FINAL REPORT

AIRPORT MASTER PLAN

TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA

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CITY OF TRACY

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EXECUTIVE SUMMARY

INTRODUCTION

This report sets forth the findings and conclusions of an airport master planning study for the Tracy Municipal Airport. The purposes of the study were to provide a plan for the orderly development of new and upgraded aviation facilities to meet Tracy's air service needs through the year 2016, and to ensure that long-term airport development and community growth would be compatible.

In short, the master plan study presents a straight-forward plan for airport development, with detailed facility requirements, phasing, costs and suggested methods of financing. A companion environmental impact report and environmental assessment (EIR/EA) assesses the potential environmental impacts of the proposed improvements at Tracy Municipal Airport.

A project Technical Advisory Committee (TAC) was formed to provide guidance in the development of this Master Plan. Representatives from the following organizations and public bodies participated in, and contributed to the development of the Master Plan for Tracy Municipal Airport:

- City of Tracy
- Tracy Airport Advisory Committee (AAC)
- Airport Users
- Local Land Owners and Developers,
- Federal Aviation Administration (FAA)
- California State Aeronautics Program
- San Joaquin County Council of Governments (COG)/Airport Land Use Commission (ALUC)
- Local School Districts

TIMEFRAME

The Master Plan projects aviation activity and facilities requirements to the year 2016. The emphasis, however, is on the first five years of this period. Potential activity levels and facility needs after the year 2002 are nonetheless addressed to provide an indication of the long-term direction of development at the Tracy Municipal Airport.

FUTURE CHANGES

This Master Plan is designed to be a comprehensive, yet flexible document. The proposed improvements are depicted on large-scale drawings (24" x 36") and reproduced in this report to an 11" x 17" format for convenience. These drawings should be reviewed and updated as necessary to ensure that they continue to represent newly evolving conditions and facility needs. As a matter of course, it is recommended that the Master Plan drawings be updated periodically to reflect new construction or other changes. A complete review and update of the Master Plan drawings should be undertaken within a seven- to ten-year period.

HISTORICAL AND FORECAST AVIATION ACTIVITY

In 1995 Tracy Municipal Airport had a total of 101 based aircraft. No less than 54,000 annual operations (landings and takeoffs) were reported. By the year 2016, the airport is forecast to have 130 based aircraft and could support over 107,000 annual operations.

CAPITAL IMPROVEMENT PROGRAM

Currently, Tracy Municipal Airport has approximately $1.48 million in capital improvement projects programmed, including the relocation of the airport's fuel storage area, a new electrical system and vault, runway and taxiway reconstruction (slurry seals), and new hangar facilities.

New capital projects proposed for FY1997-98 through FY2001-02 total an estimated $6.14 million, and include land acquisition, improvements to the Airport water and sewer systems, new hangars, a pilot's lounge, improvements to the airport entrance, and an aircraft wash rack with drainage improvements. A helicopter landing pad is also proposed. It should be noted, however, that it is not likely that all proposed capital development projects will be implemented by 2002. The availability of funds and the City's funding priorities will determine the priority of implementation after 2002, the City's annual capital improvement program will identify future development and phasing.

FUNDING

The proposed improvement projects will be funded from several sources, including the FAA's Airport Improvement Program (AIP), the California Aid to Airports Program (CAAP), private capital, and airport revenues/City funds.

ENVIRONMENTAL REVIEW

The proposed Airport Master Plan is subject to both State (CEQA) and Federal (NEPA) environmental review and clearances. A combined environmental assessment/environmental impact report (EA/EIR) has been prepared for this project.

CHAPTER 1

INTRODUCTION AND BACKGROUND

INTRODUCTION

In April 1996, the City of Tracy, under a grant from the Federal Aviation Administration (FAA) retained the aviation consulting division of P&D Consultants, Inc. (P&D Aviation) to prepare a comprehensive Airport Master Plan to meet the long-term (20-year) developmental and operational needs of the Tracy Municipal Airport.

During the development of the Master Plan, a high degree of coordination and interaction was maintained with the City of Tracy and the FAA's Burlingame Airports District Office (ADO). The Tracy Airport Advisory Committee (AAC) was particularly helpful with their insights into the community's airport and aviation needs.

The City also formulated a project Technical Advisory Committee (TAC) consisting of members of the Tracy Airport Advisory Committee, City staff, and representatives from the FAA ADO, Caltrans Aeronautics Program (formerly the State Division of Aeronautics), San Joaquin Council of Governments/Airport Land Use Commission (ALUC), Aircraft Owners and Pilots Association (AOPA), and airport users. Meetings of the TAC were held in Tracy, and were announced to, and attended by the interested public, public agencies and local land owners and developers.

BACKGROUND

The current Tracy Municipal Airport Master Plan is over twenty years old and much of the information is outdated. When adopted, the new Master Plan will provide the City with a state-of-the-art, up-to-date guide for future Airport development and planning, consistent with current FAA guidelines and directives.

The purpose of the Airport Master Plan study update is threefold. The first is to determine airfield facilities requirements in light of the demand created by new development expected to occur in the Tracy Municipal Airport environs. The second is to ensure that airport growth and community growth will be compatible with each other. The third is to identify the financial resources available to fund the proposed airport improvements.

ORGANIZATION

The Tracy Municipal Airport Master Plan is organized into 7 Chapters. A separate Executive Summary has also been prepared, which sets forth the Master Plan's major conclusions and recommendations. The following chapters set forth the technical data and analyses considered in the development of the Plan, including:

- Inventory
- Aviation Activity Forecasts
- Demand Capacity Analyses
- Facilities Requirements
- Financial Plan
- Land Use and Safety

The Master Plan study includes all the required elements of such studies, including an inventory, forecasts, demand/capacity analyses, facility requirements, economic analysis, and a separate environmental assessment. In addition, an evaluation of airfield pavement and drainage conditions has also been carried out. Master Plan capital improvement costs have been developed as well. In short, the Master Plan study represents a definitive plan for long-term airport development, with detailed facility requirements, costs and suggested financing methods.

CHAPTER 2

INVENTORY

COMMUNITY PROFILE

The City of Tracy is located in California's San Joaquin Valley, approximately 60 miles east of San Francisco and 60 miles south of Sacramento. Tracy is situated astride California's only major north-south Interstate Highway (I-5) and I-205, a connector to I-580 and the San Francisco Bay Area and "Silicon Valley." Highways I-5/205 also connect Tracy to Yosemite National Park and with the State's only other major north-south highway in the Central Valley, State Route 99 (see Figure 2-1, *"Regional Location Map"* following this page).

Local Setting

The City of Tracy is situated in southwestern San Joaquin County and is part of the larger Tracy Planning Area (TPA). In addition to the City of Tracy, the TPA includes that portion of unincorporated San Joaquin County which, as determined by the City, is related from a planning standpoint. The TPA consists of 113.4 square miles, of which approximately 22 square miles are within the City of Tracy and approximately 91 square miles in unincorporated County territory. The TPA is bounded by the Alameda County/San Joaquin County line to the west, Old River to the north, the Union Pacific Railroad and Chrisman Road to the east, and the westerly extension of State Route 132 from I-580 to the Alameda County Line along Corral Hollow Road on the south (see Figure 2-2, *"Tracy Planning Area"*).

Regional Development Trends

Tracy is experiencing one of the fastest growth rates in the State. Population within the Tracy Planning Area has been projected to increase from 41,905 (1990) to almost 134,000 by the year 2010.[1] With the exception of some rural centers, the majority of existing development in the TPA is concentrated within the Tracy city limits. In 1993, the City of Tracy adopted an Urban Management Plan/General Plan to manage this anticipated growth (see below for further discussion).

1. City of Tracy, Community Development Department, *"South Schulte Specific Plan, Draft Environmental Impact Report,"* March 1997, pp. 3-1 to 3-2.

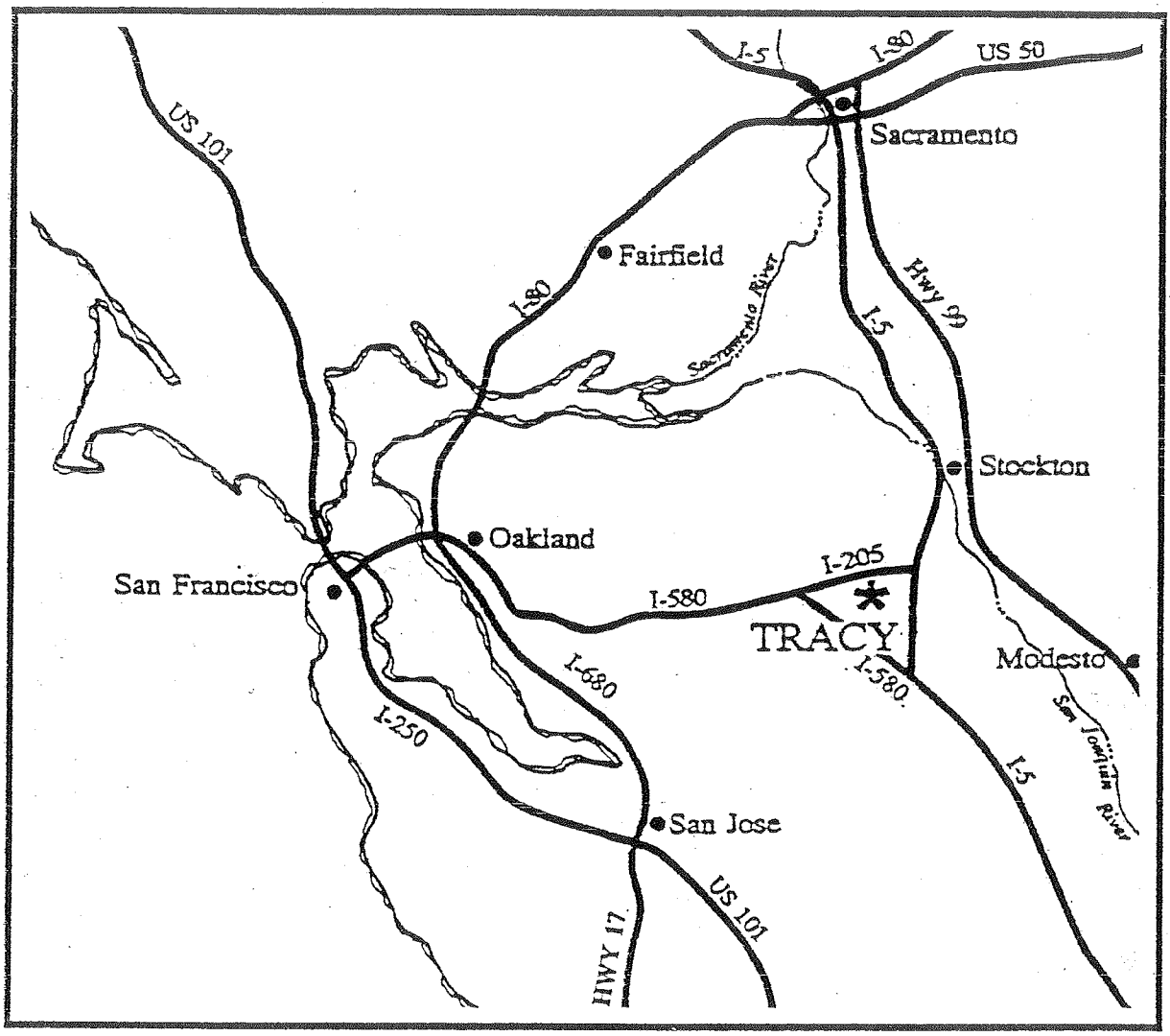


FIGURE 2-1

REGIONAL LOCATION MAP

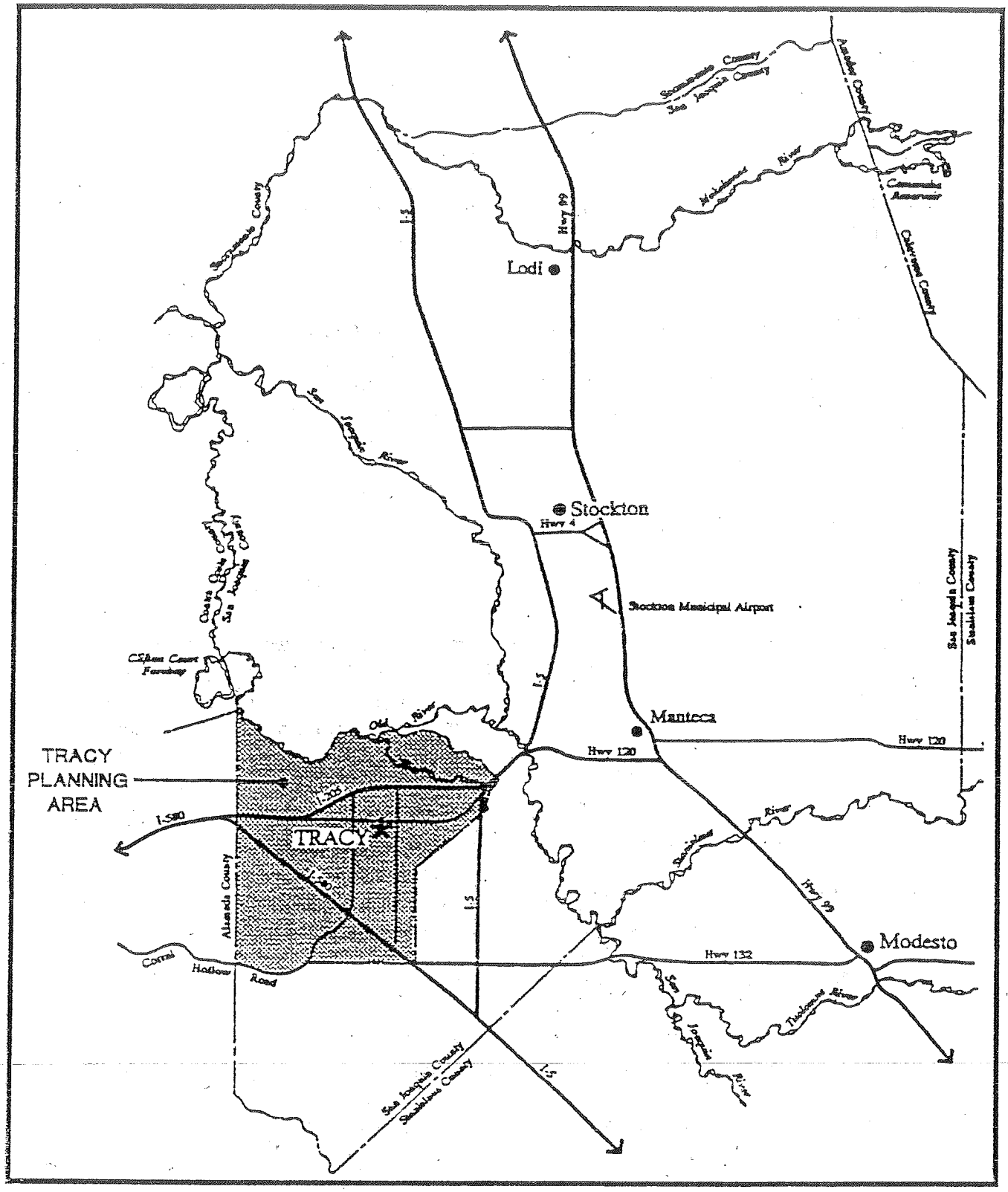


FIGURE 2-2
TRACY PLANNING AREA

Growth in San Joaquin County and the City of Tracy is driven by a combination of the presence of large amounts of developable land and proximity to the San Francisco Bay Area. From 1980 to 1990, San Joaquin County's population grew at an annual rate of 3.2 percent compared to a statewide annual average increase of 1.9 percent.[2] Pacific Gas and Electric Company's (PG&E) Land Use Planning and Appraisal Unit estimates that a majority of the population growth in San Joaquin County between 1980 and 1990 was from people from the Bay Area seeking affordable housing.[3]

As a result of this growth, San Joaquin County is undergoing a transition from a leading producer of agricultural products to a more industrial and service-oriented economy,[4] with its population being concentrated in seven cities. These cities are: Stockton, Tracy, Lathrop, Lodi, Manteca, Escalon and Ripon. Tracy, Lathrop, Manteca and Ripon are experiencing the greatest growth, with Stockton experiencing growth at a somewhat lesser rate.[5]

Local Development Trends

The City of Tracy was incorporated in 1910. It was originally developed around the juncture of three major railroad lines. Because of its strategic location along these major rail transportation routes, the City grew and prospered. World War II also resulted in a period of growth for the City as a result of the construction of the Tracy Defense Depot and the expansion of the agricultural industry in support of the war effort. Despite this period of growth, Tracy maintained its "small town" atmosphere.

Tracy's historic connection to major transportation corridors, including the railroads, and the state and interstate highway systems, along with its proximity to employment centers in San Ramon, Pleasanton and Livermore, have made Tracy an attractive place to live and work. These locational attributes contribute significantly to the growth that the City is currently experiencing.

Urban Management Plan/ General Plan (UMP/GP)

In response to these local and regional growth trends, the City of Tracy has adopted, and is implementing, an "Urban Management Land Use Plan (UMLUP)." This plan represents the culmination of the land use planning process completed as part of the Tracy Urban Management Plan/General Plan (UMP/GP) process. The UMLUP is intended to be a comprehensive, graphic representation of the

2. City of Tracy, *"Final EIR for the City Tracy Urban Management Plan/ General Plan"*, July 19, 1993, p.37.
3. Ibid.
4. County of San Joaquin, *"San Joaquin General Plan 2010,"* July 1992.
5. Ibid.

policies contained in the City's Urban Management Plan/General Plan adopted in 1993. The UMLUP establishes general locations and relationships of land uses and traffic circulation. The ultimate implementation of the plan would be carried out by approval of site specific development plans that City decision makers find to be consistent with the intent of the UMLUP.

The UMP/GP (including the UMLUP) provides the foundation and framework for future land use decision making by the City. Measures for implementing the UMP/GP include the City's zoning regulations, subdivision ordinance, building codes, environmental review procedures, specific plans, finance plans, and infrastructure master plans. Included among the goals and policy actions of the UMP/GP relating to the Tracy Municipal Airport are the following:

GOAL L U7- LAND USE PATTERNS THAT MINIMIZE CONFLICTS BETWEEN NEIGHBORING USES AND TRANSPORTATION CORRIDORS

"...The airport is an example of a use that was established prior to the development of neighboring homes; through careful land use planning and site development, conflict between the airport and surrounding land uses can be minimized...(and)... special requirements will be made of development to assure compatibility of land use with the Airport and consistency with the Airport Land Use Plan."

Policy LU 7.1.- Support location and mix of land use types and intensities that minimize conflicts with other uses and transportation corridors.

Action LU 7.1.2.-Cooperate with San Joaquin County in planning and approving land uses throughout the Tracy Urban Management Planning Area, including near the airport.

Action LU 7.1.3.- Revise the Airport Master Plan and establish clear and approach zones for the airport.

Action LU 7.1.4.- Assure that all new land uses are consistent with the San Joaquin Council of Governments Airport Land Use Plan.

GOAL CI 1 – SAFE WELL-MAINTAINED AND INTEGRATED TRANSPORTATION SYSTEMS.

The Tracy UMP/GP relies on a variety of transportation modes, including air transportation. According to the UMP/GP "each mode must allow for maximum use and efficiency...(and)... residents and visitors of Tracy must be given a choice of travel and provided opportunities to connect between the varying means."

use and efficiency...(and)... residents and visitors of Tracy must be given a choice of travel and provided opportunities to connect between the varying means."

Policy CI 1.1. – Plan for roadways, truck routes, bikeways, transit, rail and aviation that are universally consistent with the City's goals for roadways, bicycle and pedestrian circulation, transit services, rail and aviation activity.

Action CI 1.1.5. – Utilizing the growth envisioned by the Land Use Plan in the context of the Urban Management Plan goals for all transportation modes to be consistent with the function of the airport.

GOAL CI 10 – EFFICIENT AND CONVENIENT RELIEVER OF GENERAL AVIATION AIR TRANSPORTATION

The UMP/GP's stated intent is that as "air travel is increasingly an important method of transportation," City policy should address the operation and development of the airport."

Policy CI 10.1. – Provide for the expansion of the Tracy Municipal Airport if deemed appropriate to meet increasing demand for air travel and aircraft storage and servicing.

Action CI 10.1.1. – Pursue the expansion objectives of the Airport Master Plan.

Action CI 10.1.2. – Promote development of compatible land uses for the lands in the Airport Zone.

Action CI 10.1.3. – Support the establishment of FAA Reliever Airport status at Tracy Municipal Airport for the San Francisco Bay Area.

GOAL PF 8 – ADEQUATE AIR AND AIRPORT ORIENTED GROUND BASED TRANSPORTATION FACILITIES TO SATISFY LOCAL AND REGIONAL NEEDS.

As the community grows, the UMP/GP recognizes the need to provide adequate transportation systems and modes to assure continued economic development and quality of life.

Policy PF 8.1. – Maintain an airport facility within the City of Tracy.

Action PF 8.1.1. – Maintain, protect and enhance a general aviation airport to service the city and surrounding communities at the present Tracy Municipal Airport site.

GOAL NO 1 – PROVIDE APPROPRIATE EXTERIOR AND INTERIOR NOISE LEVELS FOR LAND USES TO PROTECT CITIZENS FROM EXCESSIVE NOISE.

Action NO 1.1.3. – Prohibit residential development in areas where existing or future noise contours exceed 65 Ldn, unless mitigation is provided to meet this level by the project proponent.

GOAL NO 2 – FACILITATE PROPER LAND USE PLANNING BY SEPARATING SIGNIFICANT NOISE GENERATORS FROM SENSITIVE RECEPTOR AREAS.

Policy NO 2.1. – Locate noise tolerant land uses in areas irrevocably committed to noise producing uses, such as adjacent to master planned roadways or within the contours of the Tracy Municipal Airport.

Action NO 2.1.1. – Require that projects include a review of noise impacts meeting a minimum standard of performance.

Policy NO 2.2. – Assure that areas subject to noise hazards are identified, quantified, and mapped in a form that is available to decision makers.

Action NO 2.2.1. – Review the airport noise contour map with every Govern Plan Update.

GOAL NO 4- CONTROL NOISE FROM SIGNIFICANT NOISE GENERATORS IN THE COMMUNITY

Policy NO 4.2. – Encourage the use of noise reducing flight procedures for large aircraft accessing Tracy Municipal Airport, such as maintaining minimum flight altitudes or using less sensitive flight paths.

Action NO 4.2.1. – Prepare performance standards and other noise reducing procedures in close coordination with the airport administrator of the FAA.

The above goals and policy actions serve to define the role of the Tracy Municipal Airport in the context of the UMP/GP, as well as setting forth the City's desire to maintain the airport as a viable component of the region's economy and transportation system.

TRACY MUNICIPAL AIRPORT

The Tracy Municipal Airport is owned by the City of Tracy and complements the City's proximity to the existing major surface transportation networks. The airport is located on approximately 310 acres at the southern end of the City, and is the second-largest publicly-owned airport in San Joaquin County.

History

The airport was constructed in 1943 for the U.S. Army Air Corps on land donated by the City. The facility was used as a training base during World War II and was returned to the City in 1946.

Activities

Tracy Municipal Airport is a general aviation airport which is used for a variety of aeronautical uses, including flight training, business, and pleasure flying. The airport does not provide scheduled air carrier or commuter airline services, although small aircraft are available for charter.

A wide variety of aircraft are accommodated at the airport, including single- and twin-engine propeller-driven airplanes, business jets, agricultural aircraft (crop dusters), and helicopters. Hot air balloons, gyrocopters, paraplanes and ultra-light aircraft also use the facility. Crop dusters use the airfield, but are prohibited from loading chemicals at the site, and, although used by business jets, the airport does not currently sell jet fuel.

In calendar years 1995 and 1996, there were approximately 54,000 aircraft operations[6] each year at Tracy Municipal Airport. In 1995 there were 101 aircraft based at the facility, and 106 in 1996. Historical and forecasted aircraft operations at Tracy Municipal Airport are discussed in Chapter 3.

Airport Facilities and Features

Table 2-1 *"Airport Facilities and Features"*, summarizes the facilities and features located on the Airport. Figure 2-3, *"Existing Airport Facilities"*, shows the location of existing airport facilities, and follows Table 2-1.

6. An operation is defined as being either a landing or a takeoff.

Table 2-1

AIRPORT FACILITIES AND FEATURES

1. **Airport Name and Location Identifier:** Tracy Municipal Airport (TCY)
2. **Airport Location:** Three nautical miles (NM) southwest of City center[7]
3. **Geographic Coordinates:** N37°41.35' Lat. W121°26.51'
4. **Charts:** San Francisco Sectional Aeronautical chart (1:500,000) and San Francisco VFR Terminal Area Chart (1:250,000).
5. **Instrument Approach Procedures:** VOR and GPS-A
6. **Elevation:** 190 feet (MSL)[8]
7. **Mean Maximum Temperature:** 95° (hottest month)
8. **Rotating Beacon:** Yes
9. **Servicing:** Minor airframe and powerplant repairs.
10. **Fuel:** Grade 80 aviation gasoline - 100LL (low lead)
11. **Traffic Pattern Altitude:** 990 feet MSL (800 ft. above airport elevation). Left traffic only on all runways.
12. **Runway Data:** The airport has two runways. Runway 11/29 is the primary runway and Runway 07/25 is the secondary runway.
• **Rwy 11/29** - 3,680 feet long x 100 feet wide; paved (asphalt); lighted (MIRL - medium intensity runway lighting); VASI (4 box/3° approach slope);[9] weight bearing capacity - single-wheel type(s) landing gear (50,000 pounds gross weight capacity), dual-wheel (D) landing gear (70,000 pounds), and dual-tandem (DT) gear (120,000 pounds).
• **Runway 07/25** - 3,418 feet long x 100 feet wide; paved (asphalt); lighted (MIRL; VASI (2 box/3.4° approach slope); weight bearing capacity - S = 50,000 pounds, D = 70,000 pounds, DT = 120,000 pounds.
13. **Weather Data Sources:** Automated Weather Observing System (AWOS-3) reporting sky condition, altimeter setting, wind data, temperature, visibility and density altitude.

7. One nautical mile equals approximately 1.15 statute miles.
8. MSL = mean sea level
9. VASI = Visual Approach Slope Indicator - an airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing.

14. **Communications:** Common Traffic Advisory Frequency/Aeronautical Advisory Station (CTAF/UNICOM) frequency = 122.8[10] . Radar approach and departure control available from Stockton Air Traffic Control Tower (ATCT) and Oakland Air Route Traffic Control Tower (ARTCC).
15. **Radio Aids to Navigation:** Manteca (ECA) VORTAC[11] .
16. **Fixed Base Operator:** Tracy Flight Center
17. **Aircraft Parking:**
• 250 tiedown spaces
• 63 hangar units (24 privately-owned and 39 City-owned)
18. **Access:** Off Tracy Boulevard via Tracy Boulevard from I-205. From I-580 via Corral Hollow Road and Linne Road to Tracy Boulevard.

