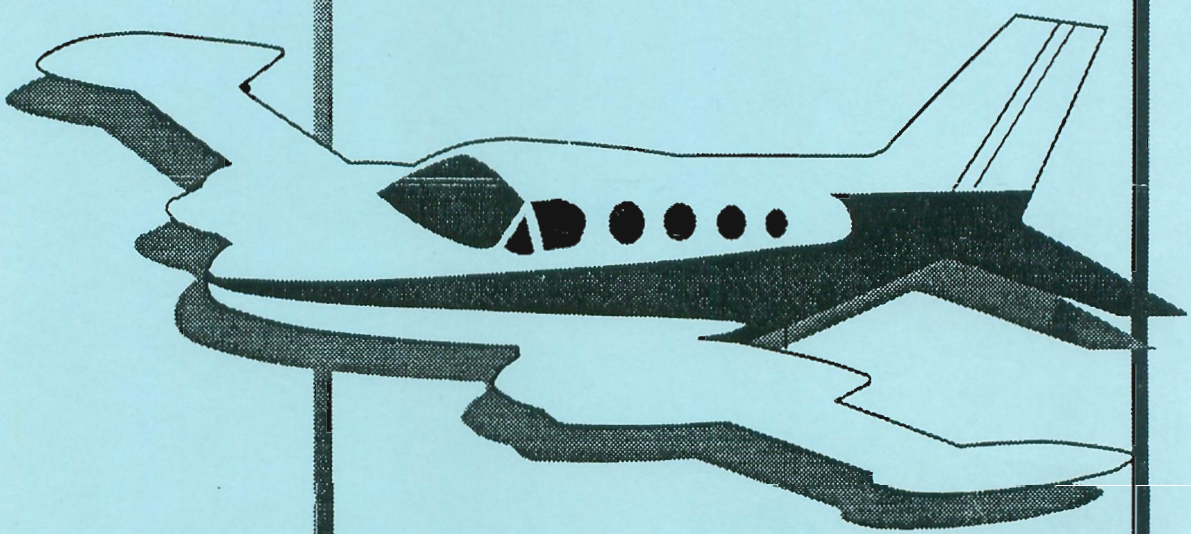
Final Report

Lompoc Airport Master Plan



City of Lompoc

July 1993

Errata
Lompoc Airport Master Plan - December 1996

Since the preparation of the final report of the Lompoc Airport Master Plan in July 1993, there have been several significant changes made at the Lompoc Airport. The following information provided below will update previously provided information to current 1996 data. If you have any questions regarding this updated information, please contact Barry Rondinella, Aviation and Transportation Administrator at (805) 736-1261, Extension 218.

Page	Updated Information
2-1, 3-2	Executive Summary/Runway Taxiway System - The Lompoc Airport now encompasses 194.37 acres, due to land acquisition of 18.16 acres for runway approach protection in 1995.
2-2	Airport Plans - Landside recommendations include the acquisition of either 16.0 acres south of the Airport west of O Street or 11.74 acres south of the airport and east of O Street. This change in the project description resulted after attempts to purchase the 11.74 acres south of the airport in 1995 were stalled. This property has recently been re-listed for sale, and may be sought for purchase at a future date as proposed.
Figure 3-2	Revise Existing Airport Layout - Please see the Environmental Impact Report prepared for the LAMP for the corrected Airport Layout Plan. Several revisions have been made including the construction of the Guerra hangar and the relocation of the Jordan hangar, realignment and lengthening of George Miller Drive, the fuel tanks have been relocated to the northern taxiway, south of the FBO, and improvements have been made to the Roadside Park.
3-11	Fuel Storage - As approved by the Planning Commission in 1996, a 10,000 gallon fuel tank for Avgas fuel has been permitted and will be installed by January - February 1997. Jet A fuel is delivered directly to fuel trucks operated by Arctic Air.
3-11	Automobile Parking - As a result of the realignment of George Miller Drive, the existing auto parking facilities now total 119 paved spaces at various locations around the Airport. The breakdown of paved parking stalls is as follows: Administration Building/Marshall Aviation - 25 spaces Arctic Air - 45 spaces T-Hangar Area - 15 spaces East Hangar Area - 34 spaces

4-11 Vehicle Traffic - Change last sentence to "This development would use alternative access routes such as "O" or "V" Streets. Change forecast information to the following:

	1996	2000	2005	2010	2015
Weekdays	**450**	710	750	790	830

5-12 Fixed Based Operator (FBO) Area - Change Lompoc Aviation to Marshall Aviation.

Figure 7-1 Revised Airport Layout Plan - See Environmental Impact Report for revised map.

Figure 7-2 Revised Building Area Plan - See Environmental Impact Report for revisions.

Figure 7-4 Revised Airport Land Use Plan - See Environmental Impact Report for revisions.

7-5, 7-6 Last Paragraph - Three parcels of land (APN 93-051-12, 13 and 14) have been purchased by the City of Lompoc to provide for a Runway Protection Zone for Runway 25. An avigation easement is no longer necessary. An avigation easement for Runway 7 Protection Zone, which is off Airport property, is not required because that property is under federal ownership and consists largely of the Santa Ynez River Channel.

Table 8-4 Corrections to Table 8 - Schedule of Phase I Improvement Projects:

1994 Acquisition of 18.16 acres east of H Street for Runway Protection Zone.
1996 Modify George Miller Drive and construct vehicle parking areas.
1996 Acquisition of 16.0 acres on south side of Airport.
1996 Construct Fuel Farm with 10,000 above ground storage tank
1997 Construct 21 rectangular/T-hangars and 2 corporate hangars.
1998 Provide a localizer/DME or straight-in approach system
1996 Construct access road to northwest FBO area
1998 Extend runway and north parallel taxiway
1997 Construct eastern part of new south parallel taxiway and new ramp area.
1998 Construct O Street access road and vehicle parking for based aircraft owners.
1999 Provide aircraft wash area.
2000 Construct first stage of terminal building, including access road and vehicle parking. Also construct new Aircraft Rescue and Fire Fighting Facility.

CITY OF LOMPOC
DEPARTMENT OF PUBLIC WORKS

LOMPOC AIRPORT MASTER PLAN

FINAL REPORT

July 22, 1993

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The preparation of this document was financed in part through a planning grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airways Improvement Act of 1982, as amended. The contents of this report reflect the views of P&D Aviation, a Division of P&D Technologies, which is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein, nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

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Lompoc Airport
Master Plan

Section 1

Introduction

SECTION 1
INTRODUCTION

BACKGROUND

Lompoc Airport, a publicly owned facility, serves the aviation needs of the Lompoc Valley area in Santa Barbara County. The Airport is owned by the City of Lompoc and operated by the Department of Public Works. In order to determine the potential of the Airport and specific opportunities for improving facilities, a planning grant was obtained from the Federal Aviation Administration (FAA) under the Airport Improvement Program (AIP) of the Airport and Airway Improvement Act of 1982, as amended. On April 16, 1992, a contract was awarded to P&D Aviation, a division of P&D Technologies of Orange, California for the preparation of a comprehensive 20-year master plan for Lompoc Airport.

The documentation for this study consists of three Technical Reports issued during the course of the project and a Final Report and Environmental Initial Study. In addition a set of airport plan sheets was prepared.

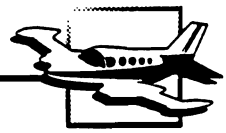
PURPOSE AND SCOPE OF STUDY

In August 1991, the Lompoc Airport was acquired by the City of Lompoc from the County of Santa Barbara. At that time, there was no current master plan of the Airport. The Lompoc Airport Transfer Study Final Report prepared by the City in May 1989 recommended that an Airport Master Plan be prepared to identify Airport needs and to guide the future development of the Airport.

The development of the Airport is considered instrumental to the overall growth of the City of Lompoc and the broadening of its economic base and employment opportunities. It is envisioned that the availability of expanded aviation facilities will promote the location of new businesses in the industrial park on the south side of the Airport.

This Airport Master Plan was prepared to determine the extent, type and schedule of development needed to accommodate future aviation demand at the Airport. The recommended development is presented in the following three planning periods: short-term (1993-2000); intermediate-term (2001-2005); and, long-term (2005-2015). The recommended development will satisfy aviation demand and be compatible with the environment, community development and other transportation modes. Above all else, the Plan is technically sound, practical and economically feasible. Specifically, the Master Plan:

- Establishes a schedule of priorities and phasing for the various improvements in the Plan.
- Provides an effective graphic presentation of the ultimate development of the Airport.



- Describes the various concepts and alternatives which were considered in the establishment of the proposed Plan.

- Provides a concise and descriptive report so that the impact and logic of its recommendations can be clearly understood by the community the Airport serves and by those authorities and public agencies that are charged with the approval, promotion and funding of the improvements proposed in the Master Plan.

- Ensures that the development of Airport facilities thoroughly complements and supports development envisioned in the City of Lompoc and surrounding area.

- Promotes the safety of Airport operations.

THE PLANNING PROCESS

A transportation planning study, such as this, is accomplished by following some fundamental, sequential steps that are briefly stated here as an overview of the work which was accomplished. The initial step involved taking inventories of existing facilities and systems, conducting surveys of Airport users, documenting existing conditions, and coordinating activities with other agencies. Next, air traffic demand forecasts were prepared and then used to develop a listing of required facilities. Once this list was determined, requirements were compared with existing facilities to identify deficiencies. Alternative development concepts to satisfy the deficiencies were then developed and evaluated, and a recommended concept was identified. Once the preferred alternative was identified, detailed development plans were prepared.

Section 2

Executive Summary

SECTION 2
EXECUTIVE SUMMARY

This document describes the findings and conclusions of an Airport Master Planning Study for Lompoc Airport. The purpose of the study was to provide a plan for the orderly development of new facilities and other improvements at the Airport to meet the community's air service needs to the year 2015. Lompoc Airport, owned and operated by the City of Lompoc is located on the north side of the City of Lompoc at the south bank of the Santa Ynez River, 150 miles northwest of Los Angeles. The Airport encompasses 175 acres and has a single 3,600 foot runway to serve general aviation users. Other Airport facilities consist of an airport administration/terminal building, an FBO maintenance hangar and offices, individual aircraft hangars, a Non-Directional Radiobeacon (NDB) and Automated Weather Observing System (AWOS).

The results of this master planning effort include recommended time-phased improvements to the Airport, which are depicted on plans and described in Section 7. The important findings and conclusions of the study are summarized below.

FORECASTS

- The number of aircraft permanently based at the Airport is forecast to increase from 68 in 1992 to 104 in 2015. Multi-engine piston and turbine powered aircraft are projected to increase from 4 to 20 over the same period.

- Annual operations (takeoffs and landings) are projected to increase from an estimated 36,000 in 1992 to 55,000 in 2015. Operations during the average day of the peak month are forecasted to increase from 133 to 200 over the twenty-three year period.

- Local (training) operations are expected to continue to account for 50 percent of all Airport operations.

- The number of annual instrument approaches is forecasted to increase from 1,220 in 1992 to 2,750 in 2015.

FACILITY REQUIREMENTS

- Additional airfield operating capacity will not be needed over the next 23 years. Annual airfield capacity is 190,000 operations a year and hourly airfield capacity is 115 operations. Projected demand in 2015 is approximately 25 to 30 percent of these capacity limits.

- The present runway length of 3,600 feet must be increased to 4,600 feet to accommodate the types of aircraft anticipated to use the Airport.

- A straight-in non-precision instrument approach procedure is needed to meet the needs of existing and potential Airport users and to enhance the safety of Airport operations.

- An estimated 34 additional rectangular or T-hangars will be needed by 2015. It is estimated that six of these new hangars should be corporate or executive sized hangars.

- Fixed base operator (FBO) space requirements will grow from 2.3 acres in 1992 to 3.6 acres in 2015. Additional space will be needed on the Airport for other related general aviation businesses.

- Permanent fuel storage tanks are needed to adequately serve Airport customers. By 2015, the fuel storage requirement on the airport will reach 23,000 gallons.

- At sometime in the future, a fire station should be located on the Airport capable of accommodating at least one fire truck and manned with aircraft fire-fighting specialists.

ALTERNATIVE DEVELOPMENT CONCEPTS

- Three alternative development concepts were prepared and evaluated. Each concept provided for the extension of the runway to 4,600 feet, a localizer/DME approach system, a new or expanded Airport terminal building, additional aircraft hangars, and additional FBO space. The concepts varied in the extent of development, particularly development on the south side of the runway.

- The recommended development is a refinement of Concept C and provides for the development of a new Airport terminal/administrative building and other aviation facilities the south side of the Airport.

AIRPORT PLANS

- Recommended airside improvements include a 1,000 foot extension of the runway, extension of the north parallel taxiway, a new full length south parallel taxiway, a new exit taxiway at midfield for the south parallel taxiway, a new transient tie-down apron, runway protection zone acquisition, and a new localizer/DME approach system.

- Landside recommendations include the acquisition of 11.7 acres south of the Airport between the extensions of L and O Streets for a new Airport administration/terminal building, a new aircraft rescue and fire fighting (ARFF) facility, aircraft hangars and other aviation related uses; the development of existing Airport property on the southside of the runway for hangars and helicopter facilities, the expansion of FBO areas on the northside of the runway, new T-hangars adjacent to the existing City hangars; a new fuel farm area; an aircraft wash facility; and a new community park.

- Airport noise contours are projected to increase due to the growing numbers of aircraft operations and the expected trend towards larger general aviation aircraft at the Airport.

Aircraft noise contours are not projected to adversely impact residential or other noise - sensitive land uses.

CAPITAL COSTS AND FINANCING

- The estimated capital cost of all recommended Airport improvements is $8.8 million, which includes engineering design and construction administration costs, and an additional 15 percent for contingencies.

- Capital improvement costs are estimated to total $7.0 million in the period from 1993 to 2000, $1.3 million from 2001 to 2005 and $0.6 million from 2006 to 2015.

- A total of $5.6 million in capital cost is estimated to be eligible for FAA and other government grant funding. However, these projects must compete with other projects for funds, and therefore all projects eligible for FAA or other funding might not receive it.

- Private sources could contribute $1.1 million for the construction of hangars over the next 23 years. The City of Lompoc would be required to contribute $2.1 million towards funding the recommended improvements. The City's share would average approximately $93,000 a year over the next 23 years.

- Several large capital cost items will benefit City residents as a whole in addition to Airport users, such as a new fire station ($672,000) and a new community park ($495,000).

- The Airport is responsible for creating 111 jobs in the local area and produces direct and indirect local revenues of $5.6 million a year. By 2015, the economic benefit of the Airport to the local economy is projected to increased to 170 jobs and $8.5 million in annual revenues to the local economy.

Section 3

Inventory

SECTION 3
INVENTORY

INTRODUCTION

This section documents the number, type and general description of the existing facilities and services at Lompoc Airport, including the airfield, aircraft parking areas, building area, ground access, parking, navaids, pavement conditions, utilities and the physical characteristics of the airport site.

A comprehensive inventory of existing facilities was conducted because, in later phases of the work program, the capability to accommodate future traffic volumes was evaluated. By comparing the capacity of existing facilities with future traffic volumes (demand/capacity analysis), capacity deficiencies were determined. Once the deficiencies were identified, alternative expansion concepts (capable of accommodating future demand) were formulated and evaluated, and ultimately a recommended development program was prepared.

The following subsections document the findings of the facility inventory.

AIRPORT LOCATION AND ROLE

Lompoc Airport is situated in the western part of Santa Barbara County. The airport is located in the City of Lompoc's north side on the south bank of the Santa Ynez River, west of State Highway 1. The Airport location and regional highway system that serves the Airport are graphically presented in Figure 3-1.

A portion of the Airport to the north and west lies within the 100-year flood area of the Santa Ynez River (Figure 3-2). This constraint effectively limits airport development to the north, although the runway can be extended to the west with the addition of fill material.

Lompoc Airport functions in several roles as defined by the FAA. First, it is a general aviation airport which means it enplanes less than 2,500 annual scheduled commercial passengers and is used exclusively by private and business aircraft that do not provide common-carrier passenger service. By comparison, other neighboring airports in Santa Barbara and Santa Maria are primary airports which are defined as public-use commercial airports enplaning at least 0.01 percent of all passengers enplaned annually at U.S. airports. Santa Ynez Airport is an example of another general aviation airport in the region. Together with Santa Barbara, Santa Maria, Santa Ynez, and New Cuyama (privately owned), Lompoc Airport is one of five public use airports in Santa Barbara County.

Lompoc Airport is contained in the National Plan of Integrated Airport Systems (NPIAS) and is classified as a general utility airport which is defined as an airport that is designed to serve all airplanes classified by the FAA as Aircraft Approach Category A and B. These are aircraft with approach speeds up to but not including 121 knots.

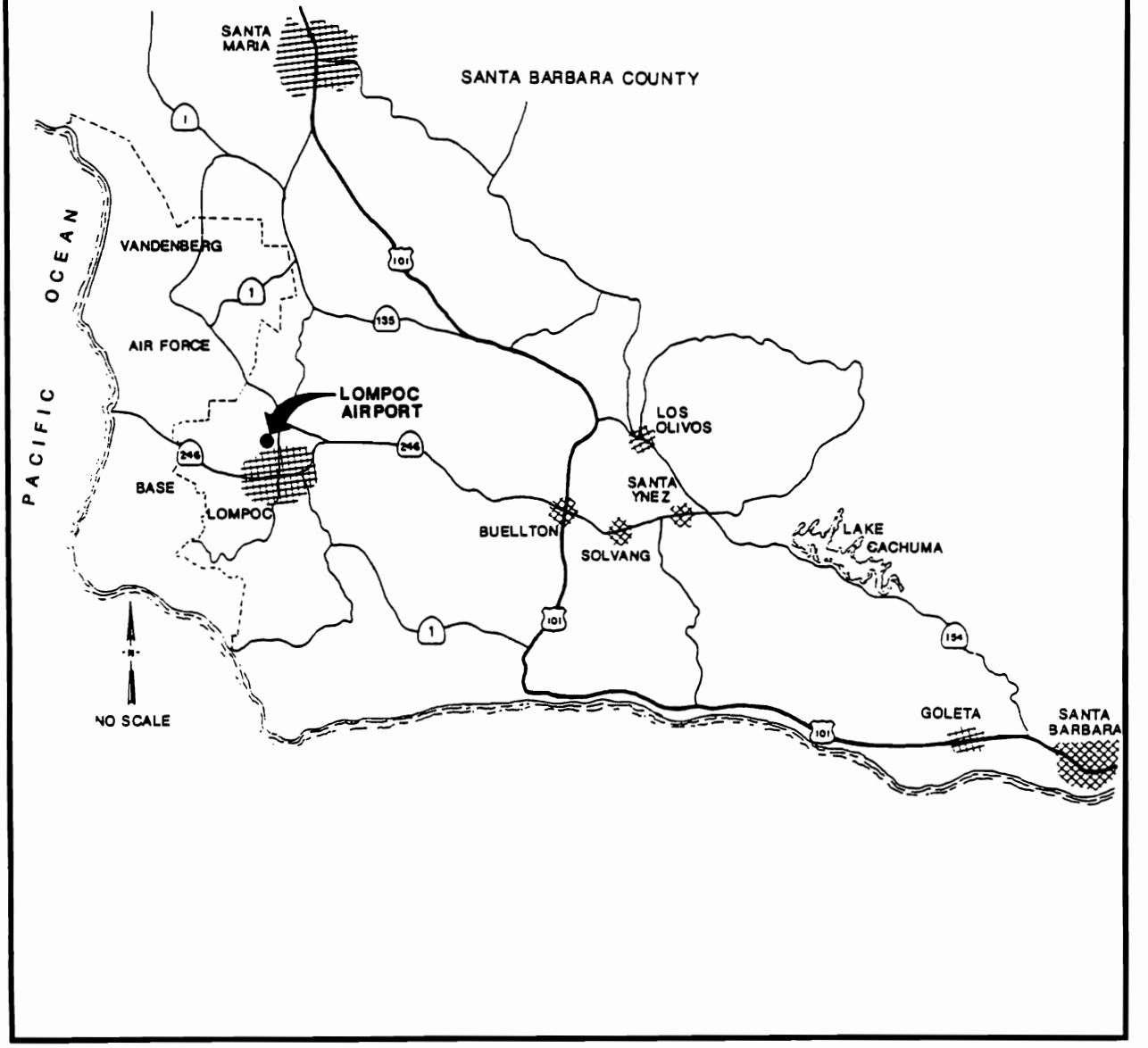


FIGURE 3-1

AIRPORT LOCATION MAP

Planning standards contained in FAA AC 150/5300-13, Airport Design, will be applied in this study of Lompoc Airport using standards for Airplane Design Group II aircraft. These standards are for aircraft with wing spans from 49 feet up to but not including 79 feet, and ensure that general aviation aircraft that could be expected to use the Airport will be accommodated by facilities of appropriate design.

AIRPORT HISTORY

Lompoc Airport was developed by the County of Santa Barbara in 1960 on a 156-acre site which at the time was one-half mile north of the City of Lompoc. Initial construction included a 3,600-foot asphalt runway, 12 T-hangars, a conventional hangar, an administration building, and two 10,000-gallon underground fuel tanks (which were subsequently removed). The original Airport operating permit was issued by the State of California on December 12, 1960. In 1966, 12 additional T-hangars were built.

In the late 1980s the County expressed interest in transferring the Airport to a local agency. Subsequently, the City of Lompoc retained Skyway Engineering to study the feasibility of transferring the Airport to the City. Its report (The Lompoc Airport Transfer Study, Final Report, May 1989) recommended transfer to the City. In August 1991, the transfer from the County to the City was completed.

The FAA has contributed to the funding of four projects at the Airport including the original land acquisition and construction. The State Division of Aeronautics has funded one project (Table 3-1).

AIRSIDE FACILITIES

The term "airside" as used in this report relates principally to the airfield facilities, or landing area, and includes the runway and taxiway system, the runway approach areas and the associated appurtenances such as airfield lighting, visual and navigation/communication aids. The aircraft parking aprons are considered "landside" because apron planning considerations are more closely associated with hangars or fixed base operator (FBO) operations which are classified in the landside element. Air traffic control facilities and meteorological considerations are also addressed in this discussion of airside facilities as they can significantly affect aircraft operations in, on and around an airport. Existing airside and landside facilities are shown in Figure 3-2 and Table 3-2.

Runway/Taxiway System

The Airport now encompasses approximately 175 acres and has a single east-west runway. The runway, which is designated Runway 7-25, is of asphalt construction and is 3,600 feet long by 100 feet wide. The true bearing of the runway is South 89°12'10" East. According to the current FAA Airport Facilities Directory, the pavement strength rating for Runway 7-25 is 17,000 pounds for single wheel main landing gears.

TABLE 3-1
HISTORY OF STATE AND FAA GRANTS AT LOMPOC AIRPORT

Date Completed	Grantor Agency	Description	Grant Amount (Dollars)
5/23/61	FAA	Land acquisition (Parcels I, III, IV, VI); construct east/west runway (approximately 100' x 3,600'), parallel taxiway (approximately 50' x 3,685'), access taxiways (approximately 50' x 175' and 50' x 240'), parking apron (approximately 17,220 square yards) including tie-down; install medium intensity runway lighting system, taxiway lighting system, beacon and beacon tower, lighted wind cone and segmented circle; mark runway and taxiways; construct revetment and remove obstructions; seed landing area, install portion perimeter fence (approximately 9,035').	528,424 [a]
5/18/79	FAA	Extend apron (approximately 6,924 square yards) including tie-downs, associated taxiway marking and fence relocation; construct holding apron, Runway End 25 (approximately 800 square yards) including associated marking and relocating existing taxiway lights; install apron floodlights.	118,500
5/10/83	FAA	Install runway end identifier lights for Runway 25; install non-directional beacon; install apron security lighting; and install radio controls for existing runway lighting system, new runway end identifier lights and future VASI.	67,860
12/8/88	FAA	Construct aircraft apron with tie-downs and lighting (approximately 400' x 230'); install security fencing (approximately 350'); install fire protection waterline (approximately 3,200').	315,900
6/31/91	State Division of Aeronautics	Overlay runway and taxiways; striping	143,000
In Progress	FAA	Airport Master Plan	60,000

[a] Total project cost: $978,563.

Sources: U.S. Department of Transportation, Federal Aviation Administration, Western-Pacific Region, Airports Division, December 1991; State of California, Division of Aeronautics.

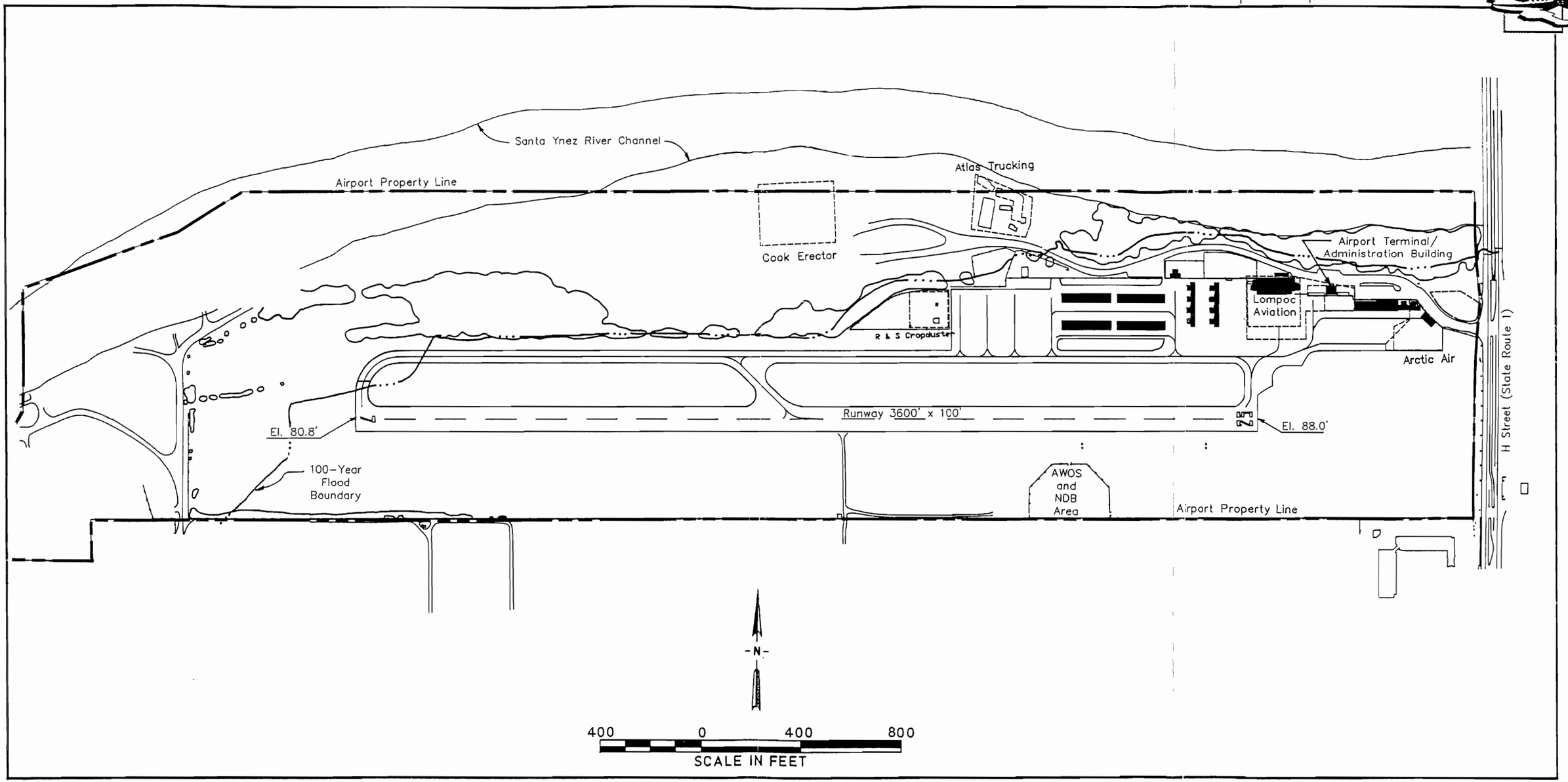


FIGURE 3-2

EXISTING AIRPORT LAYOUT

TABLE 3-2
EXISTING FACILITIES AT LOMPOC AIRPORT

GENERAL INFORMATION		
Airport Owner	City of Lompoc	
Airport Operator	City of Lompoc	
Airport Size	175 Acres	
Airport Elevation	88 feet MSL	
Mean Maximum Temperature of Hottest Month	80°F.	
AIRPORT FACILITIES		
Runways	7-25	
Taxiway	Full Parallel Taxiway - Runway 7-25	
Other Facilities	Rotating Beacon, Segmented Circle, Maintenance Hanger and FBO Facilities, Administration Building, T-hangars, Non-directional Radiobeacon (NDB), Automated Weather Observing System (AWOS), Unicom 122.7	
RUNWAY INFORMATION	**Runway 7-25**	
Type of Surface	Asphalt	
Type of Markings	Basic	
Weight Bearing Capacity (single wheel)	17,000 Pounds	
Runway Edge Lighting	Medium Intensity	
Width	100 Feet	
Full Length	3,600 Feet	
True Bearing	S89°12'10"E	
Instrument Approaches (Circling)	VOR/DME, NDB	
SPECIFIC RUNWAY DATA	**Runway 7**	**Runway 25**
Magnetic Bearing	74°	254°
Displaced Threshold	None	None
Available Length		
Takeoff	3,600 Feet	3,600 Feet
Landing	3,600 Feet	3,600 Feet
Visual Approach Indicator	None	VASI
Runway End Identifier Lights	None	REIL
Traffic Pattern	Left	Right
Traffic Pattern Altitude [a]	900 Feet MSL	900 Feet MSL

[a] Will be raised to 1,100 feet MSL (1,012 feet AGL)

Source: State of California, Division of Aeronautics, "Public Use Airport Inventory Data;" U.S. Department of Transportation, Federal Aviation Administration, "Airport Master Record," FAA Form 5010-1, June 15, 1990; City of Lompoc.

The present Airport Reference Point (ARP) is located at 34°39'58" North latitude and 120°27'56" West longitude. The established airport elevation, defined as the highest point along any of the Airport's runways, is 88 feet above mean sea level (MSL), which is found at the Runway 25 threshold.

An evaluation of the airfield pavements was conducted for Caltrans as part of its statewide Airport Pavement Management System (APMS) in June 1988. The evaluation included a review of as-built drawings and plans of record, visual survey, and preparation of a series of reports from the pavement management system. Pavement Condition Index (PCI) condition ratings were developed for numerous pavement sections at the Airport. After the Caltrans report was prepared, several improvements were made to airside pavements. In 1991, an asphalt overlay was added to the runway (inner 80 feet of width) and taxiways. A general pavement evaluation was conducted as part of this Master Plan to provide up-to-date information on the condition of the airfield pavements. Current pavement conditions and a proposed pavement rehabilitation and maintenance program are described in Appendix B.

Runway 7-25 is equipped with medium intensity runway edge lights (MIRL) and each end of the runway is equipped with threshold lights which indicate the beginning of usable runway. The runway is marked with standard visual markings. These include centerline and designator (runway number) markers.

A segmented circle is located to the south of the touchdown area of Runway 25. This marking system helps visiting pilots locate wind indicators, as well as the Airport traffic patterns.

The runway is served by a full parallel taxiway. The following is a description of the taxiway system:

- Parallel Taxiway - is north of the runway and is located with a runway centerline to taxiway separation of 250 feet. The taxiway is 50 feet wide and provides access from the runway to terminal facilities located in the northeast corner of the Airport. The taxiway is lighted with blue taxiway edge lights.

- Midfield Exit Taxiway - an angled exit taxiway is located approximately 1,850 feet from the threshold of Runway 25 and provides a midfield turnoff from the runway. This facilitates the exiting of aircraft from the runway and access to the building area.

The taxiway system described above is shown in Figure 3-2.

Meteorological Considerations

A wind rose, indicating wind speed and direction, is available from weather data collected at the former Naval Air Station Lompoc. This was a small blimp base operated during World War II within the Lompoc city limits. The wind rose appears on the current Lompoc Airport Layout

Plan. However, the plan does not indicate the period during which the observations were collected or if they were collected over 24 hours of the day.

The existing runway orientation provides 97.9 percent coverage for a 13-knot (15 mph) crosswind during all weather periods. This meets the FAA recommendation of 95 percent crosswind coverage. Thus additional runways for improved crosswind coverage are not needed.

Wind speeds of 21 knots and greater occur approximately 0.4 percent of the time. These occur from the northwest and west-northwest. Calms, winds under 3 knots, on the other hand prevail 30.2 percent of the time.

Wind data was also examined for the 10-year period from September 1979 through August 1989 from data collected at Vandenberg Air Force Base (AFB), located 6 miles northwest of Lompoc Airport. On the basis of the Vandenberg data, Lompoc Airport would have a 95.0 percent wind coverage for a 13-knot crosswind component. However, the data from Lompoc is considered more reliable than the Vandenberg data due to the relative proximity of each from the coastline and the surrounding terrain.

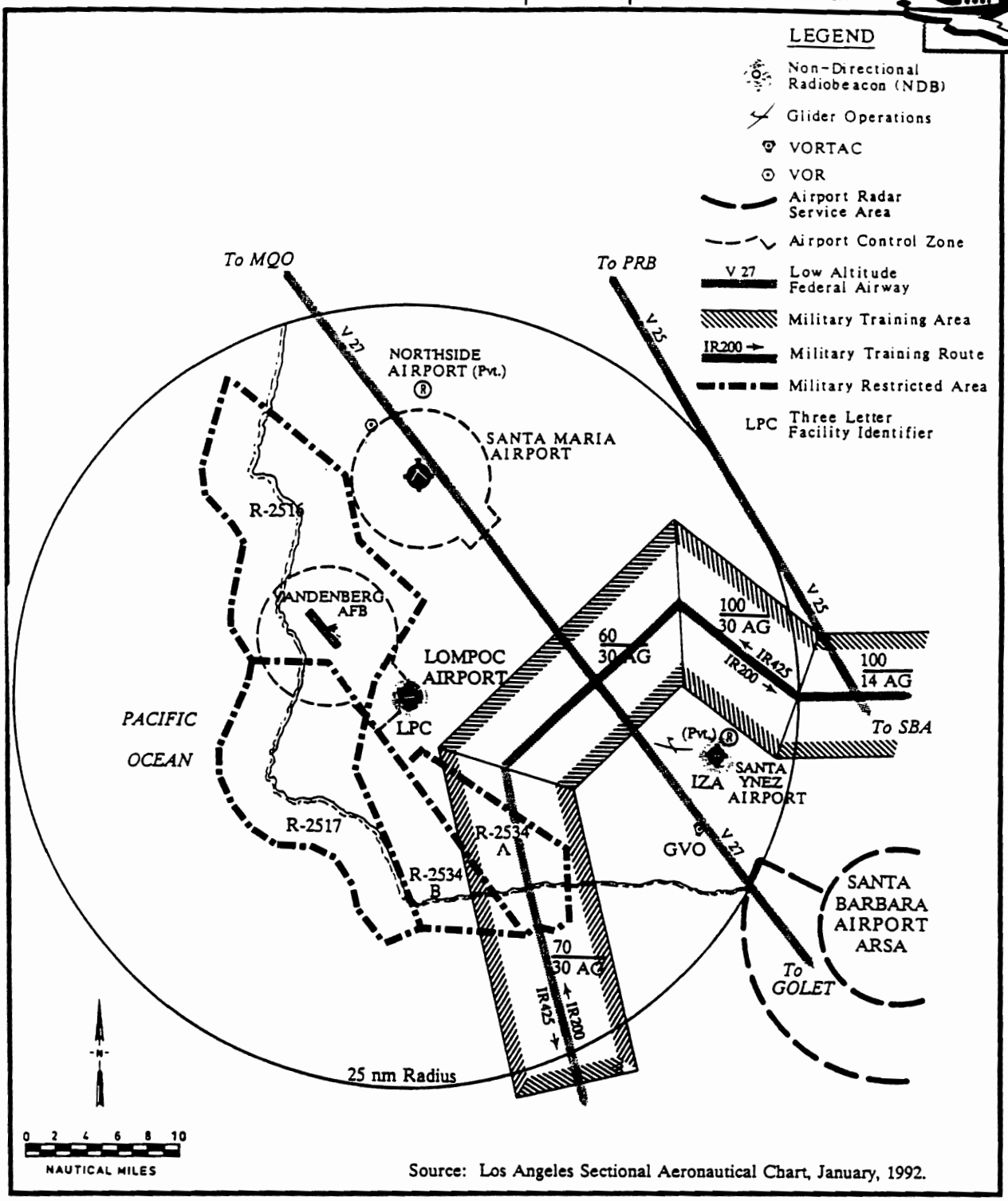
Airspace And Navigational Aids

Airspace. The existing system of enroute airways, navigational aids, and airports located within a 25 nautical mile (nm) radius of Lompoc Airport is depicted on Figure 3-3. A low altitude airway (V27) traverses the area serving those enroute aircraft flying below 18,000 feet MSL. There are 5 airports within 25 nm of Lompoc Airport which are shown on Figure 3-3 and listed in Table 3-3. Because of the proximity to Vandenberg AFB, Santa Maria and Santa Barbara, and the very high volumes of military air traffic in the area, there are a number of different controlled airspace areas and restricted areas in the vicinity of the 25 mile area. Controlled airspace means an area in which some or all aircraft may be subject to air traffic control. The various controlled airspace areas found in the area are discussed below.

TABLE 3-3
AIRPORTS WITHIN 25 NAUTICAL MILES OF LOMPOC AIRPORT

Airport	Location from Lompoc
Vandenberg AFB	6 nm NW
Santa Maria	14 nm N
Northside	19 nm N
Santa Ynez	20 nm ESE
Shepherd	20 nm ESE

Source: "Los Angeles Sectional Aeronautical Chart", January 9, 1992.



Source: Los Angeles Sectional Aeronautical Chart, January, 1992.

FIGURE 3-3
AIRSPACE ENVIRONMENT AND ADJACENT AIRPORTS

- Control Zone - Is controlled airspace which extends upward from the ground up to but not including 14,500 feet MSL. A control zone is regulatory in nature and may include one or more airports and is normally a circular area with a radius of 5 statute miles and any extensions necessary to include instrument approach and departure paths. Within the area delineated by the 25 nm arc shown in Figure 3-3 there are control zones for Vandenberg AFB and Santa Maria Airport. Lompoc Airport is located within the Vandenberg AFB control zone.

- Airport Radar Service Area (ARSA) - Consists of controlled airspace at specified altitudes, within which all aircraft are subject to certain operating rules and equipment requirements contained in FAR Part 71. An ARSA will generally extend horizontally as far as 20 nm from the primary airport. The basic operating rules and requirements are: specific pilot certification is not required; two-way radio; for arrivals and overflights it is mandatory that two-way radio contact be established with ATC prior to entering and ARSA and maintained while with the area; for departures within an ARSA it is mandatory that two-way radio contact be maintained with ATC while within the area; operation of ultralight vehicles is prohibited unless prior authorization is received from ATC; and, parachute jumps are prohibited. An ARSA has been established for Santa Barbara Municipal Airport and a very small piece of its eastern section lies within the area encompassed by the 25 nm radius from Lompoc.

- Restricted Areas - Are special use airspace designated under FAR Part 73 within which the flight of civilian aircraft is either restricted or prohibited. Four restricted areas are shown on Figure 3-3 (R-2516, R-2517, R-2534A, and R-2534B). Restricted area R-2534A and R-2534B are designated joint use, and civilian IFR or VFR operations in these areas may be authorized by the controlling ATC facility when they are not being used by the controlling agency. Areas R-2516 and R-2517 are in continuous use by the using agency and are therefore not joint use areas.

- Special Military Activity - Included in Figure 3-3 is a corridor for IFR Military Training Routes within which the Department of Defense conducts periodic operations involving unmanned aerospace vehicles. These vehicles are escorted by military tactical type aircraft which, as necessary, exercise control of the unmanned vehicles. The altitude limits are indicated for these area. The ceiling is shown in hundreds of feet above mean sea level (MSL), while the floor of the MTR corridors are shown in hundreds of feet above ground level (AGL).

Lompoc Airport has three published non-precision instrument approach procedures, two for fixed wing aircraft and a helicopter approach procedure. An instrument approach procedure is a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a point where a landing may be made visually. The procedure provides protection from obstacles that could jeopardize safety of aircraft operations by providing a specific clearance over obstacles. An approach procedure can be precision or non-precision. A precision approach procedure is one in which an electronic glideslope is provided that gives the pilot glide path, or specific descent profile guidance. A

non-precision approach, which is used at Lompoc Airport, is a procedure in which no electronic glide slope is provided. In this case the pilot is provided with directional, or azimuth, guidance only. The tabulation below summarizes the instrument approaches and navigational aids for the Airport and shows the Navaid, location of the Navaid, type of procedure and lowest landing minima.

NAVAID	Location	Procedure	Lowest Minima
Gaviota VORTAC	20 nm SE	Circling	900 feet/1 mile
Lompoc NDB	On-airport	Circling	1,240 feet/1¼ mile

The instrument approaches may only be used during hours when Vandenberg Approach Control is operating, currently from 6:00 a.m. to 8:00 p.m.

Navigational Aids. The Airport is an uncontrolled airport in that there is not an airport traffic control tower (ATCT) on the airfield. A tower provides air traffic control services to aircraft operating at and in the vicinity of an airport. The ATCT authorizes aircraft to takeoff and land at an airport and transit the airport traffic area (typically all airspace up to 3,000 feet above airport elevation within a five mile radius). Vandenberg AFB, Santa Maria and Santa Barbara Airports all have ATCT. Lompoc and Santa Ynez do not. Review of facility requirements to be undertaken later in the master plan will evaluate the need for a control tower at Lompoc.

The Los Angeles Air Route Traffic Control Center (ARTCC) has delegated an approach control area to the Vandenberg Terminal Radar Approach Control (TRACON) facility when Vandenberg Approach Control is operational. The TRACON has responsibility for all IFR arrivals, departures and overflights within this area. Lompoc Airport lies within the area of responsibility of the TRACON and as such all IFR operations at Lompoc are controlled by it. The function of the TRACON is basically to sequence arriving traffic transitioning from the enroute phase of flight (controlled by the ARTCC) to the airport, and vice versa. In this case, arriving aircraft will be controlled by the ARTCC, then the TRACON, which will clear the arrival for final approach.

A UNICOM is maintained at the Airport. This service provides local traffic pattern advisories but is not used for air traffic control purposes. Additionally, an Automated Weather Observing System (AWOS) located south of the runway provides a continuous broadcast of weather information for the Airport. The system reports altimeter setting, wind data, temperature, dewpoint, density altitude, visibility and cloud ceiling data.

An inventory of the navigational aids and air traffic services available at the Airport follows:

- Airport Surveillance Radar (ASR) - Used in the control of air traffic within a 40 to 60 mile radius of Vandenberg AFB. The ASR, which is located at Vandenberg AFB,

scans through 360 degrees of azimuth and presents target information on radar display equipment located in the Vandenberg ATCT and TRACON.

- Very High Frequency Omni-Directional Range/Tactical Air Navigation (VORTAC) - This navigational aid provides azimuth (direction) and distance information to the pilot. The Gaviota (GVO) VORTAC is located 20 nm southeast of the Airport and is the Navaid used for the "circling", VOR published instrument approach. It is also used for enroute navigation. The GVO facility is designated as an "L" (Low Altitude) facility which means it is usable from 1,000 to 18,000 feet above the ground within 40 nm of the station.

