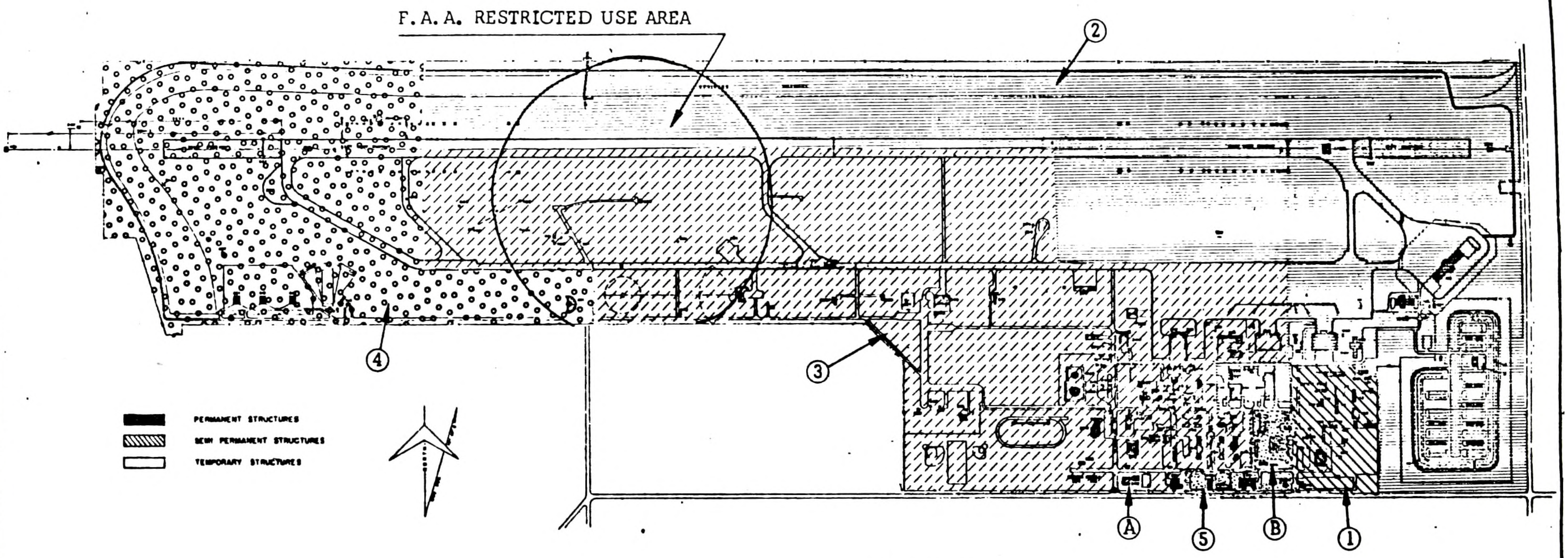
• Regional Occupational Program School	16± acres
• Ventura Community College (Junior College)	307± acres
• Pepperdine University (includes Chapel)	290 acres
• Park and Recreation	150 acres
• Oxnard Union High School	9± acres
• Immigration and Naturalization Service	1± acre
• Chapel	1± acre

Table 0.1 identifies the 90 major buildings located on Oxnard Air Force Base with regard to original purpose, current use, and proposed ownership under (1) the proposed airport complex and (2) the primary alternative, the educational complex.

It should be noted that the following land uses are common to both the proposed action and the primary alternative (Pepperdine University) and in either case would be part of the program:

- Regional Occupational Program
- Oxnard Union High School
- Park and Recreation
- Ventura Community College
- Immigration and Naturalization Service
- Chapel

A second alternative is consideration of "public sale" as a method of disposal. This is a rather limited study alternative since potential environmental impacts would be a function of the ultimate user of the land after public sale.



Ⓐ CHAPEL

Ⓑ FEDERAL USE (Immigration & Naturalization Service)

① REGIONAL OCCUPATIONAL PROGRAM SCHOOL

② VENTURA COMMUNITY COLLEGE

③ PEPPERDINE UNIVERSITY

④ PARK - City of Camarillo

⑤ OXNARD UNION HIGH SCHOOL

Figure 0.3

ALTERNATE PLAN OF DISPOSAL . . . EDUCATIONAL COMPLEX

U.S. AIR FORCE
AIR DEFENSE COMMAND
OXNARD AIR FORCE BASE, CALIFORNIA

D

Table 0.1

ON-BASE BUILDING INVENTORY AND PROPOSED USES

BUILDING NO.	ORIGINAL PURPOSE	CURRENT USE	PROPOSED OWNERSHIP AIRPORT COMPLEX	EDUCATIONAL COMPL
1	Stor Ammo A/D	Junior College	Junior College	Junior College
2	Alert Hangar	Junior College	Airport	Junior College
3	Rocket Storage	- -	Airport	Junior College
4	Readiness Building	- -	Airport	Junior College
5	Hangar, Organizational	- -	Airport	Junior College
6	Hydrant Pump House	Pumps (Fire & Water System)	Airport	Junior College
7	P.O.L. Administration & Dispatcher	Fuel Storage for Vehicles	Airport	Junior College
8	Refueling Vehicle Parking	- -	Airport	Junior College
9	CAMRON Storage	- -	Unknown	Unknown
10	Water Supply	Existing Water Tank	Airport	Junior College
11	Flight Simulator	- -	Airport	Junior College
12	Motor Pool Administration, Dispatcher Driver Training	Reg. Occupational School (Repair Shop)	Regional Occupational Program School	Regional Occupational Program School (R.O.P.S
13	Vehicle Maintenance Shop	- -	R.O.P.S.	R.O.P.S.
14	Refueling & Vehicle Maintenance	Refuel & Maintenance	R.O.P.S.	R.O.P.S.
15	Vehicle Painting Shop	Vehicle Paint Shop	R.O.P.S.	R.O.P.S.
16	A.I.E. Administration	- -	R.O.P.S.	R.O.P.S.
17	A.I.E. Shops	Shops	R.O.P.S.	R.O.P.S.
18	A.I.E. Supply	Bldg. 209 -- rented by Transcon Truck Co.	R.O.P.S.	R.O.P.S.
19	A.I.E. Covered Storage	- -	R.O.P.S.	R.O.P.S.
20	B-X Gas Station	Mechan. School	R.O.P.S.	R.O.P.S.
21	Commissary	Cafeteria (ROP)	R.O.P.S.	R.O.P.S.
22	Communications Transmitter	Used by County	R.O.P.S.	R.O.P.S.
23	Cold Storage	Used by County	R.O.P.S.	R.O.P.S.
24	Veterinary Office	Used by County	R.O.P.S.	R.O.P.S.
25	Ration Break Down	City Schools ROP	R.O.P.S.	R.O.P.S.
26	Nursery	City Schools ROP	Unknown	Unknown
27	Gate House	Gate House	ROPS/High School/ Parks & Rec	ROPS/Park & Rec/ Pepperdine

Table 0.1

ON-BASE BUILDING INVENTORY AND PROPOSED USES
(Continued)

BUILDING NO.	ORIGINAL PURPOSE	CURRENT USE	PROPOSED OWNERSHIP AIRPORT COMPLEX	EDUCATIONAL COMPLEX
28	Base Exchange	Oxnard H.S. District	High School	High School
29	Gymnasium	Oxnard H.S. District	High School	High School
30	Concessions, Bank, Post Office	Immigration and Naturalization Service	INS	High School
31	Clothing Sales	Oxnard H.S. District	High School	High School
32	Squadron Headquarters	- -	Airport	Pepperdine Univ.
33	Airmen Dormitory	- -	Airport	Pepperdine Univ.
34	Recreation Hobby Shop	- -	Airport	Pepperdine Univ.
35	Service Club	Oxnard High School	High School	High School
36	Library	Oxnard High School	High School	High School
37	Theater	Oxnard High School	High School	High School
38	Bowling Alley	Oxnard High School	High School	High School
39	N.C.O. Club	- -	Park & Recreation	Pepperdine Univ.
40	Chapel and Educational Wing	Chapel	Chapel	Chapel
41	Swimming Pool and Bath House	- -	Park & Recreation	Pepperdine Univ.
42	B.O.Q.	- -	Airport	Pepperdine Univ.
43	Base Headquarters, OSI, Air Police	- -	Park & Recreation	Pepperdine Univ.
44	Officer's Club	Back Used for Picnics	Park & Recreation	Pepperdine Univ.
45	Family Housing	Guard Staying There	Unknown	Unknown
46	Communications Receiver	Telephone Company	Park & Recreation	Pepperdine Univ.
47	Sewage Lift Station	Used	Park & Recreation	Pepperdine Univ.
48	Dog Kennel	- -	Park & Recreation	Pepperdine Univ.
49	Fire and Crash	City Fire Department	Airport	Pepperdine Univ.
50	Pump Station	Used	Airport	Pepperdine Univ.
51	Jet Test Cell	- -	Airport	Pepperdine Univ.
52	Bulk Fuel Storage	Fuel Storage	Airport	Pepperdine Univ.
53	Truck Fill Stand	- -	Airport	Pepperdine Univ.
54	P.O.L. Warehouse	- -	Airport	Pepperdine Univ.
55	Base Operations	- -	Airport	Pepperdine Univ.
56	Weather Office	- -	Airport	Pepperdine Univ.
57	AACS	- -	Airport	Pepperdine Univ.
58	Classroom Building	Ventura City Sheriff -- Classroom	Airport	Pepperdine Univ.
59	Washrack	- -	Airport	Pepperdine Univ.
60	Tech. Photo Lab	City Fire Department -- Classroom	Airport	Pepperdine Univ.

Table 0.1

ON-BASE BUILDING INVENTORY AND PROPOSED USES
(Continued)

BUILDING NO.	ORIGINAL PURPOSE	CURRENT USE	PROPOSED OWNERSHIP AIRPORT COMPLEX	EDUCATIONAL COMPL
61	Guard House	- -	Airport	Pepperdine Univ.
62	Field Maintenance Hangar	Sheriff/Fire Department -- Storage	Airport	Pepperdine Univ.
63	Ground Power Equipment	- -	Airport	Pepperdine Univ.
64	Engine Build-Up	- -	Airport	Pepperdine Univ.
65	Alert Crew	- -	Airport	Pepperdine Univ.
66	War Room	- -	Airport	Pepperdine Univ.
67	Paint Shop	- -	Airport	Pepperdine Univ.
68	Parachute & Dinghy	- -	Airport	Pepperdine Univ.
69	Organizational Hangar	- -	Airport	Pepperdine Univ.
70	Base Warehouse	Transcon -- Rented	Airport	Junior College
71	P&C Administration and Transportation Administration	- -	Airport	Junior College
72	Hazard and Flammable Storage	- -	Airport	Junior College
73	Dining Hall	Clifford Indus. - Rented	Airport	Pepperdine Univ.
74	Base Communications	- -	Airport	Pepperdine Univ.
75	Automotive Hobby Shop	ROP	Airport	Pepperdine Univ.
76	MARS	- -	Airport	Pepperdine Univ.
77	Water Storage and Pumping	Water Storage and Pumping -- Used	Airport	Pepperdine Univ.
78	Dispensary	- -	Airport	Pepperdine Univ.
79	Dental Clinic	- -	Airport	Pepperdine Univ.
80	Reclamation Yard, Base	- -	Airport	Pepperdine Univ.
81	Tennis Courts	Parks & Recreation	Parks & Rec.	Pepperdine Univ.
82	Swimming Pool	- -	Parks & Rec.	Pepperdine Univ.
83	Bath House	- -	Parks & Rec.	Pepperdine Univ.
84	Archery Range	- -	Parks & Rec.	Pepperdine Univ.
85	Baseball Field	Parks & Recreation	Parks & Rec.	Pepperdine Univ.
86	Football Field	Parks & Recreation	Parks & Rec.	Pepperdine Univ.
87	Softball Field	Parks & Recreation	Parks & Rec.	Pepperdine Univ.
88	Indoor Firing Range	- -	Parks & Rec.	Pepperdine Univ.
89	Picnic & BBQ Area	- -	Parks & Rec.	Pepperdine Univ.
90	Children's Play Sculpture Area	Used	Parks & Rec.	Pepperdine Univ.

A third alternative, "no action," has been considered within this statement. However, due to the strong interest displayed in obtaining the property by various agencies, there is little possibility that this land would remain idle for very long, if at all.

The application for the proposed airport complex, which was submitted by Ventura County, indicates that certain restrictions will be placed upon aircraft operations if the proposed plan is implemented. The Federan Aviation Administration has agreed to these restrictions, a copy of which is included as Appendix C. The most profound restriction is one intended to essentially limit commercial jet aircraft operations.

It is assumed by GSA and its consultants that if the proposed operational restrictions are released to allow for greater levels of aircraft operation, the environmental impact of such release would be assessed at that time by Ventura County.

The basis of this EIS is primarily the Ventura County Application and the restrictions contained therein which limit the proposed airport operations in number of aircraft operations (14 takeoffs and 14 landings per day) in hours of operation (no operations between 10 p.m. and 7 a.m.) and maximum weight of the aircraft. These and other limitations are detailed in the application.

The application and the following reports and studies have been referenced or quoted after review and analysis by the consultant in determining the environmental impacts such as amount of air emissions, noise levels, and traffic generation figures: the Adrian Wilson & Associates study, Master Plan of General Aviation, Phases I, II and III, July 28, 1970; the study prepared by The Committee Against Camarillo Airport (CACA), Analysis of Adrian Wilson Report: Phases I and II, 7 April 1970, the study prepared by Environmental Resources Inc. and Travelers Research Corporation, An Analysis of the Air Pollution Potential in Selected Areas of Ventura County; and the Draft Environmental

Statement prepared by GSA July 16, 1971 and the resulting Environmental Protection Agency Comments.

This basis represents the most conservative case, i.e., the uppermost expected environmental impacts. These airport operation levels are assumed to be reached in 1975; however, this is only approximate as many factors which influence airport demand cannot be accurately quantified.

All of the aforementioned studies and applications submitted to GSA are available for review at the Regional Office of GSA, 525 Market Street, San Francisco, California

Section III

PROJECT DESCRIPTION

Section III
PROJECT DESCRIPTION

The Oxnard Air Force Base, GSA Control Number D-California-410-B, is located in the City of Camarillo, California, and includes about 774 acres of occupied land. The total occupied land and easement rights are shown in Figure 0.4. The property is currently split between the present Air Force facility, Parks and Recreation, high school, Regional Occupational Program School, and Ventura Community College.

The proposed plan of disposal will be comprised of four major elements:

1. Commercial airport.
2. Education/recreation facilities
3. Airport support and industrial facilities
4. Miscellaneous (church and federal use)

These four elements are shown in Figure 0.2.

1. Commercial Airport

The general layout of the proposed airport is shown in the Ventura County application and includes approximately 633 acres. The County of Ventura's basis of need for such a facility is described in the 25-year plan of development which is provided in the Master Plan of General Aviation, Adrian Wilson and Associates, July 28, 1970, a copy of which is available for review in the regional offices of the GSA in San Francisco.

As indicated by Ventura County Airport officials, there are a number of reasons that make the Oxnard Air Force Base a more desirable location for the county airport. Some of these stated reasons were:

It is important to note that the above facilities are now in use and would be retained basically as they now exist.

3. Airport Support and Industrial Facilities

This area adjacent to the proposed commercial airport comprises approximately 40 acres and would provide a portion of the economic base for the airport operation. Typical uses would include leasing to various industrial and commercial enterprises.

4. Miscellaneous

A very small portion of the property is now occupied by a vacant church and Federal Immigration and Naturalization Service (1.17 acres). These are intended to remain in these services, with the church being sold to a religious organization.

Section IV

ENVIRONMENTAL IMPACT ASSESSMENT

Section IV
ENVIRONMENTAL IMPACT ASSESSMENT

1.0 ECONOMICS

1.1 Detailed Environmental Setting

1.1.1 Economic Baseline

The economic impacts related to the movement of an airport within a region, or the expansion of the size and scope of the services of an existing airport, are felt both in the short term and the long term. In the short term (construction phase), direct and indirect employment opportunities are created in the construction and supply industries. In the long term, employment creation is a direct result of the operation of the airport facility and its related businesses as well as a good indicator of the extent of resultant regional or local economic stimulus.

Other direct impacts result in beneficial or detrimental indirect impacts in the local economy. They include such "quality of life" issues as effects of traffic congestion, air pollution, noise, landscape degradation, etc. These issues are in large part covered in their own sections within this EIS. However, the extent of their local economic impact can be indicated in an overall sense by their effect upon surrounding land values.

These and other positive and negative impacts of converting the existing Oxnard Air Force Base (OAFB) to a commercial/general aviation airport are discussed in this section.

1.1.2 Employment Baseline

Since September 1, 1970, the Standard Metropolitan Statistical Area (SMSA encompassing Oxnard, Simi Valley, and Ventura, has been classified as an area of "substantial unemployment" by the California Department of Human Resources Development. Since May of that same year, Ventura County has been eligible for federal grants for public works and development facilities under Title I of the Public Works and Economic Development Act of 1965 (PWEDA). Generally speaking, current high levels of unemployment in the Oxnard-Simi Valley-Ventu SMSA are due to the failure to date of area economic and business development to keep pace with recent population growth rates.

Projections of economic growth in Ventura County have varied widely in recent years, as have those of population in the county. With a 1970 county population of 410,900, total civilian employment in that year ran just over 112,000. This was the result of a steady uptrend from around 95,000 in 1968 (a compound growth rate of about 8.5%). Between 1970 and 1973, county employ- ment has risen at a much more moderate pace with manufacturing employment actually declining somewhat (due to the declines in aerospace and durable goods employment). Between 1968 and 1970, trade and services led in total employment, with government, manufacturing, and agriculture following in that order* (see Fig. 1.1).

Table 1.1 is a summary of the changes in county labor force, employed an unemployed, during the period November 1971 and November 1972. Reflected in this table are the results of the following employment trends during that yea

- Manufacturing - Aerospace employment rose from a record low of just over 5,000 in the fall of 1971, to more than 6,000, its highest level in the previous two years. Meanwhile, durable and nondurable goods manufacturing employment remained relatively constant.

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*California Department of Human Resources Development, "Area Manpower Review: Economic Review of Ventura County, May 1972-November 1972," January 1973, p. 8.

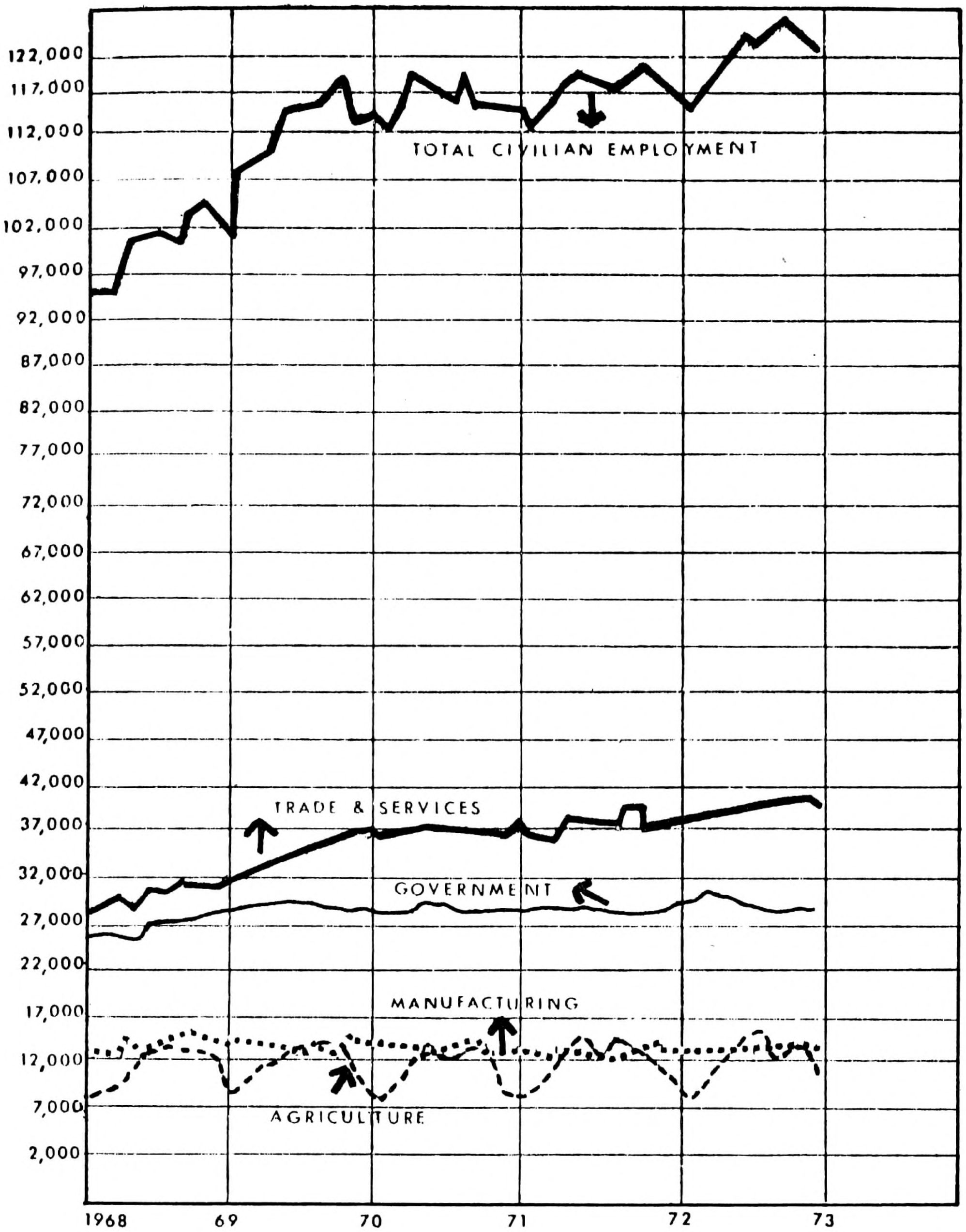

Figure 1.1 LONG-TERM TRENDS IN TOTAL EMPLOYMENT AND MAJOR INDUSTRY DIVISION - VENTURA COUNTY

Table 1.1

LABOR FORCE SUMMARY[a]

	NOVEMBER 1972	OCTOBER 1972	SEPTEMBER 1972	MAY 1972	NOVEMBER 1971	% CHANGE FROM 11/71 TO 11/72	PROJECTED FEBRUARY 1973	PROJECTED MAY 1973
Total civilian work force	129,800	130,900	132,300	132,600	126,700	+ 2.5	129,500	135,500
Unemployment	7,700	6,200	6,600	8,800	7,600	+ 1.3	8,100	7,300
Unemp. rate - seas. adj.	6.0	5.7	5.9	6.2	6.1	- 1.6	5.2	5.8
Unemp. rate - unadjusted	5.9	4.7	5.0	6.6	6.0	- 1.6	6.3	5.4
Total civilian employment	122,100	124,700	125,700	123,800	119,100	+ 2.5	121,700	128,500
Nonag wage and salary	99,600	99,900	100,100	98,700	95,700	+ 4.1	99,900	102,200
Mining	1,700	1,700	1,700	1,700	1,700	0.0	1,700	1,700
Construction	4,600	4,800	4,900	4,900	4,600	0.0	4,500	4,700
Manufacturing	13,700	14,000	14,100	12,800	13,000	+ 5.4	13,500	13,800
Durable goods	8,400	8,200	8,100	7,900	7,600	+ 10.5	8,500	8,700
Stone, clay, and glass	200	200	200	200	200	0.0	200	200
Machinery	3,100	3,000	2,900	2,800	2,700	+ 14.8	3,300	3,500
Ord. and trans. equip.	3,400	3,300	3,300	3,200	3,100	+ 9.7	3,500	3,600
Other durable goods	1,700	1,700	1,700	1,700	1,600	+ 6.2	1,500	1,400
Nondurable goods	5,300	5,800	6,000	4,900	5,400	- 1.9	5,000	5,100
Food and kindred	2,000	2,500	2,700	1,500	1,900	+ 5.3	1,600	1,700
Apparel	600	600	600	600	600	0.0	600	600
Printing and publishing	800	800	800	800	800	0.0	800	800
Other nondurable goods	1,900	1,900	1,900	2,000	2,100	- 9.5	2,000	2,000
Trans., comm., and util.	4,600	4,600	4,600	4,600	4,300	+ 7.0	4,300	4,400
Trade	23,600	23,900	24,100	24,000	22,400	+ 5.4	23,800	24,700
Wholesale	3,700	4,000	4,300	4,500	3,800	- 2.6	3,700	4,400
Retail	20,000	19,900	19,800	19,500	18,600	+ 7.5	20,100	20,300
Fin., ins., and r.e.	3,700	3,700	3,700	3,600	3,600	+ 2.8	3,700	3,700
Services	16,300	16,300	16,200	16,000	15,500	+ 5.2	17,100	17,700
Government	31,400	30,900	30,800	31,100	30,600	+ 2.6	31,300	31,500
Federal	10,600	10,600	10,500	10,400	10,600	0.0	10,600	10,600
State and local	20,800	20,300	20,300	20,700	20,000	+ 4.0	20,700	20,900
All other nonag employment[b]	11,900	11,900	11,900	11,900	11,700	+ 1.7	12,100	12,100
Agriculture	10,600	12,900	13,700	13,200	11,700	- 9.4	9,700	14,200

a. March 1972 benchmark data.

b. Self-employed, unpaid family, and domestic workers.

- Trade - Employment in the trade industry rose by 5 percent over the previous year.
- Construction - Construction employment remained relatively constant during the period averaging 4,800 for a gain of only 2 percent over the comparable period one year before.
- Services - Services employment increased 6 percent during the same period in 1971. This expansion was largely in business and personal services which grew to match the comparable growth in population.
- Government - Government employment grew 44 percent over 1971, reflecting largely a growth in teacher employment for the added population.
- Agriculture - Heavy rains and extermination of chickens (thought to have Newcastle's disease) forced the 12,400 farm employment count to drop to 12,000 during this period.

Future projections of county employment (hence economic growth) vary as widely as do projections of its population. In 1972, Southern California Regional Aviation System Study (SCRASS) published a UCLA Business Forecasting Project forecast of employment growth from 112,000 in 1970 to 194,000 in 1985 (a compounded rate of nearly 3.8%).* Forecasts published in former years were higher, as were all forecasts related to population-related factors in California. In 1970, Adrian Wilson & Associates projected a compound growth rate of county employment to 1985 of 5.5 percent.**

The seasonally adjusted unemployment rate in Ventura County between January and November 1972 averaged 6.1 percent. In November of that year,

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*System Development Corporation/William L. Pereira Associates, "Final Report: Southern California Regional Aviation System Study," July 19, 1972, p. 39.

**Adrian Wilson & Associates, "Phase II: Commercial Aviation Feasibility Study," March 2, 1970, p. 5-1.

the county unemployment rate was significantly above that of both the state as a whole and the U.S., as follows:*

Ventura County	6.0%
California	5.6%
U.S.	5.2%

In the report section on population, it is shown that county population is expected to grow by at least 50 percent by 1985. If this is so, employme opportunities, hence county economic development, will at least have to keep apace or this unemployment level will go even higher. At present this is not happening: "... the population of Ventura County keeps on growing at a rapid pace with the area's industries not being able to absorb the increasing labor force."** The problem is most pronounced in "minority" employment. It can b seen in Table 1.2 that in every minority category, except "other non-white," the percent unemployed is larger than that category's proportion of the work force.***

1.1.3 Income

In the ten years before 1969, income grew at a faster rate in Ventura C than in the state as a whole. Between 1959 and 1969, medium county income, a justed for inflation, grew 37 percent while the comparable state figure was 2 percent.**** In that same year, mean and median incomes were distributed by occupational group and by race, as indicated in Table 1.2, and geographicall as set forth in Figure 1.2.

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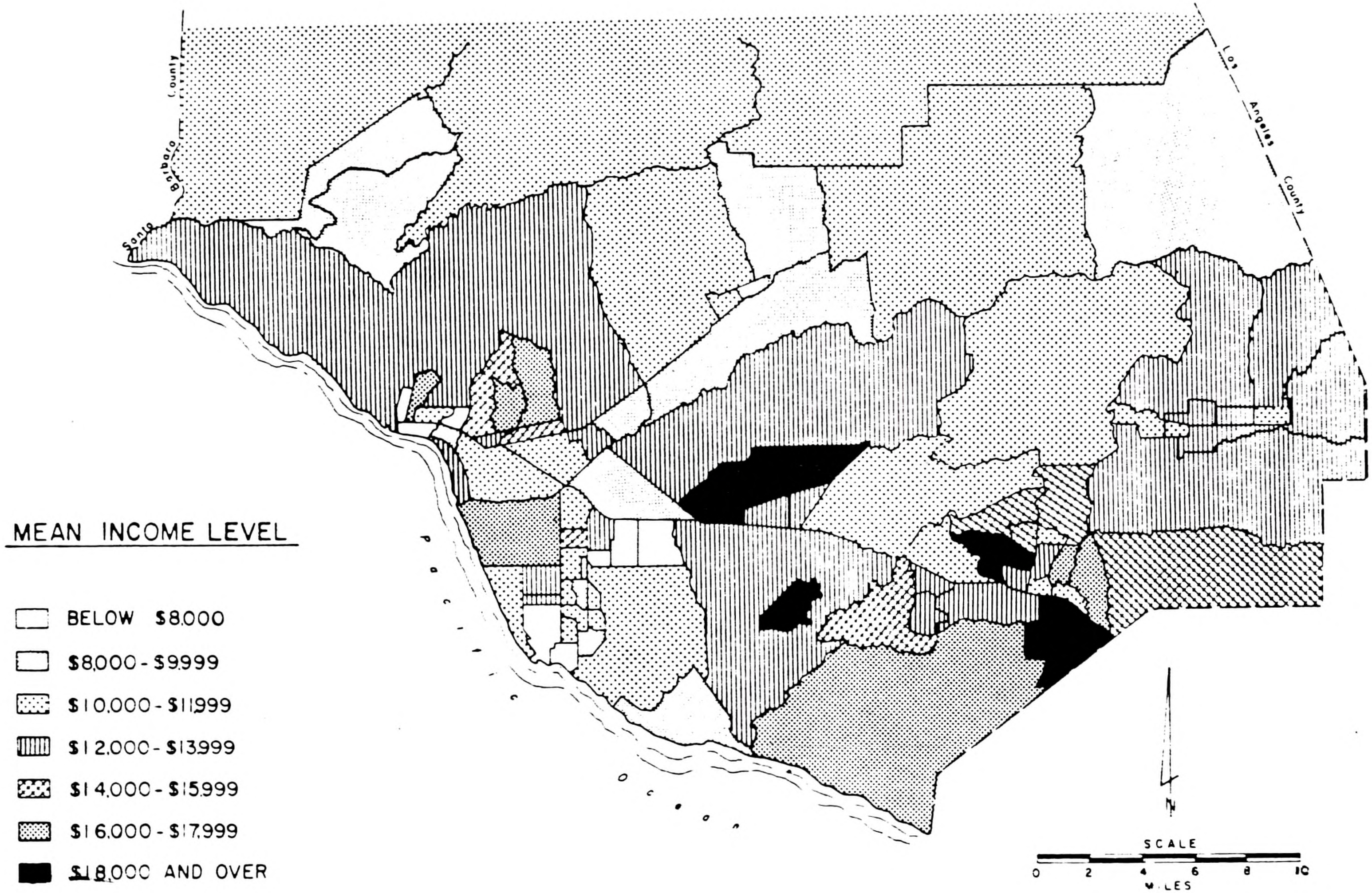
*The foregoing discussion was abstracted largely from the California Depar ment of Human Resources Development's "Area Manpower Review: Economic Review of Ventura County, May 1972-November 1972," January 1973, pp. 6-20.

**Ibid., p. 31.

***Ibid.

****Ventura County Planning Department, "General Social and Employment Characteristics of Ventura County," p. 60.



Source: General Social and Employment Characteristics of Ventura County, op.cit., p. 62

Figure 1.2 VENTURA COUNTY CENSUS TRACTS

Table 1.2

MEDIAN AND MEAN INCOME IN 1969 BY MAJOR OCCUPATIONAL GROUP OF MALES AND FEMALES 16 YEARS OLD AND OVER, BY RACE AND ETHNIC GROUP[a]

INCOME	TOTAL	WHITE	BLACK	OTHER	SPANISH AMERICAN
MALE					
Professional, managerial and kindred workers					
Median	12,469	12,489	10,549	11,642	11,413
Mean	13,070	13,084	11,207	12,896	11,756
Craftsmen, foremen and kindred workers					
Median	9,418	9,442	7,763	8,777	8,272
Mean	9,294	9,315	7,294	8,693	8,176
Operatives, including transport					
Median	7,381	7,447	6,169	6,239	6,259
Mean	7,125	7,180	5,631	5,939	6,010
Laborers, except farm					
Median	5,539	5,429	6,409	7,866	5,685
Mean	5,484	5,412	5,604	8,334	5,303
Farmers and farm managers					
Median	8,184	6,948	500	10,499	4,894
Mean	9,904	9,702	250	11,857	6,279
Farm laborers, except unpaid and farm foremen					
Median	4,160	4,138	2,899	4,937	4,031
Mean	4,254	4,143	4,743	6,441	3,728
Total male experienced labor force					
Median	8,899	8,961	6,536	7,926	6,186
Mean	9,301	9,337	6,748	9,038	6,573

Table 1.2 (continued)

INCOME	TOTAL	WHITE	BLACK	OTHER	SPANISH AMERICAN
FEMALE					
Clerical and kindred workers					
Median	4,449	4,462	3,775	4,631	3,366
Mean	4,206	4,219	3,585	4,121	3,542
Operatives, including transport					
Median	3,018	3,046	2,616	2,723	2,577
Mean	3,139	3,128	3,196	3,342	2,703
Total female experienced labor force					
Median	3,773	3,786	3,402	3,593	2,731
Mean	4,143	4,157	3,569	4,002	3,166

a. With earnings.

Source: Area Manpower Review, 1973, p. 67.

1.1.4 Land Values

The report section dealing with land use describes the lands immediately surrounding the Oxnard Air Force Base as being used almost entirely for agriculture. More specifically, these lands are currently planted in celery, tomatoes, strawberries, and lettuce.

Similarly, the majority of land surrounding the Ventura County Airport is agriculturally used today. This airport, however, is located near the city of Oxnard. Westward movement of the developed portion of that city has placed some residential, commercial, and light industrial land uses adjacent to the airport property to the east.

Current market values of the agricultural lands surrounding both airports are dictated largely by their proximity to a city or major arterial, as well as their potential for eventual development as commercial, residential, or industrial sites. Agricultural lands surrounding Oxnard Air Force Base currently range in market value between $5,500 and $6,000 per acre in open areas to the south and west, and up to $8,000 or more per acre approaching US 101 to the north or the city of Camarillo to the east. If traded today, the market value of these lands could go significantly higher depending upon the intended use.

In the vicinity of the county airport, current market values for land are somewhat higher. While land north of the airport sold for agricultural use at $8,500 per acre (sale around 1970), current sales of residentially developable land place market values north of the airport at around $12,500 per acre. Neighboring lands to the north, which were being planned for light industrial development would now sell for $15,000 to $20,000.* Commercially developable land ranges from $20,000 up.

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*Land values taken from examples of area land sales obtained from Ventura County Tax Assessor.

A relatively small residential tract exists adjacent to the county airport property at its northeast corner. A densely populated portion of central Oxnard also approaches to within 1/4 mile of the airport at its east end. The homes in the smaller tract are relatively new, being constructed within the past eight years. The median value of the units in that census tract was $29,000, and the median income of their residents was $15,657 in 1970.

The adjacent residences in western Oxnard are older and are valued proportionately less. Nearly 85 percent of these homes were constructed before 1960. Their median value in 1970 was $18,700, and their residents' median income was $9,914.*

1.1.5 Inactivated Base Uses

The Oxnard Air Force Base has been on the inactive rolls since December 1969. During the past four years, it has been maintained by a staff of four under the direction of the General Services Administration. Many organizations, public and private, have used portions of the buildings and facilities on the base -- some have paid rent, while others have provided a service while there and, as such, have not had to pay.

The largest single area has been used by the local Regional Occupational Program (ROP) under the direction of the Ventura County Superintendent of Schools. With an enrollment of 325 this year, the program teaches job preparatory classes in restaurant occupations, dental assisting, auto body work, air conditioning, refrigeration, heating, general mechanics, and auto service. Also provided are special facilities for testing the hearing of school children, a center for child development, and physical education for the handicapped. The ROP is a present applicant for continued use of its existing space.

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*U.S. Census of Population and Housing, 1970.

A recent (September 1973) user of the Oxnard Air Force Base facilities is the Continuation High School under the direction of the local high school district. With a co-ed enrollment of 64, this school provides continuing high school opportunity for students who have not adjusted well to the normal community high school setting. The area currently occupied by this use includes the former base bowling alley, theater, gymnasium, exchange, and administration building. The high school is also a present applicant for continued use of a portion of the base. Another user, Ventura Community College, uses about 40 acres for an agricultural program.

As public facilities, neither of the above educational institutions pays for its use of the base. Other non-revenue producing uses have been:

- Boy Scouts of America
- Civil Air Patrol
- Bicycle clubs
- Boys' clubs
- Academies for local police and fire departments
- Miscellaneous recreational activities
- Immigration and Naturalization Service

Private base users who have paid rent to the General Services Administration include:

- A charter bus company (for outside storage space and hangar repair space)
- A trucking firm (for warehousing)
- Filming crews (for shooting TV commercials and short films)
- An automobile company (for outdoor storage of new cars).

GSA seeks to transfer this air force base to the "best" recipient. Included in the transfer would be all or part of a total of 96 structures (77 permanent, 17 semi-permanent, and 2 temporary). The total square footage of these buildings is 547,821. Their original cost was $15,785,267.07.

At least 62 of the buildings are usable. These are considered to be in good condition, having depreciated only about 20 percent. The 1970 depreciated market value of these structures is placed at $6,363,740.* The market value of the Oxnard AFB land has been conservatively estimated at $8,800 per acre by the Property Division of the Ventura County Public Works Department. Finally, navigational easements are estimated at $2,770,000, for a grand total current market value of $15,873,740 (in 1970 dollars, disregarding worth of buildings not considered readily usable).

1.2 Detailed Impact Analysis

1.2.1 Impacts - Employment

Short Term. The major short-term (construction phase) direct economic impact of the proposed plan for utilization of the Oxnard Air Force Base will be the construction jobs created. Table 1.1 indicated that current country-wide construction employment is varying cyclically between 4,500 and 4,900, depending on the season. This total has held relatively constant in recent years.

If the Oxnard Air Force Base were to be converted for use under the proposed plan (county airport focus), its major components would be:

- New Ventura County Airport
- Park (Pleasant Valley Park and Recreation District)
- Continuation High School (Oxnard Union High School District)
- Regional Occupational Program (County Superintendent of Schools
- Ventura Community College
- Immigration and Naturalization Service
- Chapel

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* Department of Airports and Harbors, County of Ventura, "Report of Evaluation: Oxnard Air Force Base," April 3, 1970, p. 5.

Construction, cleaning, mechanical, or maintenance expenditures would be involved in most cases. At current averages of proportion of total cost to labor and current wage levels, man-years of labor to be created are outlined in Table 1.3.

Initial airport plans entail a large continuing capital improvement program. The program proposed by the County airport application is presented in Table 1.4. It must be remembered, however, that this program was drafted in light of the high area population and economic growth projections published in earlier studies. If current trends continue and these high projections are not realized, this extent of airport capital investment will not be needed. Because of the impossibility of predicting either the actual future county growth rate or the rates of inflation in building costs and salaries up to 25 years in the future, only generalizations are now possible concerning the potential for generation of construction employment. To the extent that such expenditures are made, comparison of the cost and employment equivalents in Table 1.4 will give some indication of the magnitude of the construction employment which would result.

Long Term

Regional Employment Impacts. As with short-term impacts, the most significant long-term impact of the proposed plan is its potential for stimulation of local economic growth. To the extent that this growth occurs, its impact will be most noticeably felt as increased opportunities for employment in Ventura County.

There is no doubt that opportunities for greater employment in the county receive high priority in the current decision-making process at that governmental level. It has been strongly suggested that continued growth (in either the economy or the population) is not the aim at all levels of government within the county. Nevertheless, it was pointed out

Table 1.3

ESTIMATED COSTS AND MAN-YEARS OF LABOR CREATED IN INITIAL CONVERSION TO PLANNED USES UNDER PROPOSED PLAN - AIRPORT[a]

		CAPITAL COST	MAN-YEARS LABOR[b]
New County Airport			
Modification of Building 306 for terminal and offices (planned for temporary use), extension of existing aircraft and parking ramp	$156,000[c]		
Runway lighting[d]	3,000		
Tie downs	3,000		
		$162,000	2.3
Continuation High School			
Renovation of Buildings 200, 238, and 258, plus maintenance		25,000	0.4
Regional Occupational Program (ROP)			
Renovation of Building 161	$ 2,000		
Renovation of Building 166	35,000		
Raising Building 164	n.a.		
		37,000	0.6
Totals		$224,000	3.3

a. Cost estimates taken from respective applications. Estimates for Ventura Community College and the Immigration and Naturalization Service are not included since these planned uses are currently in use and therefore will require no significant initial conversion costs. Estimates for the Park and the Chapel are not included since it is anticipated that there will be only small initial conversion costs.

b. Average proportion of construction wages within total building cost taken from U.S. Dept. of Commerce, "1967 Census of Construction Industries," pp. 26-3, and 26-4. Average salary levels in SMSA inflated to 1973 from 1969 levels in "Area Manpower Review," 1973, p. 67.

c. "Report of Evaluation: Oxnard Air Force Base," p. 4.

d. First year of capital improvement program, Table 1.4.

Table 1.4

CAPITAL IMPROVEMENT PROGRAM
(Dollars x 1,000)

ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEARS 6-10	YEARS 11-15	YEARS 16-25	TOTAL
Land						600.0	780.0		1,380.0
Paving, airfield		30				440.6		990.0	1,460.6
Paving, non-airfield			135			72.5	80.6	764.5	1,052.6
Grading and drainage						136.0		176.8	312.8
Runway lighting	3					145.2		372.5	520.7
Roads				25		237.5	37.5	372.0	672.0
Fencing		5				28.5	22.0		55.5
Turf and sod					50	124.0	200.0		374.0
Terminal building		56				50.0	462.8	925.0	1,493.8
Tie downs	3		2			6.6	27.6	27.0	66.2
ILS		75				160.6			235.6
	6	166	137	25	50	2,001.5	1,610.5	3,627.8	7,593.8

Source: Ventura County Department of Airports and Harbors' application for use of Oxnard Air Force Base, Attachment 6.

earlier in this report that unemployment is currently higher than at state or federal levels, and that the gap between existing growth rates in population and those in job opportunities is continuing to widen.

Concern for this disparity is reflected in the three criteria listed in the Ventura Overall Economic Development Plan to be used in judging all county project proposals. Listed in order of importance, they are:

1. Absolute numbers of private sector jobs created

2. The number of jobs which will be created for the target (low-income and minorities) population

3. The contribution to the overall economic well-being of Ventura County.*

A very real question exists, however, concerning the actual degree of contribution to regional economic growth which is provided to an area by locating with it a jet airport with adequate capacity to serve local needs. Much has been written on this subject. Earlier references claimed very significant degrees of stimulus to area economic growth could be attributed to the location of an airport in that area. Many more recent analysts, however, have tended to diminish the influence of the airport alone, claiming that airports do not affect economic development by themselves; that within a region, airports are a part of the infrastructure much the same as roads, utilities, and communications systems. For example, the recent SCAG publication entitled "Economic Impact of Airports" contends that only ". . . if airport capacity is significantly below air travel demand (manifested in poor air service levels, difficulty in obtaining flight reservations, traffic congestion, delays, etc.) (are) increases in capacity . . . likely (to) have significant positive economic impacts."**

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* Ventura County Planning Department, "Ventura County Overall Economic Development Plan: Annual Report," March 1973, p. 61.

** Southern California Association of Governments, "Regional Aviation Study Hearing Program: Economic Impacts of Airports - An Issue Paper," (undated), p. 6.

The report goes on to reason that direct and indirect employment stimulus by airports occurs only if significant population and economic growth is occurring anyway. "An increase in airport employment (and employment in related industries) is due to increases in employment, population, and income in the region and nation; which in turn generate an increased demand for air services and, subsequent, increased airport employment."*

Thus, the degree to which the existence of a jet airport in Ventura County will serve to stimulate immediate economic development depends upon the extent to which existing air service is demonstrated to be inadequate for current demands. Likewise, assuming that the proposed airport were constructed, the extent to which it might be expected to provide an additional boost to future regional economic growth rates depends upon the degree to which regional economic growth is to be fostered in all other public and private sectors.

Although there is little doubt that the current level of commercial air service to Ventura County falls short of existing needs, and that a jet airport will certainly some day be needed in the county to answer future transportation demands, the extent of these future demands (the rate at which they may grow) is certainly subject to question.

The major source of this question is the recent trend, locally and nationwide, toward slowing historic growth. For example, the lowered growth projections for county population and employment which are discussed in this report encompass only a period of two years. Still, the differences between the growth projections in these two vital areas made in 1972 are sufficiently lower than those which served as the basis for the 1970 Adrian Wilson projections of future airport demand to invalidate those 1970 projections. The political and social issues and questions

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* SCAG, "Economic Impacts of Airports - An Issue Paper," p. 6.

which will determine the extent of allowed or promoted future growth in Ventura County are subject to debate and decisions at levels which go beyond the scope of this EIS.

Local Employment Impacts. Local economic impacts of a jet-capable commercial airport within the city of Camarillo will be largely in terms of employment generated at the airport itself and at surrounding airport-related industrial and service organizations, and retail shops. The best indicator of the magnitude of this direct impact is provided by a September 1973 analysis performed by the California Human Resources Development. Entitled simply "Ventura County Airport Project," the brief outline of the findings of this analysis present a series of tables comparing the number of current employees in the Ventura County Airport and its directly related businesses with those in each of seven comparable airport complexes in California. The figures were developed in a series of recent surveys. The other airports considered were:

El Centro Airport
Kern County Air Terminal (Bakersfield)
Fresno Air Terminal
Monterey Peninsula Airport
Salinas Airport
Modesto Airport
Stockton Metropolitan Airport

Table 1.5 presents the results of the survey at Ventura County Airport. There are 159 persons employed in the airport itself and in the 16 related businesses in or around the airport. The number of commercial airline passengers in 1972 was 37,642. This yields a ratio of 2.37 employees per passenger, a rate nearly 10 times the level at the other seven airports. This unusually large employment is attributed to both the higher volume of general aviation activity (hence related business) at the Ventura County Airport, and the extremely low number of commercial passengers per population served. Otherwise, the mix of employment at the

Table 1.5

CURRENT EMPLOYMENT IN VENTURA COUNTY AIRPORT
AND ITS RELATED BUSINESSES
(July 1973)

	TOTAL ALL INDUSTRIES	SERVICES	RETAIL TRADE	TRANSP. COMM. UTIL.	GOVT.	MFG.
Total all occupations	159	68	29	5	30	27
Managers	21	10	4	1	5	1
Clerical	24	5			18	1
Sales	12	8		4		
Craftsmen	28	1	2			25
Operatives						
Services	73	44	22		7	
Laborers	1		1			

Note: Ventura County Airport statistics:
Number of businesses = 16
Number of employees = 159
Number of passengers (1972) = 37,642

Ventura County Airport and its related businesses is comparable to that at the others. Service employees amounted to the largest part of the whole in each case, amounting to 45.9 percent at Ventura. Craftsmen (17.6%) and managers (13.2%) constituted the next highest occupations represented. This mix is generally typical of the other airports as well.

If Oxnard Air Force Base is converted to a county airport complex, the existing commercial operation at the Ventura County Airport would be moved there. With it would go many, but not all, of these related businesses and their employees. The old county airport would continue at a reduced level of general operation. Many of those businesses which serve general aviation would stay on. However, without extensive analysis, it is difficult to ascertain which businesses would move to the new site and which would be financially prohibited from doing so. It is also possible that some small businesses might go bankrupt as a result of this shift, but the actual number will likely be small and unquantifiable without extensive interviews.

As no significant immediate stepping-up of commercial service is anticipated in the new county airport setting (and both high levels of intrastate service and any possible interstate service are at least several years away), it seems reasonable to assume that the largest likely employment boost to the Camarillo area to result from this move would be another 159 jobs. However, since the distance between the existing airport and Oxnard Air Force Base is relatively short, it must be also assumed that many of the current position holders would follow their jobs to the new setting and, consequently, relatively few "new" jobs could be expected to be created.

Those "new" jobs which are created should prove to aid local unemployment problems, however. The HRD analysis contains a second part which shows the characteristics of a sampling of about two-thirds of the unemployed workers in the county. These characteristics are outlined in

Tables 1.6 and 1.7. Note that significantly more persons in the two-thirds sample are available and have compatible age, education, and experience characteristics than would be required to fill these jobs. Note too that, with the exception of the "services" category, sufficient unemployed persons in each category live in Camarillo itself.

The potential for indirect airport stimulation of local economic growth beyond airport-related businesses must be considered minimal when taken by itself. As in the regional context, unless the entire package of economic growth-facilitating elements (including favorable local government action) is present, the addition of an air transportation element is going to be of less significance as a growth stimulant. The majority of Ventura County businesses are located within a 60-minute drive of either Los Angeles International (LAX) or Hollywood-Burbank Airports. At these, direct interstate air freight and passenger transport is available today to existing industries. This availability will not be matched in the foreseeable future at a new Ventura County Airport.

In a recent survey conducted by URS Research Company, 12 manufacturing firms in the vicinity of the San Jose Municipal Airport were asked to comment on the relative importance of the various elements in their decision to locate in the vicinity of the airport. The firms surveyed were from a broad spectrum of Standard Industrial Code (SIC) classifications, and were identified as being both among and representative of the most active air freight shippers through that airport.

In random order, the decisional elements listed most frequently were the relative location or existence of:

Markets
Labor
Transportation
Raw materials
Power, fuels, and water
Favorable community factors
Site factors

Table 1.6

UNEMPLOYED APPLICANT CHARACTERISTICS
SEX-AGE-EDUCATION-EXPERIENCE
VENTURA COUNTY - 1973[a]

CODE		SEX			AGE					EDUCATION					EXPERIENCE				
		TOTAL	MALE	FEMALE	TOTAL	UNDER 21	21-40	41-60	61+	TOTAL	0-11 YEARS	H.S. GRAD.	1+ YRS. COLLEGE	COLL. GRAD.	TOTAL	LESS THAN 1 YEAR	1-3 YEARS	3-9 YEARS	10+ YEARS
	Total	4,868[b]	3,033	1,835	4,868	482	2,733	1,452	201	4,868	1,324	2,117	1,103	324	4,868	574	1,319	1,750	1,225
0-1	Professional, technical, managerial	819	546	273	819	25	406	340	48	819	54	276	283	206	819	35	269	272	243
2	Clerical and sales	1,444	401	1,043	1,444	134	792	457	61	1,444	194	781	378	91	1,444	156	294	600	394
3	Services	684	439	245	684	96	368	193	27	684	303	261	113	7	684	137	206	240	101
4	Farming, fishery, forestry	129	117	12	129	19	80	22	8	129	73	32	22	2	129	35	34	40	20
5	Processing	157	98	59	157	11	81	55	10	157	83	54	18	2	157	18	48	51	40
6	Machine trades	304	288	16	304	33	180	83	8	304	83	148	69	4	304	23	86	97	98
7	Bench work	251	133	118	251	24	163	58	6	251	109	101	40	1	251	34	89	90	38
8	Structural	451	449	2	451	50	284	101	16	451	150	220	77	4	451	35	130	142	144
9	Miscellaneous	629	562	67	629	90	379	143	17	629	275	244	103	7	629	101	163	218	147

a. California Department of Human Resources Development, "Ventura County Airport Project," September 1973.

b. Approximately two-thirds sampling of county unemployed work force.

Table 1.7

UNEMPLOYED APPLICANT CHARACTERISTICS
PLACE OF RESIDENCY
VENTURA COUNTY - 1973[a]

CODE	OCCUPATION	TOTAL	CAMARILLO	FILLMORE-STA PAULA	OJAI	OXNARD	PORT HUENEME	SIMI VALLEY	THOUSAND OAKS NEWBURY PARK	VENTURA	ELSEWHERE VENTURA CO.	OUT OF COUNTY	INA
	Total	4,868[b]	315	291	155	1,783	253	168	598	1,112	134	32	25
	Percent of Total	(100.0)	(6.5)	(6.0)	(3.2)	(36.5)	(5.2)	(3.5)	(12.3)	(22.8)	(2.8)	(.7)	(.5)
0-1	Professional, technical, managerial	819	78	41	31	239	34	37	166	171	15	7	0
2	Clerical and sales	1,444	107	64	50	472	67	61	266	314	33	11	0
3	Services	684	31	46	17	285	37	14	56	173	24	--	1
4	Farming, fishery, forestry	129	5	16	6	50	16	2	4	25	5	--	0
5	Processing	157	8	8	3	68	18	--	11	28	9	--	4
6	Machine trades	304	22	22	8	123	13	13	17	71	11	1	3
7	Bench work	251	18	16	8	92	16	6	16	54	6	5	14
8	Structural	451	17	26	13	177	24	22	29	118	20	4	1
9	Miscellaneous	629	29	52	19	279	29	13	33	158	11	4	2

a. California Department of Human Resources Development, "Ventura County Airport Project," September 1973.

b. Approximately two-thirds sampling of county unemployed work force.

Seldom was transportation ranked among the considerations of higher importance. When it was, respondents most often stated ambivalence to the specific proximity of the San Jose Airport, stating that interstate service and broader flight coverage were available anyway at both San Francisco International Airport and at Oakland Metropolitan Airport which are 50 miles away or less. Their situation is comparable to that of industries in the Ventura County Airport area of influence with their proximity to LAX and Hollywood-Burbank Airport.

1.2.2 Lease Income

The Ventura County application for use of Oxnard Air Force Base as a commercial/general aviation airport included a discussion of the "Financial Need for Revenue-Producing Property" (p. 4-5). The projected revenues and expenses presented in that application are in Table 1.8.

The county application states, ". . . the average annual expenses for airport operations for the 25-year period will exceed the average annual operating income. Use of the airport-support area will be necessary to provide a break-even or slightly profitable operation."

A partial list of prospective lessees is given in Attachment 7 to the application:

PROSPECTIVE LESSEES AND TENANTS

Firm or Individual	Activity/Facilities
AVIATION-ORIENTED ACTIVITIES	
Hughes Aviation Company	Aircraft Modification and FBO - 6 buildings and approximately 20 acres
California Airmotive Corp.	Aircraft Modification and Repair - 2 large hangars and ramp space
Air Intercontinental, Inc.	Airline Service and Aircraft Manufacture - hangar and ramp space
Edward M. Boothe	Aviation Services (FBO) - 12,000 square feet
T. Thompson	Air Cargo Service (livestock)
D. Stanley Corcoran	Air Shipment of Fine China and Crystal
OTHER ACTIVITIES	
Karl Krumme	Light Manufacturing - 10,000 square feet
David Tallichet	Specialty Restaurant
American Home Industries	Prefab Housing - 350,000 square feet outdoors and 10,000 square feet under roof
Davis Ranch Company	Potato Chip Processing and Shipment - 40,000 square feet
PUBLIC SERVICE (No Lease Fee)	
Oxnard Kiwanis Club Camarillo American Legion County Sheriff	Rifle and Pistol Range
Civil Air Patrol	Aircraft Tiedown Space
Campfire Girls	Offices

+ what flight

W

what kind will airport

etc

Table 1.8

SUMMARY OF PROJECTED INCOME AND EXPENSES FOR PROPOSED VENTURA COUNTY AIRPORT LOCATED AT OXNARD AIR FORCE BASE[a]

	1ST YEAR	5TH YEAR	10TH YEAR	15TH YEAR	25TH YEAR
Revenues					
Source					
Aircraft tie downs	$ 36,000	$ 69,000	$102,000	$102,000	$102,000
Landing fees	15,000	153,000	263,000	338,000	350,000
Fuel and oil sales	11,000	21,000	31,000	35,000	40,000
Lease rents	75,000	225,000	375,000	425,000	500,000
Total[b]	$137,000	$468,000	$771,000	$900,000	$992,000

Expenses	
Operating Expenses	
Staff salaries and employee benefits	$205,000 per year
Supplies, services and fixed assets	95,000 per year
Total	$300,000 per year
Capital Improvements	
Average annual payment on principal	$320,000 per year
Average financing cost per year	60,000 per year
Contingencies	50,000 per year
Total	$430,000 per year

a. Ventura County Department of Airports and Harbors' application for surplus property at Oxnard Air Force Base, pp. 4-5.

b. Income from state or federal aid to airport programs is not included in this summary because such funds cannot be accurately predicted or relied upon.

It is difficult at this time to assess the extent of potential "use of the airport-support area . . ." It is important to point out, however, that to the extent that this additional revenue should fall short of covering this planned deficit, the county (taxpayers) would be liable for the difference. A determination of the actual extent of this liability is beyond the scope of this report.

1.2.3 Land Value Impacts

Surrounding Lands. It was explained earlier that agricultural lands surrounding both airports are now ranging between $5,500 and $8,000 per acre in market value. If the Ventura County Airport moved its operations to the Oxnard Air Force Base site, there is potential for a shift in surrounding property values at both airports. The recently formed county airport Land Use Commission has been given the responsibility of passing judgment on all proposed construction within a 2-mile radius of each airport in its county. If commercial airport operations were moved to Oxnard Air Force Base from the existing county airport, land values surrounding the latter might be expected to increase somewhat, reflecting the potential for eventual residential development. It is also most likely (and has been strongly recommended by many authorities) that land use surrounding the new airport would then be restricted to agricultural, commercial, or industrial uses. Eventual sale of nearby lands for this purpose will establish their market value (hence assessed value) at the then current rate for that type of land use. The effect will be to increase the total assessed valuation of Ventura County, as well as the worth of the potentially developable land to the landowner.

Today agricultural land in this part of Ventura County returns about $160/acre in annual property taxes. This same land used industrially would return about $480/acre, and used commercially about $550/acre. Hence these changes would increase the county tax rolls and owners' land value by factors of 200 percent to 340 percent, respectively.

The existing residential areas to the east and north of the base would face the potential of loss in quality-of-life (hence market) value to the extent that air traffic was initiated over their homes.

On-Base Lands. On-base lands which are leased to private concerns will be taxed at a reduced rate for the lessee's "possessory interest." Accordingly, land leased for industrial use would return approximately $360/acre at today's land values. Land to be used commercially would return about $410/acre.* Both figures are as compared to no tax returns for that property today.

Similarly, some of the agricultural land which surrounds the existing county airport could be considered residentially developable once commercial air traffic were moved away. To the extent that this is so, land values and tax returns would approximately double at today's market.

1.3 Unavoidable Adverse Impacts

The only potential adverse economic impact of conversion of the Oxnard Air Force Base to a county airport is the fact that any portion of the anticipated 25-year operational deficit which is not covered by lease revenue will likely be carried by county taxpayers.