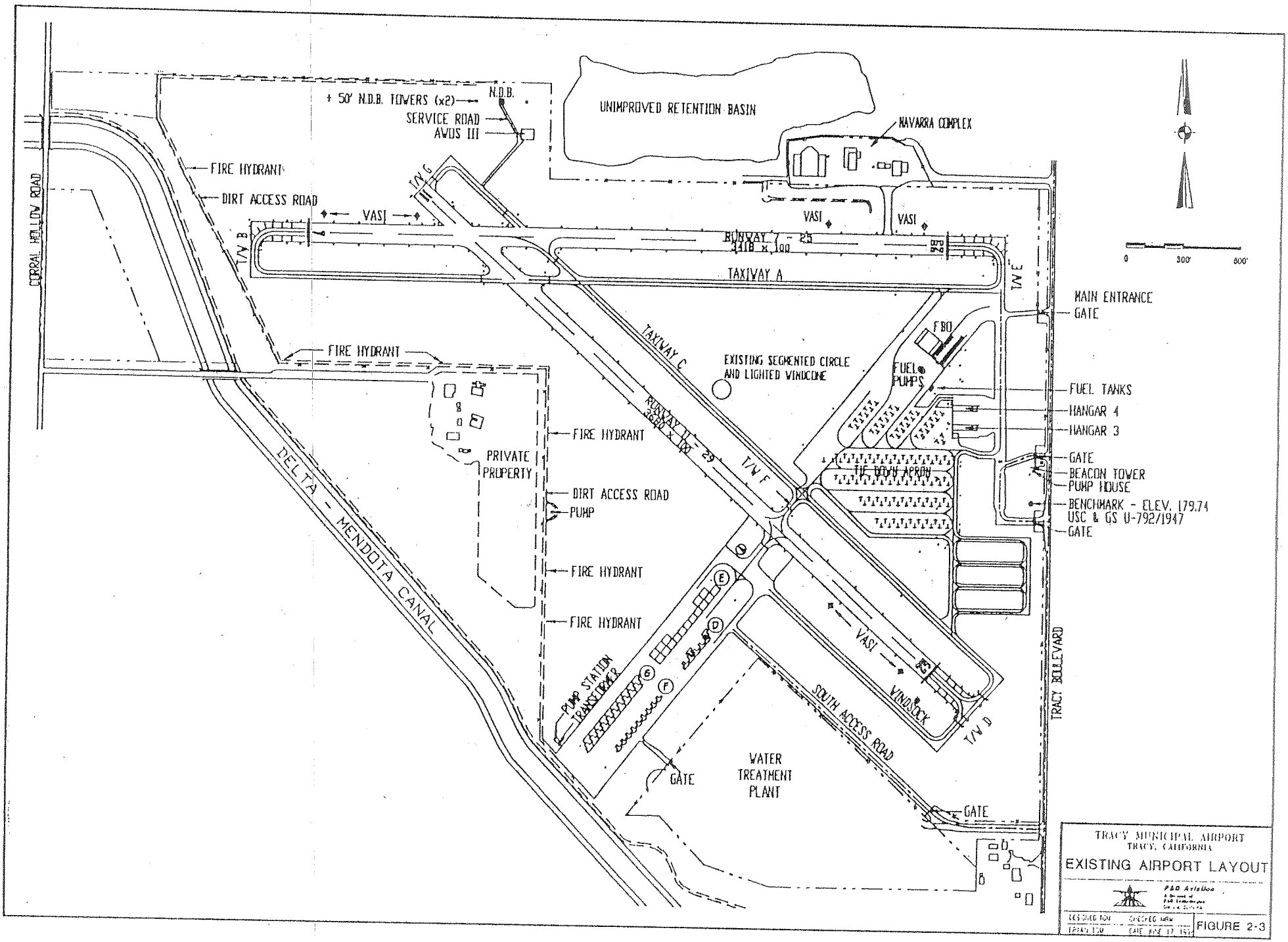
Source: Federal Aviation Administration, *"Airport Facility Directory, Southwest U.S."*

Airport Buildings. The main airport building is a large hangar structure, approximately 96 feet by 116 feet (11,136 sq. ft.) which includes the FBO offices, pilot/passenger lounge, bathroom facilities, and aircraft maintenance and repair facilities. The hangar bay is 98 feet by 96 feet in size (9,408 sq. ft.). Offices and support facilities total 1,728 square feet.

Two hangar buildings (Hangars 3 and 4) are situated southeast of the main hangar building. These structures, which measure 30 feet by 130 feet (3,900 sq. ft.) consist of five bays each and are leased by private aircraft owners from the City.

The City owns twenty large nested T-hangars ("G" group) and nine small T-hangars ("F" group) which are leased to private aircraft owners and located in the South Hangar Area. The City also leases land for the placement of privately owned hangars. A total of 24 privately-owned hangars are also located in the South Hangar Area (groups "D" and "E").

10. CTAF is designed to get all vehicles and aircraft at an uncontrolled airport on a common radio frequency. UNICOM is a non-government air/ground radio communication facility for general airport advisory assistance.
11. VORTAC = a combination civilian (VOR) and military (TACAN) electronic aid to navigation providing azimuth and distance measuring information from one site


+ 50' N.D.B. TOWERS (x2)
N.D.B.
SERVICE ROAD
AWOS III
UNIMPROVED RETENTION BASIN
NAVARRA COMPLEX
FIRE HYDRANT
DIRT ACCESS ROAD
CORRAL HOLLOW ROAD
T/W C
VASI
VASI
VASI
T/W B
RUNWAY 7 - 25
7418 X 100
T/W E
TAXIWAY A
MAIN ENTRANCE
GATE
FBO
TAXIWAY C
EXISTING SEGMENTED CIRCLE
AND LIGHTED WINDCONE
FUEL PUMPS
FUEL TANKS
HANGAR 4
HANGAR 3
FIRE HYDRANT
RUNWAY 11 - 29
3600 X 100
T/W F
GATE
TIE DOWN APRON
BEACON TOWER
PUMP HOUSE
PRIVATE
PROPERTY
FIRE HYDRANT
BENCHMARK - ELEV. 179.74
USC & GS U-792/1947
GATE
DIRT ACCESS ROAD
PUMP
DELTA - MENDOTA CANAL
FIRE HYDRANT
FIRE HYDRANT
PUMP STATION
TRANSFORMER
VASI
WINDSOCK
T/W D
TRACY BOULEVARD
SOUTH ACCESS ROAD
GATE
WATER
TREATMENT
PLANT
GATE
0
300'
600'
TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA
EXISTING AIRPORT LAYOUT
P&D Aviation
DESIGNED
DRAWN
CHECKED
DATE
FIGURE 2-3

Utilities. The airport has access to electrical and water distribution service from lines located adjacent to the airport along Tracy Boulevard (see Figure 2-4, "Existing Utilities." The airport is not currently served by the City's sewer system and, as a result, relies on septic tanks for sewage disposal. These septic tanks are quite old and tend to backup on an ever increasing basis. The nearest sewer trunk line is a 10" line which is stubbed off at Linne Road approximately one half mile from the FBO area.

The City of Tracy's water treatment plant is located adjacent to the southernmost corner of the airport property. This facility provides potable water to the City of Tracy from a 36-inch water line along Tracy Boulevard. Two water lines, a 24-inch and a 14-inch water line, also run along Tracy Boulevard past the airport. Water service to the FBO and Hangars 3 and 4 is taken off one of these lines. A 16-inch water line also passes along the airport's westerly boundary and provides service to the Safeway Distribution complex northwest of the airport. This line also serves the only system of fire hydrants on airport property.

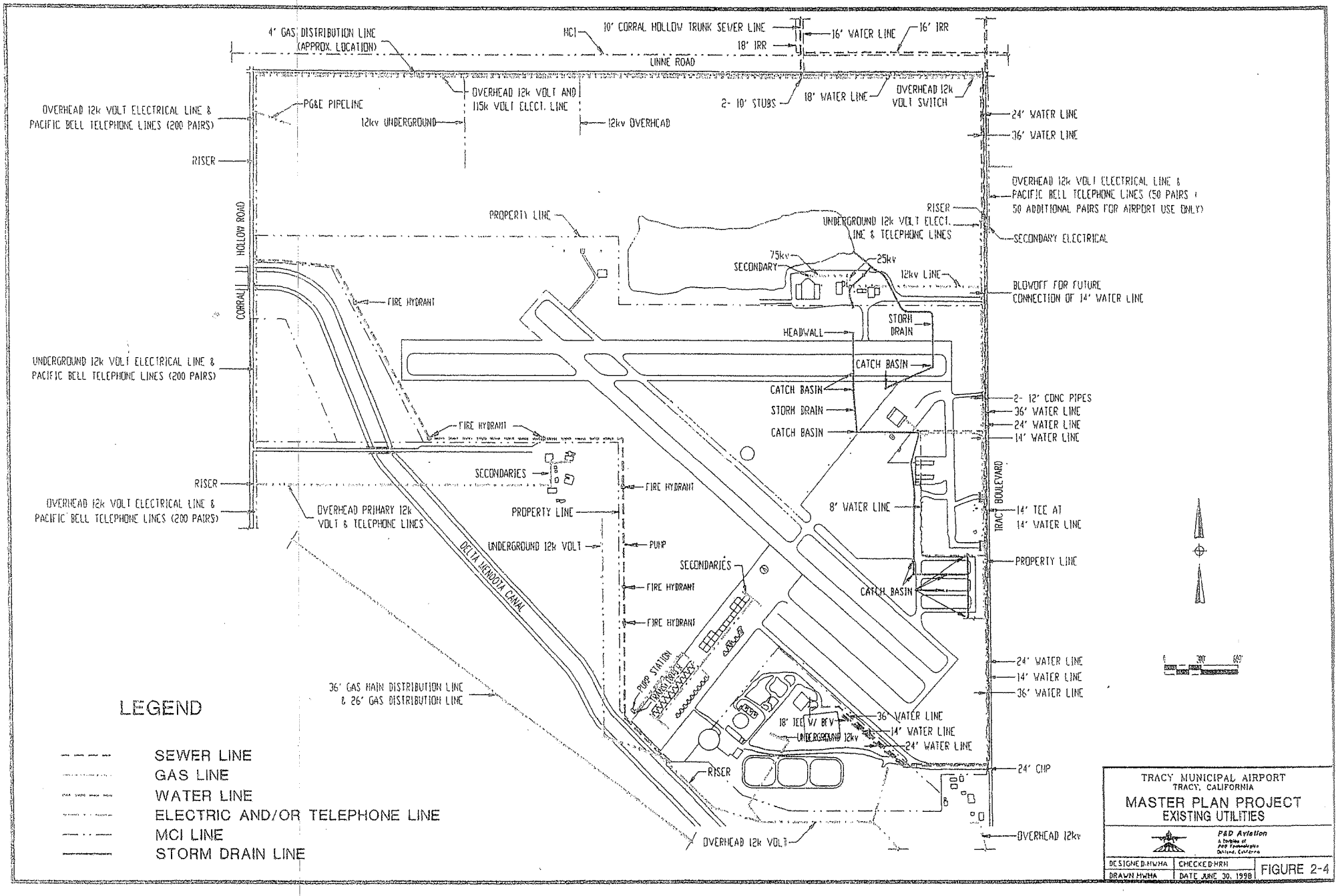
Electrical service to the airport is provided by Pacific Gas and Electric Company (PG&E) from a 12kV. distribution line along Tracy Boulevard (the line is undergrounded between Runways 25 and 29). The 12kV. line extends around the south end of the airport and is undergrounded again just outside the airport's western boundary. This line serves the City's water treatment plant and the South Hangar Area.

The South Hangar Area has security lighting, and the City is in the process of providing electrical service to all hangars in this area.

Telephone service is provided to the airport's FBO area by Pacific Bell from lines located along Tracy Boulevard.

Natural gas service is also provided by PG&E, but distribution lines have not been extended along Tracy Boulevard in proximity to the airport.

Stormwater runoff from the airport is accommodated by an existing swale and drainage system which drains in a northerly direction to an existing retention basin on adjacent property. The City maintains an easement which guarantees the availability of the retention basin, even though the City does not own the property.


4" GAS DISTRIBUTION LINE (APPROX. LOCATION)
MCI
10" CORRAL HOLLOW TRUNK SEWER LINE
16" WATER LINE
16" IRR
18" IRR
LINNE ROAD
OVERHEAD 12k VOLT AND 115k VOLT ELECT. LINE
2- 10" STUBS
18" WATER LINE
OVERHEAD 12k VOLT SWITCH
OVERHEAD 12k VOLT ELECTRICAL LINE & PACIFIC BELL TELEPHONE LINES (200 PAIRS)
PG&E PIPELINE
12kv UNDERGROUND
12kv OVERHEAD
24" WATER LINE
36" WATER LINE
RISER
CORRAL HOLLOW ROAD
OVERHEAD 12k VOLT ELECTRICAL LINE & PACIFIC BELL TELEPHONE LINES (50 PAIRS + 50 ADDITIONAL PAIRS FOR AIRPORT USE ONLY)
PROPERTY LINE
RISER
UNDERGROUND 12k VOLT ELECT. LINE & TELEPHONE LINES
SECONDARY ELECTRICAL
75kv SECONDARY
25kv
12kv LINE
FIRE HYDRANT
BLOWOFF FOR FUTURE CONNECTION OF 14" WATER LINE
STORM DRAIN
HEADWALL
UNDERGROUND 12k VOLT ELECTRICAL LINE & PACIFIC BELL TELEPHONE LINES (200 PAIRS)
CATCH BASIN
CATCH BASIN
STORM DRAIN
CATCH BASIN
2- 12" CONC PIPES
36" WATER LINE
24" WATER LINE
14" WATER LINE
FIRE HYDRANT
SECONDARIES
FIRE HYDRANT
RISER
OVERHEAD 12k VOLT ELECTRICAL LINE & PACIFIC BELL TELEPHONE LINES (200 PAIRS)
OVERHEAD PRIMARY 12k VOLT & TELEPHONE LINES
PROPERTY LINE
8" WATER LINE
TRACY BOULEVARD
14" TEE AT 14" WATER LINE
UNDERGROUND 12k VOLT
PUMP
DELTA MENDOTA CANAL
SECONDARIES
PROPERTY LINE
CATCH BASIN
FIRE HYDRANT
FIRE HYDRANT
24" WATER LINE
14" WATER LINE
36" WATER LINE
36" GAS MAIN DISTRIBUTION LINE & 26" GAS DISTRIBUTION LINE
PUMP STATION
18" TEE W/ BFV
36" WATER LINE
14" WATER LINE
UNDERGROUND 12kv
24" WATER LINE
RISER
24" CMP
OVERHEAD 12k VOLT
OVERHEAD 12kv
0
300'
600'
LEGEND
SEWER LINE
GAS LINE
WATER LINE
ELECTRIC AND/OR TELEPHONE LINE
MCI LINE
STORM DRAIN LINE
TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA
MASTER PLAN PROJECT
EXISTING UTILITIES
P&D Aviation
DESIGNED MWHA
CHECKED MRH
DRAWN MWHA
DATE JUNE 30, 1998
FIGURE 2-4

AIRPORT ENVIRONS LAND USE

With the exception of some light industrial development along Linne Road northwest of the airport, the Basalite Manufacturing complex at the southeast corner of Linne Road and Corral Hollow, a small commercial/residential enclave along Tracy Boulevard at Linne Road, the West Plainview Water District property south of the airport, and a small farming operation and orchard located between the airport's western property line and the Delta-Mendota Canal, the general area surrounding the airport is largely undeveloped at this time. The area immediately east of the airport (over 2,000 acres) is currently being used for the extraction of sand and gravel. This use is expected to continue for many years into the future, and is so designated in the Tracy Urban Management Plan/General Plan (see Figure 2-5, *"General and Specific Plan Land Uses"* on the next page).

Although currently undeveloped, the area northeast of the airport off Tracy Boulevard and Linne Road is proposed for a combination of industrial and very low density residential development, including a Planned Unit Development (PUD) proposed by Bank of America Properties (B of A). The B of A project anticipates the development of 386 dwelling units on 91 acres.[12] This project was approved by the Tracy City Council on June 2, 1998. Also located at the northeast corner of Tracy Boulevard and Linne Road is a new transit station for the Altamont Commuter Express (ACE) service.

To the immediate north of the airport, on the south side of Linne Road at Tracy Boulevard, the currently undeveloped Teichert and Sons parcel is zoned for industrial development. To the north of Linne Road, the area between Tracy Boulevard and Corral Hollow Road is proposed for a mixed-use planned unit development. This is the Cheng PUD, which includes approximately 150 acres of low density residential development, 130 acres of medium density residential development, a small area of high density residential development, a neighborhood shopping center, an elementary school, and linear park. The project anticipates approximately 1,250 dwelling units.[13]

The area northwest of the airport, off Corral Hollow Road north of Linne Road, is currently undeveloped, but is also planned for mixed uses, principally medium density residential development. The South Shulte Specific Plan proposes a community of 1,844 acres of residential, industrial and mixed use development with areas for parks and recreation.[14] Figure 2-5 depicts the locations of proposed South Schulte Specific Plan land uses, as follows:

12. City of Tracy, *Final EIR for the Bank of America General Plan Amendment Planned Developments,"* April 1998.
13. City of Tracy, *"Final Negative Declaration for the Cheng Planned Unit Development,"* August 10, 1994.
14. City of Tracy, *"South Schulte Specific Plan Draft EIR,"* March 1997.

Table 2-2
Proposed South Schulte Specific Plan Land Uses

Residential, Very Low Density	211.7 acres
Residential, Low Density	408.2 acres
Residential, Medium Density	379.7 acres
Urban Center, Residential, High Density	21.7 acres
Urban Center, Townhouses, Medium Density	45.0 acres
Mixed Use	38.6 acres
Public Facilities	35.7 acres
Industrial	312.8 acres
Airport Compatible Industrial	71.8 acres
Parks and Trails	107.9 acres
Schools	53.1 acres
Proposed Roads	170.9 acres
Outparcels	(13.0) acres
Total:	1,844.1 acres

Land uses within the South Shulte Specific Plan designated as "Airport Compatible" are consistent with the land use and density criteria set forth in the currently adopted San Joaquin County *"Airport Land Use Plan."* [15]

The land area to the west of the airport between the Delta-Mendota Canal and Corral Hollow Road is not currently developed, and is designated for aggregate production on the Tracy UMP/GP. The area west of Corral Hollow Road is located within the Tracy Hills Specific Plan planning area. Although this area is largely undeveloped, it does include some agricultural activities. From Figure 2-5 it can be determined that this 6,175 acre area is proposed for a combination of industrial, residential and other uses as follows:

Table 2-3
Tracy Hills Specific Plan Land Uses

	Acres
Residential Estate	82.6
Low Density Residential	539.3
Medium Density Residential	557.3
High Density Residential	35.4
Light Industrial	383.7

Table 2-3 continued on next page

15. San Joaquin County Council of Governments, *"Airport Land Use Plan."* August 1993.

Professional Office/Medical	96.7
Highway Commercial	71.5
Neighborhood Shopping	18.2
Neighborhood Parks	59.5
Golf Courses	190.6
Open Space/Habitat	3,599.2
Village Center	21.8
Schools	80.0
Roads Right-of-Way	160.4
I-580 Interchange	136.2
California Aqueduct ROW	141.5
Total:	6,175.0 acres

The Tracy Hills Specific Plan was approved by the Tracy City Council on January 5, 1998 and annexation proceedings are currently underway.

Full scale development of the areas depicted on Figure 5-2, as currently proposed, would result in over 2,600 acres of new residential development, almost 13,000 new dwelling units, a population in excess of 34,000 people and ten new schools in the airport environs.

REGIONAL AIRSPACE

The navigable airspace over the United States is categorized as either regulatory or nonregulatory. Within these two categories are controlled, uncontrolled, special use and other airspace types. The categories and types of airspace are determined by (1) the complexity or density of aircraft movements; (2) the nature of the operations conducted within the airspace; (3) the level of safety required; and (4) the national and public interest.[16]

Controlled Airspace

Controlled airspace is a generic term which covers several different classes of airspace (Classes A through E) within which air traffic control service is provided to IFR (instrument flight rules) flights and VFR (visual flight rules) flights in accordance with the appropriate airspace classification.

Class A airspace is generally all airspace from 18,000 feet MSL up to and including 60,000 feet. Aircraft operating in Class A airspace are normally under positive air traffic control.

16. Federal Aviation Administration, *"Airman's Information Manual,"* 1997.

Class B airspace is, generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of each Class B airspace area is unique to the airport it serves and consists of a surface area and two or more separate layers (some Class B airspace is likened to an upside-down wedding cake). Figure 2-6 *"Regional Airspace"* depicts a portion of the Class B airspace for San Francisco International Airport (SFO). The dimensions of the Class B airspace are designed to contain all published instrument procedures once an aircraft enters the airspace. An air traffic control (ATC) clearance is required for any aircraft to operate within the Class B airspace, and an electronic aircraft identification device (a "transponder") is required. Aircraft operating within 30 NM of SFO must be equipped with such a device. Tracy Municipal Airport is not within the area of SFO airspace which requires a transponder.

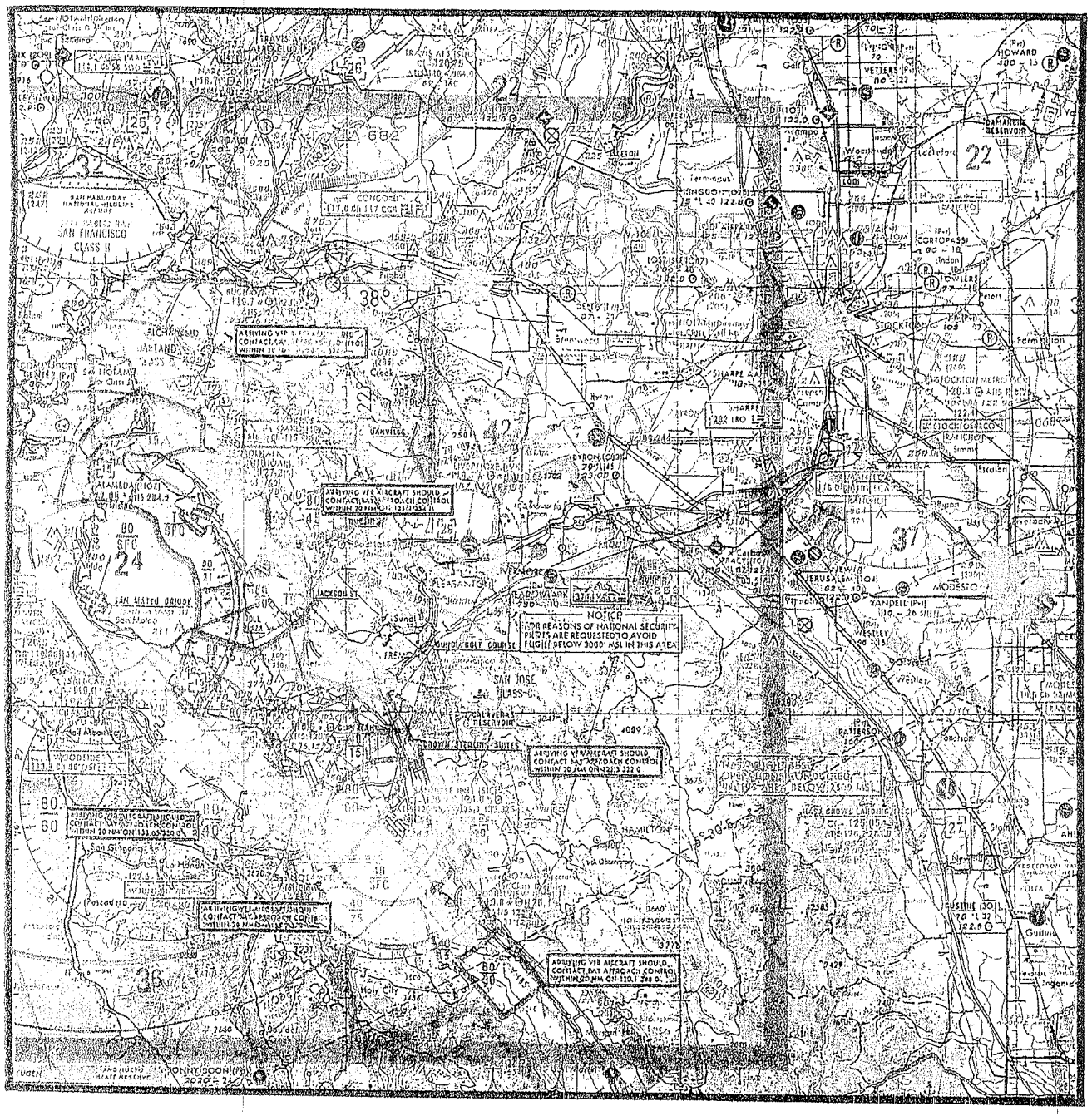
Class C airspace is, generally, the airspace from the surface to 4,000 feet MSL above the airport elevation at airports having an operational air traffic control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although individually tailored, Class C airspace generally consists of a 5 NM radius core from the surface to 4,000 feet and a 10 NM radius shelf area that extends from 1,200 feet to 4,000 feet above the airport elevation. Oakland, Sacramento and San Jose International Airports are examples of airports in the region with Class C airspace.

Class D airspace is, generally, the airspace from the surface to 2,000 feet above the airport elevation at airports with operating control towers. The configuration of the Class D airspace is individually tailored and when instrument procedures are published, the airspace will usually be designed to contain the procedure. Stockton Metro, Modesto City-County, Crows Landing, and Livermore Airports all have Class D airspace designations.

Class E airspace is generally all other controlled airspace which is not Classes A, B, C, or D. Some Class E areas overlie areas of uncontrolled (Class G) airspace at specific airports in order to allow transitions to or from the airport in an instrument environment. Tracy Municipal Airport is overlaid by Class E airspace for purposes of aiding the transition of instrument flight from the Manteca (ECA) VORTAC to a visual approach into the airport. The floor of the Tracy Class E airspace is 700 MSL (refer to Figure 2-6).

Uncontrolled Airspace

Class G airspace is usually associated with airports not having an operational control tower. Tracy Municipal Airport is such an airport. Aircraft operating at Tracy Municipal Airport below 700 feet MSL operate in Class G airspace.



LEGEND

AIRPORTS

Other than hard-surfaced runways

Hard-surfaced runways 1500 ft to 8099 ft

Hard-surfaced runways 8100 ft and longer

Open dirt, sod or sand runway and gliderport unknown or less than 1500 ft

All recognizable hard-surfaced runways, including those closed, are shown for visual identification. Airports may be public or private.

ADDITIONAL AIRPORT INFORMATION

Rotating "Pulse" - Nine public use having emergency or landmark value.

Military - Other than hard-surfaced. All military airports are identified by abbreviation: AFB, NAS, MAF, etc. For complete airport abbreviation consult FAR 91.

Lighted

Unverified

Abandoned - used for landmark value 1000 ft or greater

Lighted Night Part-time

Part-time hard-surface and turf landing during normal working hours depicted by use of rotating beacon symbol. If normal working hours are Mon thru Fri 1000 A.M. to 400 P.M. local time, Consult A/FD for specific days of week and hours of operation. Runways less than 2000 ft or having obstructions in operation should be avoided.

AIRPORT TRAFFIC SERVICE AND AIRSPACE INFORMATION

Only the controlled and reserved airspace effective below 18,000 ft MSL are shown on this chart. All times are local.

Class B Airspace

Class C Airspace (Effective Dates & Times P.A.R. 91.131(b)(1)(i))

Class D Airspace

40 — Ceiling of Class D Airspace in hundreds of ft (if 99 means ceiling value extends up to 9,900 ft MSL or unlimited)

Class E Airspace

Class E Airspace with floor 700 ft above surface

Class E Airspace with floor 1200 ft or more above surface (Class E Airspace)

2400 MSL — Lateral limits and floor of Class E Airspace (floor 700 ft above surface)

4500 MSL — Class E Airspace floor above Federal Airways

Intersection — Aircraft are directed to avoid facilities which establish intersection.