- Non-Directional Radiobeacon (NDB) - The NDB transmits non-directional radio signals which allows the pilot of an aircraft to determine his bearing and "home-in" on the station. There are two NDB facilities in the Lompoc Airport area. The Lompoc NDB is located on the airport, and the Santa Ynez NDB is located at the Santa Ynez Airport approximately 20 nm east-southeast of Lompoc.

Assistance from a Flight Service Station (FSS) is available by telephone to pilots in the Lompoc Airport area through the Hawthorne FSS. This facility is open 24 hours every day. Services provided by the FSS include:

- Issuance of Notices to Airmen (NOTAM's)
- Dissemination of Pilot Reports (PIREP's) to interested parties
- Issuance of weather data
- VFR advisory service
- Direction finding assistance to "lost" aircraft
- Pilot briefing service
- Flight plan assistance

There is also a Shout Line with direct communications to a variety of services such as FAA air traffic control services and the National Weather Service.

Visual Aids. In addition to the above navigational aids, ATC, and advisory services, the airport is equipped with the following visual aids. These are provided to assist pilots in locating the runway at night or during periods of reduced visibility.

- Visual Approach Slope Indicator (VASI) - provides vertical visual glide path information to approaching pilots. Runway 25 is equipped with a VASI set at a standard three degree glide path angle.

- Runway End Identifier Lights (REIL) - are two synchronized flashing lights (strobes), one on each side of the runway threshold, which provide rapid and positive identification of a runway end to approaching pilots. Runway 25 is equipped with REIL.

- Rotating Beacon - a visual aid that indicates the location of an airport. Alternating white and green beams indicate an airport.

LANDSIDE FACILITIES

The landside facilities consist of those airport elements which support the various activities of the airport except for the navigation and maneuvering of aircraft. The exception to this categorization is the aircraft parking apron, which due to its relation with hangars and FBOs is considered a landside component. At Lompoc Airport the landside facilities include aircraft parking aprons, hangars, FBO buildings, other tenant buildings and an Airport administration building. The landside facilities at the Airport are located on the north side of the field along George Miller Drive.

Aircraft Parking Apron

Aircraft parking is available on two aprons located north of the runway. There are a total of 44 paved aircraft tie-downs for based aircraft which are City operated. Additionally, Lompoc Aviation has 6 tie-down spaces for their own use. Presently the 50 based aircraft tie-downs are approximately 60 percent occupied.

All transient aircraft parking is located adjacent to the administration building and maintenance hangar. There are 12 transient aircraft spaces in this area.

Aircraft Storage Hangars

There are a total of 39 aircraft hangar units available. The City operates 24 units in four T-Hangar buildings. All City storage hangars are occupied and airport management reports a waiting list of 19 aircraft for hangar space.

The remaining 15 hangars are individually owned. These are all single hangar units placed on rented spaces. Eleven of the private hangars are portable T-hangars.

Maintenance Hangar

The Lompoc Aviation maintenance hangar was erected with the initial Airport construction in 1960. The 8,300-square foot structure has sheet metal skin on a steel frame. The hangar, with large access doors, is designed for aircraft maintenance, repair, and light painting. This hangar is also used for the storage of aircraft.

Administration Office

The administration building was constructed in 1960. It has recently been remodeled to accommodate airport administration, a pilots lounge, a flight planning room, rental car facilities, and restrooms.

Other Buildings

In 1968, FBO offices were constructed adjacent (and attached) to the main hangar. These are used by Lompoc Aviation for its main office and customer counter and greeting area.

Various other structures are located on airport property. Arctic Air operates from a double-wide mobile structure just inside the perimeter fence. Other Arctic Air facilities include a portable T-hangar and a safety equipment storage shed. The County Flood Control District maintains a field office at the airport. It is a single-story framed structure located on the bluff above the river. Dufrene Crane makes use of a single-wide mobile structure for its office.

Fuel Storage

Presently, the Airport has no fuel storage tanks. All underground tanks were removed by the County prior to the transfer of the airport to the City. Both Jet A and Avgas fuel is delivered directly to fuel trucks operated by Lompoc Aviation.

Automobile Parking

The existing auto parking facilities total 59 paved spaces at various locations around the Airport. The breakdown of paved parking stalls is as follows:

- Administration Building/Lompoc Aviation - 24 spaces
- Arctic Air - 4 spaces
- T-hanger Area - 12 spaces
- East Hangar Area - 19 spaces (There is additional room for 18 paved spaces in this area with minor pavement improvements and restriping.)

Additionally, aircraft owners will park their automobiles in the tie-down and T-hangar areas in the space occupied by their aircraft.

EXISTING UTILITIES

Electric service to the Airport is currently provided by Pacific Gas and Electric Company (PG&E). Distribution of power is from an above-ground 12,000 volt line along H Street (State Highway 1). This line goes underground at the approach end of Runway 25. Secondary service lines along George Miller Drive provide service to the Airport.

The City of Lompoc normally provides electric utility service within its City limits. The Airport area was recently annexed and the City is negotiating with PG&E to acquire the power service lines at the Airport to allow the City to provide electric utility services to the Airport. The City purchases its power from the Western Area Power Administration and the Northern California Power Agency and transmits along PG&E distribution lines.

Southern California Gas Company provides natural gas service to the Airport through a 3-inch service line along George Miller Drive. This service line is connected to a 10 3/4-inch main line which runs along H Street.

The City of Lompoc provides water services. Presently an 8-inch water main along George Miller Drive serves the Airport. This main connects to a 14-inch water main along H Street. Eventually, the 8-inch main along George Miller Drive will be connected to lines at the west end of the Airport to form a continuous loop.

At the present time, the Airport is not connected to the City's sanitary sewer system. Sewer service to Airport buildings is by septic tank and leach field located west of the main hangar.

Telephone service is provided by General Telephone of California from lines along H Street. These lines are underground along H Street and above ground along George Miller Drive.

AIRPORT TENANTS AND SERVICES

In addition to leasing hangar units, hangar spaces and tie-down spaces on a month-to-month basis, the City leases four larger parcels at the Airport (Table 3-4). These parcels range in size from 28,009 to 75,000 square feet and are for terms of 3 years or less.

TABLE 3-4
LOMPOC AIRPORT LEASES

Tenant [a]	Activity	Lease Area (Square Feet)	Lease Term
Lompoc Aviation	Fixed Base Operator (Aircraft Maintenance, Flight Instruction and Charter)	41,247	3 years
Arctic Air	Helicopter Operations	28,009	1 year
Cook Erector	Storage of Industrial Cranes	75,000	1 year
Atlas Trucking	Metals Recycling	45,000	1 year

[a] In addition to the tenants listed, the City leases City-owned hangars, spaces for privately-owned hangars and tiedown spaces on a month-to-month basis.

Source: City of Lompoc.

General aviation services at Lompoc Airport are provided by the City of Lompoc and two airport tenants (Table 3-5).

TABLE 3-5
PROVIDERS OF GENERAL AVIATION SERVICES AT LOMPOC AIRPORT

Service	City of Lompoc	Lompoc Aviation	Arctic Air
Airport Administration and Maintenance	X		
Airport Security	X		
Crash/Fire/Rescue	X		
Unicom Operation		X	
Aircraft Parking/Storage			
Hangars	X		
Tie-downs	X		
Transient Parking	X		
Aircraft Maintenance			
Engine		X	
Airframe		X	
Avionics/Radio [a]			
Sales			
New or Used Aircraft [a]			
Parts		X	
Pilot Supplies		X	
Flight Instruction/Testing		X	
Aircraft Rental/Charter		X	
Fuel			
80 octane		X	
100 octane low lead		X	
Jet A		X	
Tenant Activities			
Helicopter Operations			X
Other Services			
Pilot Lounge	X		
Rental Car [a]			

[a] Not available at airport.
Source: Tenant survey by P&D Aviation.

The City of Lompoc provides airport administration and facilities maintenance, airport security, crash/fire/rescue service, and rents hangars and tie-downs. Currently fire fighting services are provided by the Lompoc City Fire Department. The nearest fire station is on "D" Street between North Avenue and Barton Avenue, less than a mile from the Airport administration/ terminal building. The fixed base operator (FBO), Lompoc Aviation, provides unicom operation, aircraft maintenance, aircraft rental, flight instruction and sales of parts and pilot's supplies. In addition, Lompoc Aviation pumps three types of aviation fuel, 80 octane and 100 octane low lead aviation gasoline and Jet-A fuel. Arctic Air provides helicopter services to off-shore oil platforms.

AIRPORT ACTIVITY

Based Aircraft

The number of aircraft based (permanently stationed) at Lompoc Airport has fluctuated during the last 30 years from a low of 40 in 1967 and 1968 to a high of 73 in 1986 (Table 3-6). Overall the trend has been for a modest increase over the last three decades. The inventory of based aircraft in May 1992 recorded 68 aircraft. Sixty-one were single engine piston aircraft; five were twin-engine piston craft and two were helicopters.

The general aviation industry nationwide has experienced a decline in new aircraft deliveries and numbers of private pilots over the past fifteen years. The reasons for the decline are varied and include economic recessions, high product liability costs, and increasing aircraft operating costs. In spite of these national trends, based aircraft activity at Lompoc Airport has grown by 24 percent over the last fifteen years.

Annual Aircraft Operations

An aircraft operation, or movement, is defined as either a takeoff or landing with each touch-and-go being counted as two operations. A local operation is one that is performed by aircraft that: 1) operate in the local traffic pattern or within sight of the airport, 2) are known to be departing for or arriving from flights in local practice areas located within a 20-mile radius of the airport, or 3) execute simulated instrument approaches or low passes at the airport. Itinerant operations are all operations other than local.

At Lompoc Airport, no counts are made of the number of operations. Recent surveys of airport operations were made by the State Department of Transportation, Division of Aeronautics from March 2 to March 8, 1992 and from June 19 to June 30, 1992. Data recorded during those periods was manually tabulated by Division of Aeronautics' personnel. Weather during the March period was predominantly overcast and raining. Therefore, the number of operations were lower than normal. Activity for the remainder of 1992 was estimated by an examination of fuel sales records for 1991 and 1992 and estimating the same ratio of operations to fuel sales as for the survey periods. It is estimated that half of the operations at the Airport are local operations.

TABLE 3-6
BASED AIRCRAFT AT LOMPOC AIRPORT, 1963 TO 1992

Year	Based Aircraft				
	Total	Single Engine Piston	Multi-Engine Piston	Turbo-Prop and Turbojet	Helicopter
1963	52	50	2	0	0
1964	[a]	[a]	[a]	[a]	[a]
1965	59	54	5	0	0
1966	51	47	4	0	0
1967	40	36	4	0	0
1968	40	36	4	0	0
1969	51	48	3	0	0
1970	53	50	3	0	0
1971	53	50	3	0	0
1972	[a]	[a]	[a]	[a]	[a]
1973	50	48	2	0	0
1974	[a]	[a]	[a]	[a]	[a]
1975	[a]	[a]	[a]	[a]	[a]
1976	46	42	3	0	1
1977	55	47	7	0	1
1978	57	47	8	0	2
1979	53	47	5	0	1
1980	55	49	5	0	1
1981	[a]	[a]	[a]	[a]	[a]
1982	54	51	2	0	1
1983	[a]	[a]	[a]	[a]	[a]
1984	54	51	2	0	1
1985	58	55	2	0	1
1986	73	66	4	0	3
1987	[a]	[a]	[a]	[a]	[a]
1988	[a]	[a]	[a]	[a]	[a]
1989	60	53	4	0	3
1990	66	61	4	0	1
1991	[a]	[a]	[a]	[a]	[a]
1992	68	61	4	0	3

[a] Data not available.
Sources: U.S. Department of Transportation, Federal Aviation Administration, "Airport Master Record," FAA Form 5010-1 (1963-1991 data); P&D Aviation Survey, February 1992 (1992 data).

The results of this analysis are the following number of operations estimated for 1992:

Local Operations	18,000
Itinerant Operations	18,000
Total Operations	36,000

Operations for 1992 are estimated to be split by type of aircraft as follows:

Fixed Wing Operations	33,100
Helicopter Operations	2,900
Total Operations	36,000

The reasonableness of the overall operations estimates can be tested by comparing the estimated number of annual general aviation operations per based aircraft at Lompoc (529 overall and 501 excluding helicopter activity) with State estimates and ratios for nearby airports with FAA air traffic control towers (which provide accurate counts of operations at those airports). In 1989, estimated average annual operations per based aircraft were 495 in California (California Department of Transportation, Division of Aeronautics, The California Aviation System Plan, Element 1, Inventory, August 1990). Ratios of annual general aviation operations to based aircraft at nearby towered airports are 440 at Santa Maria Airport and 490 at Santa Barbara Municipal Airport. Thus the operations estimate for Lompoc Airport appears reasonable in light of the relatively large amounts of training flying and relatively few based aircraft.

Peak Month, Daily and Peak-Hour Operations

Based on fuel sales records, peak month (August) operations are estimated to be 11 percent of annual operations, or 4,000 in 1992. Average day operations in the peak month are defined as the number of peak month operations divided by 30. Average day peak month operations for 1992 are estimated to be 133.

Operations in the peak hour of the average day peak month are estimated to be 15 percent of the average day peak month operations. Peak hour operations are estimated to be 20 in 1992. During busy days, such as weekends, the daily and peak-hour operations are greater than the average day and peak hour of the average day. However, average day and peak hour of average day peak month are useful statistics for facility planning purposes.

Vehicle Traffic

Estimates of vehicle traffic on George Miller Drive (the Airport entrance road) were made from vehicle traffic counts taken from August 6, 1991 through August 13, 1991. Counts for the week were made on H Street (State Highway 1) at George Miller Drive. A separate count was made of northbound traffic on H Street turning left into the Airport. This count was increased by 100 percent to account for traffic from the north entering the Airport.

Estimated daily vehicle movements in both directions, average daily traffic, on George Miller Drive at H Street were 540 during the average weekday and 940 on Saturday, the busiest day.

Hourly movements in both directions during the peak hour of Airport traffic (2:00 p.m. to 3:00 p.m. on both weekdays and Saturday) were 64 on the average weekday and 128 on Saturday. Hourly movements on George Miller Drive during the peak hour of traffic on H Street averaged 29 on weekdays (5:00 p.m. to 7:00 p.m.) and 104 on Saturday (1:00 p.m. to 2:00 p.m.). Airport traffic in the peak hours of H Street traffic was only 1.3 percent of H Street traffic on weekdays and 4.9 percent on Saturday.

AIRPORT USER SURVEY

As part of the work program for this master plan study a survey of Airport users was conducted to solicit comments on existing facilities and suggestions for facility improvements. The survey consisted of a questionnaire, a copy of which is contained in Appendix C. Questionnaires were mailed to all owners of aircraft based at the Airport and aviation-related businesses at the Airport on May 1, 1992. Additionally, questionnaires were handed out to transient pilots during the month of May. Characteristics of owners of aircraft based at Lompoc Airport are listed in Table 3-7.

TABLE 3-7
PROFILE OF OWNERS OF AIRCRAFT BASED AT LOMPOC AIRPORT, 1992 [a]

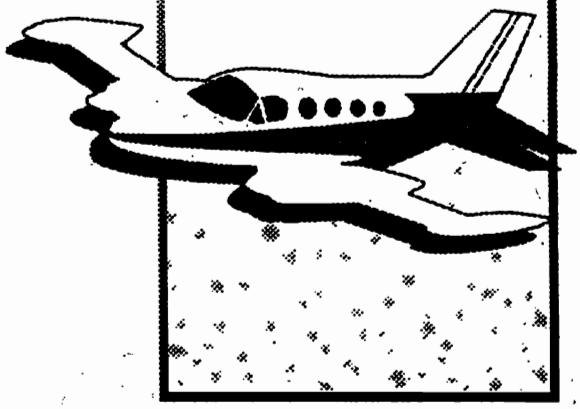
Characteristic	Survey Response
Owner's Residence (Percent of Respondents)	
City of Lompoc	53.3
Lompoc Area	36.7
Other	10.0
	100.0
Reasons for Basing Aircraft at Lompoc Airport (Percent of Respondents)	
Proximity to Home	96.7
Availability of Services	33.3
Availability of Facilities	20.0
Cost of Services	16.7
Favorable Flying Conditions	13.3
Proximity to Business	10.0
Use of Aircraft (Average of Responses)	
Personal	72.8
Business	15.8
Training	11.4
	100.0
Estimated Total Dollars Spent Annually in Lompoc Area for Operation of Based Aircraft (Based on Average of Responses)	$231,000

[a] Source: Airport User Survey taken in May 1992.

SURROUNDING LAND USES

Lompoc Airport is located at the northern edge of the developed portion of the City of Lompoc. North and west of the Airport is the Santa Ynez River and agricultural uses and open space. To the east of the Airport, east of H Street, are agricultural uses. A hotel is located southeast of the Airport, west of H Street and north of Central Avenue. Immediately south of the Airport, north of Central avenue, is vacant land. The Central Avenue Specific Plan for this area describes the planned development business park to be located there. Uses under the Airport's traffic pattern, which is north of the Airport, include open space, agriculture, and residential (Mesa Oaks). Uses planned for this area include additional residential east of H Street at Purisima Road, a museum and science center west of H Street at Purisima Road, and Alan Hancock Community College west of H Street at Purisima Road.

Lompoc Airport
Master Plan



Section 4

Avaition Demand Forecasts

SECTION 4
AVIATION DEMAND FORECASTS

This section describes aviation activity which is forecast at Lompoc Airport for short-range (2000), intermediate-range (2005), and long-range (2015) time periods. Forecasts were developed for the total number of aircraft to be based at the Airport, mix of aircraft, aircraft operations (take-offs and landings), local (training) and peak-hour operations and aviation fuel usage. The forecasts described in this section will form the basis for much of the master planning tasks. The forecasts will be compared with airport capacities to determine future facility requirements. These requirements will then be used to develop recommendations for future airport improvements.

Establishing forecasts of aviation demand was carried out in several steps. First, the geographical area served by the Airport was identified. Second, demonstrated past trends in the growth of demand-inducing factors such as population and employment were examined. Third, relationships between these elements and aviation activities were developed. Fourth, aviation activity for future years were projected by a variety of statistical methods, based upon estimates relating to future national and local socioeconomic conditions. These alternative methods produced a range of projections. Fifth, a subjective determination was made, within the range of statistical projections, of the aviation activity being forecast.

AIRPORT SERVICE AREA

Lompoc Airport serves an area generally bordered by the Purisima Hills to the north, Santa Rosa Creek to the east, the Santa Ynez Mountains to the south, and Vandenberg Air Force Base to the west (Figure 4-1). This area, often referred to as the Lompoc Valley, encompasses the City of Lompoc as well as the unincorporated areas of Vandenberg Village and Mission Hills. For the most part, persons residing outside this area have a shorter travel time to Santa Maria Airport to the north or Santa Ynez Airport to the east. Lompoc Airport is the only public use airport in the service area. The Airport user survey conducted in May 1992 indicated that 90 percent of the owners of aircraft based at the Airport reside in the service area.

SOCIOECONOMIC TRENDS

Population

The population of the Airport service area declined during the 1970s from 47,700 in 1970 to 44,800 in 1980 (Table 4-1). In the early 1980s, population began to rise and reached an estimated 58,400 in 1990. Overall, population growth in the service area averaged 1.0 percent a year from 1970 to 1990.

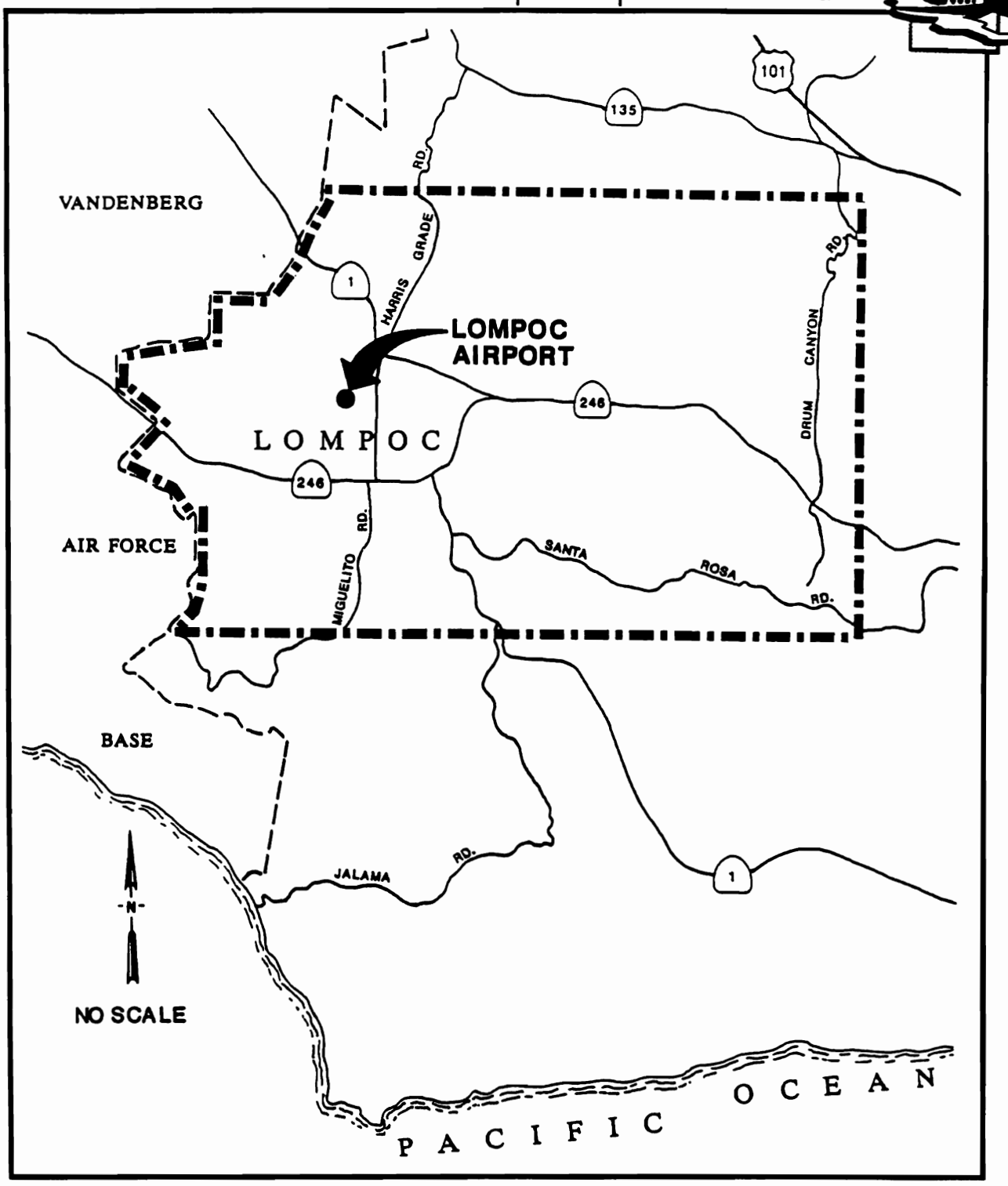


FIGURE 4-1

LOMPOC AIRPORT SERVICE AREA

TABLE 4-1
LOMPOC AIRPORT SERVICE AREA POPULATION
1970 TO 2015

Year	Service Area - Population (thousands)			Service Area Employment (thousands)
	City of Lompoc	Unincorporated Lompoc Valley	Total Service Area	
History				
1970 [a]	25.3	22.4	47.7	14.5
1975 [a]	24.2	19.7	43.9	15.2
1980 [b]	26.3	18.5	44.8	15.8
1985 [b]	29.8	19.9	49.7	20.4
1990	37.6 [c]	20.8 [c]	58.4 [c]	16.1 [b]
Forecast				
1995	41.3 [c]	21.3 [c]	62.6 [c]	19.0 [b]
2000	43.2 [c]	22.4 [c]	65.6 [c]	21.8 [b]
2005	44.2 [c]	23.7 [c]	67.9 [c]	22.8 [b]
2010 [d]	--	--	70.2	23.8
2015 [d]	--	--	72.5	24.8

[a] Source: Santa Barbara County - Cities Area Planning Council, City of Lompoc Population, Employment and Land Use Forecast, May 1987.

[b] Source: Santa Barbara County - Cities Area Planning Council, Forecast 89, August 1989.

[c] Source: City of Lompoc.

[d] Source: P&D Aviation Analysis, based on a straight line projection of 2000 to 2005 forecast.

Population in the service area is projected to grow to 67,900 in 2005 and 72,500 in 2015 (Table 4-1). The anticipated growth from 1990 for 2005 represents an average annual population growth rate of 1.0 percent. The growth rate for Santa Barbara County is expected to average 1.3 percent for the same period. A significant shift in the age distribution of population in the service area is expected. The percent of residents in the 25 to 35 age group will decline, whereas the percent in the 40 to 55 and over 65 age groups will increase.

Employment [1]

From 1970 to 1990, employment in the service area increased from 14,500 to 16,100, an average rate of 0.5 percent a year (Table 4-1). In 1990, the employment to population ratio was only 0.28, compared with 0.30 in 1970 and 0.35 in 1980.

Vandenberg Air Force Base is the major employer in the Lompoc Airport service area (Table 4-2). Vandenberg AFB's dominate role in the Lompoc Valley region was clearly illustrated by events of the mid-1980's. On-base employment increased steadily between 1981 and 1985 at 4 to 5 percent per year due to the Space Shuttle and MX Peacekeeper Missile programs. These projects resulted in a workforce, distributed among the manufacturing, transportation, services, and government sectors, of more than 15,000 jobs in 1986. However, due to the Challenger disaster, the Air Force decided in 1986 to place the Space Shuttle program "on hold," which severely affected employment in the Lompoc region. Table 4-3 shows the steep drop in employment in the manufacturing, services, and government sectors between 1985 and 1990.

Employment in the service area is forecast to increase to 22,800 by 2005 and 24,800 by 2015. The major increase in jobs will be in the services sector. Manufacturing, primarily at Vandenberg AFB, is expected to increase from 3,800 in 1990 to a high of 5,100 by 2005. The mining sector, primarily related to oil development, is anticipated to increase by over 400 jobs by 2005. The largest increase in overall employment is expected between 1990 and 1995 when 2,900 new jobs will be created.

Consistent with historic trends at Vandenberg AFB, the employment forecast assumes another rebound. This could include: another Vandenberg AFB missile testing program accompanied by increases in on-base contractor programs, private launch vehicle testing from NASA facilities and related commercial space applications, and/or the Space Defense Initiative program. However, due to anticipated reductions in defense spending, future growth is assumed to be low to moderate vs. the large "dramatic" programs of the past.

The projections of population and employment discussed above are important factors in the forecast of aviation activity at the Airport, particularly the number of based aircraft anticipated over the next 20 years.

BASED AIRCRAFT FORECAST

The number of aircraft based at the Airport is a primary consideration which influences the requirements for Airport facilities. This section contains the forecasts of total based aircraft and the mix of aircraft by type.

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[1] Much of the information in this section was taken from Forecast 89 prepared by the Santa Barbara County-Cities Area Planning Council in August 1989.

TABLE 4-2
MAJOR EMPLOYERS IN THE LOMPOC AIRPORT SERVICE AREA

Company	Employment	Type of Business/ Employer
MANUFACTURING [a]		
Celite Corporation	545	(Mining and processing
Grefco	67	diatomaceous earth)
NON-MANUFACTURING [b]		
VANDENBERG AIR FORCE BASE EMPLOYMENT		
Military	3,687	Department of Defense
Civil Service	1,323	Federal Government
Non-Appropriated Funds	391	
Contractors	4,187	Private Sector
Other	775	
TOTAL	10,363	

[a] Source: Lompoc Valley Chamber of Commerce, Lompoc 1990, "Community and Economic Profile."
[b] Source: Vandenberg AFB Economic Resource Impact Statement, Fiscal Year, 1988.

TABLE 4-3
EMPLOYMENT FORECAST BY SECTOR IN THE LOMPOC AIRPORT SERVICE AREA 1985 TO 2005

Employment Sector	1985	1990	2000	2005
Agriculture	704	712	552	540
Mining	0	125	486	540
Construction	620	700	979	1,012
Manufacturing	6,345	3,840	5,130	5,130
Transportation	495	495	603	630
Wholesale Trade	288	366	432	456
Retail Trade	2,780	2,835	3,555	3,960
Finance, Insurance and Real Estate	370	450	600	675
Services	4,641	2,905	5,450	5,800
Government	4,176	3,640	4,030	4,095
TOTAL	20,419	16,068	21,817	22,838

Source: Santa Barbara County-Cites Area Planning Council, Forecast 89, August, 1989.

Forecast of Total Based Aircraft

Past experience at Lompoc and other airports indicates that the number of aircraft based at the Airport is closely related to the socioeconomic activity of the area (for example, population, employment and personal income) as well as the costs of operating general aviation aircraft. These factors were considered in the development of a based aircraft forecast for Lompoc Airport.

Based aircraft projections were prepared using a number of forecasting techniques. These projections were evaluated and reduced to five alternative projections as described below:

- Based Aircraft per 1,000 Population. Under this approach the number of based aircraft per 1,000 service area population was computed from 1970 to 1992. This ratio was found to vary from a low of 1.11 in 1970 to a high of 1.23 in 1980. In 1992, the number of based aircraft per 1,000 population is 1.16 at Lompoc compared with approximately 0.85 for the U.S. The ratio for Lompoc is estimated to remain at 1.16. Although the U.S. ratio is projected by the FAA to decline to 0.81, the Lompoc ratio is estimated to remain constant because it has been relatively constant over the past 22 years, and the economic base for the service area is becoming more diversified. The based aircraft per 1,000 population ratio was multiplied times the projected service area population to obtain the based aircraft projection.

- Historic Relationship Between Based Aircraft and Population. Using regression analysis, an equation was developed which statistically relates the historic numbers of based aircraft with past population in the Airport service area. This equation was then used to project numbers of based aircraft from the projection of population in the service area.

- 30-Year Based Aircraft Trend. The historical based aircraft trend was established by developing a statistical relationship between time and based aircraft. This approach provides a projection of based aircraft which assumes that the number of aircraft will continue to increase over time at the rate observed over the past 30 years. This methodology is justified on the basis that the socioeconomic growth projected over the next 20 years is roughly on a straight-line trend with past growth.

- 20-Year Based Aircraft Trend. This projection is similar to the 30-year trend, except the trend was developed from data over the last 20 years. This period is more representative of the socioeconomic base of Lompoc today, which is more economically diversified and which has recently grown at a faster rate.

- Relationship with Employment. A forecast related to employment was developed from the historic relationship between based aircraft and population. The population-based forecast was adjusted to account for the projected increase in the ratio of employment to population. The employment/population ratio is expected to increase from 28 percent to 34 percent from 1990 to 2015. Therefore, the population-based forecast was adjusted upward to account for the increased economic activity relative to population.

Together, these alternative techniques produced a range of based aircraft projections (Figure 4-2). The greatest variation between the high projection (relationship with employment) and low projection (30-year trend) was 19 based aircraft in 2015. A purely population-based forecast is expected to underestimate future based aircraft growth in the service area due to the changing economic base, which is moving from a predominantly service economy dominated by Vandenberg Air Force Base to a more diversified economy. The mid-range forecast, which was developed from the 20-year trend, is used in this master plan as a baseline projection.

A final step in the development of the based aircraft forecast was to add to the 1992 to 2000 baseline projection the number of aircraft on the hangar waiting list which are currently based at other airports. These aircraft, which total 13, represent current demand which is not being satisfied because of insufficient hangar space.

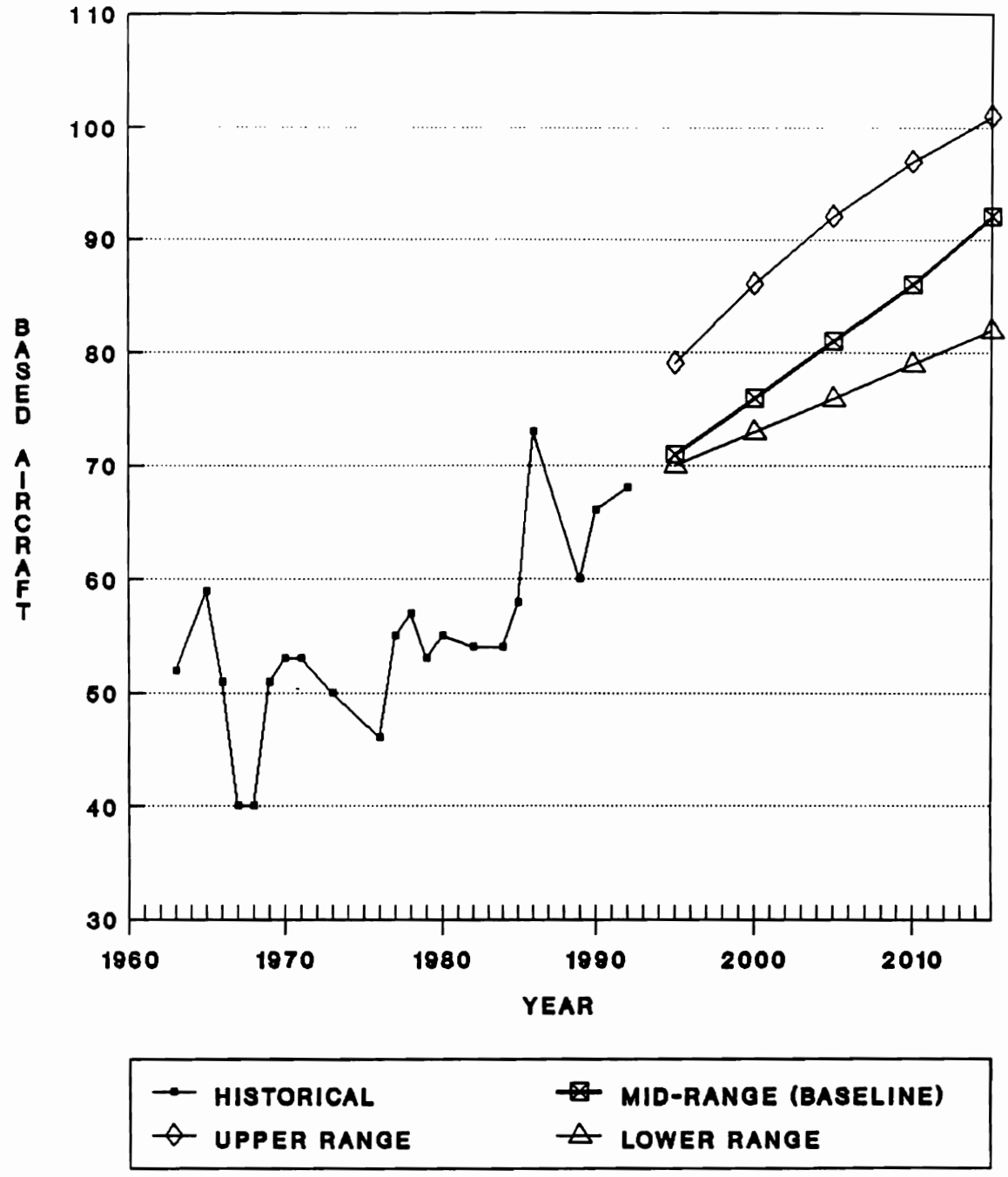
The resulting Master Plan based aircraft forecast is shown in Table 4-4 and Figure 4-3. Aircraft based at Lompoc Airport are forecast to increase from 68 in 1992 to 104 in the year 2015, an increase of 53 percent.

Based Aircraft Forecast Comparisons

The Airport Master Plan forecast of based aircraft was compared with forecasts developed by the Federal Aviation Administration in the National Plan of Integrated Airport Systems (NPIAS) and the State of California Division of Aeronautics in the California Aviation System Plan (CASP). The master plan based aircraft forecast is higher than the NPIAS and CASP forecasts in all years (Table 4-5). The CASP projects no based aircraft growth for Lompoc Airport beyond 1995. It appears that neither the CASP nor NPIAS based aircraft forecasts account for the growth in economic activity and diversification of economic base expected in the Lompoc Valley over the next 20 years, or the relocation of aircraft at other airports to Lompoc Airport. The Master Plan forecast of based aircraft is based on the assumption that the runway will be extended sufficiently to allow a wider range of business aircraft to use the Airport.

Aircraft Mix Forecast

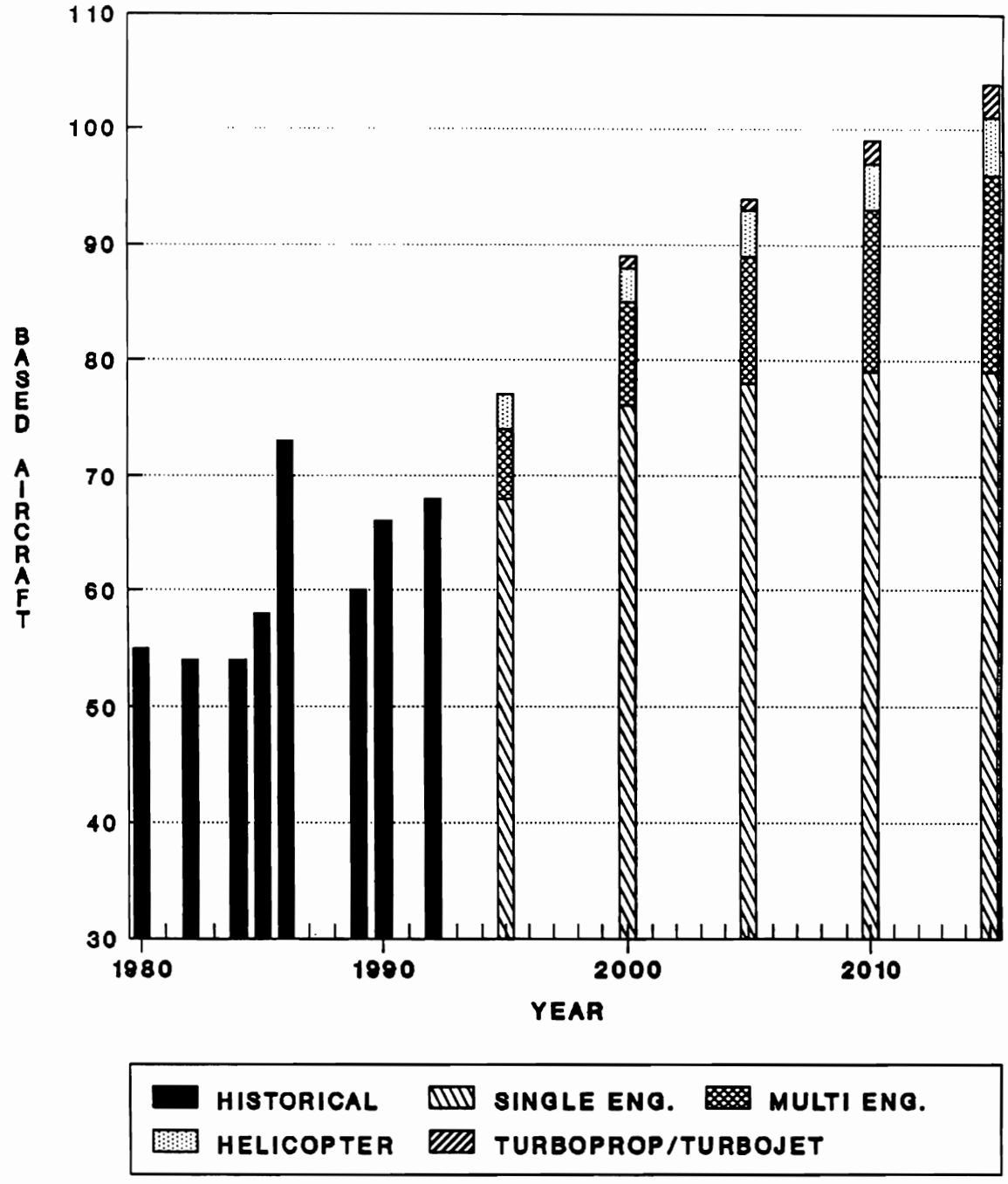
The Statewide and national trends of increasing percentages of larger general aviation aircraft and helicopters is expected to occur at Lompoc Airport. Presently 5.9 percent of the Lompoc based aircraft are multi-engine piston aircraft. Comparative multi-engine percentages are: 13.8 percent at Santa Maria Airport, 13.1 percent for Santa Barbara County, and 10.7 percent for the nation. Multi-engine piston aircraft at Lompoc Airport are projected to grow to 10 percent in 2000 (slightly below the U.S. average) and 16 percent by 2015.



Sources: FAA Form 5010; P & D Aviation.

FIGURE 4-2

RANGE OF BASED AIRCRAFT PROJECTIONS



Sources: FAA Form 5010; P & D Aviation.

FIGURE 4-3
BASED AIRCRAFT FORECAST

TABLE 4-4
FORECASTS OF BASED AIRCRAFT AND OPERATIONS AT LOMPOC AIRPORT
1992 TO 2015

Description	Actual or Estimated 1992 [a]	Forecast				
		1995	2000	2005	2010	2015
Based Aircraft						
Single Engine Piston	61	68	76	78	79	79
Multi-Engine Piston	4	6	9	11	14	17
Turboprop and Turbojet	0	0	1	1	2	3
Helicopter	3	3	3	4	4	5
Total	68	77	89	94	99	104
Annual Operations						
Itinerant	18,000	20,500	23,500	25,000	26,000	27,500
Local	18,000	20,500	23,500	25,000	26,000	27,500
Total	36,000	41,000	47,000	50,000	52,000	55,000
Monthly, Daily and Hourly Operations						
Peak Month	4,000	4,500	5,200	5,500	5,700	6,000
Average Day of Peak Month (ADPM)	133	150	173	183	190	200
Peak-Hour of ADPM	20	22	26	27	28	30
Annual Instrument Approaches						
IFR Conditions	230	260	900	960	1,000	1,050
Practice Approaches	990	1,130	1,450	1,540	1,600	1,700
Total	1,220	1,390	2,350	2,500	2,600	2,750
Fuel Pumped (Gallons)						
Avgas	35,000	68,000	78,000	82,000	86,000	88,000
Jet-A	35,000	35,000	70,000	105,000	140,000	175,000
Total	70,000	103,000	148,000	187,000	226,000	263,000

Source: P&D Aviation.

[a] Based aircraft data is actual. All other data is estimated.

TABLE 4-5
COMPARISON OF BASED AIRCRAFT AND OPERATIONS FORECASTS FOR LOMPOC AIRPORT, 1992 TO 2015

Year	Master Plan [a]	CASP [b]	NPIAS [c]
BASED AIRCRAFT			
Actual			
1992	68	--	--
Forecast			
1995	77	72	73
2000	89	72	74
2005	94	72	--
2010	99	72	--
2015	104	--	--
OPERATIONS			
Estimated			
1992	36,000	--	--
Forecast			
1995	41,000	108,000	111,000
2000	47,000	108,000	116,000
2005	50,000	109,000	--
2010	52,000	--	--
2015	55,000	--	--

[a] Source: P&D Aviation.

[b] Source: California Department of Transportation, Division of Aeronautics, The California Aviation System Plan, Element II: Forecasts, October 1990.

[c] Source: U.S. Department of Transportation, Federal Aviation Administration, National Plan of Integrated Airport Systems (NPIAS), 1990-1999, March 1991.