1.4 Mitigating Measures

A necessary mitigating measure is an active and well planned promotional program for on-base leasable property.

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*URS estimates on the basis of figures obtained from Ventura County Tax Assessor.

1.5 Project Alternatives

1.5.1 Educational Complex

If Oxnard Air Force Base is converted to an educational complex, as backed by the City of Camarillo, its major economic impacts would be:

(1) the direct creation of on-campus employment;

(2) the indirect impact on the county work force of annually converting large numbers of unemployables (or persons currently underemployed) into people capable of holding more responsible and rewarding positions; and

(3) the economic stimulus to the community of the spending power of campus-housed students.

The basic facilities scheduled for inclusion in the educational complex are as follows:

Pepperdine University (includes Chapel)
Junior College (Ventura County Community College District)
Continuation High School (Oxnard Union High School District)
Regional Occupational Program (ROP - County Superintendent of Schools)
Park and Recreation (Pleasant Valley Park and Recreation District)
Immigration and Naturalization Service

The Continuation High School, the Regional Occupational Program, and a portion of the Ventura Community College exist today. Major economic impacts would involve the other three facilities.

Short-Term Impacts. The major short-term (construction phase) direct economic impact of the educational complex utilization of Oxnard Air Force Base will be the construction jobs created.

If the Air Force base were to be converted for use as an educational complex, its major components would be:

- Pepperdine University (includes Chapel)
- Junior College (Ventura County Community College District)
- Continuation High School (Oxnard Union High School District)
- Regional Occupation Program (ROP - County Superintendent of Schools)
- Park and Recreation (Pleasant Valley Park and Recreation District)
- Immigration and Naturalization Service

Reconstruction, cleaning, mechanical, and maintenance expenditures would be involved under this plan. At current averages of proportion of total cost to labor and current wage levels, man-years of labor to be created are outlined in Table 1.9.

Pepperdine University would begin with a student body numbering about 500, and an estimated employment level of 73 divided as follows:

33	professors
15	administrators
25	support
73	total

Within five years, enrollment is expected to climb to 1,500 and staff to about 160:

100	professors
25	administrators
35	support
160	total

The proposed junior college would be sized to accommodate an initial enrollment of 500 (growing to 1,500 after five years) and a staff of 150 (growing to 300) as follows:

75	instructors
75	administration and support
150	total

Table 1.9

ESTIMATED COSTS AND MAN-YEARS OF LABOR CREATED IN INITIAL CONVERSION TO PLANNED USES -- EDUCATIONAL COMPLEX[a]

		CAPITAL COST	MAN-YEARS LABOR[b]
Pepperdine University			
Initial conversion to "get on line"		$ 20,000	0.3
Junior College			
Remodeling and repairs	$500,000		
Utilities, grounds, roads	200,000		
Equipment, supplies	175,000		
Miscellaneous	125,000		
		1,000,000	15.7
Continuation High School			
Renovation of Buildings 200, 238, and 258, plus maintenance		25,000	0.4
Regional Occupational Program			
Renovation of Building 161	$ 2,000		
Renovation of Building 166	35,000		
Raising of Building 164	n.a.		
		37,000	0.6
Park			
Initial renovation and construction costs estimated $60,000-$90,000		75,000	1.2
Totals		$1,157,000	18.2

a. Cost estimates taken from respective applications.
b. Average proportion of construction wages within total building cost taken from U.S. Department of Commerce, "1967 Census of Construction Industries," pp. 26-3 and 26-4. Average salary levels in SMSA inflated from 1969 levels in California Department of Human Resources Development, "Area Manpower Review: Economic Review of Ventura County, May 1972-November 1972," January 1973, p. 67.

n.a. = not available.

It is likely that the instructors for these institutions would not come from the existing Ventura County work force. The positions for support personnel and, to some extent, administrators might serve to strengthen the roll of job opportunities for existing county residents.

Secondly, perhaps a more far-reaching employment impact would be the effect of career/trade-oriented education to be provided at both of these institutions, as well as at the ROP and Continuation High School. Ventura County has a large unemployed population, much of which is characterized by low levels of education and work-related skills and experience. The junior college would annually graduate large numbers of night students and heads of households with the skills needed to find and hold jobs.

Thirdly, a notable community economic stimulus would be effected by the introduction of the spending power of 300 to 480 college housed students at Pepperdine University. Although it is a commonly accepted fact that average occupied city residences do little (if any) better than barely pay in tax revenues for the city services they require,* a large number of prospective Pepperdine students would be in a substantially different position with respect to their fiscal impact upon the City of Oxnard and surrounding areas. The governmental services required by the 300 (first five years) to 480 (from 5th to 10th year of university operation) campus housed students would be minimal. At the same time, however, they would bring into the area a noteworthy purchasing power, the majority of which might be expected to have been earned elsewhere. In this sense, they would have a beneficial impact upon local commerce of the same type as the tourist trade has. If, for instance, each student had $10 in weekly spending money, this would amount to $108,000 (first five years), $172,800 (5th to 10th year), in additional local retail sales. Compared

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* In fact, where there are large numbers of public school children, average residences commonly do not cover their own city and school costs.

with 1972 Oxnard taxable retail sales total,* these amounts would constitute increases approximating .05 to .08 percent.

Finally, the park area proposed by the Pleasant Valley Park and Recreation District would create only a modest employment (probably under 5). It would, however, provide needed aesthetic and quality-of-life amenities as discussed in the Recreation section of this EIS.

1.5.2 Public Sale

It was pointed out in another section of this statement that the current estimated market value of the Oxnard Air Force Base is well in excess of $15.8 million (or $19,000+ per improved acre) as it exists today. Sale price on the open market would undoubtedly be affected by the current market value of other local lands in uses similar to those intended by the buyer(s). Whereas the 774 acres of airport property would result in annual property tax revenue to the county of $434,500, or about $560/acre (if used as an airport with existing related uses), its potential tax revenue generating power could vary widely if purchased for other uses. Used agriculturally, its annual return would be about $160/acre. Residential and industrial uses would return approximately $300 to $480/acre, respectively. Commercial use would generally offer the greatest market value, hence property tax return, at around $550/acre.

Indications are that Ventura County (the Ventura County Airport) would be high on the bidders' list, even if the property were to be placed on the market. Another bidder might be Hughes Airwest, which suggested an interest in such a move shortly after the Oxnard Air Force Base was deactivated. If either of these interests obtained the base, it would be used as a county commercial/general aviation airport with supporting businesses and services much as is suggested in the proposed plan.

* Ventura County Planning Department, "Overall Economic Development Plan, Annual Report, March 1973." p.29.

The major economic difference with county purchase would be that the county would pay for the property, yet receive no more tax revenue than it would have under the proposed plan. With a Hughes (or other private airport operator) purchase, county tax revenues would be considerably larger, as they would be also in the case of private purchase for industrial or other private use.

1.5.3 No Action

Since GSA is not organized as a lease management organization, it has no facilities or intention to more effectively market the leasable property on the base than it has in the past. Moreover, the Federal Property and Administrative Services Act of 1949 and the Federal Property Management Regulations do not authorize or allow GSA to implement this alternative. The type of inactive holding described above would be contrary to regulations and to the recent Executive Orders concerning utilization of federal property.

2.0 URBAN PLANNING

2.1 Environmental Setting

2.1.1 Community Goals and Plans

Development of Oxnard Air Force Base was begun by the Federal Public Roads Administration in the spring of 1942. In the fall of that year, the facility was expanded and upgraded for use as an airfield by the Army Air Corps and the Marine Corps. In 1947, the flight strip portion of the field, which had been retained by the Public Roads Administration, was transferred to the County of Ventura under a revocable permit for public airport purposes. From 1947 to 1951, the property was used jointly by the Army, the California Air National Guard, the Naval Air Missile Test Center at Point Mugu, and various civilian agricultural and business aircraft.

In 1950, a local controversy emerged over a proposal by Lockheed Aircraft Corporation to develop a test facility for jet experimental aircraft at the airfield site. However, with the development of the Korean crisis in late 1950, non-military uses of the property were suspended and it was returned under lease from the county to the federal government for use as an air force base. In 1954, pursuant to a request by the Secretary of the Air Force, Oxnard Air Force Base was accorded permanent status by the Oxnard City Council and the Ventura County Board of Supervisors. Subsequently, in 1956 the County transferred ownership of the air force base property to the federal government, finding the transfer "desirable for the general welfare and the benefit" of the people of Ventura County.

In 1962, and again in 1967, county requests for joint airfield use were denied by the Air Force, and the field was operated as a military fighter aircraft installation until its closure in 1969. Since its closure, and the determination by the General Services Administration that the base was surplus to federal government needs, the disposation to be made of the facility has been the center of considerable public controversy.

The purpose of the following section will be to place this controversy in the context of existing community goals and plans.

The disposal of Oxnard Air Force Base will occur in a complex context of often conflicting state, regional, county and city objectives. As is by now clear, the principal contenders for the Air Force Base site are the County of Ventura, which has coordinated applications proposing a limited commercial and general aviation airport with ancillary airport-related industrial, recreational and educational uses; and the City of Camarillo, which has coordinated applications proposing an educational and recreational complex.

At their present levels of generality, relevant large-scale state and federal plans and policies offer little direct and clear guidance for the disposal of the site. At the federal level, the National Aviation System Policy Summary (March 1972) of the Federal Aviation Administration summarizes FAA (Federal Aviation Administration) policies for the development of a National Aviation System (NAS) over the next ten years. Briefly stated, its purpose is twofold:

- To advise the aviation community of FAA's current system policies, and
- To serve as the basis for input and future planning efforts of the agency in conjunction with the aviation community.

Included are both the broad policies -- such as overall FAA mission and objectives -- and the more specific policies that state the goals, requirements, and criteria for major subsystems. This NAS Policy Summary thus represents the agency's most current thinking with regard to the missions and objectives as set forth in the Federal Aviation Act, the Airport and Airway Development Act of 1970.

Within the framework of its mission requirements, the following objectives set forth by the FAA for a National Aviation System have implications for the disposal of Oxnard Air Force Base:

- It must be safe, secure and economically viable,
- It must be environmentally acceptable,
- It must have user and public acceptance, and
- It must be substantially user-supported.

The compatibility of the county's airport proposal with each of these objectives is discussed in its appropriate context throughout this report.

At the state level, the California Master Plan of Aviation is being prepared for the California Department of Aeronautics and the California Aeronautics Board by the consulting firm of Daniel, Mann, Johnson & Mendenhall. The work to date has focused primarily on survey work, and forecasting of future aviation needs throughout the state. Although specific goals, policies, and spatially specific plans have not as yet been established, the Phase I report cites the Oxnard Air Force Base as a "typical example of the need to utilize a military airfield which is no longer needed for defense purposes." Although the plan does not directly answer the question -- "utilized for what?" -- the implication is clear that the plan does anticipate civilian airport use. However, the plan also recognizes that it would be uneconomical, particularly for the airlines, "to provide air carrier service at a number of military airports in close proximity to one another, especially if traffic volumes were small in magnitude." The economic implications of this question are discussed in local context in the "Economics" section of this report.

Aside from federal and state policies and plans, certain other standards and regulations exist at both of these levels of government which exert influence over the choice of any proposed airport project or air system alternative. These standards and regulations act as decision criteria by which various alternatives are to be evaluated in both the development of an airport system, and review of specific airport proposals. Most of them deal with environmental and technical aspects of airports, and arise largely from policies and legislation on the state and federal levels. These standards and regulations are also discussed in the appropriate sections of this report. They include:

- State noise regulations.
- State and federal air quality standards.
- State and federal water quality standards, and
- FAA aircraft, air safety, airspace, operations and design criteria.

At the regional level, specific planning considerations surrounding the disposal of Oxnard Air Force Base come into somewhat clearer focus. The Regional Development Guide of the Southern California Association of Governments (SCAG) is intended to serve as a comprehensive general plan for the six-county region.* The guide contains specific goals which were established and approved by SCAG in February 1973 for various functional planning areas, including transportation. Among the goals with particular relevance to regional airport system planning are the following:

- To develop a transportation system for the region that will be compatible with the environment, use the available resources wisely, promote the aesthetic beauty of the region and not result in any undesirable environmental changes.

- To develop a transportation system that is financially, legally and politically feasible, has broad public support and has a commitment to its implementation by elected officials and those providing transportation services.

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* Ventura, Los Angeles, San Bernadino, Orange, Riverside and Imperial Counties.

- The transportation system should be responsive to the public need and be designed to assure the availability of a reasonable level of service for the movement of all people and goods in a safe, efficient and flexible manner.

- The transportation systems should be financially and politically feasible. It should have broad public support and a commitment to its implementation by the elected officials and those agencies, both public and private, who provide transportation services.

- Environmental and ecological concerns should be fully considered. The transportation system should be based upon the latest technology and shall seek the elimination of environmental pollution of all types caused or affected by the system.

The regional planning framework for the aviation component of the regional transportation network was to be provided by the Southern California Regional Aviation System Study (SCRASS). This study commenced six years ago under the administration of the SCAG Airport Study Authority. Its objective was the preparation of an overall master plan that would guide the development of an aviation system in the ten counties of Southern California through the year 1985 (see Fig. 2.1).

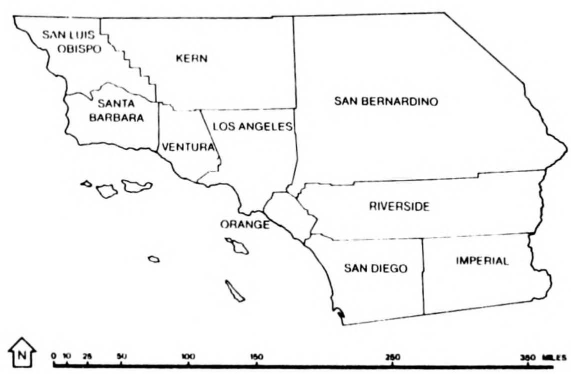

Figure 2.1. SCRASS Study Area.

The regional "Airport System Concept - 1985" shown in Figure 2.2 represents the SCRASS "Optimum Aviation System Plan" for the Southern California region. The plan shows a "continental" airport at the Point Mugu Naval Air Station, and general aviation airports at the existing Ventura County Airport at Oxnard and at Oxnard Air Force Base. The hierarchy of airports defined in the SCRASS report is shown in Table 2.1.

Table 2.1

SCRASS HIERARCHY OF AIRPORTS

CLASSIFICATION	EXAMPLE	HIGHEST FUNCTION
Public Service		
Global Airport	(Future)	Full Service
Intercontinental Airport	LAX	Long Haul
Continental Airport	Ontario	Medium Haul
Metroport	Lindbergh	Short Haul
Commuterport	Fullerton	Feeder
Private Service		
General Airport	Santa Monica	Business Flying
Airpark	Elsinore (Future)	Sport Flying

The realization of the SCRASS designation of Point Mugu as a major Ventura County "Continental" public airport in 1985 does not appear likely for the near future. The consistent position of the U.S. Navy's Pacific Missile Range command has been that "the type of operations being conducted at Point Mugu is not compatible with any commercial or private type air operations" either under joint use of existing facilities, or in conjunction with hypothetical future parallel facilities nearby. Moreover, the immediate prospects for a deactivation of the facility, similar to that which took place at Oxnard Air Force Base, appear slight in light of its recently increasing workload.

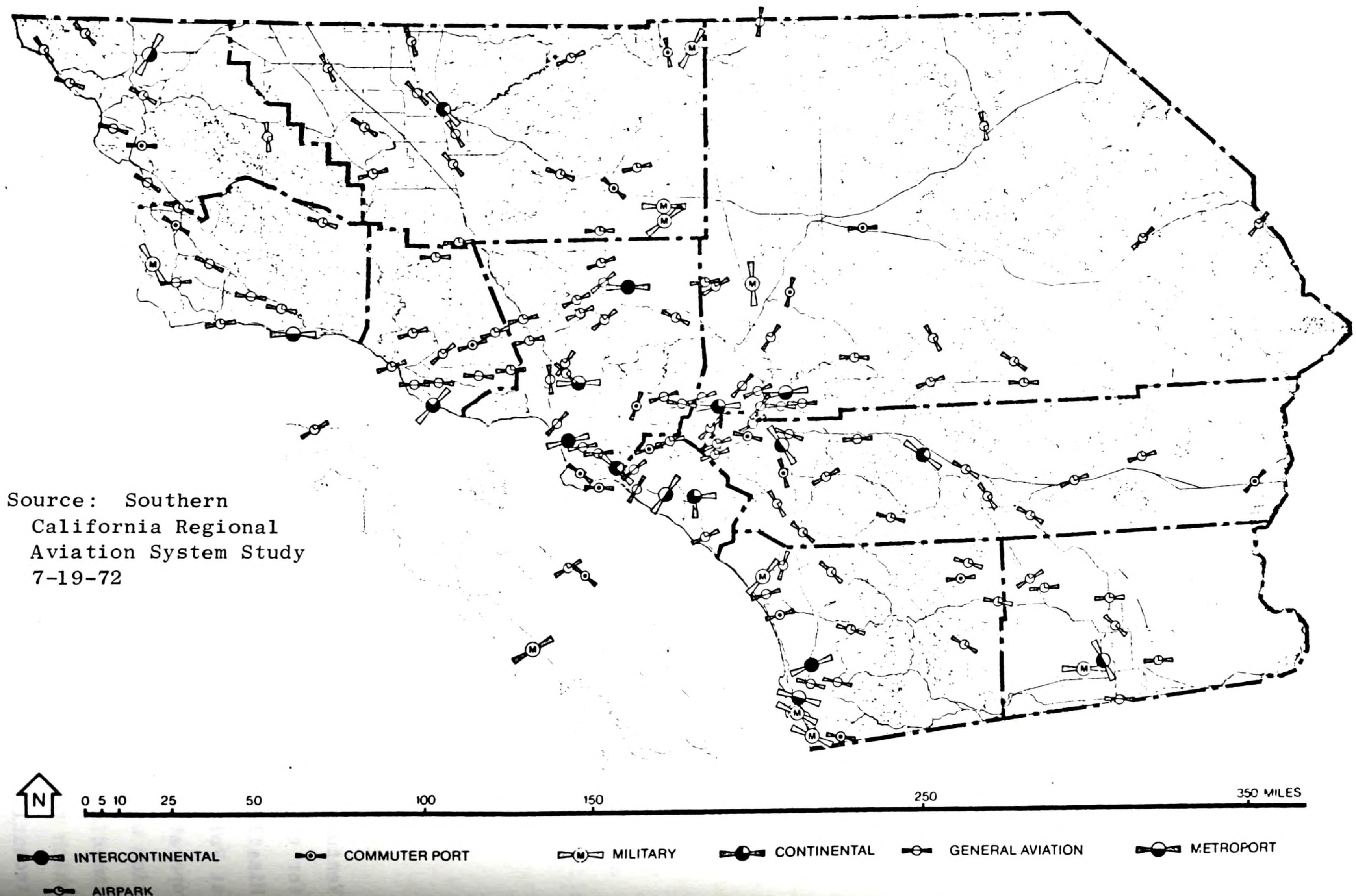

Figure 2.2 AIRPORT SYSTEM CONCEPT - 1985

In recognition of the uncertainties in future regional airport development exemplified by the case of Point Mugu, the Airport System Citizens' Hearing Board (CHB), which was appointed by the SCAG Executive Committee in the summer of 1972 to review and analyze SCRASS, recommended that emphasis be placed on development of "a plan" for the short-term air system program through 1980, but on the "planning process" for airport system plan development beyond 1980. It should be emphasized that the SCRASS report does not constitute a county-approved regional aviation system plan, but rather an input, along with the CHB recommendations, to the development of a Regional Transportation Plan. This plan is mandated by state law for completion by July 1975.

A second relevant regional plan which is now in the preparation process is that of the California Coastline Commission. This plan is also mandated for completion in 1975, and includes the Oxnard Air Force Base in its zone of coastal jurisdiction. Conversion of the base to any major new use will require approval by this regional planning agency.

At the county level, as at the regional and state levels, no current, comprehensive, approved transportation plan now exists, although the transportation element of the Ventura County General Plan is scheduled for completion in 1974. However, the county's General Plan Open Space and Conservation Element has been completed, was adopted by the Board of Supervisors in June 1973, and is now being reviewed by the cities. Its relevance to airport development arises out of the Open Space Zoning Ordinance by which the Plan is to be partially implemented. The ordinance states that unimproved private airstrips and heliports, not incorporating the use of hard paving materials, are a permitted use, subject to review. Although (1) there is an extensive review procedure which examines proposed land uses on a case-by-case basis, and (2) the Open Space Plan is not a precise zoning map, but rather a zoning guide, the clear intent of the ordinance is to discourage paved airstrips in open space areas. Figure 2.3 demonstrates that, except for adjacent lands within the city of Camarillo,

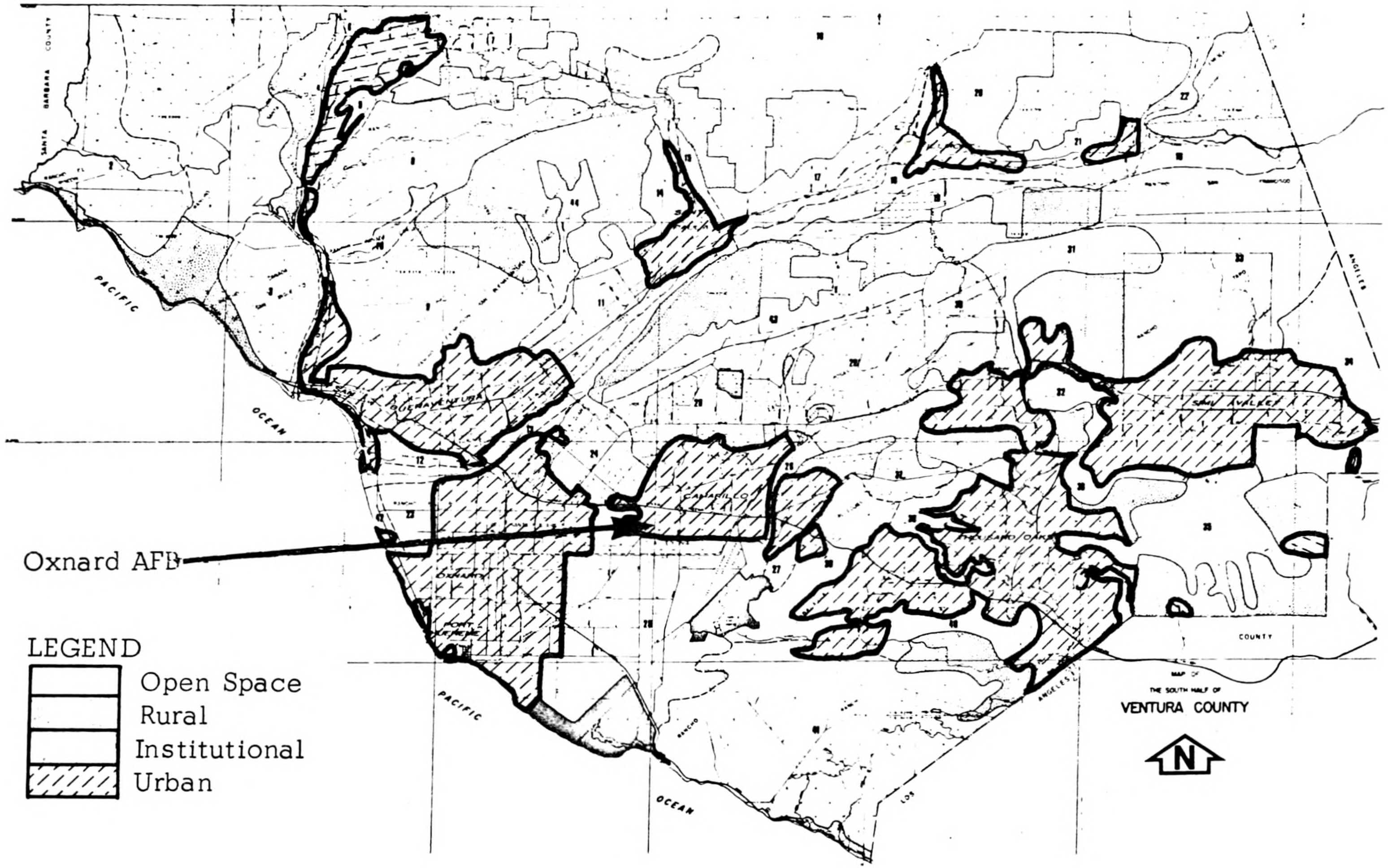

Figure 2.3 VENTURA COUNTY OPEN SPACE PLAN - 1990

Land Use Designation in the Vicinity
of Oxnard Air Force Base

the air force base site is adjacent to lands designated as open space in the County Open Space Plan. The zoning and general plan designation of adjacent incorporated lands, as well as that of the air force base itself, will be discussed later in this section.

At the county level, aviation planning attention began focusing on Oxnard Air Force Base in November 1969 when the Ventura County Board of Supervisors commissioned the firm of Adrian Wilson & Associates (AWA) to perform a survey of the commercial and general aviation needs of the County for the period 1970-1985, and to make recommendations designed to provide guidance to the Board in meeting those needs. The commercial portion of the study determined three possible levels of service: commuter only, commuter plus intra-state, and interstate service as a satellite to Los Angeles International Airport and other major airports in the Los Angeles area. The Board chose commuter plus intrastate service as the most feasible and desirable, and directed the firm to perform a study for the purpose of determining the optimum site for this level of service. In their Phase II report, AWA examined six possible sites. Although the basis for the selection of these sites was not made clear in the report, they included the current Ventura County Airport, Oxnard; Oxnard Air Force Base; and Point Mugu Naval Air Station. The site finally recommended was Oxnard Air Force Base. The board concurred with this selection and further directed AWA to develop a master plan to develop the site as a county airport providing general aviation and intrastate level commercial services. This plan was completed July 28, 1970, and its conclusions form the primary basis for the county's application for operation of the base as both a general and a limited commercial aviation facility.

In 1972, at the request of the Ventura County Association of Governments (VCAG), an evaluation of both the Southern California Regional Aviation System Study, and the AWA Master Plan of General Aviation was proposed by the Ventura County City-County Planning Association (CCPA). The evaluation raises questions with the SCRASS report concerning methodology, local and regional planning relationships, economics and environmental considerations. The purpose of the CCPA document was basically informational, and it was presented to the County Board of Supervisors and the VCAG member agencies in late 1972 and early 1973.

The following four points summarize the CCPA criticisms of SCRASS regarding local and regional planning relationships:

- The SCAG-10 study takes place outside the multi-model spectrum of transportation planning currently being conducted in the SCAG region and throughout the state -- especially as mandated under provisions of SB-325 and proposed under AB-69.

- A discussion of a systems approach to airport planning based largely on considerations of travel demand and cost factors is contained in the study. What appears not to have been adequately considered in the analysis, however, is the relationship between airport planning, and:

  - Environmental Impact considerations;
  - Impact upon natural resources;
  - Need for additional airport services; and
  - General plan land use and coordination.

- There are several airport facilities in the plan that conflict with various city and county plans, including the Oxnard Air Force Base site.

- Many jurisdictions are involved with land-use planning around airport facilities which in Ventura County include cities, the county, the Coastal

Commission, and the Airport Land Use Commission.*
The SCAG study does not appear to have addressed the issue of potential multiple agency authority for some of the proposed airports with respect to surrounding land uses.

Presumably, the resolution of the issues raised in the CCPA report and evaluation will be addressed at the regional level through the development of the SCAG multi-model, comprehensive Regional Transportation Plan mandated for completion in 1975.

At the municipal planning levels, the cities of Oxnard and Camarillo would be those most affected by the disposal of the Air Force base.

At present the Oxnard General Plan would permit general aviation uses at the existing Ventura County Airport at Oxnard (see Fig. 2.4), but recommends that it not be expanded to accommodate commercial jets, and that any future commercial airport development take place immediately northwest of, and parallel to, the existing facilities at Point Mugu Naval Air Station.

As indicated earlier in this section, the immediate prospects for any type of joint civilian airport use at Point Mugu continue to appear very slight. Meanwhile, recently approved residential development in the vicinity of the existing county airport would appear to strengthen the prospects for vigorous opposition by residents, should significant expansion of that facility be seriously proposed. The organizational

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*Basically, the County Airport Land Use Commission is charged by state law with defining the area of land-use impact around each airport, developing a 20-year master plan for land use in that area, and reviewing applications for land-use development in that area for compliance with the plan. The jurisdiction of the Commission would extend to Oxnard Air Force Base only if the base were converted to an airport, and speculation as to its eventual effect would be conjectural at this time.

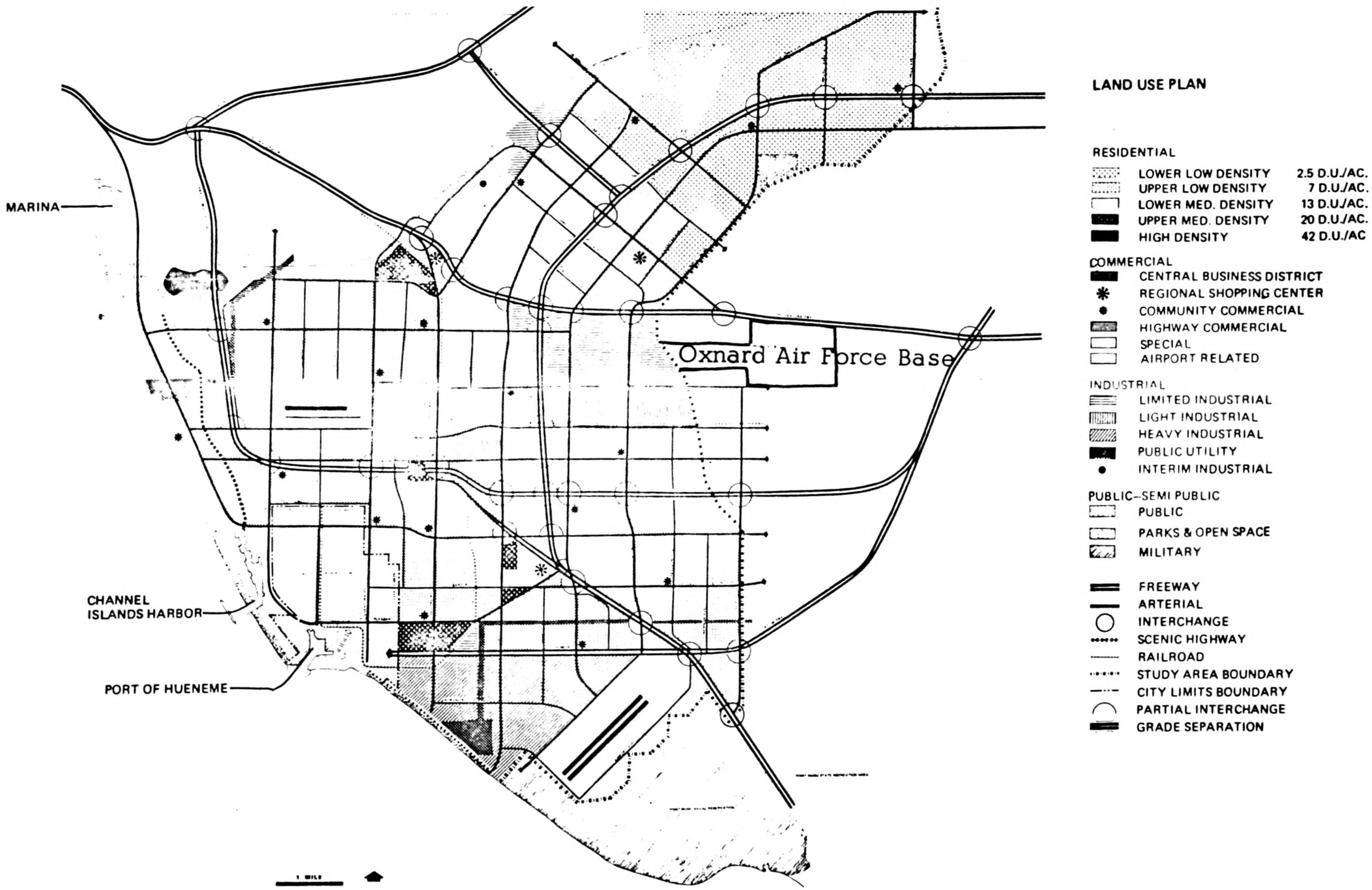

Figure 2.4 OXNARD GENERAL PLAN LAND USE MAP

framework for citizen opposition to expansion of facilities or operations at the existing airport already exists in the Oxnard committee, Citizens for Sensible Airport Development.

Although the Oxnard General Plan appears to be implicitly opposed to airport development of the Air Force Base site, the city has entertained inconclusive negotiations for a city/county joint powers agreement with the county. If finalized, such an agreement could constitute a conditional endorsement by Oxnard of the County's application.

Oxnard's neighbor to the east, the City of Camarillo, is strongly opposed to airport development of the Air Force base site, and has coordinated a package of applications which in effect constitute a counterproposal for its disposal. The site is entirely within the Camarillo City limits, and has been zoned M-1 (light industrial) by the city since 1970. This zoning is compatible with both the city General Plan and its proposal for an educational and recreational complex, but is intended to be incompatible with airport development.

The intention of the city administration, which is reflected in the General Plan, is to encourage intensive future development in the "Golden Triangle" bounded by Las Posas Road, Somis Road and the Ventura Freeway, but to retain the area south of the freeway in its present predominantly agricultural condition. The economic implications of this policy, as well as those of the competing city and county plans are discussed in the "Economics" Section of this report.

Although the city does not now have a General Plan text, it did adopt a set of Goals and Objectives in March 1973. Goal 16 has singular relevance to the disposition of Oxnard Air Force Base. It states in its entirety that "Oxnard Air Force Base should be converted and utilized as an educational institution and must not become a commercial airfield or jet port." Although this goal statement is a clear declaration of a negative official city posture toward commercial and jet airport use of this site, it does not explicitly rule out the consideration of general aviation use.

The City of Camarillo has retained a number of consultants, including Environmental Resources Incorporated and Travelers Research Corporation*, and Randall L. Hurlburt**, to challenge the findings of Adrian Wilson & Associates, who were employed by Ventura County, sponsors of the airport complex.

Public opinion of city and county residents has been organized to both support and oppose the conflicting Air Force base proposals. The Committee Against Camarillo Airport (CACA) was initiated in 1970 to oppose the county's original application for an airport at the base. The committee has been well organized and tenacious in its resistance to the county's application, and has so far contributed effectively to prevention of the application's success. Also, due largely to the efforts of CACA organizers and members, an initiative measure will appear on the County general election ballot in November 1974 whose intent will be to require approval by city voters for development of any airport within their city limits. According to representatives of CACA, the committee will take legal action to delay airport development pending the outcome of the election, should the county application be approved.***

Support for the county's airport application has been advanced by various pro-airport interests, including the Camarillo and Ventura city chambers of commerce, the Ventura County Construction Council, and the

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* An Analysis of the Air Pollution Potential in Selected Areas of Ventura County, Environmental Resources, Inc., and Travelers Research Corp., 1969.

** Analysis of the Presentations and Recommendations made October 8, 1970, regarding the Environmental Impact of Noise on Communities surrounding the Proposed Camarillo Airport, Randall L. Hurlburt, October 12, 1970.

*** According to Counsel for CACA, Romney, Stone, Smith and Drescher (Santa Paula, California).

Aircraft owners and Pilots Association. Their letters of support are reproduced in Appendix C. In addition, the Federal Aviation Administration has urged conveyance "of a major portion of Oxnard Air Force Base to the County for public airport purposes."*

One of the more revealing expressions of county public opinion concerning transportation attitudes in general, and the Oxnard Air Force Base in particular, is a recently completed transportation survey conducted by the County Planning Department. The survey questionnaire was mailed to a county-wide, random sample of approximately 8,000 voters. Of this sample, 3,343 (or 42 percent) returned usable, completed questionnaires. The results of the survey are reproduced in Appendix D of this volume. Line items 60, 71, 72, 73 and 77 have particular relevance to the Oxnard Air Force Base site, and although a detailed analysis of the statistical validity of this survey has not yet been accomplished, the preliminary results appear to show a clear anti-commercial airport sentiment among county voters.

In summary, existing state and federal plans and policies offer little direct and unambiguous guidance for the disposal of the Air Force Base site, while potentially more specific and relevant regional and county transportation plans are still in preparation. The primary basis of the county's application lies in the publicly challenged conclusions of general aviation and commercial aviation feasibility studies completed in 1970.

At the municipal level, the immediately concerned adjacent cities of Oxnard and Camarillo oppose the development of a commercial jet airport facility at the Air Force Base site, but with differing degrees of conviction. The Oxnard General Plan was for development of such a facility at Point Mugu, while the Camarillo General Plan and city objec-

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* Letter from Jess Speckart, FAA, to A. B. Pace, GSA, dated March 22, 1974.

tives specifically reject use of the site for a commercial airport, and support its use as an educational and recreational complex of the type proposed by the city of Camarillo.

County public opinion concerning the development of a commerical airport facility is mixed, but except for immediate business and aviation interests, it appears to be heavily opposed to the County airport proposal.

2.1.2 Population

Ventura County is presently undergoing population growth. After many years as a predominantly rural area, somewhat removed from major population centers to the south, it has recently experienced extensive growth primarily through in-migration. Table 2.2 helps illustrate this growth in the context of the six-county region encompassed by the Southern California Association of Governments (SCAG).

From the table it is apparent that Ventura County's percentage share of the SCAG region's population increased by over 70 percent between 1940 and 1970, while it actually tripled in absolute numbers. Although existing projections of continued regional population growth vary, they generally reflect a common expectation that Ventura County's percentage share of this regional population growth will continue to increase. For example, the California State Department of Finance Series D "medium-growth" population projections (shown in Table 2.3) anticipate that the Ventura County share of regional population will almost triple between 1970 and 2020, from 3.6 percent to 9.9 percent.

The population projections for Ventura County displayed in Table 2.3 show wide variation. The projections which anticipate the greatest growth are those advanced in 1970 by Adrian Wilson & Associates (AWA) in support of their three-phase Commercial Aviation Feasibility Study for the Ventura County Board of Supervisors.

Table 2.2

POPULATION TRENDS IN THE SCAG SIX-COUNTY REGION[1]

	1940[2]	1950[2]	1960[2]	1970[2]	1980[3]	1990[3]	2000[3]	2020[3]
Imperial	50,740 (1.8%)	62,975 (1.3%)	72,105 (0.9%)	74,492 (0.7%)	82,900 (.07%)	98,100 (.07%)	112,500 (.07%)	151,700 (.07%)
Los Angeles	2,785,643 (84.1%)	4,151,687 (83.1%)	6,038,771 (77.2%)	7,030,169 67.3%)	7,653,600 (65.8%)	8,663,700 (62.3%)	9,625,600 (59.9%)	12,006,500 (56.5%)
Orange	130,760 (3.9%)	216,224 (4.3%)	703,925 (9.0%)	1,420,386 (14.1%)	1,928,700 (16.6%)	2,445,300 (17.6%)	2,907,200 (18.1%)	3,970,000 (18.7%)
Riverside	105,542 (3.2%)	170,046 (3.4%)	306,191 (3.9%)	459,074 (4.6%)	565,900 (4.9%)	726,200 (5.2%)	876,700 (5.4%)	1,175,700 (5.5%)
San Bernardino	161,108 (4.9%)	281,642 (5.6%)	503,591 (6.4%)	684,072 (6.8%)	832,000 (7.2%)	1,064,600 (7.7%)	1,299,000 (8.1%)	1,843,300 (8.7%)
Ventura	69,685 (2.1%)	114,647 (2.3%)	199,138 (2.5%)	376,430 (3.6%)	571,200 (4.9%)	902,100 (6.5%)	1,241,500 (7.7%)	2,106,800 (9.9%)
Total	3,312,460	4,997,221	7,823,721	10,044,623	11,634,300	13,900,000	16,062,500	21,254,000

1. Figures in parentheses indicate percentage of total regional population.
2. Source: U.S. Bureau of Census as shown in "Population Growth Analysis," SCAG, April 1973.
3. Source: California Department of Finance Series "D" population projections as shown in "Regional Development Guide," SCAG, January 1972.

Table 2.3

VENTURA COUNTY POPULATION PROJECTIONS

	1970	1975	1980	1985	1990	1995	2000
U.S. Census (April 1970)	378,497	-	-	-	-	-	-
California Department of Finance (November 1972)							
Series C (high-growth)	376,440	-	639,820	-	1,221,770	-	1,815,290
Series D (medium-growth)	376,440	-	572,300	736,700	902,100	-	1,241,500
Series E (low-growth)	376,440	-	491,410	553,500	621,480	-	743,910
Southern California Regional Aviation System Study (UCLA Business Forecasting Project, July 1972)	366,000	-	480,000	545,000	620,000	-	-
Ventura County Planning Department (Approved by Ventura Co. City-County Planning Association, August 1973)							
High	378,497	483,445	593,369	717,238	835,410	959,785	1,080,388
(High + Low) ÷ 2	378,497	481,476	588,152	707,075	817,652	932,072	1,041,031
Low	378,497	479,507	582,934	696,912	799,893	904,358	1,001,673
Adrian Wilson Associates (Master Development Plan/Oxnard Air Force Base/Phase III Commercial Aviation Feasibility Study, July 1970)	339,260	513,000	680,000	900,000	-	-	-
California Master Plan of Aviation (DMJM and Associates, April 1973)	378,387	-	-	739,700	-	1,071,600	1,245,000

The basis for these projections lay in data collected during the 1960 U.S. Census and updated in succeeding annual revisions of State Department of Finance (DOF) estimates. In developing its Ventura County projections, AWA relied on DOF high-growth, or Series C, projections which were in common planning usage during the 1960s. However, reductions in in-migration and birth rates in the late 1960s and early 1970s have shown these earlier estimates to be unrealistically high.

By the early 1970s, SCAG (and many other California planning institutions) had adopted downward revisions of their population projections to conform to the DOF medium-growth, or Series D, projections also shown in Table 2.3.

In the light of continued low in-migration and birth rates, both SCAG and Ventura County are in the process of developing further downward revisions which will yield projections and allocations somewhere between the levels contemplated by DOF Series D and its low-growth Series E.

The remaining two sets of county population projections shown in Table 2.3 are those of the Southern California Regional Aviation Study (SCRASS) and the California Master Plan of Aviation (CMPA). In comparing these two sets of projections, the Citizens Hearing Board (CHB), which was established to review and analyze SCRASS, determined that the procedure which had been followed in developing the CMPA projections better reflected the "requirements of developing a short range plan and a long range program for a regional airport system."

Examination of the SCRASS, CMPA and DOF projections (shown in Table 2.3) reveals that the SCRASS projections closely approximate, but are slightly lower than, DOF's Series E, while the CMPA projections closely approximate, but are slightly higher than DOF's series D. Therefore, the CHB determination effectively constitutes its endorsement of population projections which are higher than either SCAG's or the county's, and lower only than the earlier projections by AWA.

Table 2.5 displays the three major available breakdowns of Ventura County population projections by Regional Statistical Area (see Fig. 2.5). The table shows the shift in the county's projections from correspondence to a level between DOF Series C and D in 1980, to correspondence to a level between DOF Series D and E in 1990 and 2000. The table also makes possible comparisons among the various sets of projections for individual county RSA's, particularly RSA No. 3 which contains the Oxnard Air Force Base site.

The population of Ventura County was estimated by the Ventura County Planning Department to be 444,230 residents as of July 1, 1973. Of this total, the planning department estimated that 350,290 people lived within the boundaries of incorporated areas, and that 93,940 lived in unincorporated areas of the county. The allocation of the population living in incorporated cities in April 1970 and July 1973 is shown in Table 2.4.

From the discussion above, it is clear that there is considerable difference of opinion concerning the various existing county and regional population projections. For example, for the year 1985, the percentage difference between the AWA projections and the SCRASS projections is over 65 percent, while the difference between the AWA projections and the more liberal "High" county planning department projections is still over 25%.

Although it is beyond the purpose of this discussion to choose from the available sets of projections those most likely to be realized, it is apparent that, relative to the others, the AWA projections will prove to be unrealistically high, and therefore, so will air passenger demand projections which relay on them (see also the "Economics" section of this report).

2.1.3 Land Use and Visual Quality

The Oxnard Air Force Base is located in the Oxnard Plain in the southwest corner of the city of Camarillo. The topography is virtually flat, and is dominated by agricultural row crops. The nearest urban land uses

Table 2.4

VENTURA COUNTY POPULATION
LIVING IN INCORPORATED CITIES
IN APRIL 1970 AND JULY 1973*

INCORPORATED CITIES	APRIL 1970	JULY 1973
Oxnard	71,225	81,685
Simi Valley	59,832	71,173
San Buenaventura	57,964	69,597
Thousand Oaks	35,873	55,565
Camarillo	19,219	24,071
Santa Paula	18,001	18,688
Port Hueneme	14,185	16,361
Fillmore	6,285	7,138
Ojai	5,591	6,102
TOTAL	288,175	350,290

*Source: U.S. Bureau of the Census, State of California Department of Finance, and tabulation and analysis of local building permits, final inspections and utility clearances by the Ventura County Planning Department.

Table 2.5

COMPARATIVE POPULATION PROJECTIONS FOR VENTURA COUNTY
BY REGIONAL STATISTICAL AREA

ADRIAN WILSON ASSOCIATES[2]

RSA[1]	1970	1975	1980	1985	1990	1995	2000
1	330	400	500	500	-	-	-
2	113,640	135,000	174,400	219,600	-	-	-
3	141,280	177,600	239,900	313,800	-	-	-
4	23,810	105,500	134,300	178,300	-	-	-
5	54,530	80,800	111,600	161,200	-	-	-
6	10,670	13,700	19,200	26,600	-	-	-
TOTAL	389,260	513,000	679,900	900,000	-	-	-

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS/CALIFORNIA STATE DEPARTMENT OF FINANCE[3]

RSA[1]	1970	1975	1980 (BY SERIES)			1985	1990 (BY SERIES)			1995	2000 (BY SERIES)		
			C	D	E		C	D	E		C	D	E
1	375	-	1,080	580	380	-	2,170	1,920	380	-	4,470	3,260	380
2	110,690	-	166,560	152,340	141,820	-	332,460	245,600	182,150	-	483,820	332,070	234,290
3	136,540	-	229,020	207,630	173,150	-	463,070	310,190	209,960	-	677,990	432,960	240,040
4	66,130	-	119,690	102,840	84,320	-	208,950	160,910	100,320	-	321,760	225,410	112,550
5	52,470	-	104,120	91,130	79,220	-	179,770	162,820	111,350	-	263,570	216,580	129,700
6	10,230	-	19,150	16,680	12,520	-	35,350	20,660	17,320	-	53,680	31,190	26,950
TOTAL	376,440	-	639,820	571,300	491,410	-	1,221,770	902,100	621,480	-	1,815,290	1,241,500	743,910

VENTURA COUNTY[4]

RSA[1]	1970	1975		1980		1985		1990		1995		2000	
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
1	375	404	400	520	511	647	629	772	739	904	851	1,037	961
2	112,165	113,535	132,448	165,443	162,534	199,548	193,892	233,094	223,185	270,401	254,784	310,192	287,593
3	136,430	162,425	161,102	201,234	197,695	242,717	235,838	283,520	271,467	328,897	309,904	377,297	349,808
4	67,756	88,315	87,595	99,940	98,183	120,542	117,126	140,807	134,821	163,342	153,910	187,379	173,728
5	51,542	87,011	86,303	111,176	109,220	135,587	131,745	155,957	149,328	171,582	161,673	176,192	163,356
6	10,229	11,755	11,659	15,056	14,791	18,197	17,682	21,257	20,353	24,659	23,235	28,288	26,227
TOTAL	378,497	483,445	479,507	593,369	582,934	717,238	696,912	835,407	799,893	959,785	904,358	1,080,385	1,001,673

1. Regional Statistical Area (see Fig. 2.5): (RSA 1 = Los Padres Planning Area; RSA 2 = Ojai, Santa Paula and Ventura Planning Areas; RSA 3 = Camarillo and Oxnard-Port Hueneme Planning Areas; RSA 4 = Simi and Moorpark Planning Areas; RSA 5 = Conejo-Coastal Planning Area; and RSA 6 = Fillmore-Piru Planning Area.
2. Source: Master Plan of General Aviation for Ventura County, July 1970.
3. Source: Southern California Association of Governments, Population, Land Use and Employment Projections for the SCAG Area (1980,1990,2000), November 1972.
4. Source: Preliminary Allocation by RSA of Ventura County Planning Department population projections, July 1973. Totals approved by Ventura County City-County Planning Association.

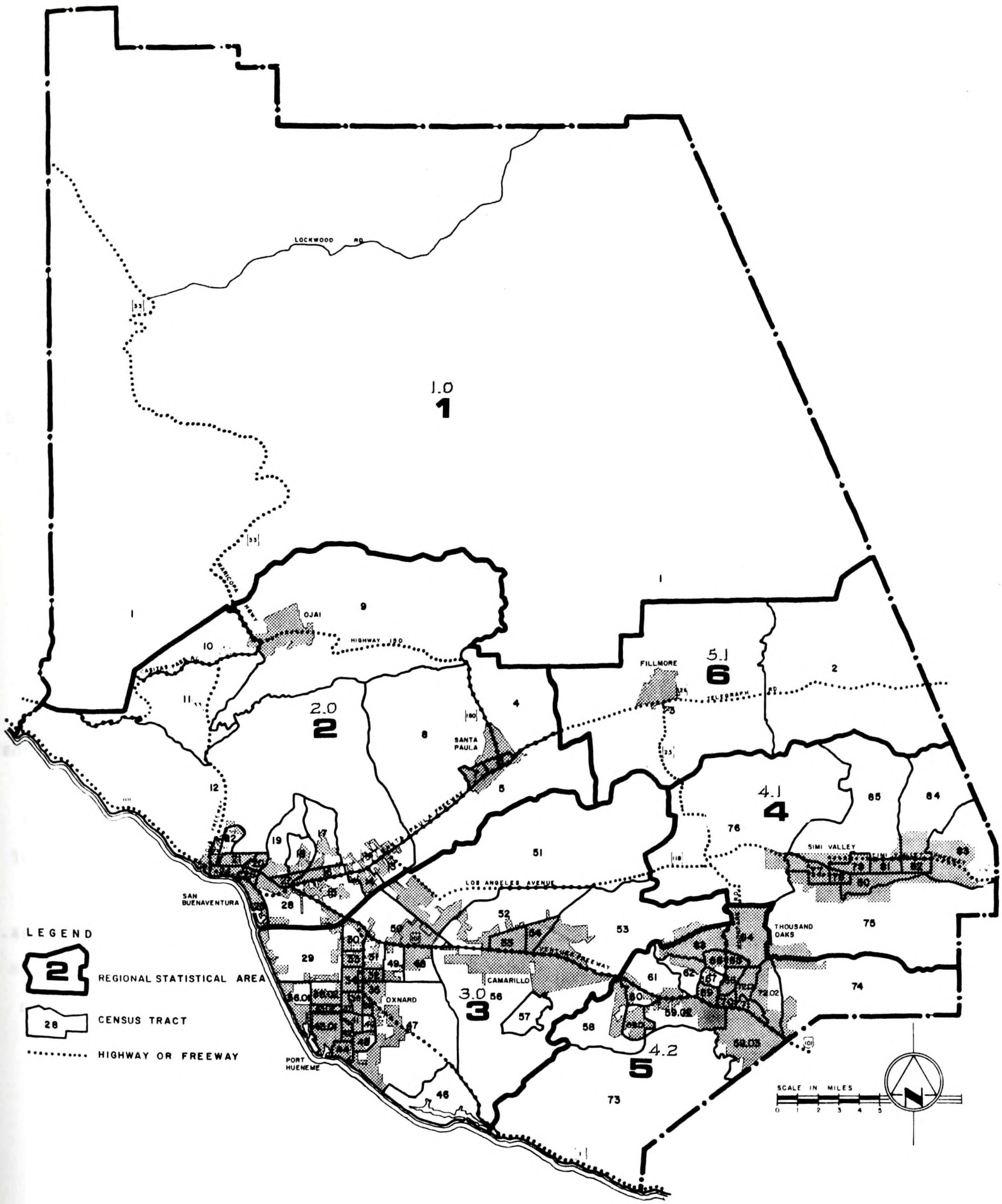


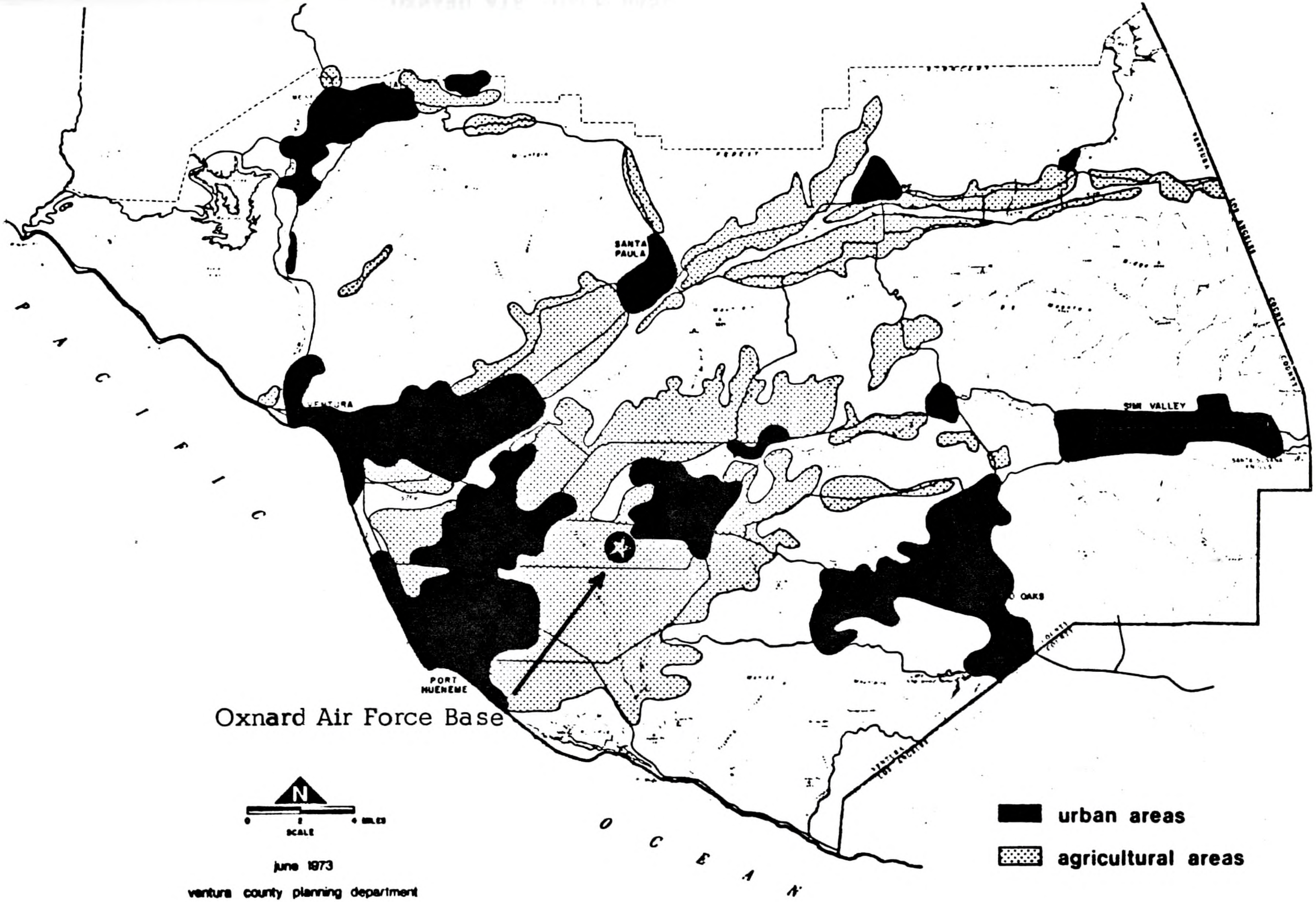
Figure 2.5 VENTURA COUNTY REGIONAL STATISTICAL AREAS AND 1970 CENSUS TRACTS

are residential areas of Camarillo, which begin about one-half mile to the north, north of the Ventura Freeway, and about one mile to the east, south of the freeway; and the Colonia residential area of Oxnard, which begins about two miles to the west. Economic profiles of these residential and agricultural uses appear in the "Economics" section of this report. Figure 2.6 depicts the land use setting of the Air Force Base in the context of the south half of Ventura County; Figure 2.7 shows the portions of the same area which are under contracts for exclusive agricultural use.

Since its deactivation in December 1969, the base itself has been in the custody of the federal General Services Administration which has leased portions of the base for various public and private uses. The present condition and present and proposed uses of all base facilities are also presented in the "Economics" section of this report. For a summary of these uses see Table 1.3.

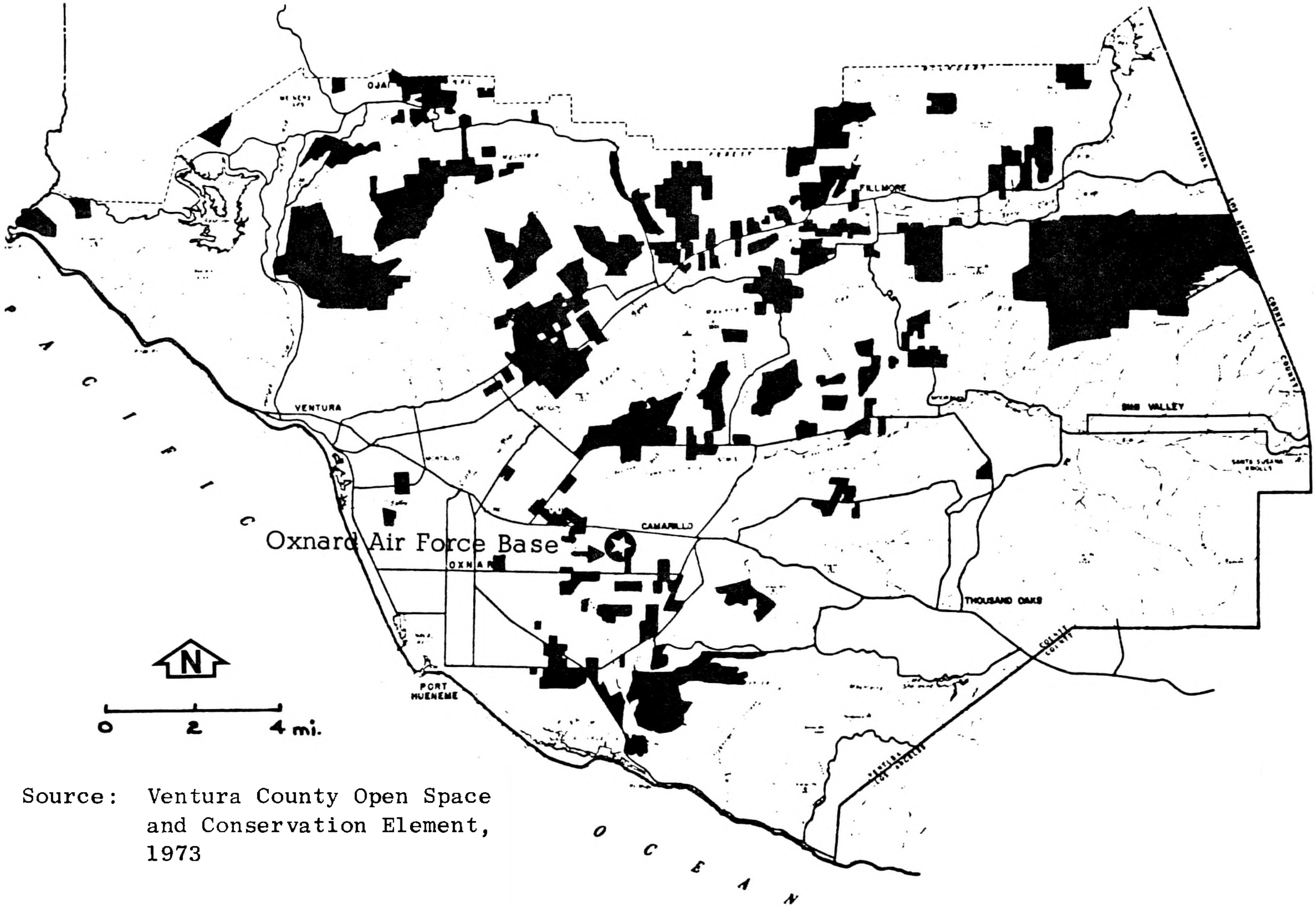
The visual character of the base is generally one of inactivity and overall incongruity with surrounding rural, agricultural uses. The site plan of the base, and the architectural style of its structures, are severe and functional in a manner common to many small military installations.