132° → V 69 — Total mileage between NAVAID's on Airway

Prohibited, Restricted, Warning and Alert Areas (Caution Advisory and Restricted Areas)

MOA – Military Operations Area

Terminal Airport Traffic Areas (See P.A.R. Part 93 for details)

ADIZ (See P.A.R. 99.45(b)(1))

National Security Area

Terminal Radar Service Area (TRSA)

IR2-9 — MTR – Military Training Routes

OBSTRUCTIONS

1000 ft and higher AGL

Below 1000 ft AGL

Group Obstruction

Obstruction with high intensity lights (May obscure portions)

3049 — Elevation of the top (above mean sea level)

1149 — Height above ground

UC — Under construction or reported position and elevation unverified

NOTICE Gray areas may extend outward from structures

MISCELLANEOUS

7°E — Isogonic line (1990 VALUE)

Hang Glider Activity

Glider Operations

NAME (Magenta, Blue, or Black) Visual Check Point

Parachute Jumping Area (See Airport/Facility Directory)

Flashing Light

Aero Light

FIGURE 2-6
REGIONAL AIRSPACE

Special Use Airspace

Special use airspace consists of airspace wherein activities are restricted for one reason or another. There are two special use airspace areas depicted on Figure 2-6 near Tracy Municipal Airport. The first is Restricted Area 2531 (R-2531 A and B). R-2531 is associated with explosives testing activities at Livermore National Laboratory. The second area is the area around the laboratory site, in which pilots are "requested" to avoid flight below 3,000 feet MSL.

Local Airspace

Airport operations into and out of Tracy Municipal Airport are conducted under both VFR and IFR conditions.

VFR Operations. Local VFR operations at Tracy Municipal Airport are conducted on the basis of a standard left-hand traffic pattern on each runway. Figure 2-7 *"Generalized Aircraft Flight Tracks,"* depicts the traffic patterns at the airport.

However, it is important to note that the pattern depicted is generalized and that depending on such factors as wind, weather, pilot proficiency, and aircraft type, the tracks depicted can and will vary for each operation.

When operating under VFR conditions in Class G airspace, pilots are required to have at least one statute mile visibility and remain clear of clouds during daytime hours. At night, pilots are required to have three statute miles flight visibility and remain 500 feet below clouds, while also maintaining a horizontal distance of 2,000 feet from clouds.

If the cloud ceiling at Tracy Municipal Airport is below 1,490 feet, no nighttime VFR operations are allowed by fixed-wing aircraft, except that if visibility is not less than one mile, an airplane may be operated clear of clouds if it is in the airport traffic pattern within one-half mile of the runway. A helicopter may be operated clear of clouds if operated at a speed that allows the pilot adequate opportunity to see any air traffic or obstruction in time to avoid a collision.

IFR Operations. Instrument operations at Tracy Municipal Airport are conducted in accordance with the requirements of the Federal Aviation Regulations (FARs) as set forth in Parts 91 and 97. These parts prescribe that each person operating an aircraft under IFR conditions shall use a standard instrument approach procedure and/or may not take off from a civil airport unless weather conditions are at or above the minimums for IFR takeoff prescribed for the airport under Part 97. At Tracy Municipal Airport these minimums are one statute mile visibility for aircraft

having two engines or less, and one-half statute mile for aircraft having more than two engines. The minimum for helicopters is one-half mile visibility.

The *"U.S. Terminal Procedures"* Manual published by the U.S. Department of Commerce lists a "VOR or GPS-A" instrument approach to Tracy Municipal Airport (see Figure 2-8, *"Published Instrument Approach"*). The procedure is based on the Manteca (ECA) VORTAC and is a circling approach with a minimum decision height of 640 feet and one mile visibility for aircraft in Approach Category "A" (approach speed of 90 knots or less), 660 feet and 1 mile visibility for Approach Category "B" aircraft (91-120 knots). In other words, if a pilot of an airplane with a landing speed of 91-120 knots is unable to see the airport by the time the aircraft has descended to 660 feet MSL, the pilot must execute a missed approach.
The published missed approach for the VOR or GPS-A approach to Tracy Municipal Airport is an "immediate climbing right turn to 2,000 (feet) via heading 320° and (the 157° radial from the Sacramento (SAC) VORTAC) to Tracy intersection and hold."

Aerobatics Airspace

There are two FAA – approved Aerobatics Areas in the vicinity of Tracy Municipal Airport. The Tracy Aerobatic Box is located immediately to the east of the Tracy Airport (see Appendix B for map). The New Jerusalem Aerobatic Box is located above the New Jerusalem Airport.

Use of the two Aerobatic practice areas are subject to a Letter of Agreement between the FAA and the International Aerobatic Club – Chapter 38 (Appendix B). Use of the Tracy Aerobatic Box requires notification of the FAA's Stockton Tower/TRACON. Use is restricted to only personnel on an approved list prepared by Chapter 38 and the control of usage of the Aerobatic Box is the responsibility of the FAA. The City of Tracy has no operational control over the use of either Aerobatics Area.

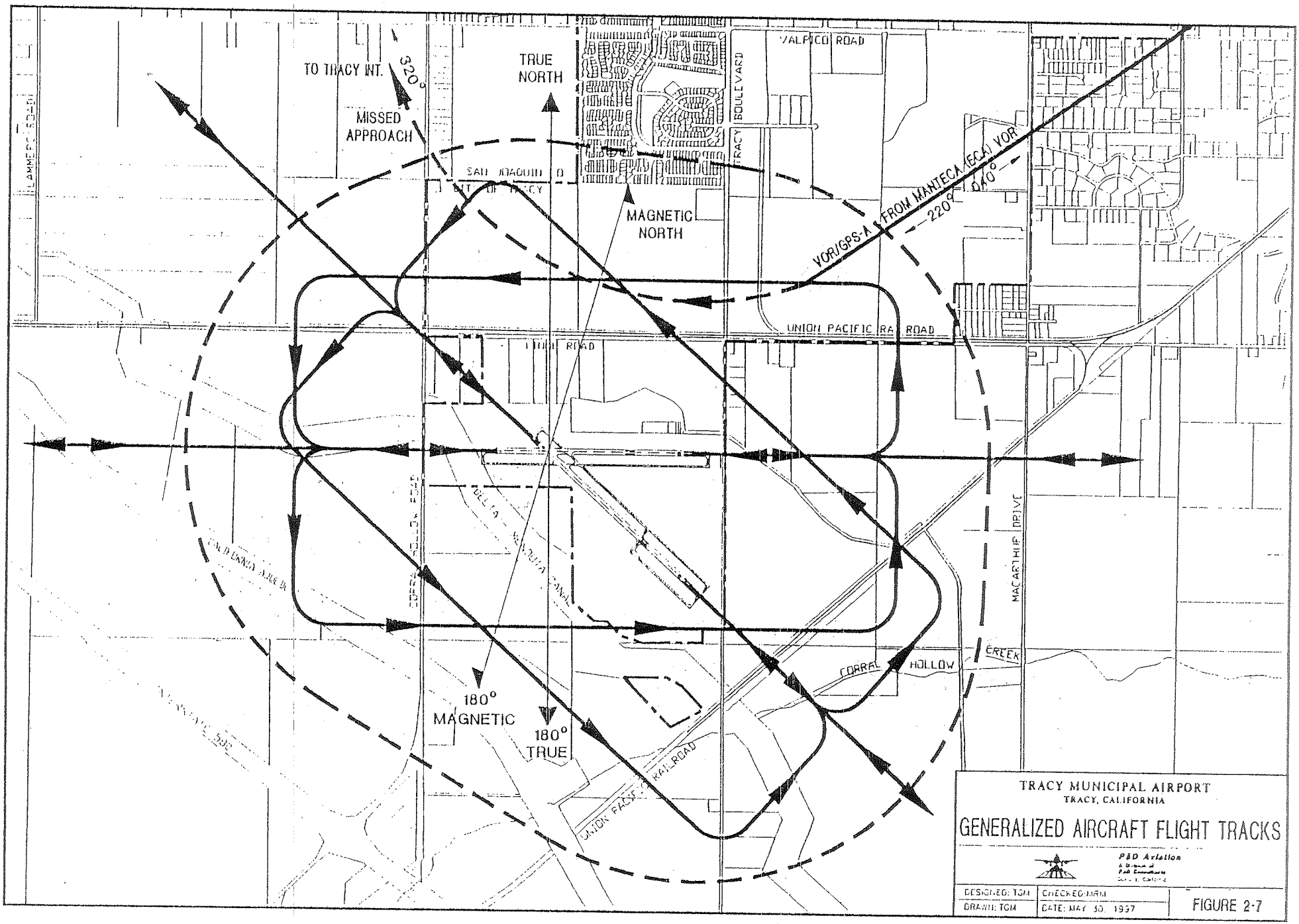
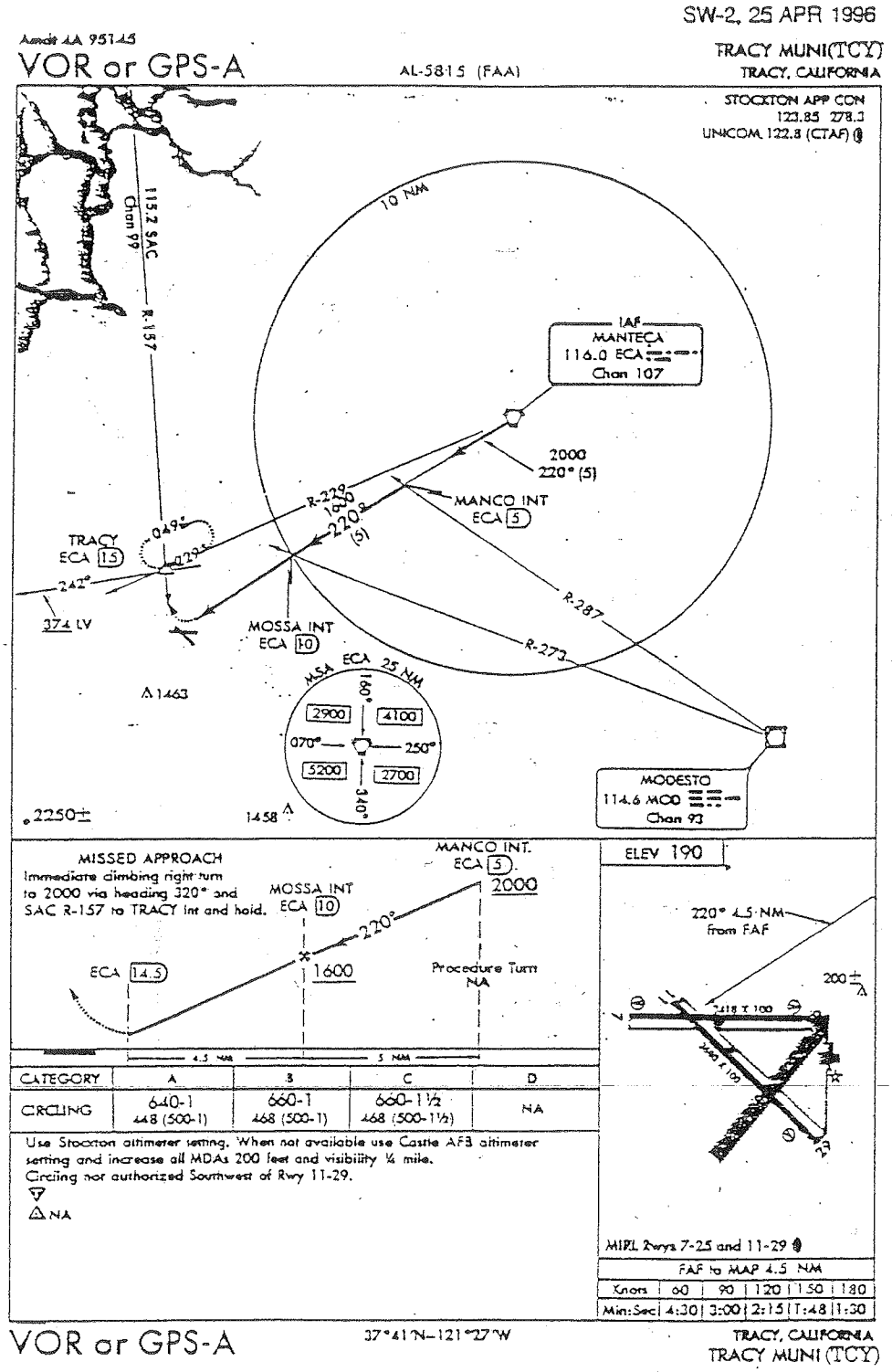

TO TRACY INT.
320°
MISSED APPROACH
TRUE NORTH
MAGNETIC NORTH
VALPICO ROAD
TRACY BOULEVARD
VOR/GPS-A FROM MANTECA (ECA) VOR
040°
220°
UNION PACIFIC RAILROAD
MACARTHUR DRIVE
CORRAL HOLLOW CREEK
180° MAGNETIC
180° TRUE
UNION PACIFIC RAILROAD
TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA
GENERALIZED AIRCRAFT FLIGHT TRACKS
P&D Aviation
DESIGNED: TGM
CHECKED: MRM
DRAWN: TGM
DATE: MAY 30, 1997
FIGURE 2-7

Figure 2-8
Published Instrument Approach



CHAPTER 3

AVIATION ACTIVITY FORECASTS

FORECASTING

A reasonable forecast of anticipated aviation activity is important in evaluating future aviation facilities needs. Forecasts of based aircraft and operations form the basis for the sizing and phasing of important airport facilities. From estimates of the numbers and types of aircraft activities, the adequacy of existing airfield facilities may be determined. The need for navigational aids and ancillary services and facilities may be keyed to anticipated future levels and types of aircraft activity.

Ideally, the forecasting of aviation activity and demand represents a rational and controlled basis for predicting future events. However, since the future is always accompanied by uncertainty, forecasts are best presented with a conservative anticipation of possible outcomes.

It is important to note that the general aviation forecasts presented in this chapter are not representative of the total anticipated demand for aviation facilities and services that exist within the service area for Tracy Municipal Airport. These forecasts recognize that other airports in the San Joaquin County/Eastern Alameda County region (particularly the Stockton and Livermore airports) will continue to serve a portion of the total general aviation demand in the region; and that virtually all of the scheduled air carrier demand would continue to be served by the San Francisco, Oakland and Sacramento International Airports.[1]

Aviation Forecast Sources

The activity forecasts set forth in this chapter are the by-product of several forecast sources; principally the Federal Aviation Administration (FAA) and the California Department of Transportation (CALTRANS), Aeronautics Program. Specific forecast references include:

- FAA NPIAS Forecasts[2]
- FAA Aviation Forecasts[3]

1. Scheduled air carrier service at Stockton Metropolitan Airport has been temporarily reduced to a less than significant level.
2. Federal Aviation Administration, "*National Plan of Integrated Airport Systems (NPIAS) 1993-1997.*" April 1995

- FAA Statistical Handbook of Aviation[4]
- California Aviation System Plan.[5]

Historical Aviation Activity

Data concerning historical flight activity at the Tracy Municipal Airport was obtained primarily from airport and FAA records. Complete information on historical aviation activity and based aircraft for Tracy Municipal Airport is not available. Table 3-1 provides a summary of the available information concerning based aircraft and operations at the airport from 1986 through 1995.

Based Aircraft

During the ten-year period of 1986 through 1995 the only reasonably consistent source of official information on based aircraft at Tracy Municipal Airport has been the FAA's Airport Master Records (Form 5010). These records indicate that based aircraft have increased from 88 in 1986 to 101 in 1995, or a net overall increase of thirteen aircraft (see Table 3-1). This is an average increase of about 1.3 new based aircraft per year for ten years. In 1996, five additional aircraft were added to the based aircraft inventory, bringing the total to 106.

Aircraft Ownership

Of the 106 aircraft based at Tracy Municipal Airport in 1996, approximately 41% were owned by San Joaquin County residents who, for the most part, resided in or near Tracy.[6] Approximately 30% of the other aircraft owners gave addresses in eastern Alameda County (principally the Livermore area) and southern Contra Costa County (San Ramon). Twenty-five percent of the based aircraft were registered to people out of the area, with a majority of the owners listing addresses in San Mateo and Santa Clara Counties. Only 4% of the aircraft owners listed addresses in Stanislaus County.

Aircraft Operations

Again, the FAA's Form 5010 presents the only consistent inventory of historical aircraft operations at Tracy Municipal Airport. From Table 3-1 it can be determined that although total aircraft operations declined slightly over the period 1986-1995,

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3. Federal Aviation Administration, "*FAA Aviation Forecasts, Fiscal Years 1995-2006.*"
4. Federal Aviation Administration, "*FAA Statistical Handbook of Aviation.*" 1993
5. California Department of Transportation, Aeronautics Program, *"The California Aviation System Plan, Interim Statewide Forecasts,"* October 1991
6. City of Tracy, "*Airport Based Aircraft*" statistics, January 28, 1997.

TABLE 3-1

SUMMARY OF PUBLISHED HISTORICAL AND FORECAST AVIATION ACTIVITY
TRACY MUNICIPAL AIRPORT
AIRPORT MASTER PLAN PROJECT

BASED AIRCRAFT

	HISTORICAL										FORECAST				
Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010	2015	2020
Source															
5010	88	-	-	-	103	71	-	-	89	101					
CASP[1]									-	71	71	77	78	84	89
COG[2]							82	-	-	-	71	77	78	84	89
NPIAS[3]											105				

GENERAL AVIATION OPERATIONS

	HISTORICAL										FORECAST				
Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010	2015	2020
Source															
5010	56,000				57,000	54,000			54,000	54,000					
CASP[4]										53,000	53,000	57,500	58,300	62,700	66,500
COG[5]						56,750	-	-	-	53,037	53,037	57,519	58,266	62,748	66,483

1 Caltrans, Aeronautics Program, "*The California Aviation System Plan, Interim Statewide Forecasts,*" October 1996, Appendix D
2 San Joaquin Council of Governments, "*Regional Aviation System Plan – San Joaquin County,*" December 1997
3 Federal Aviation Administration, "*National Plan of Integrated Airport Systems (NPIAS) 1993-1997.*" April 1995
4 Op. Cit., Appendix E
5 San Joaquin County Council of Governments, "*Regional Aviation System Plan – San Joaquin County,*" December 1997

they have nonetheless remained somewhat constant (around 54,000 annual operations) from 1991 through 1995.[7]

METHODOLOGY AND ASSUMPTIONS

As a general rule, the validity of forecasts is completely dependent on the accuracy in predicting the variables which influence aviation demand. Typically, those variables which are of significant importance in the determination of demand are availability of services, population, employment and income of the community being served. The achievement of any forecast may be affected by fluctuating conditions and is dependent upon the occurrence of other future events which cannot be assured. Thus, the potential accuracy of demand forecasts becomes more speculative as one looks further into the future. That is, it is possible to predict as much as five years into the future with reasonable confidence; but, it becomes more difficult to look further into the future, particularly in a period of uncertainty characterized by dynamic and unpredictable economic behavior.

General Aviation Trends

Nationwide trends can sometimes be useful predictors of local aviation activity. In the absence of historical data, an awareness of national trends can assist in interpreting the range of forecasts available from other sources, including those previously described.

General aviation incorporates several diverse and growing uses of aircraft including pilot training, recreational flying, transportation of personnel by business firms in privately-owned aircraft, non-scheduled commercial (air taxi) operations, and some highly specialized uses such as aerial application (crop dusting), security patrol, aerial photography, medical flights and bank record transfers. All of these activities will influence, to one degree or another, the type of aircraft using a given airport.

Aircraft Fleet Mix

Historical and forecast growth of the national general aviation fleet by type and use, as developed by the FAA[8] indicate that domestic manufacture of general aviation aircraft has declined each year from 1979 through 1996. The majority of the general aviation fleet (in excess of 75%) are single engine aircraft. When the single engine piston aircraft market declines, as it has been during the past

7. Published data for 1996/1997 are not presently available.
8. FAA Aviation forecasts, op. cit.

decade, it signals the slowing of expansion in the general aviation fleet on the whole and, consequently, a slowing in the overall rate of aviation growth.

The active U.S. general aviation fleet mix is expected to continue to decline (down 0.3 percent annually) during the period 1995-2006, with most of the decline occurring in the early years (1995-98).[9] The decline in the total active fleet will be driven by retirements from the piston engine aircraft component of the general aviation fleet.[10]

After 1998, older piston engine aircraft are anticipated to be replaced by aircraft with newer technology, due in part to the passage of the General Aviation Revitalization Act of 1994. This legislation, which limits the liability of aircraft manufacturers to eighteen years from the date of manufacture, is anticipated to stop the escalating costs of general aviation aircraft and could be the first step in the revitalization of the market for GA aircraft and services.[11]

The changing character of the general aviation aircraft fleet is reflected in the increased business use of aircraft. This involves the use of more sophisticated turbine-powered aircraft. In 1994, there were an estimated 8,218 turbine-powered fixed-wing aircraft in the active general aviation fleet (4.7 percent). By 2006, it is projected that there will be 11,100 turbine-powered aircraft (6.4%) in service throughout the United States.[12]

The additional costs involved in the production of the more sophisticated turbine-powered aircraft are being offset by the use of lightweight composite materials.[13] Small (four- or five-seat) business jets will permit executives to arrive for their business meetings at "jet speed", instead of the more leisurely pace enforced by a propeller.[14]

Hours Flown

Total hours flown in general aviation aircraft across the U.S. are expected to increase by three million in the short-midterm period. The expected growth is from 24.1 million hours in 1994 to 27.0 million by the year 2006. Multi-engine aircraft will account for the greater portion of the projected increase.[15]

9. Ibid.
10. op. cit.
11. op. cit.
12. op. cit.
13. Jane's, "*All the World's Aircraft, 1996-97.*"
14. Ibid.
15. Ibid.

Significance of Trends

At the local level these represent positive trends, in that the City of Tracy and the Tracy Municipal Airport are well situated from both a geographic and economic development perspective. The City's key location adjacent to the State's principal north-south Interstate Highway (I-5) and its proximity to the San Francisco Bay Area to the west and Sacramento to the north, place it in one of the most actively developing areas of the State.

As a result, over the next twenty years the City is expected to grow from its existing incorporated area of 7,600 acres (11.88 sq. mi.) to 72,570 acres (113.39 sq. mi.).[16] Included in this area are provisions for a planning area population of over 162,000, some 57,100 dwelling units, and approximately 153,200 jobs. This represents a significant potential for population growth alone, given that Tracy's 1990 population was only 33,558 people.[17] In other words, the City's Urban Management Plan/General Plan projects almost a 400 percent increase in population over the next 20 years.

The need for air transportation services at Tracy Municipal Airport is also anticipated to grow with the City. Absent these positive geographical and economic conditions, the Tracy Municipal Airport (with its existing predominance of light, piston-engine aircraft) would likely see only relatively insignificant operational growth (on the order of 1% per year)[18] over the next 20 years. However, due to its strategic location and adopted community development policies, the airport has the potential to attract new business class aircraft tenants and users. With ample aircraft parking and hangar areas, and upgraded navigational facilities, Tracy Municipal Airport has the potential to generate demand in excess of that anticipated in the "*California Aviation System Plan*" and the "*Central California Aviation System Plan.*"

GENERAL AVIATION FORECAST

The following forecast of general aviation operations assumes an average annual growth rate of around slightly less than 3.5% over the forecast period. During the current five-year period (1997-2001) it was assumed that aircraft operations at Tracy Municipal airport would continue to grow at a relatively low rate (on the order of 1% annually) because of the lack of facilities at the airport, and the yet-to-

16. City of Tracy, "*Final EIR for the City of Tracy Urban Master Plan /General Plan 1993,*" July 19, 1993, p. 12.
17. Ibid., p. 18.
18. Caltrans, "*Interim Forecasts,*" op. cit.

be implemented initial stages of Urban Management Plan developments (e.g., South Schulte, Cheng PUD, and Tracy Hills). During the second five-year period (2002-2006), with the emphasis on business aviation and new facilities, the growth in operations would increase to about 2% annually. This would be due in part to the fact that although the focus would be on the development of business aviation, small single-engine aircraft would still comprise the majority of based aircraft and operations. Finally, over the final 10-year period (2007-2016), with buildout of the facility contemplated, increases in operations would be anticipated (3% annually).

Annual Aircraft Operations

Table 3-2 sets forth the Master Plan forecasts of general aviation operations for the Tracy Municipal Airport for the five-(1997-2001), ten-(2002-2006), and twenty-year (2007-2016) planning horizons. This table also sets forth the projected numbers of both local and itinerant operations for each of the horizon years.

Total general aviation activity is forecast to increase from approximately 54,000 annual operations in 1995 to approximately 107,200 operations in 2016.

Types of Operations

Over the forecast period, local operations are expected to decline from an estimated 68% of total operations in 1995 to approximately 55% in 2016. Itinerant operations would increase from 32% of all operations in 1995 to 45% by 2016. With the projected increase in itinerant operations, IFR operations would also be expected to increase proportionately.

Aircraft Types

Single-engine propeller aircraft will continue to form the greater part of total operational demand through the forecast period, but such operations are expected to grow at a lesser rate because the national inventory of such types of aircraft is declining. Twin-engine propeller operations are anticipated to experience the most significant rates of growth due to their association with projected business aviation activities on the airport.

Based Aircraft

Single engine propeller aircraft are expected to remain the dominant type of aircraft based at the airport through the planning horizon, and are expected to grow from 93 in 1995 to 130 by 2016.

Twin-engine propeller (including twin turbo-prop) aircraft are anticipated to increase from a total of 8 in 1995 to 60 by 2016. A significant increase in the numbers of these types of aircraft is anticipated to occur after 2006 as a result of projected improvements to the airport and installation of sophisticated navigational aids.[19] These projected improvements should also make the airport attractive to light, quiet business jets, which currently use the airport, but without access to necessary facilities and services (including jet fuel). By 2016, it is anticipated that up to five of these types of business jets could be based at the airport.

Helicopters

There are no helicopters currently based at Tracy Municipal Airport. Based on forecasts for the national helicopter fleet and flight hours as set forth in the "*FAA Aviation Forecasts, Fiscal Years 1995-2006,*"[20] it is anticipated that by the year 2006 at least one helicopter would be based at the airport. By 2016, total based helicopters are projected to increase to five.

19. Nonprecision instrument approaches are currently being evaluated for three of the four runway ends. It is anticipated that such approaches will be based on GPS or DGPS technology.
20. op. cit., p. VI-3.

TABLE 3-2

GENERAL AVIATION FORECAST (1995-2016)
TRACY MUNICIPAL AIRPORT MASTER PLAN

Annual Aircraft Operations				
Year Ending	1995[a]	2001	2006	2016
Total	54,000	56,000	65,800	107,200
Operations by Type				
Local	36,500	36,000	39,500	59,000
Itinerant	17,500	20,000	26,300	48,200
Based Aircraft[1]				
S-E Prop[b]	93	95	105	130
M-E Prop[c]	8	15	23	60
M-E Prop[d]	0	0	1	5
Turbojet	0	0	1	5
Helicopter	0	0	1	5
TOTAL	101	110	131	205

Source: P&D Aviation - February 1997

a. FAA Form 5010-1
b. Single-engine propeller
c. Multi-engine propeller (including turboprop)
d. Light, quiet business jet

CHAPTER 4

DEMAND CAPACITY ANALYSES

The analysis of airport capacity normally provides important information concerning airport facilities requirements in terms of runway orientation, runway length, taxiway configuration, and general geometric standards and siting requirements. The analysis of aircraft operational requirements helps determine runway/taxiway dimensions, pavement strengths, and lateral clearances between operating areas. These analyses are interrelated and typically must be accomplished simultaneously in order to determine facilities requirements. However, at some general aviation airports such as the Tracy Municipal Airport, the basic facilities are already in place and the airport itself oftentimes has capacity in excess of demonstrated demand. These factors must be kept in mind with respect to the following analyses, along with the fact that capacity is but one of several variables to be considered in the determination of airfield facility requirements.