The current fixed-wing turboprop/turbojet mix is 1.2 percent in Santa Barbara County and 4.7 percent in the nation. There are approximately 1.5 percent turbine-powered fixed-wing general aviation aircraft at Santa Maria Airport, 1.4 percent turbine-powered at Santa Ynez Airport and 2.9 percent at Santa Barbara Airport. The Lompoc Airport turbine-powered mix is forecast to be 1.0 percent in 2000, increasing to 2.5 percent in 2015.

Helicopters represent 4.4 percent of the based aircraft at Lompoc. Comparative helicopter percentages are 3.0 percent at Santa Maria Airport, 2.7 percent for Santa Barbara County and

3.5 percent for the nation. The helicopter mix at Lompoc is projected to grow to 5.0 percent in 2015, which is similar to the increases projected by the FAA and California Division of Aeronautics.

The resulting forecast of aircraft mix at Lompoc Airport is shown in Table 4-4. Single engine piston aircraft are projected to increase from 61 in 1992 to 79 in the year 2015. Multi-engine piston aircraft are anticipated to increase from 4 to 17 over the same period. It is anticipated that fixed wing turbine-powered aircraft will begin to be based at the Airport between 1995 and 2000.

AIRCRAFT OPERATIONS FORECASTS

The forecasts of aircraft operations were developed on the basis of the average number of annual operations per based aircraft at the Airport. Projections were also made of local operations (touch-and-go and other training flights within a 20 mile radius of the Airport) and peak-hour operations.

Forecast of Annual Operations

In 1992, the estimated number of total operations (flown by based and transient aircraft) averaged 529 per based aircraft. It is predicted that the number of operations per based aircraft will continue at the current level. The total number of airport operations in 1992 is estimated to be 36,000. The number of operations is expected to increase to 55,000 by the year 2015 (Table 4-4).

Operations Forecast Comparisons

The Master Plan forecast of operations was compared with FAA and State forecasts. The Master Plan forecast of operations is lower than both the CASP and NPIAS projections (Table 4-5). Between 1986 and 1990 the number of annual operations at the Airport has been variously estimated from 51,300 to 105,950 on the FAA "Airport Master Record," Form 5010. These estimates were not substantiated by survey counts. It is believed that the NPIAS and CASP operations estimates were based, in part, on the higher operations estimates contained on the Form 5010s.

Local Operations

Local operations are operations performed by aircraft which operate in the local traffic pattern or are known to be departing for or arriving from local practice areas within a 20 mile radius of the Airport. Many local operations are touch-and-gos, whereby an aircraft touches down, continues its ground roll and makes an immediate departure. One touch-and-go represents two operations. All other operations at the Airport are defined as itinerant operations.

From information supplied by Airport management and Lompoc Aviation, local operations are estimated to be approximately 50 percent of the total operations at the Airport. The percentage

of local operations is projected to remain at 50 percent throughout the forecast period (Table 4-4).

Peak Month, Daily and Peak-Hour Operations

Fuel sales records and the California Division of Aeronautics survey data were analyzed to provide estimates of peak month, average day of peak month, and peak-hour operations. Operations in the peak summer month are estimated to be approximately 4,000 in 1992. Peak month operations are expected to increase to 6,000 by the year 2015. Peak month and average day of peak month operations are shown in Table 4-4. Average day operations in the peak month are defined as the number of peak month operations divided by 30.

Operations in the peak-hour of the average day peak month are estimated to be 20 in 1992, increasing to 30 in 2015. Peak-hour operations are estimated to be 15 percent of the average day peak month operations.

Instrument Approaches

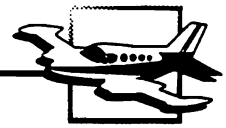
Instrument approaches to Lompoc Airport are estimated to total 1,220 in 1992 from data supplied by the air traffic control tower at Vandenberg AFB. About 80 percent of these instrument approaches are practice approaches, made during visual weather conditions. In 1992 instrument approaches were 6.8 percent of all approaches to the Airport.

A straight-in instrument approach with significantly lower minimums would allow more landings to be made during bad weather. It is estimated that such an approach would increase the percentage of instrument approaches at Lompoc by 50 percent, to 10 percent of all approaches. For purposes of this forecast, it is estimated that a straight-in instrument approach with significantly lower minimums will be installed by 2000. Under these assumptions, instrument approaches will grow to 2,750 by 2015.

GENERAL AVIATION PASSENGERS

There is currently no information collected at Lompoc Airport related to the number of general aviation passengers that arrive or depart there each year. Based on data collected by the State of California for general aviation airports in the state, passengers and pilots average approximately 2.5 per itinerant operation. Using this relationship, the number of arriving and departing general aviation passengers and pilots at Lompoc are estimated as follows:

Year	General Aviation Passengers and Pilots
1992	45,000
2000	58,750
2005	62,500
2015	68,750



AVIATION FUEL

From records supplied by Lompoc Aviation, the amount of aviation fuel to be pumped in 1992 is estimated as follows:

80 Octane Avgas	3,500 Gallons
100 Octane Low Lead Avgas	31,500 Gallons
Jet A	35,000 Gallons
TOTAL	70,000 Gallons

Future aviation fuel volume for transient and based aircraft was estimated on the basis of the number of annual gallons pumped per based aircraft. Avgas is estimated to equal 900 gallons a year per aircraft, based on fuel sales at Santa Barbara, Santa Ynez and Santa Maria Airports. Jet fuel is estimated to remain 35,000 gallons a year per based turbine-powered aircraft. The amount of aviation fuel pumped at the Airport is expected to increase to 263,000 gallons by the year 2015 (Table 4-4).

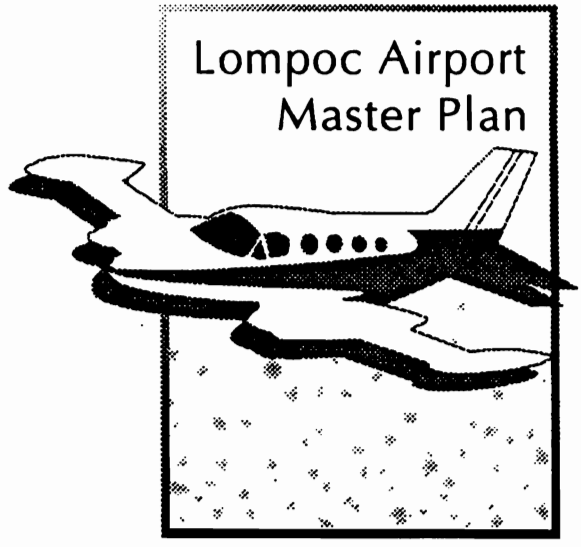
VEHICLE TRAFFIC

Future vehicle traffic on George Miller Drive was estimated under the assumption that all future Airport development would be accessed from that street. In the analysis of alternative development concepts, aviation development on the south side of the airport will be considered. This development would use alternative access routes such as "L" or "O" Streets.

Vehicle traffic on George Miller Drive is projected to increase in proportion to the anticipated increase in based aircraft. Average daily vehicle traffic forecasts are as follows:

	1992	1995	2000	2005	2010	2015
Weekdays	540	610	710	750	790	830
Saturday	940	1,060	1,230	1,300	1,370	1,440

The forecasts of aviation demand presented in this section provide the justification for the sizing and timing of airport facility needs described in the next section.



Section 5

Facility Requirements

SECTION 5
FACILITY REQUIREMENTS

Section 4 described the forecasts of aviation demand expected to be generated at the Airport to the year 2015. The next step in the master planning process was to determine the type and magnitude of Airport facilities that are needed during the planning period to satisfactorily accommodate future traffic volumes.

The process of determining facility requirements involves the application of acceptable airport planning standards to the various forecast components to identify the facilities that will provide sufficient capacity to handle the expected traffic. By comparing future facility needs with existing facility capacities, facility deficiencies have been determined and quantified.

In Technical Report 3, alternative development concepts for satisfying the deficiencies will be presented. Once the preferred concept is selected, Airport plans will be prepared and a capital improvement program developed.

Airport facility requirements are grouped into the two main operating elements: airside facilities and landside facilities. Before addressing the facility requirements, the airport planning standards used in this study are identified.

AIRPORT PLANNING STANDARDS

Planning standards contained in FAA Advisory Circular 150/5300-13, Airport Design, September 29, 1989, were applied in the preparation of this Lompoc Airport Master Plan based on standards for the Airport Reference Code of B-II (Approach Category B and Airplane Design Group II). This will accommodate essentially all general aviation piston aircraft as well as small turboprop and turbojet aircraft (aircraft with approach speeds less than 121 knots and wingspan under 79 feet). This category includes aircraft as large as the Cessna 441 Conquest, Beech Super King Air, and Cessna Citation. It is recognized that larger aircraft use the Airport on occasion. However, the application of planning standards to accommodate such infrequent, or special use, by larger aircraft would result in an over-design of facilities which is not warranted.

The Airport Reference Code description affects the clearances, dimension, and other planning standards used for planning future Airport facilities. Table 5-1 presents the relevant airport planning standards used in this study. The table contains separation criteria for runways and taxiways, recommended runway and taxiway widths, safety area dimensions, approach surface dimensions, and other relevant standards. The criteria used in this Master Plan are for a non-precision instrument runway with minimums greater than 3/4 mile, accommodating aircraft heavier than 12,500 pounds maximum takeoff weight.

TABLE 5-1
AIRPORT PLANNING STANDARDS USED FOR
LOMPOC AIRPORT MASTER PLAN

Description	Distance [a] (Feet)
Runway Dimensions	
Runway Width	75
Runway Shoulder Width	10
Runway Blast Pad Width	95
Runway Blast Pad Length	150
Runway Safety Area Width	150
Runway Safety Area Length Beyond Each Runway End or Stopway End (whichever is greater)	300
Runway Object Free Area Width	500
Runway Object Free Area Length Beyond each Runway End or Stopway End (whichever is greater)	600
Clearway Width	500
Stopway Width	75
Taxiway Dimensions	
Taxiway Width	35
Taxiway Edge Safety Margin	7.5
Taxiway Shoulder Width	10
Taxiway Safety Area Width	79
Taxiway Object Free Area Width	131
Taxilane Object Free Area Width	115
Taxiway Wingtip Clearance	26
Taxilane Wingtip Clearance	18
Runway Separations	
Runway Centerline to Holdline	200 [b]
Runway Centerline to Parallel Taxiway or Taxilane Centerline	240
Runway Centerline to Edge of Aircraft Parking	250
Taxiway Separations	
Taxiway Centerline to Parallel Taxiway or Taxilane Centerline	105 [c]
Taxiway Centerline to Fixed or Movable Object	65.5
Taxilane Centerline to Parallel Taxilane Centerline	97
Taxilane Centerline to Fixed or Movable Object	57.5 [d]

TABLE 5-1
AIRPORT PLANNING STANDARDS USED FOR
LOMPOC AIRPORT MASTER PLAN

Description	Distance [a] (Feet)
Runway Protection Zone (Runway 25)	
Length	1,700
Width 200 Feet from Runway End	500
Width 1,900 Feet from Runway End	1,010
Approach Surface Slope	34:1
Runway Protection Zone (Runway 7)	
Length	1,000
Width 200 Feet from Runway End	500
Width 1,200 Feet from Runway End	700
Approach Surface Slope	20:1
Helicopter Area	
Takeoff and Landing Area Length/Width or Diameter	
Small Helicopters	75
Large Helicopters	97

[a] Based on Airport Reference Code B-II for aircraft over 12,500 pounds maximum gross weight. Existing Airport dimensions that do not meet these standards are footnoted.

[b] The existing hold line to runway centerline is approximately 90 feet.

[c] Existing separation between parallel taxiway and taxilane centerline at west T-hangars is 83 feet.

[d] Existing separations between west T-hangars and centerlines of taxilanes are from 25 to 38 feet.

Sources: Federal Aviation Administration, Advisory Circular 150/5300-13, Airport Design, September 29, 1989, with subsequent changes; Federal Aviation Administration, Advisory Circular 150/5390-2, Heliport Design, January 4, 1988.

AIRFIELD CAPACITY REQUIREMENTS

Hourly runway capacities and annual service volume estimates were developed to compare airfield demand and capacity. The method for computing airport capacity is the throughput method described in FAA Advisory Circular 150/5060-5, Airport Capacity and Delay, September 23, 1983, with subsequent changes.

The airfield capacity of a particular airport is affected by many factors. Particularly important are: runway configuration (number and alignment of runways), the number and location of taxiway exits, weather conditions and other factors which dictate the percent of time a particular runway use pattern applies, the aircraft mix, type of landing aids and instrument approach procedures, and the percentage of touch-and-go operations.

Hourly Airfield Capacity

The visual flight rules (VFR) hourly airfield capacity was computed under the FAA methodology to be 115 operations per hour. This hourly capacity is based upon the existing airfield configuration, the exiting and projected mix of aircraft, the existing and projected touch-and-go percentage, and arrivals equaling 50 percent of operations. There is sufficient hourly airfield capacity to accommodate projected needs well beyond the 20-year planning period (Table 5-2). Peak hour operations during the average day peak month are 18 now and are projected to increase to 25 in the year 2015.

Annual Service Volume

The annual airfield capacity (called Annual Service Volume under the FAA methodology) is computed by applying a weighted average hourly capacity to the ratios of: 1) annual aircraft operations to average daily aircraft operations during the peak month, and 2) average daily aircraft operations to average peak hour aircraft operations of the peak month. Thus, it is explicitly assumed that hourly and daily distributions of operations are a limitation to overall annual capacity (i.e., not every hour of every day can be filled to capacity).

The annual service volume for Lompoc Airport derived under the capacity methodology is 190,000 operations per year. This volume is based on 93 percent VFR conditions, a ratio of annual to daily operations of 280, and a ratio of daily to hourly operations of 7. The annual service volume of the Airport is adequate to accommodate airport operations well beyond the year 2015 (Table 5-2). The projected number of annual operations in the year 2015 is approximately 23 percent of the computed Annual Service Volume.

From the preceding demand/capacity analysis, it is concluded that additional airfield capacity will not be needed through the year 2015. Although the implementation of additional airfield capacity during the planning period is not warranted from an operations capacity standpoint, there may be other reasons for making airfield improvements, such as to improve airfield safety or to accommodate a greater variety of aircraft.

TABLE 5-2
COMPARISON OF DEMAND AND CAPACITY OF FACILITIES AT LOMPOC AIRPORT
1992 TO 2015

Category	Capacity 1992	Existing Demand 1992	Forecast Demand		
			Phase I: Up to 89 Based Aircraft 2000	Phase II: 90-94 Based Aircraft 2005	Phase III: 95 to 104 Based Aircraft 2015
AIRSIDE FACILITIES					
Airfield Operations					
Annual	190,000	41,000	47,000	50,000	55,000
Peak Hour VFR	115	18	26	27	31
Runway Length (Feet)	3,600	3,600	4,600	4,600	4,600
Instrument Approach	Circling	Straight-in Non-Precision	Straight-in Non-Precision	Straight-in Non-Precision	Straight-in Non-Precision
LANDSIDE FACILITIES					
Administration/Terminal Building (SF)	1,200	2,500	3,200	3,400	3,700
Based Aircraft Hangars					
T-Hangars	37	54	58	61	65
Exec/Corp. Hangars	2	2	4	5	8
Total	39	56	62	66	73
Based Aircraft Tie-Downs	50	25	27	28	31
Transient Aircraft Parking					
Spaces	12	9	11	12	13
Area (Square Feet)	32,000	27,000	33,000	42,000	52,000
FBO Area (Acres)	2.3	2.3	2.7	3.3	3.6
Vehicle Parking (Paved Spaces) [a]	59	65	85	88	98
Fuel Storage (Gallons)					
Avgas	0	3,000	6,500	7,000	8,000
Jet-A	0	3,000	6,000	9,000	15,000
Fire Protection (Trucks)	0	1	1	1	1

[a] Excludes long-term parking requirements of Arctic Air.

Source: P&D Aviation.

AIRSIDE FACILITY REQUIREMENTS

The airside operating element as used in this report includes the runway and taxiway system, the runway approach areas and the associated appurtenances such as airfield lighting, visual aids and navigation aids. The airside facilities required to accommodate future airport demand are described in the subsections below.

Runway Length

Aircraft need adequate runway lengths to operate safely under varying conditions of wind, temperature and takeoff weight. Inadequate runway length will reduce the allowable takeoff weight. The weight reduction must come through either less payload or less fuel, thereby restricting the usability or operational range of the airplane.

FAA Advisory Circular 150/5325-4A, Runway Length Requirements for Airport Design, January 29, 1990, contains criteria used in developing runway lengths required to accommodate various general aviation aircraft. The recommended runway lengths are based on performance information from manufacturer's flight manuals in accordance with provisions in Federal Aviation Regulations.

Aircraft performance together with site characteristics are considered in analyzing runway length. The site characteristics that are evaluated include: Airport elevation, temperature (mean maximum temperature of the hottest month), runway gradient and wind conditions. The airport site characteristics used in the runway length analysis were:

- Elevation - 88 feet MSL
- Temperature - 80° Fahrenheit
- Runway Gradient - 0.2 percent
- Surface Winds - Calm

The Advisory Circular and related computer model contain a series of runway length curves based on different percentages of the general aviation fleet that can operate from a given runway and the percent of useful load that they can carry using that runway.

On the basis of the design curves, the present runway length of 3,600 feet is adequate to accommodate virtually all of the general aviation fleet having a gross takeoff weight under 12,500 pounds.

Occasionally, larger, particularly turbine-powered, aircraft use the Airport now. As described in Section 4, these larger aircraft are forecast to become more prevalent at the Airport as the Airport serves a broader base of the business community. By 2000, the Airport's runway must be capable of accommodating on a regular basis some smaller turbine-powered aircraft with gross takeoff weights over 12,500 pounds.

The next classification in the runway length criteria considered in the FAA guidelines is the accommodation of 75 percent of the general aviation fleet over 12,500 pounds maximum takeoff weight at 60 percent of useful load. This is estimated to be appropriate for future activity at Lompoc Airport. A runway length of 4,600 feet is needed to provide this increased level of service. For general aviation aircraft over 12,500 pounds gross takeoff weight, the runway length required for takeoff is greater than for landing. The runway length required for landing is approximately 3,500 feet. Therefore, some or all of the additional runway requirement could be provided by a displaced threshold, which would permit the takeoff length to be greater than the landing length.

Table 5-3 shows the runway takeoff and landing distances for a variety of turboprop and turbojet business aircraft. The runway lengths are based on FAA criteria for zero wind, sea level elevation, and standard temperature (59°F). Most of the aircraft under 20,000 pounds maximum gross weight would be able to operate from Lompoc Airport with the runway extended to 4,600 feet.

The additional runway length will allow the Airport to accommodate corporate users who might locate at the future industrial park south of the Airport. The added runway length will also provide a greater margin of safety for aircraft already using the Airport.

Runway Width

FAA Advisory Circular 150/5300-13 specifies a runway width of 75 feet for Airport Reference Code B-II. While the present width of 100 feet exceeds the standard, it is recommended that it be maintained because the wider runway enhances safety of operations during periods of high crosswinds, and no crosswind runway is available.

Runway Grades

The maximum recommended longitudinal grade is 1.5 percent, however, the longitudinal grade may not exceed 0.8 percent in the first and last quarter of the runway. The maximum allowable difference in runway centerline elevation is one percent of the runway length. The overall longitudinal grade at Lompoc Airport is only 0.2 percent, which is nearly constant through the length of the runway.

A runway should have adequate traverse slopes to prevent the accumulation of water on the surface. A maximum traverse grade of 1.5 percent is recommended for the airport by FAA with the acceptable range being 1.0 to 1.5 percent. The transverse grade is approximately 1.0 percent along the entire runway at Lompoc Airport

TABLE 5-3
RUNWAY LENGTH REQUIREMENTS OF TYPICAL TURBINE-POWERED BUSINESS AIRCRAFT [a]

Aircraft Manufacturer and Model	Seats Including Crew	Maximum Gross Weight (Pounds)	FAA Takeoff Field Length (Feet)	FAA Landing Field Length (Feet)
Turboprop Aircraft				
Beech Aircraft Corporation				
C-90A King Air	8-10	10,100	2,577	2,078
300 Super King Air	9-15	14,000	3,682	2,907
Starship	11-12	14,500	4,093	2,630
350 Super King Air	11-12	15,000	3,680	2,508
British Aerospace				
Jetstream 31	10-20	15,322	4,150	3,820
Cessna Aircraft Company				
406 Caravan II	14	9,925	2,635	2,485
Fairchild Aircraft Corporation				
Merlin 4C	16	14,500	3,950	2,985
Precision Airmotive Corporation				
1000 Commander	7-11	11,250	2,131	2,670
Piper Aircraft Corporation				
Cheyenne 400	9	12,050	2,825	2,820
Turbojet Aircraft				
Beech Aircraft Corporation				
Beechjet 400A	9-10	16,100	4,142	2,820
Canadair Aerospace Group				
Challenger CL-601	2-21	43,250	5,400	3,300
Cessna Aircraft Company				
Citation Jet	7-9	10,100	2,960	2,800
Citation 2	8-11	14,300	3,450	2,440
Citation 7	9-15	22,200	4,950	3,000
Dassault-Aviation				
Falcon 10	6-9	18,740	4,500	2,750
Falcon 200	8-10	32,000	5,200	2,660
Learjet, Inc.				
Lear 31	6-10	15,750	2,906	2,767
Lear 36	8-12	18,500	4,972	3,075
Sabreliner Corporation				
Sabreliner 40	10	19,922	4,500	2,300
Sabreliner 65	12	24,000	5,150	2,500

[a] Sources: "Aviation Work and Space Technology," March 16, 1992 and March 18, 1991.

Pavement Strength

The design aircraft for pavement strength requirements is the Beechcraft B200 Super King Air. This turboprop can carry up to 8 passengers. It has a maximum certified gross weight of 12,500 pounds and has a single-wheel landing gear. Although larger aircraft will use the Airport occasionally, aircraft of the size of the Super King Air is expected to account for at least 500 operations a year.

The runway pavement has a reported strength of 17,000 pounds single-wheel load. This pavement strength was verified by an analysis of existing pavements conducted for this master plan study (see Appendix B). While it appears that sufficient load bearing capacity is provided by the present pavement to meet anticipated demand, a runway overlay may be required during the next 20 years to extend the useful life of the runway and maintain a safe operating surface.

Runway Safety Areas

A runway safety area is defined as a rectangular area centered about the runway that is cleared, drained, graded and usually turfed. Under normal conditions, this area should be capable of accommodating occasional aircraft that may veer off the runway, as well as fire fighting equipment. For Lompoc Airport, the existing and planned requirement is an area 150 feet wide centered on the runway centerline and extended 300 feet beyond each runway end.

Approach Surfaces and Runway Protection Zones

The Approach Surface and the Runway Protection Zone (formerly called Clear Zone) are important elements in the design of runways which help to ensure the safe operations of aircraft. A brief description of these two areas follows:

- The Approach Surface is an imaginary inclined plane beginning at the end of the primary surface and extending outward to distances up to 10 miles depending on runway use (i.e., instrument or visual approaches). The width and slope of the Approach Surface are also dependent on runway use. The Approach Surface governs the height of objects on or near the airport. Objects should not penetrate or extend above the Approach Surface. If they do, they are classified as obstructions and must be either marked or removed.

- The Runway Protection Zone (Clear Zone) is an area off the runway and used to enhance the protection of people and property on the ground. The Runway Protection Zone begins at the end of the primary surface and has a size which varies with the designated use of the runway.

Federal Aviation Regulations Part 77 indicates that the Approach Surface should be kept free of obstructions to permit the unrestricted flight of aircraft in the vicinity of the airport. As the type of instrument approach to a runway becomes more precise, the Approach Surface increases in size and the required approach slope becomes more restrictive.

The Runway Protection Zone is the most critical safety area under the approach path and should be kept clear of incompatible objects and activities. No new structures should be permitted nor the congregation of people allowed within the Runway Protection Zone. Control of the Runway Protection Zone by the airport owner is essential. It is desirable, therefore, that the airport owner acquire adequate property interests, preferably in fee title, in the runway protection zone to ensure compliance with the FAA standards.

Presented in Table 5-1 are Runway Protection Zone dimensions for the Airport. It is recommended that the Approach Surface and Runway Protection Zone for Runway 25 accommodate a non-precision instrument approach with minimums greater than 3/4 mile. Runway 7 is anticipated to remain a visual runway.

Taxiways

Runway 7-25 is served by a full length parallel taxiway with an angled exit taxiway located at midfield. Although additional taxiways are not required for the purpose of increasing the airfield capacity, additional taxiways will be needed to serve future development areas. A parallel taxiway will be needed south of the runway to serve the south side of the Airport.

Navigational Aids

The FAA document Airway Planning Standard Number One, Terminal Air Navigation Facilities and Air Traffic Control Services (FAA Order 7031.2C) contains criteria for identifying candidate airports for navaids. The criteria for navaids are based upon the number of annual instrument approaches.

Based upon FAA criteria, a general aviation airport is a candidate for one of two types of non-precision approach systems when 200 annual instrument approaches are recorded: a Localizer Direction Aid (LDA) System or a TVOR. As discussed in Section 4, instrument approaches to Lompoc will total over 1,200 in 1992, with over 200 made under instrument weather conditions.

Frequently, cloud layers in the Lompoc vicinity are too low for the current ceiling minimum (900 feet MSL). To allow instrument approaches during lower ceiling conditions, an improved instrument approach system with lower minima is required. The military restricted airspace to the west of the Airport allows an instrument approach to Lompoc to be made only from the east. Missed approach criteria will be critical to the design of such an approach procedure.

FAA Order 7031.2C also provides criteria for the establishment of FAA control towers on airports. Accordingly, by the year 2015 the Airport will have only 22 percent of the operations needed to be considered as a candidate for FAA tower establishment.

Runway 25 is served by a Visual Approach Slope Indicator (VASI) system. It is recommended that a visual glide path aid should also be installed on Runway 7.

LANDSIDE FACILITY REQUIREMENTS

The airport landside system is comprised of all facilities supporting the movement of passengers and goods between the community's ground transportation system and the airport's airside system, and also any facilities used in the maintenance or protection of those facilities. For Lompoc Airport, these facilities include terminal facilities, general aviation facilities, and airport support.

Administration/Terminal Building

The administration/terminal building measures 1,200 square feet. The building is devoted to Airport administration, a pilots lounge, a flight planning room, rental car space and restrooms. Other functions typically found in general aviation administration/terminal buildings are a waiting lobby, restaurant and other concessions, classrooms, conference rooms, and offices for FBOs or other tenants.

The amount of terminal space required for these functions is generally based upon the expected demand, in this case the peak hourly volume of pilots and passengers who will use the facilities. An industry planning standard of 49 square feet per peak hour pilots and passengers, based on FAA studies, was used to determine the required area. An estimated 2.5 pilots and passengers are assumed per peak hour operation, based on FAA surveys. Table 5-2 shows the building requirements that were calculated using the above approach.

The requirements shown in Table 5-2 will accommodate the basic general aviation terminal needs of the Airport. Alternative development concepts to be evaluated will consider additional terminal functions such as intermodal transportation facilities and expanded concessions and other lease areas.

Based Aircraft Hangars and Tie-downs

It is estimated that the current demand for based aircraft hangars is 56, which is 17 more than available at the Airport today. The demand for 17 additional hangars is derived from the number of aircraft (17) on the waiting list for hangar space that are occupying tie-downs at the Airport or are based at other airports (Table 5-2).

Hangar demand represents approximately 70 percent of the total 1992 demand for based aircraft spaces (81 aircraft). Future hangar demand is expected to remain at this percentage (Table 5-2).

Hangars most in demand will be T-hangars ("T" shaped hangars) or rectangular hangars for the storage of small aircraft. Executive or corporate hangars can accommodate large twin engine piston or turbine-powered aircraft. Executive/corporate hangars are expected to be required for all turbine-powered aircraft and 30 percent of the multi-engine piston aircraft.

The current tie-down demand (25) was estimated by subtracting from the aircraft currently on tie-downs (29) those aircraft on tie-downs which are also on the hangar waiting list (4). Future tie-down demand is anticipated to remain at 30 percent of based aircraft.

Transient Aircraft Parking

Aircraft parking apron requirements for transient aircraft, aircraft not based at Lompoc Airport, were developed on the basis of the following estimates:

- Transient operations are approximately 50 percent of itinerant operations.
- The majority of transient aircraft will arrive and depart on the same day. Thus, it is assumed that the actual number of aircraft utilizing the parking apron daily is equal to the number of transient landings being performed on the average day of the peak month.
- One half of the transient aircraft will be on the ground at any given time. Thus, aircraft parked on the transient apron will equal 25 percent of transient operations.

Table 5-2 summarizes the transient aircraft parking requirements. It is estimated that the mix of transient spaces by size of aircraft should be approximately the same as the based aircraft mix. The average number of square feet required per transient space is expected to increase from 3,000 in 1992 to 4,000 in 2015.

Fixed Base Operator (FBO) Area

The total amount of space devoted to FBOs and related airport tenants is typically 3 to 4 acres per 100 based aircraft. At Lompoc Airport, current FBO and related space (Lompoc Aviation, Arctic Air and R&S Cropduster) is approximately 2.3 acres, or 3.4 acres per 100 based aircraft. Assuming 3.5 acres per 100 based aircraft in the future, total FBO and related space needs are projected to increase to a total of 3.6 acres by 2015 (Table 5-2).

Vehicle Parking

A generally accepted value for computing the amount of paved general aviation parking space needed is 1.3 spaces per peak hour general aviation pilot and passenger. This factor takes into account airport employees, rental car spaces, and visitor as well as pilots and passengers. The area required per automobile is 350 square feet, which includes circulation routes and other necessary clearances within the parking area. The projected auto parking requirements are summarized in Table 5-2. Vehicle parking needs are expected to grow from 65 in 1992 to 98 in 2015. There are 59 paved parking spaces now.

The above analysis excludes long-term parking requirements for Arctic Air. Currently, Arctic Air leases approximately 16,000 square feet of unpaved space on the north side of George Miller Drive for long-term parking by personnel who are transported by the operator to off-shore oil platforms.

Aviation Bulk Fuel Storage

Bulk fuel storage requirements were determined for the Airport based upon the forecast of fuel flowage contained in Section 4. Fuel flow was projected in gallons pumped per year for Avgas and Jet A fuels. Assuming an average 30 day storage capacity as an ideal inventory, the bulk fuel storage capacity can be determined. Based on this approach, the fuel storage requirements shown in Table 5-2 were derived. During peak activity periods, this fuel storage capacity will drop to about a 15-day supply based on historical Airport fuel sales records.

Aircraft Rescue and Firefighting (ARFF) Facilities

FAA Advisory Circular 150/5210-6C, Aircraft Fire and Rescue Facilities and Extinguishing Agents, establishes recommended levels of fire fighting protection for general aviation airports. Lompoc Airport is an Index 1 airport (an airport having at least 1,825 annual departures of aircraft more than 30 feet but no more than 45 feet long and less than 1,825 annual departures of aircraft more than 45 feet but not more than 60 feet long). Recommended equipment for an Index 1 airport is one fire truck with the following capacities: 190 gallons water for AFFF foam production (or 290 gallons for protein foam) and an application rate of 150 gallons per minute for AFFF (or 300 gallons per minute for protein foam) and (b) 300 pounds of dry chemical powders. Currently fire fighting services are provided by the Lompoc City Fire Department. The nearest fire station is on "D" Street between North Avenue and Barton Avenue, less than a mile from the Airport administration/terminal building.

Airport Access

George Miller Drive, the Airport's access road, is a two-lane paved road with an estimated average daily traffic (ADT) capacity of 10,000 vehicle trips. During the peak day of Airport traffic (Saturday), ADT on the Airport access road is estimated to be 940 in 1992, increasing to 1,440 in 2015. Therefore, ADT on George Miller Drive will reach only 14 percent of capacity over the planning period.

In 1991, "H" Street between George Miller Drive and Central Avenue was operating at 66 percent of its capacity (19,710 ADT vs. 30,000 capacity) according to the Final Environmental Impact Report for La Purisima Highlands, Annexation No. 62, December 1991. Airport traffic on this segment of road is expected to increase by 145 ADT on weekdays and 250 ADT on Saturdays between 1992 and 2015. This relatively small increase would not significantly affect the roadway segment's volume-capacity ratio or the ability of the road to accommodate traffic. Therefore no roadway improvements are required as a result of future Airport growth.

FACILITY DEFICIENCIES

Facility deficiencies at Lompoc Airport through the year 2015 are summarized in Table 5-4. In the May 1992 survey, Airport users were asked to identify the most important needs of the Airport. Their responses are summarized in Table 5-5. The most urgent facility improvements

noted were additional hangars, an improved instrument approach system, fuel tanks, an extension to the runway, improved pilot facilities in the terminal building and apron pavement repairs. The next task in the Master Plan will be to develop alternative concept plans for satisfying the requirements described in this section.

TABLE 5-4
CUMULATIVE FACILITY DEFICIENCIES AT LOMPOC AIRPORT
1992 TO 2015

Category	Cumulative Deficiency			
	1992 Deficiency	Phase I: Up to 89 Based Aircraft 2000	Phase II: 90-94 Based Aircraft 2005	Phase III: 95 to 104 Based Aircraft 2015
AIRSIDE FACILITIES				
Airfield Operations				
Annual	None	None	None	None
Peak Hour VFR	None	None	None	None
Runway Length (Feet)	None	1,000	1,000	1,000
Instrument Approach	Straight-in Non-Precision	Straight-in Non-Precision	Straight-in Non-Precision	Straight-in Non-Precision
LANDSIDE FACILITIES				
Administration/Terminal Building (SF)	1,300	2,000	2,200	2,500
Based Aircraft Hangars				
T-Hangars	17	21	24	28
Exec./Corp. Hangars	0	2	3	6
Total	17	23	27	34
Based Aircraft Tie-Downs	None	None	None	None
Transient Aircraft Area (SF)	None	1,000	10,000	20,000
FBO Area (Acres)	None	0.4	1.0	1.3
Vehicle Parking (Paved Spaces) [a]	6	26	29	39
Fuel Storage (Gallons)				
Avgas	3,000	6,500	7,000	8,000
Jet-A	3,000	6,000	9,000	15,000
Fire Protection (Trucks)	1	1	1	1

[a] Excludes long-term parking requirements of Arctic Air.
Source: P&D Aviation.

TABLE 5-5
IMPORTANT ISSUES FOR THE DEVELOPMENT OF LOMPOC AIRPORT IDENTIFIED BY AIRPORT USERS [a]

Important Development Issues	Percent of Respondents
Airport Facility Improvements	
Additional Hangars	31
Improved Instrument Approach System	17
Fuel Tanks	14
Runway Extension	11
Improved Pilot Facilities in Terminal Building	8
Apron Pavement Repairs	8
Aircraft Wash Area	6
Additional Aircraft Tiedowns/Transient Parking	6
Public Restrooms in Hangar Area	6
Restaurant	6
Picnic/Camping Area Next to River	6
Other Airport Issues	
Protection Against Encroachment of Non-Compatible Development	19
Additional FBO Services/Lower Fuel Prices	14
Preserve Airport Expansion Capabilities	8
Air Safety/Maintain Clear Approach to East	6
Maintain Community Compatibility	6
Use Airport as a Resource for Developing Business/Industry	6

[a] Source and Airport User Survey taken in May 1992.

Section 6

Concept Development

SECTION 6
CONCEPT DEVELOPMENT

INTRODUCTION

This section describes alternative concepts for providing the facilities required to accommodate future aviation demand at Lompoc Airport. Alternative concepts showing locations and layouts for needed facilities were evaluated and a preferred development concept was prepared. The preferred development concept allows the Airport to serve all aviation demand forecast for the next 20 years, with flexibility to expand facilities further to accommodate aviation growth beyond the forecast period.

The goal of this alternatives analysis was to identify the option that best satisfies the following development criteria:

- Aviation Requirements. Conceptual plans must satisfy the facility requirements identified in Section 5 to meet Airport needs for the next 20 years. Additionally, space must be reserved for aviation needs beyond the year 2015 and as a contingency against underestimating requirements.

- Community Compatibility. Future development of the Airport and the surrounding community must be compatible. Particular concerns are aircraft noise, aircraft overflights, and street traffic.

- Industry Development. The opportunities for Airport development to promote the growth and diversity of business and industry in the Lompoc area should be maximized.

- Efficient Use of Resources. Because of the limited Airport land available, efficient use should be made of all Airport property. The scope and timing of future development must be matched with the ability of the Airport to finance the improvements. Finally, opportunities to maximize the revenue-producing potential of the Airport must be pursued.

- Flexibility. The plans for future Airport development must be flexible enough to accommodate changing needs that cannot be anticipated now. Airport expansion capabilities should be preserved.

These criteria were applied to the preparation of Airport improvement. The Airport needs described in Section 5 are summarized below. Alternative improvement concepts were prepared to satisfy these future facility requirements:

- Runway Extension. A runway extension of 1,000 feet is needed to allow the Airport to accommodate a greater variety of aircraft, particularly corporate/business-use aircraft.

- South Taxiway. A parallel taxiway will be needed on the south side of the runway if area south of the runway is developed for aviation use.

- Non-Precision Instrument Approach System. A non-precision approach facility will allow greater use of the Airport during poor weather. Two approach systems meet the FAA eligibility requirements: a localizer system and a TVOR. The localizer system is recommended because it can be placed on existing Airport property while meeting clearance requirements, will allow landing minima as low as a TVOR approach, and costs about one half the cost of a TVOR facility. It is recommended that Distance Measuring Equipment (DME) be installed with the localizer to provide a localizer/DME approach.

- Administration/Terminal Building. The Airport administration/terminal building should be large enough to accommodate a variety of user needs. Services must ultimately include a larger waiting room, expanded pilots lounge and flight planning area, classrooms, conference rooms, offices, and a restaurant. An intermodal terminal facility is being considered by the City. An intermodal facility would serve the Airport needs as well as provide local and long-distance bus service and serve as a collector for train passengers.

- Based Aircraft Hangars. Over the long-range planning period another 34 aircraft storage hangars will be needed. It is estimated that six of these should be executive/corporate sized. It is recommended that all future aircraft hangars be constructed in rows of multi-unit buildings (rather than individual hangar buildings) for greater space efficiency and to provide amenities such as restrooms, electricity and telephone service.

- Transient Aircraft Tie-down Space. Transient aircraft parking needs are estimated to require an additional 20,000 square feet over the long-range planning period. Transient parking should be located near the administration/terminal building.

- Fixed Base Operator (FBO) and Tenant Space. The existing FBO and related space (2.3 acres) accommodates Lompoc Aviation as well as Arctic Air. An additional 1.3 acres will be needed over the long term planning period to meet minimum FBO expansion needs.

- Fire Protection Facilities. Aircraft rescue and firefighting capabilities of the Airport should include an on-airport fire truck and trained personnel. A fire truck could be stationed in a building which also serves as an Airport maintenance facility and operated by trained Airport staff. Alternatively, a City fire station could be constructed on the Airport to jointly serve the Airport and parts of the City near the Airport.

- Security Facilities. Security facility needs will include airport security fencing and other facilities as necessary to maintain adequate airport security.

- Other Facilities. Other facility needs identified for the Airport are additional vehicle parking spaces (39 additional spaces by 2015), fuel storage tanks, an aircraft wash area, and an Airport maintenance building and equipment storage area. A park and/or overnight camping area was suggested in the user survey.

ALTERNATIVE IMPROVEMENT CONCEPTS

Three alternative Airport improvement concepts were developed. The concepts vary by their degree of development and flexibility to expand beyond 2015 needs. Each is described below. In the figures describing each concept, thin lines indicate existing facilities and bold lines indicate new development.

Concept A: Terminal for Aviation Only/All Development on North Side

Concept A represents an attempt to satisfy the facility requirements identified in Section 5, while containing all future Airport landside development on the north side, east of the midfield exit taxiway (Figures 6-1 and 6-2). Under this concept, an intermodal terminal would not be provided.

All non-aviation uses which are not in the 100-year flood area, such as the Santa Barbara County Flood Control Facilities, would need to be relocated to provide for aviation uses due to the limited space available between the 100-year flood area and the parallel taxiway. The key elements of Concept A are described below.

Airfield. The Runway 25 landing threshold would be relocated 180 feet east. This is as far east as the landing threshold can be relocated while providing the required 15-foot clearance over H Street for the Approach Surface at a 34:1 slope. The Approach Surface begins 200 feet beyond the runway landing threshold. The 34:1 Approach Surface for the relocated threshold would be penetrated approximately 16 feet by electrical power lines along the northerly extension of D Street. The potential for lowering these lines, relocating them, or placing them underground is being investigated.

The runway pavement would be extended an additional 410 feet beyond the relocated Runway 25 threshold to provide additional takeoff distance for Runway 25. This is the maximum runway extension that can be obtained while maintaining the required 300-foot Runway Safety Area beyond the end of the runway. The resulting improvements would be a 590-foot extension of Runway 25 with a 410-foot displaced threshold.

The Runway 7 threshold would be relocated 410 feet to the west. This would provide the required 4,600-foot takeoff distance and allow the required 300-foot Runway Safety Area beyond the end of Runway 7. The parallel taxiway would not be extended to the west. Instead a turnaround would be provided at the end of the runway. This would eliminate the need for relocating the embankment and providing substantial fill material northwest of the existing Runway 7 threshold.