Figure 2.8 shows a view from the site; looking north from the hangar area, across the runway and the Ventura Freeway, to the western portion of the Camarillo Hills. Figure 2.9 shows a view looking southwesterly from the northwest corner of the site, across the runway toward the hangar area. The off-site locations from which most viewers are exposed to the site are the Ventura Freeway and the Camarillo hills, which are partially shown in Figure 2.8. The site is also visible from a few nearby residences, and from adjacent portions of Las Posas Road and Pleasant Valley Road.



Source: Ventura County Open Space and Conservation Element 1973

Figure 2.6 LAND USE IN THE VICINITY OF OXNARD AIR FORCE BASE



Source: Ventura County Open Space and Conservation Element, 1973

Figure 2.7 AGRICULTURAL PRESERVES IN THE VICINITY OF OXNARD AIR FORCE BASE

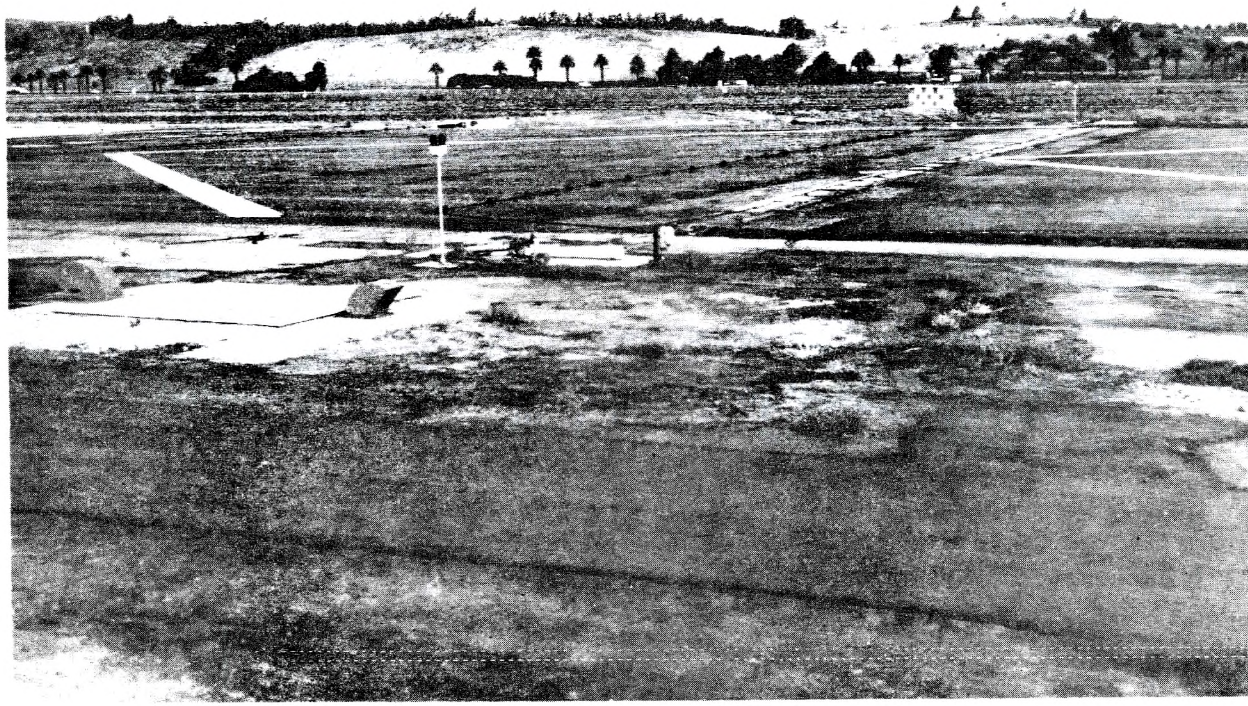


Figure 2.8 VIEW NORTH FROM HANGAR AREA

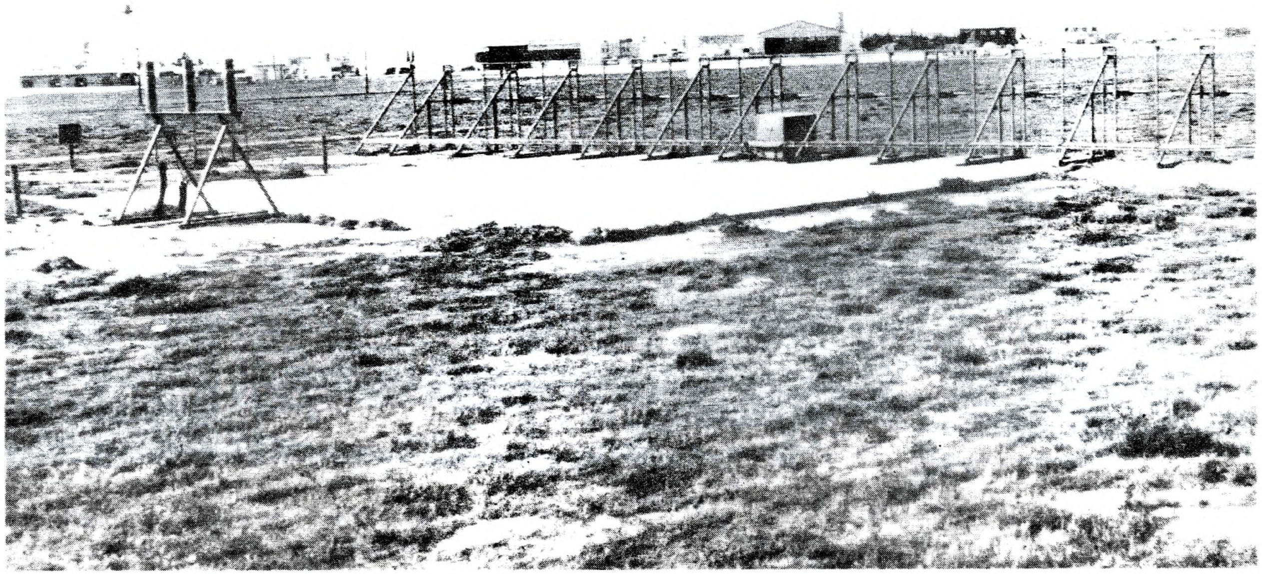


Figure 2.9 VIEW SOUTHWEST TOWARD HANGAR AREA

2.2 Impact Analysis

2.2.1 Community Goals and Plans

Apart from the potential economic, social and environmental impacts discussed elsewhere in this report, the county's airport proposal raises some basic issues concerning general transportation and aviation planning processes at state, regional and local levels.

The compatability of the county proposal with existing applicable plans and goals is one such issue. As indicated in detail in the "Environmental Setting" portions of this report, at their present stages of development, the State Master Plan of Aviation, the SCAG Regional Transportation Plan, and the Ventura County Transportation Plan offer little site-specific guidance to help in the disposition of the Air Force Base site. However, site-specific county policy has been established, is clearly compatible with the airport and educational uses proposed, and in fact was formed as the basis for the county's application. The application, which essentially seeks to make possible general aviation and limited jet and other commercial aircraft uses at this site, has been filed by the Board of Supervisors with the support of various county agencies, including the Department of Airports and Harbors, and the County Airport Advisory Commission. The rationale for the application places heavy reliancy on a series of aviation and airport studies prepared in 1970 by Adrian Wilson & Associates, which ostensibly established the demand requirement, economic feasibility and environmental compatibility of the proposed airport use. The conclusions of these earlier studies are discussed in the contexts of their appropriate sections throughout this report.

At the city level, the plans and policies of neighboring municipalities are in conflict with the county application. The Oxnard General Plan calls for the transfer of commercial aviation service not to the Oxnard Air Force Base site, but to facilities designated to be constructed in the vicinity of the Point Mugu Naval Air Station. As mentioned in the Environmental Setting Section, however, the likelihood of this possibility is slight in the light of consistent and firm resistance by the Navy's Pacific Missile Command.

The most persistent and firm municipal opposition to the County's application is that of the city of Camarillo. As clearly as the County's policy calls for development of the airport, Camarillo's city policy, General Plan and City Objectives reject it. Airport use at the Air Force Base site would be incompatible with the present city zoning, General Plan and City Goal 16. Interestingly, however, the educational component of the county application is consistent with city objectives and, in fact, is duplicated in part of the city's competing application.

Besides the issue of compatibility with existing plans, the county proposal carries significant implications for the general planning and transportation planning processes. Clearly, the establishment of a limited commercial and general aviation airport facility, pursuant to the County application, would require recognition at the state level in the formulation of the ongoing California Master Plan of Aviation; at the regional level, in the formulation of the 1975 SCAG Regional Transportation Plan; and at the County level, in the formulation of the 1974 Ventura County Transportation Plan. Also, at the County level, the establishment of the airport would place the site under the purview of the Airport Land Use Commission which, by state law, would then be required to prepare a land-use plan for the area of airport influence.

At the city level, both the Camarillo and Oxnard General Plans are scheduled for revision in 1974. Although it would be speculative to anticipate the specific airport-related changes in these plans which could occur as a result of the success of the county's application, they could be expected to reflect the projected step-down of operations at Oxnard and step-up of operations at Camarillo. Existing plans and objectives as well as available expressions of relevant public opinion are discussed in more detail in the previous "Environmental Setting" section.

2.2.2 Population

In the Growth-Inducement sections of this report, it is suggested that relatively few of the approximately 160 new airport-related jobs, which would be created pursuant to a successful county application, could be expected to be filled by in-migrants from outside Ventura County. However, even if the ratio were a high 50 percent, this new population would create only minor impacts to available community services, utilities and housing.* Based upon the highest local average number of persons per household in the 1970 U.S. Census, 3.55,** the total new area population would be approximately 284 persons in 80 new households.

The creation of this number of new households would have only a minimal impact upon the inventory of available housing. The most recent and relevant comprehensive county housing study was published in March 1973 as a result of a Postal Vacancy Survey conducted by the U.S. Post Office Department and the U.S. Department of Housing and Urban Development. Table 2.6 summarizes the findings of this survey for the Oxnard and Camarillo areas, and for Ventura County as a whole.

Since the completion of this survey, there is evidence of a further increase in the county's available housing supply, particularly in the area of Moorpark and Thousand Oaks. However, even using the earlier vacancy statistics, the new population increment could be expected to create an initial demand for only about 5 percent of the available housing in the Oxnard-Camarillo area, and for less than 2 percent of that available in the county as a whole. The initial increment of new population would represent approximately 0.3 percent of the total county population growth anticipated by the average of the county's high and low total growth projections for the period 1970-1975.

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*Impacts to utilities distribution systems are discussed in the "Utilities" section of this volume.

**Camarillo area including Census Tracts 52, 53, 54, 55 and 56; See Figure 2.10.

Table 2.6

HOUSING AVAILABILITY
IN
CAMARILLO, OXNARD AND VENTURA COUNTY*

	TOTAL UNITS	VACANT	PERCENT VACANT
Camarillo			
1-family	7,980	167	2.1
Apartments	1,045	93	8.9
Mobile Homes	547	19	3.5
Total	9,572	279	2.9
Oxnard			
1-family	20,636	557	2.7
Apartments	7,020	573	8.2
Mobile Homes	2,604	57	2.2
Total	30,260	1,187	3.9
Ventura County			
1-family	100,788	2,728	2.7
Apartments	19,575	1,895	9.7
Mobile Homes	8,021	180	2.0
Total	128,384	4,803	3.7

*Source: U.S. Postal Vacancy Survey, March 1973.

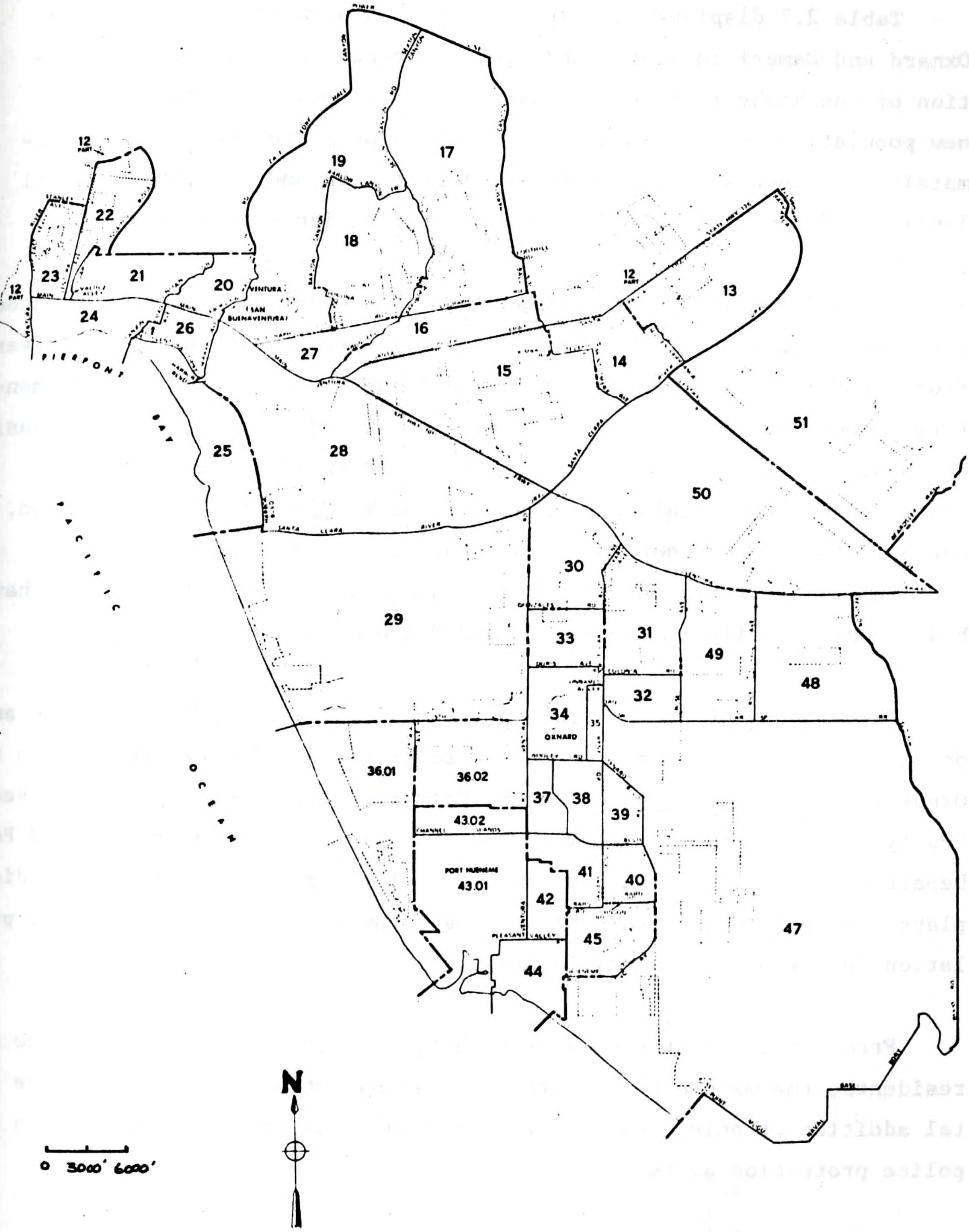

Figure 2.10 CENSUS TRACTS IN THE OXNARD-VENTURA SMSA

Table 2.7 displays the public school enrollment ratios for the Oxnard and Camarillo areas, and for the county as a whole. Application of the highest of these ratios to our already high estimate of new population would result in an expected new enrollment of approximately 60 students at the combined kindergarten and elementary school levels, and approximately 24 students at the high school level.

Table 2.8 displays the latest available comprehensive public school enrollment figures for the Oxnard-Camarillo area. Although it is clear from the table that the relatively small number of possible new elementary school students attributable to the airport proposal could be easily accommodated by local district schools, even small increases in high school enrollments could exacerbate the already overcrowded situation. Enrollments in the Oxnard Union High School District already exceed "maximum" by approximately 8 percent, and several area high schools have had to extend daily sessions to 8 and 9 class periods.

The effects of the possible population increase upon local fire and police services would be minimal. Fire protection is now provided to the Oxnard-Camarillo area by the Oxnard City Fire Department and by the Ventura County Fire Department. Police protection is provided by the Oxnard Police Department and by the Ventura County Sheriff Department. Table 2.9 displays the most recent available ratios of sworn personnel to general population in the Oxnard-Camarillo area.

From Table 2.9 it can be seen that, with the addition of 284 new area residents, the maintenance of these existing ratios would require the total addition of only about .3 sworn personnel to area fire protection and police protection units.

Table 2.7

PUBLIC SCHOOL ENROLLMENT RATIOS FOR
OXNARD, THE CAMARILLO AREA[1] AND VENTURA COUNTY[2]

		KINDERGARTEN AND ELEMENTARY SCHOOL ENROLLMENTS		HIGH SCHOOL ENROLLMENT		TOTAL PUBLIC ELEMENTARY AND HIGH SCHOOL ENROLLMENTS	
	TOTAL POPULATION	TOTAL	PERCENT OF TOTAL POPULATION	TOTAL	PERCENT OF TOTAL POPULATION	TOTAL	PERCENT OF TOTAL POPULATION
Oxnard	69,685	13,717	19.7	5,203	7.5	18,920	27.2
Camarillo Area	27,907	5,883	21.1	2,332	8.4	8,215	29.4
Ventura County	376,430	76,343	20.3	27,776	7.4	112,334	29.8

1. Census Tracts 52, 53, 54, 55 and 56 of the Oxnard-Ventura Standard Metropolitan Statistical Area (see Fig. 2.9).
2. Source: U.S. Census of Population and Housing, 1970.

Table 2.8

EXISTING AND MAXIMUM PUBLIC SCHOOL ENROLLMENTS
IN THE OXNARD-CAMARILLO AREA AS OF JANUARY 1973*

		ENROLLMENT JANUARY 1973	MAXIMUM ENROLLMENT	PERCENT OVER MAXIMUM
Elementary School Districts (No. Schools)				
Hueneme	(11)	6,630	7,728	-14
Mesa Union	(1)	445	530	-16
Moorpark Union	(2)	1,135	1,265	-10
Ocean View	(4)	2,241	2,385	- 6
Oxnard	(14)	9,090	10,714	-15
Pleasant Valley	(10)	5,883	6,302	- 7
Rio	(5)	1,941	2,810	-31
Somis Union	(1)	250	350	-29
Timber	(10)	5,741	6,053	- 5
Valley Oaks Union	(15)	7,221	8,439	-14
Total	(73)	40,577	46,576	-13
High School Districts (No. Schools)				
Moorpark Memorial Union	(1)	400	500	-20
Oxnard Union	(7)	15,442	14,275	+ 8
Total	(8)	15,842	14,775	+ 7

*Source: Ventura County Planning Department.

Table 2.9

FIRE AND POLICE PROTECTION RATIOS
FOR OXNARD-CAMARILLO AREA

	OXNARD	CAMARILLO	TOTAL
Total Population, July 1973[1]	81,685	24,071	105,756
Police[2]			
Total sworn personnel	81	16	97
Sworn personnel per 1,000 population	.99	.66	.92
Fire[3]			
Total sworn personnel	85	NA	NA
Sworn personnel per 1,000 population	1.04	NA	NA

1. Source: Ventura County Planning Department.
2. Source: Ventura County Sheriff Department and Oxnard Police Department.
3. Source: Ventura County Fire Department and Oxnard Fire Department.

In summary, the implications of even generously estimated new population growth that could be expected to result from the county airport proposal would be minimal for available housing, police, fire and elementary school resources. The only possible significant negative implications of the airport proposal which are discussed in this section are those for the Oxnard Union High School District. Here, the district is already experiencing overcrowding, and any new enrollment due to the proposed project would worsen an already unfavorable situation.

2.2.3 Land Use and Visual Quality

Historically, planning of airports and air systems has focused on demand forecasts, technical requirements, and capital and operating costs. Land use considerations generally have not played an important role in this planning process. Typically, the result has been that land-use incompatibilities and destruction of the physical environment have accompanied airport development. Residential encroachment upon airport boundaries, increased numbers of airport operations, and the inception of jet aircraft suggest situations where adverse residential and institutional land use impacts frequently occur. These very situations are now being resisted by city administrators and concerned residents of both Camarillo and Oxnard.

At present, the most critical airport-related land use incompatibility is generally between the airport and neighboring residential communities. Airport noise is typically the principal source of this incompatibility, particularly where jet aircraft are a factor. The land-use implications of projected increased noise levels on and around the Oxnard Air Force Base site (as well as the implications of possible concomitant decreased noise levels at the existing Ventura County Airport at Oxnard) are discussed in detail in the "Noise" section of this report.

Considerations of community safety suggest another area of possible land use concern. The potential for aircraft accidents in the vicinity of airports is often cited as a source of their incompatibility with residential, educational, recreational and institutional land uses. However, largely because of the very low density agricultural uses surrounding the Oxnard Air Force Base, and because of the trapezoidal "clear zone" safety areas established at the ends of the runway, pursuant to Part 77 of Federal Aviation Administration regulations, the potential aircraft accident hazard at the Oxnard Air Force Base site is believed to be very slight.

A major potential land-use impact of airport use at Oxnard Air Force Base is its effect upon neighboring land values. The direction in which these land values could be expected to change depends largely on the types of land use being impacted. Typically, new or increased airport operations decrease the value of affected residential properties, primarily because of increased neighborhood disturbance effects such as noise, pollution, and congestion. On the other hand, land values for some other potential uses may increase. In general, airport development tends to increase the value of adjacent land zoned for commercial and industrial uses, due to the increased economic attractiveness of proximity to an airport location. However, at the Oxnard Air Force Base site, development of adjacent agricultural lands may be expected to be initially slight due to the large on-site area which could be made available for such use, the apparently intense anti-airport growth sentiment of the Camarillo community and city administration, and the lack of airport-related industrial development pressure presently being generated at the existing Ventura County Airport at Oxnard. At that facility, only about three of the surrounding 1,000 acres designated for airport-related industry have actually been developed. This slow rate of market absorbtion may be generally attributable to the relatively low intensity of commercial airport operations and the current uncertainty surrounding the future of commercial aviation service to Ventura County. The prospective land value impacts of the county's proposed airport project are discussed in detail in the Land Values portion of the "Economics" section of this report.

The immediate visual impacts which would accompany airport development of the Oxnard Air Force Base would be due primarily to rehabilitation, repainting and repair of existing structures and facilities, upgrading of landscaping and other maintenance services, increased intensity of human activities, and initiation of flight operations. No substantive structural alternations or additions which would change existing major visual forms and their relationships are anticipated by the airport Capital Improvement Program (CIP) until 6 to 10 years after operations commence. At that time, significant land acquisition, paving, grading and other construction projects have been programmed which may be expected to be the subjects of subsequent environmental impact studies, if required by the California Environmental Quality Act.

Potentially, the most visually significant of these projects would be a new terminal building and related improvements which have been programmed for construction in 11 to 25 years. These facilities are expected to be built eventually on the north side of the existing runway, between it and the freeway, and to be sited to take advantage of freeway access provided by the existing interchange at the end of Central Avenue.

For the present, however, the visual impacts of the proposed airport project would be generally positive, although not particularly great. They would result primarily from the upgrading and maintenance of existing facilities, and from increased activity on the property. Although the relative aesthetic merit of aircraft operations is debatable, particularly in the local climate of opinion, they would create a measure of visual interest not now present at the site.

2.3 Unavoidable Adverse Impacts

The principal adverse impacts of the county airport proposal upon existing local, municipal plans are its incompatibility with the 1973 Oxnard and Camarillo General Plans and with existing zoning and the explicit policy of the host city, Camarillo. The airport proposal is also contrary to the apparent preponderance of the county public opinion reflected in the 1973 Ventura County Transportation Survey.

The relatively small increment of new population which could be expected to be attracted to the Camarillo-Oxnard area by the proposed airport complex would create virtually no substantial adverse impacts to housing, police, fire and public school resources, except at the high school level, where any additional enrollment would exacerbate an already overcrowded situation.

The principal adverse impacts upon local land uses are discussed in the "Noise" and "Economics" sections of this report. In addition to these, the proposed airport may also be considered to create an aircraft safety hazard which does not now exist at the site. However, this hazard may be considered very slight in light of the surrounding very low density agricultural land uses, and the trapezoidal "clear zones" established at the ends of the runway. Potential developments which would be drawn to the airport would primarily be located on-site, not in off-site danger zones at the ends of the runway. Moreover, the reduction of safety hazard at the more urbanized existing county airport at Oxnard, which would accompany the transfer of commercial operations to the air force base site, would further mitigate its overall net adverse implications for consideration of community safety.

2.4 Alternatives

2.4.1 Educational Complex

The major immediate alternative to Ventura County's plan for an airport-educational complex is a plan which has been prepared and advanced by the City of Camarillo. The city plan consists of a coordinated package of applications for portions of the site which, if approved, would create an educational-recreation complex with no airport uses. The applications which comprise the city plan are the following:

Pepperdine University (includes chapel)

Ventura County Community College District

Oxnard Union High School District (Continuation and Opportunity Programs)

County Superintendent of Schools (Regional Occupation Program)

City of Camarillo (Park and Recreation)

Immigration and Naturalization Service

Descriptions of the above applications, and the locations and descriptions of requested areas and facilities, appear in the Project Setting section of this report. The Immigration and Naturalization Service, Continuation and Opportunity Programs, and the Regional Occupation Program listed above are currently in operation at the site, are components of both the county and city plans, and will continue to operate, structurally unaffected regardless of which plan is approved. Ventura Community College currently uses about 40 acres of the site and the College will continue to use this acreage under either the proposed plan or the educational complex. However, if the educational complex is selected, Ventura Community College will utilize a total of 275 acres, including the currently used 40 acres.

As might be expected, the combination of on-site uses proposed by the city plan is compatible with present city zoning (M-1), general plan designations, and with explicit city policy objectives. Should the City plan be approved, it would be subject to the planning jurisdiction of the City, since the property is now entirely within the Camarillo city limits.

Also, as might be expected, the City plan is incompatible with explicit County policy which forms the basis of the airport plan. Should the County application be approved, the property would be in the custody and probable control of the county, city plans and objectives notwithstanding. However, the probability of this eventuality is not so clear in light of an airport initiative measure which is to appear on the county general election ballot in November 1974. According to representatives of the local Committee Against Camarillo Airport, a court injunction may be sought which would prevent the initiation of County airport operations at the Air Force Base site, pending the outcome of the vote on the initiative measure. The immediate intent of the measure is to give approval power over airports within city boundaries to voters of that city.

As indicated in the "Growth Inducement" section of this report, the new population which could be expected to be attracted to Ventura County and the Oxnard-Camarillo area as a result of a successful city application would be larger than that attracted by a new airport. Although the ROP and existing high school programs would expand only moderately, the community college program could be expected to draw its students mostly from the surrounding community, numbers of students and staff attracted from outside the community by a new and expanding Pepperdine University campus may prove to be significant. The amount, composition, and phasing of this possible in-migration are discussed in detail in the "Growth Inducement" section of this report.

Initially, the Pepperdine University campus would have a staff of approximately 73, of which an estimated 50 might come from outside Ventura County; and a student body of approximately 500, of which approximately half (or 250) might come from outside the County. After five years, the staff is expected to be approximately 160, of which approximately 120 might come from outside the County; while the student body is expected to have grown to approximately 1,500, of which approximately 750 (still about half) might be expected to come from outside the county. The junior college is expected to draw about 50 new residents to the county initially, and approximately another 50 over the next five years.

While the total new population which may be eventually attracted to the County by the educational complex could be as much as three times greater than that attracted by the airport alternative, it would be of significantly different composition. Unlike households attracted by airport jobs, the student population attracted to the County by the educational complex would be largely young and single, and could be housed in renovated or newly constructed housing on campus. While households of married staff and students new to the County might be expected to be less amenable to on-campus housing, their numbers would be relatively small and could for the most part be assimilated by housing now available or becoming available in the nearby Oxnard-Camarillo area. The initial impacts to the community of these new residents would be very similar in scope and scale to the impact due to new residents attracted by the airport alternative. Community service impacts due to new on-campus student population would be minimal, since most would be accommodated by a college-administered service system adapted to an already existing, but upgraded, on-site physical infrastructure.

In light of the available supply of housing in the surrounding community, the anticipated future student housing on campus, the strong antigrowth sentiment of much of the Camarillo public and city administration against new development outside its "Golden Triangle," the county planning designation of the unurbanized areas south and west of Oxnard Air Force Base as open space (see Figure 2.3), existing Williamson Act contracts in the surrounding areas (see Figure 2.7), and the relatively small demand for new housing expected to be generated by new population attributable to the educational complex, it is not expected to precipitate residential development in the agricultural area surrounding the Air Force Base.

2.4.2 Public Sale

As suggested in the Alternatives portion of the "Economics" section of this report, the most likely bidders at public sale would anticipate airport and airport-related industrial uses similar in type to those presently proposed in the county application. Although no firm alternative proposals now exist, other than the city and county plans discussed above, it may be expected that the urban planning impacts of such airport-related proposals would be essentially similar to those of the current county proposal. Although light industrial uses could be compatible with existing city zoning, it appears clear that the City of Camarillo would be a reluctant host for even non-jet and general aviation uses of the Air Force Base site.

2.4.3 No Action

Existing community plans and goals relevant to the disposal and future use of Oxnard Air Force Base would be held in suspension should GSA elect to retain custody of the property. Presumably, present on-site and adjacent off-site land uses would continue essentially unchanged, although the general physical and visual deterioration of existing facilities would continue. The most significant impacts of no project are really the "non-impact" of non-use of usable facilities.

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3.0 AIR QUALITY

3.1 Ambient Air Quality Setting

The ambient air quality of the area in and around Oxnard Air Force Base must be defined before the impact of any project can be assessed. A continuous air monitoring station exists at Camarillo and measures oxidants, carbon monoxide, nitric oxide, nitrogen dioxide, hydrocarbons, and particulates. This data was obtained for the year 1972 from the publication California Air Quality Data, 1972, published by the California Air Resources Board. These data are presented in Figures 3.1 through 3.6. All data obtained from this publication are in the form of daily high hourly values as this is the only form that air quality data is available in; therefore, the figures express averages of these high hour values. Concentration during an average hour would actually be somewhat lower than the concentration shown.

Figures 3.1 to 3.3 present the data in the form of percent distribution -- the percentages shown are the amount of time that the corresponding concentration or less occurs. As an example, the carbon monoxide percent distribution shows that 50 percent of the time the carbon monoxide concentration is approximately 3 ppm or less. Figures 3.4 to 3.6 show the annual variation of these high hourly values.

Carbon monoxide is primarily an indicator of the severity of primary auto pollutants. The CO federal standard of 9 ppm is rarely exceeded in Camarillo. CO concentrations are highest in fall and winter when atmospheric stabilities are greatest.

Total hydrocarbons are also emitted primarily from automobiles. A portion of total hydrocarbons is reactive and this pollutant is considered to be the limiting factor in the formation of photochemical oxidants. Total hydrocarbons are not directly related to any standards since

Carbon Monoxide--Percent Distribution
for 1972 (High Hour Values)

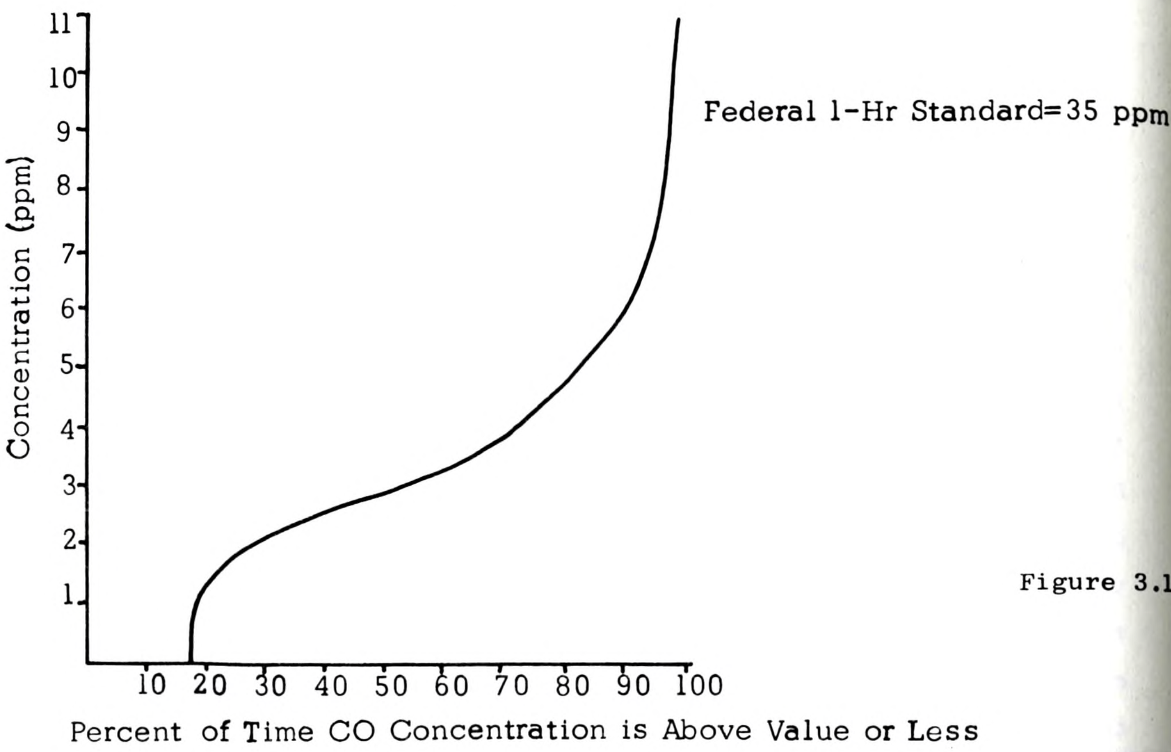


Figure 3.1a

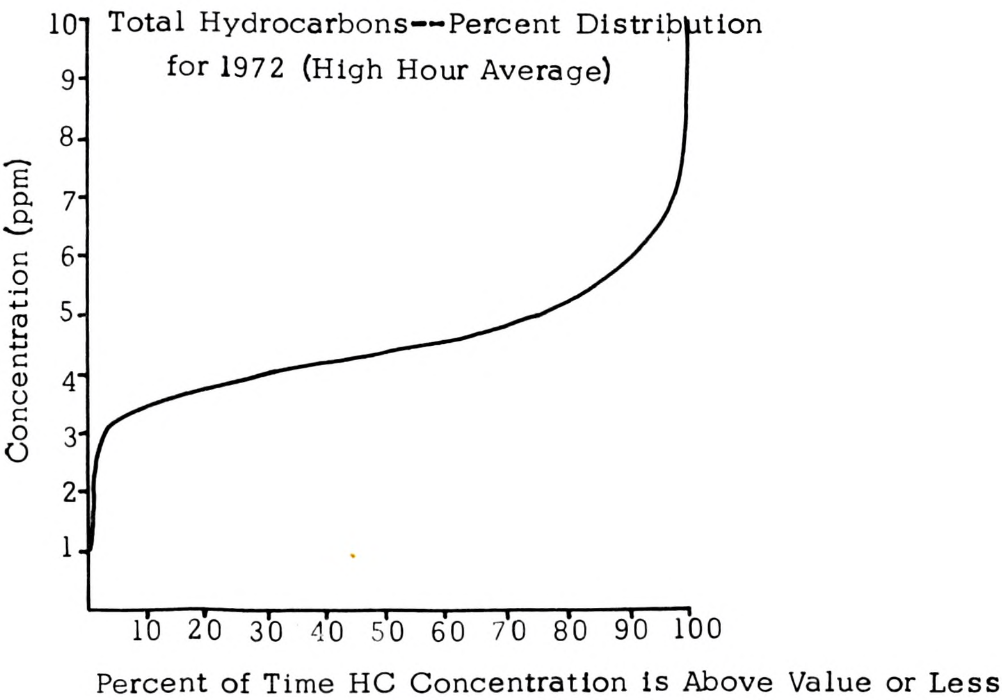


Figure 3.1b

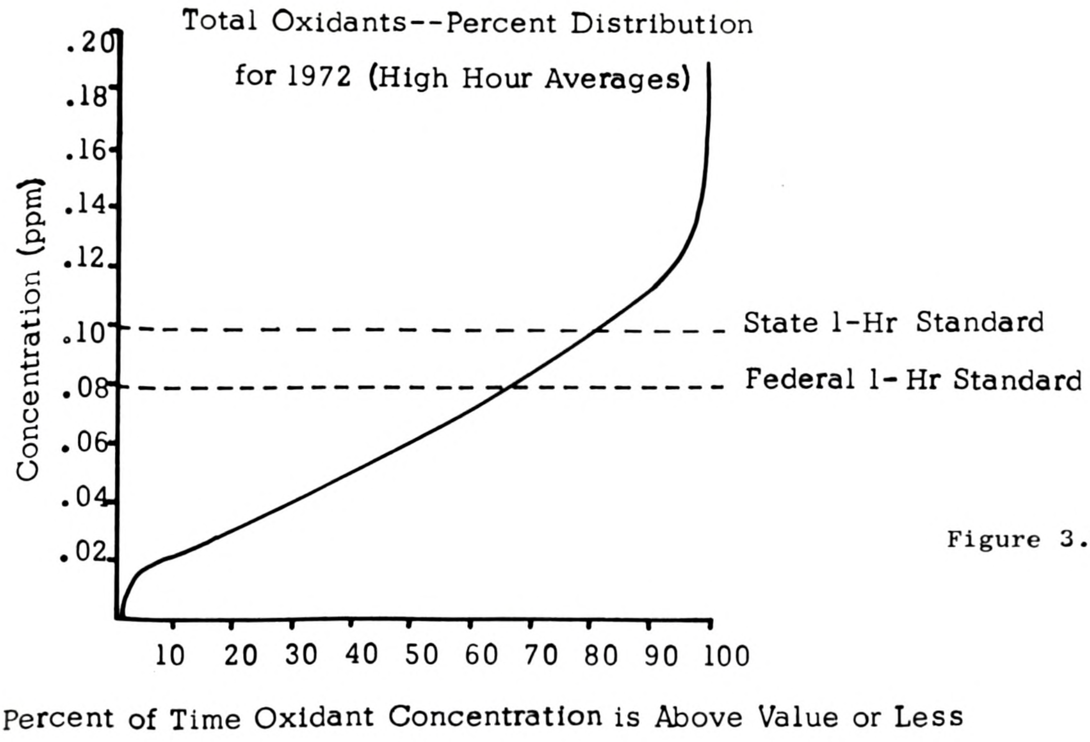


Figure 3.2a

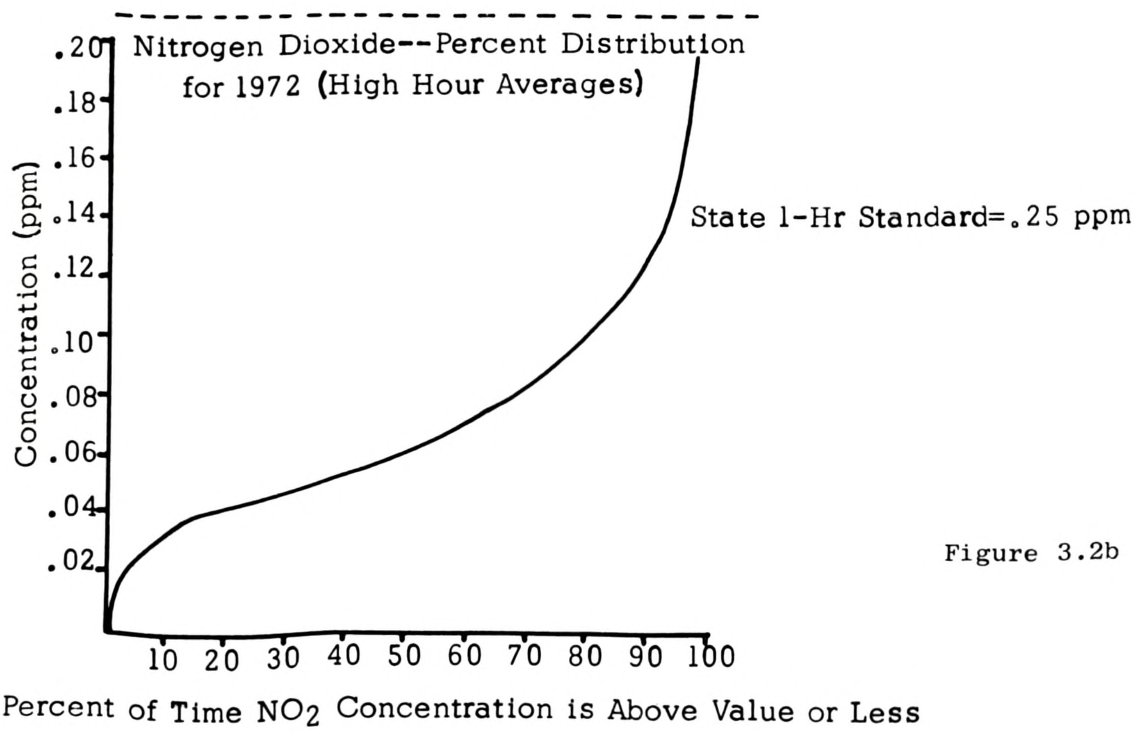


Figure 3.2b

Nitric Oxide--Percent Distribution
for 1972 (High Hour Averages)

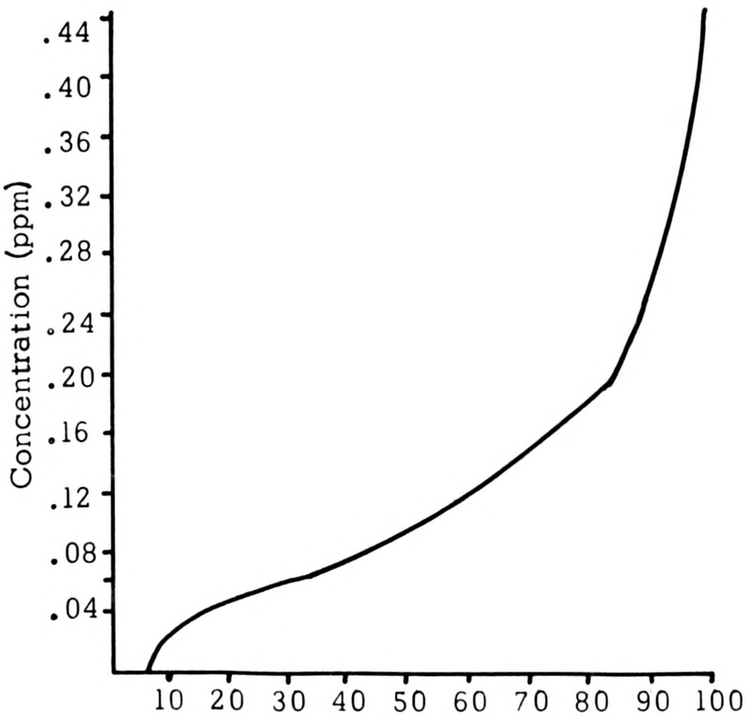


Figure 3.3a

Particulates--Percent Distribution
for 1972 (24 Hr Averages)

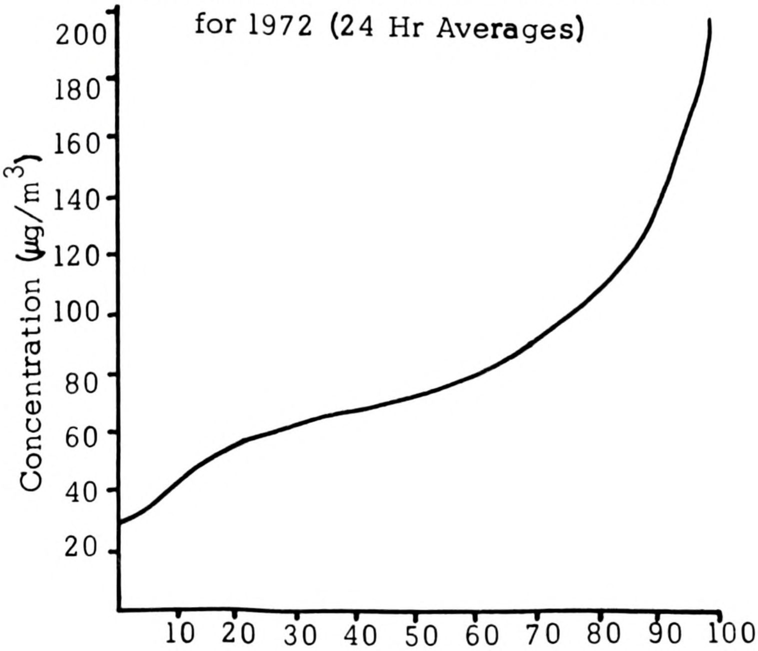


Figure 3.3b

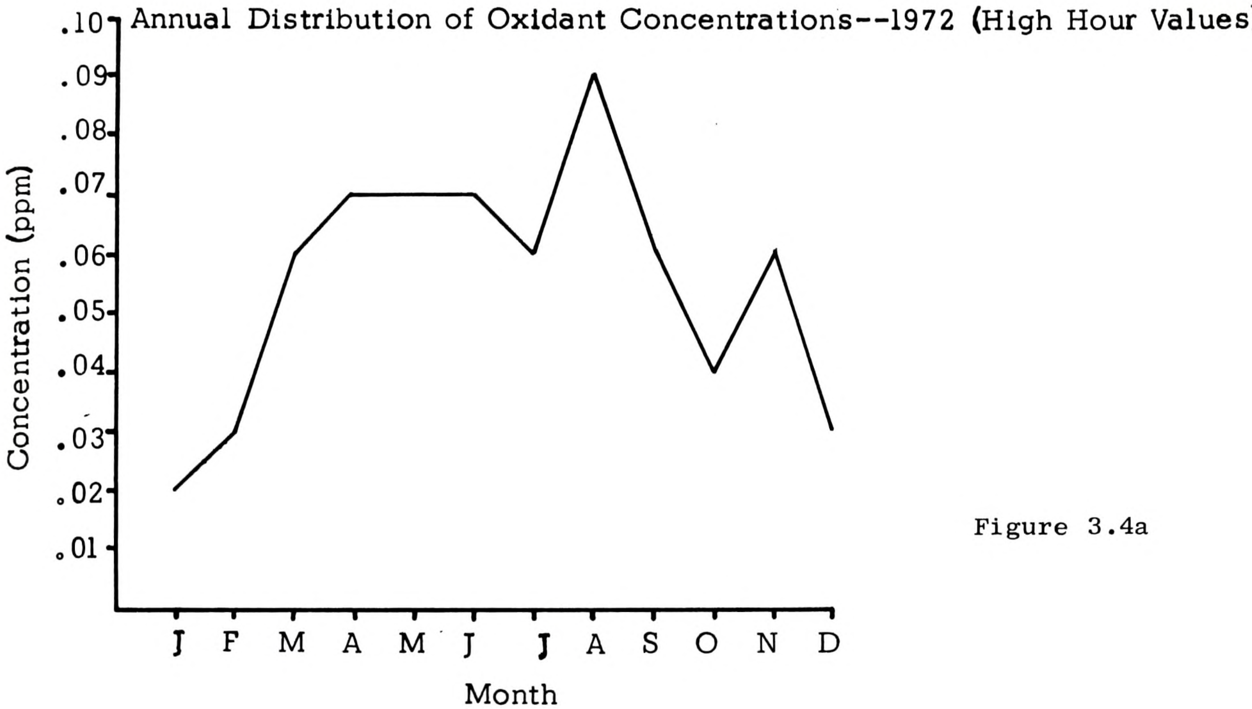


Figure 3.4a

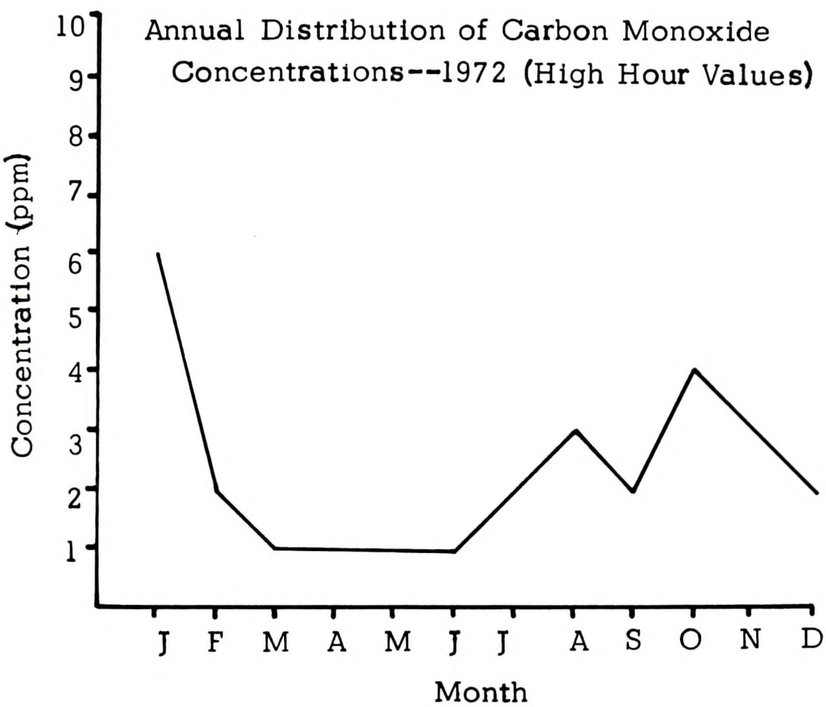


Figure 3.4b

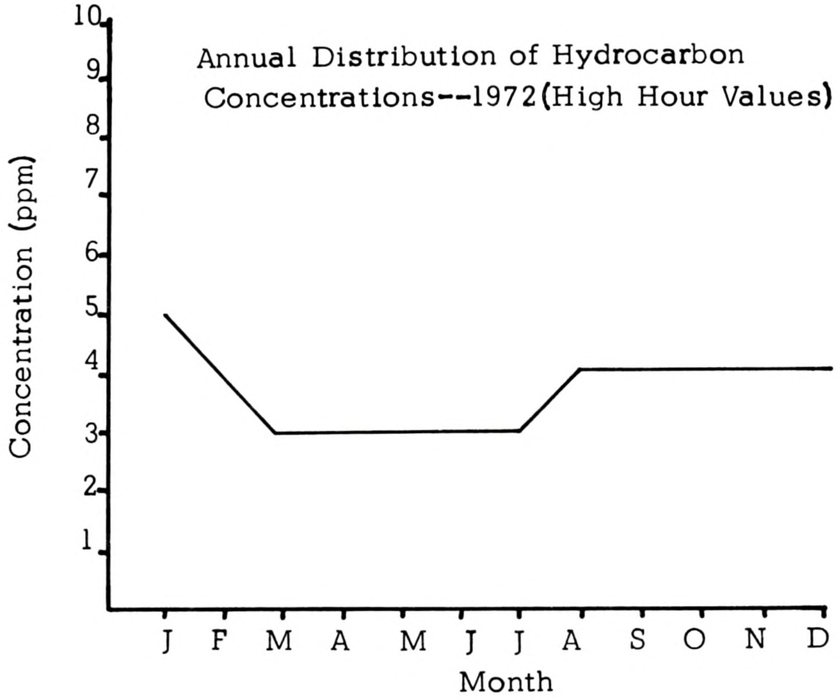


Figure 3.5a

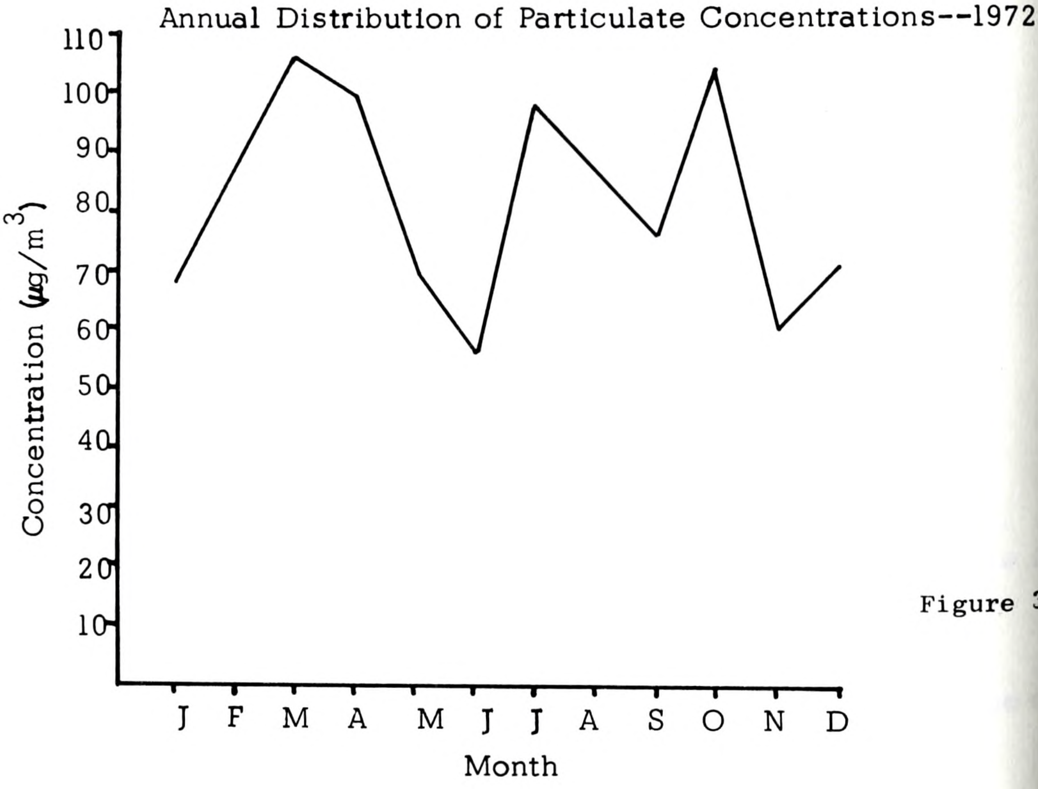


Figure 3.5b

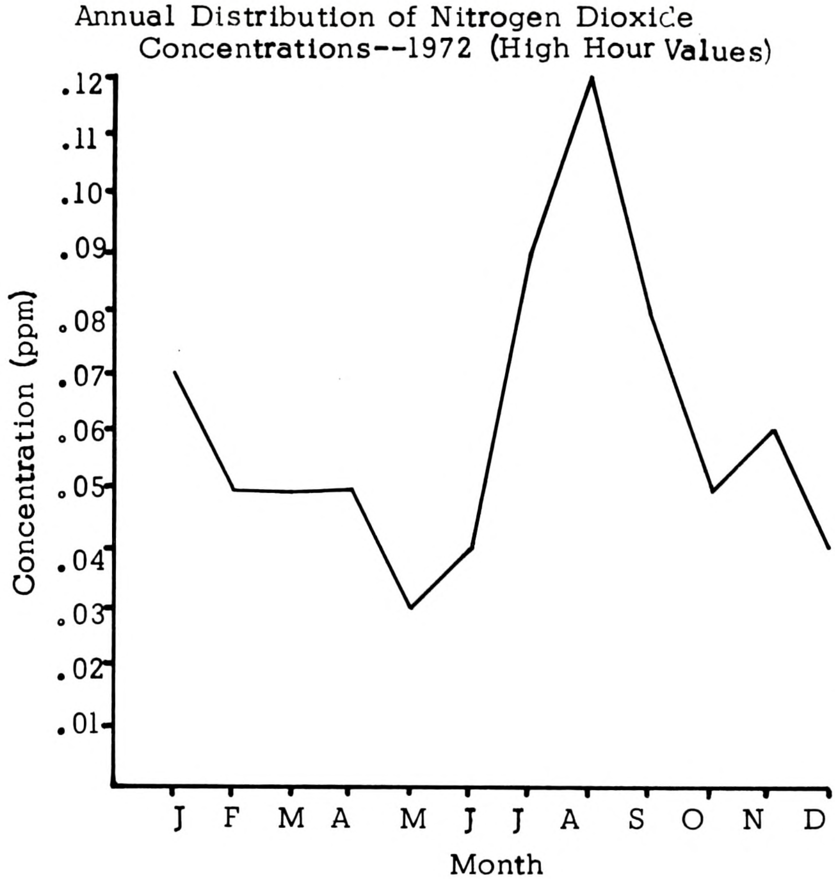


Figure 3.6a

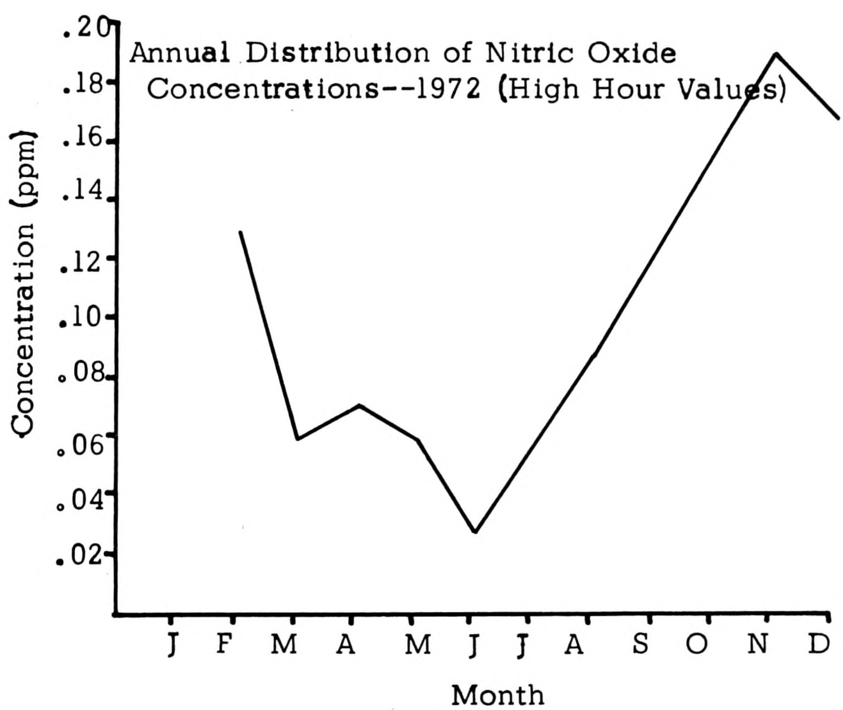


Figure 3.6b

the only hydrocarbon standard written is for reactive hydrocarbons between 6 to 9 p.m. relating to the prevention of photochemical oxidants. Hydrocarbon concentrations are also highest in the fall and winter months due to greater atmospheric stabilities.