METHODOLOGY

An analysis of airport capacity leads to a determination of how much (and/or when) additional capacity might be required at some future date to accommodate forecast aviation demand. Three distinct elements require investigation: (1) the airfield, (2) the aircraft basing and service area, and (3) the airspace. Other considerations include air traffic control and navigation aids, ground access and parking, aircraft fleet mix and meteorological factors.

Airfield

Airfield capacity is the rate of aircraft movements on the runway/taxiway system which results in a given level of delay. There are two principal expressions for airfield capacity: (1) annual service volume, and (2) throughput capacity. As defined by the FAA,[1] annual service volume (ASV) is a reasonable estimate of an airport's annual operations capacity. It accounts for differences in runway use, aircraft mix, weather conditions and so forth, which would be encountered over the course of a year. Throughput capacity is a measure of the maximum number of aircraft operations which can be accommodated on the airport or airport component (i.e., runway complex, aircraft basing/service area, etc.) in an hour. Since the capacity of an airport component may be constrained by the capacities

1. FAA Advisory Circular 150/5060-5, *"Airport Capacity and Delay."*

of the other components, it can be calculated separately for each. Traditionally, at airports serving primarily light aircraft, annual capacity is reached when delays to departures average two minutes for the peak hour of the week.

Aircraft Basing/Service Area

The capacity of the area dedicated to aircraft storage and services correlates with its ability to accept the aircraft and related activities that the airfield accommodates. After determining the airfield capacity, the capabilities and limitations of the aircraft basing/service area can be estimated.

Airspace

Airspace capacity is the ability of the airport's surrounding operational airspace to accommodate the types and frequencies of aircraft that desire to use the airport during periods of good and poor visibility.

The relative locations of other airfields, the relationship of runway alignments, and the nature of operations (IFR and VFR) are the principal inter-airport considerations which will affect the overall capacity of the airspace used by aircraft operating into and out of Tracy Municipal Airport. For example, it is important that no two airports are located so near each other that they share one distinct parcel of airspace. In such cases there may be a reduction in IFR (and, in some cases VFR) capacity for the airport involved due to the intermixing of traffic within the common parcel of airspace. Tracy Municipal Airport is far enough away from other airports in the region that this is not a problem. Hence, other than rising terrain to the south and west of the airport, there are no major airspace limitations which would adversely impact flight operations or otherwise restrict aircraft which could operate from the airport.

Air Traffic Control/NAVAIDS

With the prospect of growing usage by corporate aircraft, the demand forecasts for Tracy Municipal Airport suggest the types of navigation aids that could be needed in future years. The airspace available, the volume of traffic projected, and the nature of the operations (IFR and VFR) that could be expected are the determining factors. These considerations are given further attention in the analyses of facilities requirements as set forth in Chapter 5.

The capability of Tracy Municipal Airport to serve aircraft during IFR conditions may become an important consideration in serving the forecast increase in corporate aviation and other operators of sophisticated aircraft. In addition, the availability of a straight-in, non-precision instrument approach procedure could

provide a valuable additional margin of safety during low visibility conditions, particularly in view of the proximity of proposed new development.

Ground Access and Parking

Having determined the capacity available from the airfield, terminal area and airspace, the critical capacity (the lesser of the three capacities) should be compared with the capacity to accept surface movements by surface transportation, including capacity of the access roadway, and automobile parking lots.

Aircraft Fleet Mix Considerations

Table 4-1, *"Forecast Fleet Mix Composition (Year 2016)"*, sets forth the forecast (Year 2016) fleet composition. This table also presents the aircraft classes defined by the FAA for use in the computation of airfield capacity.

TABLE 4-1
Forecast Fleet Mix Composition (Year 2016)

Aircraft Type	Weight Class*	Annual Operations	
		Number	%
Single Eng. Propeller	A	70,847	66.0
Multi-Eng. Propeller	B	31,719	29.6
Turboprop	B	3,168	3.0
Turbojet	B	1,460	1.4
Totals	N/A	107,194	100.0

* Class A and B = Aircraft 12,500 lbs. or less

Meteorological Factors. Airfield capacity is influenced by such meteorological factors as winds, visibility, and cloud ceiling. The percentage use of each runway end for departures and arrivals by each aircraft class is significant in that this utilization can affect the computation of airfield capacity.

Percentage runway use can be determined either by analyzing a wind vector diagram (wind rose) or raw data. Twenty-four hour wind observations for all winds

during calendar year 1973 determined the following coverages for winds up to 12 mph (10.5 knots):[2]

Runway	Percent of Time
Runway 7-25	98.0%
Runway 11-29	96.8%
All Runways	98.6%

For winds up to 18 mph (15.5 knots) total wind coverage was in excess of 99 percent for both runways. Calm winds (0-3 mph) occurred 35.1% of the time.

COMPUTATION OF AIRFIELD CAPACITY

Both ASV (annual) and throughput (hourly) capacities were evaluated in order to assess the adequacy of the existing airfield.

Computational Parameters

In addition to the determination of aircraft mix set forth in the previous discussion, the following computed and measured parameters assisted in the calculation of airfield capacity.

Percent IFR Weather. Cloud ceiling between 500 and 1,000 feet and/or visibility of between 1 and 3 miles assumed at five percent of the time.[3]

- Aircraft Mix Index. Projected 2016 conditions -- C + 3D = 1.4%.
- Percent Arrivals (PA). Assumed at 50%.
- Percent Touch-and-Go's. Estimated 54.8%.
- Runway Use Configuration. The existing runway configuration was used in conjunction with Mix Index 0-20 and Diagram No. 9 in AC 150/5060-5[4]

2. Tracy Municipal Airport, *"Airport Layout Plan,"* approved May 24, 1994.
3. This assumed IFR percentage takes into account the predictable occurrence of low visibility conditions prevalent in winter months.
4. FAA Advisory Circular 150/5060-5, *"Airport Capacity and Delay."*

Computed Airfield Capacities. The airfield capacities associated with the runways at Tracy Municipal Airport are as follows:

Annual Service Volume (ASV)	230,000 operations/year
Hourly VFR capacity	98 operations/hour
Hourly IFR Capacity	50 operations/hour

The computed IFR capacity assumes the availability of published straight-in/straight-out instrument approach and departure procedures for at least two runway ends by 2016.

Annual Service Volume. The calculated ASV capacity of 230,000 annual operations at Tracy Municipal Airport exceeds the 2016 forecast of 107,200 operations by a factor of more than two times (2X). This means that the current airfield is more than adequate to accommodate projected aircraft operations through the year 2016 by a sizable margin, and that any potential aircraft delay would be negligible.

Hourly Capacity. Calculated VFR hourly capacity at Tracy Municipal Airport is 98 operations/hour. This capacity is in excess of projected VFR activity of 30 operations/hour during any peak activity period.[5]

Similarly, calculated IFR capacity of 50 operations/hour for 2016 also exceeds anticipated demand, if it can be assumed that up to 30 operations at most would have to be accommodated (actual demand is anticipated to be more on the order of four operations per hour during IMC).

AIRCRAFT BASING/SERVICE AREA CAPACITY

As discussed in Chapter 2, Tracy Municipal Airport currently has 250 aircraft tiedown positions and 63 public/private hangar spaces. This is the equivalent of 313 aircraft parking spaces (the FBO also has a number of spaces for its use). The aviation activity forecast in Chapter 3 projected a total of 200 aircraft to be based at Tracy Airport in 2016. This is only about two-thirds of the number of aircraft that the airport can theoretically accommodate.

5. Peak Hour assumed to be 12.5% of average day operations.

However, the existing tie-downs are not consistent with FAA design criteria, are oriented cross-wise to prevailing winds, and, because of extreme temperature conditions, not suited to the long-term outdoor storage of aircraft. Evidence of this can be found in the airport's waiting list for hangars and the few aircraft (12) currently leasing the existing tie-down spaces.

The issue, then, is not the quantity of aircraft tie-down facilities available, but one of the location and type of facilities needed. Such facilities should include both covered and fully-enclosed aircraft storage space. The City is currently addressing this issue with the construction of new hangars in the South Hangar Area.

AIRSPACE

Tracy Municipal Airport is almost ideally situated from an airspace standpoint. The airport is far enough away from the larger metropolitan airports (San Francisco, Oakland, Sacramento, San Jose) so as not to be constrained by proximity to Classes B and C airspace. At the same time, however, it is close enough to benefit from air traffic control facilities at Stockton and in the Bay Area. Other than some high terrain to the south and west of the airport, there are no significant constraints to the use of the local airspace.

GROUND ACCESS

Surface vehicular access to Tracy Municipal Airport is not constrained by capacity, either now or in the future. Buildout of the airport Master Plan would not trigger any quantifiable requirements for additional improvements. However, as development of the airport proceeds, the irregular surface of Tracy Boulevard south of Linne Road will become an issue. The current poor condition of this roadway is largely attributable to the large volume of heavy trucks which use it on a daily basis. This condition is not anticipated to change in the near future. Hence, any proposed improvements to South Tracy Boulevard conditioned as a result of development project approval must give consideration to the effects of this heavy truck traffic. The existing airport access road into the FBO area has also deteriorated over the past several years and is currently slated for repaving.

TERMINAL AREA

General aviation terminal facilities at Tracy Municipal Airport are limited to the facilities available from the airport's one FBO. Both the FBO and the City are

working together to provide better GA terminal facilities to include a pilot's lounge, park and picnic area, and other amenities.

PARKING

Surface vehicular parking in proximity to the FBO site is adequate for current operating conditions. However, as development in this area increases, consideration must be made for additional parking facilities.

CHAPTER 5

FACILITIES REQUIREMENTS

Based on the aviation demand considerations discussed in Chapter 3, Tracy Municipal Airport is expected to continue to serve as a general aviation facility through the year 2016;[1] and, as discussed in Chapter 4, the existing airfield has sufficient annual and hourly capacity to function in this role without building new runways or extending the existing runway pavements.

However, in order to optimize the utility of the airfield and enhance the efficiency of landside facilities, certain improvements are proposed for the runway and taxiway systems, and for the aircraft basing and servicing areas. The following information was considered in the development of these recommendations.

AIRPORT DESIGN STANDARDS

Airfield Classification

Since publication of the previous airport master plan (April 1975), the FAA has developed new standards for the design of airports which associate physical and operational characteristics of aircraft (including weight, wingspan and approach speed) with airfield dimensional characteristics.[2] A new Airport Reference Code (ARC) system replaces the older "Basic Utility," "General Utility" and "Transport" nomenclature used to designate a runway classification. The ARC system uses a two-element code consisting of a letter and roman numeral corresponding to the Aircraft Approach Category and Airplane Design Group characteristics, respectively as follows:

- Aircraft Approach Category (Speed)

A	under 91 knots
B	91 knots - 121 knots
C	121 knots- 141 knots
D	141 knots - 166 knots
E	over 166 knots

1. Consideration had been given at one time to having the Airport designated as a "reliever" airport. However, this program is no longer funded by the FAA, and since the Airport does not meet the criteria for reliever status, the idea no longer has merit.
2. FAA Advisory Circular 150/5300-13, *"Airport Design,"* 1989, as amended, through Change 5.

- Airplane Design Group (Wingspan)

I	under 49 feet
II	49 feet - 79 feet
III	79 feet - 118 feet
IV	118 feet - 171 feet
V	171 feet - 214 feet
VI	214 feet - 262 feet

Design of runways and related facilities are generally predicated on the Aircraft Approach Speed category. Separation criteria and other airfield geometric standards involving taxiways and taxilanes are generally predicated on the Airplane Design Group. Under most circumstances, an airport should be designed to the highest set of standards needed to accommodate the most demanding aircraft (termed the "critical" aircraft) likely to use the facility on a regular basis in the future. This objective must be balanced against the costs – both in dollars and in the loss of opportunity to utilize available land for other competing purposes.

Strictly interpreting current FAA criteria, the Tracy Municipal Airport now functions as a B-I airport wherein some 90% of operations involve aircraft with wingspans less than 49 feet and approach speeds less than 121 knots. However, the airport also serves "large aircraft" which also fall into Approach Category "B", with even some in category "C" and Airplane Design Group "II". Thus the airport currently functions under a "dual" classification, accommodating considerable activity of both light aircraft and larger, higher-performance aircraft. As discussed in Chapter 3, future trends at the Airport indicate more operations in the future by larger, more sophisticated, higher-performance aircraft.

General Design Criteria

The FAA standards pertaining to runway length, pavement strength, and runway and taxiway clearances were extensively revised in 1983. The standards vary depending upon the airport's specific operating conditions (e.g., elevation, average maximum temperature, type of approach) and the characteristics of the aircraft which regularly use the facility or are expected to do so.

The following discussion highlights the important factors used to determine the appropriate classification and design standards applicable to Tracy Municipal Airport.

Airport Role. As described in Chapter 3, the airport's air service area will generate a considerable and growing demand for facilities serving corporate

aircraft. Some of these corporate aircraft operations will involve turboprop and turbojet aircraft, commonly referred to as "transport" category aircraft.[3]

Thus, an important element of this Master Plan is an evaluation of current airfield facilities with the purpose of identifying design deficiencies and issues under the assumption that the airport will continue to serve the full range of demand generated within the Tracy Municipal Airport service area.

Critical Aircraft. In addition to serving transient corporate aircraft on a regular basis, the airport will be expected to have up to five based corporate jet aircraft by the year 2016. These aircraft fall within the ARC B-II category. Recognizing the need to properly serve operations of these larger aircraft, consideration has been given to the provision of facilities to ensure the safe and efficient operations of these critical aircraft types as well as for the full range of lighter aircraft which will continue to use the Airport.

With the exception of heavily loaded jet aircraft operating on hot days, the current runway length is sufficient to accommodate existing and forecasted aircraft operations and does not seriously constrain aircraft operations under usual climatological conditions. Moreover, the majority of aircraft that currently use the airport are light single-engine and twin-engine types, typically weighing less than 12,500 lbs. These types represent 90% of all operations while the remainder include the Beech Super King Air B200, and the aforementioned turbojet aircraft.

In view of the current use of the airport by corporate aircraft, perhaps the most conspicuous deficiency of the airfield is the absence of a published instrument approach procedure for any given runway (i.e., a straight-in approach). Thus, the Master Plan has determined that the ARC B-II designation is the most appropriate to serve future operations set forth in the aviation demand forecasts and must also consider alternative means to accommodate demand during periods of low ceilings and reduced visibility.

Runway Thresholds. During the inventory stage of the Master Plan study, it was noted that runway 7, 25, and 29 were marked with relocated thresholds and lead-in taxiways of 270, 296 and 322 feet, respectively. This resulted in published runway lengths of 3,418 feet for Runway 7-25 and 3,680 feet for Runway 11-29. The total length of pavement for Runway 7-25 is actually 4,004 feet and 4,002 feet for Runway 11-29. As a result, published data for the Airport actually understated the total amount of pavement available on Runway 7-25 by 566 feet and Runway 11-29 by 322 feet.

3. The FAA defined "Transport Aircraft" as those weighing in excess of 12,500 lbs. maximum gross takeoff weight.

The purpose in relocating the thresholds was to provide clearance over obstructions (i.e., trucks on Tracy Boulevard) for aircraft landing on Runways 25 and 29, and trucks along the Delta-Mendota Canal for aircraft landing on Runway 7. However, during the course of the Master Plan study it was determined that the same degree of approach protection could be achieved by changing the runway threshold markings from "relocated" to "displaced." This meant that the clearance over the aforementioned obstructions would be maintained for landings, but that now the full length of runway would be available for calculating takeoff distance. In addition, it was also determined that the threshold for Runway 29 could be moved an additional 62 feet to the southeast and still provide the necessary clearance over Tracy Boulevard. Figure 5-1, *"Airport Layout Plan"* depicts the locations of the existing and proposed thresholds and new runway end markings.

Runway Length. FAA Advisory Circular (AC) 150/5325-4A, *"Runway Length Requirements for Airport Design,"* provides guidelines for determining runway length. Runway length is determined by considering either the type of aircraft (i.e., those having similar performance characteristics) or a specific airplane needing the longest runway. Either way, the decision should be made on the basis of those aircraft anticipated to use any given runway on a regular basis (i.e., at least 250 operations per year).

An analysis of the proposed aircraft fleet mix at Tracy Municipal Airport indicates that turboprop business aircraft would have the most influence on the runway length requirements. Table 5-1, *"Turboprop Aircraft Characteristics,"* sets forth pertinent information for several types of aircraft in this class:

The recommended runway length for a specific aircraft is a function of that aircraft's landing and takeoff operating weights, the wing flap setting, airport elevation, mean maximum temperature of the hottest month, and runway gradient and surface condition. Table 5-2, *"FAA Recommended Runway Lengths,"* sets forth recommended runway lengths for various classes of aircraft.

As can be determined from Table 5-2, the present published lengths of Tracy Municipal Airport's runways (3,418 and 3,680 feet) are adequate to accommodate up to 95% of small airplanes having approach speeds of 50 knots or more and maximum certificated takeoff weights of 12,500 pounds or less. By remarking the runway ends, the effective runway lengths increase to 4,004 and 4,002 feet respectively, which will accommodate 100% of the small aircraft fleet having less than 10 passenger seats. This includes the Beech Super King Air 200, which has been selected as the design aircraft.

TABLE 5-1
TURBOPROP AIRCRAFT CHARACTERISTICS

Aircraft	Engines	Maximum Seats	Maximum Takeoff Weight (lbs)	Wingspan (feet)	Approach Speed (knots)	Weight *[a]* Group	Design *[b]* Group	Approach *[c]* Category
Beech Super King Air 200	2	15	12,500	54. 5	103	Small	II	B
British Aerospace Jetstream	2	20	15,322	52. 1	103	Large	II	B
DeHavilland DHC-6 Otter	2	22	12,500	65. 0	75	Small	II	A
DeHavilland DHC-7	4	53	44,000	93. 0	86	Large	III	A
EmBraer 100 Bandeirante	2	19	12,500	50. 3	92	Small	II	B
Embraer 120 Brasilia	2	30	25,353	64. 0	113	Large	II	B
Fairchild F-27	2	48	42,000	95. 2	109	Large	III	B
Faircild Metro 3SA-227AC	2	19	16,000	57. 0	114	Large	II	B
Gulfstream I	2	40	35,000	78. 5	113	Large	II	B
Short Brothers SD3-60	2	36	26,453	74. 8	102	Large	II	B
Swearingen Merlin III	2	10	12,500	46. 3	105	Small	I	B

Source: City of Tracy; P&D Consultants, Inc.

[a] Weight Group: Small = Maximum cert. takeoff Weight (MTOW) of 12,500 lbs. or less. Large = MTOW over 12,500 lbs.

[b] Design Group: Wingspan = (I) less than 49 feet, (II) 49-79 feet, (III) 79-118 feet

[c] Approach Category: A = less than 91 knots, B = 91-121 knots

TABLE 5-2
FAA RECOMMENDED RUNWAY LENGTHS

Aircraft Category	Runway Length
• Small airplanes having approach speed of 50 knots or more and maximum certificated takeoff weight of 12,500 or less	
– 75% of Fleet/less than 10 Passenger Seats	2,600 feet
– 95% of Fleet/less than 10 Passenger Seats	3,200 feet
– 100% of Fleet/less than 10 Passenger Seats	3,700 feet
– 10 Passenger Seats or more	4,400 feet
• All Airplanes with maximum certificated takeoff weight of 12,500 to 60,000 pounds	
– 75% of Fleet/60% of Useful Load	4,700 feet
– 75% of Fleet/90% of Useful Load	7,100 feet
– 100% of Fleet/60% of Useful Load	5,600 feet
– 100% of Fleet/90% of Useful Load	9,000 feet
• Design Aircraft	
– Beech Super King Air 200	3,700 feet

Notes: Calculation parameters for Tracy Municipal Airport
Airport Elevation = 191 feet Above Mean Sea Level
Mean Maximum Daily Temperature = 95° F

Even with the longer runways resulting from changing the runway threshold marking from "relocated" to "displaced" thresholds, the added lengths will still only accommodate less than 75% of those aircraft with a maximum certificated takeoff weight of from 12,500 to 60,000 pounds at 60% useful load. This means that some aircraft weighing in excess of 12,500 pounds MTOW or having more than 10 passenger seats can still use the runways, but will not be able to takeoff with a full complement of passengers and fuel. To accommodate 75% of these aircraft at 60% useful load would require at least one runway 4,700 feet long.

Runway Width. FAA AC 150/5300-13, *"Airport Design"*, recommends a minimum runway width of 75 feet to meet the published criteria for Class B-II aircraft. Runways 7-25 and 11-29 are 100 feet wide. No change is required or suggested.

Pavement Condition. In June 1995, an *"Airport Pavement Management System (APMS)"* study was conducted at Tracy Municipal Airport.[4] A PCI (Pavement Condition Index) report was prepared. On the basis of this report it was determined that pavement conditions of good to excellent (PCI 56-100) occurred over most of the airfield. Conditions of fair to poor (PCI 55-26) existed in only three sites:

- Area A2 consisted of the apron area around the hangars in the South Hangar Area (this area is currently scheduled for a slurry seal);
- Area T2A (taxiway "A" west of Runway 11-29) was rated fair (this area is also scheduled for a slurry seal); and
- Area T3 (the taxiway from Hangars 3 and 4 to Runway 25) was rated poor (although proposed to be slurry sealed, this taxiway will be relocated as the area around Hangars 3 and 4 is redeveloped).

Navigational Aids. To qualify for the installation of a precision instrument approach, an airport must meet certain instrument activity criteria. The formula is based on the recorded number of annual instrument approaches for an airport's existing nonprecision approach. For Tracy Municipal Airport to qualify for a precision instrument approach under FAA Handbook 7031.2C, *"Airway Planning Standards, No. 1,"* the facility must record 1,400 or more annual instrument approaches.

However, as the required data is not readily available, and the fact that to install a precision instrument approach by today's standards would require significant modifications to the airfield and severely constrain development both on and off the airport, the installation of "straight-in" nonprecision approaches to Runway 11, 25 and 29 was deemed the superior alternative. Such an approach procedure would provide pilots with enhanced horizontal guidance for straight-in approaches to these runways during instrument meteorological conditions and replace the current circle-to-land visual approach off the Manteca VOR.

The option of establishing a precision instrument approach at Tracy Municipal Airport should not be entirely foreclosed. As technology advances, such a procedure may become feasible without requiring significant modifications to the airfield or off-airport land use restrictions.

Runway/Taxiway Separations. Current FAA runway-taxiway separation criteria require a 240 foot separation between centerlines at ARC B-II airports with visual

4. Kleinfelder, *"Airport Pavement Management System (APMS): Tracy Municipal Airport, San Joaquin County."* June, 1995.

or nonprecision runways. The existing runway/taxiway separations at Tracy Municipal Airport range from 220 to 260 feet.

Existing taxiways will remain unchanged. A new parallel taxiway adjacent to Runway 11-29 is proposed northwest of the South Hangar area. Due to the location of the existing parallel taxiway southeast of this area, the separation for the proposed new taxiway will have to be the same if a jog in the taxiway is to be avoided. This distance is currently 260 feet.

APPROACH PROTECTION AND AIRSPACE

FAA runway safety areas for nonprecision instrument approaches (visibility minimum not less than one mile) to Runways 7-25 and 11-29 have been incorporated into Figure 5-1, *"Airport Layout Plan,"* and FAR Part 77 obstruction clearance criteria incorporated into Figure 5-2, *"Airport Airspace Plan."*

Runway Safety Areas

The current FAA criteria for runway safety areas (RSA) for ARC B-II runways is 150 feet in width and 300 feet in length beyond the runway end. For Runways 7, 11 and 29 the RSA will begin at the end of the pavement. For Runway 25, the RSA is inset 96 feet back from the pavement end to accommodate an airport security fence.

Runway Object Free Area

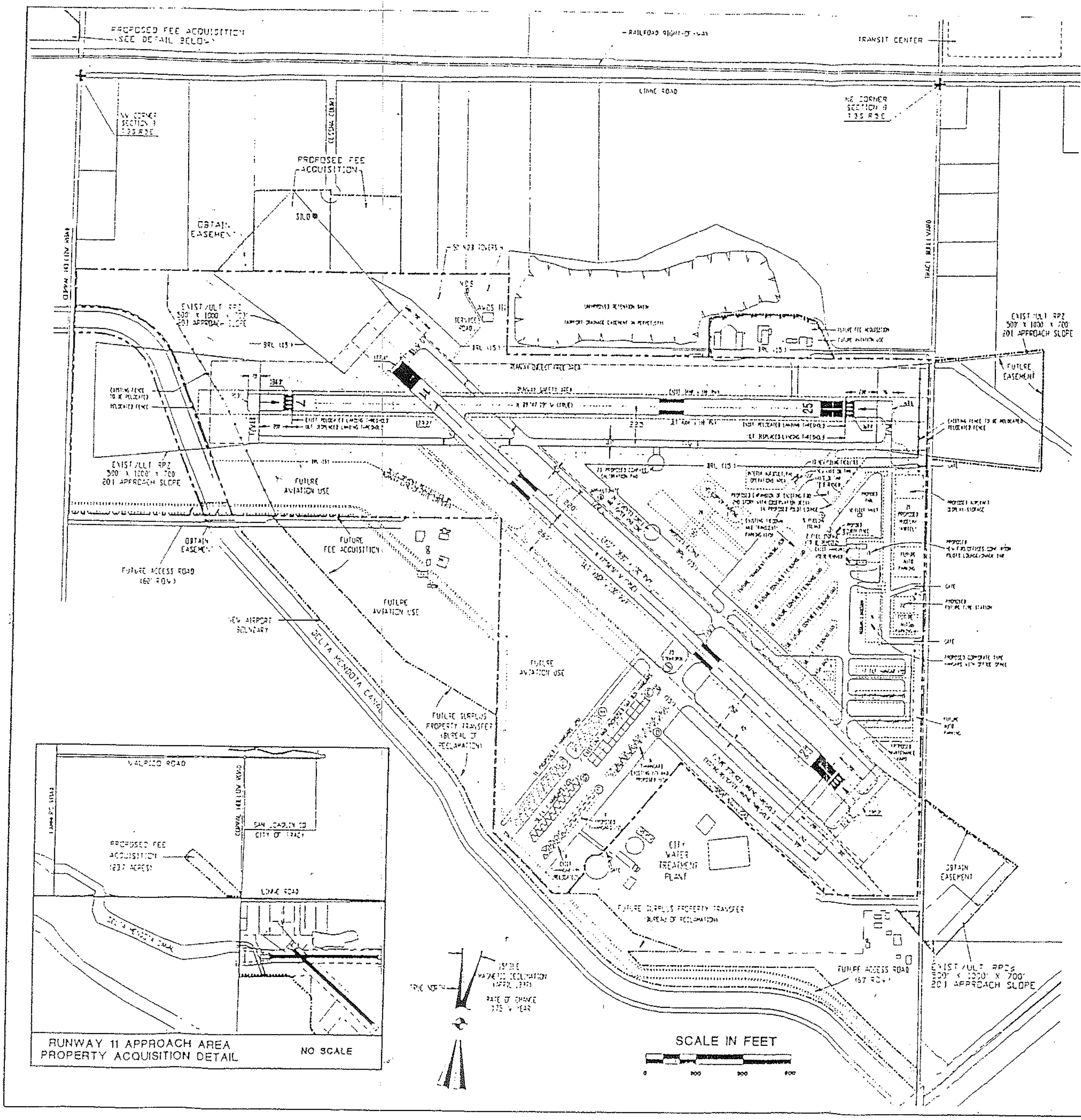
FAA design guidelines for ARC B-II facilities specify a 500-foot width and 300-foot length of the Runway Object Free Area (ROFA) from the runway end. Because the landing thresholds on Runway 7, 25 and 29 are proposed to be displaced, the actual length of the ROFA beyond each runway end would be:[5]

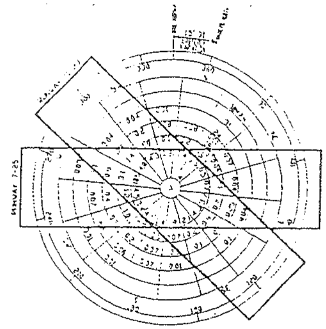
- 215 feet for Runway 7
- 230 feet for Runway 25
- 240 feet for Runway 11, and
- 300 feet for Runway 29.