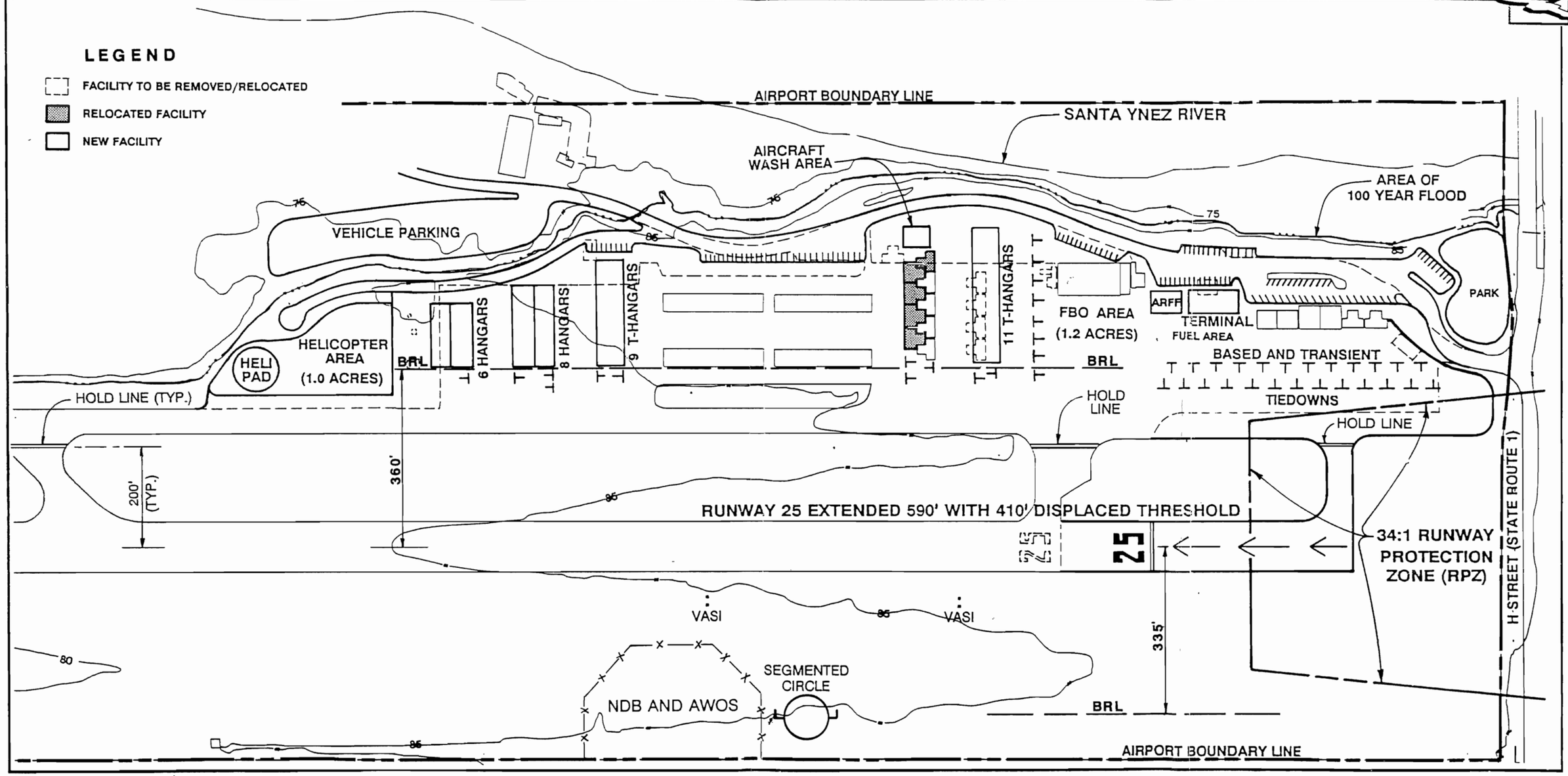


FIGURE 6-1

CONCEPT A (EAST END)

TERMINAL FOR AVIATION ONLY/
ALL DEVELOPMENT
ON NORTH SIDE

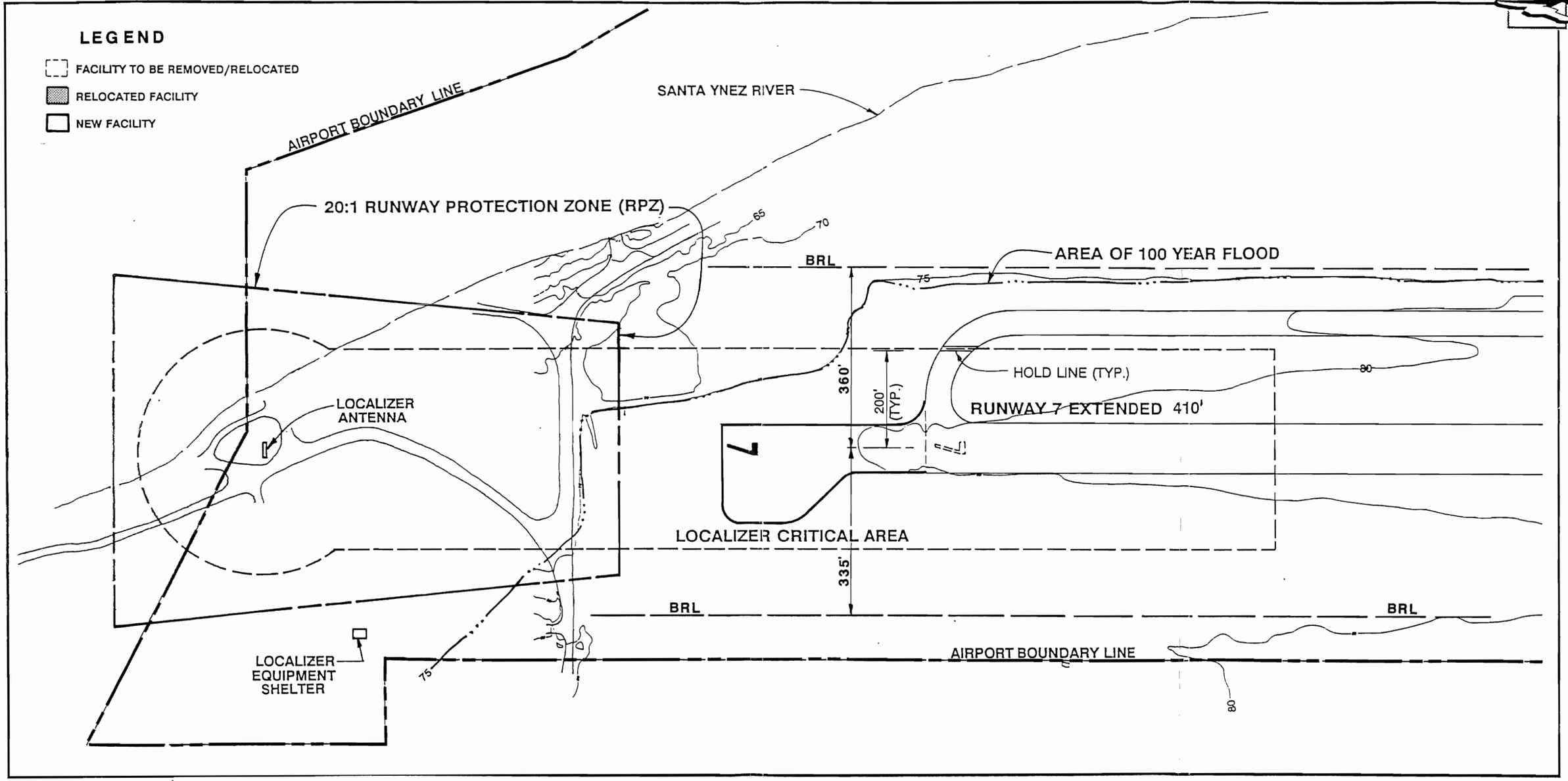


FIGURE 6-2

CONCEPT A (WEST END)
TERMINAL FOR AVIATION ONLY/
ALL DEVELOPMENT
ON NORTH SIDE

Non-Precision Instrument Approach Facilities. A localizer/DME would be provided west of the runway for instrument approaches on Runway 25. The localizer antenna would be located 900 feet from the relocated Runway 7 threshold along the extended runway centerline. Although FAA criteria suggests that the localizer antenna should be at least 1,000 feet from the runway threshold, discussions with FAA personnel indicate that shorter distances are acceptable. The location shown on Figure 6-1 is approximately 13 feet below the 100-year flood level. Therefore, the antenna would need to be elevated at least 13 feet above existing ground level. If the localizer antenna could be placed closer to the runway threshold, it would not have to be elevated as much. For example, at 500 feet from the runway threshold, the localizer antenna must be elevated only 5 feet above ground level. A location closer to the runway threshold than 900 feet would be preferred if acceptable to the FAA.

The localizer critical area should be smoothly graded at a constant 1:1.5 percent longitudinal grade and 1:3 percent transverse grade. Antenna supports are frangible and foundations are flush with the ground.

The localizer equipment shelter is located southeast of the localizer antenna near the Airport property boundary. At this location, the 100-year flood plain is approximately 6 feet above the ground level. Therefore, the equipment shelter site would be elevated at least 6 feet above the existing ground level. If the localizer antenna were located 500 feet from the runway threshold, the localizer equipment shelter could be located farther east and there would be no need to raise it above the existing ground level.

Administration/Terminal Building Area. The Airport administration/terminal building would be expanded in its present area. Additional vehicle parking would be provided on both sides of George Miller Drive. Aircraft fueling would be provided on the ramp south of the terminal building. Underground fuel tanks would be located in this area.

An Aircraft Rescue and Firefighting Facility (ARFF) would be located between the expanded terminal building and the existing FBO hangar. Airport maintenance functions could be located with the ARFF facility or to the east of the expanded terminal facility.

Based Aircraft Hangars. Additional based aircraft hangars would be located west of the FBO hangar (11 T-Hangars) and west of the existing T-hangars (9 T-Hangars and 14 rectangular hangars). Additional vehicle parking would be provided along George Miller Drive adjacent to the existing T-Hangars and the new T-Hangars to their west.

In order to achieve efficient utilization of space, the nine privately owned individual T-hangars located between the FBO hangar and the City T-hangars would be consolidated into a single row east of the existing City T-hangars. This reorganization would enable the Airport to meet its future aircraft hangar requirements (to the year 2015) while keeping all development on the north side of the Airport.

An aircraft wash area would be located north of the consolidated hangar area.

Based and Transient Aircraft Parking. Based aircraft tie-downs would be relocated to the spaces at the ends of the hangar rows, on the west side of the FBO area, and in the area near the Airport administration/terminal building. Concept A would provide for the 2015 requirements of 31 tie-downs for based aircraft and 13 transient aircraft parking spaces. All transient parking spaces would be located nearest the Airport administration/terminal building.

FBO and Other Tenant Space. A total of 2.2 acres of FBO and other tenant space with access to the airfield would be provided. In addition, 1.1 acres of vehicle parking would be available for tenant use in the 100-year flood plain area. FBO and other tenant space would fall short of the 2015 requirements by 1.4 acres. Because the three existing aviation tenants now occupy 2.3 acres, the development of the Airport according to Concept A would probably require one of the aviation tenants to be relocated off the Airport.

Other Facilities. It is assumed that Cook Erector and Atlas Trucking, the two tenants which occupy space in the 100-year flood area, would continue to occupy their present facilities. A helipad would be established at the west end of the building and lease area. The area occupied by the helipad has been included in the tenant acreage available. A park with picnic facilities would be located west of H Street at George Miller Drive.

Land Acquisition. Under this concept, approximately 3.0 acres of land would be acquired east of H Street for the portion of the Runway Protection Zone which is outside the 100-year flood area.

Concept B - Intermodal Terminal on North Side

Under Concept B, some Airport improvements would be constructed on existing Airport property south of the runway. A new intermodal transportation terminal would be constructed in the area now occupied by Arctic Air and adjacent hangars (Figures 6-3 and 6-4). The essential features of this development concept are described below.

Airfield. Improvements to Runway 25 would be the same as under Concept A. The Runway 7 threshold would be relocated to the same position as under Concept A. However, the parallel taxiway on the north side would be extended to the end of the runway. A hold/runup area would be provided on the north side of the extended taxiway at the Runway 7 threshold. This concept would require a substantial amount of fill for the taxiway extension as well as the relocation of the embankment to protect against a 100-year flood.

A partial parallel taxiway would be constructed at the south end of the runway to serve a new hangar and tie-down area. A runup area would be provided at the east end of the new south parallel taxiway.

The AWOS, NDB and segmented circle would be relocated to the west to provide for the helicopter area and adjacent transient aircraft parking area. An alternate NDB location would be approximately 3 miles east of the Airport.

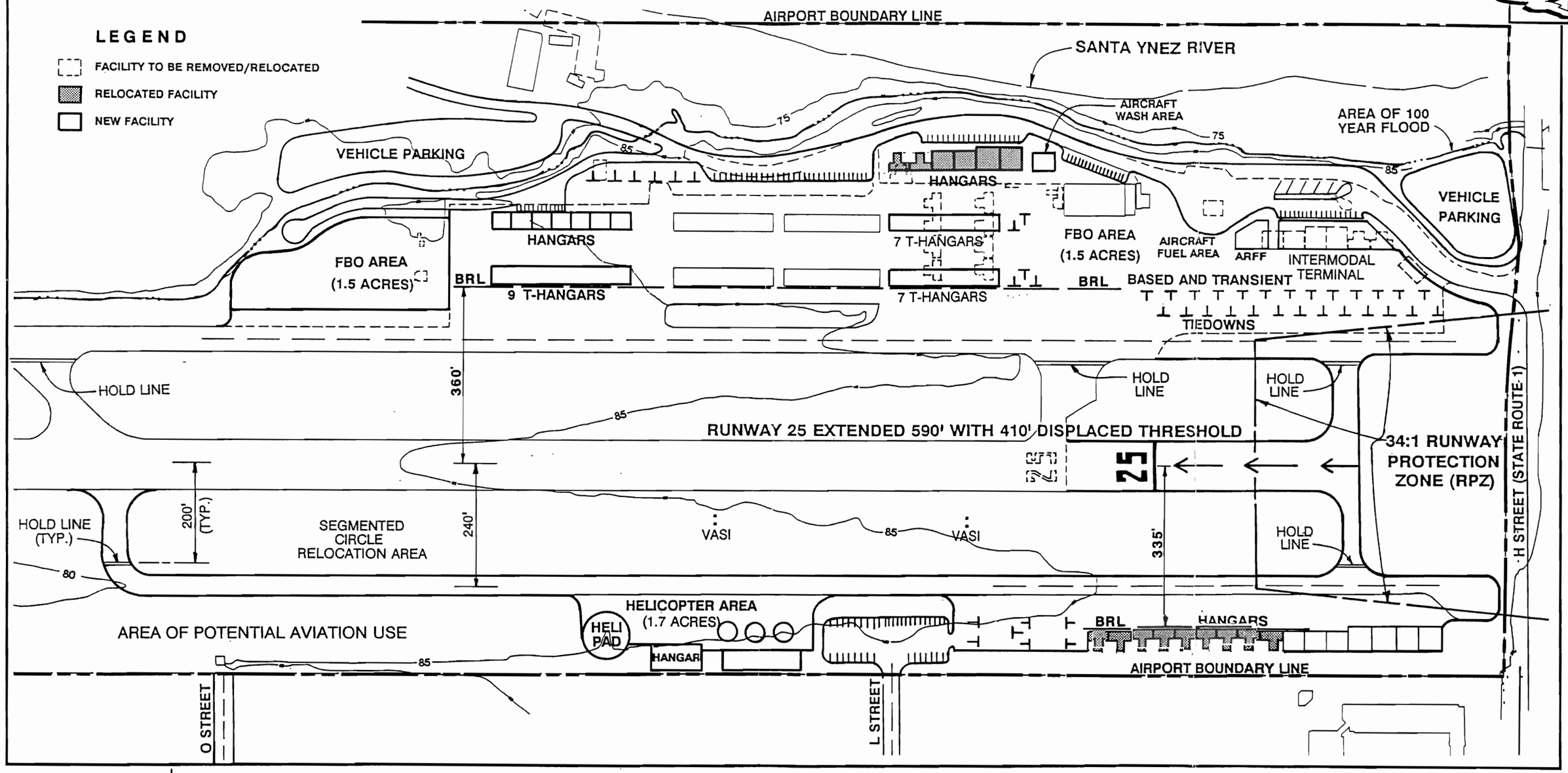


FIGURE 6-3

CONCEPT B (EAST END)

INTERMODAL TERMINAL ON NORTH SIDE

200 0 200 400
scale feet

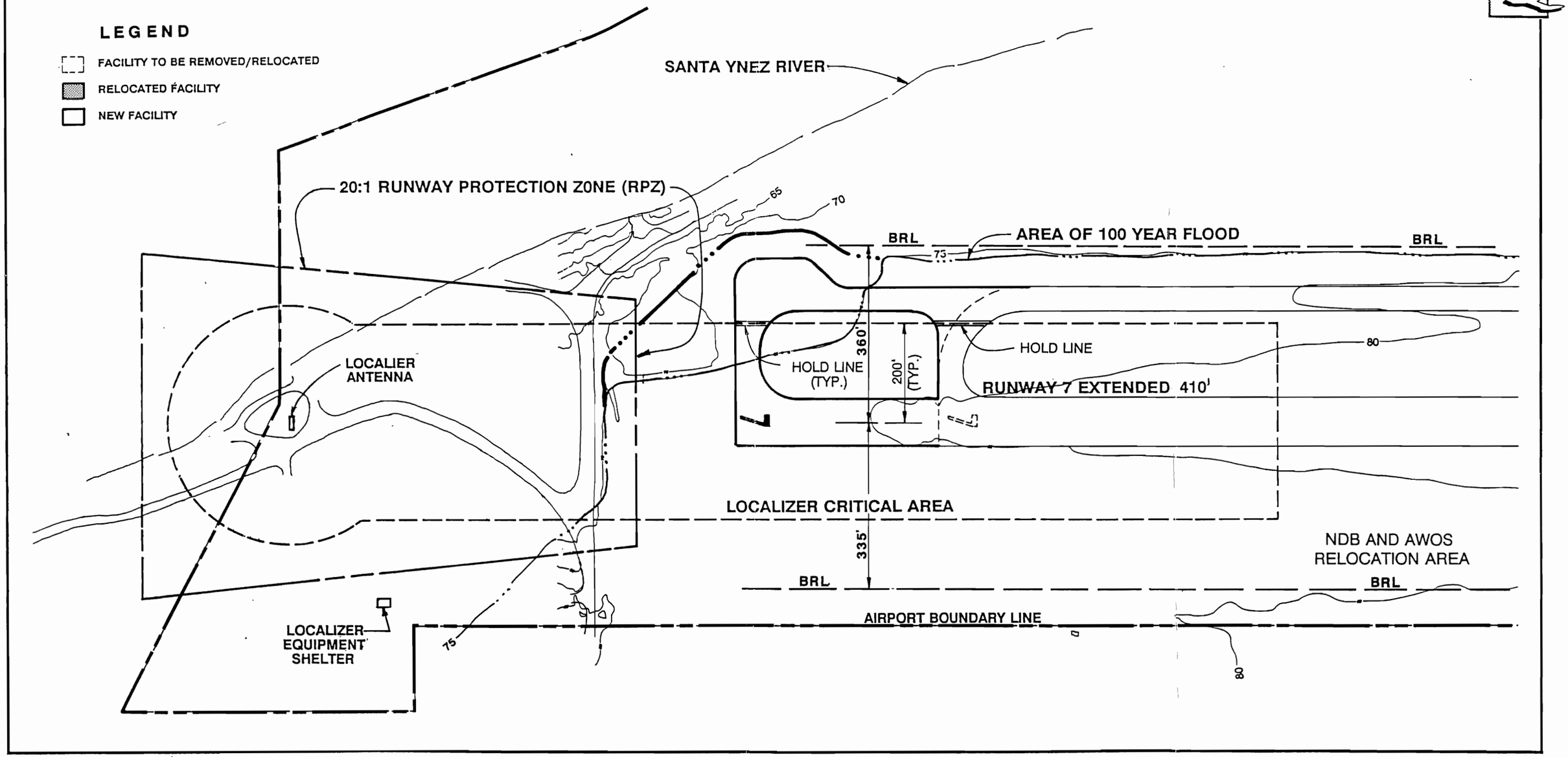


FIGURE 6-4

CONCEPT B (WEST END)
INTERMODAL TERMINAL
ON NORTH SIDE

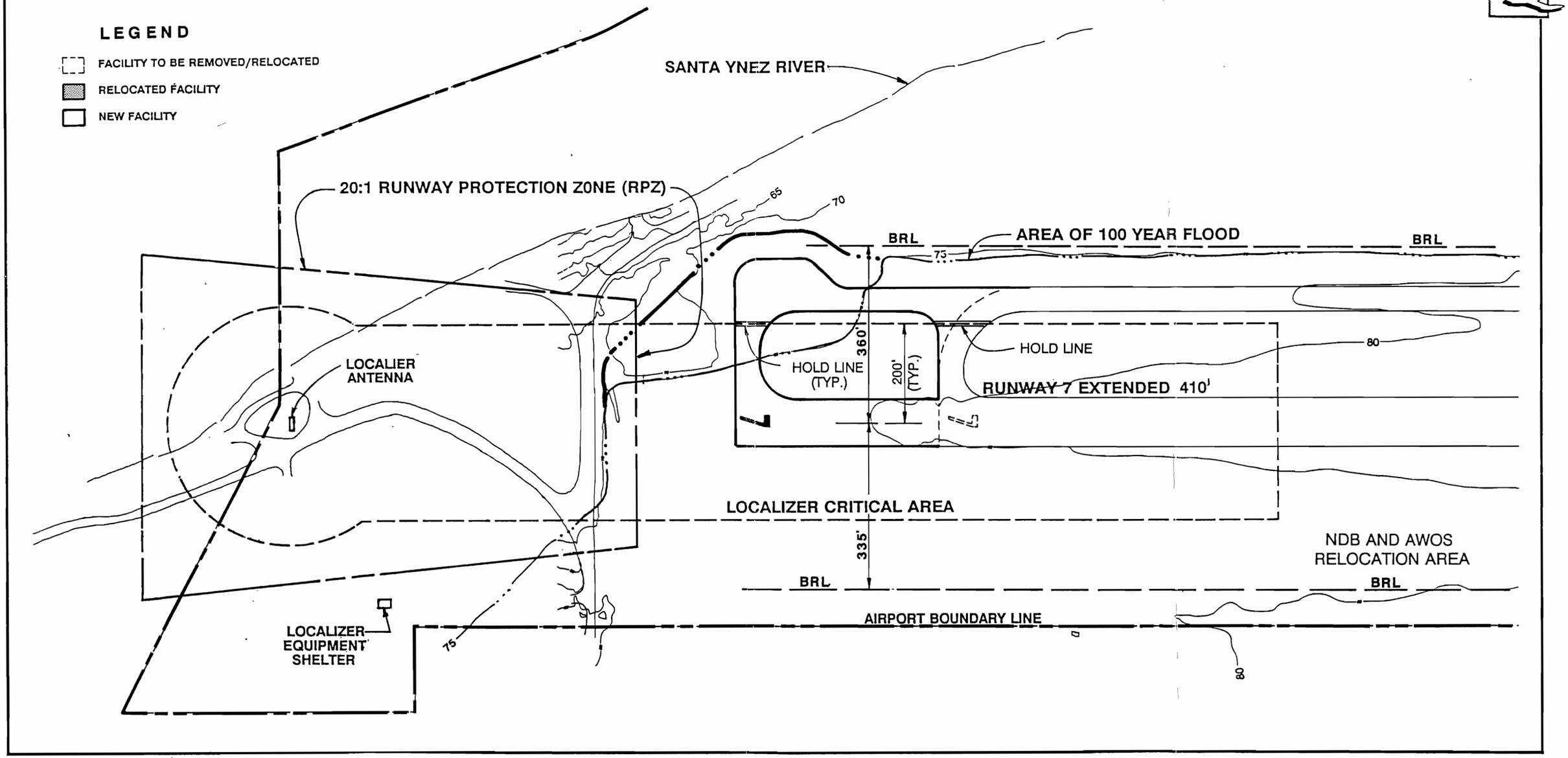


FIGURE 6-4

CONCEPT B (WEST END)
INTERMODAL TERMINAL
ON NORTH SIDE

Non-Precision Instrument Approach Facilities. The localizer/DME non-precision instrument approach facilities would be the same as under Concept A.

Intermodal Transportation Terminal. A new intermodal transportation terminal would be developed in the area now occupied by Arctic Air and adjacent hangars. A widened airport access road would provide for access by buses (as well as other vehicles), including bus parking and a bus turnaround area. Vehicle parking would be provided immediately north of the intermodal terminal and on the other side of George Miller Drive adjacent to H Street. To the west of the intermodal terminal would be located the aircraft rescue and firefighting facility (ARFF) and the aircraft fuel area.

The intermodal transportation terminal would be up to 18,000 square feet in size. Suggested uses of space within the terminal would include:

- Lobby - 3,400 square feet
- Restaurant - 2,350 square feet
- Airport and Transit Administration - 1,050 square feet
- Fixed Base Operators - 1,800 square feet
- Bus Ticket Counter and Offices - 450 square feet
- Train Ticket Counter and Offices - 400 square feet
- Classroom and Meeting Area - 950 square feet
- Pilot/Driver Lounge - 800 square feet
- Car Rental Counters and Offices - 600 square feet
- Restrooms - 500 square feet

The adjacent ARFF facility could also be used for the storage of Airport maintenance equipment and Airport maintenance offices.

Based Aircraft Hangars. New hangars for based aircraft would be located west of the FBO hangar (14 new hangars), west of the existing T-hangars (9 T-hangars and 7 rectangular hangars), and south of the runway (7 rectangular hangars). The individual T-hangars west of the FBO hangar would be relocated to the south side of the Airport. The individual hangars located in the new intermodal terminal area would be relocated to the new hangar area east of the existing City T-hangars. Additional vehicle parking would be provided north of the City T-hangar area and in the new hangar areas.

Based and Transient Aircraft Parking. Based and transient aircraft parking would be relocated to the same areas as under Concept A. In addition, some tie-down space for based aircraft would be located in the area south of the runway. Access to the new aircraft parking area would be from an extension of L Street. Vehicle parking would be provided for the tie-downs and hangars located in this area.

Fixed Based Operator and Tenant Space. A total of 4.7 acres would be available for fixed based operators and other tenants. This is 2.4 acres more than is currently leased, and is 1.1 acres more than the 2015 requirements.

Other Facilities. Other facilities identified in Figure 6-3 for Concept B include helicopter facilities located south of the runway and an aircraft wash area. The helipad is included in the tenant acreage available in that area.

Land Acquisition. Land acquisition would be 3.0 acres east of H Street as under Concept A.

Concept C - Intermodal Terminal on South Side

Concept C provides for the development of a new intermodal transportation terminal on property to be acquired south of the Airport between O Street and L Street (Figures 6-5 and 6-6). All transient aircraft parking and some based aircraft tie-downs and hangars would also be located south of the runway. This concept would allow more of the available space on the north side of the Airport to be used by FBOs and other aviation related tenants. The important features of this concept are described below.

Airfield. Airfield improvements would be the same as under Concept B, except the new parallel taxiway on the south side of the runway would extend the full length of the runway. This new parallel taxiway would serve the new terminal area and based aircraft tie-downs and hangars to the east of the new terminal and the helicopter area to the west.

The AWOS, NDB and segmented circle would be relocated to the west to provide for the development of the new intermodal terminal and adjacent transient aircraft parking area. An alternate NDB location would be approximately 3 miles east of the Airport.

Non-Precision Instrument Approach Facilities. The localizer/DME non-precision instrument approach facilities would be the same as under Concepts A and B.

New Intermodal Transportation Terminal. A new intermodal transportation terminal would be located on property which would be acquired south of the Airport between O Street and L Street. Approximately 6.8 acres of property would be acquired. While the layout of the intermodal terminal facility differs from Concept B, the functions of the terminal and related facilities would be the same. An ARFF facility would be provided adjacent to the terminal. The ARFF facility could serve the needs of the surrounding community as well as the Airport. Aircraft fueling would be located adjacent to the terminal building. Bus fueling would located near L Street.

Based Aircraft Hangars. New hangars for based aircraft would be constructed west of the FBO hangar (20 hangars), west of the existing City T-hangars (10 T-hangars), and south of the runway (4 rectangular hangars). Additional vehicle parking would be provided north of the existing City T-hangars and new vehicle parking would be available in the tie-down and hangar area south of the runway. An aircraft wash area would be provided in the hangar area west of the FBO hangar. Under this concept, the nine existing individual T-hangars located west of the FBO hangar would be relocated to the south side.

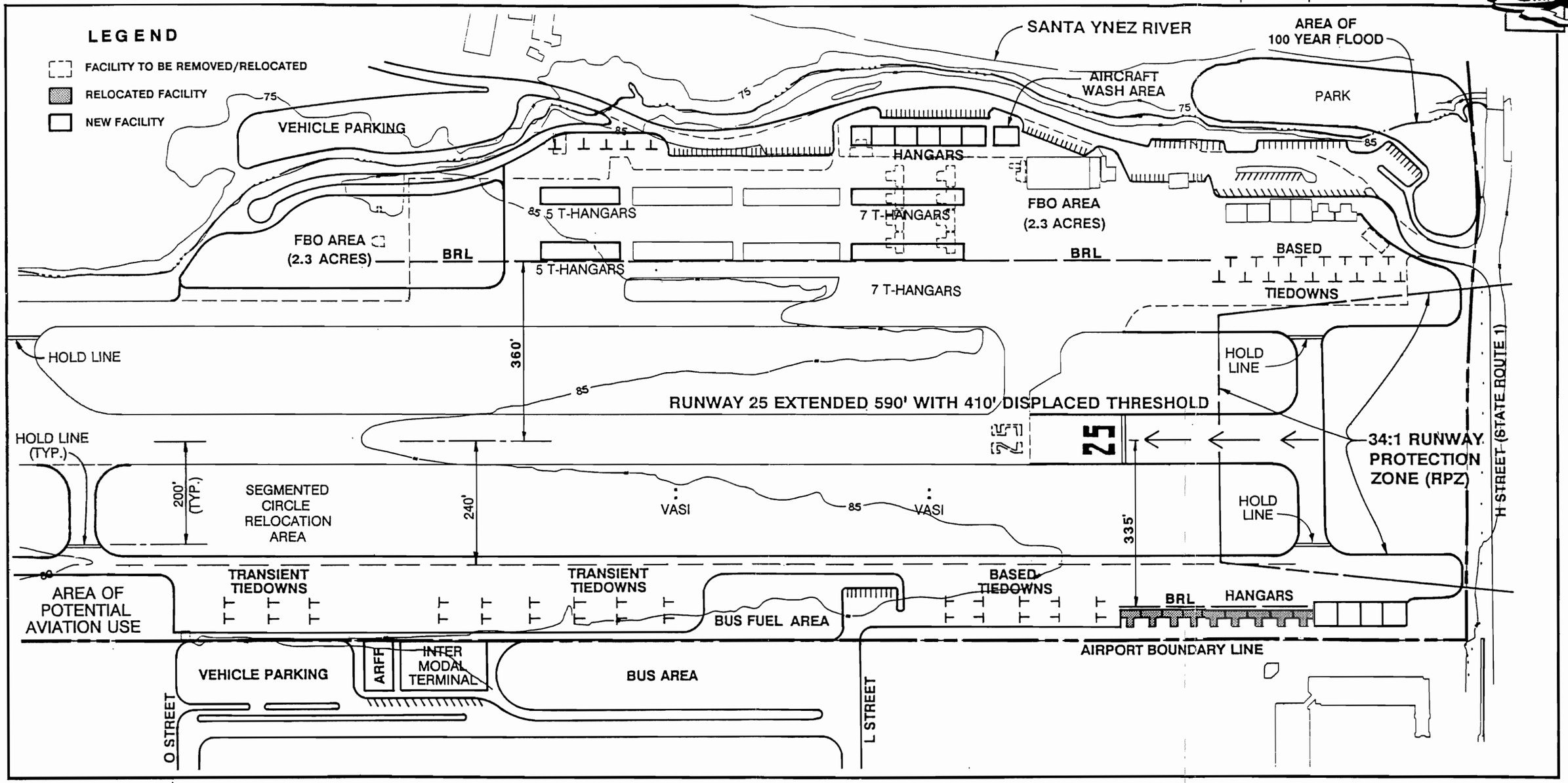


FIGURE 6-5

CONCEPT C (EAST END)
INTERMODAL TERMINAL
ON SOUTH SIDE

Based and Transient Aircraft Parking. Parking for based aircraft would be provided primarily south of the individual hangars that are located east of the present administration/terminal building and in the new area south of the runway. Transient parking would be provided in pull-through spaces on the ramp adjacent to the new intermodal terminal.

Fixed Based Operator and Tenant Space. FBO and related tenant lease areas would total 6.6 acres under this concept, which exceed the year 2015 requirements by 3 acres. The new helicopter area located near the Runway 7 threshold would provide greater separation between fixed wing and aircraft and helicopters. Access to the area would be from an extension of V Street.

Other Facilities. Other facility improvements would include an aircraft wash area located west of the FBO hangar, a park which extends to the Santa Ynez River, and a helipad serving the new helicopter area. The helipad area has been included in the helicopter area acreage.

Land Acquisition. Concept C would require the acquisition of 3.0 acres east of H Street as under Concepts A and B as well as an 11.7 acre parcel south of the Airport for a future terminal/administration building and other aviation-related development.

EVALUATION OF ALTERNATIVES

The three alternative concepts were evaluated according to the five criteria described at the beginning of this section:

- Satisfaction of Long Term Aviation Needs
- Enhancement of Airport-Community Compatibility
- Encouragement of Development of Business/Industry
- Efficient Use of Resources
- Flexibility for Future Airport Development

All three concepts are considered equal with respect to the second criterion. Therefore, the discussion which follows does not address airport-community compatibility. This subject will be discussed in Technical Report No. 4.

Evaluation of Concept A

Concept A would not satisfy the long term needs of the Airport. Because of the lack of buildable area on the north side of the runway, development under Concept A would fall short of Airport needs in Phase II development (1991 to 1995) by 1.1 acres and Phase III (2006 to 2016) by 1.4 acres. This shortfall would severely limit the future growth of the Airport and the ability of the Airport to satisfy user needs. The development of new business and industry in the Lompoc area would potentially be supported to a lesser degree under Concept A than the other concepts evaluated because of the lack of space to provide adequate services and facilities for potential corporate users. For example, under Concept A, spaces for corporate hangars and FBO facilities to service corporate aircraft will be more limited than under the other concepts.

Existing Airport resources would not be used as efficiently as under the other concepts. Airport property south of the runway will be needed in the future for the development of aviation uses. A concept which does not allow the development of this property would not maximize the efficiency of existing resources. Moreover, the north side of the Airport would become extremely congested, compromising the flexibility of the Airport to be able to meet future aviation needs that are not known today. Under Concept A, there would be insufficient space to build an intermodal transportation terminal on the north side of the runway.

Under Concept A, helicopters would be relocated to western edge of the main building area. Although this will provide better separation than exists now, helicopters would be operating in closer proximity to fixed-wing aircraft than in the other concepts.

Evaluation of Concept B

Concept B would provide for long term aviation needs better than Concept A, although not as well as Concept C. Under Concept B, the Airport would have an excess of 1.1 acres over projected Phase III requirements.

The development of Airport property south of the runway is a more effective use of Airport resources than under Concept A. However, the intermodal terminal on the north side of the Airport would commit a large part of the limited buildable Airport property to intermodal uses. The flexibility of the Airport to accommodate future aviation uses on the north side would be compromised under Concept B.

Evaluation of Concept C

Under Concept C there would be an excess of approximately 3 acres of developable property beyond the minimum Phase III requirements. For that reason, Concept C provides the opportunity for the Airport to meet aviation needs of the Lompoc area beyond the year 2015. Furthermore, Concept C would provide the maximum degree of encouragement for new business and industry development because the Airport would be capable of providing the necessary facilities and services to meet their long-range requirements.

The location of the new intermodal transportation terminal on property to be acquired south of the Airport provides a more efficient use of Airport resources than Concepts A or B. Concept B illustrates that an intermodal transportation terminal located on Airport property would severely constrain the long range development of aviation facilities. Concept C also utilizes the area south of the runway for the development of all transient aircraft activities, some based aircraft tie-downs and hangars, and a helicopter operating area. The location of the helicopter area at the southwest corner of the Airport provides the best separation between rotary-wing and fixed-wing aircraft.

Concept C also provides the greatest degree of flexibility for accommodating future Airport needs. By developing the south side of the Airport to the maximum extent possible, the Airport will come closer to balancing its sizable airfield capacity with its limited landside capabilities.

Furthermore, Concept C is consistent with and supports the development planned in the Central Avenue Specific Plan, south of the Airport.

Development Costs of Alternative Concepts

Table 6-1 compares the estimated capital development costs of alternative concepts. Because the degree of development and amount of new facilities varies substantially among the alternatives, the capital cost estimates vary correspondingly. Much of the capital investment can be provide by private, federal, and other government funding. The estimated City of Lompoc share of costs is shown in Table 6-2.

It is important to remember that these costs will be spent over 23 years. The average annual cost to the City of Lompoc over the 23-year planning period is:

Concept A - $78,000
Concept B - $90,000
Concept C - $97,000

It should also be pointed out that there are several large costs for improvements which will benefit City residents as a whole in addition to Airport users, such as a fire station ($672,000), park ($495,000) and intermodal terminal ($539,400 land and $2,700,000 building).

Moreover, many of the capital improvements which require some City funding are for revenue-generating facilities, and these costs will be paid back to the City in rental charges or user fees. Revenue-generating items include: the intermodal terminal ($2,700,000), fuel farm ($152,700), aircraft wash area ($60,000) and aircraft parking aprons.

Summary of Concept Evaluation

The evaluation of the three concepts is summarized in Table 6-3. Overall, Concept C received the highest ratings. That concept is rated equal or higher than the other concepts in all categories. Concept B scored second in overall ratings.

Aside from the overall rankings of the concepts according to development criteria, several important conclusions were reached in the evaluation of the concept alternatives:

- If an intermodal transportation terminal is located at the Airport, it must be located on property which would be acquired on the south side of the Airport, as illustrated in Concept C. The development of an intermodal terminal on the north side of the runway would restrict the Airport from using its limited property to provide necessary aviation facilities and services.

TABLE 6-1
COMPARISON OF ESTIMATED CAPITAL COSTS FOR DEVELOPMENT CONCEPTS
1993 to 2015 (Dollars) [a]

Development Item	Estimate Capital Costs		
	Concept A	Concept B	Concept C
Land Aquisition:			
Runway Protection Zone	138,000	138,000	138,000
Intermodal Terminal Site	-	-	539,400
Subtotal	**138,000**	**138,000**	**677,400**
Airfield:			
Site Preparation	40,800	66,000	97,680
Excavation/Fill	92,712	209,880	365,796
Pavement	428,004	1,081,000	1,471,000
Drainage Improvements	-	32,400	43,200
Subtotal	**561,516**	**1,389,280**	**1,977,676**
Lighting & Navaids:			
Lighting	106,320	176,880	227,700
Signage	12,000	30,000	45,000
Vasis	16,800	16,800	16,800
Marking	6,000	12,600	24,000
Relocate NDB & AWOS	-	12,000	12,000
Relocate Seg. Circle	-	36,000	36,000
Localizer	600,000	600,000	600,000
Subtotal	**741,120**	**884,280**	**961,500**
Buildings:			
Terminal Building	555,000	2,700,000	2,700,000
T-Hangars	480,000	552,000	576,000
Rectangular Hangars	988,252	1,296,864	1,014,506
ARFF	672,000	672,000	672,000
Subtotal	**2,695,252**	**5,220,864**	**4,962,506**
Roads & Vehicle Parking:			
Pavement	114,000	161,000	608,000
Lighting	-	2,775	5,100
Subtotal	**114,000**	**163,775**	**613,100**
Miscellaneous:			
Aircraft Wash Area	60,000	60,000	60,000
Fuel Farm	152,700	152,700	152,700
Park	182,952	-	495,000
Tiedowns	2,280	1,560	3,960
Landscaping	-	48,000	63,000
Subtotal	**397,932**	**262,260**	**774,660**
Total Development	**4,647,820**	**8,058,459**	**9,966,842**
Contingency (15%)	**697,173**	**1,208,769**	**1,495,026**
TOTAL	**5,344,993**	**9,267,228**	**11,461,868**

[a] Source: P&D Aviation. All costs are in 1992 dollars. Cost estimates include engineering design and construction administration costs.

TABLE 6-2
ESTIMATED CAPITAL COST TO BE PROVIDED BY THE CITY OF LOMPOC FOR DEVELOPMENT CONCEPTS, 1993 TO 2015 [a] (Dollars)

Development Item	Estimated City of Lompoc Share of Capital Costs		
	Concept A	Concept B	Concept C
Land Aquisition:			
Runway Protection Zone	13,800	13,800	13,800
Intermodal Terminal	-	-	53,940
Subtotal	13,800	13,800	67,740
Airfield:			
Site Preparation	4,080	6,600	9,768
Excavation/Fill	9,271	20,988	36,580
Pavement	42,800	108,100	147,100
Drainage Improvements	-	3,240	4,320
Subtotal	56,151	138,928	197,768
Lighting & Navaids:			
Lighting	10,623	17,688	22,770
Signage	1,200	3,000	4,500
Vasis	1,680	1,680	1,680
Marking	600	1,260	2,400
Relocate NDB & AWOS	-	1,200	1,200
Relocate Seg. Circle	-	3,600	3,600
Localizer	-	-	-
Subtotal	14,112	28,428	36,150
Buildings:			
Terminal Building	555,000	612,000	612,000
T-Hangars	-	-	-
Rectangular Hangars	-	-	-
ARFF	672,000	672,000	672,000
Subtotal	1,227,000	1,284,000	1,284,000
Roads & Vehicle Parking:			
Pavement	2,200	33,500	114,880
Lighting	-	917	1,538
Subtotal	2,200	34,417	116,418
Miscellaneous:			
Aircraft Wash Area	6,000	6,000	6,000
Fuel Farm	152,700	152,700	152,700
Park	-	-	-
Tiedowns	228	156	396
Landscaping	-	-	-
Subtotal	158,928	158,856	159,096
Total Development	1,472,191	1,658,429	1,861,172
Contingency (15%)	220,829	248,764	279,176
TOTAL	1,693,020	1,907,193	2,140,348

[a] Source: P&D Aviation. All costs are in 1992 dollars. Cost estimates include engineering design and construction administration costs.

TABLE 6-3
SUMMARY OF EVALUATION OF ALTERNATIVE DEVELOPMENT CONCEPTS [a]

Criteria for Development	Concept [b]		
	A **Terminal for Aviation Only/All Development on North Side**	**B** **Intermodal Terminal on North Side**	**C** **Intermodal Terminal on South Side**
Satisfies Long-Term Aviation Needs	2- Deficient by 1.4 acres in 2015	4- Excess of 1.1 acres in 2015	5- Excess of 3 acres in 2015
Enhances Airport-Community Compatibility	[c]	[c]	[c]
Encourages Development of Business/Industry	3- Inadequate space for facilities and services	4- Adequate space for facilities and services	5- Greatest space for future facilities and services
Provides Efficient Use of Resources	2- North side overly congested City of Lompoc Cost: $1.7 million	3- Limited Airport property committed to intermodal uses City of Lompoc Cost: $1.9 million	5- Efficient balance of property uses City of Lompoc Cost: $2.1 million
Allows Flexibility for Future Development	2- All Airport property on North side committed in Phase I	3- Nearly all Airport property committed during Phase III	4- Significant expansion potential beyond Phase III

[a] Source: P&D Aviation.

[b] Ratings are from 1 to 5, with 5 being best.

[c] All concepts are equal with respect to community compatibility. Off-airport issues will be considered later in this Master Plan.

- In the long run, Airport development will be necessary south of the runway (regardless of the decision to build an intermodal transportation terminal) because sufficient space does not exist on the north side. This conclusion is illustrated by Concept A, in which the north-side development does not provide sufficient facilities to satisfy Phase II Airport needs.

- Without the acquisition of additional land, there is limited development space on the south side of the runway. The building restriction line on the south side of the runway would be located parallel to the runway and approximately 330 feet from the runway centerline. This would provide building heights of up to approximately 12 to 20 feet above ground level without violating FAR Part 77 height restriction requirements. The available building area would be located in a narrow strip approximately 60 feet deep along the southern Airport

property boundary. Therefore, Airport property south of the runway would be useful for aircraft tie-downs, individual aircraft storage hangars, and limited FBO or related tenant activity.

A recommended time-phased airport improvement concept was developed consistent with the conclusions described above. The recommended concept, described in the next subsection, is a blending of the three alternatives which will enable the Airport to meet its development objectives.

RECOMMENDED DEVELOPMENT CONCEPT

On February 2, 1993, the Lompoc City Council adopted a modified Concept C as the preferred Master Plan development concept. The only modification was to eliminate the intermodal terminal from the recommended plan and to designate the future terminal for aviation use only.

The recommended development concept described here has been refined during the development of detailed airport layout plans. For example, a greater portion of the runway extension will be added to the west end and the parcel to be acquired for the future terminal area is somewhat larger. Section 7 describes the recommended master plan improvements in greater detail and contains plans of recommended improvements.

Section 7

Airport Plans

SECTION 7
AIRPORT PLANS

INTRODUCTION

This section, Airport Plans, presents in detail the total twenty year development program, as recommended in the Master Plan for Lompoc Airport. The findings of the Master Plan are presented in a set of 4 drawings. The improvements depicted in the drawings are based on the facility requirements discussed in Section 5 and the selected development concept discussed in Section 6. This development program integrates the existing Airport facilities with the development needed during the next twenty-two years.