Oxides of nitrogen are also considered a primary pollutant from automobiles and, like the previous pollutants, autos are the primary source. There are two major forms that oxides of nitrogen exist as -- nitric acid and nitrogen dioxide. The form emitted from auto exhaust is nitric oxide which later reacts in the atmosphere to form nitrogen dioxide. The standard for nitrogen dioxide of .25 ppm is rarely exceeded in Camarillo. The annual distributions show that nitric oxide is greatest during the fall and winter when greater stabilities occur and there is less sunlight available to convert it to nitrogen dioxide, while nitrogen dioxide concentrations are greatest in summer when sunlight is at a maximum.

Particulates are emitted from a variety of sources. A major source near the coast is salt particles from ocean spray. Particulate measurements in Camarillo are 24-hour samples measured by the Hi-Vol sampling method. In Camarillo, 24-hour particulate samples exceeded the state 24-hour standard of 100 $\mu g/m^3$ at a total of 16 times during 1972. Particulate concentrations are dependent on many variables, therefore there is no real discernible annual trends.

Oxidants are the product of photochemical reactions involving primarily reactive hydrocarbons and oxides of nitrogen; therefore, they are an indicator of the severity of photochemical smog. Oxidant values in Camarillo are the most significant problem as reactive products from population centers east of Camarillo are blown there by the prevailing sea breeze to form oxidants. Oxidant concentrations in Camarillo exceeded the federal standard of .08 ppm a total of 85 days out of the year 1972. Oxidant values are at a maximum in the summer months when sunlight is at a maximum to carry out the photochemical reactions.

Table 3.1

RESULTS OF MONITORING STUDY AND
CAMARILLO AIR MONITORING VALUES FOR SEPTEMBER 27, 1973

POLLUTANT	TIME	CAMARILLO MONITORING STATION (ppm)	OXNARD AFB (ppm)	DOWNTOWN CAMARILLO (ppm)	LAS POSAS RD & FREEWAY (ppm)	NORTH CAMARILLO (ppm)
CO	11:50-12:45	0.0	1.5	2.0	1.0	1.5
NO		0.1	0.1	0.1	0.1	0.1
NO_2		0.02	0.01	0.01	0.04	0.01
CO	1:10-2:35	1.0	1.5	1.5	1.5	1.0
NO		0.1	0.2	0.2	0.2	0.2
NO_2		0.05	0.02	0.08	0.03	0.02

A one-day monitoring effort was conducted in the area to determine if differences in concentration of pollutants existed from those measured in Camarillo. The results are presented in Table 3.1. No reliable conclusion can be drawn from these data; therefore, the Camarillo data are assumed to be representative of the area including Oxnard AFB.

Ambient air quality state and federal standards are presented in Table 3.2 for comparison.

3.2 Climatic Setting

A detailed climatic analysis was written by Adrian Wilson & Associates in their Environmental Impact Study of the Camarillo Airport, October 8, 1970. This analysis was found, after review by GSA's consultant, to be quite sufficient for the purpose of this study, therefore it is presented in this section. Although the study was prepared in 1970, it is felt that present climatic factors are very similar to those at that time.

Table 3.2

AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS CONCENTRATION	NATIONAL STANDARDS PRIMARY	SECONDARY	HAZARD
Photochemical Oxidants (corrected for NO_2)	1 hour	0.10 ppm (200 $\mu g/m^3$)	160 $\mu g/m^3$ (0.08 ppm)	Same as Primary Standard	--
Carbon Monoxide	12 hour	10 ppm (11 mg/m^3)	--	Same as Primary Standard	--
	8 hour	--	10 mg/m^3 (9 ppm)		73 mg/m^3 (66 ppm)
	1 hour	40 ppm (46 mg/m^3)	40 mg/m^3 (35 ppm)		--
Nitrogen Dioxide	Annual Average	--	100 $\mu g/m^3$ (0.05 ppm)	Same as Primary Standard	24 hour: 4000 $\mu g/m^3$ (2.0 ppm)
	1 hour	0.25 ppm (470 $\mu g/m^3$)	--		
Sulfur Dioxide	Annual Average	--	80 $\mu g/m^3$ (0.03 ppm)		--
	24 hour	0.04 ppm (105 $\mu g/m^3$)	365 $\mu g/m^3$ (0.14 ppm)	260 $\mu g/m^3$ (0.10 ppm)	
	3 hour	--	--	1300 $\mu g/m^3$ (0.5 ppm)	--
	1 hour	0.5 ppm (1310 $\mu g/m^3$)	--	--	--
Suspended Particulate Matter	Annual Geometric Mean	60 $\mu g/m^3$	75 $\mu g/m^3$	60 $\mu g/m^3$	--
	24 hour	100 $\mu g/m^3$	260 $\mu g/m^3$	150 $\mu g/m^3$	--
Hydrocarbons (corrected for Methane)	3 hour (6-9 a.m.)	--	160 $\mu g/m^3$ (0.24 ppm)	Same as Primary Standard	--

General Features

The coast of Southern California has a maritime climate. Marine air covers the Oxnard Plain about 95% of the time. The predominance of this relatively cool, moist air causes the frequent cloudiness and fog, as well as the moderate temperatures.

Most of the time the weather is determined by a cell of high pressure over the Pacific (usually referred to as the Pacific High) and a thermal trough of low pressure near the Arizona-California border. Circulation around these systems cause winds from a northerly direction, but the winds in the lowest layers are deflected by the mountains to the north resulting in an overall movement of air from the west onto the land. The air from this Pacific High also forms an inversion, a relatively thin layer of very stable air, in the lower atmosphere. This layer effectively traps the marine air between it and the surface. It is the moisture held in this trapped layer blowing across cold coastal waters that causes the frequent low cloudiness and fog mentioned above. Other material mixed with or suspended in the air is also trapped below the inversion.

In the winter, the circulation is determined on most days by the combined location of the Pacific High and another high pressure center that often develops over the Great Basin (northeastern Nevada). The inversion is often present but is not as persistent in the winter because weather systems, such as fronts and low pressure centers, frequently move over the area. These systems change the circulation, destroy the inversion, and also cause almost all of the rain that falls on the Oxnard Plain.

Occasionally during the fall and winter, and sometimes early spring, a strong offshore pressure difference develops which causes the strong, hot, dry northeasterly winds called Santa Anas.

Superimposed on the general circulation of the air over the area are the land breezes and sea breezes. These are caused by the heating and cooling of the land mass. The sea breeze flows from water to land and reaches its maximum in the afternoon. The land breeze blows from land toward the water and reaches its maximum in the early morning hours. The sea breeze blows daily during the summer and frequently occurs during the winter. The land breeze is not so pronounced over the Oxnard Plain but is frequently observed, particularly during the colder months.

The climatology of the Oxnard Plain is discussed in more detail in the following paragraphs.

Stability

The stability of the atmosphere near the ground is very important to the question of air quality because it determines whether the emissions near the surface will be trapped there, or whether they will mix with the air at higher elevations, hence lower surface concentrations. Normally the temperature of the atmosphere decreases with height, but in Southern California the situation is often reversed. That is, the temperature begins to increase with height at some altitude in the lower atmosphere. This reversal of the normal temperature gradient is called an inversion. The air within an inversion is extremely stable so that there is very little vertical movement and almost no mixing.

Subsidence Inversion. The air on the eastern side of the Pacific High slowly sinks downward as it moves in its clockwise circulation. As it descends from higher elevations, it warms at a fixed rate. This air reaches the lower levels at a temperature warmer than the air beneath it causing an inversion. This is called a subsidence inversion and, due to the position of the Pacific High, such an inversion exists along the California coast almost constantly in the summer, and frequently in the winter as well. Over an ocean, these inversions are intensified by cooling from the water below. This is particularly true along the California coast in the summer because the northerly winds around the Pacific High interact with the sea surface to cause offshore movement of the water near the surface. This results in upwelling of cooler water from below and causes the sea temperature along the coast to be colder than might be expected.

The subsidence inversion exists over the Oxnard Plain almost continuously during the summer months and during the early fall. The frequency of occurrence decreases during the late fall, and it exists about one-half of the time during the winter months. As spring progresses toward summer, it occurs more and more frequently.

The height of the base of the inversion layer varies from the surface to 5,000 feet, and occasionally even higher. On the majority of days, the base is below 2,000 feet, and it is very often below 1,000 feet. The height changes greatly from day to day. Table 3.3 gives the average height of the top of the marine layer (base of the inversion) by month. The average height of the inversion appears to be lowest during the summer and early fall.

There is also considerable diurnal variation in the height of the subsidence inversion. An extensive study made in the Los Angeles area showed that along the coast the inversion was, on the average, highest during the early morning hours when it might have been influenced by the land breeze, the lowest during the afternoon when the sea breeze was well developed. Inland over the Los Angeles basin, the opposite was true with the lower heights being recorded during the early morning and greater heights being measured during the afternoon. The limited data available locally indicate that a similar diurnal variation may occur.

The measurements made during the last six months of 1965 show that the height (see Figure 3.7) of the inversion usually increases from the coast toward the inland area such as the Simi Valley. They also show that the daytime heating often destroys the inversion over these inland areas during the afternoon.

Table 3.3

MEAN BASE OF INVERSION (1969-1970)[1,2]

PT. MUGU NAVAL AIR STATION

MONTH	SOUNDING INTERVAL[3]	NUMBER OF CASES	AVERAGE BASE[4]
Oct	0945-1330	24	12
	1435-1752	15	696
	1822-2344	17	1316
Nov	1215-1355	19	290
	1516-1550	5	322
	1900-2350	12	979
Dec	1240-1305	18	23
	1555-1815	9	849
	1855-2343	18	1474
Jan	1250-1419	16	200
	1500-1655	6	1503
	1820-2309	8	1578
Feb	1240-1325	15	180
	1458-1730	11	358
	1854-2340	8	1472
Mar	1235-1455	24	169
	1545-1750	6	1145
	1925-2335	10	1457
Apr	1220-1400	17	12
	1530-1925	9	1548
	1950-0037	12	665
May	0840-1230	15	421
	1625-2005	17	2034
	2110-0420	9	1671
Jun	0825-1235	22	869
	1537-1752	14	1794
	1803-0157	19	1360

1. Only first inversion included in data
2. Ranges in the data were often large
3. Local time
4. Altitude in feet

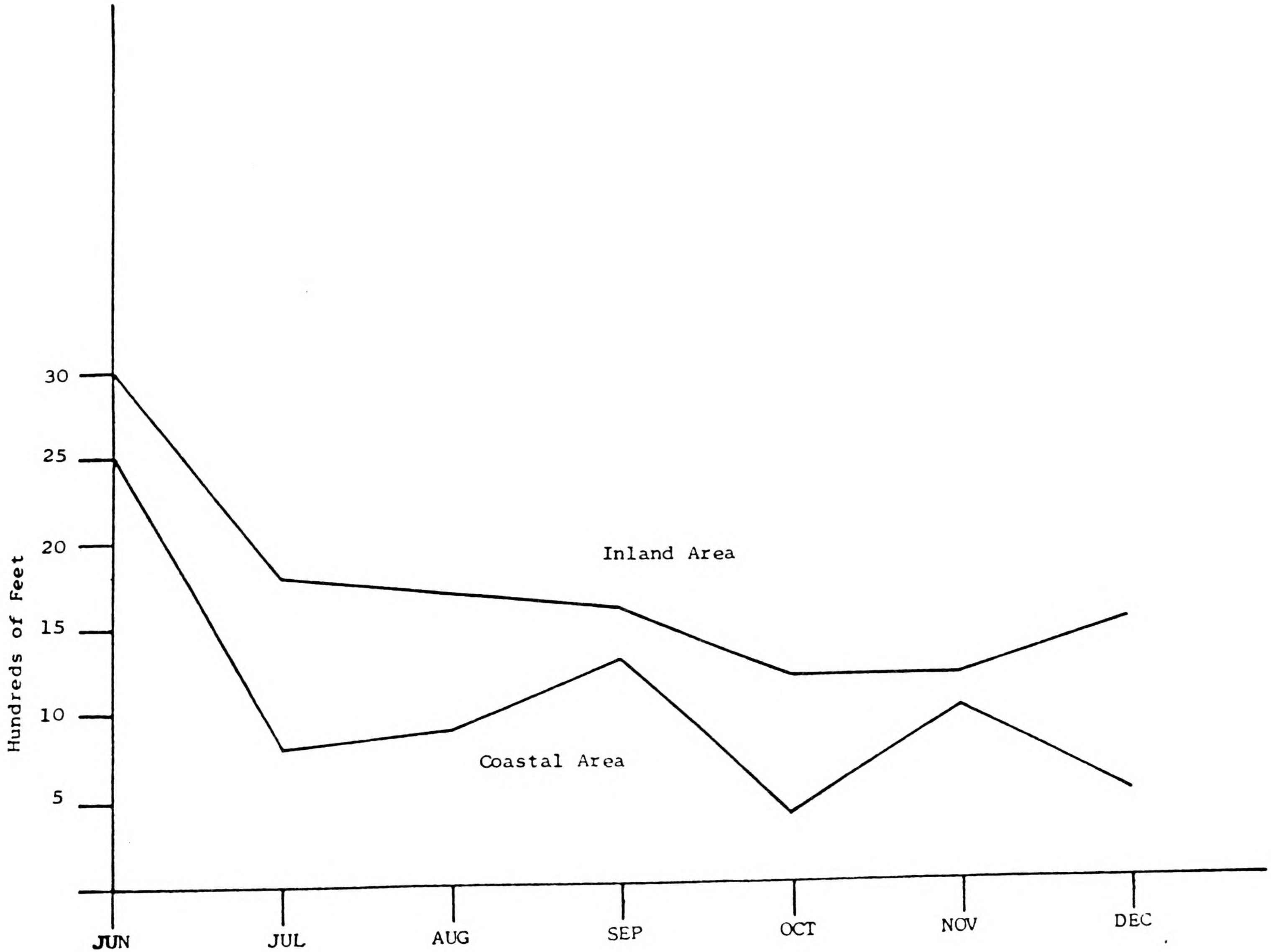


Figure 3.7. Comparison of Average Inversion Heights.

In summary, the low level subsidence inversion effectively traps the air between it and the surface. Over the Oxnard Plain it exists almost 100% of the time during summer, and about 50% of the time in midwinter. When it occurs, its base is below 2,000 feet more than 50% of the time, and below 1,000 feet a very significant percentage of the time.

Radiation Inversions. Under clear skies at night, the land cools very rapidly and, in turn, it cools the air close to the ground. When there is little or no wind, this lowest layer of air often becomes colder than the air above forming a thin inversion based at the surface. When the subsidence inversion is higher, the radiation inversion will form below it and two low level inversions will exist. When a layer of low clouds exists below the subsidence inversion, a frequent occurrence, the radiation inversion will not form. These surface inversions prevent the surface layer of air from mixing with the air above, and when fog or smoke is present it will hang within a few feet of the ground. Radiation inversions are destroyed rapidly during the morning by normal daytime heating.

Prevailing Wind Conditions

The stability of the air determines, to a great extent, its vertical movements; the horizontal movement depends upon the winds. Along the coastal plains of Southern California, the air within the lowest layers of the atmosphere is moved, primarily by the local winds.

Streamline analyses shows that the prevailing surface winds over the ocean area adjacent to the Oxnard Plain are from the west-northwest during all seasons of the year. Over the plain the movement of air below the inversion is dominated by the sea breeze-land breeze effect mentioned earlier. The prevailing wind flow is illustrated in Figures 3.8 and 3.9.

However, these charts may give a misleading idea of the local nighttime winds in the vicinity of the old Oxnard Air Force Base. In that area in the summer, the usual sequence of winds is for the sea breeze to start in mid or late morning and increase to a maximum of 15-20 knots in mid-afternoon. About dark the wind decreases, and during the night calm or night and variable winds prevail. During winter, in the absence of major weather systems, the sea breeze starts to blow during the early afternoon and blows until dark. At night, the winds are usually calm or light and variable, but during the early morning hours a light wind often blows from the northeast. These light northeast winds may be down slope or drainage winds rather than a true land breeze. (These are winds that develop at night as the cold air near the ground, caused by radiation cooling, moves down the side of hills and down through valleys seeking lower elevations.)

Tables 3.4 to 3.9 show wind roses for Oxnard Air Force Base for an annual period and winter, spring, summer and fall. Tables 3.9a-f show wind roses for specific months in 1969, and most importantly wind roses at 6:00 a.m. and 3:00 p.m. For those months, these data illustrate the following important points.

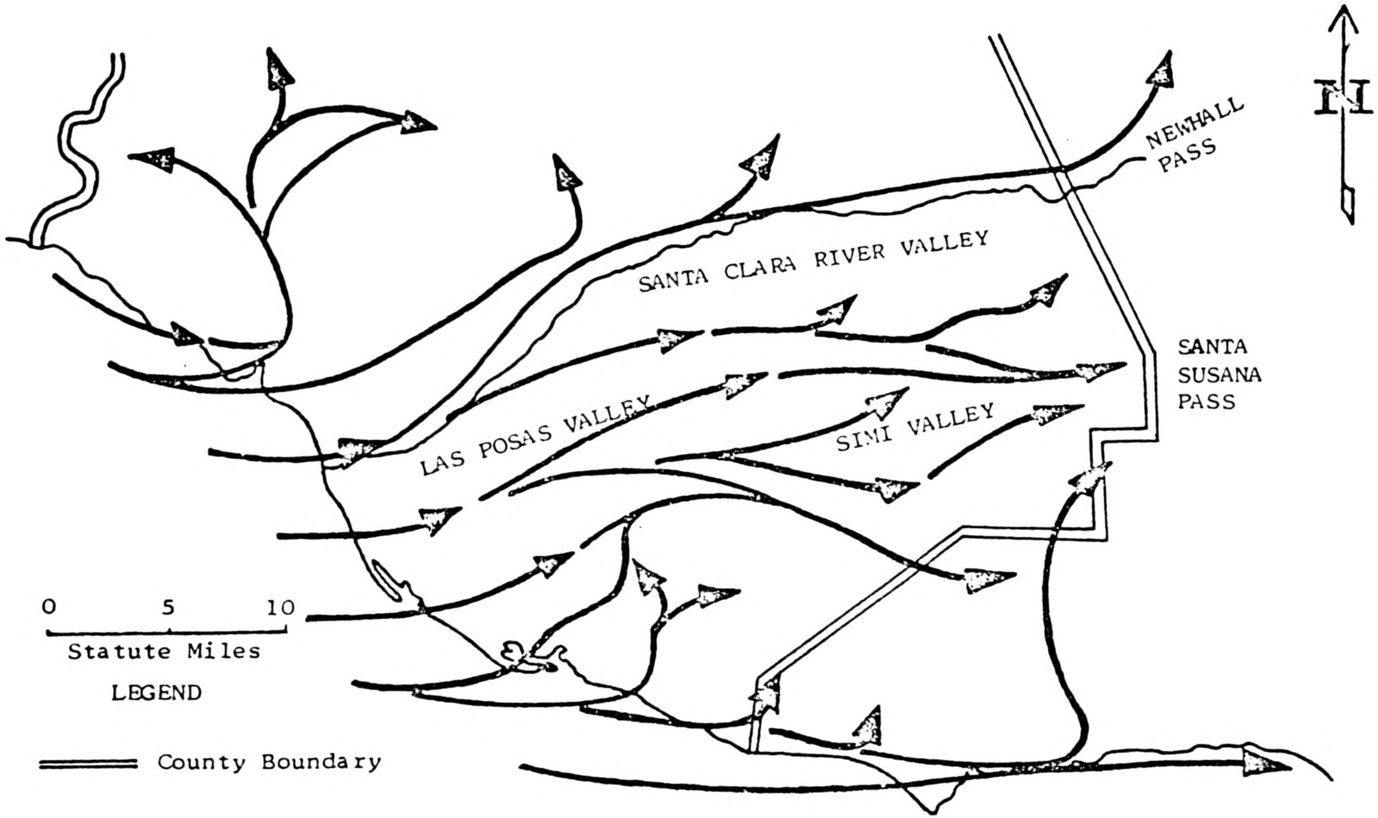


Figure 3.8. Shallow Marine Layer, Sea Breeze Flow.

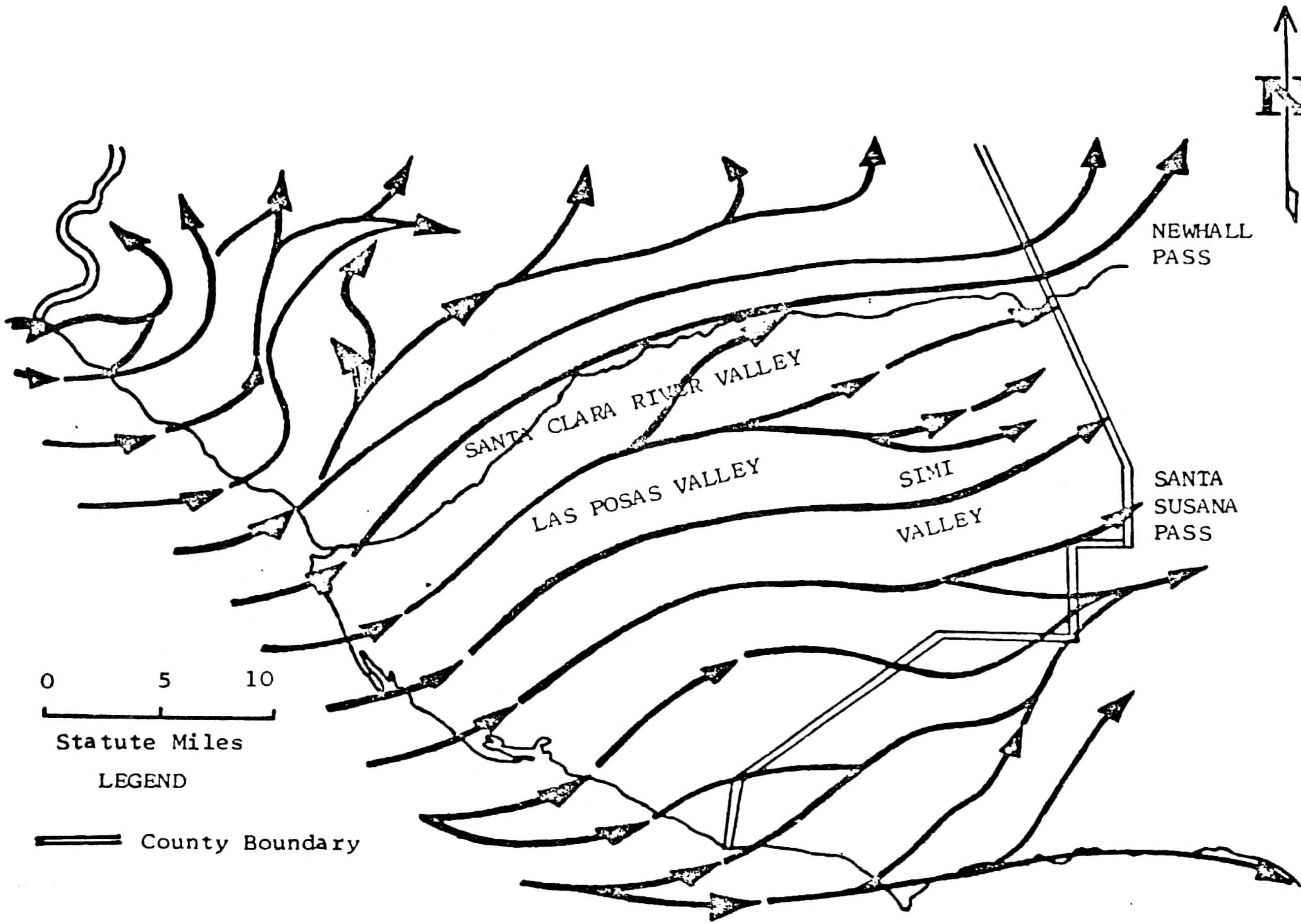


Figure 3.9. Deep Marine Layer, Sea Breeze Flow.

Oxnard AFB, Calif. ('53-'62) Table 3.4 Surface Winds (Annual)

PERCENT FREQUENCY WIND ROSE (KNOTS)

SPEED / DIR	1-3	4-10	11-21	22-27	Total ≧ 4	Percent	Mean Wind Speed
N	.8	.7	.0	.0	.7	1.5	3.8
NNE	.6	.7	.1	.0	.8	1.4	4.9
NE	2.2	3.9	1.1	.1	5.2	7.4	6.6
ENE	1.5	2.8	1.6	.2	4.6	6.1	8.2
E	1.4	2.0	.6	.1	2.7	4.1	6.3
ESE	.4	.4	.1	.0	.4	.8	4.6
SE	.6	.4	.0	.0	.5	1.1	4.0
SSE	.3	.3	.0	.0	.3	.6	4.1
S	.7	1.4	.2	.0	1.6	2.3	5.6
SSW	.7	2.0	.2	.0	2.3	3.0	6.2
SW	2.0	9.0	1.0	.0	10.0	12.0	6.6
WSW	1.2	7.3	.9	.0	8.2	9.4	7.0
W	2.0	7.2	1.6	.1	9.0	10.9	7.3
WNW	1.1	1.5	.3	.0	1.9	3.0	5.5
NW	1.7	1.7	.1	.0	1.7	3.4	4.0
NNW	.7	.5	.0	.0	.5	1.2	3.7
Calm						31.7	
Totals	18.1	41.8	7.9	.6	50.3	100.0	4.4

1 knot = 1.15 mph

PERCENT FREQUENCY WIND ROSE (KNOTS)

DIR \ SPEED	1-3	4-10	11-21	22-27	Total ≥ 4	Percent	Mean Wind Speed
N	.8	1.0	.0		1.0	1.8	4.1
	.6	.9	.0	.0	.9	1.5	5.2
NE	3.6	10.1	2.7	.3	13.2	16.8	7.2
ENE	1.7	6.2	4.2	.4	10.8	12.5	9.6
E	1.3	3.1	1.8	.2	5.1	6.4	8.7
ESE	.3	.4	.2	.0	.6	.9	6.8
SE	.4	.4	.1	.0	.5	1.0	5.7
SSE	.2	.2	.1	.0	.3	.5	6.4
S	.6	.9	.1		1.0	1.6	5.1
SSW	.4	1.4	.1		1.5	1.9	5.5
SW	1.6	5.0	.3		5.4	6.9	5.7
WSW	.6	3.9	.6		4.4	5.1	6.8
W	1.2	3.8	.8	.1	4.8	5.9	7.1
WNW	1.0	1.7	.2	.0	1.9	2.8	4.9
NW	1.9	3.2	.0		3.2	5.1	4.3
NNW	.6	.7	.0		.7	1.3	3.8
Calm						27.9	
Totals	16.8	42.6	11.3	1.1	55.3	100.0	5.0

1 knot = 1.15 mph

Oxnard AFB, Calif. ('53-'62) Table 3.6 Surface Winds (April)

PERCENT FREQUENCY WIND ROSE (KNOTS)

SPEED / DIR	1-3	4-10	11-21	22-27	Total ≧ 4	Percent	Mean Wind Speed
N	.9	.6	.0		.6	1.5	3.8
NNE	.6	.8	.0		.9	1.5	4.2
NE	1.5	2.3	.2		2.6	4.1	4.9
ENE	1.4	2.0	.3	.0	2.3	3.7	5.2
E	2.0	2.2	.0		2.2	4.2	4.0
SES	.6	.8	.1		.8	1.4	4.3
SE	.8	.8	.1		.9	1.7	4.7
SSE	.4	.4	.0		.5	.9	4.3
S	.9	1.6	.4		2.0	2.9	6.2
SSW	.8	2.2	.4	.0	2.6	3.4	6.6
SW	2.1	9.4	2.1	.0	11.6	13.6	7.3
WSW	1.1	7.3	1.4	.1	8.8	9.9	7.6
W	2.4	9.7	2.8	.4	12.9	15.3	8.0
WNW	.9	1.2	.4	.1	1.6	2.5	6.4
NW	1.5	1.2	.1		1.3	2.8	3.7
NNW	.7	.3	.0		.3	1.1	3.2
Calm						29.6	
Totals	18.5	42.9	8.4	.6	51.9	100.0	4.5

1 knot = 1.15 mph

PERCENT FREQUENCY WIND ROSE (KNOTS)

SPEED / DIR	1-3	4-10	11-21	22-27	Total ≥4	Percent	Mean Wind Speed
N	.8	.4			.4	1.1	3.1
NNE	.4	.1			.1	.5	3.2
NE	.8	.4			.4	1.2	3.1
ENE	.9	.3			.3	1.3	2.9
E	.8	.3			.3	1.1	3.0
ESE	.2	.0			.0	.2	2.7
SE	.5	.1			.1	.6	2.5
SSE	.3	.1			.1	.4	2.4
S	.9	1.1	.1		1.1	2.1	4.8
SSW	.6	2.3	.1		2.4	3.1	6.3
SW	2.3	13.1	1.0		14.1	16.5	6.7
WSW	1.7	12.2	.8		13.0	14.7	6.9
W	2.9	10.3	.9		11.2	14.1	6.2
WNW	1.7	2.1	.1		2.1	3.8	4.5
NW	1.8	1.1			1.1	2.9	3.3
NNW	.7	.3			.3	1.0	3.1
Calm						35.5	
Totals	17.3	44.1	3.1		47.2	100.0	3.8

1 knot = 1.15 mph

Oxnard AFB, Calif. ('53-'62)

Table 3.8

Surface Winds (October)

PERCENT FREQUENCY WIND ROSE (KNOTS)

SPEED / DIR	1-3	4-10	11-21	22-27	Total ≥4	Percent	Mean Wind Speed
N	.8	.8	.0		.9	1.7	3.7
NNE	.9	.8	.1		.8	1.7	3.9
NE	2.8	3.8	.8	.1	4.8	7.5	5.7
ENE	1.8	2.3	.9	.0	3.3	5.0	6.0
E	1.7	1.7	.3	.0	2.0	3.7	4.9
ESE	.3	.3			.3	.6	3.6
SE	.8	.4			.4	1.2	3.2
SSE	.3	.3			.3	.6	3.6
S	.9	1.6	.1		1.7	2.7	5.1
SSW	.8	2.4	.2		2.6	3.4	5.8
SW	1.9	9.3	.8		10.1	12.0	6.5
WSW	1.3	6.3	.7		7.0	8.3	6.6
W	1.8	5.0	1.1		6.1	7.9	6.8
WNW	1.1	1.3	.3		1.5	2.6	5.3
NW	1.8	1.5	.1	.0	1.6	3.4	3.8
NNW	.7	.5	.0		.6	1.3	4.0
Calm						36.5	
Totals	19.5	38.4	5.4	.1	43.9	100.0	3.6

1 knot = 1.15 mph

Table 3.9a

OXNARD AFB

FREQUENCY OF WIND DIRECTION AND SPEED

MAY 69

	1-3	4-7	8-12	13-18	19-24	TOTAL	%
N	1	1				2	0.9
NE	2	2				4	1.8
E	2	1	1			4	1.8
SE	3					3	1.4
S	4	6	1			11	5.1
SW	14	27	7			48	22.1
W	11	39	8			58	26.7
NW	4					4	1.8
CALM						83	38.2
TOTAL	41	76	17			217	
%	18.9	35.0	7.8				100.0

* Data are for hours 00, 06, 09, 12, 15, 18, 21 in knots

0600 and (1500) HOUR DATA ONLY

	1-3	4-7	8-12	13-18	19-24	TOTAL
N						
NE		1				1
E	1	1				2
SE						
S	1	(1)	(1)			1 (2)
SW	(3)	(6)	(3)			(12)
W		(12)	(5)			(17)
NW	1					1
CALM						26
TOTAL	3(3)	2(19)	9			31(31)

Table 3.9b

OXNARD AFB

FREQUENCY OF WIND DIRECTION AND SPEED

JUN 69

	1-3	4-7	8-12	13-18	19-24	TOTAL	%
N	2					2	1.0
NE							
E	1	1				2	1.0
SE	5					5	2.4
S	4	10	1			15	7.1
SW	14	27	8			49	23.3
W	12	32	16			60	28.6
NW	2	1				3	1.4
CALM						74	35.2
TOTAL	40	71	25			210	
%	19.0	33.8	11.9				100.0

* Data are for hours 00,06,09,12,15,18,21 in knots

0600 and (1500) HOUR DATA ONLY

	1-3	4-7	8-12	13-18	19-24	TOTAL
N	1					1
NE						
E						
SE	1					1
S						
SW	(1)	(8)	(5)			(14)
W	1	2 (7)	(9)			3 (16)
NW	1					1
CALM						24
TOTAL	4(1)	2(15)	(14)			30(30)

Table 3.9c

OXNARD AFB

FREQUENCY OF WIND DIRECTION AND SPEED

AUG 69

	1-3	4-7	8-12	13-18	19-24	TOTAL	%
N	2					2	0.9
NE		1				1	0.5
E							
SE							
S	5	1				6	2.8
SW	10	31	16			57	26.3
W	14	25	13			52	24.0
NW	6					6	2.8
CALM						93	42.9
TOTAL	37	58	29			217	
%	17.1	26.7	13.4				100.0

* Data are for hours 00, 06, 09, 12, 15, 18, 21 in knots

0600 and (1500) HOUR DATA ONLY

	1-3	4-7	8-12	1318	19-24	TOTAL
N	2					2
NE		1				1
E						
SE						
S						
SW	1	(8)	(6)			1 (14)
W	(1)	(7)	(9)			(17)
NW						
CALM						27
TOTAL	3(1)	1(15)	(15)			31(31)

Table 3.9d

OXNARD AFB

FREQUENCY OF WIND DIRECTION AND SPEED

SEP 69

	1-3	4-7	8-12	13-18	19-24	TOTAL	%
N	1					1	0.5
NE	1					1	0.5
E	1	1				2	1.0
SE	1					1	0.5
S	5	3				8	3.8
SW	8	19	4			31	14.8
W	14	39	11			64	30.5
NW	3	1				4	1.9
CALM						98	46.7
TOTAL	34	63	15			210	
%	16.2	30.0	7.1				100.0

* Data are for hours 00, 06, 09, 12, 15, 18, 21 in knots

0600 and (1500) HOUR DATA ONLY

	1-3	4-7	8-12	13-18	19-24	TOTAL
N						
NE						
E		1				1
SE						
S						
SW	1	(9)	(2)			1 (11)
W	(2)	(12)	(5)			(19)
NW	1					1
CALM						27
TOTAL	2(2)	1(21)	(7)			30 (30)

Table 3.9e

OXNARD AFB

FREQUENCY OF WIND DIRECTION AND SPEED

OCT 69

	1-3	4-7	8-12	13-18	19-24	25-31	Over 31	TOTAL	%
N	4	4						8	3.7
NE	5	10		4		6		25	11.5
E	5	4		3	2	1	1	16	7.4
SE								0	--
S	2	4	3					9	4.1
SW	2	11	11					24	11.1
W	4	9	11	4	2	1		31	14.3
NW	3	7			1			11	5.1
CALM								92	42.4
TOTAL	25	49	25	11	5	8	1	217	
%	11.5	22.6	11.5	5.1	2.3	3.7	0.5		100.0

* Data are for hours 00, 06, 09, 12, 15, 18, 21 in knots

0600 and (1500) HOUR DATA ONLY

	1-3	4-7	8-12	13-18	19-24	25-31	Over 31	TOTAL
N	1	3						4
NE	1	4		(2)		2		7(2)
E	2							2
SE								
S		(3)	(1)					(4)
SW		(5)	(4)	(1)				(10)
W	(1)	(2)	(7)	(1)	(2)	(1)		(14)
NW	2	1			(1)			3(1)
CALM								15
TOTAL	6(1)	8(10)	(12)	(4)	(3)	2(1)		31(31)

Table 3.9f

OXNARD AFB

FREQUENCY OF WIND DIRECTION AND SPEED

NOV 69

	1-3	4-7	8-12	13-18	19-24	25-31	Over 31	TOTAL	%
N	5	4						9	4.3
NE	3	12	14	7	8	12	3	59	28.1
E	2	9	8		4	2		25	11.9
SE	1	3						4	1.9
S	1		2					3	1.4
SW	4	15	2					21	10.0
W		10	2					12	5.7
NW	8	7	1					16	7.6
CALM								61	29.0
TOTAL	24	60	30	7	12	14	3	210	
%	11.4	28.6	14.3	3.3	5.7	6.7	1.4		100.0

* Data are for hours 00, 06, 09, 12, 15, 18, 21 in knots

0600 and (1500) HOUR DATA ONLY

	1-3	4-7	8-12	13-18	19-24	25-31	Over 31	TOTAL
N	1							1
NE	1	2	4(2)	(3)	2(1)	2(2)		11(8)
E		4	(4)					4 (4)
SE		(1)						(1)
S			(1)					(1)
SW	1(2)	(6)	(1)					1 (9)
W		(3)	(2)					(5)
NW		1						1
CALM								12(2)
TOTAL	3(2)	7(10)	4(10)	(3)	2(1)	2(2)		30(30)

1. The winds in the Oxnard Plain blow primarily from the southwest.

2. The sea breeze is a real phenomenon as shown by the predominant wind directions at 0600 and 1600.

3. The percentage of reported calms at Oxnard AFB is between 30 and 40 percent.

4. The wind speed is highest in the afternoon during the summer and early fall.

Overall, the southwesterly sea breeze winds are much more pronounced than the northeasterly winds. During all seasons, these low level winds are greatly influenced by the topography. This is particularly true when the inversion is below the level of the hill tops. In such a case, some of the flow of air is funneled through the valleys and passes, but not all of it.

During the summer and early fall when the marine layer is shallowest, the concentration of any given pollutant often increases from morning to evening. As the land breeze sets in at night, some of this pollutant is blown out to sea. The next day this residual pollutant augments the new day's emissions. This meso-scale horizontal ebbing and flowing assists in the build-up of excessive amounts of atmospheric pollutants. These remarks explain how the surrounding hills combined with a low inversion serve to produce poor air quality periods.

Santa Ana Winds

The Santa Ana winds develop several times each year. They occur during the fall and winter and, infrequently, in the spring. They are caused by large, intense areas of high pressure that form, or move, over the great basin with the highest pressure over Nevada. The great pressure difference between the inland area and the coast causes very strong winds to flow from the inland deserts through the mountain passes and onto the coastal plains. These winds blow across the Oxnard Plain from a northeasterly to easterly direction, and often reach speeds of 30 to 40 knots. This air from the desert, warmed as it flows down the mountain slopes, is hot and dry when it reaches the coastal plains. The winds completely replace the air in the lower layers and, quite often, the subsidence inversion is completely destroyed.

On a typical Santa Ana day in the vicinity of the defunct Oxnard AFB the wind blows lightly from the northeast during the early morning hours (often it is calm). The wind abruptly becomes very strong from the northeast at about 9 or 10 a.m. The wind reaches its maximum during the early afternoon and continues very strong until replaced by a sea breeze in mid-afternoon. (This sea breeze moves inland from the coast across the

Oxnard Plain and it is not unusual for local airports to observe a strong southwesterly wind at one end of the runway, and northwesterly wind at the other end. Where these winds meet there is an area of much turbulence which is of considerable importance to aircraft operation -- particularly with light aircraft.) At other times, the Santa Ana is strong enough to prevent the sea breeze from forming and the northeasterly winds blow constantly for two or three days. Table 3.10 shows the occurrences of Santa Anas at Oxnard Air Force Base, and Table 3.11 shows the frequency of Santa Anas at Point Mugu.

Cyclones

During the fall, winter and spring, weather systems such as fronts and low pressure centers often move across the area. At such times their circulation dominates the local weather. As these systems pass, the winds vary greatly in speed and direction. The inversion is usually destroyed and a layer of air is no longer trapped near the ground. They often cause layered clouds to great altitude and, when they are strong enough, they cause rain. During such periods of weather, ventilation of the atmosphere is excellent and air pollution is no problem.

Catalina Eddy

Another phenomena that can change the low level circulation is known as the Catalina Eddy. This is probably caused as the prevailing north to northwesterly surface winds, blowing down the California coast, pass the Point Conception area where the coastline and coast range turn and become oriented east-west. The winds recurve in the lee of the mountains and undoubtedly form eddies. Under certain conditions, a larger counter-circulation of air develops much farther south and a weak low pressure center forms near Santa Catalina Island. When this happens, there is a weak south to southeasterly flow below the inversion, is carried out to sea during the night by a land breeze. If there is a southeasterly flow over the ocean, this air is carried northwest where it can be carried inland over the Oxnard Plain by the sea breeze the next day. This explanation is somewhat subjective, but it is generally accepted by meteorologists working in the area. At least one case has been well documented by Mr. Rosenthal of the Geophysics Section of the Pacific Missile Range.

Stratus

Low clouds, called coastal stratus, are a predominant feature of the local weather picture. These clouds form in the air trapped below the inversion with the cloud tops at the base of the inversion.

Within this lower layer of moist marine air, the temperature decreases with height up to the inversion and the humidity usually, due to vertical mixing, increases with height. The temperature through this entire layer increases during the day and decreases at night. During the late afternoon

Table 3.10

SANTA ANA WINDS AT OXNARD AFB 1964-1969

NUMBER OF SIGNIFICANT OCCURRENCES

	1964	1965	1966	1967	1968	1969
JAN	7	7	6	6	7	2
FEB	10	8	6	9	3	1
MAR	4	3	4		3	2
APR		1	3		4	2
MAY				4		
JUN						
JUL						
AUG						
SEP	1	2			3	
OCT	2	4	3	5	3	8
NOV	7	1	1		3	8
DEC	4	4	8	7	6	1
TOTAL	35	30	31	31	32	24

1. Data taken from WBAN 10.

Table 3.11

SANTA ANA OCCURRENCES AT POINT MUGU (Jul 49-Jun 66)

MONTH	MAXIMUM NUMBER	MINIMUM NUMBER	TOTAL 17-YEAR PERIOD
SEP	1	0	2
OCT	4	0	18
NOV	8	1	56
DEC	7	2	60
JAN	8	0	58
FEB	9	0	61
MAR	4	0	34
APR	1	0	5
MAY	4	0	7
JUN	1	0	1

Note: Santa Ana winds have not been observed during July or August or night the air just below the inversion often cools to the saturation point and clouds form at this level. The height of these clouds is determined by the inversion.

These clouds may form over the Oxnard Plain, but often they form over the water or near the coast and are advected inland in the evening by the weakening sea breeze. As nighttime cooling continues, the clouds thicken and their base becomes lower.

The cloud base is usually lowest in the early morning and lifts with daytime heating. The clouds dissipate when the temperature of the layer of air below the inversion is raised above the saturation point. Very low stratus dissipates much earlier in the day because the thin layer of air beneath a low inversion heats more rapidly than the larger volume of air under a high inversion. When the inversion is higher than usual, the stratus exists all day.

Considerably more stratus occurs during the summer than in winter because the subsidence inversion is more persistent during the summer season. At Oxnard AFB, clouds were observed below 2,500 feet about 9% of the time during February, and 34% of the time during August. When only the early morning hours are considered, the figures are 17% and 57%. Figures 3.10 and 3.12 illustrate the seasonal variation in low clouds.

Fog

Fog, of course, is a cloud which is based at the surface. It forms when the air at the surface is cooled to the saturation point. This can happen in the moist air when the subsidence inversion is very low, or when a radiation inversion forms. When surface temperatures are relatively low, light winds can move the fog and it is often advected from the ocean across the Oxnard Plain.

At Oxnard AFB (see Figures 3.11 and 3.13), fog was reported about 15% of the time. It was reported on less than 10% of the observations made during March and May, and on over 20% of the observations during August, September, and October. These figures represent all reports of fog. Fog occurred most often during the night and early morning hours, and was not frequently observed during the mid-afternoon.

Visibility

The visibility is sometimes restricted by precipitation or blowing dust, but the significant reported restrictions to visibility, other than fog, are haze and smoke. Smoke and fog can often clearly be identified, but usually the observer must subjectively decide if a restriction if visibility is due to haze, smoke, or light fog. The restriction commonly known as smog is usually reported on weather observations as haze and smoke. In the climatological records of weather stations, reports of haze or smoke are grouped together.

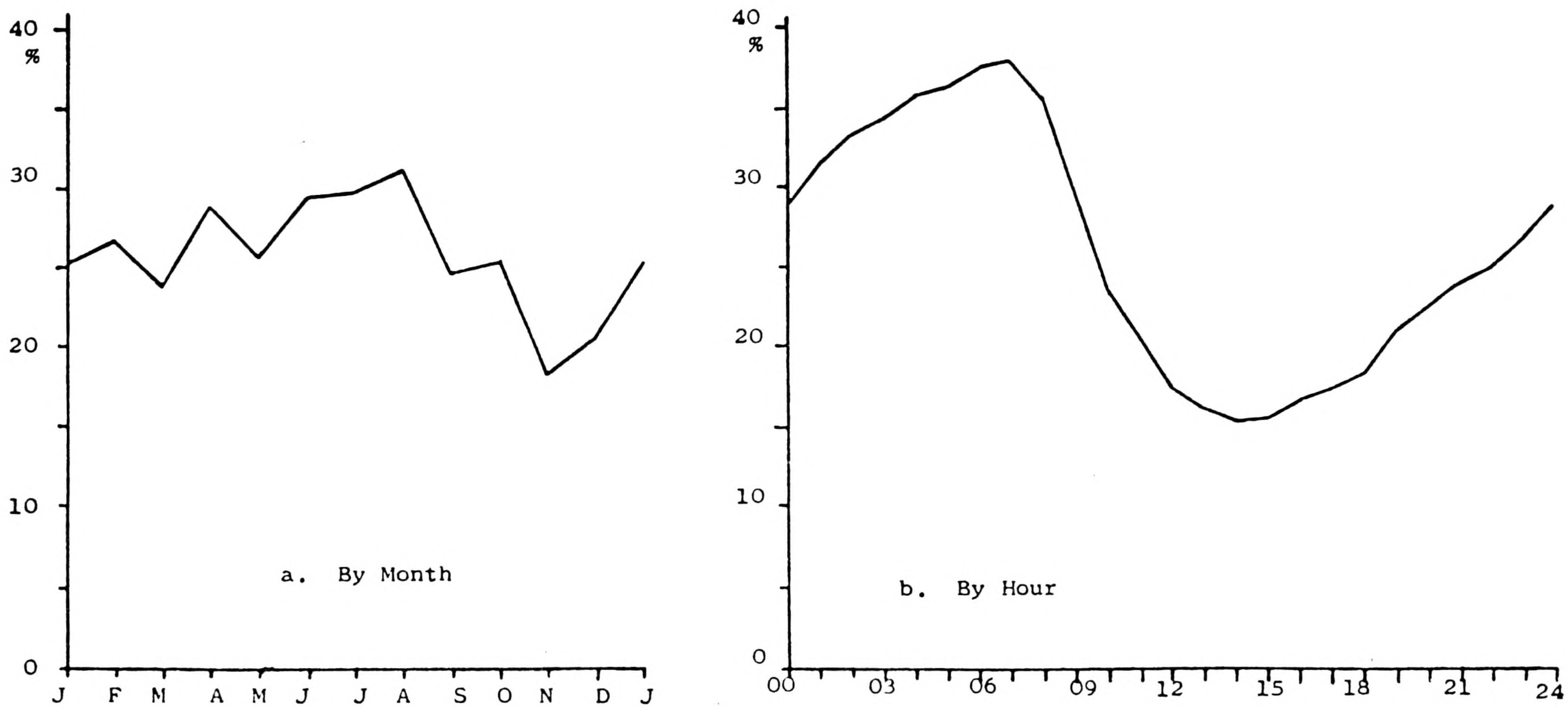


Figure 3.10. Average Occurrence of Overcast Sky Cover.

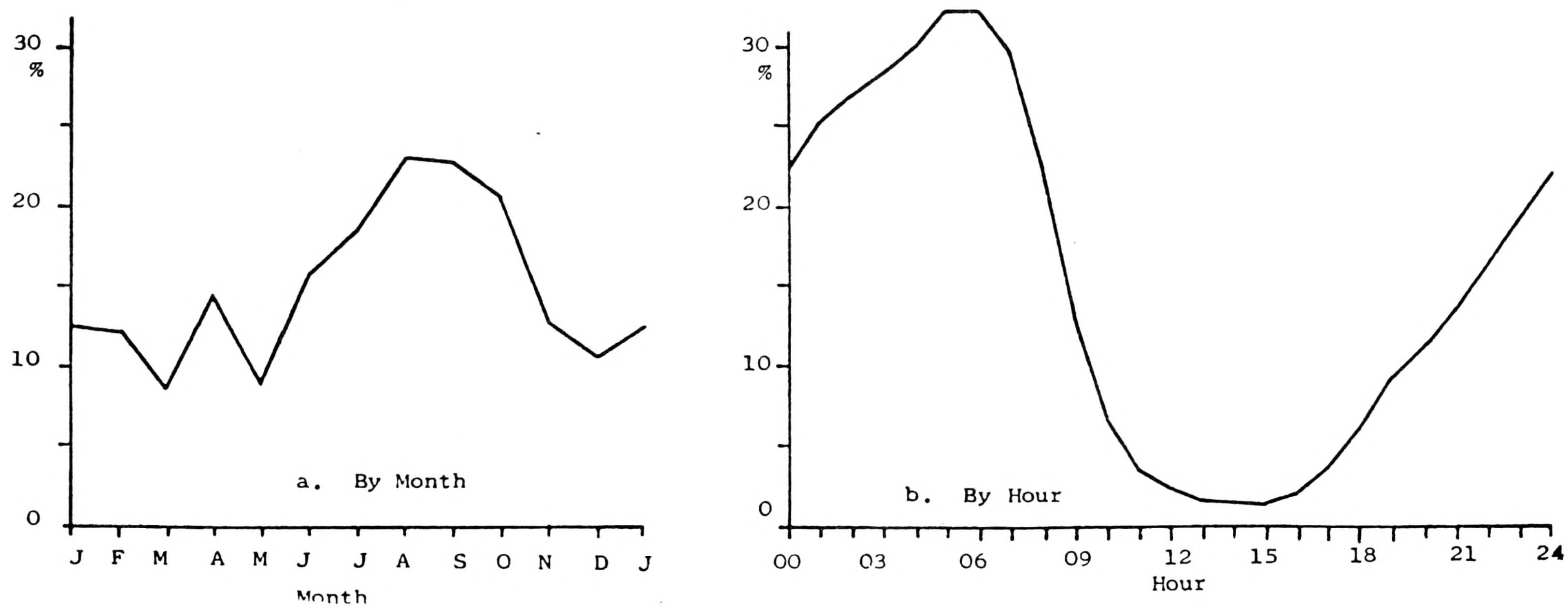


Figure 3.11. Average Occurrence of Fog.

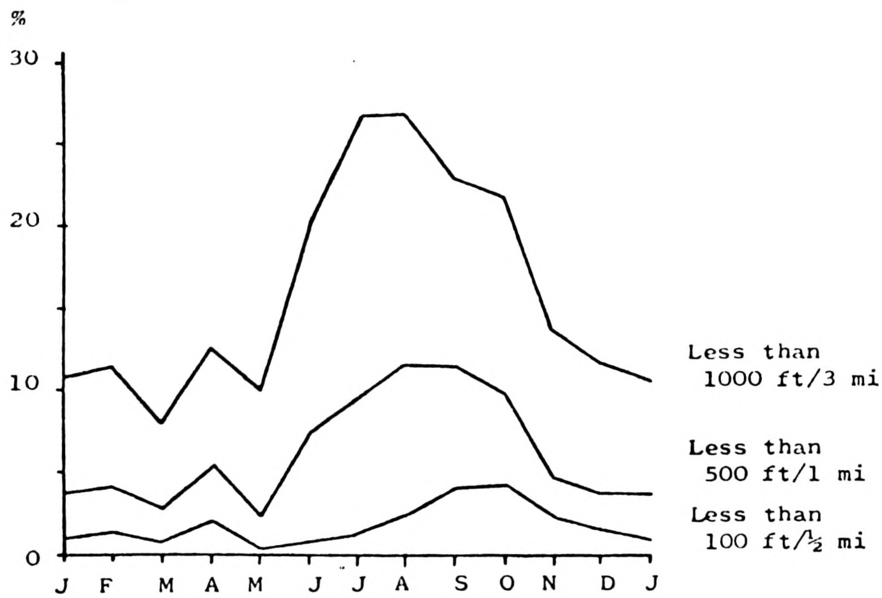


Figure 3.12. Monthly Average Occurrence of Selected Ceiling/Visibility Conditions.

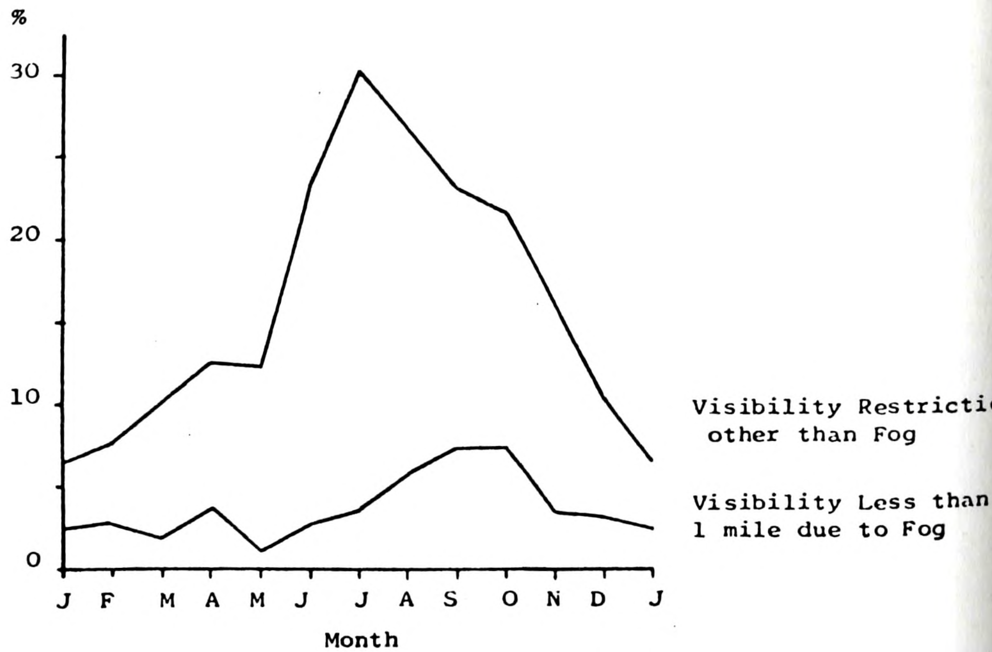


Figure 3.13. Monthly Average Occurrence of Selected Visibility Conditions.

At Oxnard AFB, haze and/or smoke was reported less than 10% of the time in January and February, increasing to more than 20% of the time from June through October, and over 30% of the time during July. During all months the fewest cases were reported at night and the greatest number during the afternoon. This variation is partially due to the fact that when fog forms, it often reduces the visibility to a point where the haze and smoke are no longer reported. Figures 3.14 through 3.17 report the percent occurrences of reduced visibility for various categories for the month of September, usually considered the month of poorest air quality.

Precipitation and Related Phenomena

As is typical of a Mediterranean-type climate, the Southern California region exhibits a winter maximum of precipitation. As is also typical of a Mediterranean climate, precipitation in the form of snow is rare enough at lower elevations to permit the nearly interchangeable usage of the terms rainfall and precipitation.

Rain

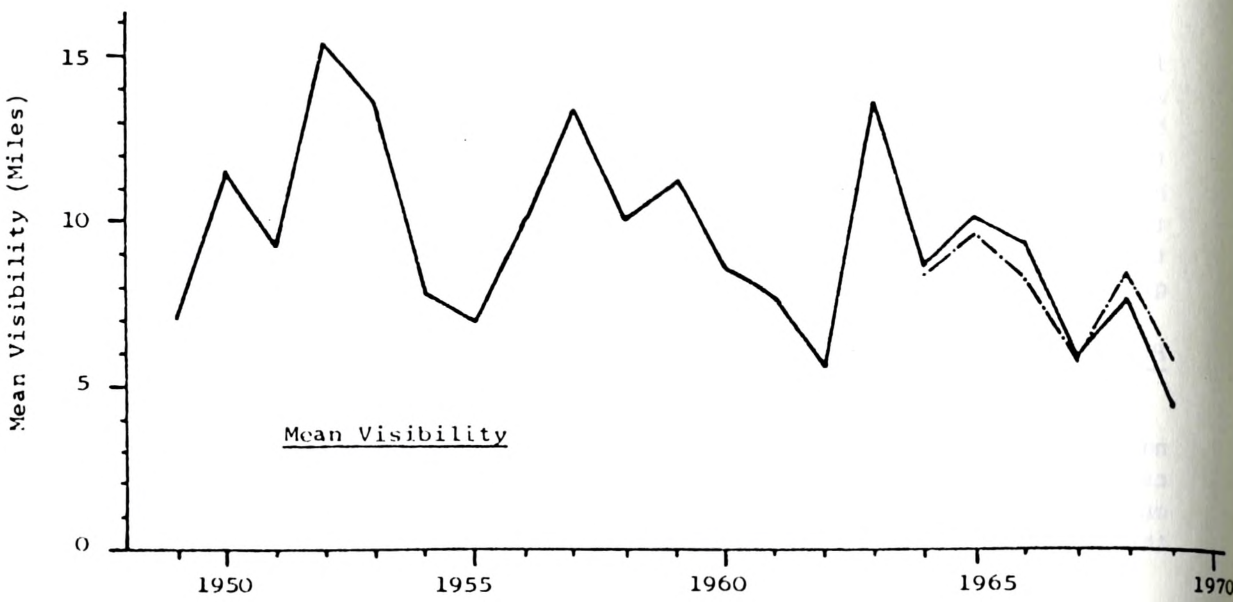
The rainy portion of the season usually begins in November and continues through April. During these six months, each station receives 95 percent of its average seasonal total rainfall; over one-half of the total falls in December, January and February. During May through October, precipitation amounts are small and most often in the form of drizzle from stratus clouds. Occasional scattered shower activity from tropical air brought over this area by southerly winds may also add a few hundredths of an inch in this period.