Runway Protection Zone

A runway protection zone (RPZ) is a trapezoidal area which begins 200 feet beyond the end of the runway area usable for takeoff or landing and is centered

5. FAA Advisory Circular 150/5300-13, Change 5, Appendix 14.





AIRPORT DATA	EXISTING	ULTIMATE
AIRPORT ELEVATION	190	SAME
AIRPORT REFERENCE POINT / ARP COORDINATES (NAD83)	LAT 37°41'[illegible] / LONG 121°26'[illegible]	LAT 37°41'[illegible] / LONG 121°25'[illegible]
AIRPORT and TERMINAL NAVIGATION AIDS	AWOS NDB	SAME
MEAN MAX TEMPERATURE OF HOTTEST MONTH	95° F	SAME
AIRPORT REFERENCE CODE	B-II	SAME
DESIGN AIRCRAFT	KING AIR B200	SAME
GPS AT AIRPORT	NONE	NON-PRECISION (NOT LESS THAN 1 MILE)

LEGEND

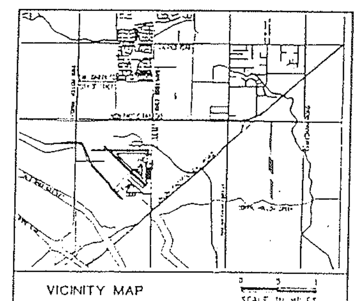
DESCRIPTION	EXISTING 1999	PROPOSED 1999-2003	PROPOSED 2003-2019
AIRPORT PROPERTY/EASEMENT LINE			
BUILDINGS			
RUNWAY - TAXIWAY - APRON			
AIRPORT REFERENCE POINT		SAME	SAME
BOUNDARY FENCE			SAME
PROPERTY DIVISION OR LEASE LINE			
BUILDING RESTRICTION LINE		BRL	BRL

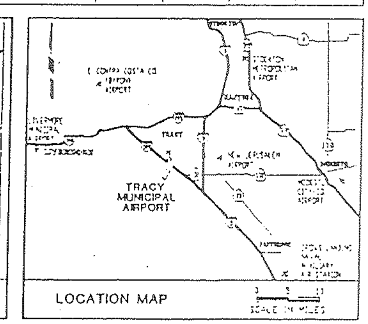
RUNWAY END COORDINATES (NAD83)

DESCRIPTION		LATITUDE	LONGITUDE
RUNWAY 7 - END	EXIST	37° 41' 25.[illegible]"	121° 26' 56.7"
	ULT	37° 41' 25.9"	121° 26' 16.6"
RUNWAY 11 - END	EXIST	37° 41' 29.1"	121° 26' 45.[illegible]"
	ULT	37° 41' 29.1"	121° 26' 45.9"
RUNWAY 25 - END	EXIST	37° 41' 25.[illegible]"	121° 25' 11.[illegible]"
	ULT	37° 41' 25.[illegible]"	121° 25' 59"
RUNWAY 29 - END	EXIST	37° 41' [illegible]"	121° 25' 31.[illegible]"
	ULT	37° 41' [illegible]"	121° 25' 31"

BUILDINGS/FACILITIES	EXISTING	ULTIMATE
FBO/TERMINAL BUILDING	1	1
FUEL STORAGE FACILITY	2	-
HANGAR BUILDING	3	-
HANGAR BUILDING	4	-
FUELING ISLAND	5	5
T-HANGAR (AREA D)	6	6
BOX HANGAR (AREA E)	7	7
RELOCATED T-HANGARS (AREA F)	8	-
SMALL NESTED T-HANGARS (AREA F)	-	9
LARGE NESTED T-HANGARS (AREA G)	-	10
T-HANGARS (AREAS H & I)	-	11
ELECTRICAL VAULT	-	12
RELOCATED FUEL STORAGE FACILITY	-	13
TEMPORARY PILOTS LOUNGE	-	14
NEW FBO OFFICES/LOUNGE	-	15
CORPORATE HANGAR	-	16
HANGAR COMPLEX	-	17
SHADE HANGAR COMPLEX	-	18
AIRCRAFT WASH RACK	-	19
HELIPAD COMPLEX	-	20
HOTEL/AIRFIELD MUSEUM	-	21
FIRE STATION	-	22
COMPASS CALIBRATION PAD	-	23
SEGCIRCLE LIGHTED WIND CONE	24	24
TETRAHEDRON	25	25

RUNWAY DATA	RUNWAY 7-25 EXISTING	RUNWAY 7-25 ULTIMATE	RUNWAY 11-29 EXISTING	RUNWAY 11-29 ULTIMATE
RUNWAY DIMENSIONS	3438' x 100'	4004' x 100'	3682' x 100'	4202' x 100'
% OF WIND COVERAGE AT 12 MPH	98.0 %	SAME	95.8 %	SAME
RUNWAY EFFECTIVE GRADIENT	.153 %	SAME	0.02 %	SAME
PAVEMENT STRENGTH	12,500 lb SWL	SAME	12,500 lb SWL	SAME
PAVEMENT MATERIAL (RWY & TWY)	ASPHALT	SAME	ASPHALT	SAME
RUNWAY APPROACH SURFACES	20:1/20:1	SAME	20:1/20:1	SAME
RUNWAY THRESHOLD RELOCATION	270'/296'	NONE	0'/322'	NONE
RUNWAY THRESHOLD DISPLACEMENT	NONE	270'/296'	NONE	0'/260'
RUNWAY MARKING TYPE	VISUAL/VISUAL	VISUAL/NON-PREC	VISUAL/VISUAL	NON-PREC/NON-PREC
RUNWAY LIGHTING	MIRL	SAME	MIRL	SAME
TAXIWAY LIGHTING	NONE	SAME	NONE	SAME
TAXIWAY MARKING	CENTERLINE	SAME	CENTERLINE	SAME
RWY SAFETY AREA BEYOND RWY END (150' WIDE)	300'/300'	215'/300'	300'/300'	300'/300'
OFA BEYOND RWY END (500' WIDE)	300'/293'	215'/230'	300'/300'	240'/300'
OFZ BEYOND RUNWAY END (250' WIDE)	200'/200'	200'/200'	200'/200'	200'/200'
TAKEOFF RUN AVAILABLE (TORA)	3438'/3438'	3708'/3734'	3680'/3680'	3742'/4002'
TAKEOFF DISTANCE AVAILABLE (TODA)	3704'/3704'	3974'/4000'	3946'/3946'	4009'/4268'
ACCELERATE-STOP DISTANCE AVAIL (ASDA)	3599'/3431'	3919'/3334'	3942'/3682'	3942'/4002'
LANDING DISTANCE AVAILABLE	3599'/3431'	3649'/3638'	3942'/3680'	3942'/3742'
RUNWAY INSTRUMENTATION	VASI/VASI	PAPI/PAPI	VASI/VASI	PAPI/PAPI
NAVIGATIONAL AIDS	AWOS/NDB	SAME	AWOS/NDB	SAME





FAA DISCLAIMER

The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

SUBMITTED BY:
CITY OF TRACY

By ____________ Date ____
CITY MANAGER

By ____________ Date ____
AIRPORT MANAGER

NO.	DATE	REVISION	BY	APP.

TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA

AIRPORT LAYOUT PLAN

P&D Aviation
A Division of P&D Consultants, Inc.
Oakland, California

DESIGNED TGM	CHECKED NPM	FIGURE 5-1
DRAWN TGM	DATE JUNE 30 1999	

on the extended runway centerline. For each category of runway and type of instrumentation, the FAA specifies the dimensions of the RPZ. The existing RPZs for the Tracy Municipal Airport are based on visual approaches to Runways 7, 25 and 29. The existing (1994) Airport Layout Plan also depicts a nonprecision instrument approach RPZ to Runway 11.[6] The proposed ALP (Figure 5-1) recommends nonprecision instrument approaches to Runway 11, 25 and 29. Runway 7 would remain a visual runway due to high terrain to the southwest.

The RPZs for Runway 11, 25 and 29 would measure 500 feet wide at their inner edges by 1,000 feet in length and 700 feet wide at their outer edges. These RPZ dimensions are consistent with the planned nonprecision instrument approaches and allow for visibility minimums as low as one statute mile for aircraft in approach categories A and B.

Approach Protection

Part 77 of the FAA Regulations (FAR Part 77), *"Obstruction Clearance,"* sets forth criteria for the protection of airspace around the nation's airports. The acceptable height of an object near an airport is determined by the application of standards set forth in Subpart C of Part 77. In general, the farther away from an airport an object is, the higher it may be.

FAR Part 77 establishes three-dimensional imaginary surfaces around an airport designed to protect navigable airspace from penetration by buildings or other objects. The sizes and shapes of these surfaces is determined by the type of airport, its runway layout, and the nature of its approaches (i.e., visual, nonprecision instrument, precision instrument). Any object penetrating these surfaces is considered an obstruction, and possibly a hazard if it were to have a significant adverse effect on the aeronautical use of the airspace. Objects *not* penetrating the FAR Part 77 surfaces may be considered obstacles – but not obstructions or hazards – if vertical clearance is required during flight operation. However, the FAA concedes that the FAR Part 77 imaginary surfaces are, in general, *"more restrictive than is needed for safe flight operations."*[7] According to the Caltrans Airport Land Use Planning Handbook, *"Limiting the heights of structures to the heights specified by Part 77 provides an ample margin of safety for normal aircraft operations."*[8] The term *"normal aircraft operations"* includes the landing and takeoff of aircraft within the range of wind and weather conditions under which such operations would be allowed at a given airport (including inclement weather conditions).

6. The dimensions of the RPZs depicted on the existing (May 1994) Airport Layout Plan are not consistent with current FAA RPZ design criteria.
7. FAA, Aeronautical Study 94-AWP-277-OE, March 31, 1994.
8. Caltrans Handbook, page 9-31.

Applicable FAR Part 77 surfaces for Tracy Municipal Airport are depicted on Figure 5-2, "*Airport Airspace Plan,*" and include:

- Primary Surface
- Transitional Surface
- Horizontal Surface
- Approach Surface
- Conical Surface

Primary Surface. The FAR Part 77 primary surface is an imaginary surface longitudinally centered on a runway and extending 200 feet beyond each end of the runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of the primary surface proposed for Runway 7-25 and 11-29 at Tracy Municipal Airport is 500 feet.

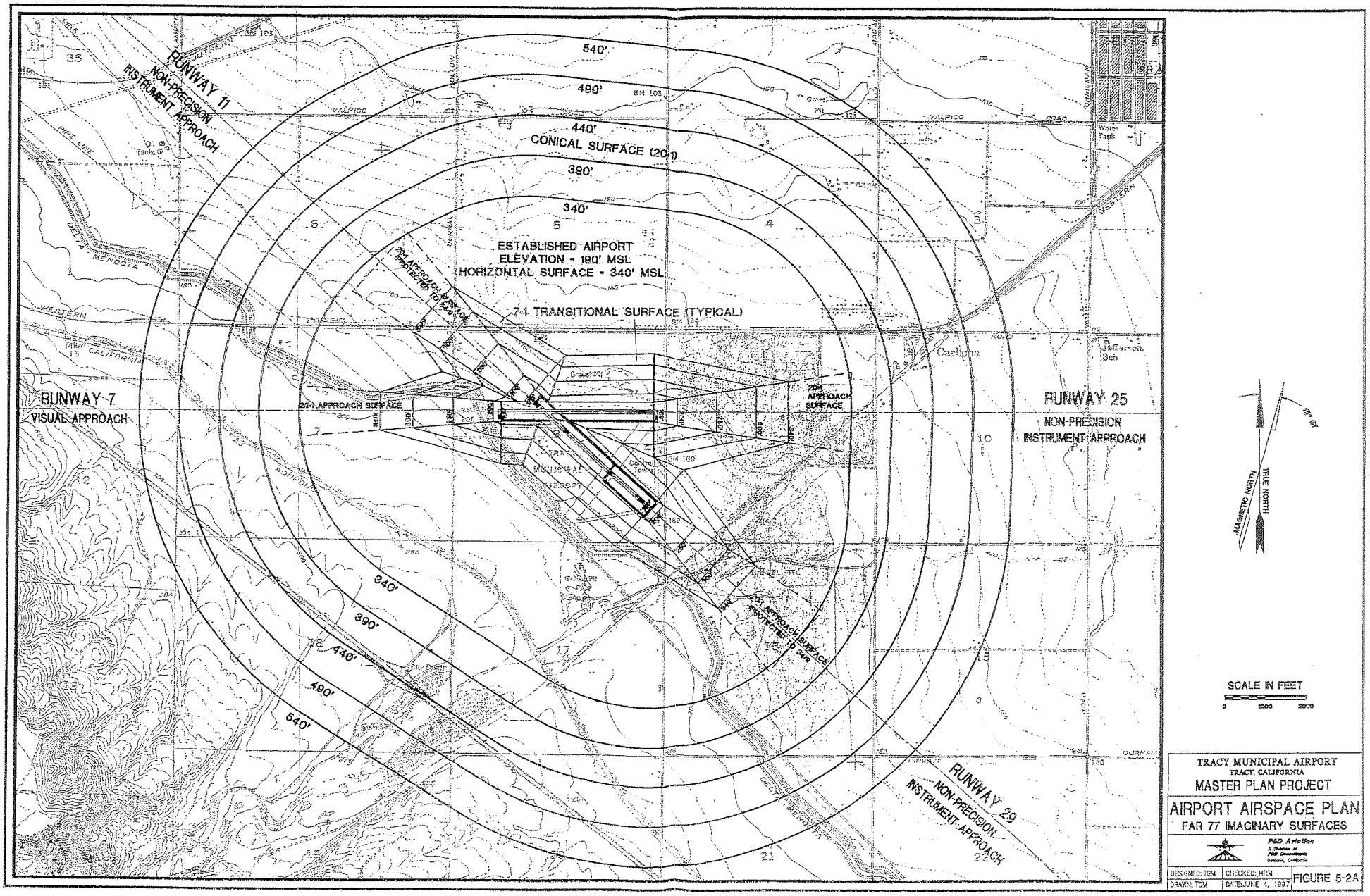
Transitional Surface. The transitional surface represents the transition from the primary surface to the horizontal surface. It slopes upward from the primary surface around the runway at a ration of 7:1 until it intersects the horizontal surface at a point 150 feet above the airport elevation.[9]

Horizontal Surface. As noted above, the plane of the FAR Part 77 horizontal surface is at an elevation 150 feet above the published airport elevation. The horizontal surface extends outward from the ends of the primary surface, a distance of 5,000 feet.

Approach Surface. This surface is longitudinally centered on the extended runway centerline and extends outward and upward from each end of the primary surface (on Figures 5-1 and 5-2 the three-dimensional approach surface overlies the two-dimensional runway protection zone for the first 1,000 feet). The approach surface slopes upward at a ratio of 20:1 for a distance of 3,000 feet, at which point it penetrates the overlying horizontal surface.

Conical Surface. The FAR Part 77 conical surface begins at the outer edge of the horizontal surface and extends outward and upward at a ratio of 20:1 to an elevation of 540 feet MSL.

9. Under ideal circumstances, where the airport elevation is the same as the elevation of the runway ends, this distance is 1,050 feet



TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA
MASTER PLAN PROJECT

AIRPORT AIRSPACE PLAN
FAR 77 IMAGINARY SURFACES

P&D Aviation
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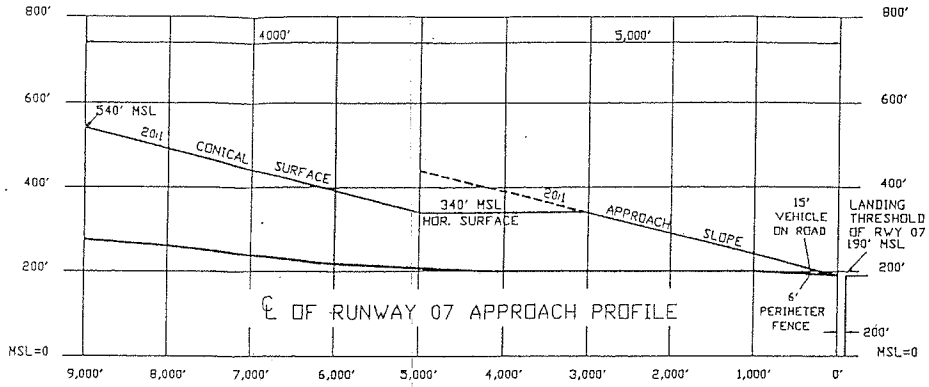
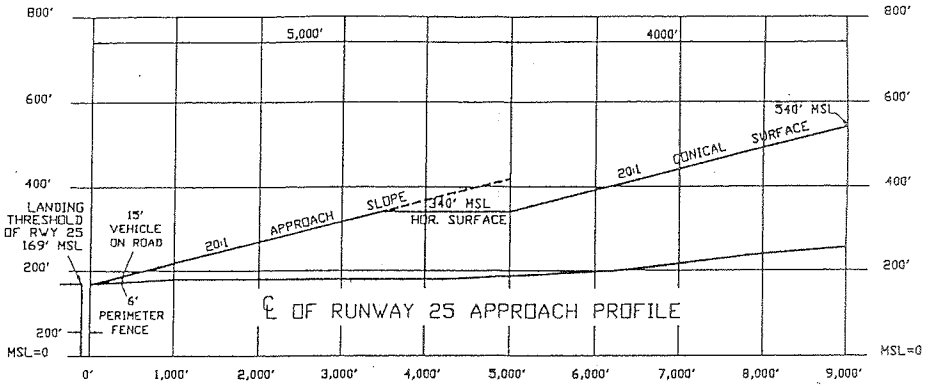
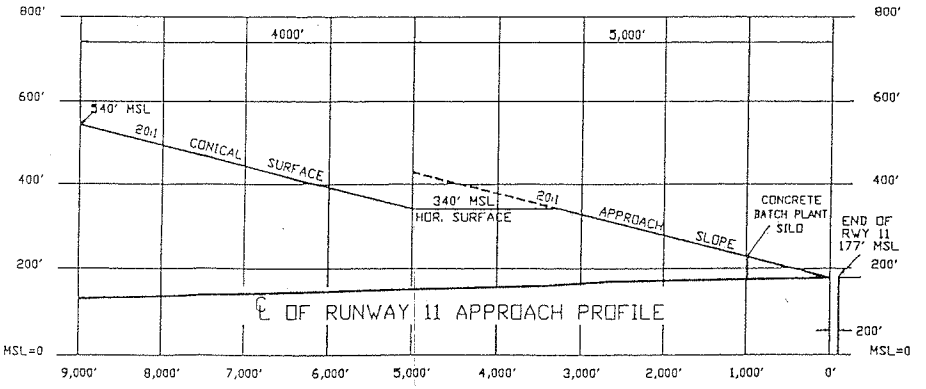
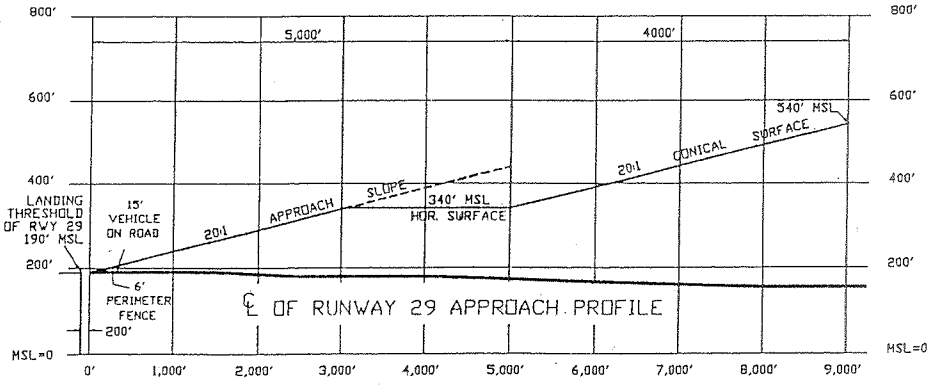
Pell Corporation
Oakland, California

DESIGNED: TGM	CHECKED: MRM	FIGURE 5-2A
DRAWN: TGV	DATE: JUNE 4, 1997	

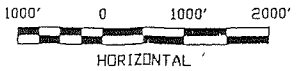








GRAPHIC SCALES



TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA
MASTER PLAN PROJECT

AIRPORT AIRSPACE PLAN
RUNWAY APPROACH PROFILES

P&D Aviation

DESIGNED: TGW	CHECKED: MRW	FIGURE 6-2B
DRAWN: TGW	DATE: JUNE 4, 1997	

BUILDING AREA PLANS

The building area of an airport typically encompasses those areas on the airport devoted to the following uses:

- based aircraft tiedowns and hangars;
- transient aircraft parking;
- fixed base operation (FBO) facilities;
- fuel storage and dispensing;
- terminal facilities (pilot's lounge, restrooms, public telephone, snackbar, etc.);
- automobile access and parking;
- security/perimeter fencing, access gates, lighting and signage; and
- visitor services

There are two building areas on the Airport for which plans have been prepared. These are the Terminal Area and the South Hangar Area.

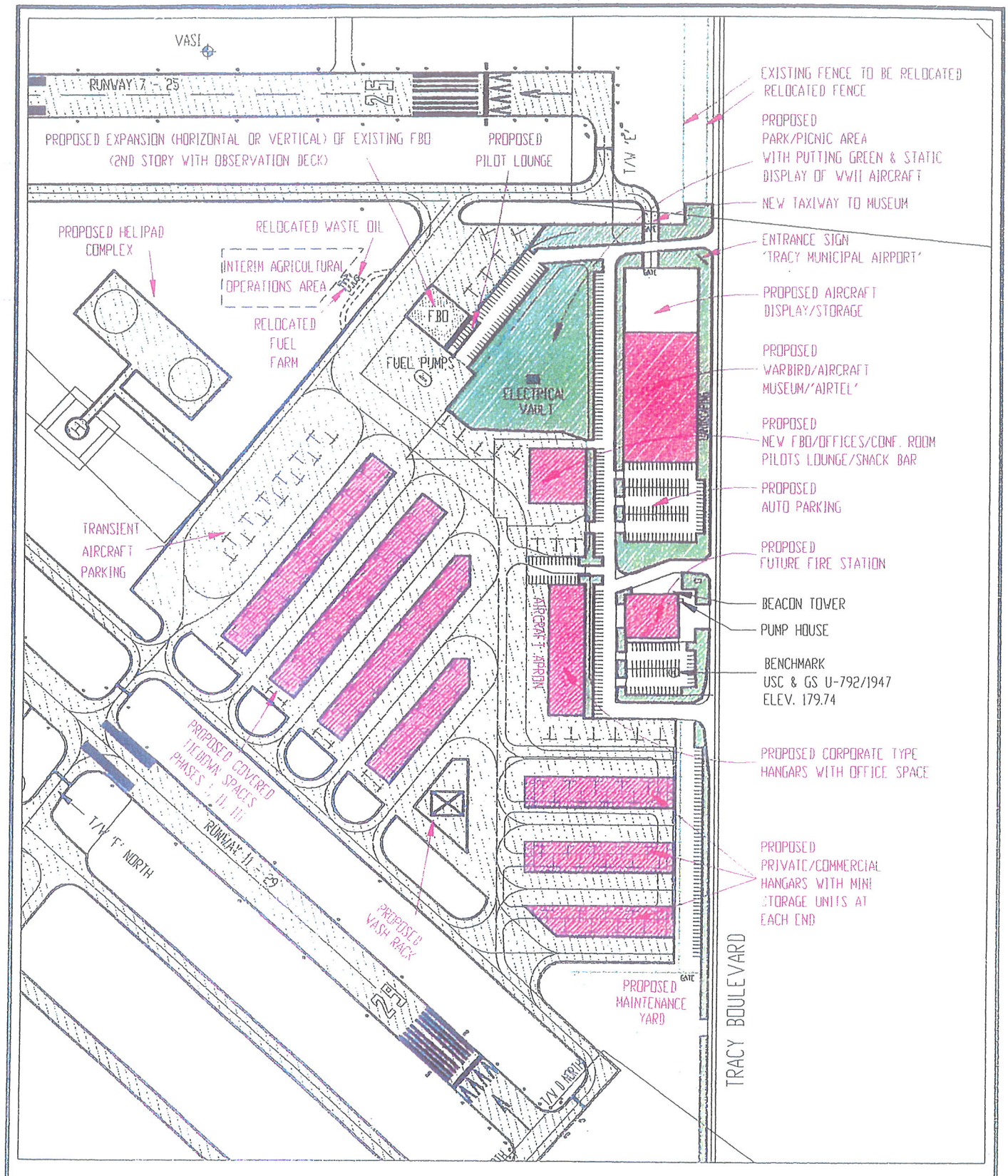
Terminal Area Plan

Figure 5-3, *"Terminal Area Plan,"* depicts in detail specific facilities improvements proposed for this area, as follows:

Hangars. The forecasts for Year 2016 conditions and input from airport users indicate a need for a combination of corporate-type hangars with office space, private/commercial hangars with mini-storage units, and covered tiedown spaces (shade hangars). Figure 5-3 anticipates approximately 22,000 square feet of new corporate hangar space with 14,000 square feet of associative office space, 58,000 square feet of private/commercial hangars (28 aircraft parking spaces minimum), and approximately 144,000 square feet of shade hangars (66 aircraft spaces minimum).

Development of the proposed corporate hangars will require the removal of existing City-owned Hangars 3 and 4. Hangars 3 and 4 would be replaced by the proposed private/commercial hangars (a net increase of 18 fully-enclosed hangar spaces). Total covered hangar spaces in the Terminal Area would total 84, not including existing FBO spaces and proposed corporate hangar space.

Open Tiedowns. A minimum of 13 transient aircraft parking spaces are proposed for the existing ramp area southwest of the fuel island. An additional 16-20 open tiedowns would also be available, not counting tiedowns used by the existing FBO. This should be an adequate number of tiedowns to accommodate itinerant Airport visitors through the forecast period.



TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA

MASTER PLAN PROJECT
TERMINAL AREA PLAN

P&D Aviation
A Division of
P&D Technologies
Oakland, California

DESIGNED: MRM	CHECKED:MRM	FIGURE 5-3
DRAWN: TGM	DATE: JUNE 30, 1998	

FBO Facilities. The current airport Capital Improvement Program (CIP) anticipates renovation and improvement of the existing FBO facility, including a second story observation deck. In association with the proposed FBO improvements are a pilot's lounge, park/picnic area with a putting green and static display of historic (W.W.II) aircraft, and improved parking and access from Tracy Boulevard.

Fuel Storage and Dispensing. The City is currently in the process of redesigning its fuel storage facilities. As proposed, the existing fuel storage tanks will be relocated to an area west of the existing FBO hangar and a new fuel dispensing facility constructed.