The total development plan, including airside and landside improvements, is depicted on Figure 7-1, Airport Layout Plan (ALP). The development of the building areas is shown in greater detail in Figure 7-2, Building Area Plan. Figure 7-3, Obstruction Plan, depicts the imaginary surfaces on and around the Airport, as outlined in FAR Part 77. Figure 7-4, Airport Land Use Plan, shows recommended land uses within the Airport boundary.

AIRPORT LAYOUT PLAN (ALP)

The Airport Layout Plan (ALP), Figure 7-1, delineates the overall development plan for Lompoc Airport as recommended in this Master Plan Study. The ALP provides for the phasing in the various airport improvements without disrupting existing Airport uses and activities. As a graphic overview of the recommended Airport development, the ALP is supported by the other plans discussed in this section. The ALP conforms to the guidelines set forth by the Federal Aviation Administration (FAA) for the preparation of this plan. The ALP is the principal plan portraying the existing Airport facilities and recommended improvements and changes to the Airport layout configuration and the support areas.

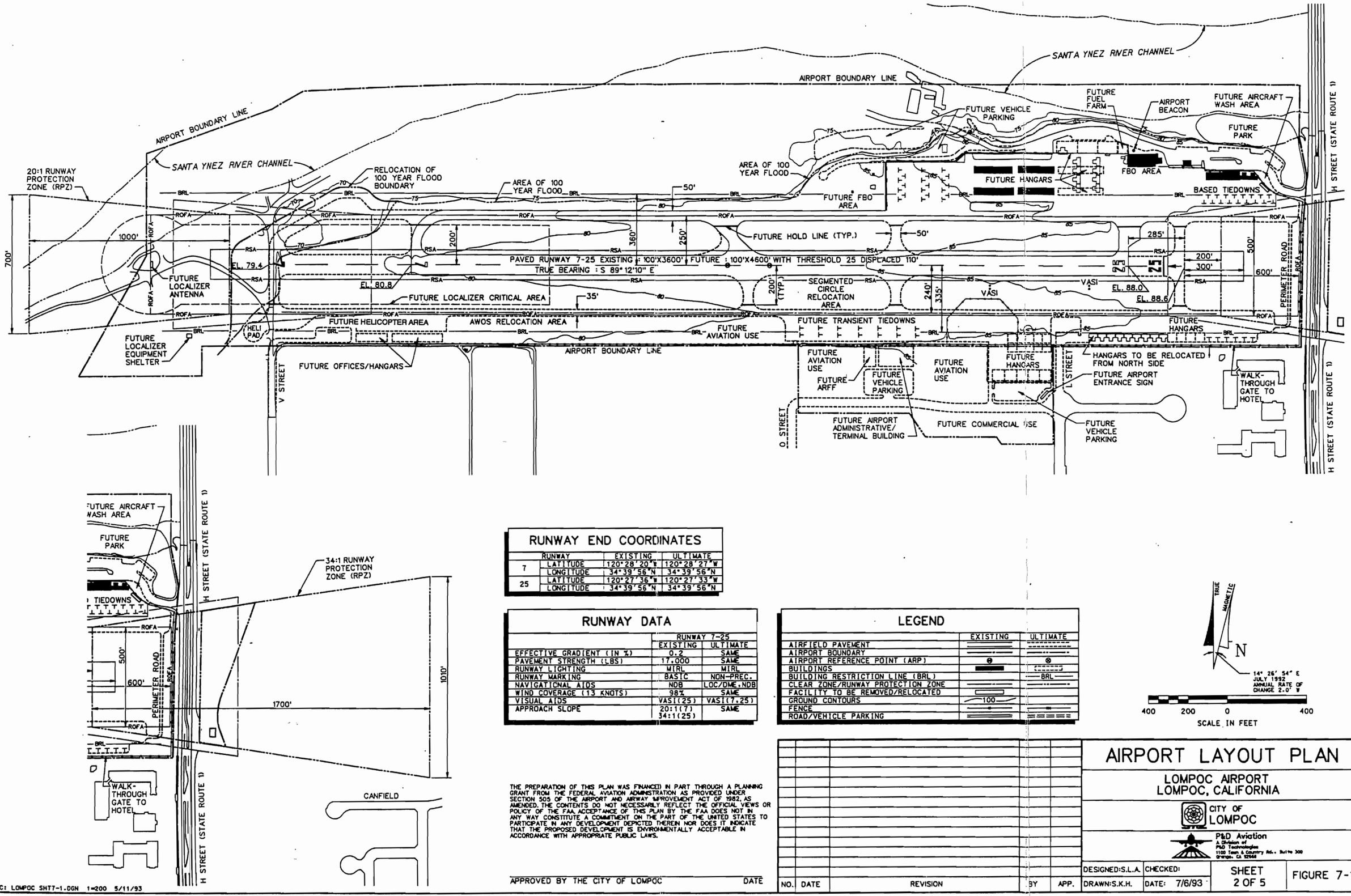
The recommended improvements to the airfield are summarized below. The phasing of the recommended airfield improvements is addressed in Section 8.

The elements comprising the airside improvements consist of the extension of the runway, taxiway extension and new taxiways, acquisition of property for the Runway Protection Zone, and navaid improvements.

Recommendations for pavement maintenance actions are contained in Appendix B.

Runway Extension

The 3,600 runway will be extended to 4,600 feet by extending it 285 feet to the east and 715 feet to the west. At the east end (Runway 25), a displaced runway threshold will be created by locating the Runway 25 landing threshold 180 feet east of the present threshold and locating the Runway 25 takeoff threshold 285 feet east of the existing threshold.



RUNWAY END COORDINATES

RUNWAY		EXISTING	ULTIMATE
7	LATITUDE	120°28'20"W	120°28'27"W
	LONGITUDE	34°39'56"N	34°39'56"N
25	LATITUDE	120°27'36"W	120°27'33"W
	LONGITUDE	34°39'56"N	34°39'56"N

RUNWAY DATA

	RUNWAY 7-25	
	EXISTING	ULTIMATE
EFFECTIVE GRADIENT (IN %)	0.2	SAME
PAVEMENT STRENGTH (LBS)	17,000	SAME
RUNWAY LIGHTING	MIRL	MIRL
RUNWAY MARKING	BASIC	NON-PREC.
NAVIGATIONAL AIDS	NDB	LOC/DME,NDB
WIND COVERAGE (13 KNOTS)	98%	SAME
VISUAL AIDS	VASI(2S)	VASI(7.2S)
APPROACH SLOPE	20:1(7) 34:1(25)	SAME

LEGEND

	EXISTING	ULTIMATE
AIRFIELD PAVEMENT		
AIRPORT BOUNDARY		
AIRPORT REFERENCE POINT (ARP)	⊕	⊗
BUILDINGS		
BUILDING RESTRICTION LINE (BRL)		BRL
CLEAR ZONE/RUNWAY PROTECTION ZONE		
FACILITY TO BE REMOVED/RELOCATED		
GROUND CONTOURS	100	
FENCE		
ROAD/VEHICLE PARKING		

TRUE / MAGNETIC

N

14° 26' 54" E
JULY 1992
ANNUAL RATE OF CHANGE 2.0' W

400 200 0 400
SCALE IN FEET

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APPROVED BY THE CITY OF LOMPOC DATE

NO.	DATE	REVISION	BY	APP.

AIRPORT LAYOUT PLAN

LOMPOC AIRPORT
LOMPOC, CALIFORNIA

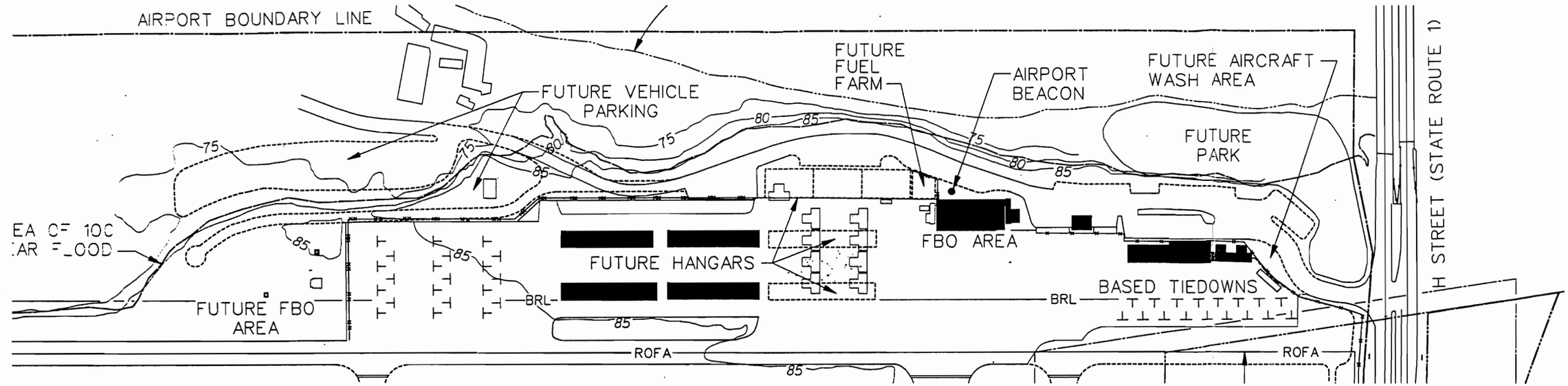
CITY OF LOMPOC

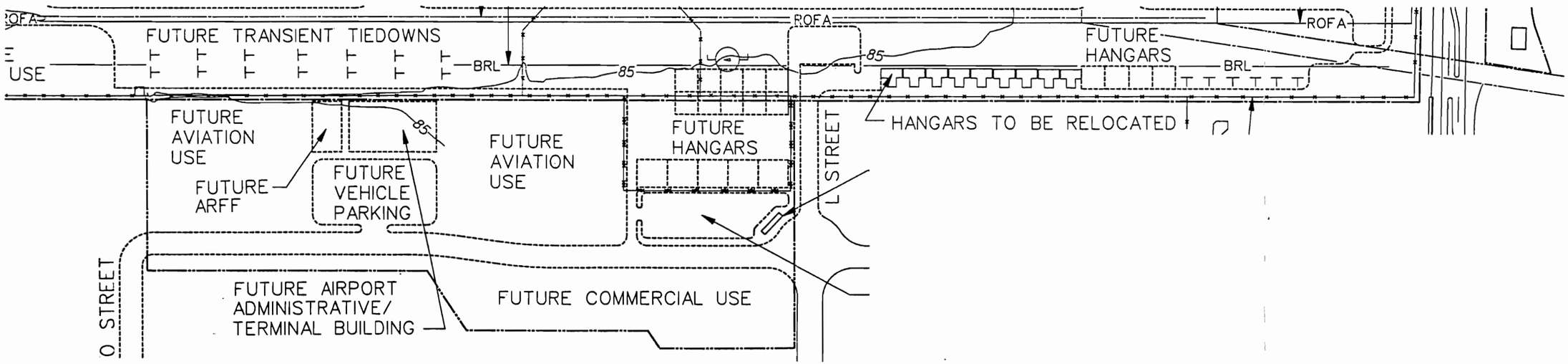
P&D Aviation
A Division of P&D Technologies
1100 Town & Country Rd., Suite 300
Orange, CA 92668

DESIGNED: S.L.A.	CHECKED:	SHEET 2 OF 5	FIGURE 7-1
DRAWN: S.K.H.	DATE: 7/6/93		

C: LOMPOC SHT7-1.DGN 1=200 5/11/93

Approved as Development Plan





LEGEND

	EXISTING	ULTIMATE
AIRFIELD PAVEMENT		
AIRPORT BOUNDARY		
AIRPORT REFERENCE POINT (ARP)	⊕	⊗
BUILDINGS		
BUILDING RESTRICTION LINE (BRL)		BRL
CLEAR ZONE/RUNWAY PROTECTION ZONE		
FACILITY TO BE REMOVED/RELOCATED		
GROUND CONTOURS	100	
FENCE		
ROAD/VEHICLE PARKING		

TRUE
MAGNETIC
N
14° 26' 54" E
JULY 1992
ANNUAL RATE OF
CHANGE 2.0' W

200 100 0 200
SCALE IN FEET

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APPROVED BY THE CITY OF LOMPOC DATE

NO.	DATE	REVISION	BY	APP.

BUILDING AREA PLAN

LOMPOC AIRPORT
LOMPOC, CALIFORNIA

CITY OF LOMPOC

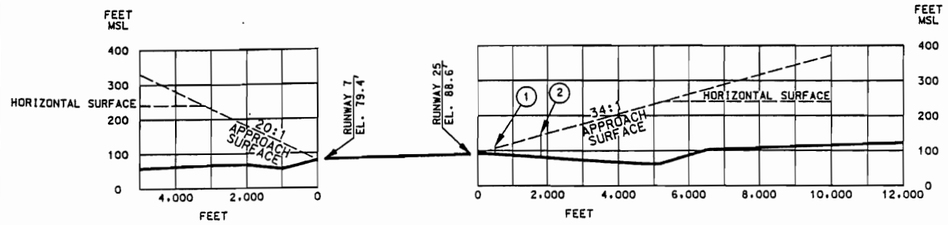
P&D Aviation
A Division of P&D Technologies
1100 Town & Country Rd., Suite 300
Orange, CA 92668

DESIGNED:S.L.A. CHECKED:
DRAWN:S.K.H. DATE: 5/11/93

SHEET 3 OF 5

FIGURE 7-2

C: LOMPOC SHT7-2.DGN 1=200 5/11/93



OBSTRUCTION IDENTIFICATION

RUNWAY	DESCRIPTION	ELEV.	PENETRATION	PROPOSED ACTION
7	NONE			
25	1. H STREET +15'	104'	3'	TO REMAIN (NOTE 1)
	2. POWER LINE ALONG O STREET	159'	17'	RELOCATE OR PLACE UNDERGROUND IF FEASIBLE
HOR. SURF.	TERRAIN	330'	91'	TO REMAIN
CON. SURF.	TERRAIN	360'	96'	TO REMAIN

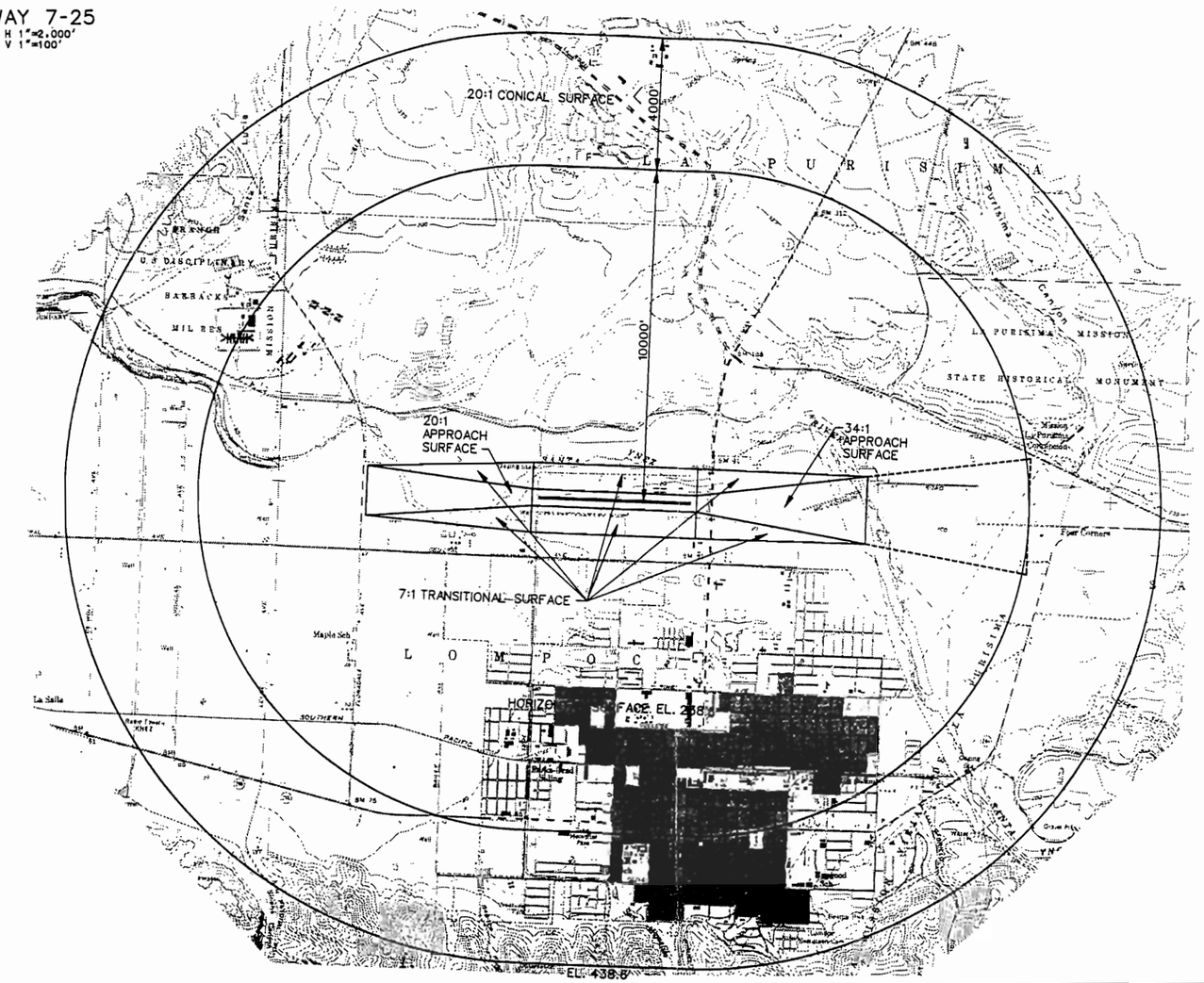
NOTES:
1. NO PENETRATION OCCURS WITH APPROACH SLOPE MEASURED FROM LANDING THRESHOLD.

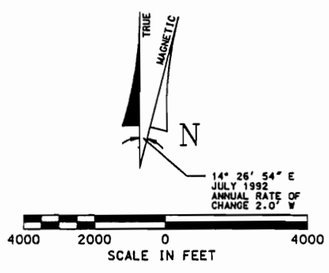
QUAD MAPS USED FOR BASE

NAME	DATE
SURF. CALIFORNIA	1974
LOMPOC. CALIFORNIA	1982

RUNWAY 7-25

SCALE: H 1"=2,000'
V 1"=100'





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APPROVED BY THE CITY OF LOMPOC DATE

NO.	DATE	REVISION	BY	APP.

OBSTRUCTION PLAN

LOMPOC AIRPORT
LOMPOC, CALIFORNIA

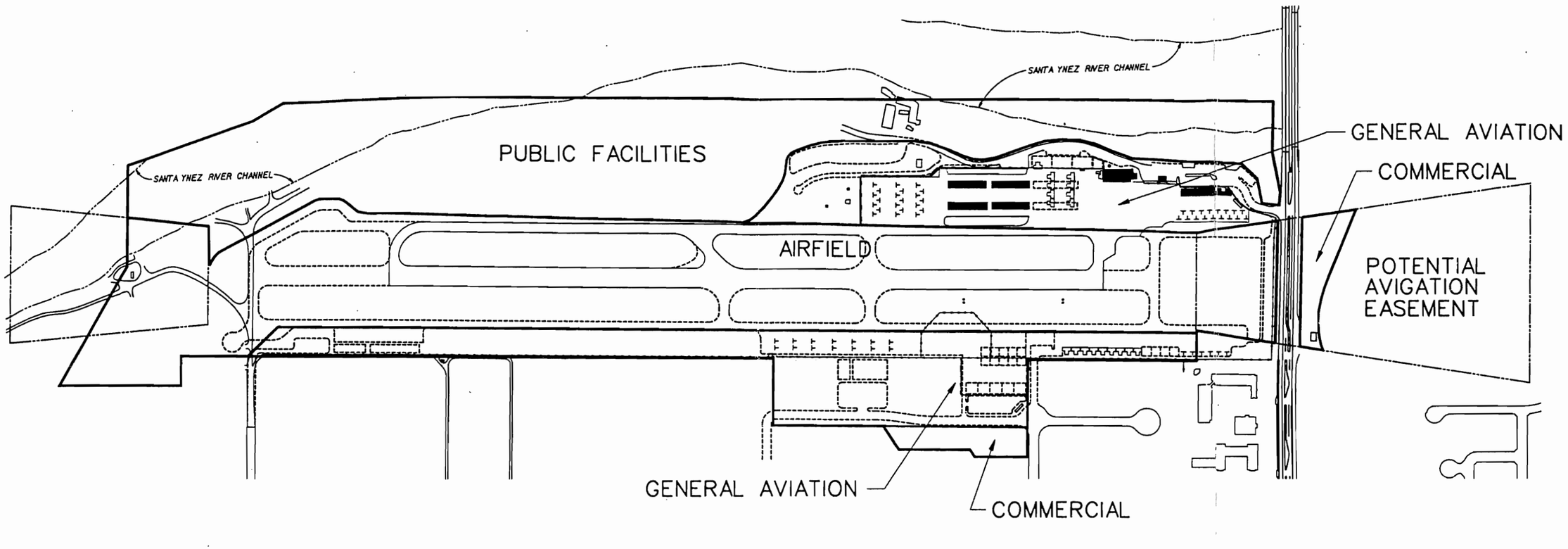
CITY OF LOMPOC

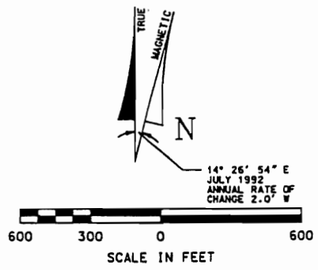
P&D Aviation
A Division of P&D Technologies
1100 Town & Country Rd., Suite 300
Orange, CA 92668

DESIGNED: S.L.A. CHECKED:
DRAWN: S.K.H. DATE:

SHEET 4 OF 5

FIGURE 7-3





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APPROVED BY THE CITY OF LOMPOC DATE

NO.	DATE	REVISION	BY	APP.

AIRPORT LAND USE PLAN

LOMPOC AIRPORT
LOMPOC, CALIFORNIA

CITY OF LOMPOC

P&D Aviation
A Division of P&D Technologies
1100 Town & Country Rd., Suite 300
Orange, CA 92868

DESIGNED:S.L.A.	CHECKED:	SHEET 5 OF 5	FIGURE 7-4
DRAWN:S.K.H.	DATE: 5/11/93		

C: LOMPOC SHT7-4.DGN 1=300 5/11/93

The location of the Runway 25 landing threshold was determined by the maximum easterly extension that could be obtained while providing an unobstructed 34 to 1 approach slope over the height of H Street including the required 15 feet above street level. The location of the Runway 25 end (takeoff threshold) was determined by the maximum easterly extension which would allow the Runway Object Free Area (ROFA) to be located on existing Airport property.

The Runway 7 threshold will be relocated 715 feet to the west.

Runway improvements will also include the extension of runway edge lighting and the relocation of runway threshold lighting and runway end identifier lights. Appropriate runway signage will also be provided.

Taxiways

Future taxiway improvements will include the extension of the north parallel taxiway westerly to the new Runway 7 threshold and easterly beyond the Runway 25 threshold to provide a run-up area. A new parallel taxiway will be constructed on the south side of the Airport to serve future aviation development on the south side. An exit taxiway will be provided at midfield to serve the south parallel taxiway.

The runway and taxiway development will require the addition of fill material at the west end of the Airport. The 100-year flood boundary will be relocated so that all Airport pavements will be outside the 100-year flood area.

Taxiway improvements will also include taxiway edge lighting for all new taxiways.

An additional set of exit taxiways, located approximately midway between the Runway 25 threshold and the existing midfield taxiway exit, should be considered when warranted by demand. These exit taxiways would connect to both the north and south parallel taxiways to allow early exiting of Runway 25 arrivals and to facilitate the access between the existing general aviation area and the future general aviation area south of the runway.

Runway Protection Zones

Runway Protection Zones are required at each end of the runway under FAA regulations. On the east end, it is recommended that the property in the Runway Protection Zone lying outside the 100-year flood area (3.0 acres) be acquired. Ultimately, an easement should be considered for property within the remainder of the Runway Protection Zone. The portion of the Runway Protection Zone extended beyond the Airport boundary to the west is presently owned by the federal government and is comprised primarily of the Santa Ynez Channel. Therefore, future development within this area is protected against, and property or easement purchase is not necessary.

Navaids

A localizer/DME will be installed west of the Runway 7 threshold, between the Santa Ynez Channel and the runway. This navaid will provide for a straight-in non-precision approach procedure for Runway 25.

The Non-directional Beacon (NDB) must be relocated to develop the general aviation area south of the runway. A suggested location would be on the extended runway centerline approximately 3 miles east of the Airport. The NDB in this location could potentially serve as a marker-beacon for approaches to Runway 25. The feasibility of installing the NDB in this location must be evaluated by the FAA. An alternate location will be south of the runway, on Airport property, between the extensions of O and V Streets.

BUILDING AREA PLAN

The building area plan (Figure 7-2) illustrates the improvements in the north and south building areas on a large scale. It should be noted that the precise siting of hangars and other buildings is subject to further engineering studies and their final siting might be modified.

Terminal/Administration Building Area

A new Airport terminal/administrative building will be located on an 11.7 acre parcel to be acquired south of the Airport between the extensions of L and O Streets. An access street will be constructed between L and O Streets on the south side of the parcel. The terminal area will include a new Aircraft Rescue and Fire Fighting (ARFF) facility and vehicle parking. The existing Airport terminal building could be leased to an FBO or other organization providing aviation related activity.

Aircraft Parking Aprons

An aircraft parking apron will be provided for transient aircraft tie-downs north of the new terminal area. The existing transient parking area on the northeast end of the Airport will be converted to based aircraft tie-downs. Additional parking apron for based aircraft will not be needed.

Aircraft Hangars

A new hangar complex will be located on the east end of the parcel to be acquired south of the Airport. It is envisioned that this hangar area will accommodate a mix of aircraft sizes including corporate aircraft. Vehicle parking will also be provided in this hangar area.

A second hangar area will be located south of the new south parallel taxiway adjacent to the Runway 25 threshold. This hangar area can accommodate the relocation of the 9 existing Port-a-Port hangars on the north side, as well as some new hangars. Additional hangars will also be constructed on the north side adjacent to the existing City T-hangar buildings.

Fixed Base Operator (FBO) Areas

An additional FBO area will be provided at the west end of the north side general aviation area. Additional parcels for future aviation use will be located on each side of the new Airport terminal area. In addition, an area is reserved at the south west corner of the Airport for helicopter operations. This area will be served by an extension of V Street.

Other Improvements

A new fuel farm will be located in the dirt area adjacent to the entrance road northwest of the FBO hangar. This area will be easily accessible for fuel delivery trucks and Airport fueling trucks. A turn-around area for fuel delivery trucks will be provided near the present end of the Airport access road. An aircraft wash area will be provided between the present Arctic Air area and the relocated Airport entrance road. Other improvements will include a community park located at the intersection of H Street and the Airport access road and Airport security fencing.

OBSTRUCTION PLAN

The Obstruction Plan, presented as Figure 7-3 depicts the imaginary surfaces on and around Lompoc Airport through which no object should penetrate without being properly marked. The dimensions and criteria employed in determining these surfaces, as discussed in the following paragraphs, are those outlined in Part 77 of the Federal Aviation Regulations, Objects Affecting Navigable Airspace, May 16, 1971, as amended.

The Horizontal Surface is a horizontal plane 150 feet above the future Airport elevation, which in the case of Lompoc Airport is 238.6 feet above mean sea level (the future Airport elevation will be 88.6 feet MSL). The perimeter of the Horizontal Surface is delineated by an arc of radius 10,000 feet from the ends of 200 foot extensions of the centerline of the runway. Adjacent arcs are connected by tangent lines.

The Conical Surface extends outward and upward from the edge of the Horizontal Surface at a slope of 20:1 for a horizontal distance of 4,000 feet. Thus, the elevation of the Conical Surface at its outermost edge is 438.6 feet above mean sea level.

The Primary Surface is defined as being longitudinally centered along the runway for a width of 500 feet and extending 200 feet beyond each end of the runway.

The slope and configuration of the runway Approach Surfaces vary as a function of runway type, length, and availability of instrument approaches. The inner width of the Approach Surfaces is the same width as the primary surface. This surface expands uniformly to an outer width of 3,500 feet for a planned non-precision instrument runway (Runway 25) and 1,500 feet for a runway planned for with only visual approaches (Runway 7). The Approach Surface extends a horizontal distance of 5,000 feet for Runway 7 and 10,000 feet for Runway 25.

The Transitional Surfaces extend outward and upward at right angles to the runway centerline (and the runway centerline extended) at a slope of 7:1 from the edges of the Primary and Approach Surfaces.

Two objects penetrate the Approach Surface to Runway 25: H Street with the required addition of 15 feet above the road elevation and a high-voltage power line along the northerly extension of D Street (approximately 1,300 feet east of H Street). The H Street (State Route 1) penetration is only 3 feet and does not penetrate an approach slope measured from the landing threshold of Runway 25 rather than the Runway 25 end. Therefore, it is not estimated to effect a future non-precision approach to Runway 25. The power line penetration is 17 feet (14 feet measured from the landing threshold of Runway 25). It is recommended that this line be relocated or placed underground if feasible. If that is not feasible, the wires should be marked and the poles lighted. If the height of the power line adversely affects the future landing minimums of the Runway 25 localizer approach (as determined by the FAA) an option is to relocate the landing threshold of Runway 25 to the west. Relocating it approximately 475 feet to the west would eliminate the powerline penetration and would allow adequate landing length (4,015 feet) for aircraft currently using and those expected to use the Airport in the future.

There are ground penetrations to the Horizontal Surface and the Conical Surface as depicted in Figure 7-3. The penetrations are at the outer edges of these surfaces and are not expected to affect air navigation at the Airport. A row of eucalyptus trees south of the Airport possibly penetrates Part 77 imaginary surfaces. The height of these trees should be determined and they should be trimmed if they are a penetration to Part 77 surfaces.

In order to control the future construction of obstacles which may hamper the safe operation of aircraft at Lompoc Airport, it is recommended that this Obstruction Plan be incorporated into the zoning ordinances of the City of Lompoc and County of Santa Barbara.

LAND USE PLAN

The Land Use Plan (Figure 7-4) delineates the different land uses within the Lompoc Airport boundary. These land uses are airfield, general aviation, commercial, and open space.

The airfield area includes all the airfield elements which are runways, taxiways and runway protection zones.

The general aviation area includes FBO areas, terminal/aircraft parking ramps, maintenance and administrative buildings, hangars and aprons. This area is divided into two parcels, north and south of the runway. These areas are depicted in Figure 7-4.

Additional land has been identified to be acquired for the new terminal area on the south side (11.7 acres) and for the portion of the Runway 25 Runway Protection Zone that is above the 100-year flood area (3.0 acres). Ultimately the acquisition of an avigation easement should be considered for the remainder of the Runway 25 Runway Protection Zone, which is in the 100-year flood area. Although building in the 100-year flood area is currently not allowed by

the City zoning ordinances, an easement would provide protection against the potential for bringing the property out of the 100-year flood area by use of fill material or levees. An aviation easement for the Runway 7 Runway Protection Zone, which is off Airport is not required because that property is under federal ownership and consists largely of the Santa Ynez River Channel.

OFF-AIRPORT LAND USE PLAN

Two potential off-airport impacts which could result from airport operations are the effects of aircraft overflights and airplane noise.

Aircraft Overflights

Aircraft overflights often result in annoyance, particularly of residential areas, and also present a greater potential for aircraft accidents off-airport which could result in personal injury or property damage. Typical flight tracks for aircraft approaching or departing the Airport are shown in Figure 7-5. Aircraft generally are able to avoid flying over residential areas near the Airport. However, flight tracks currently pass over a portion of the Mesa Oaks area, northeast of the Airport and occasionally along Central Avenue. Future development in the traffic pattern area should avoid large concentrations of people and contain restrictions on the density of residential use. The approach and departure areas along the extended runway centerlines should avoid residential uses.

Measurement of Aircraft Noise

Several methods have been devised to relate measurable sound, dB(A), to community response. The State of California has adopted the Community Noise Equivalent Level (CNEL) as the methodology for describing airport noise exposure. (California Administrative Code, Title 21, Chapter 2.5, Subchapter 6, Articles 1 through 14).

CNEL is an energy-averaging metric that combines the average noise level of each aircraft flyover in a 24-hour period and the number of flyovers during that period. To incorporate the increased annoyance of aircraft noise during the evening and nighttime hours, the CNEL assigns a weighting of 3 times to aircraft noise events occurring between the hours of 7:00 and 10:00 p.m. and a weighting of 10 times to aircraft noise events occurring between 10:00 p.m. and 7:00 a.m.

A CNEL level is approximately equal to the average dB(A) level during an entire day. Thus, a 65 CNEL level represents a time-averaged constant noise level of 65 dB(A) even through noise events higher and lower than 65 dB(A) would be experienced throughout the day. CNEL provides a common measure for a variety of differing noise exposures. The same CNEL can describe both an area with very few high level noise events and an area with many low level events. CNEL levels typically are depicted as contours. Contours are an interpolation of noise levels drawn to connect all points of a similar level. Contours appear similar to topographical contours and form concentric "footprints" around an airport.

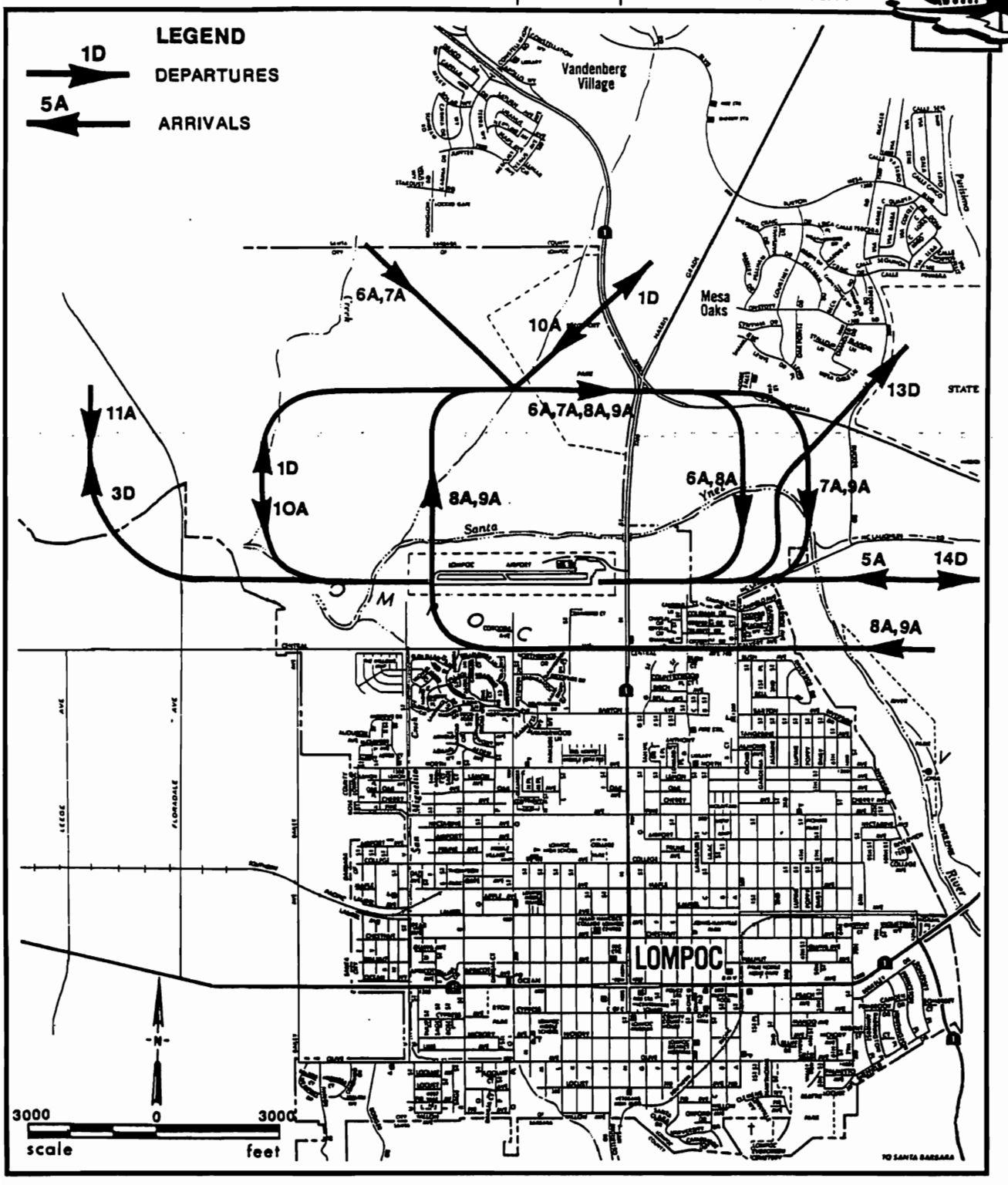
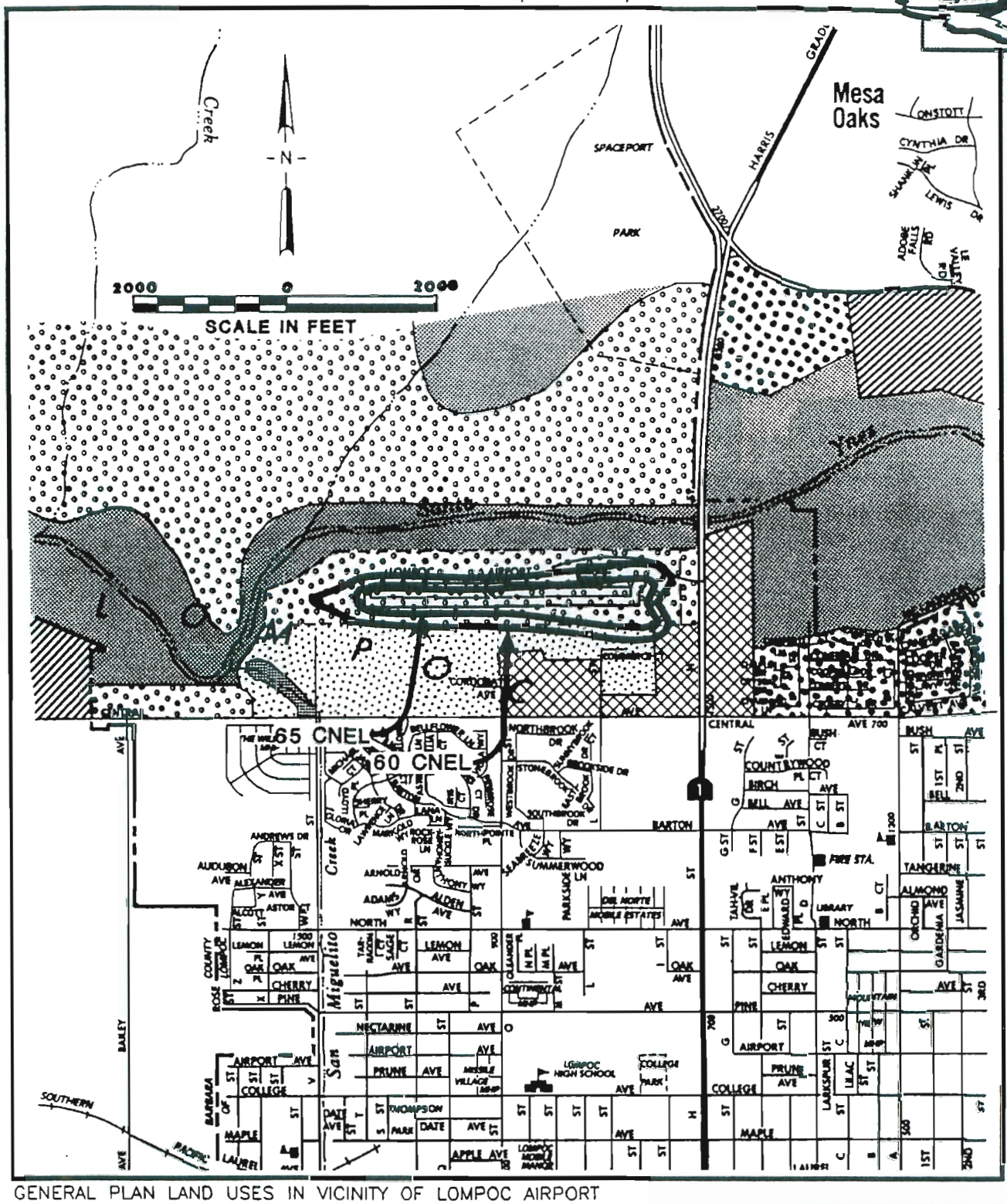


FIGURE 7-5

TYPICAL FLIGHT TRACKS AT LOMPOC AIRPORT



GENERAL PLAN LAND USES IN VICINITY OF LOMPOC AIRPORT

- PUBLIC FACILITY
- OPEN SPACE
- AGRICULTURAL RESERVE
- LOW DENSITY RESIDENTIAL
- PLANNED COMMERCIAL DEVELOPMENT
- PLANNED MANUFACTURING

FIGURE 7-6

ESTIMATED CNEL NOISE CONTOURS FOR 1992

State of California noise standards do not permit incompatible land uses with the 65 CNEL contour, except for conditional variances granted to existing airports. Incompatible land uses under the State definitions include single family dwellings, multiple family dwellings, trailer parks, schools of standard construction and hospitals. Compatible uses include multiple family dwellings 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 the interior CNEL in all habitable rooms does not exceed 45 dB(A) during aircraft operations.

The City of Lompoc has developed a draft of interior and exterior noise standards for the noise element of the City's General Plan. Their draft noise standards are shown in Table 7-1. Note that these standards are still under review and have not been adopted by the City.

Noise Contours

Using the Integrated Noise Model (INM) developed for the Federal Aviation Administration (FAA), CNEL noise contours were prepared for Lompoc Airport. INM input data used in the preparation of the noise contours are shown in Table 7-2. This table lists the number of average daily flights by type of aircraft, the distribution of flights by time of day, and the distribution of flights by runway end. As described in Section 4, there is anticipated to be a greater percentage of larger business-related general aviation aircraft activity in the future. The percentage of evening and nighttime operations is also projected to increase.

The estimated CNEL noise contours are shown in Figures 7-6 (1992), 7-7 (year 2000) and 7-8 (year 2015). In 1992, the 65 CNEL contour remains within Airport property, while the 60 CNEL contour extended beyond the property line to the southeast where a hotel is located.

Between 1992 and 2015 the CNEL noise contours around Lompoc Airport are estimated to increase. The increased noise will be a result of more aircraft activity, larger aircraft and a greater number of nighttime operations. However, future noise contours are expected to remain relatively small and are not expected to significantly impact residential areas.

It is recommended that new residential and other sensitive land uses, such as schools, hospitals, and auditoriums, around Lompoc Airport, be prohibited by zoning ordinances with the 60 CNEL contour. Currently off-airport areas within the year 2015 60 CNEL noise contour are zoned for commercial and open space uses.

Santa Barbara County Airport Land Use Plan

In October 1992 a revised Santa Barbara County Land Use Plan was prepared by the Santa Barbara County Airport Land Use Commission and the Santa Barbara County - Cities Area Planning Council. That document contains general guidelines for airport land use planning and presents the Airport Land Use Plan (ALUP) for Lompoc Airport and other airports in Santa Barbara County in compliance with the State Airport Land Use Commission regulations.