Drizzle

The occurrences of drizzle are included when speaking of precipitation unless specifically noted otherwise. Drizzle is most frequently associated with stratus clouds and usually does not amount to much -- a few hundredths of an inch at most on any one day. In coastal Southern California, it is more frequent in the summer months than in the winter, and most of the occurrences of "trade" in the precipitation totals are from drizzle.

Hail

In the Southern California lowlands, hail is almost as rare as snow. Associated with thunderstorm activity, occurrences of small hail have been observed only a few times -- in January, February, and March. In the majority of cases, the hail size has been near 1/8-inch in diameter, and the durations of fall have been less than 10 minutes.



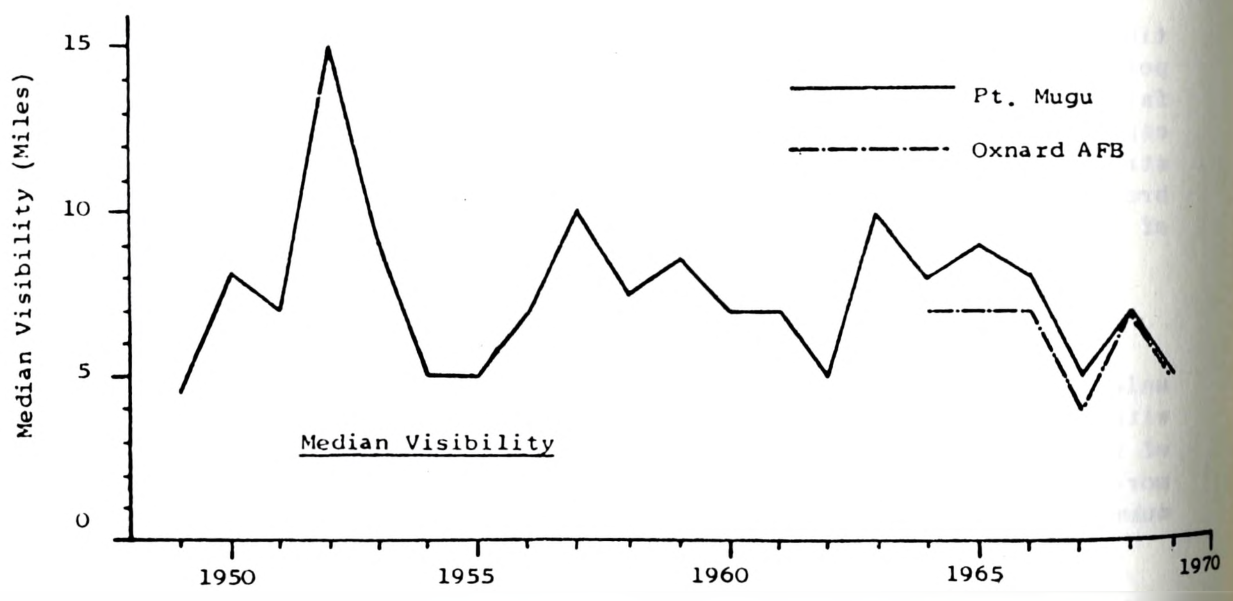


Figure 3.14. Annual Means and Medians of September Noon Visibilities at Point Mugu and Oxnard AFB.

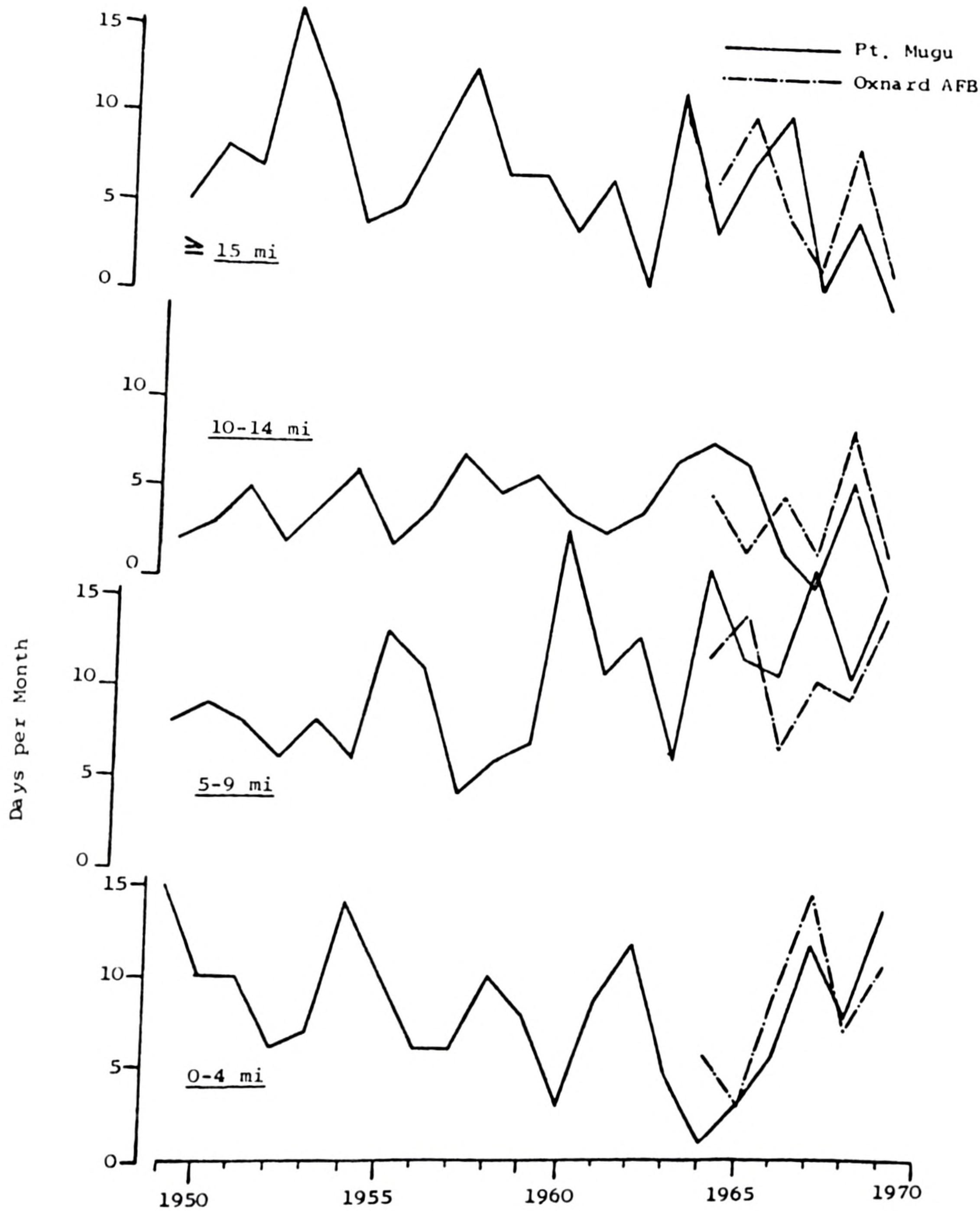


Figure 3.15. Annual Frequencies of Occurrence of September Noon Visibilities at 5-Mile Intervals. Description of Curves Same as Figure 3.14.

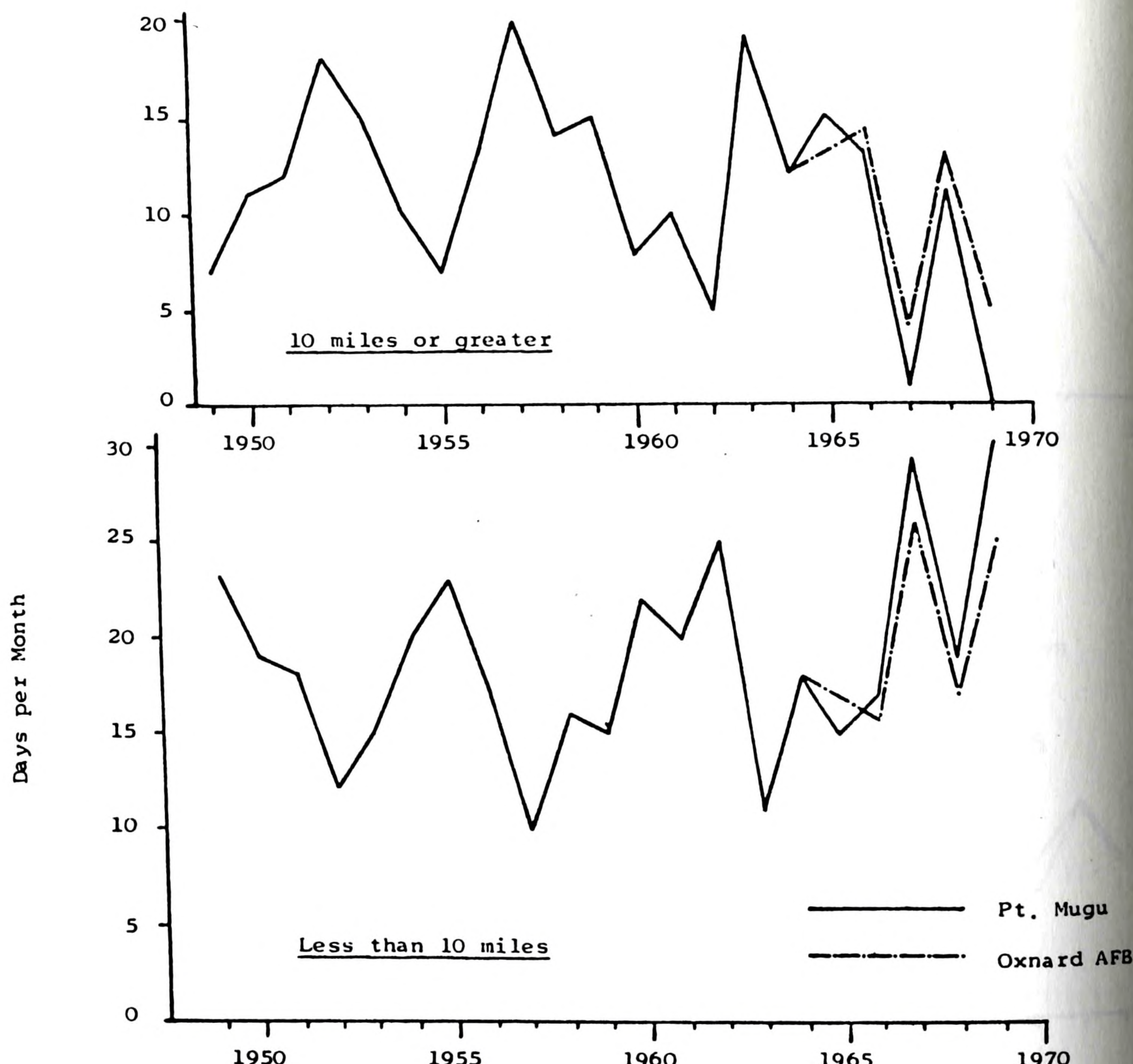


Figure 3.16. Annual Frequencies of Occurrence of September Noon Visibilities of 10 Miles or Greater and of less than 10 Miles. Description of Curves Same as Figure 3.14.

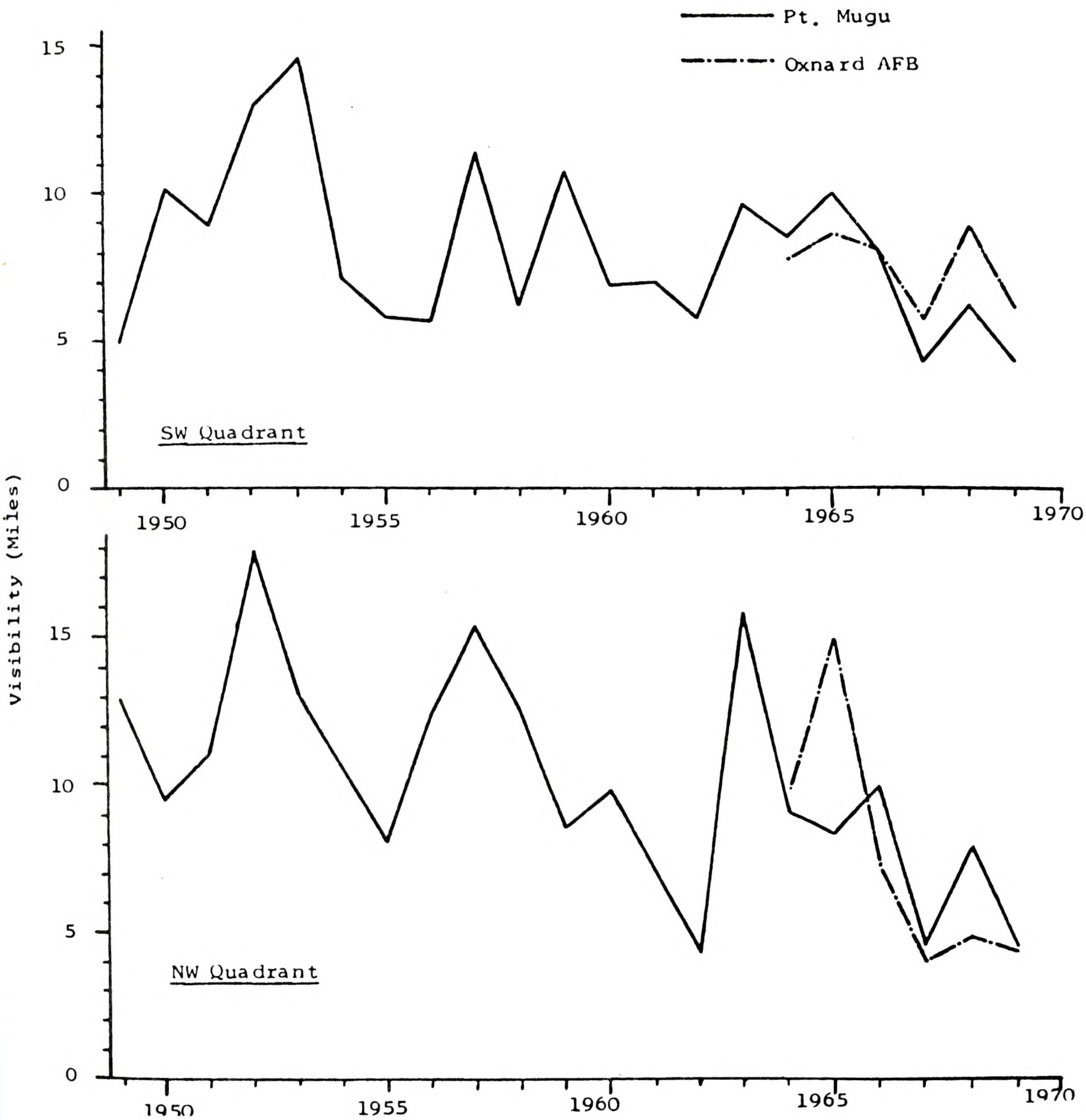


Figure 3.17. Annual Means of September Noon Visibilities Associated With Wind Directions from SW and NW Quadrants.

Thunderstorms

Thunderstorms are more frequent area visitors, though still comparatively rare. Almost every year there are three or four days during which a thunderstorm is reported. The thunderstorms usually occur in November through April, with a lesser possibility of occurrence in the summer months when unstable, tropical air has moved over Southern California. The frequency of these storms has been so low (less than 0.1 percent of the total observations) that it has not been possible to determine any favored time of occurrence.

Funnel Clouds

A brief mention should be made here of the occurrence of funnel clouds in Southern California. Although not the extreme threat here or as highly destructive as tornadoes in the Midwest, small funnel clouds are not unusual in this area, and are often considered a curiosity when they do occur. No fully developed funnel has ever been observed to reach the ground; on a few occasions incipient waterspouts have been noted over the offshore waters. The cloud systems from which these phenomena evolve are very seldom able to maintain the characteristics required for tornado development.

3.2.1 Climatic Impact

The general nature of airports with their large amount of paved area could possibly have a significant impact on the local climate. This impact would be due mostly to temperature increases. The effect is caused by the large area of asphalt which absorbs more heat than the ground. In this case, however, the airport already exists so there would be little further impact from the existing temperature situation.

Particulate emissions, which would be significant, could have an effect on the climate. The most significant effect would probably be an increase in local fog, as particulates act as condensation nuclei that are necessary for the formation of fog. It is probable that the longest effect would be to increase ground fog in the winter since the highest particulate concentrations will occur near the ground. The summertime advection fog could be increased slightly in the local area. It is doubtful that a significant increase would occur as the fog is not formed over land and particulate concentration at the elevation of this fog should not increase appreciably.

The same process that creates fog could also increase rainfall during the winter season. However, since airport particulate emissions are estimated to be approximately 2 percent of air basin particulate emissions, the rainfall increase would not be more than this amount. In actualities, it would be much less than 2 percent since most of the particulates are emitted on the ground, and a significant portion settles out.

This discussion has been necessarily qualitative since no specific models exist for predicting the incidence of fog. The formation of ground (radiation) fog is a complex process depending on humidity, temperature, wind, and condensation nuclei. When meteorological conditions exist for the formation of fog, it is reasonable to assume that an increased number of condensation nuclei will lead to an increased amount of fog.

3.3 Air Quality Impact of Proposed Airport

The air quality impact of the proposed airport was analyzed for the year 1975. Estimates of pollutant concentrations generated by airports is a very complex problem with many variables including airport traffic; mix of the type of aircraft utilizing the airport; aircraft emission factors, present and future; airport layout (length of the landing-take-off cycle); auto traffic generated; miscellaneous sources such as hangar maintenance, fuel transfer, etc.; and meteorological parameters. All these sources were quantified and then a computerized point and line source dispersion model developed by URS and, based on the work of Turner,[8] was utilized to predict concentration downwind.

The number of operations that the proposed airport will have in the future is in question. The Adrian Wilson reports prepared for the airport list a relatively high utilization, while the application submitted by

Ventura County lists a relatively low utilization due to restrictions placed on jet aircraft operations. The current thinking is that the restrictions will be enforced and therefore jet aircraft flights will be limited to 14 per day (28 operations). This activity is exactly the same as that listed for 1975 in the Adrian Wilson Reports, therefore that aircraft mix was used.

As long as the above mentioned restriction is in effect, the number of operations at the proposed airport would remain essentially constant in the future. Therefore, the air quality impact predicted for 1975 is a "worst case" condition as increased aircraft and auto emission standards would gradually reduce the emissions and resultant concentrations.

Two reports prepared previously dealing with air quality in Ventura County were An Analysis of the Air Pollution Potential in Selected Areas of Ventura County, prepared by Environmental Resources, Inc., and Travelers Research Corporation, and An Analysis of Adrian Wilson Reports: Phases I and II, prepared by Committee Against the Camarillo Airport. Both of these reports addressed the air pollution potential of the area but had little to do specifically with the airport. The air pollution potential as expressed in those reports was taken into account in this analysis.

3.3.1 Aircraft Sources

All information on the number of aircraft utilizing the airport, mix of aircraft type, and airport layout was taken from the Adrian Wilson & Associates reports, Phases I, II and III, and the Environmental Impact Study of the Camarillo Airport by the same firm with restrictions added. Table 3.12 shows the operations per day (which are twice the number of landing/take-off cycles expected for 1975 for the type of aircraft expected to utilize the airport [AWA Phase III report]).

Table 3.12

OPERATIONS PER DAY FOR EXPECTED MIX OF AIRCRAFT TYPES

AIRCRAFT TYPE	1975
Boeing 737 and DC-9	28
Twin Otter F-27	26
4-Engine Turboprop STOL	0
Boeing 727	0
General Aviation (12,500 lbs. gross wt. or less)	750

It can be seen that general aviation aircraft account for the majority of air traffic. General aviation is predicted to account for 85 percent of airport utilization in 1975.

Emission factors for the type of aircraft listed in Table 3.12 are presented in Table 3.13 for each phase of the LTO cycle. These factors were obtained from the report Airports and Their Environment: A Guide to Environmental Planning. This report listed present emission factors for carbon monoxide, hydrocarbons, and oxides of nitrogen only. Particulate and sulfur dioxide emissions were obtained from the report Aviation Effect on Air Quality by the Bay Area Air Pollution Control District. This report was utilized because it presented detailed particulate emissions from several sources. It also presented data for the specific engines used on the aircraft of concern with and without smokeless burner cans. For this study, all JT8D engines were assumed to be fitted with smokeless burner cans as this required retrofit program was scheduled to be completed by January 1, 1974.

The five different models listed in Table 3.13 make up an LTO cycle. Take-off, climb out, approach and landing times were obtained from the Airports and Their Environment report for each specific aircraft. Taxi

Table 3.13

RATES OF POLLUTANTS EMITTED DURING AN LTO CYCLE

ENGINE	REPRESENTING AIRCRAFT	MODE	EMISSIONS IN LBS/HOUR/ENGINE				
			CO	HC	NO	SO_x	PARTICU-LATES
JT8D	Boeing 727 & 737	taxi/idle	37	9	2	0.1	5
	DC-9	take-off	6	0.4	133	1.8	40
		climb out	6	0.4	87	1.2	34
		approach	12	0.9	20	0.5	11
		landing	6	0.4	87	0.5	11
501-D13	F-27	taxi/idle	15	6	2	4.4	17
Turboprop 4-Engine	STOL	take-off	2	0.4	23	0.6	2.2
		climb out	3	0.5	21	0.9	1.3
		approach	4	0.5	8	1.1	4.5
		landing	3	0.5	21	0.9	0.2
Piston engine (avg. of nine different light aircraft)	General Aviation	taxi/idle	12.6	1.3	.05	*	*
		take-off	62	1.3	.4	*	*
		climb out	62	1.3	.4	*	*
		approach	34	1.9	.2	*	*
		landing	34	1.9	.2	*	*

* Particulates and SO_x emissions for piston engines are insignificant.

times were estimated assuming the aircraft taxi at 20 mph for a distance extimated by using the airport layout plans for 1975. Start-up and idle times were estimated from previous work done by URS at the San Jose Municipal Airport, an airport very similar in function to the one proposed for Oxnard AFB. Also included in the taxi/idle times were delay times, as delays would occur during peak hour traffic. Delay time was estimated to be four minutes during peak hour. The airport capacities described in the AWA reports were based on a delay of this magnitude. For average hour conditions, no delay times were used.

Peak hour and average hour LTO cycles were estimated in the following manner. The AWA report Phase II estimates peak hourly passenger emplanements based upon the number of commuter and intrastate flights and statistics from various airlines. These show that approximately 33 percent of the total daily commercial flights will occur during peak hour. Since traffic at the airport will be limited to 16 hours a day, the rest of the traffic was assumed to be evenly distributed throughout this time period. General aviation aircraft were estimated to have a peak hour rate of 12 percent of the total daily general traffic, based on data from the San Jose Municipal Airport. Average hour was estimated in the same manner as for commercial aircraft. To determine total emissions from general aviation aircraft, a percentage mix between single and two-engine aircraft was assumed to be 80 percent single engine, 20 percent twin engine.

Listed in Table 3.14 are the times for each operational mode for each aircraft (climb out and approach are assumed to be up to 3,000 feet). Using the aircraft mix and number of operations from Table 3.12, the emissions from Table 3.13, the traffic at peak and average hours, and the time for each mode in Table 3.14, the total emissions per hour per aircraft mode can be calculated and are shown in Table 3.15.

Table 3.14

AVERAGE TIME FOR EACH OPERATIONAL MODE PER AIRCRAFT

AIRCRAFT	START-UP AND IDLE (min)	TAXI/LTO CYCLE (min)	DELAY (min)	TAKE OFF (min)	CLIMB OUT (min)	APPROACH (min)	LANDING (min)
Boeing 737, 727 DC-9	3.3	4.8	Peak hr. - 4 Avg. hr. - 0	.6	1.8	4.2	.6
F-27 4 engine Stol	3.3	4.8	Peak hr. - 4 Avg. hr. - 0	.6	3.6	4.8	.6
General	3.3	4.8	Peak hr. - 4 Avg. hr. - 0	.6	2.4	3.6	.6

Table 3.15

TOTAL EMISSIONS IN POUNDS/HR FOR SPECIFIC AIRCRAFT AND OPERATIONAL MODES

AIRPLANE	MODE	CO AVG.	CO PEAK	HC AVG.	HC PEAK	NO AVG.	NO PEAK	SO_x AVG.	SO_x PEAK	PART. AVG.	PART. PEAK
						1975					
DC-9 & 737	Idle	3.7	18.5	4.5	9	.2	1.0	.01	.05	.5	2.5
	Take-off taxi	1.5	30	1.4	7	.3	1.5	.02	.1	.8	4
	Land taxi	5.2	26	1.3	6.5	.3	1.5	.01	.05	.7	3.5
	Take off	.1	.5	.01	.05	2.7	13.5	.04	.2	.8	4
	Climb	.4	2	.02	.1	5.2	26	.07	.35	2	10
	Approach	1.7	8.5	.1	.5	2.8	14	.07	.35	1.5	7.5
	Land	.12	.05	.01	.5	1.7	8.5	.01	.05	.2	1
Twin Engine F-27	Idle	1.5	3	.6	1.2	.2	.4	.2	.8	1.7	3.2
	Take-off taxi	.85	4.8	1.0	2.0	.3	.8	.4	1.6	2.7	5.2
	Land taxi	2.1	8.4	.8	3.2	.3	1.2	1.1	4.4	2.4	9.6
	Take off	.05	.2	.01	.04	.5	2.0	.01	.04	.04	.16
	Climb	.4	1.6	.6	.2	2.5	10	.1	.4	1.3	5.2
	Approach	.6	2.4	.1	.4	1.3	5.2	.2	.8	1.2	4.8
	Land	.05	.2	.01	.04	.4	2.0	.02	.1	.01	.02

Table 3.15

TOTAL EMISSIONS IN POUNDS/HR FOR SPECIFIC AIRCRAFT AND OPERATIONAL MODES
(Continued)

		CO		HC		NO		SO_x		PART.	
AIRPLANE	MODE	AVG.	PEAK	AVG.	PEAK	AVG.	PEAK	AVG.	PEAK	AVG.	PEAK
					1975 (Continued)						
General Aviation	Idle	18	32	1.9	3.6	.7	.1	-	-	-	-
	Take-off taxi	7.5	56	2.9	5.4	.1	.2	-	-	-	-
	Land taxi	26	49	2.4	4.5	.1	.2	-	-	-	-
	Take off	18	32	.5	.9	.02	.05	-	-	-	-
	Climb	72	135	1.4	2.7	.5	.9	-	-	-	-
	Approach	57	108	1.4	4.5	.2	.5	-	-	-	-
	Land	4.0	6.5	.5	.9	.02	.05	-	-	-	-
TOTAL		220	523	21	53	19	90	2.3	9	16	57

Table 3.15

TOTAL EMISSIONS IN POUNDS/HR FOR SPECIFIC AIRCRAFT AND OPERATIONAL MODES
(Continued)

AIRPLANE	MODE	CO AVG.	CO PEAK	HC AVG.	HC PEAK	NO AVG.	NO PEAK	SO_x AVG.	SO_x PEAK	PART. AVG.	PART. PEAK
						1980					
DC-9, 737	Idle	3.7	26	.9	6.3	.2	1.4	.01	.7	.5	3.5
	Take-off taxi	1.5	42	1.4	9.8	.3	2.1	.02	.14	.8	5.6
	Land taxi	5.2	36	1.3	9.1	.3	2.1	.01	.7	.7	4.9
	Take off	.1	.7	.01	.07	2.7	19	.04	.28	.8	5.6
	Climb	.4	2.8	.02	1.4	5.2	.36	.7	.5	2.0	14
	Approach	1.7	12	.1	.7	2.8	20	7	.5	1.5	11
	Land	.12	.8	.01	.07	1.7	12	.01	.7	.2	1.4
F-27	Idle	1.5	7.5	.6	3.0	.2	1.0	.4	2	1.7	8.5
	Take-off taxi	.6	12	1.0	5.0	.3	1.5	.7	3.5	2.7	14
	Land taxi	2.1	10	.8	4.0	.3	1.5	1.1	5.5	2.4	12
	Take off	.04	.2	.01	.05	.5	2.5	.01	.05	.04	2.0
	Climb	.4	2	.06	.3	2.5	13	.1	.5	1.3	6.5
	Approach	.6	3	.1	.5	1.3	6.5	.2	1.0	1.2	6.0
	Land	.05	3	.01	.05	.4	2	.02	.1	.01	.03

Table 3.15

TOTAL EMISSIONS IN POUNDS/HR FOR SPECIFIC AIRCRAFT AND OPERATIONAL MODES
(Continued)

AIRPLANE	MODE	CO AVG.	CO PEAK	HC AVG.	HC PEAK	NO AVG.	NO PEAK	SO_x AVG.	SO_x PEAK	PART. AVG.	PART. PEAK
					1980 (Continued)						
4-Engine STOL	Idle	.6	6	.2	2.4	.8	.8	.2	1.8	.7	6.8
	Take-off taxi	.25	9.6	.4	3.6	.1	1.0	.3	2.8	1.1	11
	Land taxi	.8	8.4	.3	3.4	.1	1.2	.2	2.4	1.0	9.6
	Take off	.02	1.6	.01	.04	.2	1.8	.01	.04	.02	1.8
	Climb	.1	1.4	.02	.2	1.0	10	.04	.4	.1	.6
	Approach	.3	2.6	.04	.4	.5	5.2	.8	.8	.3	2.8
	Land	.02	.2	.01	.2	.2	1.6	.01	.08	.01	.02
General Aviation	Idle	30	57	3.0	6.0	.1	.2	-	-	-	-
	Take-off taxi	12	90	5.0	9.0	.2	.4	-	-	-	-
	Land taxi	12	23	1.0	2.0	.04	.8	-	-	-	-
	Take off	29	56	.8	1.5	.04	.8	-	-	-	-
	Climb	70	134	2.3	4.5	.8	1.6	-	-	-	-
	Approach	94	180	4.0	7.5	.4	.8	-	-	-	-
	Land	.6	11	.8	1.5	.04	.08	-	-	-	-
TOTAL		**273**	**741**	**24**	**83**	**23**	**144**	**3.5**	**23**	**19**	**127**

Table 3.15

TOTAL EMISSIONS IN POUNDS/HR FOR SPECIFIC AIRCRAFT AND OPERATIONAL MODES
(Continued)

AIRPLANE	MODE	CO AVG.	CO PEAK	HC AVG.	HC PEAK	NO AVG.	NO PEAK	SO_x AVG.	SO_x PEAK	PART. AVG.	PART. PEAK
					1985						
727	Idle	3.3	10	.95	3.0	.2	.7	.02	.6	.8	2.4
	Take-off taxi	2.1	25	2.3	6.7	.6	1.7	.5	.15	1.8	5.4
	Land taxi	3.3	10	.1	3.0	.2	6.5	.02	.6	.8	2.4
	Take off	.1	.35	.01	.04	2.8	8.5	.6	.18	1.2	3.6
	Climb	.35	1.1	.02	.15	2.0	17	.1	.3	3.0	9.0
	Approach	1.5	4.5	.15	.45	2.8	9.0	.1	.3	2.3	6.9
	Land	.1	.35	.02	.04	1.8	5.0	.02	.6	.3	.9
DC-9, 737	Idle	2.2	11	.7	3.2	.15	.7	.01	.05	.5	2.5
	Take-off taxi	1.5	27	1.5	7.4	.35	1.8	.03	.15	1.2	6.0
	Land taxi	2.2	11	.7	3.2	.15	1.4	.01	.05	.5	2.5
	Take off	.05	.3	.01	.03	1.9	9.5	.04	.2	.8	4.0
	Climb	.25	1.2	.02	.05	3.6	18	.7	.35	2.0	10
	Approach	1.0	5.0	.05	.35	2.0	9.5	.7	.35	1.5	7.5
	Land	.05	.35	.01	.04	.9	6.0	.01	.05	.2	1.0

Table 3.15

TOTAL EMISSIONS IN POUNDS/HR FOR SPECIFIC AIRCRAFT AND OPERATIONAL MODES
(Continued)

		CO		HC		NO		SO_x		PART.	
AIRPLANE	MODE	AVG.	PEAK	AVG.	PEAK	AVG.	PEAK	AVG.	PEAK	AVG.	PEAK
					1985 (Continued)						
F-27	Idle	1.5	7.5	.6	3.0	.2	1.0	.4	2.0	1.7	8.5
	Take-off taxi	1.0	18	1.4	7.0	.5	2.5	1.0	5.0	4.0	20
	Land taxi	1.5	7.5	.6	3.0	.2	1.0	.8	4.0	1.7	8.5
	Take off	.04	.2	.01	.05	.5	2.5	.01	.05	.04	.2
	Climb	.4	2.0	.6	.3	2.5	13	.1	.5	1.3	6.5
	Approach	.6	3.0	.1	.5	1.3	6.5	.2	1.0	1.2	6.0
	Land	.06	.3	.01	.05	.4	2.0	.02	.01	.01	.03
4-Engine STOL	Idle	.9	6.0	.4	2.4	.1	.8	.3	1.8	1.0	6.8
	Take-off taxi	.6	14	.8	4.6	.3	2.0	.6	4.2	2.4	16
	Land taxi	.9.	6.0	.4	2.4	.1	.8	.2	1.6	1.0	6.8
	Take off	.02	.16	.01	.04	.3	1.8	.01	.04	.03	.18
	Climb	.2	1.4	.03	.2	1.5	10	.6	.4	.9	.6
	Approach	.4	2.6	.6	.4	.8	5.2	.1	.8	.4	2.8
	Land	.04	.24	.01	.04	.2	1.6	.01	.08	.01	.02

Table 3.15

TOTAL EMISSIONS IN POUNDS/HR FOR SPECIFIC AIRCRAFT AND OPERATIONAL MODES
(Continued)

		CO		HC		NO		SO_x		PART.	
AIRPLANE	MODE	AVG.	PEAK	AVG.	PEAK	AVG.	PEAK	AVG.	PEAK	AVG.	PEAK
					1985 (Continued)						
General Aviation	Idle	41	77	7.0	8.0	.2	.25	-	-	-	-
	Take-off taxi	16	121	6.5	12	.25	.55	-	-	-	-
	Land taxi	16	31	1.5	3.0	.05	.1	-	-	-	-
	Take off	40	76	1.0	2.0	.05	.1	-	-	-	-
	Climb	131	250	3.2	6.0	1.0	2.0	-	-	-	-
	Approach	128	242	5.5	10	.55	1.0	-	-	-	-
	Land	8.0	15	1.0	2.0	.05	.1	-	-	-	-
TOTAL		416	1012	41	96	39	181	4.5	24	32	147

3.3.2 Auto Sources

A significant amount of pollutants will be generated by automobile and truck related sources such as employee parking, passenger arrivals and departures, and passenger parking. All parking volumes and traffic volumes entering and leaving the airport were obtained from the Adrian Wilson report, Phase II, for 1975, after review by GSA's consultant. The volumes are listed in Table 3.16.

Table 3.16

AUTO PARKING AND TRAFFIC VOLUMES
(peak hour)

YEAR	TYPE	VOLUME
1975	Vehicles inbound	482/hr
	Vehicles outbound	455/hr
	Flow into and out of public parking	66/hr
	Employee parking spaces	66

The vehicle flow per hour for inbound and outbound vehicles, and the flow into and out of the parking lots, was used directly from the table to predict pollution production per hour. Employee parking lots were assumed to experience a complete turnover in 8 hours. Also, the traffic mix was assumed to contain 10 percent heavy duty vehicles (i.e., trucks).

The emission factors used were taken from a State of California publication entiled Air Quality Manual: Motor Vehicle Emission Factors for Estimates of Highway Impact on Air Quality. This report takes into consideration deterioration factors, vehicle age mix and travel data, vehicle speed, and future emission standards. The emission factors for 1975 are listed in Table 3.17.

Table 3.17

FUTURE AUTOMOBILE EMISSION FACTORS

	FACTORS (grams/mile)		
YEAR	CO	HC	NO_x
1975	58	7.8	4.4

Table 3.18

TOTAL AUTOMOBILE EMISSIONS

		EMISSIONS (pounds/hr)		
YEAR	TYPE OF OPERATION	CO	HC	NO_x
1975	Passenger Parking	.7	.1	.06
	Employee Parking	.06	.01	.01
	Access Road	173.0	28.0	18.0

The average number of miles driven by each car from each location was calculated from the airport layout plan. The inbound and outbound traffic for 1975 was assumed to travel on Pleasant Valley Road and was considered in the immediate vicinity of the airport only.

By combining the traffic volumes in Table 3.16 with the emission factors in Table 3.17, the total emission can be estimated for each type of automobile operation and are presented in Table 3.18. (Particulate and SO_2 emissions from automobiles are insignificant.)

3.3.3. Hangar Sources

There will be no maintenance facilities for commercial aircraft at the airport, but hangar facilities for general aviation will be a significant source of air pollution. The emissions are based upon the general aviation emission factors presented in Table 3.13, and the amount of total idle time in the hangars due to maintenance activity. This time was based on other airports having similar characteristics. The total emissions from the hangars are presented in Table 3.19.

Table 3.19

HANGAR SOURCES OF POLLUTANTS

	EMISSIONS (pounds/hr)		
YEAR	CO	HC	NO_x
1975	3.7	1.0	0

3.4 Fuel Transfer Sources

A significant amount of hydrocarbons will be lost due to fuel transfer processes. Listed below are emission factors for these processes:

Jet fuel - 16.4 lbs hydrocarbons/10^6 gallons/transfer
(transferred three times)

Gasoline - 8200 lbs hydrocarbons/10^6 gallons/transfer
(transferred three times)

The amount of fuel transferred is very difficult to estimate as it is not certain how many airplanes will take on fuel at the airport. Because of this difficulty, data from other airports were used, based on number of aircraft based and their estimated flight distances. The amount of fuel consumed is estimated below:

1975 - jet fuel = 2400 gallons/day
gasoline = 1200 gallons/day

From the emission factors and total gallons of fuel used, the total emissions estimated were 5.5 lbs/hour of hydrocarbons in 1975.

3.3.5 Miscellaneous Sources

Additional sources of air pollution besides the ones mentioned exist. Natural gas combustion for space heating and cooling generate pollutants along with ground support vehicles. These sources were not included in the model as they are insignificant relative to the previous sources mentioned.

3.4 Modeling Technique

The emissions previously discussed were used in a computer dispersion model to predict downwind concentrations. The model utilized point and line sources based on the manual entitled Workbook of Atmospheric Dispersion Estimates by D. B. Turner.[8] Basically, the model was set up in the following manner. Runways and taxiways were considered as finite line sources. Other sources (such as parking lots, hangars and fuel transfer facilities) were considered as multiple point sources and area sources. Also, approach and climb out patterns were treated as finite line sources with "stair stepping" line segments being used to represent these operations. Finally, access roads were considered to be finite line sources.

The meteorological parameters used were based upon the conditions that occur most often in the area. Two conditions during peak hour (8-9 a.m.) were considered. One was a southwest wind at 1 meter/second with a moderately stable atmosphere, and the other was a northeast wind at 2.5 meters/second with a neutral stability (occurring during Santa Ana Conditions). During average hour conditions (afternoon), two other conditions were considered: a typical sea breeze condition with a southwest wind at 3.5 meters/second, and a Santa Ana condition with a northeast wind at 3.5 meters/second, both with moderately unstable atmosphere.

3.5 Impacts

The expected peak concentrations of pollutants are shown in Table 3.20 with the locations specified (E-5, E-6, etc.) corresponding to the grid layout in Figure 3.18. It can be seen that almost all of the peak concentrations occur at the airport itself. The results show that particulates present the only significant local air pollution problem. Sulfur dioxide values, although well below standards, are conisdered significant in some cases since there is virtually no sulfur dioxide in the area at present. (It is not monitored in Camarillo presently.)

Carbon monoxide, hydrocarbons, and nitrogen oxides represent very small increases in most cases. Carbon monoxide does have an increase of 1.8 ppm during peak hours in 1975, but considering the relatively low ambient value, the one-hour standard, and the fact that the concentration is negligible at every location except the airport, this increase is not significant.

It must be stressed that Table 3.20 contains concentration increases only due to the proposed airport. Those increases judged as significant, as described above, are marked with an asterisk and are presented in detail form of isopleths in Figure 3.19 and 3.20. No pollutant concentrations were found to be significant during average hour operations.

The isopleths on Figures 3.19 and 3.20 show absolute concentration/ project concentration plus ambient. Ambient concentrations for the future were estimated in the following manner. Present ambient values are known from the Camarillo air monitoring station, and future values were based upon predicted emissions (primarily a factor of future emission controls and increased population). The predicted emissions were obtained from a publication entitled Source Inventory of Bay Area Air Pollutant Emissions put out by the Bay Area Air Pollution Control District. This publication was used because it is the only known source of future emission trends. The predicted values can be applied to Ventura County as a comparison between present values because emission rates per person in the two areas

Table 3.20

MAXIMUM CONCENTRATIONS THAT OCCUR DURING
SPECIFIC METEOROLOGICAL CONDITIONS AND ACTIVITY PERIOD

	CONDITIONS				POLLUTANTS				
YEAR	WIND DIREC	WIND SPEED (meter/sec.)	STABILITY	ACTIVITY	CO (ppm)	NO_x (ppm)	HC (ppm)	SO_2 (ppb)	PARTICULATE ($\mu g/m^3$)
1975	SW	1	moderately stable	peak	1.8 E-5+	.02 E-5+	.2 E-5+	12* E-5+	86* E-5+
	NE	2.5	neutral	peak	.2 E-5	.02 D-5	.03 D-3	.8 D-4	9 D-5
	NE	3.5	moderately unstable	average	.06 E-5	.002 E-5	.005 D-3	..1 D-4	3 D-4
	SW	3.5	moderately unstable	average	.1 E-5	.002 E-5	.03 E-5	.45 E-5	15 E-5

+ Letter and number refer to grid location shown in Figure 3.18

* Increases that are felt to be significant

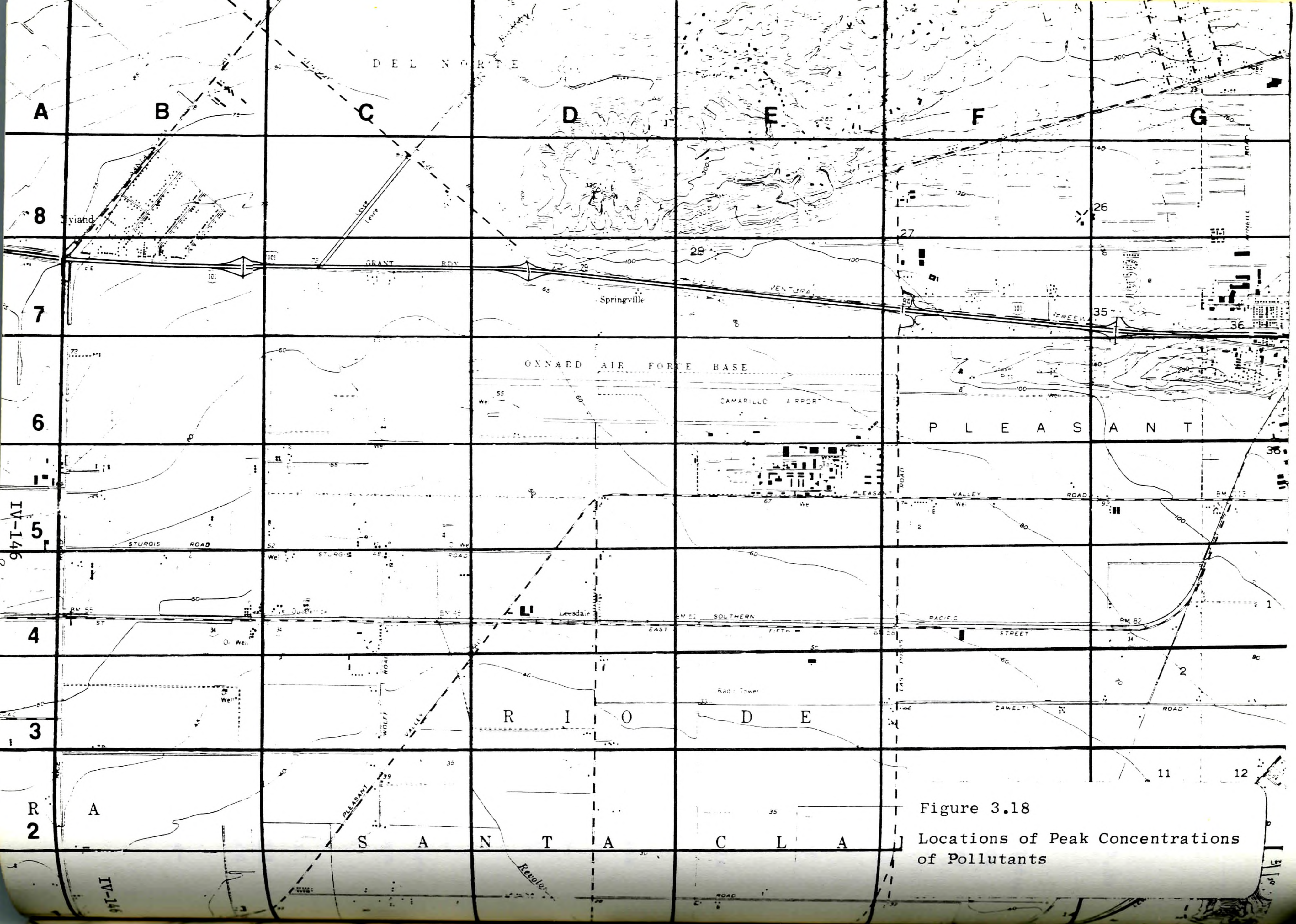


Figure 3.18

Locations of Peak Concentrations of Pollutants

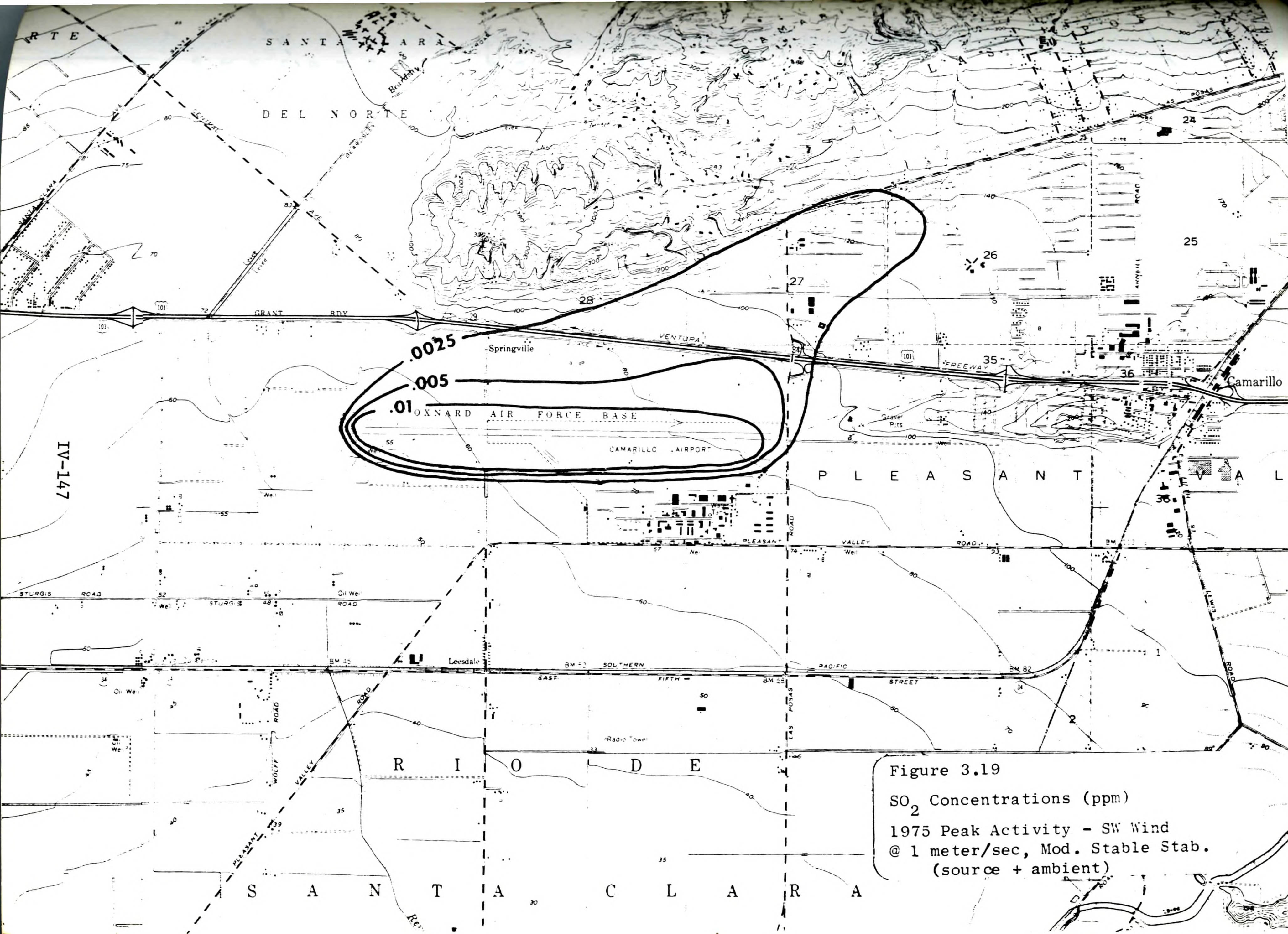


Figure 3.19

SO_2 Concentrations (ppm)

1975 Peak Activity - SW Wind @ 1 meter/sec, Mod. Stable Stab. (source + ambient)

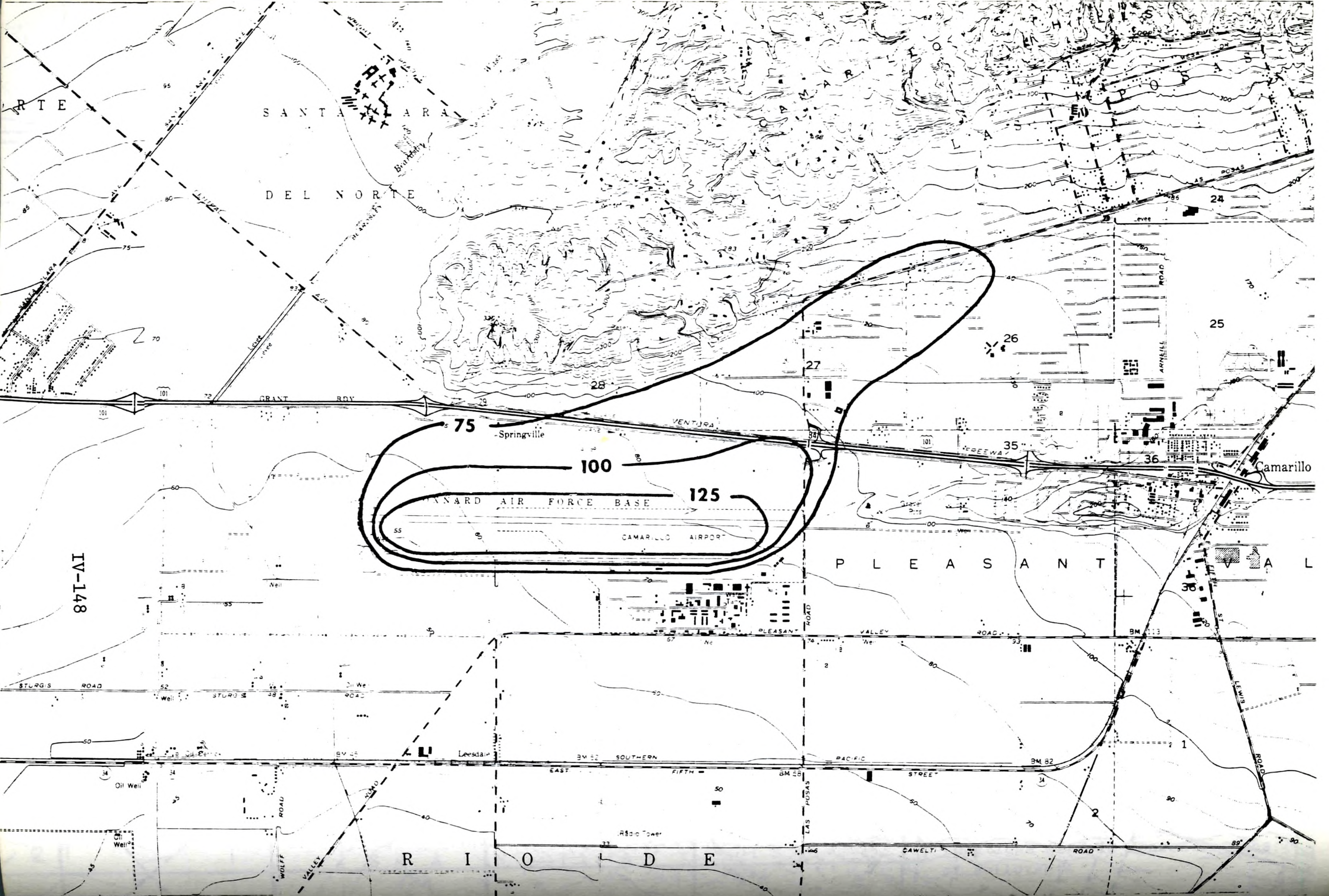


Figure 3.20

Particulate Concentrations (ug/m3)
1975 Peak Activity – SW Wind @

are nearly identical, with corrections being applied where rates were slightly different. The predicted ambient values are shown in Table 3.21.

Particulate emissions are not reliably predictable; therefore, ambient particulate concentrations were assumed to remain constant until 1975. Peak hour concentrations usually occur later in the day, while average hour concentrations usually occur in the morning.

The isopleths show that the highest concentrations occur during peak hour conditions with a light southwest wind. The proposed project could cause short-term particulate concentrations of 125 $\mu g/m^3$ in the residential area northwest of Camarillo. Sensitive receptors, such as schools in this area, will receive significantly high concentrations of particulates during the peak hour.

When the wind blows from the west, which it does a significant percentage of the time, Camarillo will be adversely affected. Since the downtown area is further away from the airport than the northwestern section, concentrations will be less than 75 $\mu g/m^3$.

Sensitive receptors at the airport itself include a high school and park. The airport emissions are predicted to have little effect on those areas during prevailing southwest wind conditions and only a minor effect during the northeast Santa Ana condition.

Figure 3.21 shows some of the major effects of air pollutants. The effects are for prolonged exposure at the concentrations shown, while the predicted concentrations portrayed by the isopleths are for one hour only. Some effects will occur, however. Sunlight and visibility reduction will occur over a widespread area, as shown by the isopleths during peak hour and some of the conditions shown. Chronic plant injury can occur with prolonged SO_2 exposure of approximately .03 ppm. This concentration is not reached due to emissions from the proposed project.

Table 3.21

PREDICTED AMBIENT AIR QUALITY VALUES
IN THE CAMARILLO AREA

TIME	POLLUTANT	PRESENT CONCENTRATION	1975 CONCENTRATION
Peak Hour	CO *	3.5	2.8
	HC *	4.5	3.8
	NO_x*	.2	.2
	Part.+	80	80
Average Hour	CO *	1.5	1.2
	HC *	3.5	2.9
	NO_x*	.1	.1
	Part.+	55	55

* ppm
+ $\mu g/m^3$

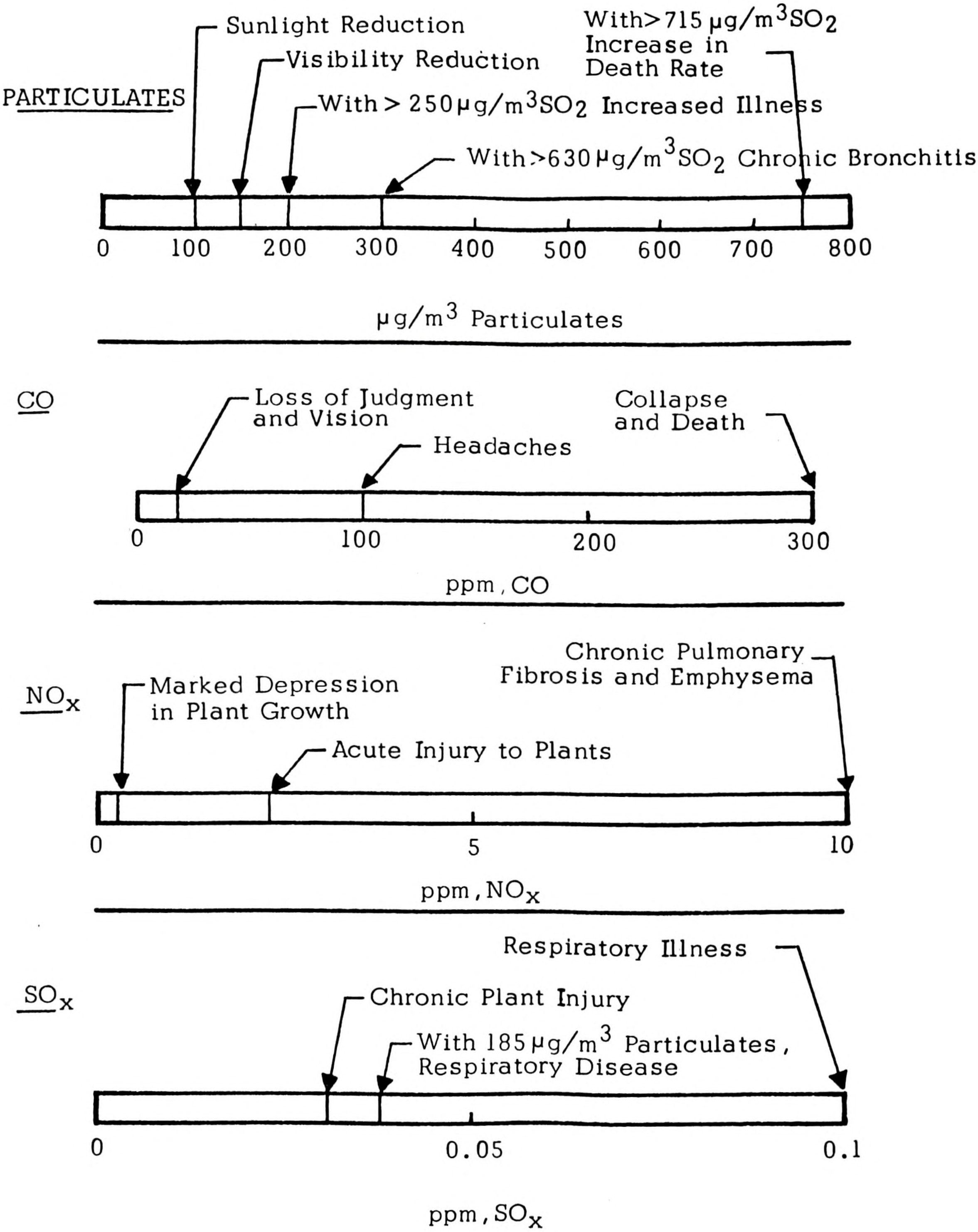


Figure 3.21 Long-term Effects of Air Pollutants

The highest SO_2 concentration predicted to occur due to the proposed project is .01 ppm concentration which is well below the one-hour standard of .5 ppm. The peak hour particulate concentrations are not directly relatable to standards since the particulate standard is 24 hours; however, federal standards probably will not be exceeded and state standards will probably be only infrequently exceeded. The state annual particulate standard is 60 $\mu g/m^3$. Since ambient values presently are estimated at 66 $\mu g/m^3$, particulates generated by the airport could cause this standard to be exceeded in the immediate airport vicinity.