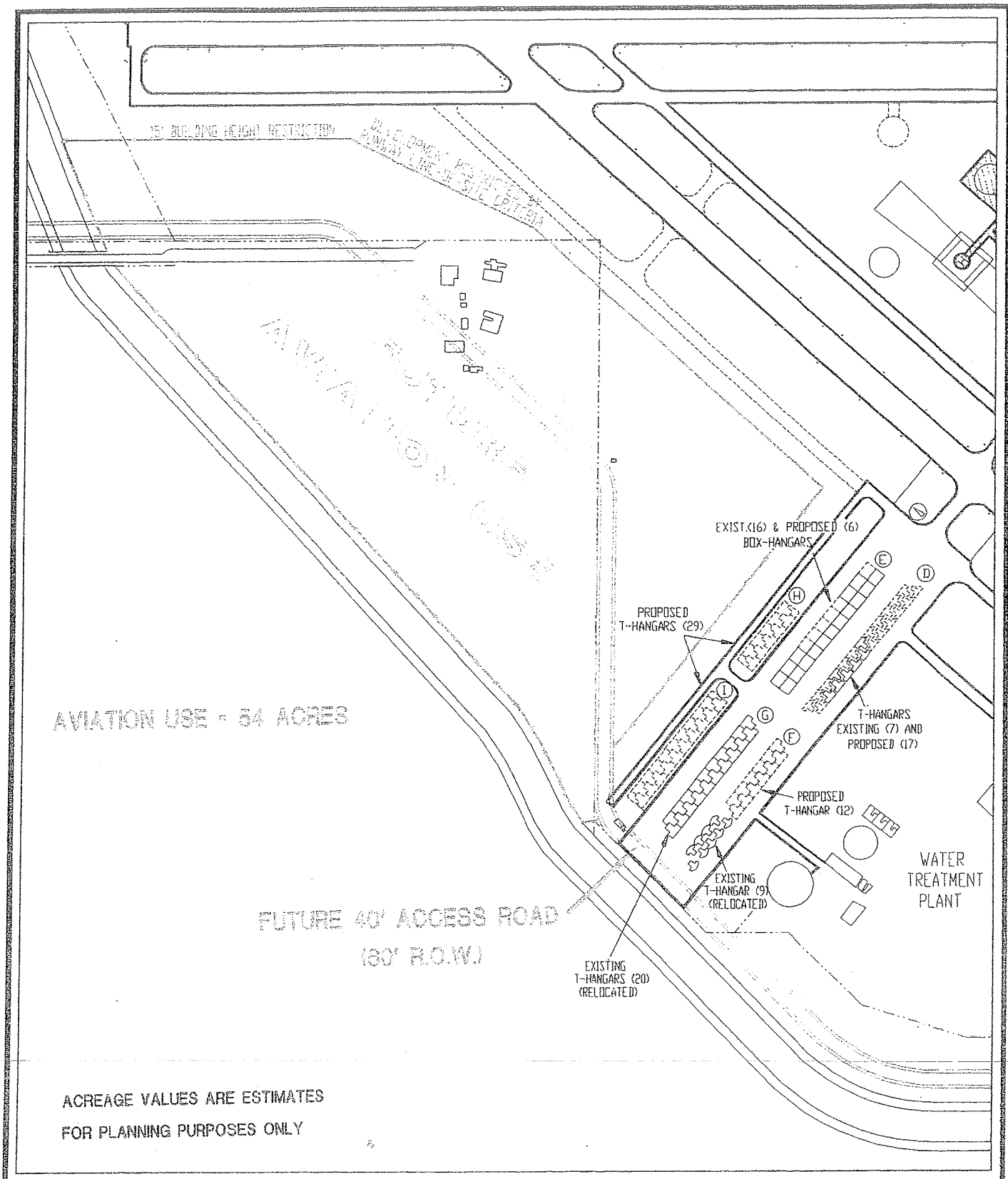
Automobile Access and Parking. Renovation of the existing FBO area will include improved access from Tracy Boulevard, including new entry features and signage, and landscaping. The FBO parking lot would be redesigned. The old Taxiway "E" would be closed and form the basis for a new access road serving the park, expanded FBO facilities, a proposed "warbird" aircraft museum and hotel/airtel complex, corporate hangars, and a possible City fire station. On the west side of the airport, a new access road would be developed which would connect Tracy Boulevard with Corral Hollow Road.

Security and Lighting. The terminal area plan depicts the proposed location of new airport perimeter/security fencing which would provide security to aircraft and airport facilities, and would also separate the aircraft operating areas from unauthorized surface vehicle and pedestrians. A fenced storage yard is also proposed for aircraft maintenance vehicles and equipment.

Visitor Services. As the area around the Airport develops, it is anticipated that overnight hotel accommodations will be required. The Airport is well situated to meet this need. To make such a facility more attractive, it has been suggested that it be developed on an aviation theme with a display of historical and vintage aircraft.

South Hangar Area Plan.

Figure 5-4, *"South Hangar Area Plan,"* depicts proposed modifications and new development in the South Hangar Area. Nine existing T-hangars are proposed to be relocated as noted, and 12 new T-hangars are to be constructed in their place. Seventeen new T-hangars would be added to an existing 7-unit complex, and 6 new box hangars are proposed as infill units to the existing 16 box hangars. An additional 29 new T-hangars are also proposed on a new apron to be constructed.



TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA

MASTER PLAN PROJECT
SOUTH HANGAR AREA PLAN

P&D Aviation
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P&D Technologies
Oakland, California

DESIGNED: MRM	CHECKED:MRM	FIGURE 5-4
DRAWN: TGM	DATE: JUNE 30, 1998	

This would result in 94 total T-hangars and 22 box hangars in this area, for a total of 116 hangars.

Future Uses. Figure 5-4 also depicts an area between the Delta-Mendota Canal and the Airport's western boundary for "Future Aviation Use." This area is comprised of two parcels: (1) a 22.4 acre farm and orchard; and (2) excess Bureau of Reclamation right-of-way along the canal (22.9 acres). An additional 0.4 acres is proposed for acquisition to ensure unrestricted access to the site from Corral Hollow Road.

Land Acquisition. Figure 5-5, *"Land Acquisition Plan,"* depicts the above parcels as well as other parcels of land recommended for acquisition in fee or interest in the form of easements.

Fee Acquisition. Figure 5-5 depicts five separate parcels comprising of 59.6 acres, recommended for fee acquisition. The recommended order of priority for acquiring these parcels is as follows:

- 5.4 acres off Cessna Court in RPZ for approach protection (Parcel A1)
- 4.7 acres off Cessna Court adjacent to RPZ for approach protection (Parcel A2)
- 23.7 acres northwest of Linne Road/Corral Hollow Road for approach protection (Parcel A6)
- 3.4 acres on the airport's north side for future development (Parcel B3)
- 22.4 acres on west side for future airport development (Parcel B2)

Easement Acquisition. Figure 5-5 also depicts four parcels, totaling 16.6 acres, recommended for acquisition of easements, as follows:

- 0.6 acres located within RPZ for Runway 11 (Parcel A3)
- 9.3 acres within RPZ for Runway 25 (Parcel A4)
- 6.1 acres within RPZ for Runway 29 (Parcel A5)
- 0.2 acres within RPZ for Runway 29 (Parcel A5)
- 0.4 acres for access across Delta-Mendota Canal (Parcel B4)

Surplus Property Transfer. The City intends to negotiate with the U.S. Bureau of Reclamation for the transfer of 22.5 acres of surplus land along the Delta-Mendota Canal for future Airport development and access.

UTILITIES

One key to the development success of Tracy Municipal Airport will be the availability of public utilities. As noted in Chapter 2, the Airport is currently on the urban fringe, and only rudimentary utility services are provided. Until adequate water, electricity, natural gas, sanitary sewers, and storm drain connections are provided at the Airport, only marginal growth and development can be expected.

It is not reasonable to expect that the Airport will attract any sort of significant corporate aviation activities, or commercial/industrial ventures, until such utilities are in place and available. As development in the City progresses toward the Airport, the ability to upgrade the Airport utilities becomes more and more likely as a result of the extension of utilities into the area.

However, as likely as long-term prospects are for providing the full range of utility services required by the Airport, there are nonetheless short-term needs which must be addressed. Among these are the provision of electrical and water services to the hangar areas. Without these essential services, the City is not able to lease its hangar units at the most optimal rate, and new development is not encouraged. In addition, upgraded water service would enhance the Airport's fire protection capabilities.

Although identified as a short-term need, the requirement for sanitary sewer connections on the Airport may have to wait until some of the nearby mixed-use developments are underway or completed.

Storm Drainage. The Airport's storm drainage system is in need of upgrading. After reviewing the drawings of record and a preliminary site inspection, P&D Aviation was able to conclude that there are four main drainage issues that will need to be resolved, as follows:

1. The outfall of the drainage into the retention basin needs to be controlled.
2. Ponding occurs in the center of the airfield.
3. Additional drainage facilities will need to be provided for future growth.
4. Long term access/easement rights to the off-site storm drainage retention basin.

Basin Outfall. Currently, the existing swale and drainage system on the airport drains in a northerly direction to the existing retention basin on the Teichert & Sons, Inc. property. There are currently two drainage outfalls into the basin. At both outfall locations the storm waters fall uncontrolled into the basin without any structure. This causes a large amount of erosion in the banks of the basin.

In the future, when the Teichert property is developed, the basin will be significantly reduced in size. It will be advantageous to combine these outfalls into one location. P&D Consultants, Inc. recommends removing the easterly outfall, and extending the ditch on the airport property to join the westerly ditch.

At the end of this primary ditch, adjacent to the north airport property line, a drop structure should be installed. The drop structure should have a grated inlet and a flowline approximately 10 feet below grade. A 42-inch reinforced concrete pipe should be installed to the wall of the retention basin. At the outfall of the pipe, a concrete outfall structure should be installed. The outfall structure should have an apron that extends down the basin wall and 10 feet out onto the basin floor. The apron can be made of concrete or rock slope protection material. The basin cannot be closer than 5 feet to the local water table during the winter period.

Existing Ponding. The triangular area in the middle of the airport, bounded by the runways and the FBO area, has several low points where ponding occurs in the winter. This condition should be changed to provide positive drainage. This may be accomplished by either grading the low points so they drain to the existing catch basins, or, installing additional piping and catch basins.

P&D recommends the installation of additional piping and catch basins. The new piping can be used to facilitate drainage for future development, to eliminate the ponding, and to support the existing catch basins in the area. The existing catch basins are insufficient to absorb the drainage from this area.

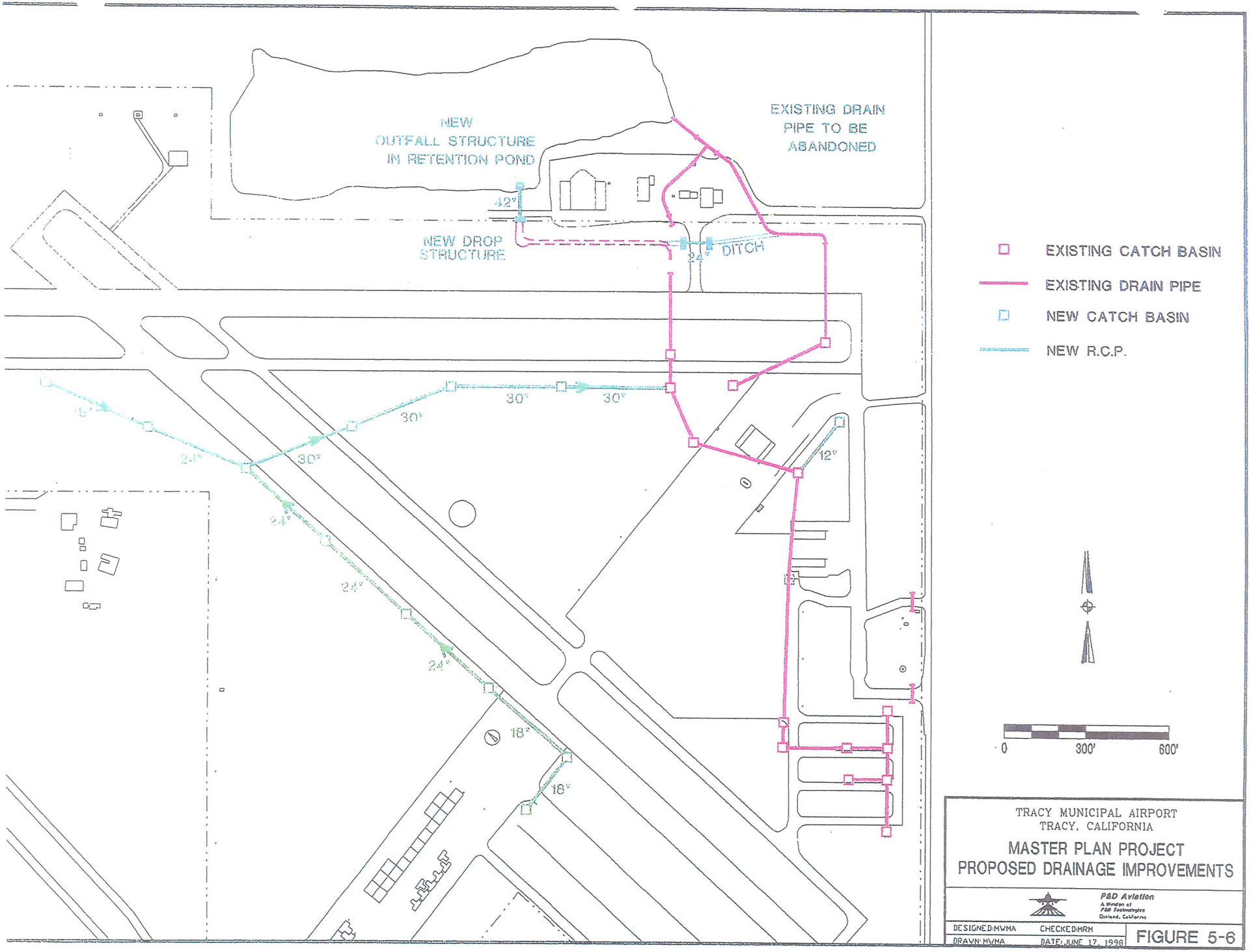
Future Development. The majority of any future development that will increase the impervious area of the Airport will occur in the triangle west of Runway 11/29. It will be necessary to collect any storm waters prior to their crossing the Runway. Therefore, it will be necessary to extend the additional drainage installed to eliminate the standing water in the middle of the airport, as outlined above. This will pick up any water from this triangular area west of Runway 11-29.

Once the main storm drain line crosses Runway 11-25, it will split to the northwest to pick up the remainder of the future development area and to the southeast to

pick up that portion of the developed area. It will also be available to pick up any drainage from the water treatment plant.

Figure 5-6, *"Proposed Drainage Improvements,"* shows the existing drainage system and the recommended improvements. The actual locations of existing and proposed new drainage facilities are subject to a survey and development plan.

Status of Existing Easement. In October 1977, the City was granted an easement to discharge storm drain water into a retention basin on the adjoining Teichert & Sons, Inc. property for both existing and future runoff as the result of continued Airport development. The easement also allows the City to enter the property to *"lower the...channel...and replace....culverts...as necessary."* If airport storm water runoff is discharged into a surface drainage system, and such system drains into the waters of the United States, the provisions of Federal laws concerning clean water (and coordination and permits from the U.S. Army Corps of Engineers) come into play.



TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA

MASTER PLAN PROJECT
PROPOSED DRAINAGE IMPROVEMENTS

P&D Aviation
A Division of
P&D Technologies
Oakland, California

DESIGNED:MVMA	CHECKED:HRM	FIGURE 5-6
DRAWN:MVMA	DATE: JUNE 17, 1998	

CHAPTER 6

FINANCIAL PLAN

INTRODUCTION

This chapter of the Tracy Airport Master Plan reviews the financial resources available to the City for funding the airport's capital improvement development program, and develops an annual pro-forma financial projection to determine capital funding requirements for the first five years of the program.

In preparing the above information, certain additional background analyses were undertaken including: analysis of airport operating revenues and expenses; evaluation of existing leases vis-à-vis industry guidelines and FAA requirements; and, a survey of competing airports to determine the comparability of Tracy Airport lease rates, hangar rents and other factors. A recommended airport lease policy was also prepared. Together, all of these analyses provide the background for the Financial Plan. The Master Plan does not incorporate a specific implementation plan for the airport's capital improvement program, as this is subject to the availability of funding resources and the City's internal priorities. Implementation and phasing of specific projects will be accomplished through the City's annual CIP budget program.

CAPITAL IMPROVEMENT PROGRAM (CIP)

The capital requirements for implementing the proposed development program in two stages is summarized in Table 6-1. It should be emphasized that although the capital costs shown are for specific airport facilities, there should be no commitment to make the investments unless an actual need for such facilities can be demonstrated. The indicated facilities were determined from the forecast of future demand and a survey of airport users.

Should actual demand not be attained per the forecast, then the indicated facilities should be deferred until such time as actual demand matches forecast values. On the other hand, if actual demand exceeds the forecast values, then the implementation schedule of facilities could be advanced accordingly. The main benefit of presenting this capital cost and staging program is to provide guidance to the City for anticipating when investment is needed according to actual demand levels.

Table 6-1
TRACY MUNICIPAL AIRPORT
CAPITAL IMPROVEMENT PROGRAM REQUIREMENTS
FY 1997-98 through FY 2001-02

PROJECT		TOTAL PROJECT COST [2]
CURRENT PROJECTS - Stage I (FY 96-97 through FY 97-98)		
A. Relocate Fuel Storage, Reconstruct Tiedown Apron	$	335,000
B. New Electrical System and Vault [1]		236,000
C. Slurry Seal R/Ws, T/W's, Apron [1]		250,000
D. Taxiway Construction (South) [1]		159,000
E. Relocate 9 Portable Hangars, Construct 12 New Hangars		255,000
F. Electric Power/Lighting to Hangars		116,000
G. Slurry Seal (South Hangar Area)		74,945
H. Ramp/Taxiway Construction (Hangar 4 Area)		50,000
TOTAL STAGE I PROJECTS	$	1,475,945
NEW PROJECTS - Stage II (FY 98-99 through FY 01-02)		
A. Land Acquisition (Approach Protection)	$	1,463,000
1. Nelson Concrete (5.4 acres) [3]		900,000
2. Ellisagaray (4.7 acres)		300,000
3. Basalite Easement (0.6 acres)		18,000
4. Runway 25 RPZ Easement (9.3 acres)		10,000
5. Runway 29 RPZ Easements (6.3 acres)		10,000
6. So. Schulte - (Western Corral) (23.7 acres)		225,000
B. Land Acquisition (Airport Expansion)	$	1,600,000
1. Bureau of Reclamation Land Transfer (22.9 acres)		50,000
2. Farm Site (22.4 acres)		1,200,000
3. Navarra (3.4 acres)		350,000

[1] The Federal grants for these items totals $624,573. However, the anticipated cost is $645,000; 90% of this amount is $580,500. Thus a total of $44,073 of the Federal grant is not committed.

[2] Costs are in inflated dollars at year of expected development. Cost escalation rate assumed at 2.4% per year, compounded.

[3] Includes Land acquisition and relocation costs

Table 6-1
TRACY MUNICIPAL AIRPORT
CAPITAL IMPROVEMENT PROGRAM REQUIREMENTS
FY 1997-98 through FY 2001-02

(Continued)

PROJECT		TOTAL PROJECT COST
C. Airport Development	$	1,821,600
1. Extend/Upgrade Water System		307,800
2. Extend/Connect Sewer System		138,200
3. Portable Hangars - South Hangar Area (29 units)		588,000
4. Pilot Lounge (Trailer)		25,000
5. Improve Main Entry		228,900
a. Public Parking ($142,000)		
b. Main Entry Lighting ($38,400)		
c. Entranceway Construction ($48,500)		
6. Shade Hangars (18 units), Lighting		215,000
7. Aircraft Wash Rack		42,200
8. Helicopter Pad		52,000
9. Storm Drain Upgrade		117,500
10. Fence Relocations		100,000
11. Relocate Airport Beacon		7,000
D. Reconstruct So. Tracy Blvd		1,265,000
1. Planning, Design, etc.		205,000
2. Convert 10' VCP Sanitary Sewer		300,000
3. Road Work		720,000
4. Rehabilitate Existing Water Line		40,000
TOTAL - STAGE II PROJECTS	$	6,149,600
TOTAL - ALL PROJECTS (STAGES I and II)	$	7,625,545

Source: City of Tracy; P&D Consultants

Revised 12/97

Overall Program

Highlighting the program is the staged increase in airport hangar facilities, provision of needed water and sewer systems, upgrading of electrical power/lighting systems, and additional taxiways and aprons to accommodate the forecast increase of based aircraft and operations. The staged program also provides for the possible addition of two FBOs at designated sites on the south side of the airport and acquisition of land and easements for runway protection zones.

Cost Estimates

Cost estimates for the various stages I and II improvements are summarized in Table 6-1. The program does not reflect any commitment or obligation to undertake any or all of the projects, nor is the program set out in Table 6-1 a firm order of preference or priority.

Short-Term (Stage I) Program. Over the period FY 1996-97 through FY 1997-98, capital costs are estimated to total almost $1.5 million in inflated dollars. These are the estimated costs at the year of expected development, escalated at 2.4% per year, compounded.

Long-Term (Stage II) Program. During the period FY 1998-1999 through FY 2001-2002, the estimated cost is just over $6.1 million. Together, the Stage I and Stage II programs total almost $7.63 million. It is important to note, however, that not all stage II projects will be implemented by 2002. The availability of funds and the City's funding priorities will determine which projects will be implemented. In addition to the stage II projects, several additional projects, including a proposed hotel ("Airtel") and aircraft museum, and corporate aviation facilities are proposed. These would be built with private capital at some future date, and would not be included in the City's CIP program.

CAPITAL 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 private capital, airport lease revenues, and City funds (Airport Enterprise, primarily, and, when so warranted, the City General Fund).

FAA Airport Improvement Program (AIP)

On the Federal level, the FAA's Airport Improvement Program provides funding for planning, construction, or rehabilitation at any public airport. The current grant program, known as the AIP, was established by the Airport and Airway Improvement Act of 1982 and amended most recently by the Federal Aviation Administration Authorization Act of 1996. The AIP provides funding through FY 1998 from the Airport and Airway Trust Fund for airport development, airport planning, noise compatibility planning and to carrying out noise compatibility programs. Reauthorization will be necessary for funding after FY 1998.

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 a 10 percent tax on airline tickets, a 6.25 percent tax on freight waybills, a $6 international departure fee, a $0.15 and $0.175 per gallon tax on general aviation gasoline and jet fuel, respectively.

The Airport and Airway Improvement Act of 1982, as amended, authorized the use of monies from the Airport and Airway Trust Fund to make grants under the Airport Improvement Program through fiscal year 1998, which ends on September 30, 1998. The following amounts were authorized for the AIP:

Fiscal Year	Authorization Amount ($Billions)
1997	$2.068
1998	$2.129

Under the Act, the authorization for funds not obligated in a fiscal year carries forward to future fiscal years unless the Congress takes specific action to limit such amounts. During the annual appropriations process, Congress may also limit the funding for grants to an amount that differs from the above authorization. It should be noted that in fiscal year 1996 the actual amount appropriated was $1.380 billion or 62 percent of the $2.214 billion authorized.

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. Technical advisory services are also eligible. 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 art work, or routine maintenance and repair.

The AIP provides a maximum Federal share of 90 percent for all eligible projects. Because of the large number of projects competing for AIP funds, not all eligible projects can be funded.

In fiscal year 1996, $13.3 million in AIP funds was granted to 14 "general aviation" airport projects in the State of California (excluding reliever airports) for an average grant of $950,000 per project General aviation airports may be publicly or privately-owned to receive AIP grants, but must be included in the National Plan of Integrated Airport Systems (NPIAS). There are presently 122 general aviation (non-reliever) airports in the State that are included in the current NPIAS and compete for the AIP funds. Proposed grant projects must compete with all other projects in the State on the basis of need.

The funds for AIP are distributed in accordance with provisions contained in the 1982 Act, as amended.

California Aid to Airports Program (CAAP)

The CAAP provides three types of grant funding to general aviation airports: annual grants; acquisition and development grants (A&D); and grants to cover part of the sponsor's share of eligible projects funded by FAA AIP grants (AIP Match). 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.

Each program is discussed below.

Annual Grants. The annual grants are used to fund preapproved, eligible projects and/or operations and maintenance of public-use general aviation airports (commercial service and reliever airports are not eligible). The funds are a fixed amount of $10,000 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 general obligation or revenue bonds issued to finance airport capital improvements and for operation and maintenance purposes. They may also be used as the local match for a Federal grant.

Acquisition and Development Grants. Acquisition and development grants provide discretionary funds for airport projects included in the adopted state aeronautics program administered by Caltrans. The aeronautics program is a three year capital improvement program. In prioritizing project submittals, Caltrans uses a "State Aeronautics Program Evaluation Matrix."

Acquisition and development grants can be used to fund any capital improvements used for aviation purposes on an airport, with runway construction/rehabilitation projects receiving the highest priority. 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 AIP grants. Funds cannot be used for operations or routine maintenance. Grants range from $10,000 to $500,000.

Total acquisition and development grant funding was $2.4 million in fiscal year 1994/95 for 17 grants. In fiscal year 1995/96, six grants were funded for a total of $1.6 million. Current estimates of acquisition and development grants for future years are as follows:

Fiscal Year	Programmed Grant Amount
1996/97	$3,700,000
1997/98	$2,471,000
1998/99	$2,483,000

There are 179 general aviation (including reliever) airports in California competing for these funds. The State's fiscal year ends on June 30 (as opposed to September 30 for the Federal government).

The California Transportation Commission annually establishes a local matching requirement which ranges from 10 to 50 percent of the airport sponsor's share or non-Federal funded portion of the eligible project cost. Since 1977/78, this has been 10 percent of eligible costs for acquisition and development projects.

Federal AIP Matching Grants. A third type of grant became effective October 1, 1994 and relates to AIP projects funded after this date. As explained previously, FAA AIP grants will typically cover 90 percent of eligible project costs for general aviation airports, which prior to October 1, 1994 left 10 percent of the project costs to be borne by the airport sponsor. The new state grants will provide five percent of

the 90 percent FAA grant to be used as part of the sponsor's matching share. This translates into 4.5 percent of eligible project costs, which reduces the sponsor's matching share to 5.5 percent. It is expected that a total of $1.5 million will be available for these grants, and with the introduction of this program the amount available for Acquisition and Development grants has been reduced. Since the amount of funds available from the State is essentially fixed, it was necessary to change the distribution among the different grant programs. The amount available for A&D grants was reduced to accommodate the new AIP match program. In fiscal year 1995/96, 17 grants were funded for a total of $500,000.

Revenue Generating Loans. Loans may be made for revenue generating projects not eligible for funding under other programs and which are designed to improve airport financial 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. Matching fund loans may be used for securing Federal AIP grants. The amount of these loans equals the sponsor's share (5.5 percent) of project costs required to match a Federal grant. Requests for matching fund loans are given highest priority. Total loan funding (for both Revenue Generating and Matching Fund Loans) in fiscal year 1994/95 was $2.25 million for 17 projects. In fiscal year 1995/96, only one loan was funded for a total of $90,000. In the future, approximately $2 to $2.5 million per year can be expected to be available for matching fund loans.

Private Capital

Private funding is often available for certain airport improvements, including, most commonly, aircraft hangar construction. It is assumed that some of the future hangars and other FBO improvements at the Tracy 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, ownership of the hangars could revert to the City or lessee, depending upon the terms of the airport's lease agreement.