TABLE 7-1
DRAFT CITY OF LOMPOC INTERIOR AND EXTERIOR NOISE STANDARDS

Land Use Categories		Energy Average CNEL	
Category	**Uses**	**Interior [1]**	**Exterior [2]**
Residential	Single Family, Duplex, Multiple Family, Mobile Home	45 [3]	60 [4]
Commercial Industrial	Retail, Restaurant Motel Professional Offices Movie Theater, Concert Hall, Meeting Hall Manufacturing, Utilities, Warehousing, Agriculture	55 45 45 45 65	65 60 [4] 65 65 75
Institutional	Hospital, School, Nursing Home, Church, Library, Civic Offices	45	65
Open Space	Parks	--	60 [4]

[1] Interior areas exclude bathrooms, closets, and corridors.

[2] Exterior areas are limited to the following:

- *Private yards or patios of residential uses;*
- *Restaurant patios;*
- *Motel recreation areas;*
- *Office, theater, or hospital patios or assembly areas;*
- *School playgrounds;*
- *Nursing home, library, or civic office assembly areas;*
- *Park picnic areas.*

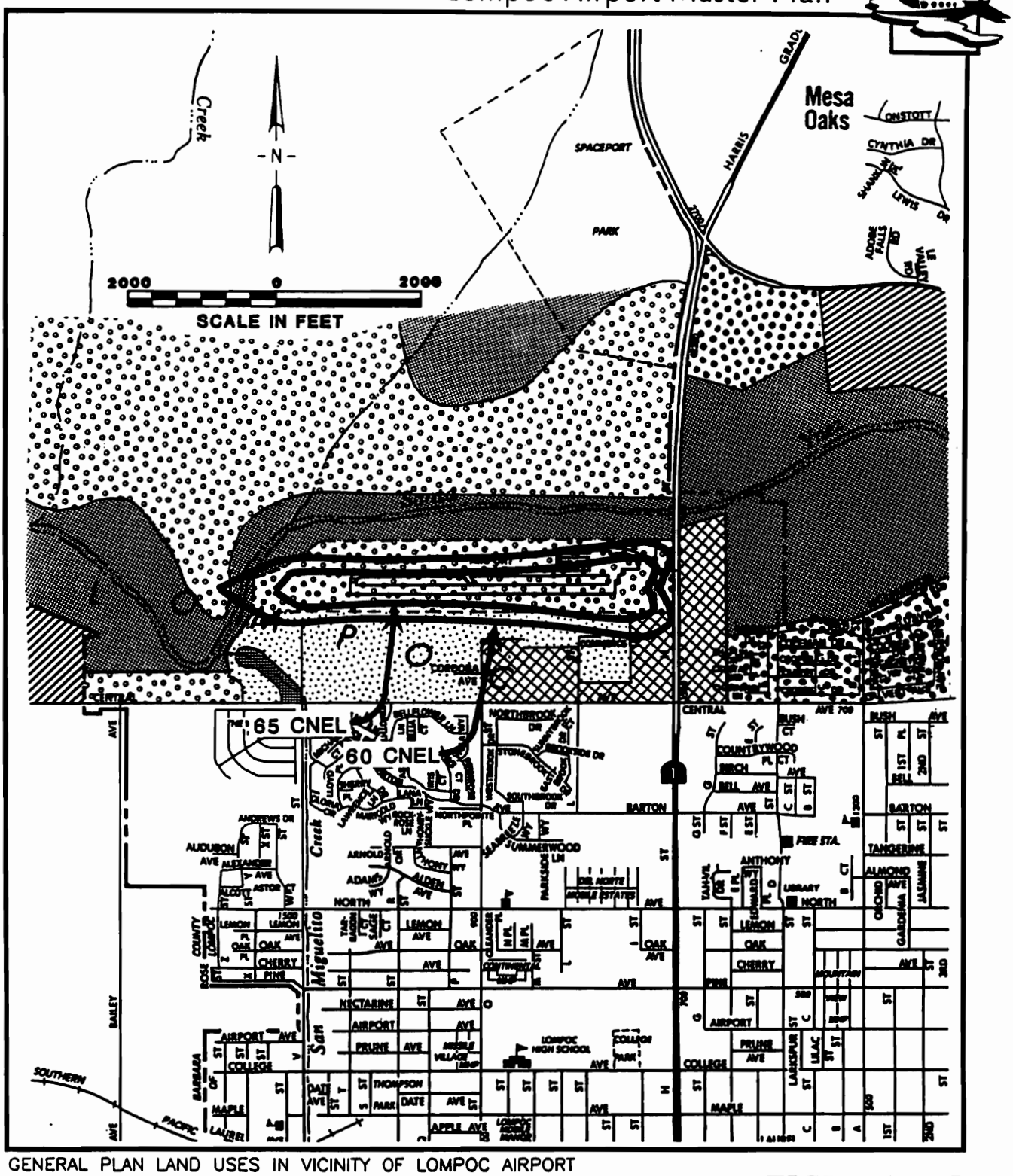
[3] If achievement of the interior noise standards requires that windows and doors remain closed, air conditioning or mechanical ventilation is required.

[4] In areas affected by aircraft noise, the standard is 65 CNEL with the stipulation that the noise level exclusive of the aircraft-generated noise cannot exceed 60 CNEL.

[5] In situations of overlapping Noise Standards, the quieter standard shall apply unless it can be found that the circumstances of the project allow for a less conservative interpretation based on the specific type of use, the benefits of the project, and the ability to mitigate the noise impacts.

[6] If an acoustical study shows that noise levels at any noise sensitive area will exceed 75 CNEL, the development should not be approved.

Source: City of Lompoc.

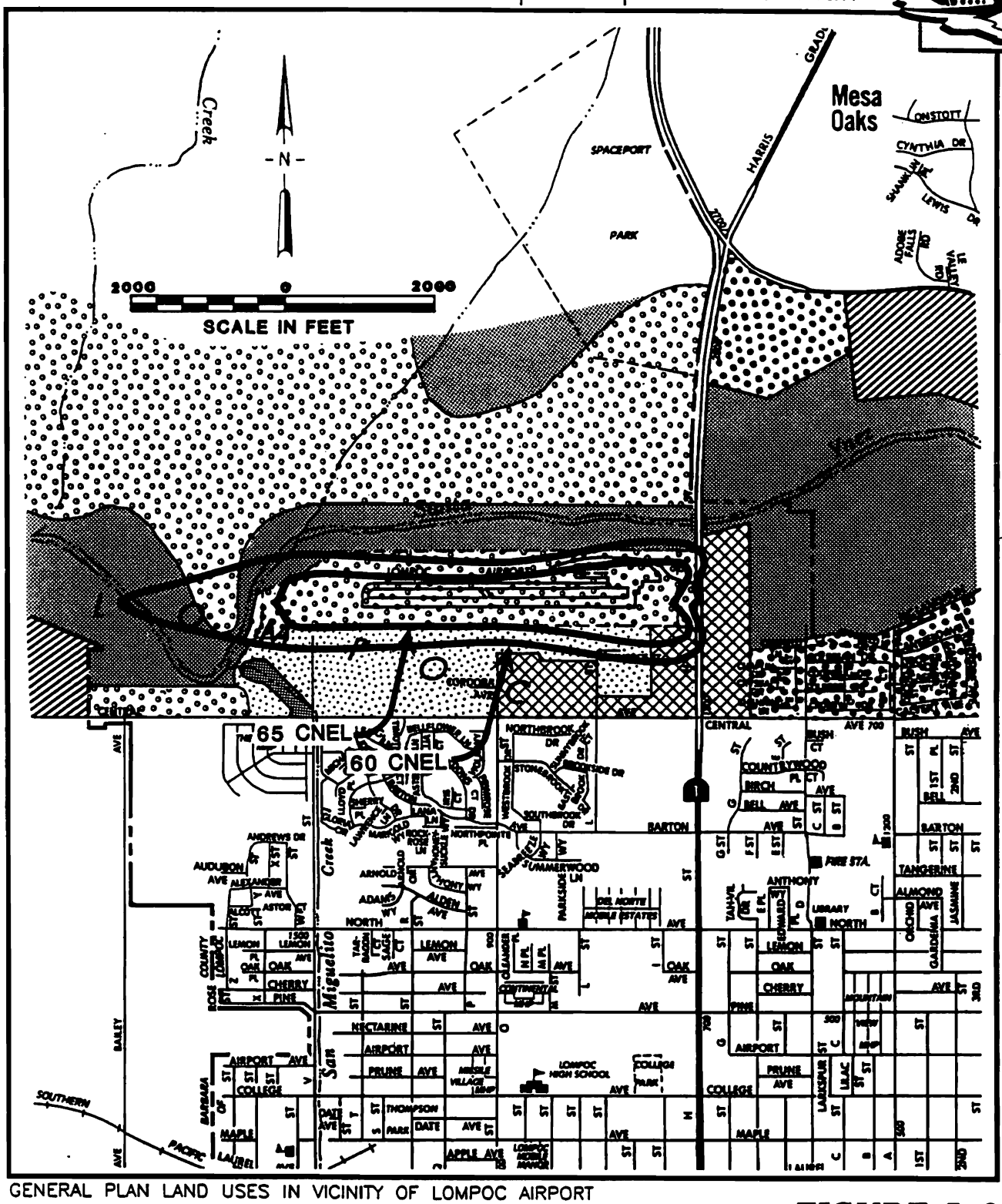


GENERAL PLAN LAND USES IN VICINITY OF LOMPOC AIRPORT

- PUBLIC FACILITY
- OPEN SPACE
- AGRICULTURAL RESERVE
- LOW DENSITY RESIDENTIAL
- PLANNED COMMERCIAL DEVELOPMENT
- PLANNED MANUFACTURING

FIGURE 7-7

ESTIMATED CNEL NOISE CONTOURS FOR 2000



GENERAL PLAN LAND USES IN VICINITY OF LOMPOC AIRPORT

- PUBLIC FACILITY
- OPEN SPACE
- AGRICULTURAL RESERVE
- LOW DENSITY RESIDENTIAL
- PLANNED COMMERCIAL DEVELOPMENT
- PLANNED MANUFACTURING

FIGURE 7-8

ESTIMATED CNEL NOISE CONTOURS FOR 2015

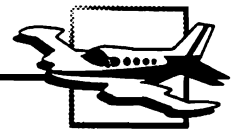
TABLE 7-2
INTEGRATED NOISE MODEL INPUT DATA
FOR LOMPOC AIRPORT

Input Parameter	Existing 1992	Forecast	
		2000	2015
Average Daily Operations			
Single Engine Piston	83.5	102.2	101.8
Multi-Engine Piston	6.8	12.1	21.9
Turboprop	0.2	2.0	6.0
Turbojet	0.2	2.0	6.0
Helicopter	7.9	10.5	15.0
Total	98.6	128.8	150.7
Percent of Operations by Time Period			
Day (7:00 AM - 7:00 PM)	96	94	92
Evening (7:00 PM - 10:00 PM)	2	3	4
Night (10:00 PM - 7:00 AM)	2	3	4
Total	100	100	100
Percent of Operations by Runway End			
Runway 7	10	10	10
Runway 25	90	90	90
Total	100	100	100
Percent Touch-and-Go [a]	35	35	35

[a] Includes "stop-and-go" traffic pattern training.

Source: P&D Aviation

The height restriction and safety zones pertaining to Lompoc Airport contained in the ALUP were derived from FAR Part 77 criteria which applied at that time but do not apply to the future Airport conditions as proposed in this Airport Master Plan. The noise zones in the ALUP were based on noise contours taken from the City of Lompoc's General Noise Plan Element. They are based on projections for 250 daily operations, compared with 98.6 in 1992 and 150.7 projected for 2015.



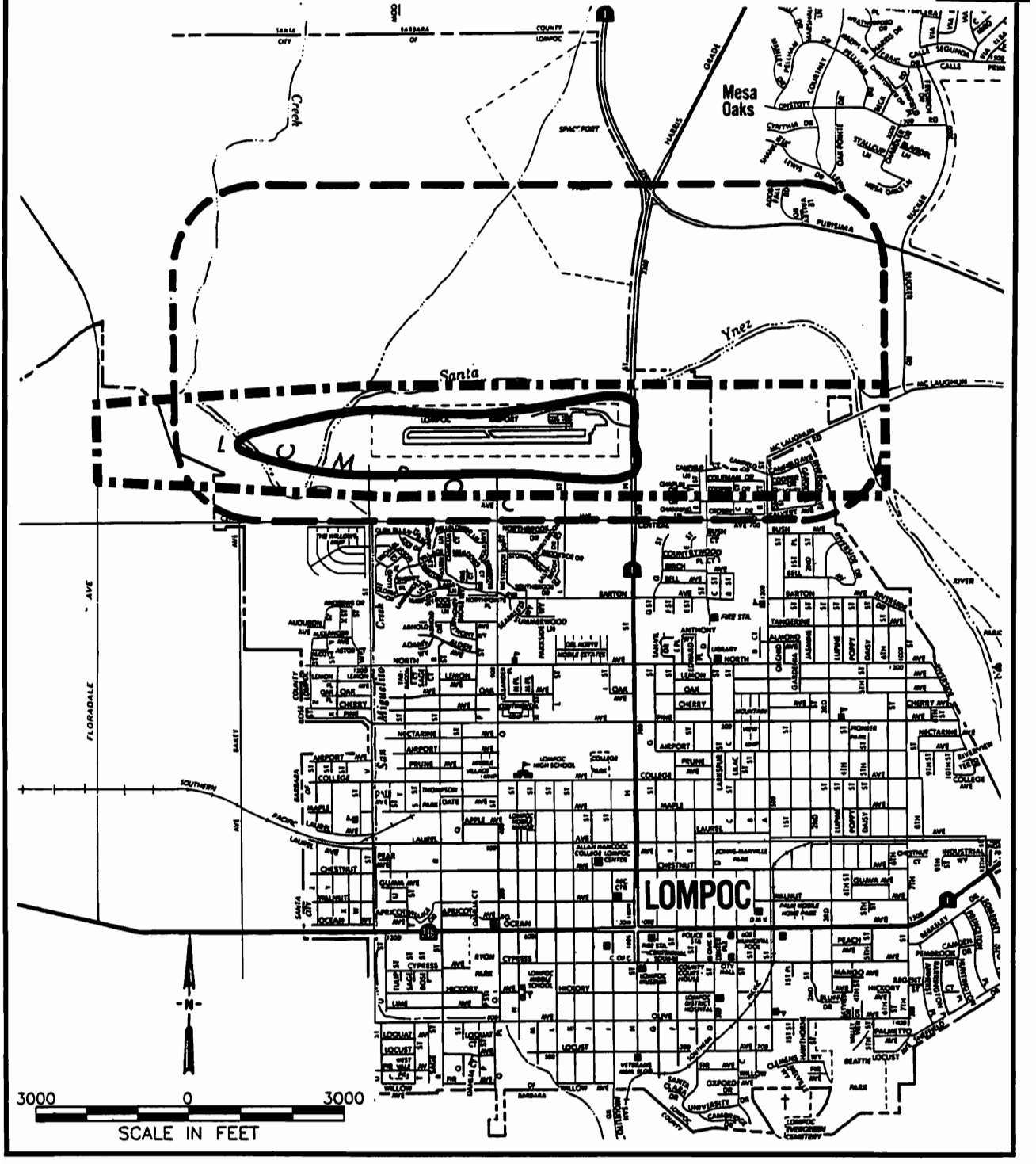
It is recommended that the ALUP be modified to reflect existing conditions at the Airport and projections of future activity which are consistent with this Airport Master Plan. It is recommended that the ALUP for Lompoc Airport be updated as follows:

- The planning boundary or Airport area of influence for Lompoc Airport should be revised to include the outer limits of the height restriction zone (Zone I), the airport safety zone (Zone II), and the noise restriction zone (Zone III) (Figure 7-9). It is recommended that the Airport height restriction area (Zone I), for use in defining the ALUP planning area, be restricted to the area under portions of the Primary, Transitional and Approach Surfaces which are below the Horizontal Surface. The current ALUP is based upon the outer limits of the FAR Part 77 surfaces, which extend approximately 9,000 feet from the runway, under present conditions. The new Part 77 surfaces, however, will extend approximately 14,000 feet from the runway under the proposed Airport Master Plan. This expanded Part 77 will encompass virtually all of the City of Lompoc. This area is too large to be effectively controlled by the Airport Land Use Commission. It is recommended that FAR Part 77 height restrictions be regulated through zoning ordinances of the City of Lompoc and County of Santa Barbara.

- In the current ALUP the Airport safety area (Zone II) is defined as the outer limit of the Horizontal Surface. This area will now be increased from approximately 5,000 feet from the runway to 10,000 feet from the runway. It is recommended that a new safety area be developed based on flight tracks at the Airport rather than the Horizontal Surface, to more accurately represent the area of greater accident risk.

- It is recommended that the Airport noise area (Zone III) be defined by the 60 CNEL noise contour for the year 2015 shown in Figure 7-8.

Revisions to the Santa Barbara County Airport Land Use Plan should also consider the future environmental documentation to be prepared for this Master Plan.



LEGEND

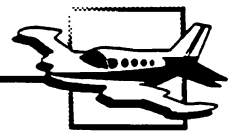
- HEIGHT ZONE
- SAFETY ZONE
- NOISE ZONE

FIGURE 7-9

RECOMMENDED ALUP PLANNING AREAS

Section 8

Capital Costs, Funding and Management



SECTION 8
CAPITAL COSTS, FUNDING AND MANAGEMENT

This section presents estimates of the capital costs for the Airport improvements recommended in Section 7. A phasing plan for the scheduling of improvements between 1992 and 2015 is provided, and funding sources are proposed. The economic impact of the Airport and a review of Airport operations and management practices are also discussed. All dollar values in this section are in 1992 dollars.

CAPITAL COST ESTIMATES

Estimated capital costs for the aviation improvements are $8.8 million. Major cost elements are property acquisition ($1.2 million), airfield pavement ($1.5 million), and buildings ($2.2 million). Capital cost estimates are detailed in Tables 8-1 and 8-2. Unit costs include the costs of engineering design, surveys, soils tests, and construction management. A contingency allowance of 15 percent of all costs is included. Capital cost estimates are broad projections prepared for master planning purposes.

PHASING PLAN

Capital improvement costs are shown in Tables 8-1 and 8-2 for three time periods: Short-term, 1993 to 2000; intermediate-term, 2001 to 2005; and long-term, 2006 to 2015. Capital costs are expected to total $7.0 million in the short-term period, $1.3 million in the intermediate-term, and $0.6 million in the long term. Major cost items in the short-term period are land acquisition, the extension of the runway and taxiway, and the construction of new hangars, a terminal and ARFF facility. Although the majority of costs are scheduled for the short-term (Phase I) period, cost will actually be incurred only when dictated by demand. Table 8-3 provides an estimate of phased improvements according to expected numbers of based aircraft. Priorities for Phase I projects are indicated in Table 8-3. Projects with a priority of 1 should be pursued immediately. Projects with a priority of 2 and 3 should be initiated when warranted by demand and when funds are available. An estimated schedule for Phase I projects is shown in Table 8-4.

FUNDING SOURCES

There are two grants-in-aid programs designed specifically for airport development: the FAA's Airport Improvement Program (AIP) and the State's California Aid to Airports Program (CAAP). Other funding sources are other government grants and private capital for specific projects.

TABLE 8-1
ESTIMATED CAPITAL COSTS FOR RECOMMENDED
AIRPORT IMPROVEMENTS, 1993 to 2015 [a]

Development Item	Capital Cost Estimate		
	Quantity	Unit Cost	Estimated Cost ($)
PHASE I (1993-2000)			
Land Acquisition:			
Runway Protection Zone	3.0 AC	$46,000/AC	$ 138,000
Terminal	11.7 AC	$87,000/AC	1,018,000
Subtotal			**1,156,000**
Airfield:			
Site Preparation	32AC	$2,400/AC	76,800
Excavation/Fill	23,820 CY	$12/CY	285,840
Pavement	63,333 SY	$18/SY	1,140,000
Drainage Improvements	270 LF	$120/LF	32,400
Subtotal			**1,535,040**
Lighting & Navaids:			
Lighting	1 LS	$176,940/LS	176,940
Signage	10 EA	$3,000/EA	30,000
VASI/PAPI	2 EA	$8,400/EA	16,800
Marking	1 LS	$18,000/LS	18,000
Relocate NDB & AWOS	1 LS	$12,000/LS	12,000
Relocate Seg. Circle	1 LS	$36,000/LS	36,000
Localizer	1 LS	$600,000/LS	600,000
Subtotal			**889,740**
Buildings:			
Terminal Building	3,200 SF	$150/LF	480,000
Rectangular/T-Hangars	21 EA	$24,000/EA	504,000
Corporate Hangars	2 EA	$45,000/EA	90,000
ARFF	1 EA	$672,000/EA	672,000
Subtotal			**1,746,000**
Roads & Vehicle Parking:			
Pavement	28,667 SY	$18/SY	516,000
Lighting	60 EA	$75/EA	4,500
Subtotal			**520,500**
Miscellaneous:			
Aircraft Wash Area	1 LS	$60,000/LS	60,000
Fuel Farm	12,500 gal	$6.60/gal	82,500
Park	-	-	-
Tie-downs	13 EA	$120/EA	1,560
Landscaping/Fencing	10,500 SF	$6/SF	63,000
Subtotal			**207,060**
Total Phase I Development			**6,054,340**
Contingency (15%)			**908,150**
TOTAL PHASE I			**6,962,490**

TABLE 8-1
ESTIMATED CAPITAL COSTS FOR RECOMMENDED AIRPORT IMPROVEMENTS, 1993 TO 2015

Development Item	Capital Cost Estimate		
	Quantity	Unit Cost	Estimated Cost ($)
PHASE II (2001-2005)			
Land Acquisition:			
Runway Protection Zone			
Terminal			
Subtotal			
Airfield:			
Site Preparation	7AC	$2,400/AC	16,800
Excavation/Fill	4,000 CY	$12/CY	48,000
Pavement	11,389 SY	$18/SY	205,000
Drainage Improvements	90 LF	$120/LF	10,800
Subtotal			**280,600**
Lighting & Navaids:			
Lighting	1 LS	$50,760/LS	50,760
Signage	5 EA	$3,000/EA	15,000
VASI/PAPI	-	-	-
Marking	1LS	$6,000/LS	6,000
Relocate NDB & AWOS	-	-	-
Relocate Seg. Circle	-	-	-
Localizer	-	-	-
Subtotal			**71,760**
Buildings:			
Terminal Building	-	-	-
Rectangular/T-Hangars	3 EA	$24,000/EA	72,000
Corporate Hangars	2 EA	$45,000/EA	90,000
ARFF	-	-	-
Subtotal			**162,000**
Roads & Vehicle Parking:			
Pavement	3,889 SY	$18/SY	70,000
Lighting	8 EA	$75/EA	600
Subtotal			**70,600**
Miscellaneous:			
Aircraft Wash Area	-	-	-
Fuel Farm	3,500 gal	$6.60/gal	24,000
Park	82,500 SF	$6/SF	495,000
Tie-downs	-	-	-
Landscaping/Fencing	-	-	-
Subtotal			**519,000**
Total Phase II Development			**1,103,960**
Contingency (15%)			**165,590**
TOTAL PHASE II			**1,269,550**

TABLE 8-1
ESTIMATED CAPITAL COSTS FOR RECOMMENDED AIRPORT IMPROVEMENTS, 1993 TO 2015 [a]

Development Item	Capital Cost Estimate		
	Quantity	Unit Cost	Estimated Cost ($)
PHASE III (2006-2015)			
Land Acquisition:			
Runway Protection Zone			
Terminal			
Subtotal			
Airfield:			
Site Preparation	1.7 AC	$2,400/AC	4,080
Excavation/Fill	2,663 CY	$12/CY	31,960
Pavement	7,000 SY	$18/SY	126,000
Drainage Improvements	-	-	-
Subtotal			**162,040**
Lighting & Navaids:			
Lighting			
Signage			
VASI/PAPI			
Marking			
Relocate NDB & AWOS			
Relocate Seg. Circle			
Localizer			
Subtotal			
Buildings:			
Terminal Building	500 SF	$150/SF	75,000
Rectangular/T-Hangars	4 EA	$24,000/EA	96,000
Corporate Hangars	2 EA	$45,000/EA	90,000
ARFF	-	-	-
Subtotal			**261,000**
Roads & Vehicle Parking:			
Pavement	1,222 SY	$18/SY	22,000
Subtotal			**22,000**
Miscellaneous:			
Aircraft Wash Area	-	-	-
Fuel Farm	7,000 gal	$6.60/gal	46,200
Park	-	-	-
Tie-downs	-	-	-
Landscaping/Fencing	-	-	-
Subtotal			**46,200**
Total Phase III Development			**491,240**
Contingency (15%)			**73,690**
TOTAL PHASE III			**$564,930**

[a] Source: P&D Aviation. All costs are in 1992 dollars. Cost estimates include engineering design and construction administration costs.

TABLE 8-2
ESTIMATED CAPITAL COSTS OF THE RECOMMENDED AIRPORT IMPROVEMENTS BY PHASE, 1993 TO 2015 (Dollars)

Development Item	Total	Phase I (1993-2000)	Phase II (2001-2005)	Phase III (2006-2015)
Land Acquisition:				
Runway Protection Zone	138,000	138,000		
Terminal	1,018,000	1,018,000		
Subtotal	**1,156,000**	**1,156,000**		
Airfield:				
Site Preparation	97,680	76,800	16,800	4,080
Excavation/Fill	365,800	285,840	48,000	31,960
Pavement	1,471,000	1,140,000	205,000	126,000
Drainage Improvements	43,200	32,400	10,800	-
Subtotal	**1,977,680**	**1,535,040**	**280,600**	**162,040**
Lighting & Navaids:				
Lighting	227,700	176,940	50,760	
Signage	45,000	30,000	15,000	
VASI/PAPI	16,800	16,800	-	
Marking	24,000	18,000	6,000	
Relocate NDB & AWOS	12,000	12,000	-	
Relocate Seg. Circle	36,000	36,000	-	
Localizer	600,000	600,000	-	
Subtotal	**961,500**	**889,740**	**71,760**	
Buildings:				
Terminal Building	555,000	480,000	-	75,000
Rectangular/T-Hangars	672,000	504,000	72,000	96,000
Corporate Hangars	270,000	90,000	90,000	
ARFF	672,000	672,000	-	90,000
Subtotal	**2,169,000**	**1,746,000**	**162,000**	-
				261,000
Roads & Vehicle Parking:				
Pavement	608,000	516,000	70,000	22,000
Lighting	5,100	4,500	600	-
Subtotal	**613,100**	**520,500**	**$70,600**	**22,000**
Miscellaneous:				
Aircraft Wash Area	60,000	60,000	-	-
Fuel Farm	152,700	82,500	24,000	46,200
Park	495,000	-	495,000	-
Tie-downs	1,560	1,560	-	-
Landscaping/Fencing	63,000	63,000	-	-
Subtotal	**772,260**	**207,060**	**519,000**	**46,200**
Total Development	**7,649,540**	**6,054,340**	**1,103,960**	**491,240**
Contingency (15%)	**1,147,430**	**908,150**	**165,590**	**73,690**
TOTAL	**8,796,970**	**6,962,490**	**1,269,550**	**564,930**

[a] Source: P&D Aviation. All costs are in 1992 dollars. Cost estimates include engineering design and construction administration costs.

TABLE 8-3
PHASING PLAN FOR RECOMMENDED MASTER PLAN IMPROVEMENTS Page 1 of 3

Improvement	Short Range Priority	Phase I: Up to 89 Based Aircraft (1993-2000)	Phase II: 90 to 94 Based Aircraft (2001-2005)	Phase III: 95 to 104 Based Aircraft (2006-2015)
Land Acquisition				
Runway Protection Zone	1	Acquire 3.0 acres east of H Street in Runway 25 RPZ.		
South Side	1	Acquire 11.7 acres on the south side of the Airport.		
Airfield				
Site Preparation	2	Prepare sites for airfield, terminal and hangar construction.	Prepare sites for hangar and taxiway construction.	Prepare sites for terminal and hangar construction.
Excavation/Fill	2	Excavation and fill for airfield, terminal and hangar construction.	Excavation and fill for hangar and taxiway construction.	Excavation and fill for terminal and hangar construction.
Pavement	2	Construct runway and north taxiway extensions, eastern part of south taxiway and ramp area.	Construct ramp expansion on south side and south taxiway extension.	Construct ramp expansion on south side.
Drainage	2	Make drainage improvements for runway, taxiway and ramp improvements.	Make drainage improvements for south taxiway extension.	
Lighting and Navaids				
Lighting and Signage	2	Provide runway/taxiway lighting and signage and ramp lighting.	Provide runway/ taxiway lighting and signage and ramp lighting.	
VASI/PAPI	3	Provide VASI or PAPI for Runway 7.		

TABLE 8-3
PHASING PLAN FOR RECOMMENDED MASTER PLAN IMPROVEMENTS Page 2 of 3

Improvement	Short Range Priority	Phase I: Up to 89 Based Aircraft (1993-2000)	Phase II: 90 to 94 Based Aircraft (2001-2005)	Phase III: 95 to 104 Based Aircraft (2006-2015)
Marking	2	Provide pavement markings for runway and taxiway extensions.	Provide pavement markings for taxiway extension.	
Relocate NDB, AWOS and Segmented Circle	2	Relocate NDB, AWOS and Segmented Circle.		
Localizer/DME	1	Provide a localizer/DME approach system.		
Buildings				
Terminal Building	3	Construct first stage of new terminal building.		Construct second stage of terminal building.
Hangars	1	Construct 21 rectangular/ T-hangars and 2 corporate hangars.	Construct 3 rectangular/ T-hangars and 2 corporate hangars.	Construct 4 rectanglar/ T-hangars and 2 corporate hangars.
ARFF	3	Construct new Aircraft Rescue and Fire Fighting (ARFF) facility.		
Roads and Vehicle Parking				
Pavement	2	Construct L Street access road, vehicle parking and access road to northwest FBO area.	Construct additional vehicle parking on north side.	
Lighting	2	Provide lighting for roadway and vehicle parking.	Provide lighting for roadway and vehicle parking.	

TABLE 8-3
PHASING PLAN FOR RECOMMENDED MASTER PLAN IMPROVEMENTS Page 3 of 3

Improvement	Short Range Priority	Phase I: Up to 89 Based Aircraft (1993-2000)	Phase II: 90 to 94 Based Aircraft (2001-2005)	Phase III: 95 to 104 Based Aircraft (2006-2015)
Miscellaneous				
Aircraft Wash Area	3	Provide aircraft wash area.		
Fuel Farm	1	Construct fuel farm with 12,500-gallon underground tanks.	Add 3,500-gallon tank(s).	Add 7,000-gallon tank(s).
Park			Develop community park at northeast corner.	
Tie-downs	2	Provide tie-downs for new transient ramp.		
Landscaping/ Fencing	2	Provide landscaping and fencing in new construction areas.		

Source: P&D Aviation

FAA Airport Improvement Program (AIP)

On the federal level, the FAA's aid to airports program provides funding for planning, construction, or rehabilitation at any public airport. The current grant program, known as the Airport Improvement Program (AIP), was established by the Airport and Airway Improvement Act of 1982 as amended. The AIP provides funding from the Airport and Airway Trust Fund for airport development, airport planning, noise compatibility planning and to carrying out noise compatibility programs.

The Trust Fund provides the revenues used to fund AIP projects. The Trust Fund concept guarantees a stable funding source whereby users pay for the services they receive. Taxes or user fees are collected from the various segments of the aviation community and placed in the Trust Fund. These taxes include an 8 percent tax on airline tickets, a 5 percent tax on freight waybills, a $3 international departure fee, and a $.12 and $.14 per gallon tax on general aviation gasoline and jet fuel, respectively.

TABLE 8-4
SCHEDULE OF PHASE I IMPROVEMENT PROJECTS

Year Initiated	Project	Improvements	Estimated Cost by Funding Source (Thousands of 1992 Dollars) Total	City of Lompoc	FAA	Private	Other
1993	Acquire 3.0 acres east of H Street in Runway 25 RPZ.	Land acquisition	138.0	13.8	124.2		
1993	Acquire 11.7 acres on the south side of the Airport.	Land acquisition	1,018.0	101.8	916.2		
1993	Construct fuel farm with 12,500-gallon underground tanks.	Fuel farm	82.5	82.5			
1993	Construct 21 rectangular/ T-hangars and 2 corporate hangars.	Rectangular/T-hangers Corporate hangars Total	504.0 90.0 594.0			504.0 90.0 594.0	
1994	Provide a localizer/DME approach system.	Navaid	600.0		600.0		
1994	Construct access road to northwest FBO area, modify existing access road and construct vehicle parking areas.	Site Preparation Excavation/Fill Pavement Lighting Landscaping/Fencing Total	7.2 40.2 216.0 2.0 10.0 275.4	.7 4.0 40.8 0.6 0.0 46.1	6.5 36.2 64.6 1.0 0.0 108.3		0.0 0.0 110.6 0.4 10.0 121.0

Source: P&D Aviation.

TABLE 8-4
SCHEDULE OF PHASE I IMPROVEMENT PROJECTS

Year Initiated	Project	Improvements	Estimated Cost by Funding Source (Thousands of 1992 Dollars) Total	City of Lompoc	FAA	Private	Other
1996	Extend runway and north parallel taxiway.	Site Preparation	28.8	2.9	25.9		0.0
		Excavation/Fill	72.5	7.2	65.3		0.0
		Pavement	438.0	43.8	394.2		0.0
		Drainage	21.6	2.2	19.4		0.0
		Lighting and Signage	97.0	9.7	87.3		0.0
		Marking	10.0	1.0	9.0		0.0
		Landscaping/Fencing	17.0	0.0	0.0		17.0
		VASI/PAPI for Runway 7	16.8	1.7	15.1		0.0
		Total	701.7	68.5	616.2		17.0
1997	Construct eastern part of new south parallel taxiway and new ramp area.	Site Preparation	31.2	3.1	28.1		0.0
		Excavation/Fill	118.8	11.9	106.9		0.0
		Pavement	702.0	70.2	631.8		0.0
		Drainage	10.8	1.1	9.7		0.0
		Lighting and Signage	110.0	11.0	99.0		0.0
		Marking	8.0	0.8	7.2		0.0
		Tiedowns	1.6	0.2	1.4		0.0
		Landscaping/Fencing	18.0	0.0	0.0		18.0
		Relocate NDB, AWOS and Segmented Circle	48.0	4.8	43.2		0.0
		Total	1,048.4	103.1	927.3		18.0
1997	Construct L Street access road and vehicle parking for based aircraft owners.	Site Preparation	9.6	1.0	8.6		0.0
		Excavation/Fill	54.3	5.4	48.9		0.0
		Pavement	120.0	22.7	35.9		61.4
		Lighting	1.0	0.3	0.5		0.2
		Landscaping/Fencing	18.0	0.0	0.0		18.0
		Total	202.9	29.4	93.9		79.6
1998	Provide aircraft wash area.	Aircraft Wash Area	60.0	6.0	54.0		

Source: P&D Aviation.

TABLE 8-4
SCHEDULE OF PHASE I IMPROVEMENT PROJECTS

Year Initiated	Project	Improvements	Estimated Cost by Funding Source (Thousands of 1992 Dollars) Total	City of Lompoc	FAA	Private	Other
2000	Construct first stage of terminal building, including access road and vehicle parking.	Building	480.0	480.0	0.0		0.0
		Vehicle Parking and Access	180.0	34.0	53.8		92.2
		Lighting	1.5	0.4	0.7		0.4
		Total	661.5	514.4	54.5		92.6
2000	Construct New Aircraft Rescue and Fire Fighting Facility.	Building	672.0	672.0			
Total Phase I Improvements			6,054.3	1,637.5	3,494.6	594.0	328.2
Contingency (15%)			908.2	245.7	524.2	89.1	49.2
Total			6,962.5	1,883.2	4,18.8	683.1	377.4

Source: P&D Aviation.

Projects eligible for AIP funding consist of: capital outlays for land acquisition; site preparation; construction, alteration, and repair of runways, taxiways, aircraft parking aprons, and roads within airport boundaries (except for access to areas providing revenue, such as parking lots and aviation industrial areas); construction and installation of lighting, utilities, navigational aids, and aviation-related weather reporting equipment and safety equipment required for certification of an airport facility; security equipment required of the sponsor by the Secretary of Transportation; limited terminal development at commercial service airports; and equipment to measure runway surface tension. Grants may not be made for the construction of hangars, automobile parking facilities, buildings not related to the safety of persons in the airport, landscaping or artwork, or routine maintenance and repair.

The Aid to Airports Program provides a maximum federal share of 90 percent for all eligible projects at Lompoc Airport. Capital costs eligible for AIP funding are listed in Table 8-5. FAA eligible costs total $4.6 million, an average of $200,000 a year over the 23-year planning period. Because of the large number of projects competing for AIP funds, not all eligible projects can be funded.

In fiscal year 1993, $17,224,552 in AIP funds was available for "general aviation" airports in the State of California (excluding reliever airports). The "general aviation" (non-reliever) category includes Lompoc Airport. General aviation airports must be publicly-owned to receive AIP grants. There are presently 122 publicly-owned general aviation (non-reliever) airports in the State competing for the AIP funds. Although an average of $141,000 in AIP grant funds was available for each general aviation airport in 1993, proposed grant projects must compete with all other projects in the State on the basis of need.

California Aid to Airports Program (CAAP)

The CAAP provides two types of grant funding: annual grants, and acquisition and development grants.

The annual grants are used to fund preapproved, eligible projects and/or operations and maintenance of public-use airports with less than 85,000 annual passenger enplanements. The funds are a fixed amount of $5,000 annually and may be accrued for a maximum of five years with no matching requirements. Grants can be used for airport and aviation services such as marking systems, fencing, lighting, navigation aids, land acquisition, parking and tie-downs, noise monitoring, and obstruction/hazard removal. Funds can also be used for servicing of general obligation or revenue bonds issued to finance airport capital improvements and for operation and maintenance purposes.

TABLE 8-5
SOURCES OF FUNDING FOR THE RECOMMENDED AIRPORT IMPROVEMENTS, 1993 TO 2015 [a] (Dollars)

Development Item	Total	City of Lompoc	FAA	Other Federal	State	County	Private
Land Acquisition:							
Runway Protection Zone	138,000	13,800	124,200				
Terminal	1,018,000	101,800	916,200				
Subtotal	**1,156,000**	**115,600**	**1,040,400**				
Airfield:							
Site Preparation	97,680	9,770	87,910				
Excavation/Fill	365,800	36,580	329,220				
Pavement	1,471,000	147,100	1,323,900				
Drainage Improvements	43,200	4,320	38,880				
Subtotal	**1,977,680**	**197,770**	**1,779,910**				
Lighting & Navaids:							
Lighting	227,700	22,770	204,930				
Signage	45,000	4,500	40,500				
VASI/PAPI	16,800	1,680	15,120				
Marking	24,000	2,400	21,600				
Relocate NDB & AWOS	12,000	1,200	10,800				
Relocate Seg. Circle	36,000	3,600	32,400				
Localizer	600,000	-	600,000				
Subtotal	**961,500**	**36,150**	**925,350**				
Buildings:							
Terminal Building	555,000	555,000					
Rectangular/T-Hangars	672,000	-					672,000
Corporate Hangars	270,000	-					270,000
ARFF	672,000	672,000					
Subtotal	**2,169,000**	**1,227,000**					**942,000**
Roads & Vehicle Parking:							
Pavement	608,000	114,880	181,800	84,160	40,000	187,160	
Lighting	5,100	1,540	2,430	1,130	-	-	
Subtotal	**613,100**	**116,420**	**184,230**	**85,290**	**40,000**	**187,160**	
Miscellaneous:							
Aircraft Wash Area	60,000	6,000	54,000		-	-	
Fuel Farm	152,700	152,700	-		-	-	
Park	495,000	-	-		495,000	-	
Tie-downs	1,560	160	1,400		-	-	
Landscaping/Fencing	63,000	-	-		-	63,000	
Subtotal	**772,260**	**158,860**	**55,400**		**495,000**	**63,000**	
Total Development	**7,649,540**	**1,851,800**	**3,985,290**	**85,290**	**535,000**	**250,160**	**942,000**
Contingency (15%)	**1,147,430**	**277,770**	**597,790**	**12,790**	**80,250**	**37,520**	**141,300**
TOTAL	**8,796,970**	**2,129,570**	**4,583,080**	**98,080**	**615,250**	**287,680**	**1,083,300**

[a] Source: P&D Aviation. All costs are in 1992 dollars. Cost estimates include engineering design and construction administration costs.

Acquisition and development grants provide discretionary funds for airport projects included in the adopted State Transportation Improvement Program (STIP). The STIP is a five-year capital improvement program for which any publicly-owned, public-use airport may apply. Under the "true" five-year STIP, the funding period is the first year, and the remaining four years are "committed to" to the extent that funds are available. In prioritizing project submittals, the Department of Aeronautics uses the "STIP Project Evaluation Matrix" and an Airport Rating form. Acquisition and development grants can be used to fund any capital improvements on an airport and for aviation purposes with runway maintenance projects receiving the highest priority for funding. Additionally, funds can be used for servicing general obligation or revenue bonds issued to finance airport capital improvements and for the local matching portions of Federal Airport Improvement Program grants. Funds cannot be used for operations or maintenance. Grants range from $10,000 to $500,000.

Total acquisition and development grant funding was $2,100,000 in fiscal year 1993. Recent increases in aviation fuel taxes will allow acquisition and development grants to increase to an estimated $4,900,000 in fiscal year 1994.

There are 213 general aviation (including reliever) airports in California competing for these funds. Therefore the average funding per airport is approximately $10,000 in fiscal year 1993, increasing to 19,000 in fiscal year 1994. The California Transportation Commission annually establishes a local matching requirement which ranges from 10 to 50 percent of the non-Federal funded portion of the project cost. Since 1977/78, recipients have provided a minimum match of 10 percent of eligible project costs for acquisition and development projects. It is estimated that all CAAP grant funds received by Lompoc Airport will be used for pavement maintenance and rehabilitation and therefore will not be available for new construction.

In addition to grants-in-aid, the CAAP provides financial assistance in the form of low interest loans, repayable over a period not to exceed 25 years. Two types of loans are available: Revenue Generating Loans and Matching Funds loans. The interest rate for these loans is based on the most recent issue of State of California bonds sold prior to approval of the loan. Currently (1993) this rate is at 5.9 percent.

Funds from Revenue Generating Loans may be used for any projects not eligible for funding under other programs and which are designed to improve airport self-sufficiency. Loans of this type cannot be used for "land banks," automobile access roads and auto parking facilities to accommodate airlines. The loan amounts are based upon an analysis of each individual application, after a public hearing is held, and subject to availability of funds. Matching fund loans may be used for securing Federal AIP grants, and the loan amount equals the 10 percent of project costs required to match a Federal grant. Requests for matching fund loans are given highest priority. Total loan funding in fiscal year 1993 was $2.9 million, and specific project funding ranged from $25,000 to $500,000. In fiscal year 1994, $1.6 million is expected to be available for loan funds.

Other Grant Programs

Several other grant programs could potentially provide funding for improvements at the Airport. Such programs will provide funding for street improvements, parks and landscaping (Table 8-5).