Table 3.22 shows a comparison between estimated 24-hour particulate values and state and federal standards. It shows that during average meteorological conditions, no standards will be exceeded.

Table 3.22

24-HOUR PARTICULATE CONCENTRATIONS FOR
AVERAGE 24-HOUR METEOROLOGICAL CONDITIONS
(concentrations at airport)

YEAR	24-HOUR AVERAGE CONCENTRATIONS	STATE STANDARD	FEDERAL STANDARD PRIMARY	FEDERAL STANDARD SECONDARY
1975	73 $\mu g/m^3$	100 $\mu g/m^3$	260 $\mu g/m^3$	150 $\mu g/m^3$

As mentioned previously, carbon monoxide, hydrocarbons, and nitrogen oxides will have small increases. Carbon monoxide and hydrocarbon concentration increases when added to ambient concentrations should cause no adverse effects anywhere in the area. Maximum oxides of nitrogen concentration increases are small, but when added to the predicted ambient levels they may become a problem. The effects versus concentrations as shown in

Figure 3.21 are only applicable to longtime exposures (as an example, for plants this would be a large portion of their growing season). Therefore, even though the predicted peak concentrations may have adverse effects for long-term exposures, these peak concentration expected will only occur intermittently for short periods and will probably have little or no adverse effects associated with them.

It would be useful to compare the total emission of the airport with the total emissions of Ventura County. Airport emissions have already been listed in the source descriptions. Future emissions in Ventura County were estimated by using the same method that was referenced previously to obtain future emissions per person figures. Population estimates from Adrian Wilson & Associates were combined with these figures to obtain future total emissions. Table 3.23 lists the emission and the percent that were airport-related.

The table shows that airport emissions are a very small part of total county emissions with the highest percentage being 0.8 percent CO due to the proposed project. Therefore, the basin-wide impact of the airport will be minimal in most cases for these primary impacts.

Oxidant concentrations are a major problem in Ventura County. This pollutant is a basin-wide phenomena and is formed primarily from hydrocarbons and oxides of nitrogen. Reactive hydrocarbons are considered to be the limiting factor in the photochemical reaction that forms oxidants; therefore, oxidant concentrations are proportional to reactive hydrocarbon concentrations.

Table 3.23 shows that airport hydrocarbon emissions are less than one percent of county hydrocarbon emissions. Assuming that the same percentages of these emissions are reactive, oxidant concentration would be increased by less than one percent in the basin over ambient levels due

Table 3.23

COMPARISON BETWEEN AIRPORT AND VENTURA COUNTY
TOTAL EMISSIONS (tons/day)

YEAR	POLLUTANT	AIRPORT EMISSIONS	COUNTY EMISSIONS	% OF EMISSIONS AIRPORT GENERATED
1975	HC	0.5	118	0.4
	Part	0.15	15	1.0
	NO_x	0.3	74	0.4
	SO_2	0.02	15	0.1
	CO	3.1	382	0.8

to the airport. Meteorological and topographic features tend to trap pollutants in the Camarillo area; therefore, the oxidant increase could be more than one percent in that area. A significant increase in oxidants is not anticipated.

3.5.1 Summary

It must be strongly emphasized that the impacts quantified in this section are based on a series of assumptions beginning with the aircraft operations and mix in the future, and ending with the inherent assumption in the diffusion equations. There is no approved set of emission factors for aircraft; therefore, the "worst case" emissions were used to obtain concentrations that could have given these emissions. Therefore, it is highly unlikely that concentrations would be greater than those given, and in fact likely that they will be lower.

Another important point is that presently fuel oil is used to heat the facility. It was assumed in the above calculation that natural gas would be used, and that the emission would be negligible. Combustion of fuel oil releases significant amounts of particulates and SO_2 to the air; therefore, those concentrations could be increased over the values that are predicted otherwise.

Increased traffic on roadways in the area will have an adverse effect on air quality. The roads that will be significantly affected will be Pleasant Valley Road, East 5th Street, Las Posas Road and the Ventura Freeway. Limited operation in 1975 will produce a level of auto traffic that will cause insignificant increases within 50 feet of roadways during "worst case" meteorological conditions (less than 1 ppm carbon monoxide). Future emission controls will cause concentrations to steadily decrease, assuming that the airport-generated traffic remains constant.

3.5.2 Construction Impacts

Various short-term impacts will result during construction and expansion of the facility. Grading for new runways and facilities will leave ground exposed to the wind which will cause significant particulate concentration in the vicinity. Heavy equipment emissions, if they are concentrated in one place, can also be significant. Hydrocarbon and particulate emissions during paving operations are also significant.

These emissions cannot be quantified since they will occur in the future, and not enough is known about the amount of area to be exposed. There will be short-term impacts, however, and steps can be taken to reduce them.

3.6 Unavoidable Adverse Impacts

As mentioned in the previous section, peak hour particulate concentrations could cause some adverse effects such as reduced visibility and sunlight reduction in the area, but states that 24-hour standards should not be exceeded in the immediate area of the airport.

An increase in fog due to climatic changes represents a potential adverse impact, considering that the proposed airport requires good visibility.

3.7 Mitigating Measures

Many mitigating measures, both during airport operation and construction, are listed in the manual Airports and Their Environment: A Guide To Enviromental Planning by CLM/System, Inc. These measures are presented here.

Modification of Ground Operations

The aircraft landing takeoff (LTO) cycle can be broken down into flight and ground operations. Flight operations include approach, climb-out, landing and takeoff, even though the latter two occur on the ground. Ground operations include taxiing, idling, and all servicing and support operations which involve emission sources. Aircraft ground operations contribute substantially to the concentrations of CO and HC that exist at air carrier airports because of the relatively high emission rates of these pollutants at low engine power levels, and also because these operations occur in limited areas within the boundaries of the airport.

The Los Angeles County APCD found that:

> Based on flight time surveys and the JT4A and JT9D engine test data, 70 percent of flight time to and from 3,500 feet altitude is in the idle and taxi mode, which accounts for about 60 to 70 percent of total emissions from these engines.

Seven methods of ground operation modification have been identified that offer some degree of control over CO and THC emissions at air carrier airports. The advantages and disadvantages of each are discussed below. It should be stressed, however, that airport operations come under the jurisdiction of the FAA, and any modifications of present operating procedures will require approval.

Suggested ground operation modifications are:

a. Increase Engine Idle RPM

Carbon monoxide and hydrocarbons result from incomplete combustion. By operating engines nearer the more efficient full power settings, the CO and HC emission rates will be reduced, as shown in Table 3.24.

Table 3.24

COMPARATIVE REDUCTIONS RESULTING FROM CONTROL METHODS APPLIED TO LOS ANGELES INTERNATIONAL AIRPORT

Control Method	Controlled Emissions as Percent of Uncontrolled Emissions	
	CO	Hydrocarbons
1. Increase engine idle rpm	71	93
2. Increase idle rpm and use minimal engines for taxi:		
a. two engines	53	66
b. single engine	39	51
3. Eliminate delays at gate and runway	90	91
4. Transport passengers between terminal and aircraft	100	100
5. Tow aircraft to avoid taxi emissions	34	42
6. Avoid use of aircraft auxiliary power units	99.5	98.5
7. Control emptying of fuel drainage reservoirs	100	98.4

Source: Bastress, E.K., et al., Assessment of Emission Control Technology (Northern Research and Engineering Corporation. Prepared for the Environmental Protection Agency, Sept. 1971), p. 146.

Disadvantages of this procedure are that:

- Aircraft braking power and brakewear constrain the increase in idle RPM. (Brake overheating already occurs occasionally during ground operation)

- Increased exhaust velocities may create safety hazards for employees, vehicles and other aircraft.

This ground operation modification would not appear to warrant further consideration.

b. Increase in Idle RPM and Use of Minimal Engines for Taxi

Thrust levels for taxiing can be kept the same by using fewer engines, but at a higher power output level. Again the benefit will be in reducing CO and HC emissions which occur predominantly at low power settings. (American Airlines currently saves fuel on the ground by shutting down the center engine on Boeing 727 aircraft and by operating the two outboard engines at higher output levels). The emission reductions from this modification could be quite substantial (as shown in Table 3.24). This change would have the added benefit of lowering the airline fuel costs for ground operations.

There are disadvantages associated with this procedure:

> Tests are...needed to confirm the safety of such operation as a standard procedure. A more serious factor militating against use of a single engine is the power level which would be required to resume taxi after the aircraft comes to a complete stop. With fully loaded aircraft on slight grades a 100 percent power output from a single engine may well be necessary to resume taxi. The hazardous jet blast area would have to be extended from a current value of 150 feet to more than 400 feet. The ramifications of the increased jet blast might require substantial modification of airport taxi procedures and rules.

Fire safety provisions would be required at the ends of runways where engines will be started.

c. Elimination of Delays at Gate and Runway

A ground traffic control system would require engines to be shut down at gates, and only started when the aircraft could begin taxiing to the runway. The control system would schedule all aircraft so that delays at the runway would also be minimized. Estimated reduction in emissions (calculated for LAX) are shown in Table 3.24.

One of the disadvantages of this procedure is that the traffic control system by necessity would have to be extremely complex to maintain current runway utilization levels. Also, a major contribution to current delays at the end of the runway is unavailability of gates for arriving aircraft. Airlines may dispatch aircraft to open a gate for arriving aircraft, irrespective of how soon clearance for takeoff will be granted. "Thus either more gates, or an intermediate parking area for departing aircraft, or more uniformly scheduled traffic levels would be necessary to implement this change." In addition, electrical power and air conditioning would have to be supplied to certain aircraft that do not have on-board auxiliary power units.

d. Transport of Passengers Between Terminal and Aircraft

This procedure involves the use of mobile lounges that carry passengers from gates to aircraft parked in the vicinity of the runway. Since current airport design practices already attempt to locate terminals so as to minimize taxi times, the gains from this procedure are small. In addition, there are serious hazards involved in parking a number of aircraft close to busy runways.

In general, it appears that at most airports this procedure does not offer major reductions in airport emissions, as shown in Table 3.24.

e. Towing of Aircraft

The use of vehicles to tow aircraft around airports will eliminate all taxi mode emissions. Aircraft would be towed to a staging area near the end of the runway where engines would be started. Arriving aircraft would shut down their engines at the end of the runway and would be towed to the gates.

Aircraft emissions would be reduced, but vehicle emissions would be increased significantly. Total emissions would drop, however, as shown in Table 3.24.

The great disadvantage of this procedure stems from the fact that current tow vehicles are very slow, with a maximum speed capability of eight miles per hour (loaded). This would more than double taxi times, which would have a profound effect on airport schedules and operations, and might possibly reduce revenue. (For example, gate-to-gate time from Los Angeles to San Francisco might double).

Other disadvantages include the costs associated with increased crew hours due to towing, and special provisions for air conditioning for those aircraft without auxiliary power. Thus, although there may be a reduction in aircraft emissions, the problems and inconvenience associated with this type of procedure would be significant.

f. Discontinuance of Use of Auxiliary Power Unit

The use of on-board auxiliary power units could be eliminated by either portable electric air supplies, or by equipping each gate with a centrally supplied air and electric system. In either case, as Table 3.24 shows, the emission reduction from such an operation change is negligible.

These ground operation modifications do not apply to general aviation airports because of the nature of the small aircraft using these facilities. Delay times can be significant at some airports, but it is doubtful that a control system could be set up to reduce these times because of the nature of general aviation schedules. Scott Research Laboratories has found that in small piston-engine aircraft, carbon monoxide and hydrocarbon emissions can be substantially reduced by making the aircraft air to fuel mixture leaner. Although this increases the possibility of engine stalling, an emission control method for general aviation airports might be to require a leaner mixture during taxiing and idling.

Another emission control method for small piston aircraft might be the required use of low lead gasoline, since the concentrations of lead emitted at general aviation airports are significant.

Minimizing Air Pollution During Construction

As discussed in the air pollution impact section, the construction or expansion of an airport involves many operations which can influence the air quality of the local area. The pollutants involved would be dust, smoke, chemicals, and vehicle exhaust emissions.

In the air quality implementation plan submitted to the EPA, each state will specify air pollution control procedures to be followed during construction. As each state will enforce its own control procedures, state and local air pollution control agencies should be contacted prior to construction.

The EPA has suggested means for preventing dust or particulate matter from becoming airborne during construction. These precautions include (FR Vol. 38 No. 158, Aug. 14, 1971, p. 15495.):

> Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;
>
> Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can give rise to airborne dusts.
>
> Covering, at all times when in motion, open bodied trucks transporting materials likely to give rise to airborne dusts.
>
> Paving of roadways and their maintenance in a clean condition.

Minimizing Climatic Impacts

An increase in fog or fog-inducing particles can be avoided only by reducing the number of operations at the airport.

3.8 Alternatives

Educational Complex - The educational complex would consist primarily of Pepperdine University. The primary air quality impact of this complex could be due to increased auto traffic. When the proposed complex is at peak capacity (five years after opening), the auto trips generated are predicted to be 10,690 total trips/day, with peak hour traffic of about 2,220 trips/hour.

The pollutants emitted from the educational complex can only be grossly estimated as to their locations. A detailed study delineating parking facilities and traffic on the roads within the complex does not exist. Therefore, an estimate of concentrations downwind was made assuming that all of the traffic will use Pleasant Valley Road as an entrance to the facility. It is also assumed that the complex will reach capacity around 1979-1980 for purposes of determining auto emission factors.

Using auto emission factors obtained from Motor Vehicle Emission Factor for Estimates of Highway Impact on Air Quality by the State of California Division of Highways, the diffusion of the pollutants produced downwind was estimated using Elliot & Barad's Operational Prediction of Diffusion Downwind from Line Sources. The calculation showed that concentration increases would be minor in most cases. Carbon monoxide increases on-site would be less than 3 ppm, and one-fifth mile downwind from the site it would be negligible. This case was calculated assuming peak traffic hour, moderately stable condition and a 1 meter/second wind speed; therefore, it is a "worse case" condition. Similarly, hydrocarbon concentration would increase less than .4 ppm on-site, and oxides of nitrogen concentration would increase less than .15 ppm on-site. During average hour condition, concentration increases at all locations would show negligible increases. Particulate and sulfur dioxide are not significant emissions from auto exhausts.

Substantial increases in traffic will occur on the roadways in the area including East 5th Street, Pleasant Valley Road, Las Posas Road, and the Ventura Freeway. Again, assuming that the maximum traffic increases will not occur until 1980 and that federal emission standards will be met, concentration increase (within 50 feet of the road) over present values will be small (less than 2.5 ppm CO), during worst case conditions, and in most cases negligible.

Although the educational complex will eventually generate much more traffic than the restricted airport facility, the later completion date tends to mitigate the air quality impact. By 1980, many cars on the road are projected to meet the 1976 emission standards which would reduce the impact considerably. Air quality concentrations downwind from roadways in the area are predicted to be similar for the airport in 1975 and the educational complex in 1980 - both well below standards for carbon monoxide as mentioned previously. The restricted airport facility will generate negligible air pollutants on the area roadways by 1980.

A useful comparison to assess the total air impact of both alternatives is to compare total emissions from each plan as shown in Table 3.25. Emissions can only be calculated realistically from the entire site as a whole as it cannot be ascertained at this time where traffic generated by either plan will go after it has distributed itself on the roadways in the immediate area.

It can be seen from Table 3.25 that emissions from the airport are approximately one order of magnitude greater than emissions from the educational complex. These estimates can only be taken as approximations; it can be stated with certainty, however, that the airport will emit more pollutants into the air basin than the educational complex.

Public Sale - As suggested in the Alternatives portion of the "Economics" section of this report, the most likely bidders at public sale would anticipate airport and airport-related industrial uses similar in type to those presently proposed in the county application. Although no firm alternative proposals now exist, other than the city and county plans previously discussed, it may be expected that the air quality impacts of such airport-related proposals would be essentially similar to those of the current county proposal.

Table 3.25

TOTAL POLLUTANTS GENERATED BY
AIRPORT AND EDUCATIONAL COMPLEX (TONS/DAY)

YEAR	POLLUTANT	RESTRICTED AIRPORT	EDUCATIONAL COMPLEX
1975	CO	3.1	0.04
	HC	0.5	0.006
	NO_x	0.3	0.006
	Part	0.15	---
	SO_2	0.02	---
1980	CO	2.1	0.5
	HC	0.26	0.05
	NO_x	0.24	0.05
	Part	0.15	---
	SO_2	0.02	---
1985	CO	2.0	0.3
	HC	0.24	0.03
	NO_x	0.23	0.03
	Part	0.15	---
	SO_2	0.02	---

No Action - This alternative would leave the base in its present state. There would be no air quality impact.

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AIR QUALITY

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4.0 TRAFFIC

4.1 Environmental Setting

As detailed in the external street system map, Oxnard Air Force Base is bordered on the north by the Ventura Freeway, a four-lane divided freeway which is substandard by today's design criteria. The capacity of the freeway is 8,000 vehicles per hour. An interchange with Las Posas Road, a two-lane facility which lies east of the base, provides the principal access to the entrance gates located on Pleasant Valley Road, also two-lane. Supplemental access is available from Oxnard (East 5th Street), Camarillo (Pleasant Valley Road), Point Mugu (Las Posas Road), and Port Hueneme (Pleasant Valley Road). The intersection of East 5th Street with Pleasant Valley Road and with Las Posas Road, as well as Pleasant Valley Road-Las Posas Road, is signalized and flared to accommodate left-turning traffic. Capacity of each of these two-lane facilities is 1,200 vehicles per hour.

The 1972 Average Daily Traffic (ADT) on this system, as well as the number of accidents shown in circles, are depicted in Figure 4.1 as provided by the traffic engineer of Ventura County. The intersection of Wood Road and Pleasant Valley Road has the highest accident rate. Wood Road tees into Pleasant Valley Road on a 40 mph curve, and there is a severe sight distance restriction at this intersection. In addition, utility poles are placed close to the edge of the roadway on the outside of the curve. The intersection of East 5th and Pleasant Valley Road also has a high accident experience. The principal two-lane roads have adequate lane and paved shoulder widths.

The internal road system, largely located in the southeast quadrant of the air base, has been well maintained and is serviceable. Activities on the base generate approximately 300 trips daily.

The interchange of the Ventura Freeway with Las Posas Road is currently under reconstruction by the California Division of Highways.

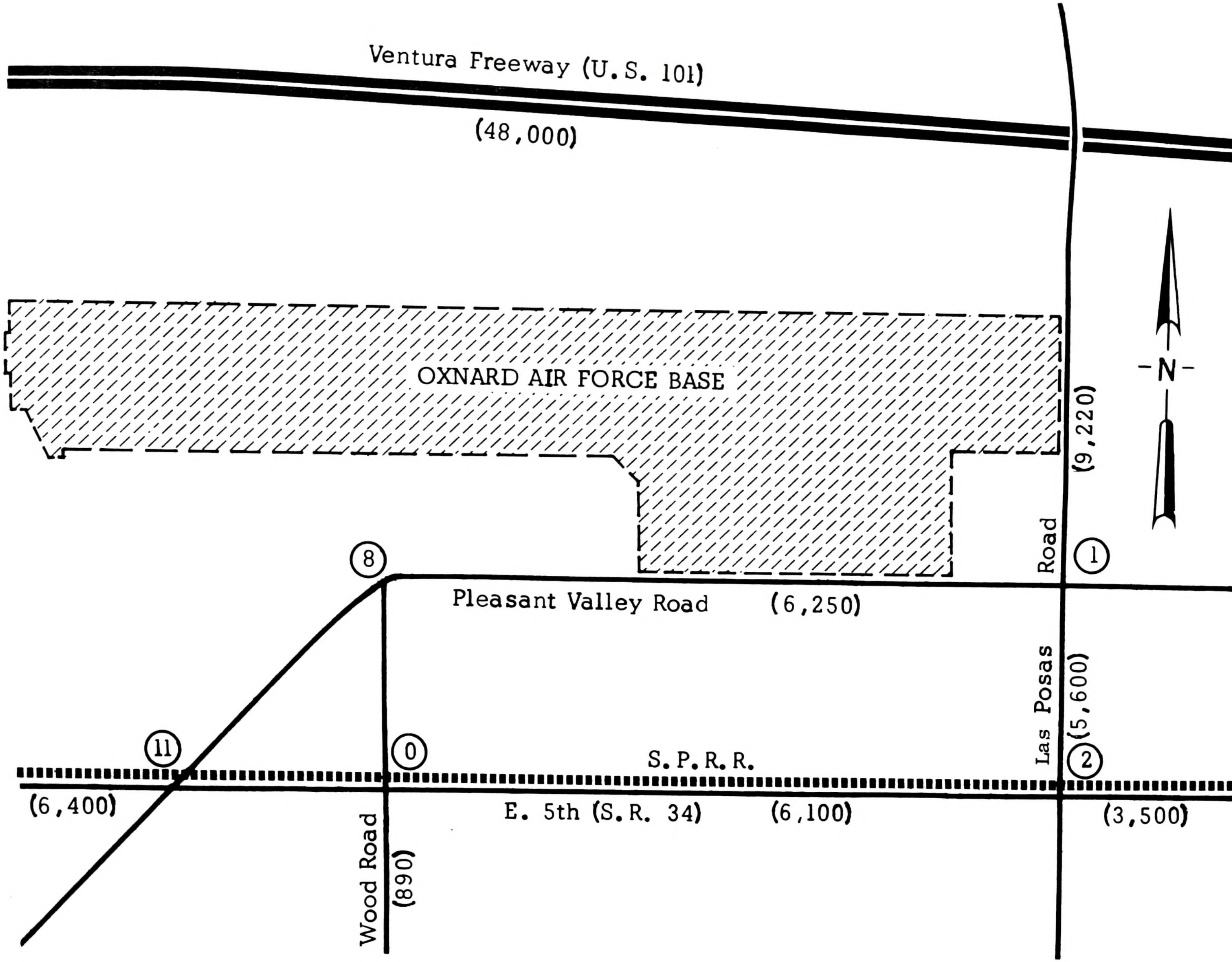

Figure 4.1 EXTERNAL ROAD SYSTEM - 1972 Data (Numbers in parentheses indicate average daily traffic [ADT].)

Scale: 1" = 1500'

4.2 Impact Analysis

Due to the relative inactivity of Oxnard AFB (currently generating approximately 300 trips/day), any change in land use will develop additional traffic on the roadway system. The proposed airport complex has been analyzed in Table 4.1 for both Average Daily Traffic (ADT) and Peak Hour (PH) conditions, based on the following assumptions:

- 14 planes per day
- 50 passengers enplaning and deplaning per plane
- Required vehicular trips per passenger, 1.5
- 200 civilian-based planes
- 2 trips per day generated by each civilian-based plane
- Peak hour factor of 20 percent of the daily operations
- Resulting total developed trips/day, 2,500 (PH, 500)
- Other uses of the airport complex, which are now in existence, are included in the 300 trips/day which are currently generated.
- Other proposed uses of the airport which are not currently in existence are considered insignificant in comparison to existing and airport-related uses.

Table 4.1 assumes that primary access will be via a newly constructed access route southerly from the Central Avenue Interchange with the Ventura Freeway.

Under the proposed plan, Las Posas Road will have a traffic demand in excess of capacity with resulting congestion. Congestion on Pleasant Valley Road will be marginal. All other sections of roadway appear to have reserve capacity to carry the facility-generated traffic. However, normal traffic growth anticipated within the area will require expansion of the system earlier than otherwise required.

Table 4.1

PROPOSED AIRPORT COMPLEX

	CURRENT		FACILITY GENERATING		TOTAL		PERCENT INCREASE	
	ADT	P.H.	ADT	P.H.	ADT	P.H.	ADT	P.H.
Ventura Freeway	48,000	4,800	2,500	500	50,500	5,300	5.2	10.4
Las Posas Road:								
N/Pleasant Valley	9,220	1,390	500	100	14,220	1,490	5.4	7.2
S/Pleasant Valley	5,600	700	400	80	6,000	780	7.1	11.4
Pleasant Valley Road	6,250	920	100	20	6,350	940	1.6	2.2
E. 5th Street	6,100	900	100	20	6,200	920	1.6	2.2

4.3 Unavoidable Adverse Impacts

With regard to traffic, the proposed airport complex will generate the following unavoidable adverse impacts:

- Traffic demand on Las Posas Road between Pleasant Valley Road and the Ventura Freeway will exceed present capacity and result in congestion.
- Marginal conditions will exist on Pleasant Valley Road.
- Accidents will increase in proportion to traffic volume.

4.4 Mitigating Measures

A. As implied above, Las Posas Road should be expanded to a four-lane facility between Pleasant Valley Road and the freeway. The roadway is under the jurisdiction of the City of Camarillo and is scheduled for widening during the 1976-1977 fiscal year.

B. Due to the severe accident experience of the Pleasant Valley Road/Wood Road intersection, a traffic study should be performed to consider:

(1) elimination of existing sight distance restrictions, or

(2) closure of Wood Road.

C. An accident analysis should be performed by the State Division of Highways and/or County of Ventura personnel at the intersection of 5th Street (S.R. 34) and Pleasant Valley Road in reference to alleviating the high number of accidents (11 in 1972) at this location.

D. In general, all utility poles located on the roadway system should be analyzed and relocated in accordance with current federal guidelines. Specifically, poles on the outside of the curve on Pleasant Valley Road at Wood Road should be removed from the outside of the curve.

E. Widening of Pleasant Valley Road or 5th Street should be considered. While not imminently necessary, potential increases in traffic suggest that traffic conditions be frequently studied. Widening of 5th Street to four lanes has the advantage of bypassing the project site, but would probably require the additional widening of Las Posas Road from 5th Street to Pleasant Valley Road.

4.5 Alternatives

4.5.1 Educational Complex

The primary alternative plan of disposal, the educational complex, has been analyzed in Table 4.2 for both Average Daily Traffic (ADT) and Peak Hour (PH) conditions, based on the following assumptions:

Principal Traffic Generated	Trips/Day	Peak Hour
Park	2,840	285
High School	400*	150
Community College	800*	300
Pepperdine College	5,650	1,335
Miscellaneous	1,000	150
Total	10,690	2,220

* Assumes some busing of students

As an alternative to the proposed project, the educational complex would result in the following:

- Traffic demand on Las Posas Road between Pleasant Valley Road and the Ventura Freeway will exceed present capacity and result in congestion.
- Traffic demand will exceed capacity with resulting congestion on Pleasant Valley Road.
- Traffic congestion on East 5th will be marginal.
- Accidents will increase in proportion to traffic volume.

- Traffic impacts will be mitigated to the extent that existing facilities are utilized for student housing.
- Alternative location of the educational complex would merely transfer its traffic impacts.
- A comparison of Tables 4.1 and 4.2 reveals that traffic impacts associated with the educational complex will be more significant than those associated with the proposed airport complex.

4.5.2 Public Sale

As an alternative to the proposed project, traffic impacts associated with "public sale" would generally vary according to the traffic demand created.

4.5.3 No Action

As an alternative to the proposed project, "no action" would result in the following:

- Adverse traffic impacts will be avoided.
- Expansion of Las Posas Road between Pleasant Valley Road and the freeway is still desirable at the established time of construction by the City of Camarillo.

Table 4.2

EDUCATIONAL COMPLEX

	CURRENT		FACILITY GENERATING		TOTAL		PERCENT INCREASE	
	ADT	PH	ADT	PH	ADT	PH	ADT	PH
Ventura Freeway	48,000	4,800	8,550	1,770	56,550	6,570	17.8	36.9
Las Posas Road:								
N/Pleasant Valley	9,220	1,390	9,625	2,000	18,845	3,390	104.4	143.9
S/Pleasant Valley	5,600	700	1,600	330	7,200	1,030	28.5	47.1
Pleasant Valley Road	6,250	920	4,280	870	10,530	1,790	68.5	94.6
E. 5th Street	6,100	900	1,075	220	7,175	1,120	17.6	24.4

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Robert Warran, P.E., Traffic Engineer, Ventura County Department of Public Works.

Joseph Howard, P.E., Assistant City Engineer, City of Camarillo.

5.0 NOISE

5.1 Introduction

Noise has variously been defined as "unwanted sound" or "sound without value." Both these definitions recognize that a degree of subjectivity is inherent in the definition of noise. However, this does not negate the fact that sound can and does affect the full range of human activity from sleeping to work.

There are various ways in which a sound environment can be described in physical terms, and physiological effects and responses predicted with varying degrees of accuracy. Physiological effects may vary from permanent hearing loss to temporary constriction of blood vessels, depending on the level and duration of sound. Thus, the implications relative to public health may vary from serious to minor. However, minor effects on health do not justify ignoring the effects of noise on the quality of life nor the more subtle or indirect influences of noise on human behavior and performance.

Community response to environmental noise is influenced by collective and individual attitudes toward the sources of noise, and beliefs as to whether or not anything can be done to reduce or eliminate the noise.[1*] Changes have occurred in the latter views as the public has come to understand that in many instances something can be done to abate or control environmental noise. It is the responsibility of public agencies to decide when and what should be done to control environmental noise.

5.2 Background

This section provides background information and definitions to aid in understanding the data and information presented in the following sections. There are three primary factors which are used to describe environmental

* Superscripts refer to references.

noise and its impact on man. These are intensity, frequency spectrum, and variation with time. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. The magnitude of the pressure fluctuation is related to the intensity of sound and the number of fluctuations per second is the frequency. The human ear is sensitive to a wide range of pressures and frequencies. The range in pressures is so great that a logarithmic scale is used to describe sound intensity. The sound pressure level is given in decibels and is defined as:

$$\text{Sound Pressure Level, dB} = 10 \operatorname{Log}_{10} \left(\frac{P}{P_o}\right)^2$$

The value of the reference pressure, P_o, is twenty micro-Newtons per square meter ($20\mu N/m^2$), which is approximately the threshold of hearing.

The unit of measurement of frequency is the cycle per second or Hertz (Hz). Most of the sounds heard in the environment do not consist of single frequencies but a range of frequencies, each with a differing intensity or level. At the same time, human hearing is not equally sensitive to all frequencies. Generally, human hearing is less sensitive for frequencies below 1000 Hz and to some extent above 5000 Hz. Fortunately, a relatively simple method of weighing the frequency components of environmental noise and combining the results into a single number has been found to correlate well with human response to environmental noise other than that generated by aircraft operations.[2,3,4] The weighting system most commonly used is "A" weighting, and the resultant number is called the "A-weighted sound level." The A-level in decibels is expressed "dBA," and the A-level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve.

Although the A-level adequately describes the environmental noise at any particular instant, the fact is that the level of environmental noise varies continuously. Distance and sources (such as traffic, winds, industries) create a relatively stable background noise level in which no particular source can be readily identified, and which slowly varies with the daily cycle of human activity. Superimposed on the slowly varying background is a succession of noisy events of short duration from nearby activities such as aircraft flyover, single vehicles, etc., which cause more rapid variation in the overall noise level.

A statistical description has become common practice in characterizing environmental noise.[4,5,6] Normally expressed as the "level exceeded for a stated percentage of time," the statistical description is derived from data expressing the percentage of total time the noise level is between any two set limits. For example, noise levels exceeded 10 percent, 50 percent, or 90 percent of the time can be derived from histograms of noise levels. These noise levels are abbreviated symbolically as L_{10}, L_{50}, and L_{90}, respectively. The L_{90} level is sometimes called the residual or background noise level, and the L_{50} level is referred to as the average noise level.

Variability and unpredictability are two characteristics of a noise environment frequently identified as the causes of disturbance and annoyance. It is easier to adapt to a relatively steady noise level, even if it is fairly high, than it is to adapt to a noise level that varies widely in intensity and in a seemingly unpredictable manner. Noise generated by construction activities is an example, but an even more dramatic example is the noise generated by airport operations.

The variability of an airport noise environment, as well as other characteristics governed by the number and type of aircraft using the airfield, cannot be adequately described using a simple scale such as the A-weighted noise level. Two measures which somewhat successfully take these airport noise environment characteristics into account are the Community Noise Equivalent Level (CNEL) and the Noise Exposure Forecast (NEF). Other measures have been formulated and used in the past or currently, such as the Effective Perceived Noise Level in Decibels (EPNLdB)* employed in certifying aircraft noise levels. The CNEL has been adopted by the California State Department of Aeronautics.[7] It is based upon a summation of A-weighted hourly energy averages for a 24-hour period. The hours between 7 p.m. and 10 p.m. and 10 p.m. and 7 a.m. are given greater weight, with the latter period receiving greatest weight to account for greater community annoyance during these hours. The NEF is in use by the federal government and is based on the summation of contributions from operations of different types of aircraft.[8] The contributions are based on the peak Effective Perceived Noise Level (EPNL) and the number of times this level occurs. Operations between the hours of 10 p.m. and 7 a.m. are given a greater weight.

5.3 Noise Criteria

This section presents the highlights of background information and data useful in evaluating the current noise environment and the impact of any changes occurring as a result of proposed developments. Most criteria currently in use to evaluate or control environmental noise are based on combinations of data on physiological effects, and community complaint and annoyance data.[6,7,8,9,10] However, it is instructive to initially consider the preferences of the general population.[10] These preferences are given in Table 5.1.

The physiological effects of noise normally considered in establishing standards or criteria are hearing damage, speech interference, sleep interference, physiological stress, and task interference.[3,11,12,13] The degree of certainty in the dBA levels given in Table 5.2 varies from good to poor. The levels given for hearing damage are well documented with the

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* The EPNL is a somewhat complex measure of aircraft noise which takes into account the perceived noisiness by frequency band, duration, and peak sound pressure level, including corrections for pure tone components.

upper limit of 70 dBA being the 8-hour continuous exposure limit allowed under the Occupational Safety and Health Act of 1970. This situation, or degree of certainty, does not exist for task interference.[14]

Table 5.1

POPULATION PREFERENCES REGARDING NOISE LEVELS

TYPE OF AREA	NOISE LEVELS (dBA)			
	DAY		NIGHT	
	WANT	ACCEPT	WANT	ACCEPT
Rural	35	45	25	35
Suburban	40	50	30	40
Urban, residential	45	55	35	45
Urban, residential plus shops	50	60	40	50
Commercial	55	65	45	55
Industrial	60	70	50	60
Water recreation, restricted	45	45	35	35
Water recreation, unrestricted	55	55	45	45
Wilderness	30	30	20	20

Table 5.2

ESTIMATES OF MAGNITUDES OF NOISE EFFECTS

EFFECTS	MODERATE	APPRECIABLE
Hearing damage risk	70	90
Speech interference	45	60
Sleep interference	40	70
Physiological stress	70	90
Task interference	55	75

O From Wyle et al

The extent and type of community response which may be expected from various average noise levels other than airport noise are shown in Figure 5.1.[2,14] This information is based on community complaint and survey data. Thus, this information must be interpreted within the context of community attitudes as discussed in the introduction.

Federal standards from the U.S. Department of Housing and Urban Development (HUD) and the U.S. Department of Transportation (DOT) are presented respectively in Tables 5.3 and 5.4.[8,9] The DOT standards are design goals for traffic-generated noise and the predicted or measured noise level, L_{10}, is based on peak hour traffic. HUD criteria do not discriminate as to land-use category as the primary concern is suitability of living quarters. These federal criteria are based upon the aforementioned data on the physiological effects of noise plus community response data. Although there is no legal requirement to comply with these criteria inasmuch as no federal funding or subsidy is contemplated, they will be used to assist in the evaluation of environmental impacts.

The Community Noise Equivalent Level (CNEL) is used in California as a means of evaluating noise from airport operations. The CNEL in decibels represents the average daytime noise level during a 24-hour day, adjusted to an equivalent level to account for the lower tolerance of people to noise during evening and nighttime periods relative to the daytime period.

A given limit value of CNEL has been established as a criterion value which shall not be exceeded in residential areas.[15] This limit value is 65 dB for "proposed new airports and for vacated military airports being converted to civilian use."[15] This value of CNEL is used to determine the noise impact boundary within which compatible land uses are required. These compatible land uses are:

(a) Agricultural

(b) Airport property

(c) Industrial property

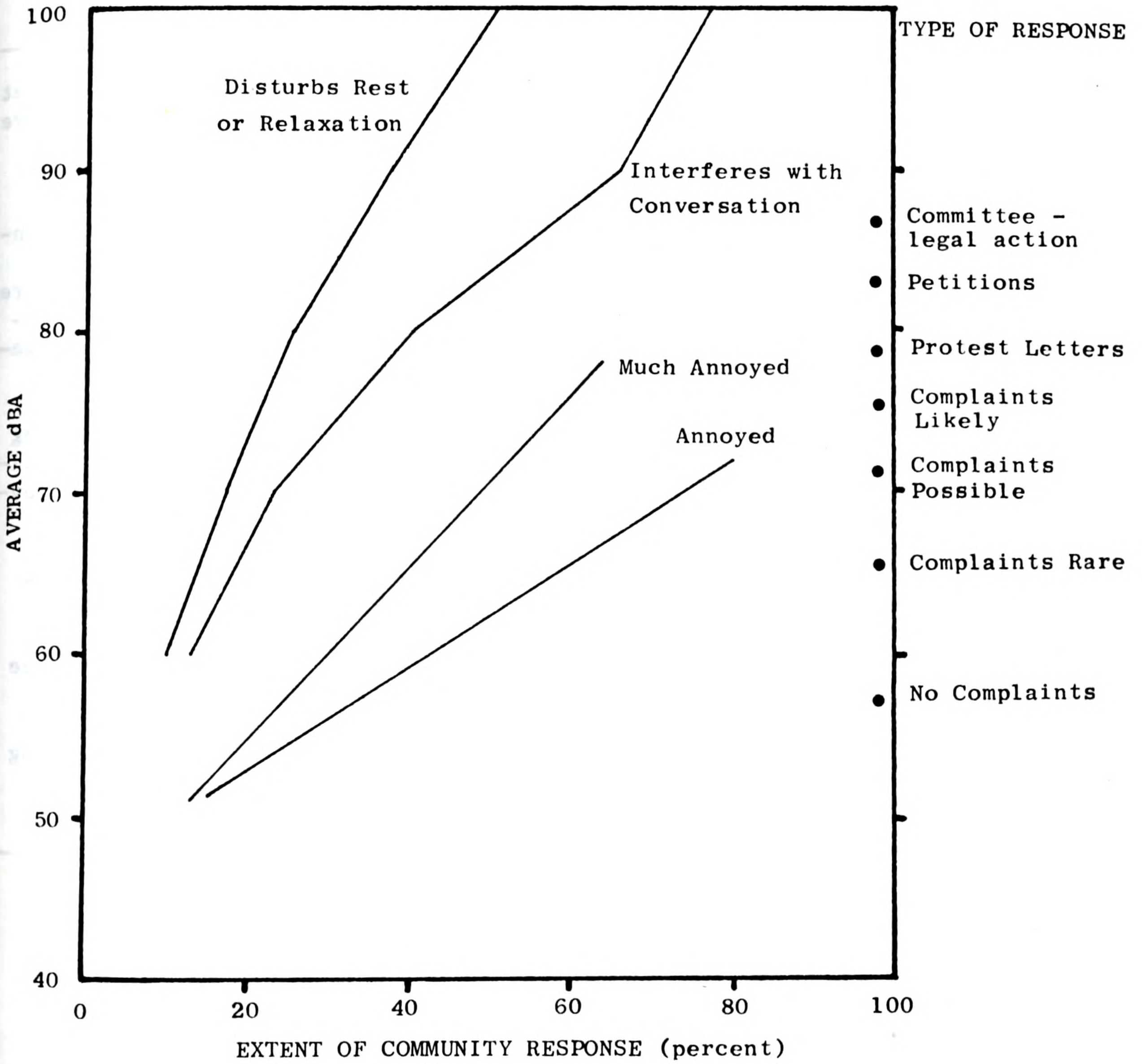

Figure 5.1 Community Response to Noise

Table 5.3

DOT DESIGN NOISE LEVEL/LAND-USE RELATIONSHIPS

LAND-USE CATEGORY	DESIGN NOISE LEVEL - L_{10}[1]	DESCRIPTION OF LAND-USE CATEGORY
A	60 dBA	Tracts of lands in which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, or open spaces which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	70 dBA	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, recreation areas, playgrounds, active sports areas, and parks.
C	75 dBA	Developed lands, properties or activities not included in categories A and B above.
D	--	For requirements on undeveloped lands, see paragraphs 5.a(5) and (6) of PPM 90-2.
E[2]	55 dBA	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

1. Criteria are applied at boundary, peak traffic hour.
2. See Ref. 9 for method of application.

Table 5.4

SUMMARY OF HUD NOISE CRITERIA*

GENERAL EXTERNAL EXPOSURES**
dBA

UNACCEPTABLE	
• Exceeds 80 dBA 60 minutes per 24 hours (L_4). • Exceeds 75 dBA 8 hours per 24 hours (L_{33}). (Exceptions are strongly discouraged and require a 102(2)C environmental statement and the Secretary's approval.)	or NEF greater than 40
DISCRETIONARY - NORMALLY UNACCEPTABLE	
• Exceeds 65 dBA 8 hours per 24 hours (L_{33}). • Loud repetitive sounds on site. (Approvals require noise attenuation measures, the Regional Administrator's concurrence and a 102(2)C environmental statement.) **DISCRETIONARY - NORMALLY ACCEPTABLE** • Does not exceed 65 dBA more than 8 hours per 24 hours (L_{33}).	or NEF between 30 and 40
ACCEPTABLE	
• Does not exceed 45 dBA more than 30 minutes per 24 hours.	less than NEF of 30

*Anon., Noise Abatement and Control: Departmental Policy, Implementation, Responsibilities, and Standards, U.S. Department of Housing and Urban Development, August 1971.
**Criteria are applied at boundary.

(d) Commercial property

(e) Property subject to an avigation easement for noise

(f) Zoned open space

(g) High-rise apartments in which adequate protection against exterior noise has been included in the design and construction, together with a central air conditioning system. Adequate protection means the noise reduction (exterior to interior) shall be sufficient to assure that interior community noise equivalent level in all habitable rooms does not exceed 45 dB during aircraft operations. Acoustical performance of the buildings shall be verified by calculation or measured by qualified officials of the building inspection agency of the city or county in which the buildings are situated.

The incompatible land uses are:

(a) Residential, including single and multiple family dwellings

(b) Trailer parks

(c) Schools of standard construction

5.4 Present Environment

The major contributor to the current noise environment is vehicular traffic. Natural sources of sound, such as wind and faunal activity, make significant contributions in rural areas, with surf noises dominating near beach areas. Aircraft operations at the Ventura County Airport are the source of intruding noises on the general background, particularly along the take-off and approach paths.

Extensive and detailed measurements have been made of the noise environment in various locations in Ventura County.[10] These measurements were made from September 1961 to January 1962 and April to June 1971. These measurements were of one-to two-hour duration between 10 a.m. and 2 p.m. They were performed in residential areas away from main traffic areas, industrial areas, business areas, and other areas representing special conditions such as airports or aircraft traffic corridors.* The results are shown in Table 5.5. For comparison, the results of a federal survey at community noise levels are given in Table 5.6 from Ref. 6.

In comparing the information in Tables 5.5 and 5.6, it can be seen that Camarillo falls into the upper range of the "Normal Suburban Residential" category, and Oxnard falls between the "Urban Residential" and "Noisy Urban Residential" categories. One other factor apparent from the data of Table 5.5 is the large increase in noise levels evidenced in these two cities. These increases appear to be the result of changes in land usage. Reference 6 concluded that changes greater than 1-2 dBA over a few decades was evidently due primarily to this factor. In addition, the growth in population in Oxnard (~77%) and Camarillo (~380%) between 1960 and 1970 further supports this conclusion.

Estimated noise contours for the Ventura County Airport are shown in Figure 5.2. Estimates are based on the level of operations for the first six months of 1973. Although land use within the 30 NEF contour is compatible with available standards, some degree of noise impact does occur, particularly off the eastern end of the runway. For example, the peak noise level at Santa Clara School during a Twin Otter approach is on the order of 76 dBA. The interior noise level would be on the order of 55-70 dBA, depending on whether windows are closed or open. The noise level in a classroom which would cause speech interference for a teacher conducting a class is on the order of 50 dBA for a normal voice level, and 60 dBA for a raised voice level.[3] Thus, the noise generated during a Twin Otter approach causes some disruption, particularly when windows are open. There are a number of schools and hospitals which are similarly disturbed, as are residences within 1000-1500 feet of the flight path (not to be confused with the ground track).

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* Measurements were made on C-weighted scale and have been converted to A-weighted scale for this analysis.

Table 5.5

MIDDAY COMMUNITY NOISE LEVELS

1961/1962 - 1971

	dBA		
location	1961/1962	1971	change
Camarillo	43.6	49.9	+6.3
Camarillo State Hospital	41.5	43.2	+1.7
Oxnard	46.8	55.3	+8.5
Port Hueneme	47.0	50.6	+3.6

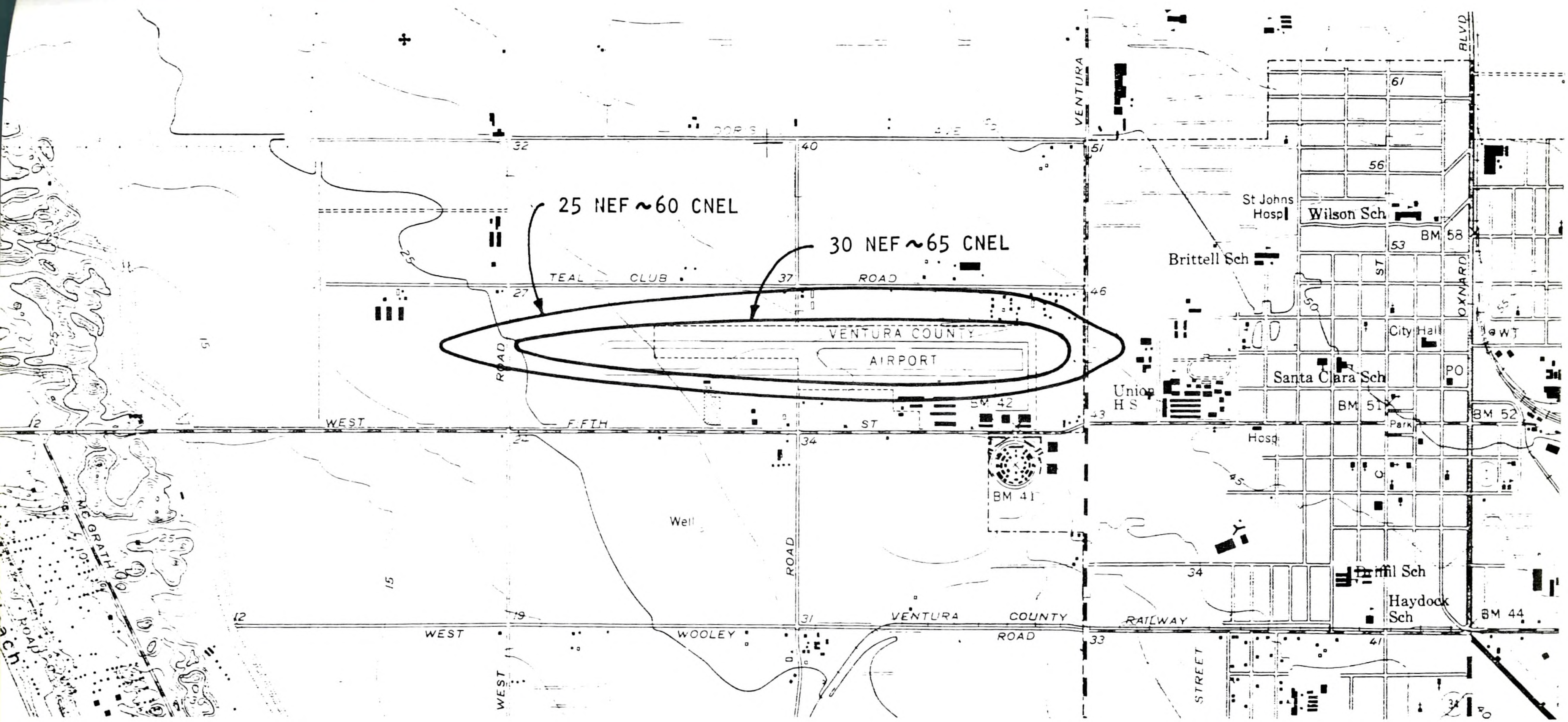
Table 5.6

QUALITATIVE DESCRIPTORS OF
URBAN AND SUBURBAN DETACHED HOUSING RESIDENTIAL AREAS
AND APPROXIMATE DAYTIME AVERAGE NOISE LEVEL.

	DAYTIME AVERAGE NOISE LEVEL IN dBA*	
Description	Typical Range	Average
Quiet Suburban Residential	41 - 45	43
Normal Suburban Residential	46 - 50	48
Urban Residential	51 - 55	53
Noisy Urban Residential	56 - 60	58
Very Noisy Urban Residential	61 - 65	63

* Sound pressure level in decibels re 0.0002 microbar, A-weighting.

Source: Anon., Community Noise, National Technical Information Document 300.3, Springfield, Virginia, National Technical Information Service. Prepared for EPA by Wyle Laboratories, December 1971.



	Operations
Twin Otters	38
General Aviation	430

Figure 5.2 Estimated Noise Contours for Current Operations at Ventura County Airport

5.5 Noise Impacts

The transfer of commercial and general aviation operations from the present airfield to the former Oxnard AFB, and the intensification of use of other facilities at Oxnard AFB, will cause changes in the noise environment. Although general aviation operations would still occur at the present airport though at a lower level, the elimination of commercial operations and transfer of some general aviation operations would result in a decrease in the frequency and level of intruding noise at the current airport. Even if the level of general aviation operations were not to decrease, this conclusion would still be valid.

The following analysis is based upon projected levels of aircraft operation at the proposed airport complex in 1975. This projection is based upon the anticipated number and mix of commercial and general aircraft operations which would occur under certain operational restrictions. In their application for Oxnard Air Force Base,[18,21] Ventura County stipulated the following operational restrictions to insure compatibility of the airport with the surrounding community:

a. The main runway threshold shall be placed 3000 feet west of its present location, providing a usable surface of 150 x 6000 feet.

b. The preferred runway for takeoff shall be Runway 26 whenever aircraft performance allows this use and the tailwind component does not exceed 10 knots.

c. The preferred runway for landing shall be Runway 08 whenever aircraft performance allows this use and the tailwind component does not exceed 10 knots.

d. Noise abatement procedures shall be in effect for all arrivals and departures. Aircraft shall follow specific traffic patterns without deviation, except in an emergency, and make appropriate power adjustments within safety limits to prevent noise levels from exceeding those prescribed by law.

e. Landings and takeoffs of twin-wheel aircraft in excess of 115,000 lbs. gross weight are prohibited except as individually approved by the Airport Supervisor.

f. Ground operation of jet engines shall be held to a minimum at all times.

g. The airport will be closed between 10 p.m. and 7 a.m. except in emergencies, with the understanding that the County will continue to provide existing services at existing airports.

h. The airport VFR traffic pattern shall be placed to the south of the airfield. Overflight of populated areas below 2000 feet above ground level is prohibited, except under actual instrument conditions. Jet aircraft shall maintain at least 2000 feet above ground level as long as practicable prior to commencing landing approach.

i. Practice missed approaches will be made to the south under VFR conditions.

j. The County will negotiate with scheduled airlines and the FAA for a limit of 14 takeoffs and 14 landings per day by 1990 based on forecasted demand and environmental quality. It is the County's intention to operate in accordance with noise contours listed in "k" below in that these contours were based upon 14 takeoffs and 14 landings per day. However, scheduled airline operations shall be in accordance with Federal noise standards now being formulated by the EPA or other Federal agencies rather than the provisions of Paragraph "k" below at the time such Federal noise standards for airports or aircraft operations are promulgated.

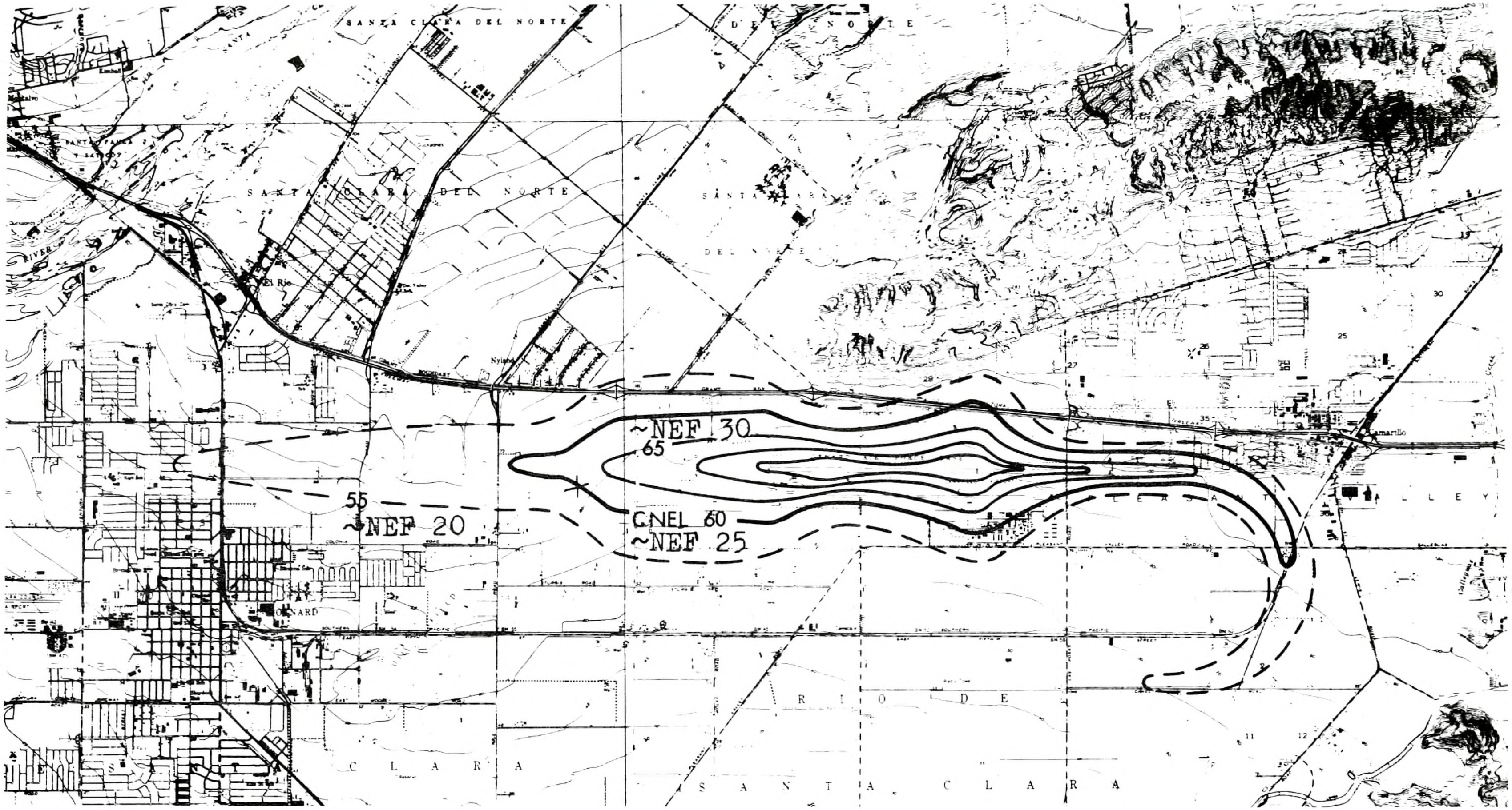
k. Aviation activities shall conform within the estimated CNEL = 60 dB noise contour for use as a commercial aviation facility (1975), according to Figure 2 of the Environmental Impact Study of the Camarillo Airport prepared for the Ventura County Board of Supervisors by Wyle Laboratories and dated October 1970.[17]

The operational restrictions proposed by Ventura County are intended to limit the CNEL = 60 dB noise contour to that resulting from the projected levels of aircraft operation in 1975, as indicated in Reference 17.

Subsequent to the Ventura County application, the Federal Aviation Authority (FAA) revealed that it agreed to and accepted the terms of the "Proposed Operating Restrictions" and "Airport Operations and Maintenance Plan" as revised and adopted by Ventura County on February 26, 1974. However, these restrictions will not be included in the deed of conveyance.[22] Consequently, the proposed restrictions are considered as a part of the proposed plan by the authors of this statement.

The estimated noise contours for projected levels of aircraft operation in the year 1975 are shown in Figure 5.3.[17] Single event noise contours for the operation of a current two-engine turbofan aircraft are shown in Figure 5.4. These estimates accounted for anticipated 1975 methods and practices of aircraft noise attenuation. These estimates, performed by Wyle Research Laboratories for Adrian Wilson, were reviewed by the consultant as were the assumptions upon which they were based. These noise contour estimates were prepared in 1970 wherein "noise characteristics (of aircraft)" used in their estimation have been based on conservative selections from available data. These assumptions of noise characteristics were compared with currently available data, e.g., Reference 19, for two-engine turbofan aircraft which are the dominant factor in determination of the noise contours. The results of this comparison indicated that the assumed aircraft noise characteristics were valid. Based on this comparison and the fact that the calculational procedure employed in 1970 (Society of Automotive Engineers Draft AIR 1114) is still valid, these estimates of noise contours are considered representative of the current state-of-the-art.