Airport Revenues and City Funds

As one of its enterprise funds, the City of Tracy has established an airport program fund for the two airports it operates and maintains: Tracy Municipal Airport and the New Jerusalem Airport. The airport fund is financed primarily through airport-

generated revenues, the State annual grant and loans, Federal grants, investment earnings, and, when required, City contributions or loans.

REVENUES FROM AIRPORT ACTIVITIES

Revenues accruing to the City of Tracy Airport Fund are also generated by various activities at both the Tracy Municipal Airport and New Jerusalem Airport. A brief discussion of these sources, by major City revenue accounting category, follows. It should be noted that for the purpose of this analysis, revenues derived from Federal Grant, Investment Earnings and Miscellaneous Airport Fund sources are not included. In addition, although the New Jerusalem Airport has two paved runways, no revenue is generated from aviation-related activities.[1]

Aircraft Parking Fees

The Airport has 250 tie-downs. Rents are $30/month for based aircraft, and $6/day for transient aircraft. Currently, only 12 tie-downs are rented on a monthly basis.

The tie-down rental agreements provide for price escalation from time to time, based upon Tracy City Council approval. There is no recognized index specified for use in making price increases.

City Hangar and Office Space Rentals

At the Tracy Airport, the City owns 39 Box and T-hangars of various sizes with and without electric power. The CIP (in FY 96-97 and FY 97-98) provides for the installation/upgrade of electric power in all hangars. The rents are as follows:

Location	No. Hangars	Type Hangar	Electric Power	Monthly Rent
Complex G	20	Large - T	Yes	$145
Complex F	9	Small - T	Yes	$115
Complex 3	5	Small Rectangle	Yes	$108
Complex 4	5	Small Rectangle	Yes	$108
Total:	39			

1 Although the City of Tracy does permit use of a portion of one of the runways for a radio-controlled model airplane club, and does allow use of the field by an "ultra-light" aircraft organization, no revenues are generated from these sources.

The City also rents office space in Hangars 3 and 4. The total monthly rent for this space is $79.

The rental agreements for these facilities do not have automatic rental rate adjustment clauses that allow for price escalation based upon a recognized index.

Airport Rental and Concessions

Included in the City's accounting category of "Airport Rental & Concessions" are: ground leases, rent, and concessions.

Ground Leases. The airport leases land at the Tracy Municipal Airport for privately constructed and owned hangars, the rates for which vary according to the size of the parcel/hangar and whether the hangar is provided with electrical power. The lease rates are as follows:

Parcel	No. Hangars	Type Hangar	Electric Power	Monthly Ground Lease
AP-3	2	Large T	No	$33.50
AP-4	6	Small T	No	$32.50
AP-1	9	Large Rectangle	Yes	$52.50
AP-2	7	Small Rectangle	Yes	$46.00
Total:	24			

The ground leases provide for price escalation based upon the Consumer Price Index and approval of the Tracy City Council.

The City also leases the land and buildings (including hangars) at the Tracy Municipal Airport to the Tracy Flight Center, the only fixed base operator (FBO) on the site. The lease rate is 3% of gross sales which are derived from flight instruction, aircraft rental, related labor, taxable sundries and a ground school. The City also charges the FBO for a portion (currently 30%) of the cost of all electric power used at the airport.

Concessions. Prior to FY 1992-1993, the City of Tracy provided (through concessionaires) the aviation-related goods and services (including fuel sales) in City-owned facilities at the Tracy Airport. Revenues from these activities were reported under the City's accounting category, "Concessions". In FY 1992-1993,

Concessions. Prior to FY 1992-1993, the City of Tracy provided (through concessionaires) the aviation-related goods and services (including fuel sales) in City-owned facilities at the Tracy Airport. Revenues from these activities were reported under the City's accounting category, "Concessions". In FY 1992-1993, this operation was turned over to a private contractor, the Tracy Flight Center, which is the current FBO on the Airport. As noted above, the Tracy Flight Center pays the City 3% of gross sales for lease of the City land and buildings it uses for these services, plus 30% of the cost of electric power used at the airport. Starting in FY 1993-1994, fuel sales were reported in a separate City accounting category entitled *"Airport Fuel Sales."*

Fuel Sales. Fuel flowage fees ($0.05 per gallon sold) are derived from the FBO. These fees are based upon the amount of fuel sold and as such, do not account for fuel used by the FBO for its own purposes.

Rent. As noted earlier, the New Jerusalem Airport has two paved runways. Moreover, one runway has been closed and no aviation-related revenue is generated. However, a substantial amount of rental income has accrued to the City of Tracy Airport Fund from non-aviation related activities. Until July 1997, rent was being received from the Tracy Sewer District for disposal of sludge from its waste water treatment plant. The rental rate was based upon a fixed amount, which was increased each year based upon the Consumer Price Index. Additionally, the airport is rented to local farmers for agricultural purposes at rates related to the amount of crops produced and sold.

In the past five years, an average of over $72,000 per year was generated by the sludge disposal operation, and over $46,000 per year by the farming operations. By agreement with the Tracy Sewer District, all farming revenues accrue to the Sewer District to help offset the sludge disposal fee. It is important to note that the sludge disposal operation ceased in July 1997. When revenues from this source stopped, the City again received rental income from the farming operations.

It should also be noted that sale of the New Jerusalem site is contemplated. In late 1995, the City contacted the Federal Aviation Agency (FAA) regarding the land release and sale of the New Jerusalem site. One of the FAA's conditions regarding approval of the sale is that the net proceeds be committed to the Tracy Municipal Airport.

State Aviation Grant

The Tracy Airport also receives a $10,000 annual grant from the State of California Aviation Fund. This money is used for maintenance, operation and capital improvements at the airport. The City also receives a similar grant amount

for the New Jerusalem Airport. The grant for New Jerusalem would be discontinued when this airport was sold.

Airport Revenues FY 1986-1987 through FY 1996-1997

A summary of aviation and non-aviation revenues accruing to the Airport Fund on an annual basis from FY1986-1987 through FY 1995-1996 and budgeted for FY 1996-1997 is contained in Table 6-2.

It may be noted that the previously mentioned transfer of concession activities from the City to the FBO is reflected in the sharp decline in revenue in FY 1992-1993 and thereafter. This decline in from this source revenue, however, was also accompanied by a decrease in airport operating costs.

It may also be noted that since FY 1993-1994, revenue from fuel sales is no longer shown under "Concessions"; it is now shown under "Airport Fuel Sales". Additionally, the annual grant amount shown in Table 6-2 results from grants received for both the Tracy Municipal Airport and the New Jerusalem Airport.

Federal grants are not included in Table 6-2. These grants are made for various improvements and received on a project-by-project basis. Since they are not made on a regular basis, these funds are not included in Table 6-2.

To provide insight as to the reliability of this income stream, the various sources were categorized under the following headings:

- *"Predictable"* (a reliable source and relatively constant amount that could reasonably be expected each year);
- *"Variable"* (a reliable source but the amount of income derived therefrom can vary significantly); and
- *"Non-Predictable"* (sources which could end at almost any time).

To provide consistency in revenue reporting for the various accounting categories, only those data from FY 1993-1994 through FY 1996-1997 are shown in Table 6-3. As may be noted, the *"Predictable"* category (which includes City Hangar Rentals, and Airport Rental & Concession - Ground Leases) accounted for roughly 50% of airport revenue.

The *"Variable"* category which includes Aircraft Parking, (Tie-Down Fees and Fuel Flowage Fees) will naturally vary depending primarily upon transient activities (such as special events) and FBO activities. Thus far, this category has amounted to a relatively minor proportion of overall revenues.

TABLE 6-2
CITY OF TRACY AIRPORT FUND REVENUES[1]
FY 1986-1987 to FY 1996-1997
(in dollars)

	FY 86-87	FY 87-88	FY 88-89	FY 89-90	FY 90-91	FY 91-92	FY 92-93	FY 93-94	FY 94-95	FY 95-96	FY 96-97[2]
AIRCRAFT PARKING FEES	7,525	8,370	17,231	7,619	8,265	8,193	5,584	4,175	3,087	351	4,320
CITY HANGAR & OFFICE RENTALS	29,324	24,037	28,020	23,862	22,127	22,966	30,575	59,769	58,917	56,987	61,128
AIRPORT RENTAL & CONCESSIONS											
Ground Leases	17,223	45,702	35,800	18,412	13,212	12,002	11,081	11,857	12,672	19,885	20,000
Rent (New Jerusalem)	--	--	69,899	84,004	84,881	69,727	71,471	72,808	74,448	74,328	75,000
Concessions/Fuel Sales [3]	--	--	--	86,143	92,751	96,392	32,681	1,068	--0--	4,705	5,000
STATE GRANTS	--	--	--	10,000	10,000	21,000	10,000	10,000	20,000	20,000	20,000
TOTALS	54,072	78,109	150,950	230,040	231,236	230,280	161,392	159,667	169,124	176,256	185,448

[1] Excludes Federal Grants, Investment Earnings & Miscellaneous Airport Fund Revenues
[2] Budget estimates plus current rents
[3] Starting in FY 1993-1994, includes only fuel flowage fees

Source: City of Tracy; P&D Consultants, Inc.

TABLE 6-3
REVENUES FROM AIRPORT ACTIVITIES
FY 1993-1994 to FY 1996-1997
(IN DOLLARS)

Revenues by Source	FY 93-94	FY 94-95	FY 95-96	FY 96-97 *[1]*
PREDICTABLE				
City Hangar Rentals	59,769	58,917	56,987	61,128
R&C *[2]* - Ground Leases	11,857	12,672	19,885	20,000
Annual State Grants (Tracy)	10,000	10,000	10,000	10,000
Subtotal	81,626	81,589	86,872	91,128
VARIABLE				
Aircraft Parking	4,175	3,087	351	4,320
R&C (Fuel flowage)	1,068	0	4,705	5,000
Subtotal	5,243	3,087	5,056	9,320
NON-PREDICTABLE				
Annual State Grant (NJ)*[3]*	0	10,000	10,000	10,000
Rent *[4]*	72,808	74,448	74,328	75,000
Subtotal	72,808	84,448	84,328	75,000
TOTALS	159,677	169,124	176,256	185,448

[1] Budget Estimate
[2] R&C = Airport rent and concessions
[3] NJ = New Jerusalem
[4] Sludge Disposal Fee

Source: City of Tracy, P&D Consultants

By contrast, the *"Non-Predictable"* category (Airport Rental & Concessions, Rent, and State Grants) includes the sludge disposal fees from and annual State Grant for the New Jerusalem site. This category accounts for roughly 50% of total revenue. With sale of the New Jerusalem site anticipated in the near future, future operating revenues from this source will no longer be available. Therefore, it would be highly desirable to increase the amount of predictable revenue as soon and as much as possible. This could be done by constructing more hangars and attracting more FBO/lessees as demand for these facilities increases. It would also be desirable to place the sales proceeds from New Jerusalem into an annuity or other income generator to provide a larger stream of predictable revenue.

AIRPORT OPERATING EXPENSES

Airport operating expenses include personnel costs, contracted services, commodities and miscellaneous operating expenses, and long-term debt amortization. These are discussed below:

Personnel Costs

This category includes salary and fringe costs for City personnel. It also includes the cost of temporary help.

Contracted Services

This category includes contracted services, utilities, advertising, maintenance and all other services and related supplies. These expenses do not include any allowance for depreciation.

Commodities & Miscellaneous Operating Expenses

Included here are office supplies, maintenance materials, internal charges by other City departments, and miscellaneous operating expenses. Also included prior to FY 1993-1994 were fuel costs. As noted earlier, the fueling operations in FY 1992-1993 were turned over to the Tracy Flight Center FBO.

Long-Term Debt and Interest

Long-term debt and interest includes three notes payable by the Airport. The first note is payable to the State of California in the amount of $200,000 (at 6.1 % for 10 years) for construction of hangars and related pavement, and is scheduled for amortization in FY 2002-03 The second note is also payable to the State of

California in the amount of $150,000 (at 5.8975 % for ten years) for construction of hangars and related pavement, and is scheduled for amortization in FY 2004-05. The third note is also payable to the State of California in the amount of $250,000 (at 5.4804% for 12 years) for construction of hangars, an electrical system, taxiways and related improvements, and is scheduled for amortization in FY 2008-09.

Airport Operating Costs: FY 1986-1987 to FY 1996-1997

Historical operating expenses over the past ten years shown in the FY 1996-1997 budget are depicted in Table 6-4. As may be noted, operating costs in FY 1992-93 decreased because Fixed Base Operations were turned over to a private contractor (Tracy Flight Center). This is reflected in the reduced Personnel Costs category and lower Commodities & Other Expense categories (which included fuel purchases subsequently made by the FBO).

In FY 1993-94, a part-time Maintenance Worker position was added due to the increased workload, which has continued to the current year. This is reflected in the increased Personnel Expense in FY 1994-95. In FY 1996-97, the Airport Program was reassigned from the Public Works Department to the Parks & Community Services Department. It is anticipated that overall operating costs will decrease in line with prior trends.

It is important to note that the above operating costs include expenses relating to the New Jerusalem site. These expenses relate to weed abatement and maintenance relative to the runway and taxiway for the active runway. The inactive runway is not maintained but weed abatement is provided by the agricultural lessees. The expenses for New Jerusalem, however, cannot be separated from the above. According to City of Tracy estimates, these expenses average about $10,000 per year and are offset by the annual State grant ($10,000).

OVERALL COMPARISON: REVENUES vs COSTS

A comparison of the overall Airport Program operating revenues (excluding Federal Grants, Investment Earnings and Miscellaneous Revenues) and operating costs is made in Table 6-5. As may be observed, prior to FY 1988-1989 and in FY 1995-1996, costs exceeded revenues. These shortfalls, however, were covered by other funds (grants, investment earnings, etc.).

Beginning in FY 1988-1989, revenues exceeded costs and the Airport Program was financially self-sufficient. However, this revenue surplus was created by the

TABLE 6-4
CITY OF TRACY
AIRPORT OPERATING EXPENSES
FY 1986-1987 to FY 1996-1997
(in dollars)

	FY 86-87	FY 87-88	FY 88-89	FY 89-90	FY 90-91	FY 91-92	FY 92-93	FY 93-94	FY 94-95	FY 95-96	FY 96-97[1]
PERSONNEL EXPENSES [2]	25,127	24,301	25,127	64,807	77,547	69,640	52,453	48,378	63,744	81,080	64,380
CONTRACTED SERVICES [3]	61,249	86,602	56,689	97,986	28,007	21,974	33,696	32,240	34,401	38,159	57,940
COMMODITIES & OTHER EXPENSES [4]	[5]	[5]	[5]	[5]	103,749	88,057	38,228	25,452	25,912	18,184	18,760
SUB-TOTAL:	86,376	110,903	81,816	162,793	209,303	179,671	124,377	106,070	124,057	137,423	141,080
LONG-TERM DEBT & INTEREST [6]								32,324	31,092	47,180	46,948
TOTALS	86,376	110,903	81,816	162,793	209,303	179,671	124,377	138,394	155,149	184,603	188,028

[1] Budget Projection

[2] Includes salaries & benefits

[3] Includes utilities, maintenance, operation, equipment rental and other contracted services

[4] Includes supplies, materials, fuel, internal charges from other departments & miscellaneous expenses

[5] Amount included in contracted services

[6] Includes debt service on: Note payable ($200,000) to State of California for construction of hangars and related pavement at 6.1% for 10 years starting FY 92-93; note payable ($150,000) to State of California for construction of hangars and related pavement at 5.9875% for 10 years starting FY 95-96; and note payable ($250,000) to State of California for construction of hangars, an electrical system, taxiways and related improvements at 5.4804% for 12 years starting FY97-98.

Source: City of Tracy; P&D Consultants

TABLE 6-5
OVERALL COMPARISON of AIRPORT PROGRAM OPERATING REVENUES *[1]* and OPERATING COSTS FY 1986-1987 to FY 1996-1997
(IN DOLLARS)

	FY 86-87	FY 87-88	FY 88-89	FY 89-90	FY 90-91	FY 91-92	FY 92-93	FY 93-94	FY 94-95	FY 95-96	FY 96-97*[2]*
AIRPORT OPERATING REVENUES	54,072	78,109	150,950	230,040	231,236	230,280	161,392	159,677	169,124	176,256	185,448
AIRPORT OPERATING EXPENSES	86,376	110,903	81,816	162,793	209,303	179,660	124,376	138,394	155,149	184,603	182,028
REVENUE SURPLUS (OR SHORTFALL)	[32,304]	[32,794]	69,134	67,247	24,933	50,620	37,016	21,283	13,975	[8,347]	3,420

[1] Excludes Federal Grants, Investment Earnings & Miscellaneous Airport Program Revenues

[2] Budget estimates & current activity

Source: City of Tracy; P&D Consultants

sludge disposal fees at the New Jerusalem Airport. Without these fees, there would have been an operating revenue shortfall. Moreover, with the elimination of these funds after FY 1996-1997, a fund shortfall would occur. Thus, the need to replace this revenue source is immediate if the Airport is to maintain its financial self-sufficiency.

AIRPORT LEASE EVALUATION

As noted above, the airport has entered into a number of lease agreements. To provide a framework for this evaluation, the key features that should guide any lease arrangement, especially a lease of airport property, are outlined below.

Key Lease Features

The key features to be considered are founded on certain basic principles. These are described as follows:

Basic Lease Principles. The basic principle underlying any real estate lease is that it should be a sound business arrangement in line with good real estate management practices. The lease terms should consider the short and long term financial impact of the arrangement, public acceptance, physical appearance of any leasehold facility, and a continuing relationship with the other party. This is especially important with respect to leases with FBO's as the lease must make financial sense not only to the FBO but also to lenders who make loans for improvements and development of business.

With respect to airport property management, however, where the owner receives Federal grant assistance, there are other obligations wherein the owner is more than a passive landlord of specialized real estate. In this situation, the owner is obligated to comply with a number of assurances with respect to aeronautical use, maintenance and operations, use of airport property, and others necessary to preserve the rights and powers needed to perform the covenants in the agreement with the United States Government.

For the purposes of this analysis, the most pertinent guidelines set forth by the Federal Aviation Administration (FAA) require that:

- The owner operates the airport for the use and benefit of the public and makes it available to all types of aeronautical activity on fair and reasonable terms without unjust discrimination.

- The owner makes the facilities and services available at rates and charges that are fair and reasonable and applied without economic or any other type of discrimination.

- The owner operates the airport to be as financially self-sustaining as possible.
- There is no actual or proposed development of use of land and facilities contrary to an Airport Layout Plan (ALP) previously approved by the FAA.

The lease agreement does not relieve the owner of its obligations, rights and powers under its agreement with the Federal Government.

Rights or Privileges of Lessor and Lessee. The basic obligation of the public airport owner (lessor) is to make available to the public the aircraft landing and parking areas. However, the owner has the right to recover the cost of providing these facilities through fair and reasonable fees, rentals and other user charges. From the standpoint of the tenant (lessee) it is important that the terms of the lease be designed to give it sufficient latitude to operate it's business and survive financially. Airport lease agreements usually reflect a grant by the owner (lessor) to the tenant (lessee) the three basic rights or privileges for an appropriate monetary consideration:

- The right for the tenant to use the landing area and public airport facilities in common with others so authorized.

- The right to occupy as a tenant and to use exclusively certain designated premises on the airport.

- The commercial privilege or franchise right to offer goods and services to the public who use the airport.

Likewise, the right of the tenant (lessee) with respect to the establishment of the fees, rentals, etc. is that the rates, terms and conditions are non-discriminatory. However, it is the responsibility of the airport owner, in negotiating the privilege to offer these services and commodities at the airport, to retain sufficient control over the operation to guarantee that the patrons will be treated fairly. The owner may not have this control if, by contract or otherwise, it surrenders the right to approve rates, fees, and charges imposed for essential aeronautical services.

It should be noted that the obligation of the airport owner to ensure availability of services to the public on fair and reasonable terms is limited to aeronautical

activities. There is no requirement in a grant agreement or deed with the Federal Government that the prices charged for nonaeronautical concessions be controlled.

It is also important to note that this obligation to make an airport available for the use and benefit of the public does not impose any requirement to permit access by aircraft from adjacent property. The existence of such a "through-the-fence" arrangement could place an encumbrance upon the airport property unless the airport owner requires the off-site property owner or occupant to conform in all respects to the requirements of an existing or proposed grant agreement.

From a safety standpoint, arrangements that permit aircraft to gain access to a public landing area from off-site properties could complicate the control of vehicular and aircraft traffic. Special safety operational requirements would have to be incorporated in the "through-the-fence" agreement. In fact, the FAA, as a general rule, recommends that airport owners refrain from entering into such agreements.

The owner also has a right (with prior FAA approval) to lease airport property for non-aviation purposes until such time as it is needed for its primary aeronautical purpose. Such approval, however, does not release the property from any term, condition, or covenant of the applicable compliance agreement with the Federal Government. Any option to renew an interim use lease agreement should be conditioned on obtaining a new FAA determination that the property will not be needed for any aviation use during the proposed renewal period. Investment by the interim user is at its risk and is not a factor in considering renewal of a lease or use agreement.

Term of Lease. To conform with the realities of lending institution financing, the lease term should extend for a period long enough to permit amortization of loans made for physical improvements on the property and erection of hangars, buildings, and the like. Financing experience has shown that 15 years is the minimum term accepted by most lenders for major improvements. A 20-year lease, with options to extend, is preferable.

From the perspective of the lessor, a long-term lease for a key aviation service is desirable, so long as fair market rentals are being achieved.

Lease Rates and Charges. As noted above, the obligation to make an airport available for public use does not preclude the owner from recovering the cost of providing the facility or service through fair and reasonable fees, lease rates or other user charges which make the airport as financially self-sufficient as possible. However, each tenant (i.e., FBO) must be charged the same rates, fees and charges as all other FBO's making the same or similar uses of the airport or utilizing the same or similar facilities. In establishing these rates and charges; a variety of

factors must be considered. For example, differences in the values of properties involved and the extent of common facilities usage must be considered; seldom will each user have properties of the same value nor will their use of the common facilities be the same. To justify noncomparable rates, the owner must show that the differences are substantial.

Another example would be if one operator rents hangar space and another builds its own facilities; this would provide justification for different rental and fee structures. These two operators would not be considered similar as to rates and charges even though they offer the same services to the public.

Also, if one FBO is situated in what is considered a prime location and another FBO is in a less advantageous area, there could logically be a differential in the fees and charges to reflect this advantage of location. This factor would also influence the rental value of the property.

In addition, even if two FBO's are both providing primary commercial services, they may have dissimilar requirements, i.e., space needs, building construction, or location. Therefore, different rates may be acceptable, although the rates must be equitable.

Lease Rate Adjustment. It is important to note that all leases, especially those with a term exceeding five years, should provide for periodic review of the rates and charges and adjustment (based upon an acceptable index) to reflect the then current values. This periodic lease review will facilitate parity of rates and charges between new FBO services coming on the airport and the existing operators. It will also assist in making the airport as financially self-sustaining as possible under the circumstances existing at the airport.

Leasing Aprons Constructed with Federal Assistance. As noted above, the owner has the responsibility for the management and operation of the airport and must assure it is operated in accordance with all aspects of the Federal grant assurances. As such, the owner can not enter into unconditional leasing of apron areas constructed with Federal grant assistance since it would impair its ability to comply with its obligations to the Federal Government.

Apron space or tie-downs on the apron can be leased by the owner to individual aircraft owners and/or to FBO's for space necessary to serve the needs of their aircraft in their business. Also, the apron area in the immediate vicinity of an FBO can be leased to the FBO to permit the exercise of his/her business over the public-use ramp area. However, the lease terms must not restrict the owner from carrying out its grant obligations and must ensure that the public will be served by the lessee in a manner consistent with the grant agreement.

A point worth mentioning is that the installation of portable hangars and sun shades on Federally-funded aprons is prohibited, except when specifically approved by the FAA. Such hangars and/or sun shades, if approved, must be designed for ready-removal (no foundation or footing); not cause damage to the apron and, meet other FAA criteria.

Insurance Requirements. It is normal that the lease require indemnity insurance holding the lessor harmless from all claims, risks, accidents, or injuries caused by the lessee or its employees acting on its behalf in the operation of the leasehold business.

The lease should also give the lessee and its customers the rights of ingress, egress, and of free access to the premises, as well as "peaceful possession and quiet enjoyment" thereof. There should also be an assurance that the lessor will continue to operate the airport as a public airport consistent with government regulations, and there will be no restrictions on normal operations which might apply to the proposed leasehold during the term of the lease.

Requirement to Make Improvements. In the case of leases with FBO's, the lease agreement should contain language which obligates the lessee to provide physical improvements and installations on the premises, including refurbishing existing structures and/or the erection of new structures and to do so within a certain time period.

Right of Prior Approval and Conformance to Design Criteria. The lease should also give the lessor the right of prior approval of all architectural/engineering plans and designs for improvements, as well as any contractor to be selected by the lessee to construct the improvements. Requirements relating to site improvements, exterior design, building height, paint schemes, signage, etc. should also be part of the lease agreement.

Maintenance and Repairs of Leasehold. The lease should specify which party is financially responsible for repairs and maintenance of the leased premises. In some cases, the lessor pays for structural repairs and specific major items and the lessee pays for maintenance needed because of ordinary wear and tear. If the lessee does not perform the required maintenance and repairs, the lessor should have the right to enter the premises to perform the necessary work at the lessee's expense.

Fire Loss. Most leases require the lessee to replace buildings or facilities destroyed by fire and to return them to the pre-damaged conditions so that the replacement is equivalent in value to the original facilities. Normally, the lease will require 75-80 percent fire and extended coverage and lessee liability coverage with insurance

companies approved by the lessor. The lessor should also be named on the insurance certificates as an additional insured.

Ownership and Removal of Improvements After Termination. The lease should also specify in whom title to the various improvements will vest upon leasehold termination. If ownership of improvements do not revert to the lessor, then there should be the requirement for lessee removal of all or certain structures, fixtures or equipment on the site. Ordinarily, a stated time is given to the lessee to do this and vacate the premises. If the lessee fails to do so within the allotted time, the lease should allow the lessor to remove the lessee's property with liability to the lessee, or provide that such property will become the property of the lessor.

Evaluation of Existing Airport Leases

A review was made of the existing leases at Tracy Municipal Airport. The findings with respect to the above noted guidelines are as follows:

- The FBO and private hangar parcel leases have escalation clauses to adjust rates in the future. The adjustments are based upon changes in the Consumer Price Index (CPI), plus City Council Approval.

- City-owned hangar and tie-down agreements do not have automatic rental rate adjustment clauses based upon a recognized index. Rather, the rates are adjusted from time to time by the City Council based upon recommendation of Airport Management which considers charges at competing airports and other market factors.

- Term of leases for private hangar parcels is 10 years. City-owned hangar and tie-down leases are on a month-to-month basis. The FBO lease is for a five year term, with renewal at the FBO's option for three additional 5-year periods not to exceed a total of 20 years.

- All the above-noted leases require adequate general liability insurance as well as verification of coverage. The FBO lease also provides for the lessee to carry Workers Compensation insurance as well as Property Damage insurance.

- The FBO lease specifies responsibility for maintenance and operations relative to the leasehold.

- The FBO and private hangar parcel leases have provisions relative to ownership and removal of improvements at time of lease termination.

- The private hangar parcel leases have a requirement to make improvements during a certain time frame, and give the City the right of prior approval of, or require adherence to specific site/building design criteria.

Based on the above review the City has met all of the preferred guidelines with respect to its airport leasing policies.

Lease Rates and Charges at Competitive Airports

A survey of current rates and charges at selected general aviation airports in California was undertaken to evaluate the comparability with the Tracy Airport's rates and charges. A copy of the survey form is included in Appendix "A".