Private Capital

Private funding is often available for certain airport improvements, including aircraft hangar construction. It is assumed that future hangars at the Airport will be constructed with private funds on property leased from the Airport on a long-term basis. At the end of the lease period the hangars would be owned by the City. It is recommended these be constructed in groups of adjoining T-hangars or rectangular hangars, rather than constructed individually.

Non-Aviation Lease Revenues

Revenues will potentially be available from the development of the non-aviation lease area recommended east of H Street and south of the new terminal area. Because the timing of this development is uncertain, these revenues are not included as a funding source.

FINANCING PLAN

The financing plan for recommended improvements to Lompoc Airport is summarized in Table 8-5. Lompoc share of costs are shown in Table 8-6 by time period. Over the next 22 years, the City will have to rely on the FAA's AIP program and other government grant programs to fund the majority of capital improvement projects at Lompoc Airport. Private capital will also play a significant role. State aviation funds are not expected to be a major source of financing even with the recent increases in aviation fuel taxes.

In Table 8-5, the maximum grant funding is indicated for all AIP eligible projects. However, because of the limited amount of AIP funds, many of these projects may have to be delayed.

ECONOMIC IMPACT OF AIRPORT

The impact of Lompoc Airport on the local economy was estimated according to a methodology developed by the State of California Division of Aeronautics. Through this procedure, the State has developed average impacts in terms of local area revenues and local area jobs created per based aircraft. Based on the State averages, the estimated economic impact of Lompoc Airport is shown in Table 8-7. In 1992, the Airport created a total of 111 jobs in the local area and was responsible for $5.6 million in direct and indirect local revenues. By 2015, the impact is forecast to grow to 170 jobs and $8.5 million.

TABLE 8-6
ESTIMATED CAPITAL IMPROVEMENT COSTS FOR THE CITY OF LOMPOC BY PHASE, 1993 TO 2015 [a] (Dollars)

Development Item	City of Lompoc Total	Phase I (1993-2000)	Phase II (2001-2005)	Phase III (2006-2015)
Land Acquisition:				
Runway Protection Zone	13,800	13,800		
Terminal	101,800	101,800		
Subtotal	**115,600**	**115,600**		
Airfield:				
Site Preparation	9,770	7,680	1,680	410
Excavation/Fill	36,580	28,580	4,800	3,200
Pavement	147,100	114,000	20,500	12,600
Drainage Improvements	4,320	3,240	1,080	-
Subtotal	**197,770**	**153,500**	**28,060**	**16,210**
Lighting & Navaids:				
Lighting	22,770	17,690	5,080	
Signage	4,500	3,000	1,500	
VASI/PAPI	1,680	1,680	-	
Marking	2,400	1,800	600	
Relocate NDB & AWOS	1,200	1,200	-	
Relocate Seg. Circle	3,600	3,600	-	
Localizer	-	-	-	
Subtotal	**36,150**	**28,970**	**7,180**	
Buildings:				
Terminal Building	555,000	555,000		
Rectangular/T-Hangars	-	-		
Corporate Hangars	-	-		
ARFF	672,000	672,000		
Subtotal	**1,227,000**	**1,227,000**		
Roads & Vehicle Parking:				
Pavement	114,880	114,880	-	
Lighting	1,540	1,480	60	
Subtotal	**116,420**	**116,360**	**60**	
Miscellaneous:				
Aircraft Wash Area	6,000	6,000	-	-
Fuel Farm	152,700	82,500	24,000	46,200
Park	-	-	-	-
Tie-downs	160	160	-	-
Landscaping/Fencing	-	-	-	-
Subtotal	**158,860**	**88,660**	**24,000**	**46,200**
Total Development	**1,851,800**	**1,730,090**	**59,300**	**62,410**
Contingency (15%)	**277,770**	**259,510**	**8,900**	**9,360**
TOTAL	**2,129,570**	**1,989,600**	**68,200**	**71,770**

[a] Source: P&D Aviation. All costs are in 1992 dollars. Cost estimates include engineering design and construction administration costs.

TABLE 8-7
ESTIMATED ECONOMIC IMPACT OF LOMPOC AIRPORT
ON THE LOCAL ECONOMY, 1992 TO 2015

Year	Based Aircraft [a]	Local Revenues (millions of dollars) [b]			Jobs Created in Local Area [c]
		Total	Direct	Indirect	
1992	68	5.58	2.37	3.21	111
1995	77	6.32	2.69	3.63	126
2000	89	7.31	3.11	4.20	145
2005	94	7.72	3.28	4.44	153
2010	99	8.13	3.46	4.67	161
2015	104	8.54	3.63	4.92	170

[a] Source: P&D Aviation forecast.

[b] Estimated from airport averages based on studies conducted with the California Airport Economic Impact Model developed by the California Department of Transportation, Division of Aeronautics. Average expenditures per based aircraft are: total $82,105; direct $34,908; indirect $47,198.

[c] Estimated from airport averages based on studies conducted with the California Airport Economic Impact Model developed by the California Department of Transportation, Division of Aeronautics. Average number of jobs created per based aircraft is 1.63.

General Methodology [1]

A most important aspect of the Division's Airport Economic Impact Model is that it measures net economic impact. Only the net amount of money which remains in the local economy is being considered. Net economic impact measures those economic events which would not take place without the existence of the Airport, and expresses these economic events in terms of jobs and income added to the local community.

Direct Impacts. Direct Impacts are those which occur as a direct result of aviation activity and airport operations. Direct impacts are "first-round" or initial spending impacts. For example, the purchase of avgas for a general aviation aircraft is an initial or first-round impact. However, only a small portion of the price paid for the avgas is taken into account as a direct impact. The reason is that only a small portion of the money that is paid at the pump stays in the local economy. This small portion is the local mark-up. Most of the money received at the pump has no effect on the local economy, as this money is used to buy the gasoline from a non-local producer.

[1] This material was taken from: State of California, Division of Aeronautics, Summary of Data obtained with California Airport Economic Impact Model, August 1992.

The net portion of spending which remains in the local area is calculated by the program on an aggregate basis by industry group. For example, all spending in restaurants is reduced by 40 percent to account for supplies purchased outside the local area. Similarly, all spending for capital improvement projects is reduced by 45 percent to account for purchases of building materials made outside the local area. The percent reduction applied in each industry is built into the program and is based on primary research (conducted by Economics Research Associates), and various other sources of information.

The various direct impact items are as follows:

- Spending by visitors who would not have visited the local area without the availability of the Airport.
- Expenditures for goods, services, and capital projects by airport tenants such as the FBO.
- Expenditures for goods, services, and capital projects by Airport administration.

Indirect Impacts. The indirect impact results from the second and subsequent rounds of spending of the initial (first-round) direct impacts. For example, initial spending takes place when a visitor spends money in a restaurant located in the local area. A portion of the money received by the restaurant is used to buy supplies. Some of these supplies are not produced locally. Therefore, a part of the restaurant's receipts leaves the local area to pay for nonlocally produced supplies. The remainder is returned by the owner and is accounted for as a direct impact. This direct impact, however, can be spent again. For instance, the owner may use this direct impact money to pay a restaurant worker. In turn, the worker may use the money to buy groceries. Again, some of these groceries may not have been produced locally. Therefore, a portion of the grocer's receipts leaves the local economy to pay for nonlocally produced products. The portion that does remain in the local economy can be spent again and again. Each time, when a new round of spending takes place, the portion that remains in the local economy becomes smaller and smaller until it becomes zero. At that point, the effect of the initial spending (the direct impact) has run its full course. The portion of money which leaves the local economy with each transaction is called leakage. The repetitive process of spending, responding, and leakage of the first-round net direct impact constitutes the indirect impact.

To calculate indirect impact, the U.S. Department of Commerce has developed (and continuously updates) a set of multiplier coefficients for more than 500 industries. These coefficients are used in the Division's economic impact program for the following industries: 1) Hotel and Lodging, 2) Retail Sales, 3) Construction, 4) Business Services, and 5) Household Sector. Finally, it should be noted that multiplier coefficients when applied to net direct impact produce net indirect impact.

AIRPORT OPERATIONS AND MANAGEMENT

A management/safety audit of the Airport and its operations was conducted under this master planning study. The audit addressed Airport policies and regulations, Airport operating

procedures and Airport emergency plans. The conclusion from this audit and related recommendations are described below:

Airport Policies, Regulations and Organization

The City of Lompoc Ordinance No. 1352 (91), adopted October 8, 1991, contains City policy and regulations pertaining to Airport operations. Specific sections of the ordinance address aircraft operations, parking and hangaring of aircraft, fire regulations, vehicle regulations, safety, and the Airport Commission. Additional sections of the ordinance have been reserved for noise abatement and rates and charges. The Airport Ordinance appears to delineate thoroughly the necessary rules and regulations which could pertain to Lompoc Airport. Furthermore, it seems that all regulations are being complied with at the Airport. It is recommended that these regulations be made available to all Airport tenants and other users to ensure that the regulations continue to be met by all Airport users.

The aviation organizational structure, including job descriptions, was reviewed. The job descriptions accurately reflect the duties of each position. The city's aviation staff, although small in number, is highly qualified and extremely capable of handling the demanding duties of operating and maintaining an Airport facility.

Airport Operating Procedures

General Operations. Although an Airport operations manual has not been compiled, Airport operating procedures have been well documented. These procedures include Airport inspections, Airport maintenance, and security checks. An Airport operations manual could be prepared by compiling existing information pertaining to operating procedures and Airport regulations. The operations manual could also include the Lompoc Airport Emergency Plan.

The Airport is divided into 14 inspection areas. Complete Airport inspections are made every morning. Pertinent results of the inspections are recorded. Daily inspections include debris checks on runways and taxiways, transient parking checks and security checks. Weekly checks include a safety check list, runway and taxiway bulbs, and landscaping. Hangars are inspected annually.

An Airport maintenance schedule, covering a full year, indicates the schedule for periodic maintenance. The schedule includes airfield maintenance (beacon, wind cone and segmented circle, lighting, and pavement), building and hangar maintenance, electrical vault cleaning, mowing, weed spraying, hangar inspection, and storm drain maintenance.

Security patrols of the Airport are routinely conducted by the Lompoc City Police Department. Airport security will be increasingly difficult to maintain once Airport development occurs south of the runway due to the separation of the two development areas. Coordination with the Lompoc Police Department will be important to maintain regular daytime and nighttime patrols.

Airport Emergency Plan

The Lompoc Airport Emergency Plan provides a thorough description of procedures to be followed in the event of an Airport emergency. The plan addresses Airport accidents both within the Airport boundary and outside the Airport boundary, fuel spills, hazardous material spills, structural fires, power failures, natural disasters, bomb threats, radio logical emergencies, removal of disabled aircraft and news media. The plan is updated annually.

Conclusions from Management/Safety Audit

The conclusions from management/safety audit are that the Airport is extremely well managed. This point illustrated by the many physical improvements that have been made to the airport in the short time since it was acquired from the County. The Airport is well maintained and all applicable regulations are being enforced. The Airport staff is highly qualified and committed to the successful operation of the Airport. Airport operating and maintenance procedures are well organized and thoroughly documented. The adherence to these procedures is evidenced by the excellent condition of the Airport facility. The solid management abilities and innovative management approach of the Airport management will undoubtedly ensure the successful implementation of the recommended improvements contained in this Airport Master Plan.

Appendix A

Glossary and Abbreviations

GLOSSARY AND ABBREVIATIONS

"A"

A-WEIGHTED SOUND LEVEL - The sound pressure level which has been filtered or weighted to reduce the influence of low and high frequency (dBA).

AC - Advisory Circular published by the Federal Aviation Administration.

ACCOM. - Accommodations

ADPM - Average Day of the Peak Month

AFB - Air Force Base

AIA - Annual Instrument Approaches

AICUZ - Air Installation Compatible Use Zones define areas of compatible land use around military airfields.

AIR CARRIER - A commercial scheduled service airline carrying interregional traffic.

AIRCRAFT MIX - The relative percentage of operations conducted at an airport by each of four classes of aircraft differentiated by gross takeoff weight and number of engines.

AIRCRAFT TYPES - An arbitrary classification system which identifies and groups aircraft having similar operational characteristics for the purpose of computing runway capacity.

AIR NAVIGATIONAL FACILITY (NAVAID) - Any facility used for guiding or controlling flight in the air or during the landing or takeoff of aircraft.

AIR ROUTE SURVEILLANCE RADAR (ARSR) - Long-range radar which increases the capability of air traffic control for handling heavy enroute traffic. An ARSR site is usually located at some distance from the ARTCC it serves. Its range is approximately 200 nautical miles. Also called ATC Center Radar.

AIR TAXI - Aircraft operated by a company or individual that performs air transportation on a non-scheduled basis over unspecified routes usually with light aircraft.

AIRPORT AVAILABLE FOR PUBLIC USE - An airport available for use by the public with or without a prior request.

AIRPORT ENVIRONS - The area surrounding an airport that is affected by airport operations.

AIRPORT LAYOUT PLAN (ALP) - The current and planned airport development portrayal, which may be part of an airport master plan.

AIRPORT MASTER PLAN (AMP) - A long term development plan for an airport, adopted by the airport proprietor.

AIRPORT NOISE COMPATIBILITY PROGRAM - A program developed in accordance with FAR Part 150, including measures proposed or taken by the airport operator to reduce existing incompatible land use and to prevent the introduction of additional incompatible land uses within the area.

AIRPORT SURVEILLANCE RADAR (ASR) - Radar providing position of aircraft by azimuth and range of data without elevation data. It is designed for a range of 50 miles. Also called ATC Terminal Radar.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC) - A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the enroute phase of flight.

AIRSPACE - The space lying above the earth or above a certain area of land or water which is necessary to conduct aeronautical operations.

ALERT AREA - Airspace which may contain a high volume of pilot training activities or unusual type of aerial activity.

ALP - Airport Layout Plan

ALSF-1 - Approach Light System with Sequence Flasher Lights.

AGL - Above Ground Level

ALS - Approach Light System

AMBIENT NOISE - All encompassing noise associated with a given environment, being usually a composite of sounds from many sources near and far.

ANCLUC - Airport Noise and Compatible Land Use Control plan; an FAA sponsored land use compatibility planning program preceding Part 150 Airport Noise Compatibility Program.

APPROACH CONTROL SERVICE - Air traffic control service provided by a terminal area traffic control facility for arriving and departing IFR aircraft and, on occasion, VFR aircraft.

APPROACH FIX - The point from or over which final approach (IFR) to an airport is executed.

APPROACH SLOPE - Imaginary areas extending out and away from the approach ends of runways which are to be kept clear of obstructions.

APPROACH SURFACE - An element of the airport imaginary surfaces, longitudinally centered on the extended runway centerline, extending upward and outward from the end of the primary surface at a designated slope.

AREA NAVIGATION(RNAV) - A method of navigation that permits aircraft operations on any desired course within the coverage or stationed-reference navigation systems or within the limits of self-contained system capability.

ARTS-III - Automated Radar Terminal Service - Phase III. A terminal facility in the air traffic control system using air ground communications and radar intelligence to detect and display pertinent data such as flight identification, altitude and position of aircraft operating in the terminal area.

ASDE - Airport Surface Detection Equipment

ASV - Annual Service Volume - a reasonable estimate of the airfield's annual capacity.

ATCT - Airport Traffic Control Tower

ATC - Air Traffic Control

AVIGATION AND HAZARD EASEMENT - An easement which provides right of flight at any altitude above the approach surface, prevents any obstruction above the approach surface, provides a right to cause noise vibrations, prohibits the creation of electrical interferences, and grants right-of-way entry to remove trees or structures above the approach surface.

"B"

BASED AIRCRAFT - An aircraft permanently stationed at the airport, usually by some form of agreement between the aircraft owner and airport management.

BIT - Bituminous Asphalt Pavement

BUSINESS JET - Any of a type of turbine powered aircraft carrying six or more passengers and weighing less than 65,000 pounds gross takeoff weight.

"C"

CY - Calendar Year

CARGO - Originating and/or terminating.

CAT I - Category I Instrument Landing System. (Minimums: decision height of 200 feet; Runway visual range 1,800 feet).

CAT II - Category II Instrument Landing System. (Minimums: decision height of 100 feet; Runway visual range 1,200 feet).

CAT III - Category III Instrument Landing System. (Minimums: no decision height; Runway visual range of from 0 to 700 feet depending on type of CAT III facility).

CALIBRATION - The procedure used to adjust an urban area traffic model so that it matches base year of present day conditions.

CAPACITY - The maximum number of vehicles which have a reasonable expectation of passing over a given section of a lane or a roadway during a given period under a specified speed or level of service.

CAPACITY MANUAL - Special Report 87 published by the Highway Research Board (now Transportation Research Board). Current issue is 1985.

CAPACITY RESTRAINT - See Trip Assignment.

CENTER'S AREA - The specified airspace within which an air route traffic control center provides air traffic control and advisory service.

CFR - Crash, Fire and Rescue (now called Airport Rescue and Fire Fighting (ARFF)

CIRCLING APPROACH - A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in instrument approach is not possible. This maneuver requires ATC clearance and that the pilot establish visual reference to the airport.

CL - Centerline

CNEL - Community Noise Equivalent Level - a noise metric used in California to describe the overall noise environment of a given area from a variety of sources.

COLLECTOR - A roadway with no control of access providing movement between residential areas and the arterial system.

COMM. - Communications

COMMERCIAL SERVICE AIRPORT - A public airport which received scheduled passenger service and enplanes annually 2,500 or more passengers.

COMMUTER AIRLINE - Aircraft operated by an airline that performs scheduled air transportation service over specified routes using light aircraft.

CONC. - Portland Cement Concrete Pavement

CONICAL SURFACE - An imaginary surface extending upward and outward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

CONNECTION - A passenger who boards an aircraft directly after deplaning from another flight. On-line single carrier connections involve flights of the same carrier, while interline or off-line connections involve flights of two different carriers. This term can also be applied to freight shipments.

CONTINENTAL CONTROL AREA - This includes the airspace at and above 14,500 feet MSL of the 48 contiguous states, the District of Columbia, and Alaska, excluding the Alaskan peninsula west of longitude 160 degreees west. It does not include the airspace less than 1,500 feet above the surface of the earth nor most prohibited or restricted areas.

CONTROL AREAS - These consist of the airspace designated as VOR Federal Airways, additional Control Area Extensions but do not include the Continental Control Area. Control zones that do not underlie the continental control area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of 5 statute miles and any extensions necessary to include instrument departure and arrival paths.

CONTROLLED AREA - Airspace within which some or all aircraft may be subject to air traffic control.

CONTROL TOWER - A central operations facility in the terminal air traffic control system consisting of a tower cab structure (including an associated IFR room if radar equipped) using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

CONTROL ZONES - These are areas of controlled airspace which extend upward from the surface and terminate at the base of the continental control area. Control zones that do not underlie the continental control area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of 5 statute miles of any extensions necessary to include instrument departure and arrival paths.

CONTROLLED AIRSPACE - Airspace designated as continental control area, control area, control zone or transition area within which some or all aircraft may be subject to air traffic control.

CORRIDOR - A swath of area surrounding a proposed facility that encompasses all the possible locations for that facility that would still serve the originally intended purpose for that facility.

CRITICAL LANE VOLUME ANALYSIS - A short-cut technique for relating the level of service at intersections to traffic volumes in the "critical lane."

CROSSWIND RUNWAY - A runway aligned at an angle to the prevailing wind which allows use of an airport when crosswind conditions on the primary runway would otherwise restrict use.

CURFEW - A restriction placed upon all or certain classes of aircraft by time of day, for purposes of reducing or controlling airport noise.

CYCLE - The time period required for one complete sequence of signal indications .

"D"

DECISION HEIGHT (DH) - With respect to the operation of aircraft, this means the height at which a decision must be made, using an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.

DEMAND - The actual number of persons, aircraft or vehicles currently using a facility if that facility is operating at or below capacity or the number of persons, aircraft or vehicles who want to use the facility when the facility is operating above capacity.

DEPLANEMENT - Any passenger getting off an arriving aircraft at an airport. Can be both a terminating and connecting passenger. Also applies to freight shipments.

DESIGN HOUR VOLUME (DHV) - The number of vehicles expected to use a road section, intersection, etc. in the design hour, which is usually the 30th highest hour of the year for commuter roads, the 150th highest hour for recreational roads, twice the average for shopping center facilities, etc.

DESIGN SPEED - The maximum safe speed for which the various physical features of the roadway were designed.

DISTANCE MEASURING EQUIPMENT (DME) - An electronic installation established with either a VOR or ILS to provide distance information from the facility to pilots by reception of electronic signals. It measures, in nautical miles, the distance of an aircraft from a NAVAID.

DIRECTIONAL SPLIT - The proportional distribution between access and egress flows of traffic into and out of a development or between opposite flows of traffic on two-way streets or highways.

DPW - Department of Public Works

"E"

ENPLANEMENT - Any passenger boarding a departing aircraft at an airport. Can be both a local origin and a connecting passenger. Applies also to freight shipments.

ENROUTE - The route of flight from point of departure to point of destination, including intermediate stops (excludes local operations).

ENROUTE AIRSPACE - Controlled airspace above and/or adjacent to terminal airspace.

EQUIVALENT SOUND LEVEL (LEQ) - The steady A-weighted sound level over a specified period that has the same acoustic energy as the fluctuating noise during that period.

EXPRESSWAY - A divided highway for through traffic with full or partial control of access generally using grade separated interchanges and some well spaced at-grade intersections.

"F"

F&E - Facilities and Equipment Programming - FAA

FAA - Federal Aviation Administration of the United States Department of Transportation

FAR - Federal Aviation Regulation

FAR Part 36 - A regulation establishing noise certification standards for aircraft.

FAR Part 77 - A regulation establishing standards for determining obstructions to navigable airspace.

FAR Part 150 - A regulation establishing criteria for noise assessment and procedures and criteria for FAA approval of noise compatibility programs.

FBO - Fixed Base Operator

FEDERAL AIRWAYS - See Low Altitude Airways.

FINAL APPROACH IFR - The flight plan of landing aircraft in the direction of landing along the extended runway centerline from the base leg to the runway.

FLEET MIX - The proportion of aircraft types or models expected to operate at an airport.

FLIGHT SERVICE STATION (FSS) - A facility operated by the FAA to provide flight assistance service.

FREEWAY - A divided highway for through traffic with full control of access at grade separated interchanges.

FY - Fiscal Year

"G"

GA - General Aviation - Refers to all civil aircraft and operations which are not classified as air carrier.

GENERATION - See trip generation.

GLIDE SCOPE (GS) - The vertical guidance component of an Instrument Landing System (ILS).

GND CON. - Ground Control

GRAVITY MODEL - Newton's Law of Gravitation used to simulate traffic movements by distributing trips among zonal pairs in direct proportion to the number of trips originating in those zones and in inverse proportion to a measure of the spatial separation between the zones, such as travel time.

"H"

HGRS. - Hangars

HIGH ALTITUDE AIRWAYS - See Jet Routes.

HIRL - High Intensity Runway Lighting

HOLDING - A predetermined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance.

HORIZONTAL SURFACE - An imaginary surface constituting a horizontal plane 150 feet above the airport elevation.

"I"

IFR - Instrument Flight Rules that govern flight procedures under IFR conditions (limited visibility or other operational constraints).

IMAGINARY SURFACE - An area established in relation to the airport and to each runway consistent with FAR Part 77 in which any object extending above these imaginary surfaces is, by definition, an obstruction.

INDUCED TRIPS - See Trip.

INSTRUMENT APPROACH - A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the intial approach to a landing or to a point from which a landing may be made visually.

INSTRUMENT LANDING SYSTEM (ILS) - A precision landing aid consisting of localizer (azimuth guidance), glide slope (vertical guidance), outer marker (final approach fix) and approach light system.

INSTRUMENT OPERATION - A landing or takeoff conducted while operating on an instrument flight plan.

INSTRUMENT RUNWAY - A runway equipped with electronic and visual navigation aids for which a precision or non-precision approach procedure having straight-in landing minimums has been established.

INTEGRATED NOISE MODEL (INM) - A computer-based airport noise exposure modelling program.

ISOPLETH - A line on a map connecting points at which a given variable (ground travel time) has a specified constant value.

ITINERANT OPERATIONS - All aircraft arrivals and departures other than local operations.

INTERNATIONAL OPERATIONS - Aircraft operations performed by air carriers engaged in scheduled international service.

"J"

JET ROUTES - A route designed to serve aircraft operating from 18,000 feet MSL up to and including flight level 450.

"L"

LAT - Latitude

LDA - Localizer Type Directional Aid

LDN - Day-Night Average Sound Level. The 24-hour average sound level, in decibels, from midnight to midnight, obtained after the addition of ten decibels to sound levels for periods between 10 p.m. and 7 a.m.

LDNG. AIDS - Landing Aids

LENGTH OF HAUL - The non-stop airline route distance from a particular airport.

LEVEL OF SERVICE - An arbitrary but standardized index of the relative service provided by a transportation facility.

LIRL - Low Intensity Runway Lighting

LOAD FACTOR - Ratio of the number of passenger miles to the available seat miles flown by an airline representing the proportion of aircraft seating capacity that is actually sold and utilized. Load factors are also referred to in air cargo and can be determined by weight or volume.

LOC - Localizer (part of a ILS)

LOCAL OPERATION - Operations performed by aircraft which: (a) operate in the local traffic pattern or within the sight of the tower; (b) are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the control tower, or (c) execute simulated instrument approaches or low passes at the airport.

LOM - Compass locator at an outer marker (part of an ILS). Also call COMLO.

LONG - Longitude

LOW ALTITUDE AIRWAYS - Air routes below 18,000 feet MSL. They are referred to as Federal Airways.

LRR - Long-Range Radar

"M"

MALS - Medium Intensity Approach Light System

MALSF - Medium Intensity Approach Light System with sequence flashing lights.

MALSR - MALS with Runway Alignment Indicator Lights (RAIL)

MARKER BEACON - An electronic navigation facility which transmits a fan or boneshaped radiation pattern. When received by compatible airborne equipment they indicate to the pilot that he is passing over the facility. Two to three beacons are used to advise pilots of their position during an ILS approach.

MASTER PLAN - Long-range plan of airport development requirements.

MGW - Maximum Gross Weight

MILITARY OPERATION - An operation by military aircraft.

MINIMUM DESCENT ALTITUDE (MDA) - The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circling-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided.

MIRL - Medium Intensity Runway Lighting

MISSED APPROACH - A prescribed procedure to be followed by aircraft that cannot complete an attempted landing at an airport.

MITL - Medium Intensity Taxiway Lighting

MLS - Microwave Landing System

MM - Middle Marker (part of an ILS)

MOA - Military Operations Area

MODAL SPLIT - The distribution of trips among competing travel modes, such as walk, auto, bus, etc.

MODE - A particular form or method of travel such as walk, auto, carpool, bus, rapid transit, etc.

MOVEMENT - Synonymous with the term operation, i.e., a takeoff or a landing.

MSL - Mean Sea Level

"N"

NA - Not applicable

NAS - NATIONAL AIRSPACE SYSTEM - The common system or air navigation and air traffic encompassing communications facilities, air navigation facilities, airways, controlled airspace, special use airspace and flight procedures authorized by Federal Aviation Regulations for domestic and international aviation.

NAVAID - See Air Navigation Facility.

NB - Northbound

NDB - NON-DIRECTIONAL BEACON - An electronic ground station transmitting in all directions in the L/MF frequency spectrum; provides azimuth guidance to aircraft equipped with direction finder receivers. These facilities are often established with ILS outer markers to provide transition guidance to the ILS system.

NEPA - National Environmental Policy Act

NM - Nautical Mile

NOISE ABATEMENT - A procedure for the operation of aircraft at an airport which minimizes the impact of noise on the environs of the airport.

NOISE CONTOUR - A noise impact boundary line connecting points on a map where the level of sound is the same.

NOISE EXPOSURE MAP - A scaled, geographic depiction of an airport, its noise contours and surrounding area.

NOISE LEVEL REDUCTION (NLR) - The amount of noise level reduction achieved through incorporation of noise attenuation (between outdoor and indoor levels) in the design and construction of a structure.

NON-PRECISION APPROACH - A standard instrument approach procedure in which no electronic glide slope is provided.

NPI - Non-Precision Instrument Runway

"O"

OAG - Official Airline Guide

OBSTRUCTION - Any structure, growth, or other object, including a mobile object, that exceeds a limiting height established by federal regulations or by a hazard zoning regulation.

OM - Outer Marker (part of an ILS)

OPERATING SPEED - The maximum average speed for a given set of roadway and traffic conditions.

OPERATION - An aircraft arrival at or departure from an airport.

ORIGINATION - A passenger boarding an aircraft at an airport who has started his trip from a local, off-airport point. Also applicable to freight shipments.

OUTER FIX - A point in the destination terminal area from which aircraft are cleared to the approach fix or final approach course.

"P"

PAPI - Precision Approach Path Indicator

PAR - Precision Approach Radar

PAX - Passenger

PEAK HOUR FACTOR - The ratio of the average flow rate during the peak hour to the highest short-term (say 15 minutes) rate within the peak hour.

PEAK HOUR PERCENTAGE - The percentage of total daily trips or traffic occurring in the highest or "peak" hour. Frequently confused with Peak Hour Factor.

PERSON TRIP - A trip made by a person by any travel mode or combination of travel modes. A carpool of four persons entails one vehicle trip and four person trips.

PHASE - A part of the cycle allocated to any traffic movement or any combination of traffic movements.

PI - Precision Instrument Runway marking.

POSITIVE CONTROL AREA - Airspace wherein aircraft are required to be operated under Instrument Flight Rules.

PRECISION APPROACH - A standard instrument approach procedure in which an electronic glideslope/glidepath is provided; eg., ILS/MLS and PAR.

PRIMARY COMMERCIAL SERVICE AIRPORT - A commercial service airport which enplanes .01 percent or more of the total annual U.S. enplanements.

PRIMARY RUNWAY - The runway on which the majority of operations take place. On large, busy airports, there may be two or more parallel primary runways.

PRIMARY SURFACE - An area longitudinally centered on a runway with a width ranging from 250 to 1,000 feet and extending 200 feet beyond the end of a paved runway.

PRODUCTION - A trip end associated with a dwelling unit or other trip "producer."

PROHIBITED AREA - Airspace of defined dimensions identified by an area on the surface of the earth within flight is prohibited.

PU - Publicly owned airport.

PVC - Poor visibility and ceiling.

PVT - Privately owned airport.

"Q"

QUEUE - A line of pedestrians or vehicles waiting to be served.

"R"

RADAR SEPARATION - Radar spacing of aircraft in accordance with established minima.

RAIL - Runway Alignment Indicator Lights

RCAG - Remote Center Air/Ground Communications

REIL - Runway End Identifier Lights

RELIEVER AIRPORT - An airport which, when certain criteria are met, relieves the aeronautical demand on a high density air carrier airport.

RESTRICTED AREAS - Airspace of defined dimensions identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions.

RNAV - See Area Navigation.

ROTATING BEACON - A visual NAVAID displaying flashes of white and/or colored light used to indicate location of an airport.

RUNWAY PROTECTION ZONE - Inner portion of runway approach zone (formerly called "Clear Zone").

RVR - Runway Visual Range

RVV - Runway Visibility Value

R/W - Runway

R/W SAFETY AREA - An area symmetrical about the runway centerline and extending beyond the ends of the runway which shall be free of obstacles as specified.

"S"

SALS - Short Approach Light System

SCREEN LINE - A line dividing a study area into two parts and used for a detailed comparison of measured and simulated traffic or travel during a model calibration process.

SDF - Simplified Directional Facility landing aid providing final approach course.

SEGMENTED CIRCLE - An airport aid identifying the traffic pattern direction.

SEPARATION MINIMA - The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.

SMSA - Standard Metropolitan Statistical Area.

SOCIOECONOMIC - Data pertaining to the population and economic characteristics of a region.

SSALF - Simplified Short Approach Light System with Sequence Flashing lights.

SSALS - Simplified Short Approach Light System.

SSALR - Simplified Short Approach Light System with Runway Alignment Indicator Lights (RAIL)

STANDARD LAND USE CODING MANUAL (SLUCM) - A standard system for identifying and coding land use activities published by the U.S. Department of Housing and Urban Development and the Federal Highway Administration.

STRAIGHT-IN APPROACH - A descent in an approved procedure in which the final approach course alignment and descent gradient permits authorization of straight-in landing minimums.

STOL - Short Takeoff and Landing

STOVL - Short Takeoff Vertical Landing

SYSTEM PLAN - A representative of the aviation facilities required to meet the immediate and future air transportation needs and to achieve the overall goals.

"T"

TACAN - Tactical Air Navigation

TDZ - Touchdown Zone

TERMINAL AIRSPACE - The controlled airspace normally associated with aircraft departure and arrival patterns to/from airports within a terminal system and between adjacent terminal systems in which tower enroute air traffic control service is provided.

TERMINAL CONTROL AREA (TCA) - This consists of controlled airspace extending upward from the surface or higher to specified altitudes within which all aircraft are subject to positive air traffic control procedures.

TERPS - Terminal Instrument Procedures

T-HANGAR - A T-shaped aircraft hangar which provides shelter for a single airplane.

THRESHOLD - The beginning of that portion of the runway usable for landing.

TOUCH-AND-GO OPERATION - An operation in which the aircraft lands and begins takeoff roll without stopping.

TRAFFIC ANALYSIS OR ZONE - A subdivision of a study area used to aggregate dispersed data items, such as population, employment, etc., in preparation for estimating the trips attracted or produced by these data items and for loading such attractions and productions onto a simulation network.

TRAFFIC CONTROL DEVICE - Any sign, signal, marking or device placed or erected for the purpose of regulating, wording or guiding vehicular traffic and/or pedestrians.

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

TRANSIENT OPERATIONS - See Itinerant Operations.

TRANSITION SURFACE - An element of the imaginary surfaces extending outward at right angles to the runway centerline and from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces.

TRANSITIONAL AIRSPACE (TRANSITION AREA) - Areas designated to contain IFR operations in controlled airspace during portions of the terminal operations and while transitioning between the terminal and enroute environment.

TRAVEL SHED - The total contributing area that generates trips which ultimately concentrate at a selected study point. Also called a travel sector.

TRIP - The one-way unit of travel between an origin and a destination.

TRIP ASSIGNMENT - That portion of the transportation planning process where distributed trips are allocated among the actual routes they can be expected to use.

TRIP DISTRIBUTION - That portion of the transportation planning process that estimates the spatial distribution of trips estimated during the trip generation phase.

TRIP END - The beginning or end of a trip.

TRIP GENERATION - That portion of the transportation planning process concerned with developing an estimate of the total number of trips attracted or produced by each traffic analysis zone in a study area.

TRIP PURPOSE - The primary reason for making a trip, i.e., work, shop.

TW & T/W - Taxiway

TWR - Control Tower

TVOR - Terminal Very High Frequency Omnirange Station

"U"

UHF - Ultra High Frequency

UNCONTROLLED AIRSPACE - That portion of the airspace that has not been designated as continental control area, control area, control zone, terminal control area or transition area and within which ATC has neither the authority nor the responsibility for exercising control over air traffic.

UNICOM - Radio communications station which provides pilots with pertinent airport information (winds, weather, etc.) at specific airports.

UTILITY RUNWAY - A runway intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight or less.

"V"

VASI - Visual Approach Slope Indicator providing visual glide path.

VASI-2 - Two Box Visual Approach Slope Indicator

VASI-4 - Four Box Visual Approach Slope Indicator

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

VEHICLE MILES OF TRAVEL (VMT) - A measure of total travel within a study area, usually estimated as the total number of trips multiplied by the average length of a typical trip.

VFR - Visual Flight Rules that govern flight procedures in good weather.

VFR AIRCRAFT - An aircraft conducting flight in accordance with Visual Flight Rules.

VHF - Very High Frequency

VISUAL APPROACH RUNWAY - A runway intended for visual approaches only.

VOR - Very High Frequency Omnirange Station. A ground-based radio (electronic) navigation aid transmitting radials in all directions in the VHF frequency spectrum; provides azimuth guidance to pilots by reception of electronic signals.

VORTAC - Co-located VOR and TACAN.

V/STOL - Vertical/Short Takeoff and Landing

VTOL - Vertical Takeoff and Landing (includes, but is not limited to, helicopters).

"W"

WARNING AREA - Airspace which may contain hazards to non-participating aircraft in international airspace.

WB - Westbound

WIND CONE (WIND SOCK) - Conical wind directional indicator.

WIND TEE - A visual device used to advise pilots about wind direction at an airport.

"Y"

YEARLY DAY-NIGHT AVERAGE SOUND LEVEL (Ldn) - The 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. the following day, averaged over a span of one year.

Appendix B

Lompoc Airport Pavement Evaluation

APPENDIX B
PAVEMENT EVALUATION

DESCRIPTION

Airfield pavements were inspected on June 23, 1992. Available pavement construction documents and previous evaluation information were also reviewed. This information included:

1. Airport Pavement Management System (APMS) pavement evaluation prepared by ARE Inc., for CalTrans Division of Aeronautics, dated June 1988.

2. Construction plans for 1991 runway and taxiway overlay by County of Santa Barbara Department of Public Works.

3. Log of Soil borings in runway and taxiway areas. March 1960.

4. FAA Pavement Form 5335-1 - last inspection date 9/11/87.

This evaluation is a qualitative assessment of the airfield pavements, based on the field inspection and on the existing records only. The conditions of the various pavement sections are compared to the CalTrans APMS Report, recommendations made, and priorities suggested, for future pavement projects. Preliminary cost estimates are presented for future maintenance and capital improvement project planning purposes. In addition, based on existing "as-built" information, aircraft weight bearing capacities for the runway and taxiway pavements are calculated. Additional test data such as non-destructive testing or pavement cores was beyond the scope of this project and was not acquired. All quantitative conclusions are based on data from the above described documents. For purposes of discussion in this analysis, pavement areas have been designated as shown on Figure B-1 and as follows. This division matches that used in the APMS Report:

PAVEMENT AREAS — Page 1 of 2

Section	Use	Area (Sq. Ft.)
R1	Runway 7/25	360,000
T1	Parallel Taxiway 1	160,000
T2	Cross-Taxiway	9,750
T3	Cross-Taxiway	20,200
T4	Cross-Taxiway	8,750
A1	Apron 1	89,200
A2	Apron 2	23,190

PAVEMENT AREAS		Page 2 of 2
Section	Use	Area (Sq. Ft.)
TD1	Tie-Down Apron 1	151,250
TD2	Tie-Down Apron 2	4,160
TD3	Tie-Down Apron 3	69,400
TD4	Tie-Down Apron	110,000

PAVEMENT CONDITION

Airfield pavement conditions range from excellent to poor. The runway and taxiway system were recently overlain with a thin asphalt concrete overlay. The apron areas show general signs of distress from environmental damage -weathering, raveling, and thermal cracking. Existing conditions are as follows.

AREA R1 - RUNWAY

The 3,600-foot asphalt runway, Runway 17-25, received a 0.1 foot asphalt concrete overlay in July of 1991, and therefore currently is in excellent condition. The runway has a good crown section, and appears to have adequate infield drainage. Based on record information, this runway now consists of 6" of aggregate surface course underlying approximately three inches of asphalt concrete. The 1988 APMS report listed the pavement in "Good" condition with light to moderate cracking and surface ravelling. It is expected that the underlying cracks will reflect through the thin overlay in the 2 to 5 year time span.

The 1960 soil borings indicate an area of poor quality, moderately plastic, silty-loam subgrade on the far east end of the runway, although it cannot be determined from the existing documents, if any of this material was removed and replaced. It would be prudent to assume that no subgrade replacement was done, and to therefore pay particular attention to this area to see that cracks are sealed in a timely manner. This will minimize damage caused by water infiltration to this silt material.

AREA T1 - PARALLEL TAXIWAY

The parallel taxiway, consisting of the same cross-section and materials as the runway, was also overlain in 1991 and is likewise in excellent condition. The 1988 APMS report indicated this pavement to be in poor condition and called for complete reconstruction. Although the current airport manager indicates that the condition prior to the overlay was similar to that of the runway, it appears likely that a poorer condition prior to the overlay will result in more extensive reflection cracking. It is also probable that this distress will be manifested before that on the runway.

An area of poor quality, moderately plastic, silty-loam subgrade is also shown in the 1960 borings for the parallel taxiway just east of mid-field. As with the runway, particular attention to this area to see that cracks are sealed in a timely manner is recommended. A routine crack-filling maintenance program is recommended.

AREAS T2, T3 and T4 - CROSS-TAXIWAYS

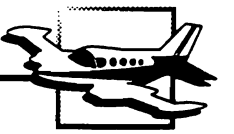
All cross-over taxiways appear to be in excellent condition having been overlain with the same section, and at the same time, as the runway and parallel taxiway. The west and midfield taxiways, T2 and T3, were shown in poor condition in the 1988 report, and were recommended for reconstruction. The eastern taxiway, T4, was called out for slurry seal to repair light to moderate cracking and weathering. The inference is that T4 was in better condition and it would therefore be likely that pavement distress will appear on the two westernmost taxiways first. Again, a routing crack-filling program is recommended.

AREAS TD1 and TD2 - TIE-DOWN APRONS

These sections of pavement, currently serving a large number of based general aviation aircraft are in fair to poor condition, exhibiting fairly extensive longitudinal and transverse cracking, and moderate to severe weathering and ravelling. In the eastern ramp area, TD2, an old slurry seal is badly raveling, especially at paint markings, presenting the potential for foreign object damage (FOD) to aircraft. Weed growth is widespread. Isolated portions of the ramp, as it borders hangars, show evidence of drainage problems which are contributing to more rapid degradation. The western portion of this ramp (TD1) was slurry-sealed several years ago, and may explain part of the questionable "excellent" rating which this ramp received in the 1988 APMS report. If funding is available, an in-place recycling reconstruction (pulverize AC as base course, pave with new asphalt concrete) would be advisable. At this time, isolated grade/ drainage problems should be corrected. In lieu of reconstruction, a high-quality, comprehensive crack sealing effort, followed by a slurry seal of polymer-modified asphalt emulsion and sand is recommended for these areas.

AREA TD3 - TIE-DOWN APRON

This ramp is in good condition, with light transverse and longitudinal cracking. It is recommended that a regular crack filling maintenance program be established in order to slow further damage. A periodic fog seal would also be recommended in order to minimize and reverse Ultra-Violet damage. It is anticipated that an overlay will be required in the 10 to 15 year time frame.



AREA TD4 - TIE-DOWN APRON

This tie-down area was fog-sealed in January of this year and therefore appears to be in good condition. The 1988 report lists it as being in excellent condition. Periodic crack filling and occasional fog seal is recommended. The need for overlay within the 10 to 15-year timeframe can be expected.

AREA A1 - APRON

This section of asphalt pavement, surrounding the rows of T-hangars is in poor to failed condition and warrants total reconstruction. Drainage problems reported by the airport manager and tenants have manifested themselves as failed pavement areas in many locations. It is recommended that a detailed field survey be undertaken and that new grades be established for the reconstruction, so that positive drainage can be effected. Because there appears to be no subsurface drainage system for the area, such reconstruction may involve the installation of a catch basin (or several) with appropriate connections to perimeter drainage systems or ponding areas. The 1988 APMS rating of "good" appears to be high - or the annual rate of degradation *very* high. It is unlikely that any rehabilitation measures short of total reconstruction (overlay, crack sealing, slurry seal, etc.) would provide worthwhile improvement.

AREA A2 - APRON

This small runup apron area east of Taxiway 4 is in very good condition and would appear to be in no need of short-term attention other than standard maintenance.