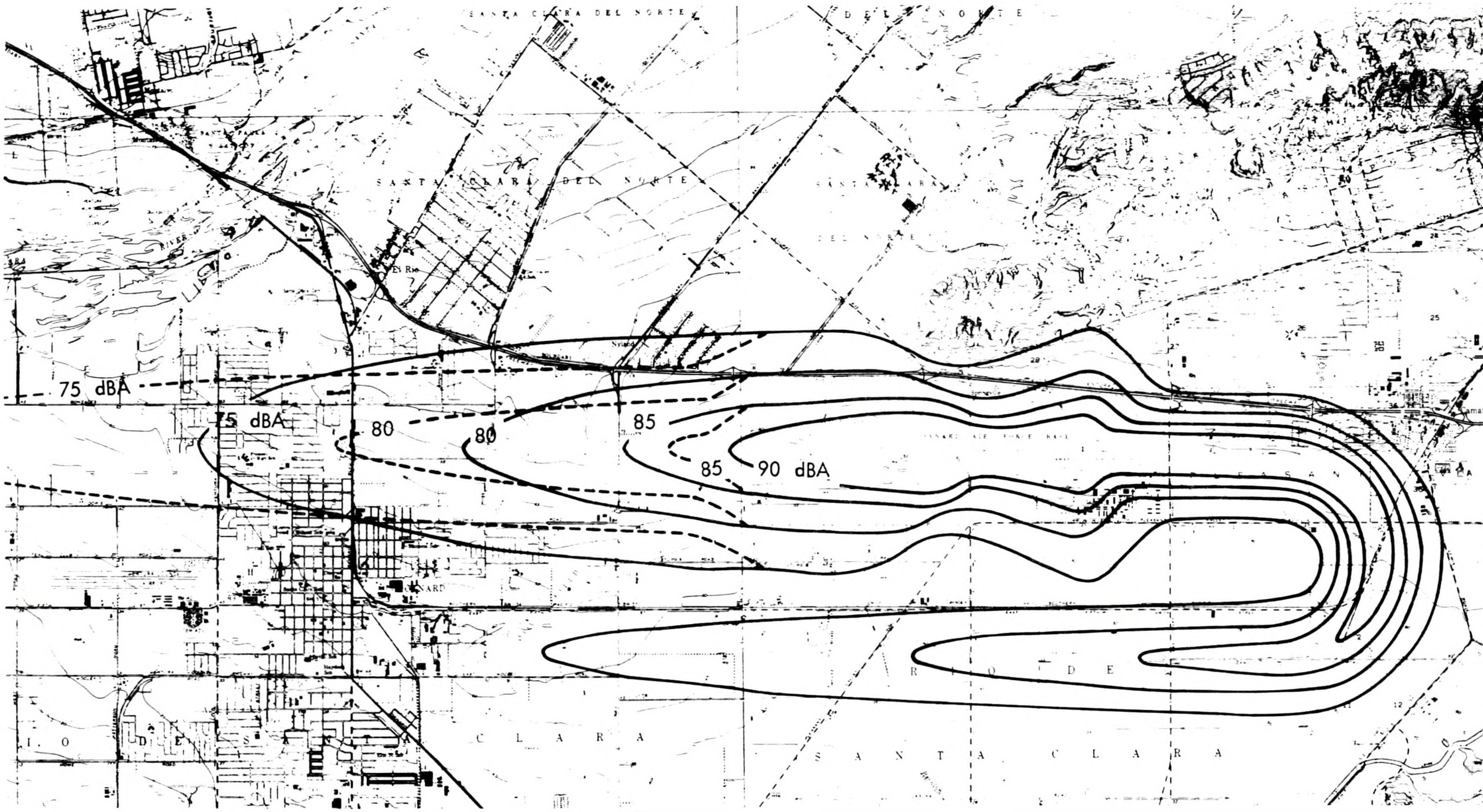
A consultant for the City of Camarillo, Randall L. Hurlburt,[20] took exception with various aspects of the Wyle study. However, the authors of this EIS contend that the assumptions, methodology, and findings of the Wyle study are valid.



Aircraft Type	Daily Operations
2-Engine Jet (737/DC-9)	28
Twin Otter	26
General Aviation	306

Source: Wyle Laboratories Research Staff
El Segundo, California

Figure 5.3 Estimated Noise Contours with Proposed Project (1975)



---- with power cutback at 1500 ft altitude
—— without power cutback

Source: Wyle Laboratories Research Staff
El Segundo, California

Figure 5.4. Single-Event Noise Contours (in dBA) for Operations of 2-Engine Turbofan Aircraft (DC-9/737)

In general, current and proposed land use within the 65 CNEL/30 NEF contour is compatible with the standards, although the contour approaches the fringes of current residential land use in Camarillo as well as the Regional Occupational Program School and high school facilities at the airport. The airport and surrounding lands are within the City of Camarillo, and surrounding lands are subject to the Camarillo City zoning authority. Therefore, the City of Camarillo would have prime responsibility for assuring land use compatible with the airport noise environment.

The single event operation of jet aircraft at the airport complex will cause significant disturbance to some residential areas in Oxnard, Nyland, and Camarillo. Very little disturbance will occur at Camarillo State Hospital, while Fremont Junior High School in Oxnard will be occasionally disturbed.

The Regional Occupational Program School, high school facilities, and other nonairport-related activities at the airport will be frequently disturbed. Despite the fact that these facilities are outside the 65 CNEL contour and therefore would not be impacted according to state standards, disturbances will occur. As revealed in Figure 5.4, the exterior peak noise level for a single flight of a two-engine jet commercial aircraft will be on the order of 80 dBA. This would result in an interior peak noise level of 60-70 dBA, which is sufficient to disrupt classroom discussion. At times, the duration of these peak noise levels will be several seconds if jet engine runups occur at that end of the runway.

The other potential source of long-term changes in the noise environment is the change in vehicular traffic on the supporting roadways. This is discussed in the section on "Traffic" and is the basis for this traffic noise impact analysis.

As mentioned earlier, vehicular traffic is the major component of the current noise environment in the general vicinity of Oxnard, Camarillo, and Oxnard Air Force Base. Reference 5 indicates that average noise levels from free-flowing traffic are a logarithmic function of average speed, vehicle volume, and distance from the roadway. At a given distance from a roadway, noise levels are more sensitive to changes in average speed than to changes in traffic volume. A doubling of traffic volume increases average noise levels by 3 dBA, whereas a doubling of average speed increases average noise levels 6 dBA.

Traffic will increase on Ventura Freeway (US 101), Las Posas Road, Pleasant Valley Road, and East 5th Street. This increase in daily traffic will increase average and roadside noise levels slightly. Increased congestion during peak hours on Las Posas Road would result in increased volume and decreased average speed which, in this case, would result in an unchanged average noise level. However, the variability in noise level will increase, and hence its potential annoyance. The changes in noise level or on the noise environment are not considered significant because they will be minimal.

The County has adopted the 60 CNEL (~NEF 25) as opposed to the CNEL 65 contour required by State of California regulations.[7] The controlling factor in the list of operating regulations is (k) which in effect says that the level and type of commercial and general aviation operations shall be restricted so as not to cause an increase in the land area within the CNEL 60 contour shown in Figure 5.4. Theoretically, the level of operations could be increased when new quieter aircraft become available, or if current aircraft are quieted through a retrofit program.

Short-term impacts from construction-generated noise will not be significant during the construction at the terminal as there are no sensitive receptors in the vicinity.

5.6 Unavoidable Adverse Impacts

A. The proposed project will result in the disturbance of some residents of Camarillo, Oxnard, and Nyland by noise from aircraft operations.

B. Educational and other nonairport-related activities at the airfield will be frequently disrupted.

5.7 Mitigating Measures

A. The educational facilities at the airfield should be acoustically modified to attenuate noise from airfield operations to acceptable interior levels.

B. An aircraft noise monitoring program should be instituted to confirm and refine the predictions made of noise contour location, and to identify areas where terrain and/or meteorology may cause localized intensification of aircraft noise.

5.8 Alternatives

5.8.1 Educational Complex

This alternative use does not include any aircraft operations; therefore, associated noise impacts would not occur including the beneficial impact of reduced noise from reduced operations at the present county airport. However, the impacts associated with vehicular traffic will be substantial. Assuming the roadways would be modified to accommodate the increased traffic, significant increases in average noise levels would occur along Las Posas Road north of Pleasant Valley Road, and along Pleasant Valley Road. The increase along Las Posas Road would exceed 3 dBA, and residential or other sensitive land uses would not be compatible with the resulting noise environment for distances up to 100 feet from the roadway. The increase on Pleasant Valley Road would be on the order of 2 to 3 dBA. The increase in average noise level along Las Posas Road south of Pleasant Valley Road will be in excess of 1 dBA, whereas the increases in average noise levels on Ventura Freeway and on East 5th Street would be on the order of 1 dBA or less.

The increased noise levels along Las Posas Road north of Pleasant Valley Road, and along Pleasant Valley Road, will impact future planning decisions as to land use contiguous to these roadways. If changes in land use are planned, (current use is predominately agricultural), care must be taken to assure that future land uses are compatible with the anticipated noise environments.

Although the specific noise impacts associated with vehicular traffic would be greater, the overall noise impacts of the educational complex would less than the proposed airport complex because of the substantially greater noise due to jet aircraft.

5.8.2 Public Sale

As suggested in the Alternatives portion of the "Economics" section of this report, the most likely bidders at public sale would anticipate airport and airport-related industrial uses similar in type to those presently proposed in the county application. Although no firm alternative proposals now exist, other than the city and county plans previously discussed, it may be expected that the traffic impacts of such airport-related proposals would be essentially similar to those of the current county proposal.

5.8.3 No Action

Present environment would continue with no adverse impacts to the current noise environment.

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17. Environmental Impact Study of the Camarillo Airport, prepared for the Ventura County Board of Supervisors by Adrian Wilson Associates and Wyle Laboratories, October 18, 1970.

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19. Anon., Airplane Noise Levels, U.S. Department of Transportation, Federal Aviation Administration Advisory Circular 36-1, May 31, 1973.

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22. Letter from FAA to GSA dated March 22, 1974, regarding approved operating restrictions.

6.0 GEOLOGY/HYDROLOGY

6.1 Environmental Setting

6.1.1 Topographic Setting

Oxnard Air Force Base is located in the northeastern part of the Oxnard Plain, approximately 7 miles from the Pacific Ocean. The Oxnard Plain is a very gently sloping coastal plain bordered by mountains on the north, east, and southeast. On the southwest, the plain borders the Pacific Ocean from Point Mugu northwestward nearly 15 miles to the city of Ventura. The plain extends, on the average, approximately 10 miles inland, but several alluvial valleys create an irregular border with the highlands on the northeast. The Santa Clara River flows in a southwest course along the northwest margin of the plain, while Calleguas Creek traverses the southeastern margin of the plain.

The air base lies on nearly level ground about one-half mile south of the Camarillo Hills, a narrow southwest trending ridge which ranges in elevation from approximately 400 feet near the southwest end to over 800 feet at the northeastern portion. The natural ground surface at the air base slopes very gently to the southeast. Elevations range from 86 feet at the northeastern corner of the property, to approximately 53 feet at the southeast corner, near the end of the runway.

6.1.2 Geologic Units

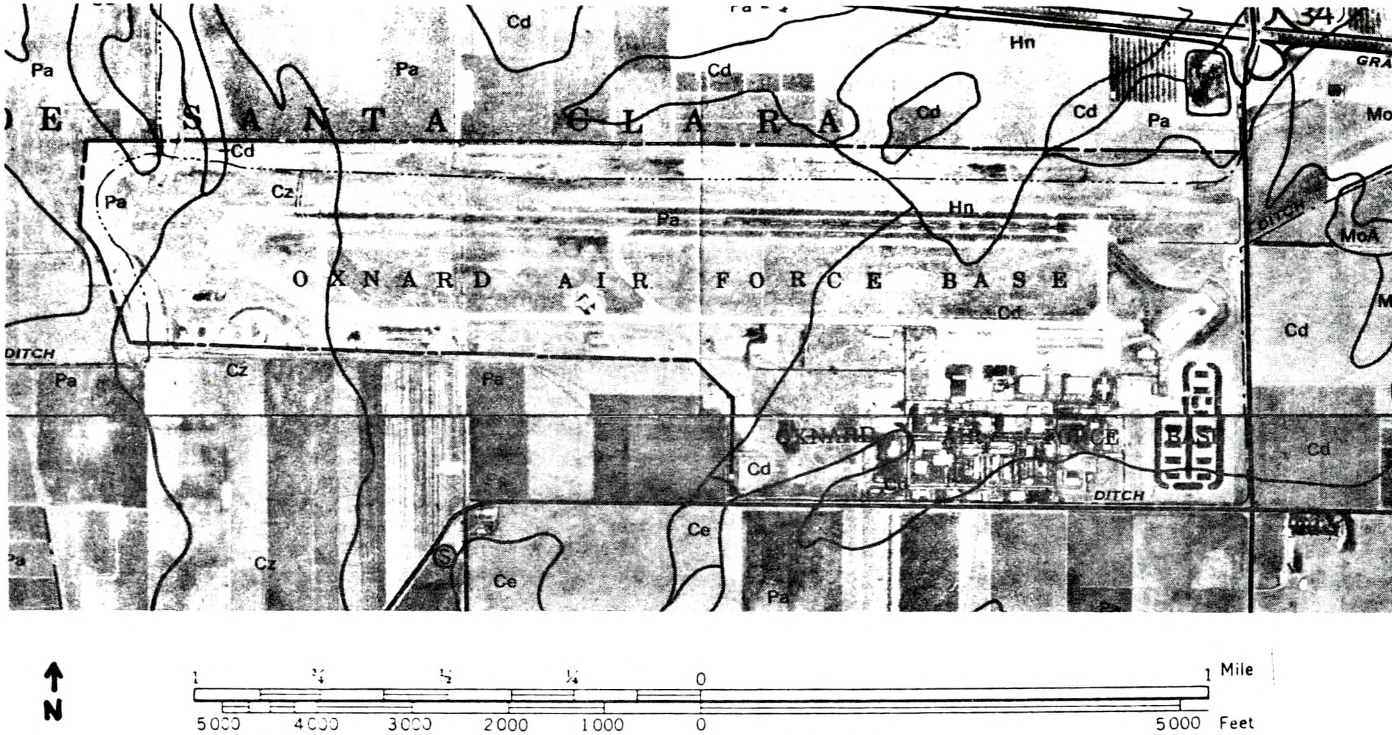
The Oxnard Plain is underlain by a rather thick sequence of unconsolidated deposits of silt, clay, sand, and gravel which range from late Pliocene or early Pleistocene marine sediments to Recent alluvium. Bedrock units upon which these sediments rest consist of Miocene marine sedimentary rocks and Miocene volcanic rocks. The thickness of the unconsolidated deposits, or the depth to bedrock in the vicinity of the air base, is probably on the order of 1000 feet.

Alluvium covers most of the Oxnard Plain, including the air base. The older unconsolidated sediments are exposed in the Camarillo and Las Posas Hills north and east of the air base and in the hills bordering the Oxnard Plain on the north and northwest. The Miocene sedimentary and volcanic rocks are exposed in the Santa Monica Mountains along the southwestern margin of the plain.

6.1.3 Soils

According to soils maps compiled by the U.S. Soil Conservation Service (Soil Survey - Ventura Area, California, 1970), the air base is covered primarily by soils of the Camarillo-Hueneme-Pacheco Association. As shown in Figure 6.1, the specific soils series mapped at the air base site include Pacheco silty clay loam, Camarillo loam, Hueneme sandy loam, and Cropley clay. All these soils are very deep (60 or more inches) and poorly drained. Typically the loamy soils are highly stratified below 40 inches with thin layers that range from sand to light clay in texture. The substratum of the Cropley clay is heavy clay, stratified only in places. Permeability ranges from moderately rapid for the sandy loam, to slow for the clay soil. Runoff is very slow to ponded, and there is no erosion hazard for any of the soils.

The major limitation of the soils at the air base is wetness caused by poor drainage and high seasonal water table. Because of the poor drainage characteristics, all these soils are subject to infrequent flooding. Careful management is essential to avoid raising the water table. Unless artificially drained, these soils have a seasonal high water table within two to three feet of the surface. The Cropley clay has the additional limitation of being highly expansive.



LEGEND: <u>Map Symbol</u> <u>Soil</u>

Map Symbol	Soil
Cd	Camarillo loam
Ce	Camarillo loam, sandy substratum
Cz	Cropley clay, calcareous variant
Hn	Hueneme sandy loam
Pa	Pacheco silty clay loam

SOURCE: Soil Survey of Ventura Area, Calif. Map Sheet 37 and 38, U.S. Soil Conservation Service, 1970

Figure 6.1 Soils Map of Oxnard Air Force Base Area

6.1.4 Seismic Setting

The earthquake history of Ventura County, particularly the popular southern part, has been dominated by small to moderate shocks. Until 1973, no earthquake greater than Richter magnitude 4.7 had originated within the county or the immediate area. Although accurate instrumental recordings of shocks are not available prior to 1934, a review of the descriptive, less accurate records from 1769 to 1934 indicate a similar earthquake history for this period.

Within the past year (1973), however, two earthquakes greater than magnitude 4.7 have occurred within southern Ventura County. On February 21, 1973, a moderate-sized earthquake (Richter magnitude 6.0) occurred just offshore from Point Mugu. Although there was no loss of life, this earthquake did cause minor damage to structures throughout the Oxnard region. A second moderate-sized earthquake (M.=4.8) occurred on August 6, 1973, about 40 km offshore from Point Mugu and 7 km southwest of Anacapa Island. This event, like the Point Mugu earthquake, was felt from Santa Barbara to the Los Angeles area and beyond.

The very deep focus (17 km) of the Point Mugu earthquake could not be identified with any specific fault zone; the Anacapa Island earthquake (focal depth 15 km) may have been associated with the eastern extension of the Santa Cruz Island fault.

Both of these earthquakes, however, are associated with a complex zone of deformation that extends in an east-west direction along the southern front of the Transverse Ranges geomorphic province. In the Oxnard Plain area, this zone occurs along the south flank of the Santa Monica Mountains. This zone, which can be traced eastward as far as Cajon Pass north of San Bernardino, has been characterized by north-over-south reverse faulting since at least Pleistocene time. The above mentioned earthquakes, as well as the San Fernando earthquake of February 9, 1971, indicate that the north-south stress that caused the past Pleistocene and Holocene faulting probably continues to the present. Thus, faults within the Transverse Ranges province which show evidence of Pleistocene activity should be considered active until further evidence proves otherwise.

In the immediate vicinity of the Oxnard Air Force Base, the Camarillo fault is believed to show geologically recent movement. Although the east-west trace of the Camarillo fault is concealed by alluvium, it is believed to extend along the northern side of Pleasant Valley, through the central part of the city of Camarillo, ending just east of Las Posas Road.

A similar geologically recent fault zone (the Springville fault zone) occurs just north of the air base at the base of the Camarillo Hills. The vertical movement along this fault has displaced the strata on the north upward, thus exposing the older unconsolidated Plio-Pleistocene sediments in the Camarillo Hills.

Besides the earthquakes that have occurred within Ventura County, numerous moderate-to-large earthquakes with epicenters located outside the county have subjected the area to strong shaking. Historically the effects from these shocks have been more serious than the effects from local shocks. Damage caused by "outside" earthquakes has been considerable in Ventura County but there has been no recorded loss of life. The larger earthquakes that have caused damage in southern Ventura County include: offshore Santa Barbara, 1812, 1925, and 1941; near Fort Ejon, on the San Andreas fault in 1857; and, more recently, near San Fernando in 1971.

6.1.5 Surface Drainage

Most of the surface drainage in the eastern part of the Oxnard Plain -- including the air base -- is carried to the Pacific Ocean at Mugu Lagoon by the southeastward flowing Revolon Slough. Callequas Creek, the other major drainage channel in the eastern Oxnard Plain, flows intermittently along the eastern margin of the plain, receiving runoff primarily from the western slope of the Santa Monica Mountains. Revolon Slough receives water from a network of drainage ditches carrying storm water runoff and excess irrigation water.

Two drainage ditches occur on the air base property. Along the north side of the runway, a wide swale known as the Camarillo Hills drain carries runoff from the area northeast of the base to Revolon Slough, about one-half mile west of the base. Runoff contained in a small wash that flows westward from the city of Camarillo is directed southward, just inside base property, along Las Posas Road to Pleasant Valley Road at the southern boundary of the base. The Pleasant Valley Road drain eventually joins Revolon Slough just south of the Southern Pacific tracks, about a mile southwest of the base.

Storm water runoff from most of the base flows into the Pleasant Valley Road drain. Runoff from the western end of the runway flows into a drainage ditch along the western boundary of the base. All runoff from the base eventually empties into Revolon Slough.

The area immediately west of the base has experienced drainage problems for many years. The high water table conditions that exist throughout much of the Oxnard Plain, coupled with the peak flows in Beardsley Wash and Revolon Slough during periods of high rainfall and the undercapacity of the existing surface drains, have caused frequent flooding in this area.

County flood control bond issues have been approved to increase the capacity of the Camarillo Hills drain along the north side of the runway and the Pleasant Valley Road drain by constructing reinforced concrete channels. However, as of this date (October 1973) funds have not been appropriated for either project.

The above projects will not in themselves solve the drainage problems west of the base; improvements to the Revolon Slough and Beardsley Wash drainage channels are also needed. Provided federal funds are made available, improvements to the Revolon Slough-Beardsley Wash drainage channels are expected within the next 10 years.

6.1.6 Groundwater

Large amounts of groundwater are contained in the unconsolidated Pleistocene sediments underlying the Oxnard Plain. Most of the water is pumped from one of two major water-bearing zones -- the Oxnard aquifer or the Fox Canyon aquifer.

The Oxnard aquifer is the main shallow aquifer in the Oxnard Plain, particularly in the central portion of the plain in the vicinity of the city of Oxnard. But from Oxnard Air Force Base eastward, the deeper Fox Canyon aquifer is the principal water-bearing zone. Although the wells on the air base extend into the Fox Canyon zone, water is also obtained from the Oxnard aquifer.

Through most of the Oxnard Plain, a layer of relatively impermeable deposits lie at the top of the Pleistocene deposits, directly above the Oxnard aquifer and at the base of the alluvial deposits. These impermeable deposits of fine silt and clay, collectively called the clay cap, inhibit the downward movement of percolating rainfall thus effectively preventing the underlying aquifer from being recharged by direct precipitation.

The primary source of recharge to the aquifers beneath the Oxnard Plain is underflow from the Montalvo groundwater basin. The Montalvo Basin is is an area of about 6,400 acres north of the city of Oxnard where the clay cap is absent. Because there are permeable materials that extend from the surface downward to the Fox Canyon aquifer, this area is used extensively to recharge the aquifers beneath the Oxnard Plain by water spreading.

Most of the water that leaves the Montalvo Basin as underflow moves seaward through the Oxnard aquifer. A much smaller quantity moves downward beneath the Saticoy spreading grounds to the Fox Canyon aquifer where the water then moves westward toward the ocean and southward toward the centers of pumping near Camarillo. During periods of high water levels, underflow from the Montalvo Basin moves seaward above the clay cap.

In general, movement of groundwater beneath the Oxnard Plain is seaward. However, near the coast, where excessive withdrawals due to increased population and a period of dry years, the water level in the Oxnard aquifer has been depressed well below sea level, thus causing sea water to flow into the aquifer. So far the extent of this sea water intrusion is limited primarily to areas near Port Hueneme and Point Mugu, but if excessive pumping continues and the advance of sea water is not controlled, fresh water beneath a large part of the Oxnard Plain may become degraded beyond acceptable limits.

The storage volumes of the Oxnard aquifer and the Fox Canyon aquifer, landward of the coastline, are estimated by Mann and Associates (1959) to be 1.2 million acre-feet and 11 million acre-feet respectively. Increased withdrawals from the Fox Canyon aquifer in the vicinity of Camarillo and eastward have caused a declining water table in this area.

Despite the fact that the water levels in the major aquifers have declined over the years, most of the Oxnard Plain is troubled with "high water table" conditions. This apparent discrepancy is explained by a semiperched water table. Water, primarily irrigation water, is retained above the clay cap. The result is a "water table" that lies within four or five feet of the surface in many parts of the plain, including the air base.

6.2 Geologic Hazards

Geologic Hazards that could have an adverse effect on present and future facilities at the Oxnard Air Force Base include: flooding, earthquakes, expansive soils, and subsidence. The following discussion of these various potential hazards has been taken largely from the land resources section in the Ventura County Resources Plan and Program - Open Space and Conservation Elements, June 1973.

6.2.1 Flooding

The floodplain of a 100-year flood in the Revolon Slough-Beardsley Wash drainage area includes the western part of Oxnard Air Force Base. Although a 100-year flood has an average recurrence interval of 100 years, it may occur in any given year and may even occur more than once a year. The 100-year floodplain was chosen by the Army Corps of Engineers as a basis for a study on the entire Santa Clara River basin. Thus, according to this study, under the present conditions the western part of the air base will be flooded at least once every 100 years. Actually, that part of the base can be expected to be flooded much more frequently than this. The Revolon Slough-Beardsley Wash area immediately west of the air base has been troubled with flooding following most periods of long, intense rainfall.

6.2.2 Earthquakes

Earthquakes must be considered a major geologic hazard to any development on the base, as well as throughout southern Ventura County. The active seismic history of the Southern California region, and the presence of faults within southern Ventura County that show signs of geologically recent activity, indicate the area will experience potentially damaging earthquake shocks during its economic lifetime. Although accurate prediction of time, place, or severity of future earthquakes is not possible at this time, general conclusions about future occurrences of earthquakes can be made based on past activity and indications of present levels of stress. An earthquake of a magnitude of 6.1 is expected to occur somewhere in Southern California each year. The recurrence interval of an earthquake of magnitude 8.0 has been estimated at 52 years. An 8.0 earthquake occurring nearly anywhere in Southern California would probably cause damage in Ventura County.

The major seismic hazard at the air base will result from ground shaking and the resulting effect on the rock materials and man-made structures. The unconsolidated sediments, upon which the air base sits, will tend to amplify any ground shaking that occurs. The fact that these sediments are also water saturated to within approximately 5 feet of the surface further aggravates the problem of ground shaking. Severe shaking of these sediments could cause them to lose their internal cohesive strength and behave as a liquid. Such a phenomenon is called liquefaction. If liquefaction occurs, structures on the surface may settle differentially and underground utility lines may be forced toward the surface and broken.

The Ventura County Department of Public Works has stated that unless seismic investigations are conducted and adequate earthquake-resistant design provisions are incorporated, no major structure should be placed on land susceptible to amplified seismic shaking. The Ventura County Department of Public Works has also stated that it is not currently deemed possible to design structures capable of withstanding disruptions caused by liquefaction of water-bearing sediments.

During seismic disturbances, a significant potential will exist for rupturing fuel storage tanks. Fuel leakage, resulting from such a rupture, could infiltrate into the groundwater or could contaminate surface water if swept away by surface runoff.

6.2.3 Subsidence

Continued extractions of groundwater and petroleum from the Oxnard Plain might contribute to subsidence. Slight changes in the surface elevation caused by subsidence can cause damage to long structures such as canals, sewers, drains and water mains. Water wells can also be damaged to the point of requiring re-drilling. Subsidence may also change the gradient of streams, canals, and drainage ditches causing flow problems.

Subsidence is occurring in the western and southern part of the Oxnard Plain; however, further investigation is necessary to determine the exact areas of subsidence and the cause or causes.

6.2.4 Expansive Soils

Highly expansive soils can cause foundation problems for structures built upon them. Because of a certain type of clay, some soils greatly increase in volume when wet and shrink when they dry out. Structures placed upon such soils may rise each wet season and fall each dry season. The amount of this vertical movement may vary under various sections of the structure, resulting in damage to the foundation and distortion of the structure.

The western end of the runway on the air base is underlain by an expansive soil known as "Cropley clay, calcareous variant" (see Fig. 6.1). Proposed new construction in this area of the base is limited to a taxiway. Since the western end of the runway was previously built upon this soil, it is assumed that the limitations can be overcome.

6.3 Impacts

6.3.1 Geologic Impacts

Development of the Oxnard Air Force Base as an airport industrial complex will have little impact on the geologic environment. Some soil erosion could occur from construction sites where the soil is disturbed but, unless these construction activities occur during the rainy season and the excavated material is piled near a storm drain without any protection, the amount of eroded material entering storm drains is expected to be very minimal.

The flat topography of the air base not only minimizes the erosion potential, but also effectively eliminates other impacts on the geologic environment such as alteration of the topography and effects on slope stability.

6.3.2 Hydrologic Impacts

The volume of stormwater runoff from the base will be increased after the proposed development because of an increase in the amount of impervious cover (new buildings, parking lots, taxiways, etc.). New development in the runway area and an area south of the runway, adjacent to the proposed interim air terminal building, will result in approximately 11 acres of additional impervious cover. Runoff from this area will eventually enter Pleasant Valley Road drain along the southern edge of base property. Development of a new air terminal building and related facilities on the north side of the runway will equal approximately 22 acres of impervious cover. Runoff from this area will enter the Camarillo Hills drain which runs along the north side of the runway.

It is assumed that about 80 percent of the precipitation which falls on an impervious surface, and about 20 percent which falls on a natural pervious surface, becomes stormwater runoff. Based on an average annual rainfall of 12 inches, the amount of runoff entering the Pleasant Valley Road drain and the Camarillo Hills drain will be increased by approximately 8.6 acre ft/yr and 17.6 acre ft/yr respectively.

Additional storm drainage pipes or channels will be required for the new areas of development on the base.

6.4 Unavoidable Adverse Impacts

The amount of stormwater runoff from the air base will be increased, due to an increase in impervious surface area resulting from the construction of new terminal facilities, etc.

6.5 Mitigating Measures

6.5.1 Geologic Hazards

A detailed soils study and seismic response study should be performed on new construction sites on the base in order to determine the limitations created by soil and seismic conditions, and to design the proposed structure accordingly including the strengthening of fuel tanks and utility lines in areas where seismic studies show potentially dangerous conditions.

6.5.2 Storm Drainage

To avoid possible drainage problems, development of the north terminal area should proceed after the planned improvements by the Ventura County Flood Control District are made on the Camarillo Hills drain and the Revolon Slough-Beardsley Wash channels.

6.5.3 Soil Erosion

In order to avoid excessive soil erosion during construction of new facilities, operations involving soil exposure should be limited to the dry season.

6.6 Project Alternatives

6.6.1 Educational Complex

Since there is no substantial increase of impervious surface area planned for the proposed educational complex, there will be no significant increase in stormwater runoff. However, proposed agricultural training will cause additional irrigation runoff.

Other geologic/hydrologic impacts will be essentially the same as those discussed for the airport complex.

6.6.2 Public Sale

As suggested in the Alternatives portion of the "Economics" section of this report, the most likely bidders at public sale would anticipate airport and airport-related industrial uses similar in type to those presently proposed in the county application. Although no firm alternative proposals now exist, other than the city and county plans previously discussed, it may be expected that the Geology/Hydrology impacts of such airport-related proposals would be essentially similar to those of the current county proposal.

6.6.3 No Action

No new impacts will result from the adoption of this alternative.

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2. Ellsworth, W.L., et al. Point Mugu, California Earthquake, 21 February 1973, and Its Aftershocks, U. S. Geological Survey and California Institute of Technology, Preliminary Report.

3. County of Ventura, Department of Public Works, Geology and Mineral Resources Study of Southern Ventura County California - Preliminary Draft, in cooperation with U. S. Geological Survey, November 1972.

4. County of Ventura, Planning Department, Ventura County Resources Plan and Program - Open Space and Conservation Elements, June 1973.

5. Jennings, C.W. and Strand, R. G., Geologic Map of California - Los Angeles Sheet, California Division of Mines and Geology, Scale 1:250,000, 1971.

6. Page, R.W. Geology and Groundwater Appraisal of the Naval Air Missile Test Center Area, Point Mugu, California, U. S. Geological Survey Water-Supply, Paper 1619-S, 1963.

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7.0 BIOLOGY

7.1 Environmental Setting

The biotic environment of the existing Oxnard Air Force Base is one which has been substantially modified by human use. The result of this modification has been to domesticate the landscape and, consequently, the flora and fauna. The long-term results of man's activities in the area have been simplification of the ecosystem and replacement of native plant species with accidental introductions and cultivation of ornamental and agricultural species.

Within the simplified landscape of the project area and vicinity, three types of habitat are offered: waste fields and grasslands, agricultural, and developed urban/suburban. Each of these habitats is colonized by flora and fauna which are able to exploit unique environmental characteristics.

Waste fields and grasslands are found on the current Air Force base property bordering the runway and taxi area. They are also found in vacant lots in Camarillo, and sparsely distributed around farm buildings in the surrounding agricultural land. Waste fields are either formerly cultivated fields or former natural plant communities once cleared and since revegetated by weedy species. Included under this heading are windbreaks and hedgerows. The dominant vegetation is usually grass, such as wild oats, and some trees are present.

Star thistle, prickly lettuce, bindweed, mustard, and saltbush are important waste field species. Bindweed appears to be the earliest pioneer species in wastefields, while star thistle dominates the well-developed waste field communities. Common birds of the fields and grasslands include the mourning dove, house finch, California quail, plain titmouse, orange-crowned warbler, red-tailed hawk, and sparrow hawk. Burrowing owls are particularly abundant in the grass strip north of the existing runway.

A small but important biologic zone found within the waste fields of the air force base is the drainage ditch along the north boundary and the bog to which it drains. Since riparian vegetation is limited, birds and mammals normally associated with stream banks are largely absent, but amphibians are well-represented.

The agricultural habitat refers to the row crops (e.g., celery, tomatoes, and strawberries) of the area surrounding the existing air force base. Crops themselves are the primary vegetative cover. The agricultural habitat supports several bird species, among which the Brewer and red-winged blackbirds, common crow, yellow-billed magpie, western meadowlark, cedar waxwing, and starling predominate. The western toad, coast garter snake, dusky-footed woodrat, California vole, and raccoon are also typical inhabitants or visitors.

Developed urban land includes residential, industrial, and commercial areas, as well as roads and other facilities. The vegetation here is often minimal consisting of introduced plants, either cultivated or escaped, and some native plants, such as sycamore and California walnut, which are often reintroduced. Bottom riparian vegetation, such as watercress, duckweed, and cattails, is occasionally present in drainage structures.

The scrub jay, acorn woodpecker, rock dove, house finch, western bluebird, golden-crowned sparrow, white-crowned sparrow, violet-green sparrow, Bullock's oriole, mockingbird, robin, and Anna's hummingbird are a few typical "backyard" bird species. Similarly, the botta pocket gopher, house mouse, black rat, California ground squirrel, bullfrog, Pacific tree frog, western skink, and gopher snake may be found in an urban habitat, providing it is not an extremely developed area.

A list of the species which would be observed in each of the habitat types is given in Table 7.1

Table 7.1

FLORA AND FAUNA WHICH MAY OCCUR ON AND AROUND THE PROJECT SITE

Plants	Waste Fields, Grassland	Agri-cultural	Developed Urban
Acacia sp. Acacia			X
Acer macrophyllum Big-leaf maple			X
Acer negundo ssp. *californium* Box elder			X
Aesculus Californica Buckeye			
Anagallis arvensis Scarlet pimpernel		X	X
Artemisia spp. Sagebrush	X	X	X
Atriplex semibaccata Australian saltbush	X	X	X
Asclepias fascicularis Milkweed	X	X	
Avena fatua Wild oat	X	X	
Baccharis pilularis Coyote brush	X		
Brassica campestris Field mustard		X	
Brassica geniculata Mustard		X	X
Centaurea solstitalis Star thistle, Barnaby's thistle	X	X	X
Cichorium intybus Chicory	X		

Table 7.1 (Cont'd)

Plants (cont'd)	Waste Fields, Grassland	Agri-cultural	Developed Urban
Cirsium arvense Canada thistle	X	X	
Conium maculatum Poison hemlock	X		
Convolvulus arvensis Bindweed	X	X	X
Cynara scolymus Artichoke	X		
Datura stramonium Jimson weed	X	X	
Dipsacus sylvestris Teasel	X		
Epilobium paniculatum	X	X	
Erigeron sp. Wild daisy	X		
Eschscholzia californica California poppy	X	X	
Eucalyptus sp. Eucalyptus			X
Ficus sp. Fig			X
Foeniculum vulgare Sweet fennel, anise	X	X	X
Fraxinus sp. Ash			X
Heliotropium curassavicum Heliotrope	X	X	X
Hedera helix Ivy			X

Table 7.1 (Cont'd)

Plants (cont'd)	Waste Fields, Grassland	Agri-cultural	Developed Urban
Hemizonia pungens Spikeweed	X		
Heteromeles arbutifolia Toyon, Christmas berry			X
Juglans californica California walnut			X
Juglans spp. English walnut			X
Lactuca scariola Prickly lettuce	X	X	X
Malva nicaeensis Mallow	X		X
Malva parviflora Cheeseweed	X	X	
Marrubium vulgare Horehound	X		
Melilotus albus White sweet clover		X	X
Mesembryanthemum sp. Ice plant			X
Olea europaea Olive			X
Opuntia sp. Prickly pear			X
Picris echioides Ox tongue	X		
Pinus spp. Pine			X

Table 7.1 (Cont'd)

Plants (cont'd)	Waste Fields, Grassland	Agri-cultural	Developed Urban
Platanus californica Sycamore			X
Polygonum spp. Knotweed, smartweed	X		
Populus fremontii Cottonwood			X
Prunus amygdalus Almond			X
Prunus armenaica Apricot			X
Prunus domestica Prune			X
Pyrus communis Pear			X
Quercus agrifolia Coast live oak	X		X
Raphanus sativa Wild radish	X	X	X
Rosa californica Wild rose			X
Rubus vitifolius California blackberry	X	X	X
Rumex crispus Curly dock	X	X	X
Sida hederacea Alkali mallow	X		X
Silybum marianum Milk thistle	X		
Taraxacum officinale Dandelion	X		X

Table 7.1 (Cont'd)

Plants (cont'd)	Waste Fields, Grassland	Agri-cultural	Developed Urban
Tribulus terrestris Puncture vine	X		
Vinca major Periwinkle			X
Vitis sp. Grape			X
Xanthium strumarium Cocklebur		X	
Unidentified grasses	X	X	X
Birds			
Brewer's blackbird *Euphagus cyanocephalus*	X	X	X
Red-winged blackbird *Agelaius phoeniceus*	X	X	X
Tricolor blackbird *Agelaius tricolor*	X	X	X
Western bluebird *Sialia mexicana*			
Chestnut-backed chickadee *Parus rufescens*			X
Brown-head cowbird *Molothrus ater*	X	X	X
Brown creeper *Certhis familiaris*			X

Table 7.1 (Cont'd)

Birds (cont'd)	Waste Fields Grassland	Agri-cultural	Developed Urban
Red crossbill *Loxia curvirostra*			X
Common crow *Corvus brachyrhynchos*	X	X	X
Mourning dove *Zenaidura macroura*	X	X	X
Rock dove *Columba livia*	X	X	X
Golden eagle *Aquila chrysaetos*	X		
House finch (linnet) *Carpodacus mexicanus*	X	X	X
Purple finch *Carpodacus purpureus*	X	X	X
Red-shafted flicker *Colaptes cafer*	X	X	X
Ash-throated flycatcher *Myiarchus cinerascens*	X	X	X
Olive-sided flycatcher *Nuttallornis borealis*			X
American goldfinch *Spinus tristis*	X		X
Lesser goldfinch *Spinus psaltria*	X		X
Black-headed grosbeak *Pheucticus melanocephalus*	X	X	X
Evening grosbeak *Hesperiphona vespertina*			X

Table 7.1 (Cont'd)

Birds (cont'd)	Waste Fields Grassland	Agri-cultural	Developed Urban
California gull *Larus californicus*	X	X	X
Herring gull *Larus argentatus*	X	X	
Ring-billed gull *Larus delawarensis*	X	X	X
Cooper's hawk *Accipiter cooperii*	X	X	X
Marsh hawk *Cyrcus cyaneus*	X	X	
Night hawk *Chordeiles*	X		
Red-shoulder hawk *Buteo lineatus*	X		
Red-tailed hawk *Buteo jamaicensis*	X	X	X
Sharp-shinned hawk *Accipiter striatus*	X	X	X
Sparrow hawk *Falco sparverius*	X	X	X
Allen's hummingbird *Selasphorus sasin*	X	X	X
Anna's hummingbird *Calypte anna*	X	X	X
Rufous hummingbird *Selasphorus rufus*	X	X	X
Prairie falcon *Falco mexicanus*	X		

Table 7.1 (Cont'd)

Birds (cont'd)	Waste Fields Grassland	Agri-cultural	Developed Urban
Crested or Stellar jay *Cyanocitta stellerii*	X	X	X
Scrub jay *Aphelocoma coerulescens*	X	X	X
Oregon junco *Junco oreganus*	X	X	X
Slate-colored junco *Junco hyemalis*	X		X
Killdeer *Charadrius vociferus*			X
Western kingbird *Tyrannus verticalis*	X		X
Golden-crowned kinglet *Regulus satrapa*			X
Ruby-crowned kinglet *Regulus calendula*	X		X
White-tailed kite *Elanus leucurus*	X		
Horned Lark *Eremophila alpestris*	X		
Yellow-billed magpie *Pica nuttallii*	X	X	X
Western meadowlark *Sturnella neglecta*	X	X	
Mockingbird *Mimus polyglottos*	X	X	X
Red-breasted nuthatch *Sitta canadensis*			X

Table 7.1 (Cont'd)

Birds (cont'd)	Waste Fields Grassland	Agri-cultural	Developed Urban
White-breasted nuthatch *Sitta carolinensis*	X		X
Bullock's oriole *Icterus bullockii*	X		X
Hooded oriole *Icterus cucullatus*			X
Barn owl *Tyto alba*	X	X	X
Burrowing owl *Speotyto cunicularia*	X		
Great-horned owl *Bubo virginianus*	X	X	X
Western wood pewee *Contopus sordidulus*	X	X	X
Ring-necked pheasant *Phasianus colchicus*	X	X	
Say's phoebe *Sayornis saya*	X	X	X
Band-tailed pigeon *Columba fasciata*	X	X	X
Water pipit *Anthus spinoletta*	X		
California quail *Lophortyx californicus*	X	X	X
Robin *Turdus migratorius*	X	X	X
Yellow-bellied sapsucker *Sphyrapicus varius*			X
Loggerhead shrike *Lanius ludovicianus*	X		

Table 7.1 (Cont'd)

Birds (Cont'd)	Waste Fields Grassland	Agri- cultural	Developed Urban
Common snipe *Capella gallinago*	X		
House sparrow *Passer domesticus*	X	X	X
Fox sparrow *Passerella iliaca*	X	X	X
Golden-crowned sparrow *Zonotrichia atricapilla*	X	X	X
Lark sparrow *Chondestes grammacus*	X		
Savannah sparrow *Passerculus sandwichensis*	X		
White-crowned sparrow *Zonotrichia leucophrys*	X	X	X
Starling *Sturnun vulgaris*	X	X	X
Barn swallow *Hirundo rustica*		X	X
Cliff swallow *Petrochelidon pyrrhonota*	X	X	X
Violet-green swallow *Tachycineta thalassina*	X	X	X
Western tanager *Piranga ludoviciana*		X	X
California thrasher *Toxostoma redivivum*	X	X	X
Hermit thrush *Hylocichla guttata*	X		X

Table 7.1 (Cont'd)

Birds (cont'd)	Waste Fields Grassland	Agri-cultural	Developed Urban
Swainson's thrush *Hylocichla ustulata*			X
Varied thrush *Ixoreus naevius*			X
Common bushtit *Psaltriparus minimus*	X	X	X
Plain titmouse *Parus inornatus*	X	X	X
Wrentit *Chamaea fasciata*	X	X	X
Brown towhee *Pipilo fuscus*	X	X	X
Rufous-sided towhee *Pipilo erythrophthalmus*	X	X	X
Hutton's vireo *Vireo huttoni*	X		X
Warbling vireo *Vireo gilrus*			X
Turkey vulture *Cathartes aura*	X	X	X
Audubon's warbler *Dendroica auduboni*	X	X	X
Orange-crowned warbler *Vermivora celata*	X		X
Townsend's warbler *Dendroica townsendi*			X
Wilson's warbler *Wilsonia pulsilla*			X

Table 7.1 (Cont'd)

Birds (cont'd)	Waste Fields Grassland	Agri-cultural	Developed Urban
Yellow warbler *Dendroica coronata*			X
Cedar waxwing *Bombycilla cedrorum*	X	X	X
Acorn woodpecker *Melanerpes formicivorus*	X	X	X
Downy woodpecker *Dendrocopus pubescens*	X		X
Hairy woodpecker *Dendrocopus villosus*	X		X
Nuttall's woodpecker *Dendrocopus nuttallii*	X		X
Bewick's wren *Thryomanes bewickii*	X	X	X
House wren *Troglodytes aedon*	X	X	X
Rock wren *Salpintces obsoletus*	X		
Amphibians			
Bullfrog *Rana catesbeiana*			X
Pacific tree frog *Hyla regilla*			X
Rough-skinned newt *Taricha granulosa*	X		
Arboreal salamander *Aneides lugubris*	X		

Table 7.1 (Cont'd)

Amphibians (cont'd)	Waste Fields Grassland	Agri-cultural	Developed Urban
California slender salamander *Batrachoseps attenuatus*	X		
Eschscholtz's salamander *Ensatina eschscholtzii*	X		
Tiger salamander *Ambystoma tigrinum*	X		
Spadefoot toad *Scaphiopus hammondi*	X		
Western toad *Bufo boreas*	X	X	X
Reptiles			
Lizards			
California horned lizard *Phrynosoma coronatum*	X		
Foothill alligator lizard *Gerrhonotus multicarinatus*	X		X
Western fence lizard *Sceleporus occidentalis*	X	X	X
Western skink *Eumeces skiltonianus*	X		X
Western whiptail *Cnemidophorus tigris*	X		
Snakes			
California king snake *Lampropeltis getulus*	X		

Table 7.1 (Cont'd)

Reptiles (cont'd)	Waste Fields Grassland	Agri-cultural	Developed Urban
Coast garter snake *Thamnophis elegans*	X	X	
Common garter snake *Thamnophis sirtalis*	X	X	
Gopher snake *Pituphos catenifer*	X	X	X
Mammals			
Marsupials			
Opossum *Didelphis marsupialis*	X	X	
Insectivores			
Broad-handed mole *Scapanus ketimanus*	X	X	
Shrew mole *Neurotrichus gibbsi*	X		
Bats			
Pallid bat *Antrozous pallidus*	X		
Carnivores			
Raccoon *Procyon lotor*	X	X	X
Striped skunk *Mephitis mephitis*	X	X	

Table 7.1 (Cont'd)

Mammals (cont'd)	Waste Fields Grassland	Agri-cultural	Developed Urban
Longtailed weasel *Mustela frenata*	X	X	
Rodents			
Botta pocket gopher *Thomomys bottae*	X	X	X
California pocket mouse *Perognathus californicus*	X		
Western harvest mouse *Reithrodontomys megalotis*	X		
House mouse *Mus musculus*	X		X
Deer mouse *Peromyscus maniculatus*	X		
Black rat *Rattus rattus*	X	X	X
Norway rat *Rattus norvegicus*	X	X	X
Dusky-footed woodrat *Neotoma fuscipes*		X	
California or Beechy ground squirrel *Citellus beechevi*	X	X	X
Western gray squirrel *Sciurus griseus*			X
California vole (meadow mouse) *Microtus californicus*	X	X	

Table 7.1 (Cont'd)

Mammals (cont'd)	Waste Fields Grassland	Agri-cultural	Developed Urban
Lagomorphs			
Audubon cottontail *Sylvilagus audibonii*	X		
Blacktail jackrabbit *Lepus californicus*	X		
Freshwater Invertebrates of Ponds, Bogs, and Streams			
Insects			
Water striders *Gerris* spp.			
Water boatman *Cenocorixa* spp.			
Back swimmers *Notonecta* spp.			
Giant water bugs *Belostoma* spp.			
Toad bugs *Gelastocoris* spp.			
Dragon-flies *Libellula* spp.			
Damsel-flies *Argia* spp.			
May-flies *Callibaetis* spp.			
Caddis-flies *Limnephilus* spp.			

Freshwater Invertebrates (cont'd)

Dobson-flies
Corydalus spp.

Predaceous diving beetles
Dytiscidae

Whirligig beetles
Gyrinidae

Water scavengers
Hydrophilidae

Mosquitos
Culex pipiens
Culex tarsalis
Culex pues
Culiseta inornata
Culiseta incidens
Aedes dorsalis

Midges
Chironomus spp.

Black flies
Simuliidae

Miscellaneous Invertebrates

Freshwater hydra
Hydra spp.

Freshwater sponges
Spongilla spp.

Planaria
Euplanaria spp.

Large water snails
Lymnaea spp.

Table 7.1 (Cont'd)

Freshwater Invertebrates (cont'd)
Small water snails *Physa* spp.
Sow bugs *Porcellio* spp.
Crayfish *Pacifastacus* spp.
Centipedes *Scolopendra* spp.
Millipedes *Spirobolus* spp.
Crayfish *Camberas* spp.

7.2 Impacts

The only possible impact which could result from implementation of the airport complex which can be identified at this time is damage to vegetation as a result of increased SO_2 concentrations from aircraft operations. This effect, it must be emphasized, would occur infrequently, if at all. It would be limited to agricultural or garden areas downwind of the airport.

The maximum possible short-term SO_2 concentration which can be predicted is .03 ppm. This concentration has resulted in crop damage when maintained for long periods of time. However, crop damage as a result of aircraft emissions is an unlikely event since the period of exposure will not likely be sufficient for damage to actually occur.

No other aspect of the plan seems likely to generate new impacts or increase the scope of existing impacts.

7.3 Unavoidable Adverse Impacts

There are no significant biological impacts attributable to the proposed plan.

7.4 Mitigating Measures

None.

7.5 Alternatives

7.5.1 Educational Complex

The impact of the educational complex upon local biota will be mixed. Some of the proposed activities are biologically incompatible with each other.

The rehabilitation of a 35-acre marsh as a natural area could be an opportunity for the re-introduction and protection of a number of wildlife species which were once abundant on the Camarillo Plain, but have been excluded by man's activities. While this pond marsh would be isolated geographically, and therefore also biologically from other wetlands, its large size would provide a good potential for development of a variety of micro-environments. If environmental variability can be provided, then the variety of organisms which can be accommodated can also increase so that the pond/marsh can significantly serve as a natural area.

If drainage to the proposed pond from surrounding lands continues, the result will be concentration of nutrients, herbicides, and pesticides in the water leading to blooms of algae and general biological imbalance, unless special drainage controls are installed. This seems highly likely to result from the agricultural training facilities to be installed by the proposed junior college and by Pepperdine College. Blooms of algae will require control treatment, possibly chemical, with attendant costs.

It should be noted that eutrophication of the proposed pond can result from park operations. Fertilization of surrounding lawns and landscaping will result in nutrient enrichment of the pond via runoff.

Eutrophication at the lake can be minimized by eliminating runoff from adjoining land areas. This means that make-up water would have to be purchased. Uses of the lake should be limited to aesthetic enjoyment only. Boating, swimming and fishing would provide opportunities for introduction of litter and other contaminants and would generally limit the effectiveness of the pond as a "natural area."

Conversion of the grass verge north of the runway to an agricultural training area for the proposed junior college would, in all likelihood, eliminate the burrowing owl colony now present there. This action will reduce predation by the owls upon mice in the vicinity. The level of control which is presently exercised by owls is probably very low since land use of the Air Force base and surrounding lands favors rodent populations and limits owls and other predators.

7.5.2 Public Sale

As suggested in the Alternatives portion of the "Economics" section of this report, the most likely bidders at public sale would anticipate airport and airport-related industrial uses similar in type to those presently proposed in the county application. Although no firm alternative proposals now exist, other than the city and county plans previously discussed, it may be expected that the biology impacts of such airport-related proposals would be essentially similar to those of the current county proposal.

7.5.3 No Action

No significant new impacts would occur if this alternative were adopted.

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8.0 ARCHAEOLOGY

8.1 Archaeology and Historic Setting

The Oxnard Air Force Base (deactivated) lies on the plains of the Ventura coast and within the valley of Calleguas Creek near its confluence with the Santa Clara River Valley. This area, and most of Ventura County, was occupied by the Chumash native American tribes when the first European explorers and colonists arrived. These native Americans were described in some early Spanish and Mexican accounts and the extensive report by Kroeber (1925). Unfortunately, the meager remains (historic accounts and ethnographic remains) have not provided any detailed description of the distribution of their villages and camps and activities that might be preserved as archaeologic sites. General interpretation, however, can contribute an estimate of archaeologic potential in the project area and vicinity. Field reconnaissance of the project area did not reveal any indication of significant archaeologic or historic remains.

Cabrillo's voyage in the 16th century indicated the presence of numerous villages along the coast and somewhat inland (Fig. 8.1). Kroeber (1925) summarized most information available regarding the tribe and named the tribal division in the project area -- Ventureno Chumash. Other studies have expanded the archaeologic information of the Chumash. Three villages are recorded (Kroeber, 1925) in the vicinity of the project area: Kayewüsh, S'ohomüs, and Mah'auh, but only one archaeologic site has been located near the project area -- Ventura 13. Absence of archaeologic sites largely results from the lack of exploration of the area by the local archaeologists and the extensive surficial disturbance by cultivation.

The project area occupies the eastern extremity of the Rancho El Rio Santa Clara o La Colonia land grant, but does not contain any historic remains of the Mexican period of occupation.

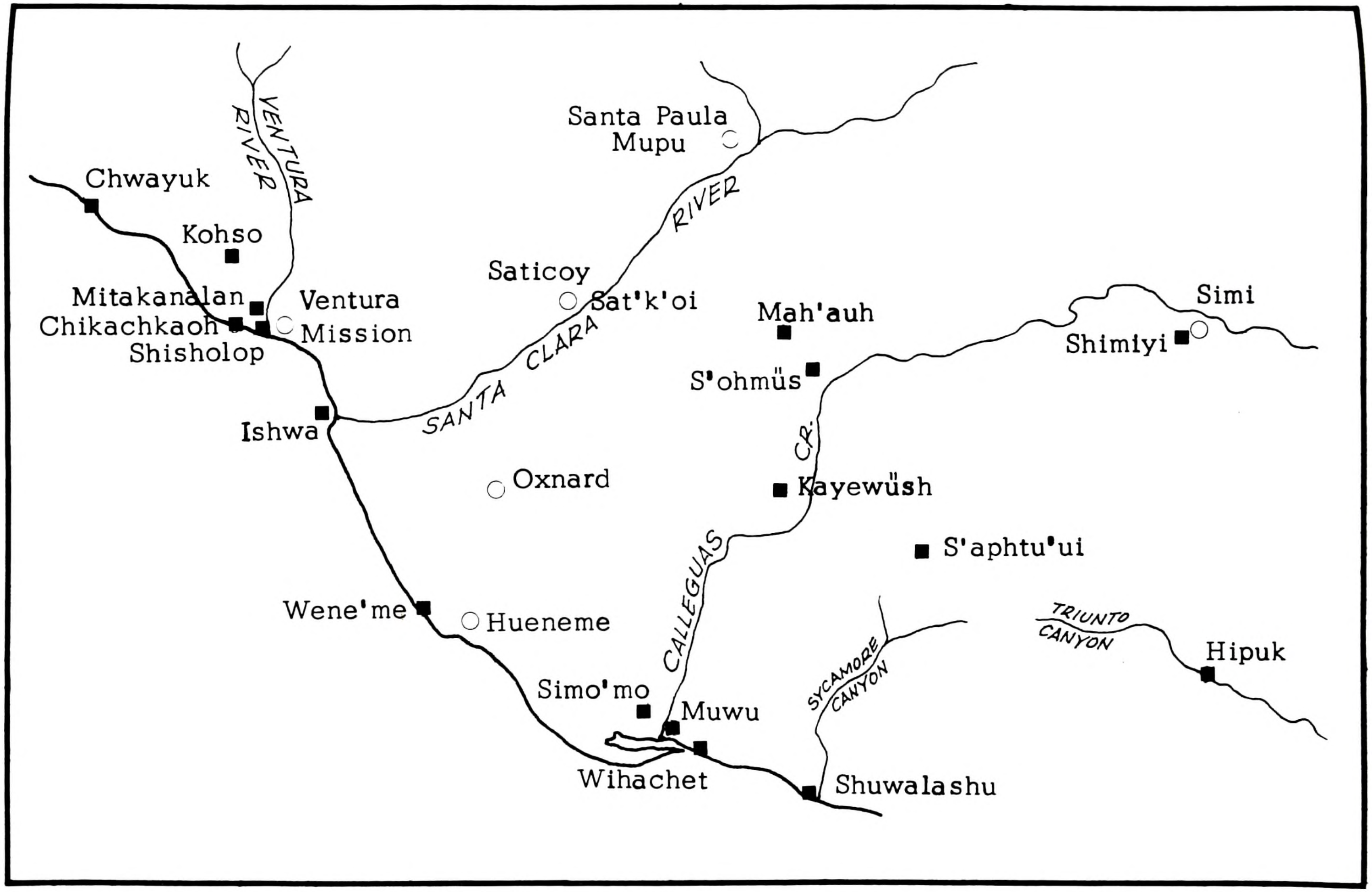

Figure 8.1 HISTORICALLY KNOWN VILLAGES OF THE PROJECT REGION

The location of the project area in relationship to streams and hill slopes affords some interpretation as to potential archaeologic remains expectable within the project area. Although a small channel system passes through the east-west axis of the project area (north side of runways and west end), the absence of any significant channel similar to the Santa Clara River or Calleguas Creek indicates the very temporary nature of any water flow within the swale of the project area. Prior to cultivation, the stream channels provided the only significant year-around water supply for humans, other animals, and plants, and the greater concentrations of these consumers would lie along the channels.

The highly seasonal climate of the project area also induced seasonal occupation and use of areas; during the summer, animals and people would move to the coast or higher elevations to escape the heat of the plains. The project area would be useful only during those times when temperatures were suitable, water generally available, and plants were carrying ripe fruits and seeds: spring and fall. The general location of the project area would indicate the potential for seasonal occupation sites, but with lesser likelihood of significant year-around village occupation.

General aspects of archaeologic occurrence in Ventura County also affect the potential significance of the project area. Most significant archaeologic remains recovered within Ventura County coastal plains occur as surficial deposits commonly not more than one yard in depth (although some coastal sites may be much deeper). Surficial disturbance of the soil and possible archaeologic remains may destroy the archaeologic remains, expose them to destruction by climatic conditions or collectors, or obliterate their exact contextual relationships. The project area has been subjected to numerous surficial disturbances that have affected the potential for significant archaeologic remains.

A preliminary surface reconnaissance, and interpretation of black and white and infrared aerial photos of the project area during October, reveal no indication of any archaeologic remains within the project area. Most of the area, however, is covered by buildings, streets, runways and aprons, land fills, or flood control levees and channel riprap. Of the total project area, only about 1 percent may remain in a suitable condition for investigation.

Trenches excavated for water drainage and utilities provided some information regarding the subsurface at the west end of the project area. No archaeologic remains were found; the trench adjacent to the runways (to the radio beacon) indicated that the areas below the runways may still retain some potential for archaeologic resources. Large amounts of fill (up to three feet) were placed over the expansive soil for a stable foundation and apparently did not disturb the underlying soil to any major degree. Construction of building foundations did disturb the soil to at least three feet in many places, and thus probably destroyed any archaeologic remains in the construction area. No reports of archaeologic remains were made during the construction of the base facilities or are now available.

Absence of any surface indication of archaeologic resources on the project area does not verify the absence of any significant archaeologic remains on the area. A moderate potential for remains of seasonal occupation sites may exist along the entire length of the runways and aprons. Within the buildings, bunkers, and firearms range, the disturbance of the upper three feet of soil may have destroyed most remains or rendered them useless. Soil beneath streets and parking areas may have not been significantly disturbed and remains may still exist in these areas. Within the vicinity of the perimeter fence, archaeologic remains may persist.

8.2 Impacts

The proposed project of the transfer of ownership of the Oxnard Air Force Base (deactivated) from the government will not have any direct impact upon possible archaeologic resources that may remain in relatively undisturbed portions of the project area. However, the secondary impacts of conversion of existing land use by the successful applicant (or applicants) will have effects both within and beyond the limits of the project area. The major impact of any land conversion will arise from the excavation of the soil beyond the existing zone of disturbance and the placement of fill over area which may contain archaeologic remains.

The impact of the plans of the various applicants will be assessed assuming the priority of the plan put forward by the County of Ventura Board of Supervisors for the use of the project area as a regional public and commercial airport. The other plans will be compared as alternatives. Undefined plans resulting from public sale and the continuation of the existing operation (i.e., no action) will also be considered as alternatives.

Proposed improvements of existing facilities, construction of new facilities, and planting of new trees on the project area as a regional airport will require or stimulate considerable excavation within the soil and thereby create potential impacts upon possible archaeologic resources of the project area. The proposed construction of motels, restaurants, and commercial buildings, and planting of trees along the north side of the runways will intrude new and deeper soil disturbance into the least disturbed area of the entire project area.

Additional educational or recreational facilities of the proposed plan will involve about 101 acres of the southern half of the project area and will not include extensive renovation or new construction and, therefore, will induce little significant impact upon archaeologic resources. Continued use of the existing runways and aprons will not affect potential archaeologic remains beneath the filled areas. Any additional general service hangars or tiedowns beyond the existing apron areas will generally require filling up to the grade level of the existing runways and will not significantly destroy archaeologic remains beneath the new fill. However, obliteration of access to the potential resources will have adverse impacts.

The operation of the project area as a regional airport will affect archaeologic resources beyond the limits of the area. During the initial phases of operation, new construction of building and, particularly, runways and aprons will require aggregate from surrounding quarries. Sand and gravel commonly come from quarries along the major river and creeks, and thereby the areas of highest potential for archaeologic remains. Although of indirect relation, the excavation of aggregate may produce direct adverse impacts upon the archaeologic resources of Ventura County and is the direct responsibility of the proposed project.

During the operation of the regional airport, land use will be regulated in the surrounding vicinity in relation to the noise created by the operation of propeller and jet aircraft. Maintenance of the existing agricultural land use in the vicinity of the project area will eliminate a common indirect impact of similar projects to attract new commercial construction in the vicinity. Some new construction may occur beyond the limits of the noise-restricted land use, and any impact upon archaeologic resources will be attributable to the proposed project.

A significant aspect of the proposed project involves the potential for increased employment of labor within the Camarillo and Oxnard region of Ventura County. Since the airport complex may draw some new residents to the region for employment, construction of new housing for these employees and their families may affect archaeologic resources of the region, and any adverse impact can be indirectly attributed to the proposed project.

The particular two-fold nature of the proposed project -- transfer of ownership and the purposes to which the new owner(s) will apply the land -- requires a comparative analysis of the impacts of the proposed project and the alternative plans. Impacts of the first portion of the proposed project will be identical (with respect to archaeologic and historic resources) to those generated by all other specific alternatives.

The low degree of new construction involved in the educational, recreational, and air traffic control uses of the proposed project (101 acres -- 43 buildings, tennis courts, pools, and the radio beacon sector) will also contribute the same impacts as in the alternative educational complex. Therefore, the net differential impacts of the proposed project involve only those areas beyond the 101 acres of educational and recreational uses, the radio beacon sector, and the remaining area of existing buildings that will not require new construction or fill.

No precise designs have been set forth for new construction around the runways and aprons, although the general plans alluded to motels and other commercial enterprises that would require new construction. The educational complex alternative does not propose any new buildings, especially on the north side of the runway. The requirement of the regional airport to maintain itself financially stimulates the incorporation of commercial (fee or lease paying) enterprises associated with existing facilities. Recreational and educational programs will receive funds from outside sources and will not be entirely dependent upon revenues generated from new facilities (fees will be paid for use of several existing structures or areas).

For both the airport complex and the educational complex, no significant new development is anticipated to occur in areas adjacent to the site due to

(1) the strong anti-growth sentiment of much of the Camarillo public and city administration against new development outside its "Golden Triangle,"

(2) the county planning designation of the unurbanized areas south and west of Oxnard Air Force Base as open space (see Figure 2.3), and

(3) existing Williamson Act contracts in the surrounding area (see Figure 2.7).

Therefore, the archaeological resources of areas adjacent to the site will not likely be impacted, regardless of the selected plan of disposal.

It is likely that some new jobs will be generated by both the airport complex and the educational complex. If these new jobs attract new residents to the region, some new residential development may be induced in the general region, although no significant residential development is expected in areas adjacent to the site for reasons previously discussed.

In either of the plans, increased use of the project area, either for recreational and educational or for airport operation, will require improved and increased size of access to the project area. No precise net differences of road construction may be estimated on the basis of available information between these plans, but greater activity in the proposed airport development may require earlier and larger improvement.

8.3 Unavoidable Adverse Impacts

Potential adverse impacts upon archaeologic resources can be avoided by elimination of those activities that disturb or obliterate access to or knowledge of archaeologic resources, or by mitigating of the impacts by a program of examination and evaluation of any new construction area by a competent archaeologist.

8.4 Mitigating Measures

Archaeology and paleontology differ from many other elements of the environment; their observation requires the carefully controlled removal of the resources from their site of preservation, or with particular design of construction and excavation the resources may remain beneath structures or pavement. Because of these aspects of archaeology, no project should have a significant unavoidable impact upon archaeologic or historic resources of a project area. The principal mitigation measures for the proposed and alternative projects should involve:

- Detailed subsurface exploration (back-hoe, trencher, corer, etc.) in any portion of the project area prior to construction of any structure, pavement, or fill and to excavation for foundations, utilities lines, or tree planting.
- Evaluation of the exploratory excavations by a professional archaeologist.
- Relocation of intrusive excavation, or detailed mapping of extent of preserved resources before placement of cover.
- Controlled excavation of remains within areas which cannot be avoided.

These mitigation measures can be easily applied to the project area (Oxnard Air Force Base), but like measures should be applied to all areas of effect: any quarries providing aggregate directly or indirectly to the site, any new commercial structures developed within the confines of the project area but by private concerns, and any new structures (access roads, expansion of existing roads giving improved access, and commercial or residential buildings) attributable to the proposed project.

The above discussion of measures demonstrates only the possible efforts that are commonly undertaken to eliminate adverse avoidable impacts upon archaeologic resources of a project, and the applicant for the proposed project -- the regional airport -- has not been committed to these measures.

Most mitigation measures have been discussed as an activity of the second part of the proposed project, although the transfer of ownership can be modified to insure that future land use conversion would not cause significant detrimental effect on potential archaeologic resources, at least within the project area. Contractual requirements may be applied to the County of Ventura Board of Supervisors to insure that the mitigation measures offered above would be accomplished. Professional archaeologists are available within the county educational institutions for conducting programs within the project area.

In order to mitigate effects beyond the project area, the Board of Supervisors would initiate guidelines for the preservation of archaeologic remains by professional archaeologists and for the evaluation of construction impacts upon archaeologic resources in the preparation of environmental impact reports to their agencies.

8.5 Alternatives

The only alternatives to the proposed project considered herein involve:

- Educational complex
- Public sale
- No action

8.5.1 Educational Complex

Retention of most existing facilities for use in educational and recreational activities will not require extensive alteration or the addition of new structures. Regrading of the sector along the north side of the runway will require filling and excavation to bring the level of the playing fields up to that of the existing runways or tennis courts. Redevelopment of the flood control and drainage structures for passive recreational uses (walking, bird watching, etc.) at the west end of the project area will disturb surficial soil and fill previously unfilled areas.

Recreational development of the north and west sectors of the project area may cause disturbance to potential archaeologic resources. Operations of existing structures will not have any significant impact upon archaeologic resources, and the impact will be close to that in the proposed project.

8.5.2 Public Sale

As suggested in the Alternatives portion of the "Economics" section of this report, the most likely bidders at public sale would anticipate airport and airport-related industrial uses similar in type to those presently proposed in the county application. Although no firm alternative proposals now exist, other than the city and county plans previously discussed, it may be expected that the archaeologic impacts of such airport-related proposals would be essentially similar to those of the current county proposal.

8.5.3 No Action

Continuation of the existing operation would have little adverse effect upon the archaeologic resources of the project area.

REFERENCES

Kroeber, A.L., 1925. Handbook of the Indians of California. Bureau of American Ethnology, Smithsonian Institute, Washington, Bull. 78.

9.0 UTILITIES

9.1 Environmental Setting

The development of Oxnard Air Force Base, according to the proposed plans of the County of Ventura, will result in increased demands for water, electricity, and either fuel oil or natural gas. With the exception of natural gas, distribution systems for all utilities are presently available on base.

Due to a lack of data on utility consumption at the base during its full operation, and the rather preliminary nature of many aspects of the proposed development, only rough estimates on future consumption of water, electricity and fuel oil or natural gas could be made.

9.1.1 Water Supply

The water supply for the air base is currently obtained from wells located on base property. Although the City of Camarillo operates and maintains the water distribution system on base, this system is independent of Camarillo's main supply system. The nearest water main in the city's system is located along Las Posas Road at the eastern edge of base property, thus the city's system could easily be extended to the air base. However, at the present time the base cannot receive water from the City of Camarillo's main system because the base is not a part of the Calleguas Municipal Water District.

The Calleguas MWD is the distributor of State Water Project water and obtains its water from the Metropolitan Water District of Southern California. The Calleguas MWD may not provide water to anyone who is not a part of their district. Although the City of Camarillo is part of the district and receives nearly 40 percent of its water from it, it may not provide Calleguas MWD water to areas that are not. Thus, the Oxnard

AFB must be annexed by the Calleguas MWD if it is to receive water from Camarillo.

At the present time, the annexation fee is approximately $400/acre. Since the air base is served by one water system, all prospective residents of the base would have to contribute toward this fee if the base is to be supplied with additional water from the City of Camarillo, or individual water mains will have to be laid to serve those businesses or institutions that would want to receive water from Camarillo.

At the present time, there is no limit to the Calleguas District's entitlement to the State Water Project water. The Metropolitan Water District is currently constructing a 260 cfs (cubic feet per second) line to the Calleguas District, which will increase the intake capacity to 350 cfs in the near future.

9.2 Utility Impacts

9.2.1 Water Supply

Based upon an equivalent water consumption of 20 gallons per commercial passenger (this factor is substantiated by the existing Ventura County Airport where there is currently an equivalent water consumption of 18 gallons per commercial passenger), the water requirements for the proposed airport are estimated to be 15,000 gallons per day. By comparison, the City of Camarillo presently consumes an average of 4.9 MGD (million gallons per day). Thus, the predicted water consumption of the proposed airport represents approximately 0.3 percent of Camarillo's current average consumption.

The present water distribution system on the base will probably have to be modified to better serve the needs of future residents. The present system was designed primarily to serve as a fire protection system for the air force base. To meet the required pressure requirements, small (4-inch) diameter water mains were used. Such lines may not be large enough to adequately serve future residents and may have to be replaced with larger lines.

In addition to these modifications, new water lines will have to be laid by 1985 to serve the proposed air terminal building on the north side of the runway.

9.2.2 Electricity

The electrical power requirements for the proposed airport-industrial development of the base are estimated at 1,603 kilowatts of connected load, or approximately 8.3 million kilowatt hours of consumption per year.

The Southern California Edison Company anticipates no trouble supplying the amount of electricity required for the development. However, future ramifications of the energy crisis may dramatically change this assessment.

New underground power lines will be required to serve the newly developed areas of the base, specifically the proposed terminal north of the runway.

9.2.3 Fuel Oil

Fuel oil is currently used on base for most heating, with individual buildings having their own separate heating systems. It is not clear at this point whether or not fuel oil will continue to be used. If fuel oil is used, it is estimated that 89,000 gallons/year will be required to heat the airport and industrial facilities. Continuing fuel shortages may cause some problems in obtaining enough fuel oil for heating purposes.

9.2.4 Natural Gas

The air base is not presently part of the Southern California Gas Company's distribution system. The nearest supply line is a 4-inch distribution main that runs along the south side of U.S. Highway 101, about one-fourth mile north of base property. If natural gas is chosen as a source of heat for the facilities on base, the above supply line would have to be extended to the base and a complete on-base distribution system would also be needed.

The amount of natural gas required to heat the airport and industry facilities is estimated at 13.2 mcf/year. Southern California Gas anticipates no difficulty supplying this amount of natural gas. However, future ramifications of the energy crisis may dramatically change this assessment.

9.3 Unavoidable Adverse Impacts

There will be increased consumption of water, electricity, and either fuel oil or natural gas. The use of fuel oil or natural gas will result in the consumption of non-renewable natural resources.

Construction required to modify existing utility systems and extend utility service to new area of development.

9.4 Mitigating Measures

9.4.1 Water Supply

A. To detect possible overdraft conditions, the water levels in wells supplying water for the proposed facilities should be monitored frequently.

B. Possibly on-site groundwater recharge, by injecting runoff water into the ground through wells, could be considered as a method to help maintain water levels in the major aquifers. Recharge by conventional infiltration ponds is not possible in this area due to the presence of an impermeable clay cap beneath the surface. To avoid possible contamination of the groundwater, runoff should be treated before being injected.

9.5 Alternatives

9.5.1 Educational Complex

Except for water supply, utility requirements of the educational complex will not be dramatically different from the proposed airport complex. As was the case with the County of Ventura plan, the following estimates of water, electrical, fuel oil, and natural gas consumption are based on very general information and are therefore only rough estimates.

Water Supply. The domestic water demands of the fully developed educational elements of this alternative will be approximately 100,000 gallons/day, or about 2 percent of Camarillo's present average daily consumption.

An estimate of water requirements for the recreational element of this alternative, including irrigation water, could not be made due to the lack of specific information.

Electricity. Electrical consumption for lighting the entire educational complex is estimated at approximately 5.6 million kilowatt hours/year.

Fuel Oil. Estimated fuel oil consumption for space heating and water heating is estimated to be slightly less than the airport/industrial demand, or approximately 75,000 gallons/year.

Natural Gas. If natural gas is chosen as an alternative to fuel oil, the estimated consumption will be approximately 11 million cubic feet/year.

Any degree of regional growth-inducement attributable to the educational complex may result in indirect impacts upon regional utility systems.

9.5.2 Public Sale

As suggested in the Alternatives portion of the "Economics" section of this report, the most likely bidders at public sale would anticipate airport and airport-related industrial uses similar in type to those presently proposed in the county application. Although no firm alternative proposals now exist, other than the city and county plans previously discussed, it may be expected that the utility impacts of such airport-related proposals would be essentially similar to those of the current county proposal.

9.5.3 No Action

The "no action" alternative would result in no significant utility impacts.

10.0 WATER QUALITY

10.1 Environmental Setting

10.1.1 Surface Water

Oxnard Air Force Base is located on the Oxnard Plain in Ventura County. The Oxnard Plain is traversed by the Santa Clara River near its northwest margin and by Calleguas Creek on the southeast, while the Pacific Ocean lies to the west. Surface waters in the immediate vicinity of the base include Revolon Slough and drainage ditches which flow along the north and south perimeters of the base.

Little is known about the quality of surface water in the immediate vicinity of the base. During a recent site visit, it was observed that there was no flow, and only occasional small pools of stagnant water within the drainage ditches. The water quality of Revolon Slough likely varies according to season, and is probably of lowest quality during the rainy season when it receives drainage from surrounding areas, including the drainage ditches along the perimeter of the base.

In the general vicinity of the site, the quality of surface waters varies. The Santa Clara River contains significant levels of dissolved solids and hardness.[1]

10.1.2 Groundwater

The quality of groundwater beneath the Oxnard Plain Basin varies according to depth and location. A layer of low permeability clay resides near the ground surface of the basin and protects productive aquifers from an initial zone of poor quality groundwater which protrudes to a depth of only a few feet below the ground surface. Beneath this protective clay layer, the major aquifer zones in the basin consist primarily of permeable sand and gravel layers, with interbedded clay layers of low permeability.

The first major zone, the Oxnard Aquifer Zone, is penetrated by shallow wells and utilized extensively. However, this zone is subject to sea water intrusion due to a heavy overdraft which amounts to about 40,000 acre-feet per year. Many of the shallow wells in the zone have been abandoned or destroyed due to this intrusion.

The Mugu Aquifer Zone, which resides beneath the Oxnard Aquifer Zone, has also been subject to sea water intrusion. Both of these zones are considered to be within the upper aquifer system. The lower aquifer system, which consists of several aquifer zones, exhibits no evidence of sea water intrusion.

In general, the average total dissolved solids (TDS) concentration indicates that groundwater in the Oxnard Plain Basin is "acceptable" for irrigation, but is only "marginal" for many domestic and industrial uses.[2] Overall, wells within the basin produce groundwater which varies in quality according to the depth and location of each well. There are wells which yield water that is brackish or that contains a significant degree of hardness, and some of the groundwater within the basin does not meet drinking water quality standards established by the State Department of Public Health.

10.2 Water Quality Impacts

The disposition of Oxnard Air Force Base as an airport for the County of Ventura will create potential water quality impacts in the following catagories:

Storm water runoff

Liquid wastes

10.2.1 Storm Water Runoff

Storm water runoff, which will occur intermittently during periods of rainfall, will be collected by a storm drainage system incorporated within the proposed airport complex. Runoff will originate from runways, taxiways, aircraft parking aprons, automobile parking lots, and streets within the airport complex.

Storm water runoff will contain oil drippings, dirt, and contaminants deposited upon drainage surfaces by aircraft, automobiles, and wind. Contaminants from airport runways and taxiways, as well as street surfaces, has been shown to contain significant amounts of oxygen-demanding material, nutrients for aquatic plants, and heavy metals (lead from gasoline, zinc from tires, and varying amounts of other heavy metals).[3,4]

The average amounts of contaminants which reside upon street surfaces in the United States are shown in Table 10.1. It is suspected that contaminants which are found upon automobile parking lots resemble those found on street surfaces. A rainstorm with an intensity of 0.5 inches per hour and a duration of one hour will remove about 90 percent of the contaminants which reside upon street surfaces and the quality of runoff produced by such a storm event is shown in Table 10.1.

The composition of contaminants which reside upon the runway and taxiway of San Jose Airport was determined in a recent study.[4] In this particular study, sections of the runway and taxiway were vacuumed and the material was analyzed for selected parameters. Results of the analysis showed that significant amounts of heavy metals were detected in the vacuumed material:

Chromium	125 milligrams per kilogram
Copper	18 milligrams per kilogram
Nickel	85 milligrams per kilogram
Lead	110 milligrams per kilogram
Zinc	75 milligrams per kilogram

Table 10.1

POLLUTANTS ON AN AVERAGE STREET IN THE U.S.

Pollutant	Quantity [1]	Average Concentration of Pollutant in Runoff [2]
Biological Oxygen Demand	90	70
Phosphate	5.6	4.3
Kjeldahl Nitrogen	11	8.5
Total Solids	7300	5600
Lead	3.4	2.5
Zinc	4.0	3.1
Copper	1.1	0.7

1. Milligrams per square foot.
2. Milligrams per liter based upon the runoff resulting from a storm with an intensity of 0.5 inches per hour and a duration of one hour.

The overall waste characteristics of runoff from an airport complex is described in Table 10.2 where a runoff sample was collected at Oakland International Airport and analyzed for selected parameters. The sample was extracted from a drainage channel which receives collected runoff from the entire airport complex, including parking lots, streets, runways, taxiways, etc.

The quality of storm water runoff originating from the airport complex can be simulated by assuming the following:

- There will be about 100 acres of paved impervious surface area of which about one-third will consist of street and parking surfaces, while about two-thirds will consist of runway, taxiway, and apron surfaces.
- Streets within the airport complex will have contaminant loadings similar to those of an average street surface in the U.S.
- Parking surfaces will have contaminant loadings similar to those of street surfaces.
- Runways, taxiways, and apron surfaces will have contaminant loadings similar to those of the San Jose Airport.

Using the above assumptions, Table 10.3 describes the quality of storm water runoff resulting from the statistically worst storm to occur within a one-year period and a five-year period. The statistical one-year and five-year storms will have intensities of 0.6 inches per hour and 1.0 inches per hour respectively, and both storms will have a duration of one hour.

Collected storm water runoff will drain into drainage ditches which are located along the perimeter of the property. Runoff will eventually flow into Revolon Slough which now receives similar drainage from surrounding areas, in addition to flow from Calleguas Creek.

Table 10.2

WASTE CHARACTERISTICS OF STORM WATER RUNOFF AT OAKLAND INTERNATIONAL AIRPORT

PARAMETER	CONCENTRATION
Total Solids	3,600 mg/ℓ
Dissolved Solids	3,400 mg/ℓ
Suspended Solids	200 mg/ℓ
Chemical Oxygen Demand	120 mg/ℓ
Nitrates	4.5 ppm
Phosphates	6.5 ppm
Color	510 color units
Turbidity	125 turbidity units
Lead	<0.05 mg/ℓ
Zinc	0.05 mg/ℓ
Oil and Grease	9.0 mg/ℓ
Phenols	0.0 mg/ℓ
pH	8.0

NOTE: mg/ℓ is milligrams per liter
ppm is parts per million

Table 10.3

ANTICIPATED QUALITY OF STORMWATER RUNOFF FROM THE AIRPORT COMPLEX

			SOURCE OF RUNOFF: STREET SURFACES AND PARKING AREAS	SOURCE OF RUNOFF: RUNWAYS TAXIWAYS AND APRONS	SOURCE OF RUNOFF: ALL SOURCES COMBINED	RECOMMENDED UNIFORM EFFLUENT CONCENTRATION STANDARD** (mg/ℓ)
ONE-YEAR STORM		VOLUME OF RUNOFF (cu ft)	80,000	140,000	220,000	
ONE-YEAR STORM	Concentration of Runoff (mg/ℓ)	BOD	60		60 *	30 to 75
		Phosphorus	3.6		3.6 *	2.0
		Kjeldahl Nitrogen	7.0		7.0 *	
		Copper	2.1	.003	0.8	1.0
		Lead	2.6	.018	1.0	0.1
		Zinc	0.6	.012	0.2	1.0
FIVE-YEAR STORM		VOLUME OF RUNOFF (cu ft)	130,000	240,000	370,000	
FIVE-YEAR STORM	Concentration of Runoff (mg/ℓ)	BOD	35		35 *	30 to 75
		Phosphorus	2.2		2.2 *	2.0
		Kjeldahl Nitrogen	4.3		4.3 *	
		Copper	1.3	.0017	0.5	1.0
		Lead	1.6	.01	0.6	0.1
		Zinc	0.4	.007	0.1	1.0

*Excludes Runways and Taxiways
**EPA

The waste characteristics of storm water runoff originating from the airport complex will have an incremental impact upon the water quality of Revolon Slough. Significant concentrations of heavy metals may affect aquatic organisms inhabiting the slough. A high oxygen demand may decrease the level of dissolved oxygen in the slough to an unacceptable level (less than 4 mg/ℓ), while a high concentration of nutrients may entice algal blooms to appear (phosphorus and nitrogen are consumed as nutrients by many species of algae).

In order to place the impacts of storm water runoff upon the water quality of Revolon Slough into proper perspective, it should be noted that other surrounding areas now contribute similar drainage to the slough.

As an added consideration, there is a potential for water quality impacts resulting from fuel tank leakages or fuel spillages. Fuel leakage or spillage could contaminate surface water if swept away by surface runoff or could infiltrate into the groundwater system.

10.2.2 Liquid Wastes

The proposed airport complex will generate two types of liquid wastes:

- Sanitary sewage
- Airport cleaning/maintenance wastewater

Sanitary sewage, comprised of water used for sanitary purposes, will be contributed by employees, passengers, and visitors at the airport. An additional source of sanitary sewage will be sewage holding tanks which exist on most large aircraft. These tanks accommodate "in-flight" sewage and are emptied and cleaned periodically. All sanitary sewage will be discharged into a sanitary sewer without pretreatment.

Aircraft cleaning/maintenance wastewater will consist of liquid wastes derived from aircraft maintenance and repair, as well as aircraft washwater. The former category of wastewater will exhibit strong waste characteristics, but will likely be small in volume.

Aircraft washwater will consist of wastewater produced during aircraft cleaning operations. Aircraft are periodically washed to control erosion of outer surfaces and to maintain a clean aircraft appearance. The washwater may contain oil, grease, dirt, paint, oxidized metal particles, detergents, solvents, paint-stripping compounds, corrosion removers, and inhibiting compounds. The following are typical waste characteristics of aircraft washwater analyzed at several naval air base facilities:[5]

Chemical oxygen demand	10,000	milligrams	per	liter
Biological oxygen demand	1,000	"	"	"
Oil and grease	2,000	"	"	"

The estimated volume of liquid wastes to be generated by the airport complex is 15,000 gallons per day.

The above estimate is based upon an assumption that an equivalent of 20 gallons of liquid waste will be generated per commercial passenger. This assumption is supported by data from the existing Ventura County Airport where about 3,000 gallons of liquid waste are produced per day (an estimate based upon daily water consumption), which is equivalent to about 18 gallons per commercial passenger.

Liquid wastes, with the possible exception of aircraft washwater, will be discharged without pretreatment into an existing sewer line located along the north side of the property. Pretreatment of aircraft washwater may be required by the Camarillo Sanitation District before it will accept such wastewater.[6]

Liquid wastes generated by the airport complex will be treated at the Camarillo Wastewater Treatment Plant. The plant, which provides secondary treatment, is located five miles southeast of Camarillo. It was originally designed to accommodate 4.75 MGD, while the current average flow is about 2.45 MGD. Most of the plant effluent is utilized as irrigation water; the remainder is discharged into Conejo Creek.

Liquid wastes generated by the proposed airport complex will incrementally increase the flow of influent wastewater into the Camarillo Treatment Plant. The anticipated daily flow of liquid wastes generated by the airport complex represents (1) about 0.3 percent of the design capacity of the plant, and (2) about a 0.6 percent increase of the plant's current average daily flow.

Aircraft washwater, without pretreatment, may adversely affect the operation of the Camarillo Sewage Treatment Plant. The oil and grease components of aircraft washwater can inhibit the settling of suspended solids during primary treatment, and the settling of biological solids during secondary treatment.

In addition to liquid wastes, which are directly applicable to the airport complex, liquid wastes will also be contributed by airport-support activities which tentatively include a potato chip processing plant, a light manufacturing facility, a prefab housing facility, and a specialty restaurant. It should be noted that the above composition of airport activities is tentative and may vary in actuality.

Restaurant liquid wastes, which will exhibit highly organic waste characteristics, will consist of wastes derived from the preparation of food. It is common practice to pass such wastes through a standard grease trap before discharging into a sanitary sewer.

Liquid wastes derived from the production of potato chips will exhibit strong waste characteristics. The primary sources of wastes include peeling, trimming, slicing, and rinsing operations. Table 10.4 describes waste flows and characteristics based upon a unit production using 1,000 pounds of potatoes.[8]

Table 10.4

PLANT OPERATION AND WASTES DISCHARGED PER 1,000 LBS. OF POTATOES PROCESSED

PLANT	MONTH	EMPLOYEES (number)	POTATO CHIPS* (lbs.)	WASTE FLOW (gals.)	B.O.D. ppm	B.O.D. lbs.	SUSPENDED SOLIDS ppm	SUSPENDED SOLIDS lbs.
A	July	0.9	240	2,480	730	15.0	820	24.3
B	Dec.	1.3	260	2,020	1,560	26.2	2,140	35.9
C	Oct.	1.0	240	2,000	1,850	30.8	2,190	36.4
D	Dec.	2.3	255	1,450	1,200	+14.5	1,700	+20.4
	Average	1.4	250	1,990				

NOTE: ppm is parts per million.

* Average weight of oil on finished chip is 40%.
\+ Much solid material was removed manually and did not reach the sewer.

10.3 Adverse Impacts

The waste characteristics of storm water runoff originating from the airport complex will have an incremental impact upon the water quality of Revolon Slough. Liquid wastes generated by the proposed airport complex will incrementally increase the flow of influent waste water into the Camarillo Treatment Plant. Aircraft washwater, without pretreatment, may adversely affect the operation of the plant.

10.4 Mitigating Measures

To reduce the water quality impact of storm water runoff upon the Revolon Slough, it is recommended that extensive efforts be made to sweep streets, parking areas, runways, and taxiways on a regular basis to remove contaminants which accumulate upon these surfaces.

To reduce the water quality impact of liquid wastes upon the Camarillo Wastewater Treatment Plant, it is recommended that the possibility of pretreating aircraft washwater be investigated.

10.5 Alternatives

10.5.1 Educational Complex

The disposition of Oxnard Air Force Base as an educational complex for Pepperdine University will create potential water quality impacts in the following categories:

- Storm water runoff
- Sanitary sewage

Storm water runoff will originate from street surfaces and parking areas within the educational complex during periods of rainfall. The waste characteristics of storm water runoff (oxygen-demanding material, nutrients, heavy metals) originating from the educational complex will have an incremental impact upon the water quality of Revolon Slough. However, it should be noted that Revolon Slough receives similar drainage from surrounding areas.

Sanitary sewage will be generated by students, faculty, support staff, and administrators who will utilize the facilities of the educational complex. Ultimately, there will be in excess of 3,000 students associated with the educational complex, of which 480 of those attending

Pepperdine University can be accommodated by on-campus housing. In addition, there will be a limited number of faculty, administrators, and support staff.

It is assumed that students who live on-campus will each contribute about 75 gallons of sanitary sewage per day, and that other students, faculty, administrators, and support staff will each contribute about 20 gallons of sanitary sewage per day. Accordingly, almost 100,000 gallons of sanitary sewage per day will be generated when the educational complex is fully developed.

Sanitary sewage generated by the educational complex will incrementally increase the flow of influent wastewater into the Camarillo Wastewater Treatment Plant. The anticipated daily flow of sewage represents about 2 percent of the design capacity of the plant.

Any degree of regional growth inducement attributable to the educational complex may result in indirect impacts upon regional sewage treatment facilities.

10.5.2 Public Sale

As suggested in the Alternatives portion of the "Economics" section of this report, the most likely bidders at public sale would anticipate airport and airport-related industrial uses similar in type to those presently proposed in the county application. Although no firm alternative proposals now exist, other than the city and county plans previously discussed, it may be expected that the urban planning impacts of such airport-related proposals would be essentially similar to those of the current county proposal.

10.5.3 No Action

No significant water quality impacts will occur if this alternative is adopted.

REFERENCES

1. Water Resources Data for California, United States Geological Survey, 1968.

2. Open Space and Conservation Elements, Ventura County Planning Department, 1973,

3. Water Pollution Aspects of Street Surface Contaminants, EPA, 1972.

4. Toxic Materials Analysis of Street Surface Contaminants, EPA, 1973.

5. Disposal of Aircraft Washrack Waste Water, Bruce D. Reinert, 1973.

6. Industrial Waste Supplement to the Operations Code, Camarillo Sanitary District, 1973.

7. Analysis of Airport Solid Wastes and Collection Systems, San Francisco International Airport; EPA, 1973.

8. An Industrial Waste Guide to the Potato Chip Industry; U.S. Dept. of Health, Education and Welfare, 1961.

11.0 SOLID WASTES

11.1 Environmental Setting

A small volume of solid wastes is currently produced at the site of Oxnard Air Force Base by:

- Maintenance activities at the base
- Activities of a Regional Occupation Program
- Activities of the Oxnard Union High School District

Currently, solid wastes attributable to maintenance activities are collected by the Navy, while the remainder are collected by private collection agencies. All solid wastes at the base are now disposed of at the Ventura Refuse Disposal Grounds.

11.2 Solid Waste Impacts

Solid wastes will be primarily generated at the proposed airport complex from the following sources:

- Passenger terminal
- Air freight area
- Aircraft maintenance area

A recent study[7*] conducted at the San Francisco International Airport revealed that 0.5 pounds of solid wastes were generated by each commercial passenger. This figure includes solid wastes generated by passenger activities, both in the terminal and on the aircraft, but does not include meal service waste.

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*See "Water Quality" reference.

The application of the above criteria to the proposed airport complex indicates that 1.2 tons of solid wastes per week will be produced by commercial passengers.

The Ventura County Regional Sanitation District will collect and transport solid wastes from the proposed airport complex to a sanitary landfill located in the city of Simi. The landfill, which is a Class I sanitary landfill, is currently accommodating about 500 tons of solid waste per day and has a life expectancy of about 20 years.

The estimated volumes of solid waste contributed by the proposed airport complex will have a negligible impact upon the life expectancy of the existing sanitary landfill.

In addition to solid wastes which are directly applicable to the airport complex, solid wastes will also be contributed by airport-support activities which tentatively include a potato chip processing plant, a light manufacturing facility, a prefab housing facility, and a specialty restaurant.

11.3 Unavoidable Adverse Impacts

None.

11.4 Mitigating Measures

None.

11.5 Alternatives

11.5.1 Educational Complex

Solid wastes will be generated at the proposed educational complex from the following sources:

- On-campus housing
- Cafeteria
- Educational facilities

Solid wastes will primarily consist of paper and cardboard wastes, landscaping wastes, and food processing wastes from the cafeteria.

Solid wastes will be generated by students, faculty, support staff, and administrators who will utilize the facilities of the educational complex. Ultimately there will be in excess of 3,000 students of which 480 of those attending Pepperdine University can be accommodated by on-campus housing. In addition, there will be a limited number of faculty members, administrators, and support staff.

It is assumed that students who live on-campus will each produce about 2.0 pounds of solid waste per day, and that other students, faculty, administrators, and support staff will each produce about 0.5 pounds of solid waste per school day. Accordingly, almost 7 tons of solid waste per day will be produced when the educational complex is fully developed.

The anticipated amount of solid waste contributed by the proposed educational complex will have an insignificant impact upon the sanitary landfill which is operated by the Ventura County Regional Sanitation District.

Any degree of regional growth-inducement attributable to the educational complex may result in indirect impacts upon regional solid waste disposal sites.

11.5.2 Public Sale

As suggested in the Alternatives portion of the "Economics" section of this report, the most likely bidders at public sale would anticipate airport and airport-related industrial uses similar in type to those presently proposed in the county application. Although no firm alternative proposals now exist, other than the city and county plans previously discussed, it may be expected that the urban planning impacts of such airport-related proposals would be essentially similar to those of the current county proposal.

11.5.3 No Action

No significant solid waste impacts will occur if this alternative is adopted.

Section V

RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Section V

RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed plan will have long-range effects in the areas of socioeconomics and aesthetics. The airport will draw trade from a wider area, thus expanding the financial base of the area. A distinct beneficial result occurs due to the so-called "multiplier effect." As jobs are created by the additional business trade, more money is spent locally which, in turn, tends to promote the peripheral or supportive businesses now present and may create the need for additional service-type businesses such as building or ground maintenance types.

The wider tax base will help support the city and county services and other agencies such as police, fire departments and schools. However, these will be counterbalanced in part by the demands of an increased population. The generation of a wider tax and other revenue base for the area will also allow greater consideration of future public facilities and enhancement of parks and recreational facilities.

It appears that the proposed plan of disposal will not reduce long-term productivity of the site itself. The proposed airport complex will not consume totally undeveloped land since the site is currently semi-developed with buildings, streets, runways, etc. In fact, the existing facilities at Oxnard Air Force Base and the physical characteristics of the site itself lend themselves toward the establishment of an airport complex.

With regard to surrounding areas, the proposed plan will tend to inhibit long-term productivity of surrounding areas due to traffic congestion, increased levels of noise, and degradation of water and air quality. However, the proposed plan does not foreclose future options since the airport complex may conceivably cease to operate in the future, thereby eliminating noise, traffic congestion, etc., in surrounding areas.

Section VI

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES RESULTING FROM THE PROPOSED ACTION

Section VI

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES RESULTING FROM THE PROPOSED ACTION

The proposed plan of disposal will result in increased consumption of water, electricity, and either fuel oil or natural gas.

Potential beneficial impacts attributable to the proposed airport complex will include a better overall economic picture for the area and the business community, enhanced aesthetics over present conditions, encouragement of more recreational facilities, and the ability of the area to provide more public services. Potential adverse impacts include increased traffic, increased noise, and increased air pollutants. However, since the airport complex may conceivably cease to operate in the future, these impacts are not necessarily irreversible.

In the interests of future generations, the factors of health, safety, and natural resources will not be materially changed. It is true that energy resources will be consumed by the project; however, any alternative proposed for the area will consume resources of a comparable level. It is possible that health and safety aspects may be enhanced by the greater ability of the city to provide these services.

Commitment of land to any use other than that of the existing state will require commitment of the archaeologic resources which may exist within that land to possible disturbance and destruction. If properly mitigated, the adverse effects will be reduced, if not eliminated; archaeologic remains would be preserved, and to some extent the contextual relationships of the remains would not be committed to detrimental uses.

With adequate provisions for mitigation, uses of the proposed project will not induce any significant decline in the archaeologic resources of the project area or its immediate vicinity. If county-wide regulations or guidelines regarding archaeologic resources were promulgated by the Ventura County Board of Supervisors, all adverse impacts beyond the project area would be eliminated and the resulting information derived would enhance the knowledge of the life and distribution of native Americans and early colonists in Ventura County.

Section VII

GROWTH-INDUCING IMPACTS OF THE PROPOSED ACTIONS

Section VII

GROWTH-INDUCING IMPACTS OF THE PROPOSED ACTIONS

Little immediate direct population growth is anticipated to be induced locally as a result of the implementation of the proposed plan. The "Employment" section of this report pointed out that relatively few of the 159 jobs expected to be created within a new county airport and its associated businesses would be "new" jobs. Most would be filled by the employees who hold them today at the existing airport. Certainly some general aviation-related businesses would stay on at the current site, and their employees would remain with them, while other businesses would move to the new site along with most of their employees. However, new businesses established at the new airport would create job openings. These new openings could be filled almost entirely from within the current unemployed labor force in the SMSA.

In the long term, the population growth-inducing impact of the proposed jet-capable airport will be tightly linked and interdependent with the population and economic growth rates of the county. The greater the economic and population growth of the county in the future, the greater will be its demand for jet air transportation, and the airport's contribution to this growth pattern will be greater in turn. On the other hand, if little population growth takes place within the county, the airport will be a far diminished growth stimulus.

In a period of very rapidly changing public and governmental attitudes toward growth, to estimate the extent to which such growth might occur in Ventura County would be unsupportable speculation.

Among the alternatives for use of the Oxnard AFB, only one poses a significant potential for growth-inducement -- the educational complex. The proposed educational complex would contain branches of two colleges which would bring significant numbers of persons into the area. While both Pepperdine University and the proposed junior college would serve mainly the population of the SMSA, each would attract a small percentage of students from surrounding areas. Each would feature a curriculum which was somewhat unique in the area. Pepperdine would provide an unusual college curriculum for the transportation industry. The junior college would offer unique study programs in agriculture.

In addition, a large percentage of the instructors in both would come from other areas. Pepperdine University plans to begin with an enrollment approaching 500 and grow to 1,500 within 5 years. Corresponding employment levels would be as follows:

	1-5 year Enrollment of 500	After 5 years Enrollment of 1,500
Professors	33	100
Administrators and support	40	60
Total	73	160

It is difficult to predict with any degree of accuracy the magnitude of the population growth inducement which would result from establishment of these schools, however, the combined enrollment will be substantial. Both have unique qualities which can be expected to attract some students from outside the normal drawing radius of a junior college -- or even a small university branch. The junior college will be offering night classes for half of its students. This suggests that a higher percentage need to work to support dependents, a further increment to population growth if they have moved into the area from outside areas.

In order to supply a suggestion of the possible magnitude of this population growth, a series of assumptions have been made. The resulting calculations have been included to allow the discriminating reader the opportunity to update the results at a later date as plans become better known.

At Pepperdine University, some growth stimulus will be felt from both staff and student immigrants. If 80 percent of the professors were "imported" and each brought with him a family averaging 3 persons, the resultant area population growth would be approximately 100 and 300 persons respectively.

Considering the student body, the university has estimated that 60 percent (300) of the initial 500 would live on campus. Assuming that another 30 percent (150) lived today within driving distance, only 50 would remain to be housed anew in the area. If half of these 50 remaining students represented families averaging 2.5 persons, the total population increase would approximate 90.

Similarly, in the five-year (1,500) enrollment figure, the 480-bed dormitory would be filled. Assuming again that 30 percent (450) of the student body lived within driving distance, the remaining students to be housed in the vicinity of the "campus" would be 970. If half of these represented families of 2.5 persons each, the total addition to the area population figure would be about 1,700.

A similar methodology can be used to approximate the area population growth attributable to the junior college. In the first five years, the enrollment of 1,000 (500 daytime students, 500 night students) would be hosted by a staff of about 150 (75 instructors and 75 support). If half of the instructors were imported (a smaller proportion than with Pepperdine in that many of the courses will be of the trades type whose instructors can be taken from among local tradesman) and each represented a family of three, the total population increase would be about 110.

If 10 percent of the total enrollment was from outside the area and half of this represented families of 2.5 persons, the added population would be about 175.

Between the 5th and 10th year of operation, enrollment and staff are expected to climb to 2,500 and 300 respectively. Again, half of the enrollees would be night students. Following the same system of assumptions, the addition to the local population would approximate 1,040 (500 staff and 440 student). These population growth projections are accumulated in the following table.

The suggested first five-year total of 475 persons constitutes an addition of just over 0.1 percent to the 1970 county population. Similarly, the 3,040 population increment for operating years after the 5th constitutes an increment of 0.8 percent.

PROJECTIONS OF AREA POPULATION GROWTH ATTRIBUTABLE TO PEPPERDINE UNIVERSITY AND THE JUNIOR COLLEGE UNDER EDUCATIONAL COMPLEX ALTERNATIVE

	Up to 5 years	5-10 years
Pepperdine		
Staff	100	300
Students	90	1,700
Junior College		
Staff	110	600
Students	175	440
Total	475	3,040

Section VIII

BOUNDARIES OF AFFECTED AREAS

Section VIII
BOUNDARIES OF AFFECTED AREAS

The boundaries of the various environmental impacts attributable to the proposed airport complex will vary by type of impact and level of magnitude.

Potential direct and secondary impacts from population growth due to the project may be expected to be confined almost entirely to Ventura County, and to be concentrated in the immediate Camarillo-Oxnard area.

Direct and secondary land-use impacts are expected to be confined to properties immediately adjacent to, or in the near vicinity of, Oxnard Air Force Base and, to a lesser extent, the existing Ventura County Airport at Oxnard. These are the areas expected to be most affected by resultant real estate market pressures and environmental effects, which could be reflected in changes in local zoning and general plan designations.

Visual impacts may be expected to be confined to those areas from which the site is visible, including the site itself.

The boundary of the area where detectable, but not necessarily significant, changes in traffic volumes and/or distribution is generally described by a circle of an approximate 12-mile radius from Oxnard AFB. The area extends to Ventura on the west, Santa Paula on the north, Thousand Oaks on the east, and the coast on the south and west.

With regard to air quality impacts, areas as far as four miles downwind could be affected with increased concentration of particulates and sulfur dioxide during peak hour conditions.

Noise impacts will affect inhabited areas surrounding the airport, areas beneath take-off approaches, and areas beneath flight paths.

Impacts upon utilities will be primarily limited to the local service areas of utility agencies.

Water quality/hydrology impacts will generally be restricted to the drainage basin and the sanitary district in which the site is located.

Appendices

Appendix A

ORGANIZATIONS AND PERSONS CONTACTED

Appendix A

ORGANIZATIONS AND PERSONS CONTACTED

Camarillo College -

Robert Lopez

Citizens Against Camarillo Airport (CACA) -

Mary Gale

Citizens for Sensible Airport Development -

Delton Johnson

City of Camarillo -

City Manager - Norman Boehm
City Councilman - Ned Chatfield
Planning Commissioner - Mary Gale
Planning Department - Tony Boden, Larry Davis
Department of Public Works - Director Earl Bennett, Joe Howard, Dave Atkinson
Municipal Treatment Plant - Don Rayburn
Administrative Assistant - William Eichenberg

City of Oxnard -

Fire Department - Chief Furr
Planning Department - Gene Hosford, Joe Hunter
Police Department - Chief Snyder
Union High School District - Lou Jonn

Federal Aviation Administration, Los Angeles

Hughes Air West -

Richard Fitzgerals

Oxnard Air Force Base -

Fred Visconti

Pepperdine University -

Dr. Larry Hornbaker

PG&E Company, San Francisco, California -

George Freymiller

Pleasant Valley Recreation and Park District -

Eldred Lokker

Point Mugu Naval Air Station Public Affairs Office -

Lt. Commander Richard McKuen

Pro-Airport Committee -

Edward Leland

Romeny, Stone, Smith and Drescher (Counsel for CACA) -

Steven Stone

Southern California Association of Governments -

Shant Agajanian
William Dochnahl

Southern California Edison Company,-Oxnard -

Nestor Valdez

Southern California Gas Company, Santa Barbara -

Larry Alcorn

U.S. Environmental Protection Agency, San Francisco

U.S. Geological Survey, Menlo Park -

Russ Campbell
William Ellsworth

U.S. Soil Conservation Service, Somis, California -

Mr. Thompson

Ventura County -

Planning Department - Kim Hocking, Victor Kahmi
Department of Public Works - Al Knuth, Felix Martinez, Blaze Cilweck
Department of Airports and Harbors - Airport Manager A.M. Grisham,
Tom Volk, Chris Kunze
Regional Sanitary District - Mr. Lambie
Aviation Advisory Committee - Louis Simon
Sheriff's Department - Mr. Wilburn
Fire Department - Robert Mandee
Airport Land Use Commission - Philip Hawthorne

Ventura County Air Pollution Control District

Ventura County Flood Control District -

William Hughes

Ventura Refuse Disposal Company

Appendix B

COUNTY OF VENTURA ORDINANCE
GUIDING DEVELOPMENT OF AIRPORTS

AN ORDINANCE GUIDING DEVELOPMENT OF AIRPORTS BY THE COUNTY OF VENTURA

SECTION 1.

(a) VOTERS SHALL HAVE THE RIGHT TO APPROVE AIRPORTS LOCATED WITHIN CITY LIMITS. Prior to the establishing, owning, operating, leasing or maintaining of any airport by the County of Ventura located in whole or in part within any incorporated city in the County of Ventura, approval by the majority of voters voting at any election on such issue of any such city shall first be obtained.

(b) EFFECT ON EXISTING AIRPORTS. This Section shall not prohibit the County of Ventura from maintaining and operating any airport which was regularly and actively being operated by any governmental entity or agency as an airport on a day to day basis with flight operations as of December 1, 1972; provided, however, such excepted airport shall not have any runways added, nor shall any of the runways of such excepted airport be extended, widened, lengthened, strengthened nor capped unless the question of such addition, extension, widening, lengthening, strengthening or capping of such runway or runways has been submitted to the voters of the city in which such airport is located and a majority of those voting on such question have voted in favor thereof. Maintenance and repair of existing runways that would not expand the then existing levels of service provided by said runways may be performed without such a vote.

SECTION 2. ZONING RESTRICTIONS AROUND AIRPORTS NOT LOCATED IN CITIES. Except as may be permitted pursuant to the provisions of Section 1 of this ordinance, the County of Ventura shall not establish, own, lease, operate nor maintain any airport located in unincorporated territory, if any portion of any runway of such airport is within one and one-half (1 1/2) miles of any property limited by the applicable zoning ordinance for such property to residential uses.

SECTION 3. DEFINITION OF "AIRPORT". For the purposes of this ordinance, airport shall include any airstrip, landing strip, pad, runway or other facility for the landing or taking off of fixed-wing or other aircraft, including helicopters. This ordinance shall not be applicable to public safety or emergency heliports or public safety or emergency helipads.

SECTION 4. AGENCIES AND ENTITIES AFFECTED. For the purposes of this ordinance, the County of Ventura shall include any agency or entity formed pursuant to a contract to which said County is a party, or any agency or entity of which said county is a party or a member, or any agency or entity established by said county.

SECTION 5. SEVERABILITY. If any section, subsection, sentence, clause, phrase or portion of this ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The people hereby declare that they have adopted this ordinance and each section, subsection, sentence, clause, phrase, or portion thereof, irrespective of the fact that any section, subsection, sentence, clause, phrase or portion be declared invalid or unconstitutional.

SECTION 6. EFFECTIVE DATE. This ordinance shall take effect immediately upon its adoption.

Appendix C

PROPOSED AIRPORT
OPERATING RESTRICTIONS

Appendix C

PROPOSED AIRPORT OPERATING RESTRICTIONS

The following restrictions shall be imposed for the purpose of assuring that operation of the airport is economically viable, meets the aviation demand and will be compatible with the surrounding community:

a. The main runway threshold shall be placed 3000 feet west of its present location, providng a usable surface of 150 x 6000 feet.

b. The preferred runway for takeoff shall be Runway 26 whenever aircraft performance allows this use and the tailwind component does not exceed 10 knots.

c. The preferred runway for IFR landing shall be Runway 08 whenever aircraft performance allows this use and the tailwind component does not exceed 10 knots.

d. Noise abatement procedures shall be in effect for all arrivals and departures. Aircraft shall follow specific FAA-adopted traffic patterns without deviation, except in an emergency, and make appropriate power adjustments within safety limits to prevent noise levels from exceeding those prescribed by law.

e. Landings and takeoffs of twin-wheel aircraft in excess of 115,000 lbs. gross weight are prohibited except as individually approved by the Airport Supervisor.

f. Ground operation of jet engines shall be held to a minimum at all times.

g. The airport will be closed between 10 p.m. and 7 a.m., except in emergencies, with the understanding that the County will continue to provide existing services at existing airports.

h. The airport VFR traffic pattern shall be placed to the south of the airfield. Overflight of populated areas below 2000 feet above ground level is prohibited except under actual instrument conditions. Jet aircraft shall maintain at least 2000 feet above ground level as long as practicable prior to commencing landing approach.

i. Practice missed approaches will be made to the south under VFR conditions.

j. The County will negotiate with scheduled airlines and the FAA for a limit of 14 takeoffs and 14 landings per day by 1990 based on forecasted demand and environmental quality. It is the County's intention to operate in accordance with noise contours listed in "k" below in that these contours were based upon 14 takeoffs and 14 landings per day. However, scheduled airline operations shall be in accordance with Federal noise standards now being formulated by the EPA or other Federal agencies rather than the provisions of Paragraph "k" below at the time such Federal noise standards for airports or aircraft operations are promulgated.

k. Aviation activity noise shall conform within the estimated CNEL = 60 dB and 90 dBA (single event) noise contours for use as a commerical aviation facility (1975), according to Figures 2 and 6 of the Environmental Impact Study of the Camarillo Airport prepared for the Ventura County Board of Supervisors by Wyle Laboratories and dated October, 1970.

Appendix D

TRANSPORTATION
PUBLIC ATTITUDE QUESTIONNAIRE

TRANSPORTATION PUBLIC ATTITUDE QUESTIONNAIRE

(raw data expressed in percents except Questions 8, 9 & 10)

[1&2] 1. AGE: ☐ YEARS   2. [3] SEX: 53 (1) MALE 47 (2) FEMALE

3. EDUCATION: (CHECK HIGHEST LEVEL COMPLETED)

[4] 5 (1) ELEMENTARY 49 (2) HIGH SCHOOL 32 (3) COLLEGE 14 (4) POSTGRADUATE

4. COMMUNITY YOU LIVE IN ____________________ ZIP CODE [5,6,7] ☐

5. FAMILY INCOME: (ANNUAL INCOME - CHECK ONE)

1 (1) $0- 999   7 (2) $4-6,999   17 (3) $ 9-11,999   23 (4) $15-19,999   5 (5) $30,000+

[8] 4 (6) $1-3,999   7 (7) $7-8,999   19 (8) $12-14,999   17 (9) $20-29,999

[9] 6. HOW MANY PEOPLE ARE IN YOUR HOUSEHOLD? 2.8 AVG.

7. OCCUPATION: (CHECK ONE)

17 (1) SKILLED   11 (2) RETIRED   3 (3) UNSKILLED   13 (4) MANAGERIAL   24 (5) PROFESSIONAL

[10] 4 (6) STUDENT   7 (7) CLERICAL   19 (8) HOUSEWIFE   2 (9) CURRENTLY UNEMPLOYED

8. HOW FAR IS IT FROM HOME TO WORK? (ONE WAY) 12 AVG [11&12] MILES   19 AVG [13&14] MINUTES

9. HOW FAR IS YOUR AVERAGE TRIP (ONE WAY) FROM HOME TO THE FOOD MARKET? 1.7 [15&16] MILES AVG.   4.8 [17&18] MINUTES AVG.

10. HOW MANY OF EACH OF THE FOLLOWING KINDS OF TRANSPORTATION ARE OWNED BY MEMBERS OF YOUR FAMILY? (INDICATE HOW MANY IN EACH SPACE)

[19] ___AUTO/PICKUP   [20] ___MOTORCYCLE   [21] ___BICYCLE   [22] ___AIRPLANE   [23] ___OTHER (SPECIFY)________

11. FOR WHICH OF THE FOLLOWING ACTIVITIES WOULD YOU BE WILLING TO USE PUBLIC TRANSPORTATION IF IT WERE CONVENIENT AND INEXPENSIVE? (CHECK MORE THAN ONE IF NECESSARY)

46 [24] GETTING TO WORK/SCHOOL   27 [25] GETTING TO RECREATION AREAS   22 [26] NONE

33 [27] GOING SHOPPING   39 [28] LONG DISTANCE TRAVEL (50 MILES OR MORE)

12. ARE YOUR TRANSPORTATION NEEDS BEING MET TO YOUR SATISFACTION?

[29] 61 (1) YES   39 (2) NO

13. WHAT CHANGES, IF ANY, WOULD YOU LIKE TO BE MADE TO MEET YOUR TRANSPORTATION NEEDS? (CHECK MORE THAN ONE IF NECESSARY)

7 [30] BUY ANOTHER VEHICLE   52 [31] PROVIDE MORE PUBLIC TRANSPORTATION   26 [32] NONE

9 [33] BUILD MORE HIGHWAYS   17 [34] OTHER (SPECIFY) ____________________

14. WHAT FEATURES WOULD YOU CONSIDER MOST IMPORTANT IN A LOCAL PUBLIC TRANSPORTATION SYSTEM? RANK IN ORDER OF THEIR IMPORTANCE FROM 1 TO 6 (NUMBER 1 BEING MOST IMPORTANT)

6 [35] PRIVACY   2 [36] LOW COST   1 [37] CONVENIENCE

4 [38] COMFORT   3 [39] SPEED   5 [40] APPEARANCE & CLEANLINESS

15. If public transportation is expanded, what new routes, if any, would you like to see?

From________________ To________________

From________________ To________________

☐ None

16. Would you pay an average of 5¢ per mile to ride a public transportation system?

[41] 64 (1) Yes 36 (2) No

17. Do you have a public bus system within walking distance of your home?

[42] 33 (1) Yes 67 (2) No

18. Do you know where the bus stops nearest your house and the destination of the bus that stops there?

[43] 42 (1) Yes 58 (2) No

19. Do you feel you have alternatives to your present form of transportation?

[44] 25 (1) Yes 75 (2) No

20. Do you think that the car should be replaced as the primary form of transportation?

[45] 39 (1) Yes 61 (2) No

21. Please check your opinion of the following features of Ventura County.

		(1) Good	(2) Fair	(3) Poor	(4) No Opinion
[46]	1. Entertainment	14	40	38	8
[47]	2. Public Transportation	6	24	58	12
[48]	3. Air Quality	48	41	9	2
[49]	4. Shopping	54	37	8	1
[50]	5. Police Protection	52	34	8	6
[51]	6. Freedom from Traffic Problems	35	46	17	2
[52]	7. Tap Water Quality	26	38	34	2
[53]	8. General Appearance of County	58	36	5	1
[54]	9. Schools and Colleges	50	35	9	6
[55]	10. Your Local Government	28	46	16	10

22. Assuming that transportation systems influence growth, do you want a system that would: (check one)

40 (1) Serve existing needs without encouraging more growth

[56] 44 (2) Serve existing needs while providing for some additional growth

16 (3) Serve existing needs and also encourage additional growth

23. On which of the following would you support spending more tax money?

		(1) Support	(2) Not Support	(3) No Opinion
[57]	1. Improve police protection	63	20	17
[58]	2. School construction	45	38	17
[59]	3. Buy open space and parks	60	27	13
[60]	4. A commercial airport	28	60	12
[61]	5. Sewer treatment facilities	57	20	23
[62]	6. Improving the streets and highways system	58	27	15
[63]	7. Health and hospital facilities	57	27	16
[64]	8. Community and recreation center	52	32	16
[65]	9. Improving public transportation services	65	21	14
[66]	10. Encouraging economic development	41	40	19

24. The design of a public transportation system is largely dependent upon where people work. Which of the following choices would you prefer? (Check one)

29 ☐(1) A transportation system that would take people out of the County to jobs.

45 ☐(2) Encouraging new industry and jobs to develop in the County and developing a transportation system to match.

[67] 26 ☐(3) Neither

25. Assuming the current growth rate of 4 1/2% per year continues, the County's population will approximately double in the next 15 years. Do you feel that this growth rate is:

[68] 63 ☐(1) Too Fast   36 ☐(2) About Right   1 ☐(3) Too Slow

26. What type of dwelling unit do you prefer to live in? (Check one)

16 ☐(1) House-City Atmosphere   2 ☐(2) Apartment   5 ☐(3) Condominium   1 ☐(4) Other

[69] 74 ☐(5) House-Country Atmosphere   1 ☐(6) Duplex or Triplex   3 ☐(7) Mobile Home   ________

27. Would you like to see cities planned to reduce travel distances within the city?

[70] 65 ☐(1) Yes   13 ☐(2) No   22 ☐(3) No Opinion

28. Would a commerical airport in Ventura County, which would provide commuter and limited jet short haul service (500 miles or less), be an advantage to you?

[71] 30 ☐(1) Yes   70 ☐(2) No

29. Would you like to see the airport described in question 28 constructed in the next 15 years?

[72] 40 ☐(1) Yes   60 ☐(2) No

30. If the airport described in question 28 were constructed, what location would you prefer?

16 ☐(1) Existing Oxnard Airport   18 ☐(2) Existing Point Mugu Military Airport

[73] 36 ☐(3) The abandoned Oxnard Air Force Base   25 ☐(4) None   5 ☐(5) Other________

31. Public transportation systems are usually supported by some sort of tax. What type of financing would you prefer? (Check one)

25 ☐(1) Gas Tax   1 ☐(2) Property Tax   6 ☐(3) Income Tax

[74] 20 ☐(4) Sales Tax   32 ☐(5) Bonds   16 ☐(6) Other

32. Which type of transportation do you use most often for each of the five activities listed below? (Check one per activity)

For example:

	Auto	Motorcycle	Bicycle	Bus	Train	Taxi	Airplane
Getting to work	X						

Type of Transportation

	Activity	(1) Auto	(2) Motorcycle	(3) Bicycle	(4) Bus	(5) Train	(6) Taxi	(7) Airplane
[75]	Getting to work	96	1	2	1	-	-	-
[76]	Going Shopping	97	-	1	2	-	-	-
[77]	Long Distance Travel (over 50 miles)	89	-	-	2	1	-	8
[78]	Recreation During Leisure Hours (scenic drives, bicycling, etc.)							