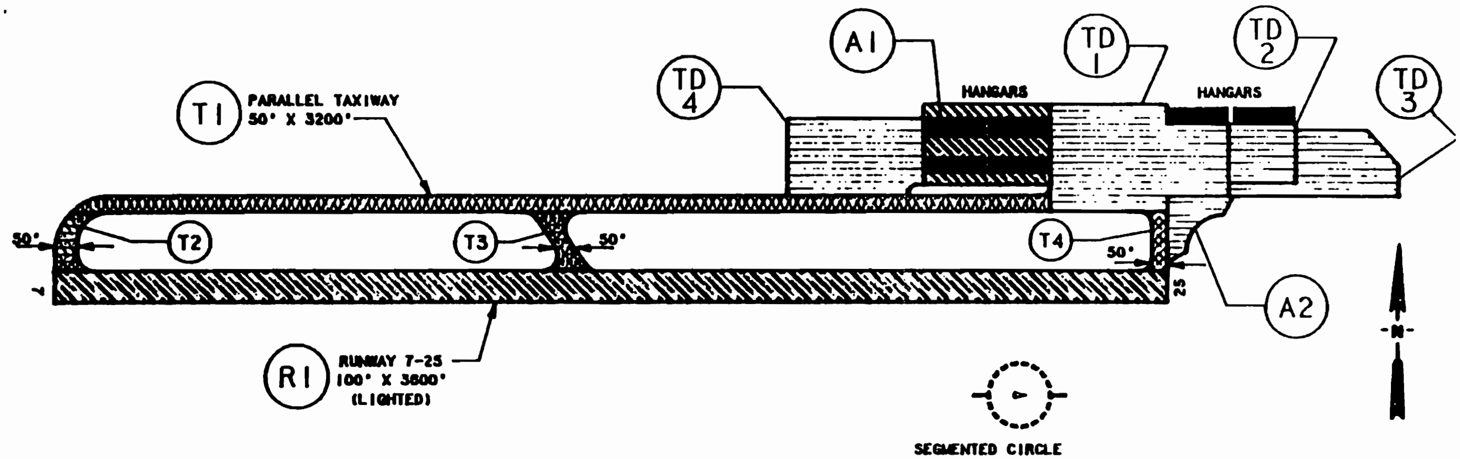
PAVEMENT WEIGHT BEARING CAPACITY

Using the records available, the runway and taxiway system is assumed to consist of the following:

3¼" Hot mix bituminous pavement
6" aggregate surface course

The subgrade material, consisting of sandy to silty loam, based on soil classification only, can be assumed to have a California Bearing Ratio (CBR) value in the range of 5 to 15. Unfortunately, determination of the weight-bearing capacity of the pavement is quite sensitive to the value assumed for the subgrade CBR. A subgrade CBR value of 5 would translate to a single-wheel rating of under 4,000 pounds, whereas a value of 15 yields a single-wheel aircraft weight-bearing capacity of 30,000 pounds. (An intermediate value of CBR=10, indicates a 20,000 pound single-wheel limit). The paving materials used for the bulk of the runway and taxiway paving (surfacing and base course) are from early FAA or local, public works department road material specifications, and are unlikely to be in conformance with the high quality requirements of the current FAA paving specs. It is suggested that the weight-bearing capacity be downgraded somewhat in consideration of these likely lesser quality materials. Based on this rather incomplete information, the currently published 17,000 pound limit would appear to be a reasonable value.

FIGURE B-1
IDENTIFICATION OF PAVEMENT AREAS



Pavement Section	Description	Area (Square Feet)
A1	APRON	89,200
A2	APRON	23,200
R1	RUNWAY	360,000
T1	TAXIWAY(PARALLEL)	160,000
T2	TAXIWAY(EXIT)	9,800
T3	TAXIWAY(EXIT)	20,200
T4	TAXIWAY(EXIT)	8,800
TD1	TIEDOWN	151,300
TD2	TIEDOWN	41,700
TD3	TIEDOWN	69,400
TD4	TIEDOWN	110,000

Source: Caltrans Division of Aeronautics and ARE Inc,
Airport Pavement Management System,
Lompoc Airport, June 1988.

A reliable value for the subgrade soil characteristics, specifically the soil condition relative to shear and deformation stresses, is critical to determining an accurate weight-bearing limit. It is therefore highly recommended that the City take the necessary steps to determine these parameters. A minimal (3 or 4 test hole) coring program, with laboratory-determined CBR values, or a limited non-destructive pavement testing program are recommended.

REHABILITATION/MAINTENANCE RECOMMENDATIONS/COST ESTIMATES

For the runway and taxiway pavement which received the 1991 overly, it is recommended that a maintenance effort be put in place to seal reflective cracks as they appear. This is necessary in order to protect the underlying pavement structure. According to the 1960 soil borings, some sections of the runway *do* overlie pockets of silty-loam with moderate plasticity. It is important that these subgrade areas be protected from surface water infiltration if possible. The periodic application (every 3-5 years) of a *light* application of asphalt emulsion (fog seal) can be a useful method to lengthen the life expectancy of the pavement by reversing some of the effects of ultra-violent damage. It is imperative that the application rate be strictly controlled, however, in order to avoid any decrease in braking action.

The following table outlines a suggested maintenance and rehabilitation program, and includes approximate costs for these procedures. Costs are in 1992 dollars and include estimated construction cost plus 15% contingency. No design or construction engineering services are included.

CF1 - Crack filling on good condition pavement. Assumes 10 lineal feet of crack sealing per 625 square feet of pavement.

CF2 - Crack filling on fair condition pavement. Assumes 50 lineal feet of crack sealing per 625 square feet of pavement.

CF3 - Crack filling on fair to poor condition pavement. Assumes 100 lineal feet of crack sealing per 625 square feet of pavement.

CF4 - Crack filling on poor to failed condition pavement. Assumes 150 lineal feet of crack sealing per 625 square feet of pavement.

FS - Fog seal. Light emulsion spray application. Repaint pavement markings.

OL - 2" bituminous hot mix overlay. Includes tack coat. Repaint pavement markings.

R+R - Recycle and Repave. Pulverize existing asphalt and recompact as base course. Apply prime coat and overlay with 2" hot mix bituminous pavement. Repaint pavement markings.

SS - Sand Slurry seal using polymer-modified asphalt emulsion. Repaint pavement markings.

LOMPOC PAVEMENT MAINTENANCE AND REHABILITATION COSTS

PAVEMENT SECTION			YEAR 1 1993	YEAR 2 1994	YEAR 3 1995	YEAR 4 1996	YEAR 5 1997
		AREA (Sq.Ft.)					
Runway		360,000		CF1		CF2	CF3
			$0	$3,600	$0	$18,000	$39,600
T1		160,000		CF1		CF2	CF3
			$0	$1,600	$0	$8,000	$17,600
T2		9,750		CF1		CF2	CF3
			$0	$98	$0	$488	$1,073
T3		20,200		CF2	CF3	CF4+FS	
			$0	$1,010	$2,222	$3,838	$0
T4		8,750		CF1		CF2	CF3
			$0	$88	$0	$438	$963
TD1	(Recommended)	151,250			R+R		
			$0	$0	$107,388	$0	$0
TD1	(Alternate)	151,250		CR+SS		CF2	CF3
			$0	$66,550	$0	$7,563	$16,638
TD2	(Recommended)	4,160			R+R		
			$0	$0	$2,954	$0	$0
TD2	(Alternate)	4,160		CR+SS		CF2	CF3
			$0	$1,830	$0	$208	$458
TD3		69,400			CF2	CF3	CF4+SS
			$0	$0	$3,470	$7,634	$0
TD4		110,000			CF1		CF2
			$0	$0	$1,100	$0	$5,500
A1		89,200		R+R			CF1
			$0	$133,800	$0	$0	$892
A2		23,190		CF1		CF2	CF3
			$0	$232	$0	$1,160	$2,551
TOTAL	(RECOMMENDED)		$0	$140,427	$117,133	$39,557	$68,178
TOTAL	(ALTERNATE)		$0	$208,807	$6,792	$47,327	$85,273

CF1 Crack Filling on Good Condition Pavement
CF2 Crack Filling on Fair Condition Pavement
CF3 Crack Filling on Fair to Poor Pavement
CF4 Crack Filling on Poor to Failed Pavement
FS Fog Seal
SS Sand Slurry
OL Overlay
R+R Recycle and Repave
CR Crack Repair

LOMPOC PAVEMENT MAINTENANCE AND REHABILITATION COSTS

PAVEMENT SECTION			YEAR 6 1998	YEAR 7 1999	YEAR 8 2000	YEAR 9 2001	YEAR 10 2002
		AREA (Sq.Ft.)					
Runway		360,000	CF4+SS		CF2	CF3	OL
			$0	$0	$18,000	$39,600	$180,000
T1		160,000	CF4+SS		CF2	CF3	OL
			$0	$0	$8,000	$17,600	$80,000
T2		9,750	CF4+SS		CF2	CF3	OL
			$0	$0	$488	$1,073	$4,875
T3		20,200	CF2	CF3	OL		
			$1,010	$2,222	$10,100	$0	$0
T4		8,750	CF4+SS		CF2	CF3	OL
			$0	$0	$438	$963	$4,375
TD1	(Recommended)	151,250	CF1		CF2	CF3	CF4+SS
			$1,513	$0	$7,563	$16,638	$0
TD1	(Alternate)	151,250	CR+SS		CF2	CF3	CR+SS
			$56,550	$0	$7,563	$16,638	$56,550
TD2	(Recommended)	4,160	CF1		CF2	CF3	CF4+SS
			$42	$0	$208	$458	$0
TD2	(Alternate)	4,160	CR+SS		CF2	CF3	CR+SS
			$1,830	$0	$208	$458	$1,830
TD3		69,400		CF2	CF3	OL	
			$0	$3,470	$7,634	$34,700	$0
TD4		110,000	CF3	CF4+SS		CF2	CF3
			$12,100	$0	$0	$5,500	$12,100
A1		89,200		CF2	CF3	CF3	CF4+SS
			$0	$4,460	$9,812	$9,812	$0
A2		23,190	CF4+SS		CF2	CF3	OL
			$0	$0	$1,160	$2,551	$11,595
TOTAL	(RECOMMENDED)		$14,664	$10,152	$63,401	$128,893	$292,945
TOTAL	(ALTERNATE)		$81,490	$10,152	$63,401	$128,893	$361,325

CF1 Crack Filling on Good Condition Pavement
CF2 Crack Filling on Fair Condition Pavement
CF3 Crack Filling on Fair to Poor Pavement
CF4 Crack Filling on Poor to Failed Pavement
FS Fog Seal
SS Sand Slurry
OL Overlay
R+R Recycle and Repave
CR Crack Repair

LOMPOC PAVEMENT MAINTENANCE AND REHABILITATION COSTS

PAVEMENT SECTION			YEAR 11 2003	YEAR 12 2004	YEAR 13 2005	YEAR 14 2006	YEAR 15 2007
		AREA (Sq.Ft.)					
Runway		360,000			CF1		CF2
			$0	$0	$3,600	$0	$18,000
T1		160,000			CF1		CF2
			$0	$0	$1,600	$0	$8,000
T2		9,750			CF1		CF2
			$0	$0	$98	$0	$488
T3		20,200	CF1		CF2	CF3	CF4+SS
			$202	$0	$1,010	$2,222	$0
T4		8,750			CF1		CF2
			$0	$0	$88	$0	$438
TD1	(Recommended)	151,250		CF2	CF3	OL	
			$0	$7,563	$16,638	$75,625	$0
TD1	(Alternate)	151,250		CF2	CF3	CR+SS	
			$0	$7,563	$16,638	$66,550	$0
TD2	(Recommended)	4,160		CF2	CF3	OL	
			$0	$208	$458	$2,080	$0
TD2	(Alternate)	4,160		CF2	CF3	CR+SS	
			$0	$208	$458	$1,830	$0
TD3		69,400		CF1		CF2	CF3
			$0	$694	$0	$3,470	$7,634
TD4		110,000	OL			CF1	
			$55,000	$0	$0	$1,100	$0
A1		89,200		CF2	CF3	OL	
			$0	$4,460	$9,812	$44,600	$0
A2		23,190			CF1		CF2
			$0	$0	$232	$0	$1,160
TOTAL	(RECOMMENDED)		$55,202	$12,925	$33,534	$129,097	$35,719
TOTAL	(ALTERNATE)		$55,202	$12,925	$33,534	$119,772	$35,719

CF1 Crack Filling on Good Condition Pavement
CF2 Crack Filling on Fair Condition Pavement
CF3 Crack Filling on Fair to Poor Pavement
CF4 Crack Filling on Poor to Failed Pavement
FS Fog Seal
SS Sand Slurry
OL Overlay
R+R Recycle and Repave
CR Crack Repair

LOMPOC PAVEMENT MAINTENANCE AND REHABILITATION COSTS

PAVEMENT SECTION			YEAR 16 2008	YEAR 17 2009	YEAR 18 2010	YEAR 19 2011	YEAR 20 2012
		AREA (Sq.Ft.)					
Runway		360,000	CF3 $39,600	CF4+FS $68,400	$0	CF2 $18,000	CF3 $39,600
T1		160,000	CF3 $17,600	CF4+SS $0	$0	CF2 $8,000	CF3 $17,600
T2		9,750	CF3 $1,073	CF4+SS $0	$0	CF2 $488	CF3 $1,073
T3		20,200	$0	CF2 $1,010	CF3 $2,222	OL $10,100	$0
T4		8,750	CF3 $963	CF4+FS $1,663	$0	CF2 $438	CF3 $963
TD1	(Recommended)	151,250	$0	CF1 $1,513	$0	CF2 $7,563	CF3 $16,638
TD1	(Alternate)	151,250	CF2 $7,563	CF3 $16,638	CR+SS $56,550	$0	CF2 $7,563
TD2	(Recommended)	4,160	$0	CF1 $42	$0	CF2 $208	CF3 $458
TD2	(Alternate)	4,160	CF2 $208	CF3 $458	CR+SS $1,830	$0	CF2 $208
TD3		69,400	CF4+SS $0	$0	CF2 $3,470	CF3 $7,634	OL $34,700
TD4		110,000	CF2 $5,500	CF3 $12,100	CF4+SS $0	$0	CF2 $5,500
A1		89,200	$0	CF1 $892	$0	CF2 $4,460	CF3 $9,812
A2		23,190	CF3 $2,551	CF4+SS $0	$0	CF2 $1,160	CF3 $2,551
TOTAL	(RECOMMENDED)		$67,286	$85,619	$5,692	$58,049	$126,893
TOTAL	(ALTERNATE)		$75,056	$101,160	$74,072	$50,279	$119,568

CF1 Crack Filling on Good Condition Pavement
CF2 Crack Filling on Fair Condition Pavement
CF3 Crack Filling on Fair to Poor Pavement
CF4 Crack Filling on Poor to Failed Pavement
FS Fog Seal
SS Sand Slurry
OL Overlay
R+R Recycle and Repave
CR Crack Repair

Appendix C

Airport User Survey Questionnaire

LOMPOC AIRPORT
LOMPOC, CALIFORNIA

GENERAL AVIATION SURVEY

April/May 1992

OPTIONAL QUESTION

1. Please provide your name and phone number, if we may call you to discuss your responses.

   Name _____

   Day Phone _____

ALL RESPONDANTS PLEASE ANSWER THE FOLLOWING QUESTIONS

2. Where do you live?

   State _____ City _____ Zip Code _____

3. How do you use Lompoc Airport?

   _____ Have aircraft based there.

   _____ Own a fixed base operation or other business on Airport.

   _____ Member of flying club or rent/lease aircraft.

   _____ Transient flights to/from the Airport (do not have aircraft based there).

   _____ Other _____

4. Briefly, please list in importance to you, the three (3) main issues you would like to see addressed in the Lompoc Airport Master Plan Study.

   1. _____

   2. _____

   3. _____

5. Rate the adequacy of existing services and facilities as you have observed them at Lompoc Airport.

	Poor		Satisfactory		Excellent
Hangar Facilities					
Tie-downs					
Transient Parking					
Pavement Condition					
Security					
Auto Parking					
Navigational Aids					
Crosswind Coverage					
FBO Services in General					
Flight Instruction					
Charter Service					
Aircraft Maintenance					
Fueling					
Wash Rack					
Restrooms					
Other: _____					
_____					

	Very High		Average		Very Low
Flight School Rates					
Maintenance Rates					
Fuel Costs					
Hangar Rental Rate					
Tie-down Rates					
Transient Parking Fees					

6. Indicate by priority the physical improvements you would lke to see at Lompoc Airport.

	Highest Priority				Lowest Priority
Additional T-hangars	_____	_____	_____	_____	_____
Additional Tie-downs	_____	_____	_____	_____	_____
Additional Transient Parking	_____	_____	_____	_____	_____
Pavement Resurfacing	_____	_____	_____	_____	_____
Runway Extension	_____	_____	_____	_____	_____
New or Reconfigured Taxiways	_____	_____	_____	_____	_____
Expanded Security Program	_____	_____	_____	_____	_____
Improved Auto Access/ Parking	_____	_____	_____	_____	_____
Navaids: _____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Other: _____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

7. Please give us any comments you have pertaining to the Airport and/or the Master Planning Study:

_____

_____

_____

_____

_____

_____

PLEASE ANSWER THE REMAINING QUESTIONS THAT APPLY TO YOU

8. If you have aircraft based at Lompoc Airport, please provide the following information.

Aircraft Type	Number of Aircraft	Annual Takeoffs at Lompoc Airport*	Percent Touch and Go
Single-engine under 4 place	_____	_____	_____
Single-engine 4 place and over	_____	_____	_____
Multi-engine - piston	_____	_____	_____
Turbo-prop	_____	_____	_____
Turbo-jet	_____	_____	_____
Helicopter	_____	_____	_____
Other: _____	_____	_____	_____

* Include Touch and Go Operations

9. If you have aircraft based at Lompoc Airport, indicate the factors that most influenced you to locate your aircraft there.

_____ Proximity to home.

_____ Proximity to business.

_____ Availability of services.

_____ Other: _____

_____ Availability of facilities.

_____ Favorable flying conditions.

_____ Cost of services.

10. If you have aircraft based at Lompoc Airport, please indicate the number of your aircraft in tie-downs and hangars.

	Present Method of Storing Based Aircraft	Preference if Additional Hangars Were Available
Number in Tie-downs	_____	_____
Number in Hangars	_____	_____

11. If you fly to/from Lompoc Airport (regardless of where your aircraft is based), what percentage of your flights are for the following purposes?

	Business	Personal	Training	Other
Single-engine under 4 place	_____	_____	_____	_____
Single-engine 4 place and over	_____	_____	_____	_____
Multi-engine piston	_____	_____	_____	_____
Turbo-prop	_____	_____	_____	_____
Turbo-jet	_____	_____	_____	_____
Helicopter	_____	_____	_____	_____

12. If you fly to/from Lompoc Airport (regardless of where your aircraft is based), please provide the following information regarding navagational aids.

    a. Has a lack of airport navigational aids prevented you from using your aircraft at Lompoc Airport? (Yes or No) _____

    b. If yes, how many times per year has this occurred? _____

    c. What type(s) of navigational aids would you recommend (if any)?

    _____

13. If you fly to/from Lompoc Airport (regardless of where your aircraft is based), please estimate the amount of money spent annually in the Lompoc area for the operation of your aircraft.

Hangar/Tie-down	$ _____
Fuel	$ _____
Maintenance	$ _____
Insurance	$ _____
Other: _____	$ _____
Total	$ _____

14. If you are a transient flyer to Lompoc Airport (i.e., do not base your aircraft at Lompoc Airport), please provide the following information.

Number of flights per year to Lompoc Airport _____

Approximate air distance (nautical miles) to your home base _____

Services used at Lompoc Airport:

Fuel _____ Maintenance _____ Overnight Tie-downs _____

Thank you for your time to provide us this information.

CITY OF LOMPOC
DEPARTMENT OF PUBLIC WORKS

INITIAL ENVIONMENTAL STUDY FOR LOMPOC AIRPORT MASTER PLAN

Prepared by:

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CITY OF LOMPOC
INITIAL ENVIRONMENTAL STUDY

PROJECT INFORMATION Date _____

Project Title/
Number: Lompoc Airport Master Plan

Applicant: City of Lompoc

Project
Description: The Lompoc Airport Master Plan provides recommendations and plans for improvements to Lompoc Airport between 1993 and 2015 to accommodate projected aviation needs. Phase I improvements, planned for the period 1993 to 2000, are as follows:

- Land Acquisition
  - Acquire 3.0 acres east of H Street in the Runway 25 Runway Protection Zone.
  - Acquire 11.7 acres on the south side of the Airport.
- Airfield
  - Prepare sites for airfield, terminal and hangar construction.
  - Excavation and fill for airfield, terminal and hangar construction.
  - Construct runway extension and north taxiway extension, eastern part of south taxiway and ramp area.
  - Make drainage improvements for runway, taxiway and ramp improvements.
- Lighting and Navaids
  - Provide runway/taxiway lighting and signage and ramp lighting.
  - Provide visual approach system (VASI or PAPI) for Runway 7.
  - Provide pavement markings for runway and taxiway extensions.
  - Relocate navitation and weather instruments (NDB, AWOS) and Segmented Circle.
  - Provide a localizer/DME approach system.
- Buildings
  - Construct first stage of new terminal building.
  - Construct 21 rectangular/ T-hangars and 2 corporate hangars.
  - Construct new Aircraft Rescue and Fire Fighting (ARFF) facility.
- Roads and Vehicle Parking
  - Construct L Street access road, vehicle parking and access road to northwest FBO area.
  - Provide lighting for roadway and vehicle parking.
- Miscellaneous
  - Provide aircraft wash area.
  - Construct fuel farm with 12,500-gallon underground tanks.
  - Provide tie-downs for new transient ramp.
  - Provide landscaping and fencing in new construction areas.

Location: Lompoc Airport is situated in the western part of Santa Barbara County. The airport is located in the City of Lompoc's north side on the south bank of the Santa Ynez River, west of H Street (State Highway 1). The Airport location and regional highway system that serves the Airport are graphically presented in Figure 1.

Environmental Setting: Lompoc Airport is located at the northern edge of the developed portion of the City of Lompoc. North and west of the Airport are the Santa Ynez River and agricultural uses and open space. To the east of the Airport, east of H Street, are agricultural uses. A hotel is located southeast of the Airport, west of H Street and north of Central Avenue. Immediately south of the Airport, north of Central avenue, is vacant land. The Central Avenue Specific Plan for this area describes the planned development business park to be located there. Uses under the Airport's traffic pattern, which is north of the Airport, include open space, agriculture, and residential (Mesa Oaks). Uses planned for this area include additional residential east of H Street at Purisima Road, a museum and science center west of H Street at Purisima Road, and Alan Hancock Community College west of H Street at Purisima Road.

ENVIRONMENTAL IMPACTS

Identify the potential for significant adverse impacts below. Explanation of "yes" and "maybe" answers is required. Explanation of "no" answers should be provided if there are conflicting points of view. Note mitigation measures, if available, for significant adverse impacts.

	Yes	Maybe	No	Comments
1. Geology/Soil. Will the proposal result in:				
a. Removal, compaction, or overcovering of high quality agricultural soils?	☒	☐	☐	Approximately 11.7 acres of agricultural land south of the airport will be converted to aviation uses, including construction of a new airport administration/terminal building, a new fire station, vehicle parking and aircraft hangars. Grading for these improvements will result in localized disruption, displacement, compaction and overcovering of site soils.
b. Unstable earth conditions or in changes in geologic structures?	☐	☐	☒	The proposed project will not result in unstable earth conditions or in significant changes to geologic substructures.
c. Changes in topography?	☒	☐	☐	Grading for the runway and taxiway extensions will require the addition of fill material on the west side of the airport. Grading for other airport improvements will result in localized changes on topography and ground surface relief features.
d. The destruction, covering or modification of any unique geologic or physical features?	☐	☐	☒	There are no unique geologic or physical features on airport property or property proposed to be acquired that would be destroyed, covered or modified by the proposed project improvements.

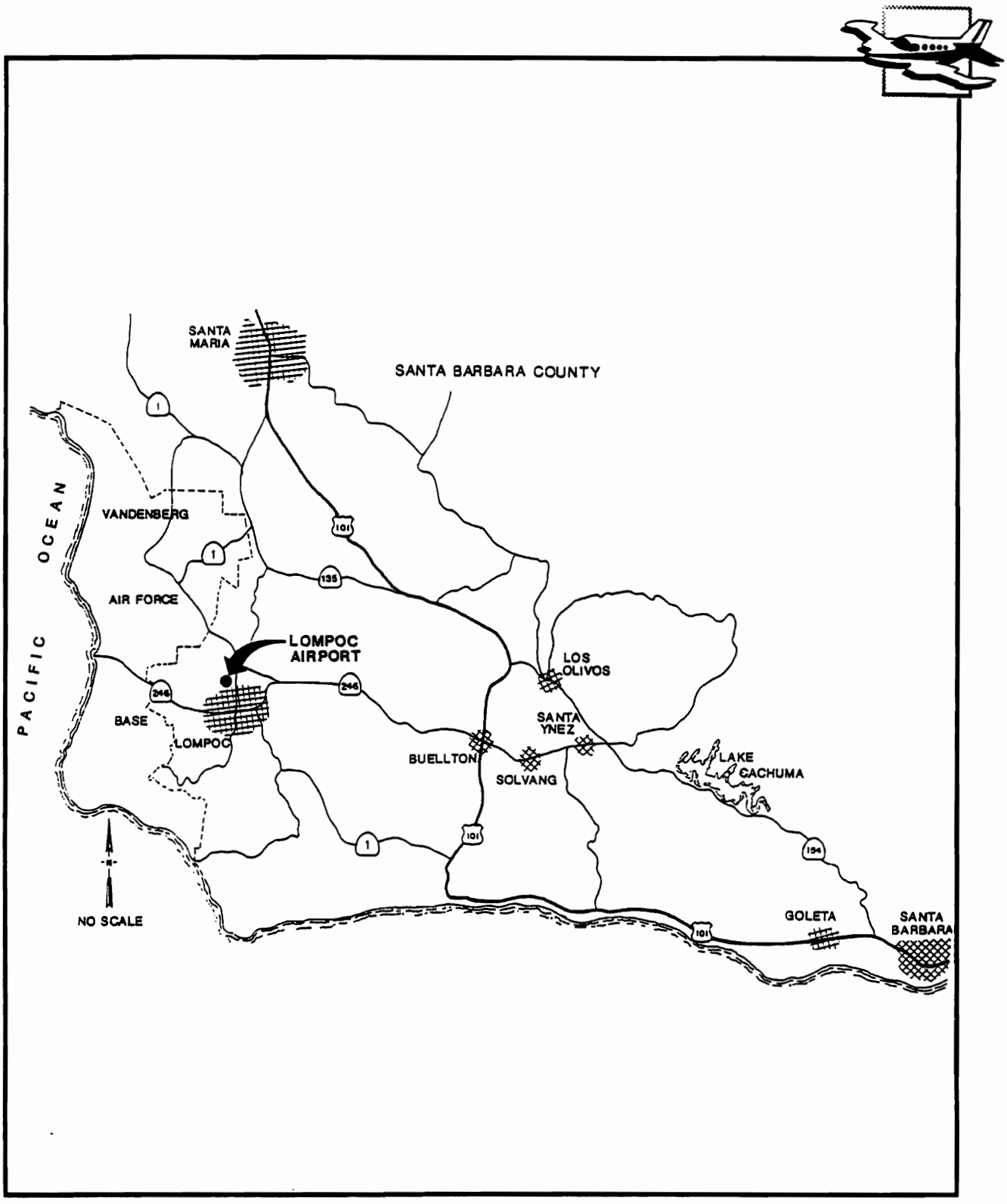

FIGURE 1

AIRPORT LOCATION MAP

	Yes	Maybe	No	Comments
e. Any increase in wind or water erosion of soils, either on or off the site?	☐	☒	☐	Short term increases in wind and water erosion may take place during construction. Mitigation measures will be taken during construction to minimize potential impacts.
f. Changes in deposition, erosion, or siltation which may modify the channel of a river or stream?	☐	☐	☒	It is unlikely that the project will result in siltation, deposition? or erosion significant enough to modify any local stream channel.
g. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?	☐	☐	☒	The proposed project is not expected to result in the exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides or ground failure.
2. Air Quality. Will the proposal result in:				
a. Substantial air emissions, deterioration of ambient air quality, or substantial contribution to an existing or projected air quality violation?	☐	☒	☐	Project-related emissions may exceed Santa Barbara County air pollution control district standards.
b. The creation of objectionable odors?	☐	☐	☒	The proposed project will not result in the creation of objectionable odors.
c. Exposure of people to localized air quality problems, CO hot spots, or objectionable odors?	☐	☐	☒	The proposed project will not expose residents to severe air pollution conditions, alteration of air movement, changes in moisture or temperature, or CO hotspots.
3. Water. Will the proposal result in:				
a. Changes in the courses of water movements?	☐	☐	☒	The proposed project will not result in changes in currents or the course or direction of water movements.
b. Changes in percolation rates, drainage patterns, or the rate or amount of surface runoff?	☒	☐	☐	The additional airfield and roadway paved surfaces will increase the amount of water runoff.
c. Alterations to the course or flow of flood waters?	☐	☐	☒	Although a portion of the airport site will receive fill material to raise it above the existing 100-year flood area, the course or flow of floodwaters is not expected to be altered.
d. Change in the amount of surface water in any water body?	☐	☐	☒	The proposed project is not expected to change materially the amount of surface water in any water body.

	Yes	Maybe	No	Comments
e. Discharge into surface waters, or any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?	☐	☐	☒	The proposed project will not result in any significant discharge into surface waters, or in any alteration to surface water quality.
f. Alteration of the direction or rate of flow of groundwaters?	☐	☐	☒	The proposed project will not alter the direction or rate of flow of groundwaters.
g. Change in the quantity of groundwaters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	☐	☒	☐	Increases in surface water runoff could reduce the quantity of groundwaters.
h. Substantial reduction in the amount of water otherwise available for public water supplies?	☐	☐	☒	The proposed project will not result in a reduction in the amount of water available for public water supplies.
i. Substantial increase in overdraft of groundwater basin?	☐	☒	☐	see 3g.
j. Substantial interference with groundwater recharge?	☐	☒	☐	Groundwater recharge could be substantially reduced due to increases in paved areas.
k. Exposure of people or property to water-related hazards such as flooding?	☐	☐	☒	All development is to be above the 100-year flood area.
4. Plant Life. Will the proposal result in:				
a. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, and aquatic plants)?	☐	☒	☐	The project site has been disturbed through previous construction, landscaping, and farming. The project could have a minor impact on changes in the diversity of species or number of plant species.
b. Reduction of the number of any unique, rare or endangered species of plants?	☐	☐	☒	Previous Environmental Impact Reports for other projects in the area have not identified rare or endangered species of plants at the project site.
c. Loss of healthy specimen trees?	☐	☐	☒	The proposed project will not result in the loss of healthy specimen trees.
d. Reduction in acreage of any agricultural crop?	☒	☐	☐	See 1a.

	Yes	Maybe	No	Comments
5. Animal Life. Will the proposal result in:				
a. Change in the diversity of species or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms or insects)?	☐	☐	☒	It is unlikely that the proposed project would result in any significant effect on the numbers or variety of animal species, particularly since animal species on the site are highly mobile and additional habitat is nearby.
b. Reduction of the numbers of any unique, rare, or endangered species of animals?	☐	☐	☒	There are no known rare or endangered animal species inhabiting the proposed project site.
c. Introduction of new species of animals into an area, or a barrier to the migration or movement of animals?	☐	☐	☒	The proposed project would not result in the introduction of new species of animals into the area, or significantly impair the replenishment of existing species.
d. Deterioration to existing fish or wildlife habitat?	☐	☐	☒	The project site has been disturbed through previous construction, landscaping and farming.
6. Land Use. Will the proposal result in:				
a. A substantial alteration in the present or planned land use of an area?	☒	☐	☐	The proposed project will result in the conversion of 11.7 acres of agricultural land to aviation uses.
b. Conflicts with the General Plan Land Use Element or Zoning Ordinance?	☐	☒	☐	The General Plan and Zoning Ordinance may need to be amended.
c. Conflicts with any other elements of the City general plan, specific plans, or Redevelopment Agency plans?	☐	☒	☐	The Central Avenue Specific Plan may have to be amended.
d. Conflicts with the adopted Airport Land Use Plan?	☐	☐	☒	Although the proposed project is not in conflict with the adopted Airport Land Use Plan, proposed amendments to the Airport Land Use Plan are recommended in the Lompoc Airport Master Plan.
e. The loss of substantial amounts of open space?	☒	☐	☐	See 6a.

	Yes	Maybe	No	Comments
7. Noise. Will the proposal result in:				
a. Increases in existing noise levels?	☒	☐	☐	The Lompoc Airport Master Plan estimates that aircraft noise levels will increase slightly in the airport vicinity between 1993 and 2015. The runway takeoff length will be extended from 3,600 feet to 4,600 feet, which will permit larger aircraft to use the airport, such as larger twin engine aircraft and small business jets.
b. Exposure of people to severe noise levels?	☐	☐	☒	Noise impacts will not affect residential land uses or other noise sensitive land uses.
8. Light and Glare. Will the proposal result in:				
a. Production of new light or glare?	☒	☐	☐	Airfield lighting will be extended and new ramp lighting and vehicle parking lot lighting improvements are recommended.
b. Exposure of people to severe light or glare?	☐	☐	☒	New lighting included in the project is not expected to result in the exposure of people to severe light or glare.
9. Health/Safety. Will the proposal involve:				
a. A risk of an explosion or the release of hazardous materials, e.g. oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?	☐	☒	☐	An aircraft accident could result in an explosion or the release of aircraft fuel and oil.
b. Possible interference with an emergency response plan or an emergency evacuation plan?	☐	☐	☒	The proposed project will provide additional fire-fighting capabilities for on-airport and off-airport emergencies.
c. The creation of potential public health or safety hazards?	☐	☒	☐	The proposed project will not result in new public health or safety hazards. A slight increase in the potential for aircraft accidents could occur as a result of increased flight activity.
d. Exposure of people to potential health hazards?	☐	☐	☒	The proposed project will not expose people to potential health hazards.
10. Population. Will the proposal alter the location, distribution, density, or growth rate of the human population of an area?	☐	☐	☒	The proposed project will not alter the location, distribution, density, or growth rate of the human population in the area.

	Yes	Maybe	No	Comments
11. Housing. Will the proposal result in:				
a. Substantial impact on existing housing or create a demand for additional housing?	☐	☐	☒	The proposed project will not affect existing housing stock or create a demand for additional housing.
b. Provision of low or moderate income housing?	☐	☐	☒	The proposed project will not have an impact on the availability of moderate income housing.
c. Loss of existing dwellings through demolition, conversion, or removal?	☐	☐	☒	No existing dwellings will be lost through demolition, conversion or removal.
d. Conversion of rental units to condominiums?	☐	☐	☒	No rental units will be impacted by the proposed project.
12. Transportation/Circulation. Will the proposal result in:				
a. Generation of substantial additional vehicular movement in relation to existing traffic load and roadway capacity?	☐	☒	☐	Some additional vehicular movement is expected to result from increased airport usage.
b. Effects on existing parking facilities, or demand for new parking?	☒	☐	☐	Additional vehicle parking will be provided under the proposed project.
c. Substantial impact upon existing transportation systems?	☐	☒	☐	See 12a.
d. Alterations to present patterns of circulation or movement of people and/or goods?	☒	☐	☐	After the construction of airport facilities on the south side of the airport, some airport traffic will use L Street, O Street and Central Avenue.
e. Alterations to rail or air traffic?	☒	☐	☐	The amount of aircraft takeoffs and landings is projected to increase between 1993 and 2015. The existing traffic pattern and flight paths in the vicinity of the airport are not expected to change.
f. Increases in traffic hazards to motor vehicles, bicyclists or pedestrians?	☐	☒	☐	See 12a.
13. Public Services. Will the proposal adversely affect the ability of the responsible agencies to provide the following services:				
a. Fire protection?	☐	☐	☒	The provision of fire protection will not be adversely affected.

	Yes	Maybe	No	Comments
b. Police protection?	☐	☐	☒	The provision of police protection will not be adversely affected.
c. Schools?	☐	☐	☒	The provision of public schools will not be adversely affected.
d. Parks or other recreational facilities?	☐	☐	☒	The provision of parks and other recreational facilities will not be adversely affected.
e. Maintenance of public facilities, including roads?	☐	☐	☒	The maintenance of public facilities, including roads, will not be adversely affected.
f. Other government services?	☐	☐	☒	Other government services are not expected to be adversely affected
14. Natural Resources/Energy. Will the proposal result in:				
a. Use of substantial amounts of natural resources, fuel, or energy?	☒	☐	☐	The proposed project will result in a negligible increase use of natural resources and energy as a result of construction activities, particularly fuel for construction vehicles and equipment, water, sand and gravel and asphaltic compounds.
b. Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?	☐	☐	☒	The proposed project will not have a significant effect on the demand for existing sources of energy or require the development of new soruces of energy.
15. Utilities. Will the proposal result in a need for new systems, or substantial alterations to the following utilities?				
a. Electrical power or natural gas?	☐	☐	☒	The extension of existing electrical power lines and natural gas lines will be required.
b. Communications systems?	☐	☐	☒	The extension of existing telephone lines will be required.
c. Water?	☐	☐	☒	The extension of existing water lines will be required.
d. Sewer or septic tanks?	☐	☐	☒	The extension of sewer and septic tank systems will be required.
e. Storm drains?	☐	☐	☒	The extension of existing storm drains will be required.
f. Solid waste disposal?	☐	☐	☒	Solid waste disposal services will need to be expanded.

	Yes	Maybe	No	Comments
16. Aesthetics. Will the proposal result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?	☐	☒	☐	The change in land use from agricultural to aviation uses on the 11.7 acres to be acquired south of the airport could somewhat obstruct the view of airport open space to the north.
17. Recreation. Will the proposal result in a negative impact upon the quality or quantity of existing recreational opportunities?	☐	☐	☒	The Lompoc Airport Master Plan provides for a new community park to be located on airport property adjacent to the Santa Ynez River and H Street.
18. Economics. Will the proposal result in:				
a. Need for new employment?	☒	☐	☐	Some increase in employment is expected to result from construction activities and the increase in aviation activity at the airport.
b. Increased demand for goods or services (including secondary services?)	☒	☐	☐	The demand for goods and services is expected to increase as a result of airport construction and increases in airport activity.
c. Project costs to local government exceeding project revenues?	☐	☒	☐	The majority of project costs will be funded through the Federal Aviation Administration. Project revenues have not been estimated.
19. Archaeological Resources. Will the proposal result in:				
a. Disruption, alteration, destruction, or adverse effect on an archaeological site?	☐	☐	☒	No archaeological sites have been identified on the proposed project site.
b. Disruption or removal of human remains?	☐	☐	☒	See 19a.
c. Increased potential for trespassing, vandalizing, or sabotaging archaeological resources?	☐	☐	☒	See 19a.
d. Ground disturbances in an area with potential cultural resource sensitivity based on the location of known historic or prehistoric sites?	☐	☐	☒	See 19a.

	Yes	Maybe	No	Comments
20. Historic Resources. Will the proposal result in:				
a. Adverse physical or aesthetic impacts on a structure or property at least 50 years old and/or of historic or cultural significance to the community, state or nation?	☐	☐	☒	The existing project site does not contain structures or property of historic or cultural significance.
b. The introduction of disruptive visual or auditory elements or other alterations to a structure or property at least 50 years old and/or of historic or cultural significance to the community, state or nation?	☐	☐	☒	See 20a.
c. Beneficial impacts to an historic resource by providing renovation, protection in a conservation/open easement, etc.?	☐	☐	☒	See 20a.
21. Hazardous Materials.				
a. In the known history of this property, have there been any past uses, storage, or discharge of hazardous materials (e.g. solvents, pesticides, underground fuel tanks)?	☒	☐	☐	Aviation fuels, oils and pesticides have been used on the site. Underground fuel tanks previously located on the site have been removed.
b. Will the proposed project involve the use, storage, or distribution of hazardous or toxic materials?	☒	☐	☐	Aviation fuels and oil will continue to be used on the site.
22. Mandatory Findings of Significance.				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a wildlife species, cause fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	Potential impacts on air quality, land use, noise and vehicle traffic are noted above.

	Yes	Maybe	No	Comments
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	☐	☒	☐	The project has the potential to achieve short term environmental goals to the disadvantage of long term environmental goals, although none have been identified.
c. Does the project have impacts which are individually limited, but cumulatively considerable?	☐	☒	☐	The project has the potential of creating impacts which are individually limited but cumulatively considerable.
d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	Substantial adverse affects on human beings are possible if not adequately mitigated.
e. Are there conflicting points of view as to the project's effects which would require investigation of potentially significant adverse impacts in an EIR? (Section 15064(h)(1)).	☒	☐	☐	There are possibly conflicting points of view as to the project's affects which would require investigation of potentially significant adverse impacts in an EIR, particularly relating to the effects of aircraft noise and safety.
f. Is there a substantial body of opinion that considers the effect of the project to be significantly adverse? (Sec. 15064(h)(2)).	☒	☐	☐	The affects of increased aviation activity, particularly aircraft noise, safety and air quality, are considered to have significant adverse impact. The increase of the runway length from 3,600 feet to 4,600 feet is viewed as substantially changing the character of the airport and increasing potential impacts to the surrounding community.

23. Information Sources.

a. City Departments Consulted: Public Works

b. County Departments Consulted: Association of Governments

c. Other Sources (check):

- X Field Work
- X Project Plans
- X Other Project Files
- _____ Architectural Elevations
- _____ Biological Resources Study
- _____ Cultural Resources Study
- _____ Seismic & Geologic Conditions Study
- _____ Soils Maps
- X Flood Maps
- _____ Other _____

d. General Plan/Zoning (check):

- X Land Element or Map
- X Circulation Element or Map
- _____ ERME
- _____ Housing Element
- _____ Bikeway Plan
- X Zoning Ordinance or Map
- X County Airport Land Use Plan
- X County Comprehensive Plan
- X Other : Central Avenue Specific Plan

DETERMINATION

On the basis of this initial evaluation, the Community Development Department:

☐ Finds that there is no substantial evidence that the proposed project may have a significant effect on the environment. A NEGATIVE DECLARATION will be prepared.

☐ Finds that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described ☐ above, ☐ on an attached sheet (please check) have been added to the project. A NEGATIVE DECLARATION will be prepared.

☐ Finds that based upon a previous environmental impact report (EIR) the project is essentially the same in terms of environmental impact, and therefore the PREVIOUS EIR will be used (CEQA Guidelines Section 15153). Previous EIR & SCH No. _____.

☐ Finds that minor additions or technical changes are necessary to make a previous EIR adequate. An EIR ADDENDUM is required (Sec. 15164). Previous EIR & SCH No. _____.

☐ Finds that the proposed project may involve new significant environmental impacts not considered in a previous EIR due to changes in the project or substantial changes in circumstances. A SUBSEQUENT EIR is required (Section 15162). Previous EIR & SCH No. _____.

☐ Finds that minor additions or changes are necessary to make a previous EIR adequately apply to a project otherwise requiring a subsequent EIR. An EIR SUPPLEMENT is required (Sec. 15163). Previous EIR & SCH No. _____.

☒ Finds the proposed project may have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required (Sec. 15161).

_____
Date

_____
Signature

_____
Name

_____
Title

Community Development Department
City of Lompoc