A total of 43 airports were contacted, of which 16 responded. The survey results are summarized and compared with Tracy Airport's rates and charges in Table 6-6. As may be noted, the airport's rates and charges generally fall at or below the average rate and charge for specific categories.

For instance, Tracy Airport rents for existing hangars ($145/month) are slightly below the average ($157/month), but rents for new hangars could be increased. Likewise, Tracy Airport's rents for small rectangular hangars ($108/month) is substantially below the average in the market and could be increased. Tracy tie-down rents ($30/month) could be increased somewhat, but with only 12 existing apron tie-downs, the increase in revenue would not be significant. FBO fuel flowage fees, and percent of sales rents are slightly lower than the average. Increases, however, are, by the terms of the existing FBO lease, renegotiable during the last six months of each five year period. For all future period and for all new FBO leases, higher rates should be sought in line with those at competing airports.

TABLE 6-6
SUMMARY OF GENERAL AVIATION AIRPORT SURVEY RESPONSES

		Survey			Tracy Airport
		# Responses	Range	Average	
Airport Activity					
Operations		16	16,000-232,200	70,200	54,000
Based Aircraft		15	9-564	166	106
FBO Revenues					
Ground Rent	$/sf/year	9	0.07 - 0.87	0.33	–
Hangar Rent	$/sf/year	5	0.72 - 2.76	2.28	–
Tie Down	$/month	6	25-59	37	–
	$/night	5	2 - 4	3.20	–
Fuel Flowage	$/gallon sold	8	0.02 - 0.06	0.05	.05
% Gross Sales		4	1% - 10$	4.0%	3.0
Private Hangar Rent	$/sf/year	3	0.27-0.40	0.40	
Lease Escalation Clause					
CPI		8	adjusted every 1-5 yrs.	N/A	CPI
Other		1	25% every 5 yrs.	N/A	
Airport Owned Hangar Rentals					
Large T	$/month	15	75 - 305	157	145
Small T	$/month	5	25 - 205	110	115
Small Rectangle	$/month	4	130 - 440	278	108
Large Rectangle	$/month	8	160 - 950	378	–
Waiting List	# aircraft	13	1 - 200	52	12
Airport Owned Tiedowns					
Monthly	$/month	12	22 - 85	40	30
Overnight	$/night	13	2 - 9	4.50	6
Landing Fees					
GA *[1]* Revenue Flights	$/1,000 lbs GLW	4	1 - 10	5.20	–
Other *[2]*	per landing	1	15	15	–
Airport Terminal Rents					
Office	$/sf/year	1	14	14	
Counter	$/sf/year	4	2 - 14	8 60	–
Other *[3]*	$/month	4	292 - 600	447	–

[1.] GA = General Aviaton
[2.] Per CDF aerial tanker landing
[3.] Includes restaurant and gift shop

Source: P & D Survey, January 1996 and December 1996

PRO FORMA CASH FLOW AND FUNDING REQUIREMENTS

Proforma cash flow analyses were prepared to evaluate the funding needed to implement the Tracy Airport development program. Before proceeding, it is first necessary to determine the City's share of the various improvements.

Capital Fund Program and Local Share Requirements

The capital improvements and the City's or local share of project costs (after making allowance for federal and state grants) were assumed to occur per the schedule outlined in the City's "Capital Improvement Program – Five Year Plan - FY 97-98 through FY 01-02." This schedule is contained in Table 6-7.

Here it may be noted that the cost of the current or Stage I projects totals almost $1.5 million of which the local share is about $255,000. The cost of the Stage II projects is about $12.2 million with an estimated local share of almost $2.4 million. The total for all capital improvements is about $13.7 million, of which the local share would be about $2.6 million.

Again, it must be emphasized that although the capital costs shown are for specific airport facilities, there is no obligation or commitment to make the investments unless an actual need and revenue generating capability for such facilities can be demonstrated. The need for the facilities is based on forecast of future demand and should it not materialize, the facilities should be deferred until such time as the actual demand matches forecast needs. On the other hand, if actual demand exceeds the forecast values, the facilities development program could be advanced accordingly. The main benefit of presenting this capital costs and staging program is to provide guidance to the City of Tracy for anticipating when investment is needed according to actual demand levels.

Table 6-7

TRACY MUNICIPAL AIRPORT
CAPITAL IMPROVEMENT PROGRAM and LOCAL SHARE REQUIREMENTS
FY 1997-98 THROUGH FY 2001-02

Project & Funding Source	Total Project Cost	Expenditure Prior Years	Appropriations FY 96-97	Proposed Budget FY 97-98	New Appropriations Required FY 98-99	FY 99-00	FY 00-01	FY 01-02
CURRENT PROJECTS (Stage I -FY 96-97 through FY 97-98)								
A. Relocate Fuel Storage, Reconstruct Tiedown Apron	335,000		243,000	92,000				
Local	180,440		110,300	70,140				
Federal/State	154,560		132,700	21,860				
B. New Electrical System, Vault *[1]*	236,000	14,470	221,530					
Local	23,600	14,470	9,130					
Federal/State	212,400		212,400					
C. Slurry Seal R/Ws, T/W's, Apron *[1]*	250,000	8,991	4,664	236,345				
Local	25,000	8,991	4,664	11,345				
Federal/State	225,000			225,000				
D. Taxiway Construction (South) *[1]*	159,000	18,821	139,679	500				
Local	15,900	18,821	9,679	(12,600)				
Federal/State	143,100		130,000	13,100				
E. Relocate 9 Portable Hangars, Construct 12 New Hangars	255,000	13,292	136,708	105,000				
Local								
Federal/State	255,000	13,292	136,708	105,000				
F. Electric Power/Lighting to Hangars	116,000	5,879	3,071	107,050				
Local		5,879	3,071	(8,950)				
Federal/State	116,000			116,000				
G. Slurry Seal (South Hangar)	74,945	945	1,000	73,000				
Local	6,905	945	1,000	4,960				
Federal/State	68,040			68,040				
H. Ramp, T/W Construction, Hangar 4	50,00	6,610	3,390	40,000				
Local	3,000	6,610	3.390	(7,000)				
Federal/State	47,000			47,000				

Table 6-7

TRACY MUNICIPAL AIRPORT
CAPITAL IMPROVEMENT PROGRAM and LOCAL SHARE REQUIREMENTS
FY 1997-98 THROUGH FY 2001-02

(Continued)

Project & Funding Source	Total Project Cost	Expenditure Prior Years	Appropriations FY 96-97	Proposed Budget FY 97-98	New Appropriations Required FY 98-99	FY 99-00	FY 00-01	FY 01-02
NEW PROJECTS (Stage II - FY 98-99 through FY 01-02)								
A. Land Acquisition: (Approach Protection)	1,463,000					1,463,00		
Local	146,300					146,300		
Federal/State	1,316,700					1,316,700		
B. Land Acquisition:(Airport Expansion)	1,600,000					50,000		1,550,000
Local	160,000					5,000		155,000
Federal/State	1,440,000					45,000		1,395,000
C. Airport Development:	1,814,600				566,000	877,734	206,533	164,333
1. Extend/Upgrade Water System	307,800				307,800			
Local	307,800				307,800			
Federal/State								
2. Extend/Connect Sewer System	138,200				138,200			
Local	138,200				138,200			
Federal/State								
3. Portable Hangars: South Hangar Area (29 units)	588,000				95,000	164,334	164,333	164,333
Local	228,000				95,000	44,334	44,333	44,333
Federal/State	360,000					120,000	120,000	120,000
4. Pilot Lounge (Trailer)	25,000				25,000			
Local	25,000				25,000			
Federal/State								
5. Improve Main Entry	228,900					228,900		
Local	228,900					228,900		
Federal/State								
6. Shade Hangars (18)/Lighting	215,000					215,000		
Local	200,000					200,000		
Federal/State	15,000					15,000		
7. Aircraft Wash Rack	42,000						42,000	
Local	42,000						42,000	
Federal/State								

Table 6-7

TRACY MUNICIPAL AIRPORT
CAPITAL IMPROVEMENT PROGRAM and LOCAL SHARE REQUIREMENTS
FY 1997-98 THROUGH FY 2001-02

(continued)

Project & Funding Source	Total Project Cost	Expenditure Prior Years	Appropriations FY 96-97	Proposed Budget FY 97-98	New Appropriations Required FY 98-99	FY 99-00	FY 00-01	FY 01-02
8. Helicopter Pad	52,000					52,000		
Local	5,200					5,200		
Federal/State	46,800					46,800		
9. Storm Drain Upgrade	117,500					117,500		
Local	117,500					117,500		
Federal/State								
10. Fence Relocations	100,000					100,000		
Local	10,000					10,000		
Federal/State	90,000					90,000		
11. Relocate Airport Beacon	7,000				7,000			
Local	7,000				7,000			
Federal/State								
D. Reconstruct So. Tracy Blvd.	1,265,000							1,265,000
Local	1,265,000							1,265,000
Federal/State								

SUMMARY								
CURRENT PROJECTS	1,475,945	69,008	753,042	653,895				
LOCAL	254,845	55,716	141,234	57,895				
FEDERAL/STATE	1,221,100	13,292	611,808	596,000				
NEW PROJECTS	6,149,600				573,000	2,390,734	206,533	2,979,333
LOCAL	2,873,900				573,000	757,234	86,333	1,464,333
FEDERAL/STATE	3,268,700					1,633,500	120,200	1,515,000

Table 6-7
TRACY MUNICIPAL AIRPORT
CAPITAL IMPROVEMENT PROGRAM and LOCAL SHARE REQUIREMENTS
FY 1997-98 THROUGH FY 2001-02

(continued)

Project & Funding Source	Total Project Cost	Expenditure Prior Years	Appropriations FY 96-97	Proposed Budget FY 97-98	New Appropriations Required			
					FY 98-99	FY 99-00	FY 00-01	FY 01-02
ALL PROJECTS	7,618,545	69,008	753,042	653,895	573,000	2,390,734	206,533	2,979,333
LOCAL	3,128,745	55,716	141,234	57,895	573,000	757,234	86,333	1,464,333
FEDERAL/STATE	4,489,800	13,292	611,808	596,000		1,633,500	120,000	1,515,000

[1] The Federal grants for these items totals $624,573. However, the anticipated cost is $645,000; 90% of this amount is $580,500. Thus a total of $44,073 of the Federal grant is not committed.

Source: City of Tracy; P&D Consultants (Revised May 1998)

Cash Flow Assumptions

A cash flow analysis to determine the potential amount of net revenue available to help fund the local share is presented below. The underlying assumptions are as follows:

Aviation Activity. Future aviation activity at the airport is assumed to occur in line with the aviation demand forecasts outlined in Chapter 3 of this Master Plan report. According to the forecasts, annual aircraft operations are projected to increase from 54,000 in 1995, to 107,200 by the year 2016. Based aircraft are projected to increase from 101 in 1995 to 200 by the year 2016.

Operating Revenues. Operating revenues are based upon following assumptions.

- The City will pursue the hangar development program shown in Table 6-8, and rent the existing and proposed new facilities at the rates shown in Table 6-9.

- Rents for existing City-owned hangars and the office space in Hangar 4 will be increased based upon expected inflation (3.3% per year),[2] consideration of the new electric power and lighting upgrades, and the rates at competitive airports.

- Rents for City-owned tie-downs will be increased in line with expected inflation.

- Rents for the new portable hangars will be the same as those in the existing small T-hangars during FY 1999-2000. Thereafter, the rates will be increased based upon expected inflation. Likewise, rates for the new City shade hangars in FY 1998-1999 ($147/month) will be just below those for the existing small T-hangars ($154/month) during that time period. Thereafter, these rates will be increased in line with inflation.

- Ground lease rents for private hangars will be increased based upon expected inflation, consideration of the electrical power and lighting upgrades, and rates at competitive airports.

- Potential ground lease rents from the proposed "Airtel" and aircraft museum, and proposed stand alone corporate aviation facilities are not

2 Inflation is estimated to be 3.3% per year, compounded, which is the average annual increase in the Consumer Price Index in the San Francisco Bay Area between 1986 and 1996.

TABLE 6-8
CITY-OWNED HANGAR/OFFICE SPACE/TIE-DOWN DEVELOPMENT and RENTAL PROGRAM
FY 1996-97 through FY 2001-02

	TOTAL	FY 96-97	FY 97-98	FY 98-99	FY 99-00	FY 00-01	FY 01-02
EXISTING HANGARS							
Complex G	20	20	20	20	20	20	20
Complex F	9	9	9	9	9	9	9
Complex 3 & 4	10	10	10	10	10	10	10
Office Space	1	1	1	1	1	1	1
NEW HANGARS							
Large T	12		12	12	12	12	12
Portable	12				5	5	12
Shade	36			36	36	36	36
TIE-DOWNS (Rental of Existing)	22	12	14	16	18	20	22

TABLE 6-9
AIRPORT HANGAR/PARCEL/TIE-DOWN RENT SCHEDULE

Location/Type	Number	Rate/Month ($/Month) FY 96-97	FY 97-98	FY 98-99	FY 99-00	FY-00-01[1]	FY 01-02[1]
HANGARS							
CITY OWNED (Existing)							
Complex G - Large T	20	145.00	185.00	195.00	200.00	206.60	213.42
Complex F - Small T	9	115.00	147.00	154.00	158.00	163.21	168.60
Complex 3 & 4 - Small Rect.	10	108.00	138.00	185.00	200.00	206.60	213.42
Office Space		79.00	83.75	88.00	90.00	92.97	96.04
CITY OWNED (New)							
Large T	12	--	185.00	195.00	200.00	206.60	213.42
Portable	12				158.00	163.21	168.60
Shade	36			147.00	151.85	156.86	162.04
PARCELS							
PRIVATE (Existing)							
Parcel 3 - Large T	2	33.50	36.85	40.54	44.59	46.06	47.58
Parcel 4 - Small T	6	32.50	35.75	39.33	43.26	44.69	46.16
Parcel 1 - Large Rect.	9	52.50	57.75	63.53	69.88	72.19	74.57
Parcel 2 - Small Rect.	7	46.00	50.60	55.66	61.23	63.75	65.34
TIE-DOWNS							
CITY-OWNED		30.00	31.00	32.00	33.00	34.00	35.00

[1] All rates include assumed inflation of 3.3%/year, compunded

Source: City of Tracy; P&D Consultants

included in these assumptions, as such facilities are to be built with private capital and are largely speculative at this time.

- FBO concession and fuel flowage revenues will increase at the rate of expected inflation, which is roughly the same increase expected in the number of based aircraft and aircraft operations at Tracy (3.32% per year, compounded).

- The State Grant for Tracy will remain constant at $10,000 per year. The grant for New Jerusalem will cease after FY 1997-98 when the site is assumed to be sold.

- Agricultural operations will continue on the New Jerusalem site in FY 1997-98 until the site is sold in that year. Lease revenues will amount to the average generated over the past five years or $16,000.

- Sales proceeds from the New Jerusalem site will be used to help finance activities at the Tracy Airport. The assumed net sales proceeds are as follow:

300 acres x 80% x $5,000/acre	=	$1,200,000
300 acres x 20% x $8,000/acre	=	$ 480,000
Assumed net proceeds	=	$1,680,000

- It is further assumed the net sales proceeds would be placed in an annuity or other financial instrument earning 6% per year, the annual revenue from this source would be $100,080. Finally, it is assumed that the sale would occur in late FY 1997-1998 with the full amount of annual income starting in FY 1998-1999.

Operating Expenses. It is anticipated that the Master Plan projects will generate additional operating and maintenance expenses, including personnel costs. For this analysis, it was assumed that these expenses would increase by 5% per year beginning in FY 1997-1998. Existing long-term debt and interest expenses for the $200,000, $150,000 and $250,000 notes were taken from schedules provided by the City of Tracy.

Cash Flow and Funding Requirements

Using the cost and revenue assumptions outlined above, the cash flow and funding requirements for development of the CIP projects were determined as depicted in

Table 6-10. As can be seen, the City's project cumulative funding requirement for FY 1996-97 and FY 1997-98 totals just over $219,000. This amount is less than the loan recently received from the State in the amount of $250,000 for the projects to be undertaken during those years.

In future fiscal years, however, the local share increases substantially. This indicates that unless the City (or private interests) provides these funds, some of the capital improvement projects will have to be deferred to later years. This is the value of this type of analysis, as it helps prioritize future projects and expenditures.

Table 6-10
TRACY MUNICIPAL AIRPORT
PROFORMA CASH FLOW AND FUNDING REQUIREMENTS
FY 1997-98 THROUGH FY 2001-02

COSTS & REVENUES	FY 96-97[1]	FY 97-98	FY 98-99	FY 99-00	FY 00-01	FY 01-02
OPERATING REVENUES						
Aircraft Parking Fees (Tie-Downs)	4,320	5,208	6,144	7,128	8,160	9,240
City Hangar Rentals						
Existing	61,128	77,841	86,688	90,144	93,118	96,192
New	0	26,640	91,584	103,879	107,307	125,012
Airport Rentals & Concessions:						
Ground Lease - Hangar Parcels	12,678	13,946	15,341	16,875	17,475	18,008
Ground Lease - FBO % Sales	7,322	7,564	7,813	8,071	8,337	8,613
Fuel Flowage	5,000	5,165	5,335	5,512	5,693	5,881
State Grant	20,000 [2]	20,000 [2]	10,000	10,000	10,000	10,000
New Jerusalem	75,000 [3]	46,000 [3]	100,800 [4]	100,800 [4]	100,800 [4]	100,800 [4]
Gross Operating Revenues	185,448	202,363	323,706	342,409	350,890	373,746
OPERATING EXPENSES						
Personnel Expenses	84,380	67,599	70,979	74,528	78,254	82,167
Contracted Services	57,940	60,837	63,879	67,073	70,426	73,948
Commodities & Other	18,760	19,698	20,683	21,717	22,803	23,943
Long-Term Debt & Interest	46,948	71,844	72,455	72,972	73,305	73,455
Gross Operating Expenses	188,028	219,978	227,996	236,290	244,789	253,513
NET OPERATING REVENUES OR EXPENDITURES	(2,580)	(17,615)	95,710	106,119	106,102	120,233
LOCAL SHARE CAPITAL EXPENDITURE	141,234	57,895	573,000	757,234	86,333	1,464,333
FUNDING REQUIREMENTS						
ANNUAL	(143,814)	(75,510)	(477,290)	(651,115)	19,769	(1,344,100)
CUMULATIVE	(143,814)	(219,324)	(696,614)	(1,347,729)	(1,327,960)	(2,672,060)

[1] Budget estimate and current activity.

[2] Includes grant for New Jerusalem Airport.

[3] Includes agricultural rent from New Jerusalem site.

[4] Annuity income from proceeds of sale of New Jerusalem site.

Source: P&D Aviation

CHAPTER 7

LAND USE AND SAFETY

OVERVIEW

Urban development is rapidly encroaching upon the Tracy Municipal Airport, particularly in the areas to the north and northwest. Future urban development is also planned for the areas to the west and southwest of the Airport. This chapter provides a brief discussion of the key land use and safety considerations facing the airport in this regard.

This chapter, however, is not intended to fulfill the requirements of the National Environmental Policy Act (NEPA) or the California Environmental Quality Act (CEQA) for environmental review and disclosure. These requirements have been met through a companion document entitled *"Draft Environmental Assessment/ Environmental Impact Report [for Tracy] Municipal Airport Master Plan."*[1]

AIRSPACE PROTECTION

The FAR Part 77 obstruction clearance criteria depicted on Figure 5-2 are designed to protect the navigable airspace around the Airport from encroachment by objects penetrating the surrounding airspace. The most critical areas are within the approaches to the Airport's runways. It is important that these approaches be maintained free and clear of obstructions, and that no future structure or other objects penetrate these surfaces.

SAFETY ON THE GROUND

The probability of an aircraft accident is highest along the extended runway centerline at any given airport, and is at its highest within one mile of the runway end. Hence, it becomes advisable to establish land use restrictions in these areas. Figure 7-1, *"Airport Safety Areas,"* defines the following four safety areas proposed for implementation at Tracy Municipal Airport.

[1] Draft EA/EIR dated June 1, 1998

1. Runway Protection Zone
2. Inner Approach Zone
3. Outer Approach Zone
4. Overflight Zone

The following land use compatibility criteria were developed for each zone on the basis of information set forth in the 1993 *"Airport Land Use Planning Handbook,"* prepared for Caltrans, as follows:

1. Runway Protection Zone. FAA and San Joaquin County Airport Land Use Commission (ALUC) criteria for land uses in RPZ's are explicit, i.e., to the maximum extent practical, these areas should be clear of all structures; any activities must be very low intensity in character and confined to the sides and outer end of the area.

- *Density of Use* -- A density of 10 people per acre is the maximum normally judged acceptable.

- *Residential Land Uses* -- New residential development should be prohibited within RPZs.

- *Special Functions* -- These types of land uses also should be prohibited within RPZs.

2. Inner Approach Zones. Next to the RPZs, the approach/departure corridors have the highest level of exposure to potential aircraft accidents.

- *Density of Use* -- Nonresidential land uses should be limited to activities which attract relatively few people to a given area. Shopping centers, eating establishments, meeting halls, multi-story office buildings, and labor-intensive manufacturing plants are examples of uses which should be prohibited. Measured on the density-of-use scale, the maximum concentrations of people generally should be no more than 40 to 60 per acre.

- *Residential Land Uses* -- Residential uses, if not deemed unacceptable because of noise, should be limited to very low densities -- 10 acres or more per dwelling unit. In this proximity to an urban airport, low density effectively precludes residential development. In rural areas, the lot size requirements for *exclusive agriculture* or other similar zone district should be considered the maximum acceptable density.

- *Special Functions* -- Special function land uses (schools, storage of flammable materials, etc.) should be prohibited.

3. Outer Approach Zones. Many ALUCs have established outer or extended approach/departure safety zones, especially for runways which are long and/or have instrument approach capabilities.

- *Density of Use* -- The types of land uses which represent concerns within outer safety zones are similar to those in the inner safety zones, but somewhat higher densities of use can be considered acceptable. For example, whereas shopping centers and multi-story office buildings are unacceptable closer to the runway end, small neighborhood shopping centers and two-story offices are reasonable within this more distant zone. Concentrations of people should be limited to no more than 60 to 100 per acre.

- *Residential Land Uses* -- Typically subdivision-density residential development should continue to be avoided in this zone. Rural residential uses with lot sizes in the 2-to 5-acre range can be considered acceptable.

- *Special Functions* -- Most special land use functions, particularly schools, hospitals, and so on, should be avoided in the outer safety zone.

4. Overflight Zone. Within outer portions of the airport area routinely overflown by aircraft, the potential for aircraft accidents is relatively low and the need for land use restrictions is thus minimal.

- *Density of Use* -- Only very large assemblies of people -- in the 150 or more people per acre range -- need to be avoided.

- *Residential Land Uses* -- In small communities, typical residential subdivision densities of 4 to 6 dwelling units per acre are acceptable from a safety perspective. In urban areas, even higher densities may be reasonable, especially if development is clustered to provide open space as discussed below.

- *Special Functions* -- Schools, hospitals and nursing homes should be avoided in traffic pattern zones unless no other feasible alternatives are available.

OVERFLIGHT

The principal issue associated with aircraft overflight is annoyance. It most often arises in areas where neither noise or safety is a significant or even measurable factor. Noise from aircraft overflight outside of immediate airport approach/ departure corridors seldom disrupts people's activities and the risk of an accident is statistically low. Nonetheless, some people will be affected. This is particularly so at the Tracy Airport where an FAA-approved "Aerobatics Box" exists in proximity to the airport. This area of the local airspace is subject to the terms of an agreement between the FAA and aerobatics flyers. The City of Tracy is not a party to this agreement, and as a result, has no jurisdiction over any activities carried out in accordance with the terms of the agreement.

ENVIRONMENTAL REVIEW

Project-related environmental issues and concerns have been dealt with in detail in a combined State and Federal environmental review document, termed an *"Environmental Assessment/Environmental Impact Report (EA/EIR)."* An environmental review of the Tracy Municipal Airport Master Plan has been carried out in compliance with the National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) of 1970. For more information, see the Draft EA/EIR prepared for the Airport Master Plan which discusses potential environmental impacts associated with Master Plan implementation.

APPENDIX A

GENERAL AVIATION AIRPORT SURVEY FORM

P&D/CTE Engineers

GENERAL AVIATION AIRPORT SURVEY

Name of Airport _____ Date: _____

Location _____ Survey By: _____

Airport Contact: Name _____

Title _____

Telephone # _____

Would you like a copy of the survey results? YES NO

I. Based Aircraft

	Single Engine	Multi Engine	Jet	Total
Hangared				
Airport Owned				
FBO Owned				
Tie-Down				
Airport Owned				
FBO Owned				

II. Airport Activity

Year	Total Annual Operations	Operations by Based Aircraft: Single Engine	Multi Engine	Jet	Total
1995					
1994					
1993					
1992					
1991					

III. Fixed Based Operations

Rents/Fuel Fees		Average Rate		Annual Fees Paid to Airport
FBO Ground Rental			($/sq. ft./yr.)	
FBO Hanger Rental			($/sq. ft./yr.)	
FBO Tie-Down	Monthly		($/acft/mo)	
	Overnight		($/acft/night)	
FBO Fuel Flowage			($/gal sold)	
FBO Fuel Input			($/gal delivered)	

FBO Sales - Minimum and/or % of Sales Fees

Type of Goods/Services	Minimum ($)	% Sales Over Minimum	% of Total Sales

Annual Sales Fee Revenues

Year	
1995	$
1994	$
1993	$
1992	$
1991	$

Lease Rate Escalation

CPI	Other (specify)	How Often Adjusted

IV. Airport Owned Operations

Hangars	Full Ts	1/2 Ts	Single Engine	Twin Engine
Number of Airport Hangars				
Average Airport Hangar Rental Rate ($/mo)				
Annual Airport Hangar Revenue ($)				
Airport Hangar Waiting List (# Hangars)				
Electrical (E) Water (W) Connection	E__ W__	E__ W__	E__ W__	E__ W__

Other		Average Rate		Annual Fees Paid to Airport
Airport Tie-Down				
	Monthly		($/sq. ft./yr.)	
	Overnight		($/acft/night)	
Airport Terminal Building				
	Counter space		($/sq. ft./yr.)	
	Office space		($/sq. ft./yr.)	
	Other (specify)_____		($/sq. ft./yr.)	
Landing Fees for General Aviation Revenue Flights			($/1000 lbs GLW)	
Airport Fuel Flowage			($/gal sold)	
Airport Fuel Input			($/gal delivered)	

V. Other Airport Rents/Revenues

Other Rents

Activity	Land Area (sq. ft.)	Land Rent ($/sq. ft./yr)	Aprt Bldg Area (sq. ft.)	Bldg Rent ($/sq. ft./yr.)	When Started (year)

Other Activity

Activity	Basis of Charge ($/activity)	Annual Revenue ($/sq. ft./yr.)	Lease or Permit Involved? (specify)	When Started (year)

END OF SURVEY

Any other comments you feel would be helpful to us?

Thank you for your assistance!

P&D Aviation
A Division of
P&D/CTE Engineers

APPENDIX B

LETTER OF AGREEMENT AND MAP OF TRACY/NEW JERUSALEM AIRPORTS AEROBATICS AREAS

STOCKTON TOWER/TERMINAL RADAR APPROACH CONTROL
AND NORTHERN CALIFORNIA AEROBATIC CLUB CHAPTER 38

LETTER OF AGREEMENT

EFFECTIVE: April 25, 1994

SUBJECT: Use of Tracy and New Jerusalem Aerobatic Areas

1. PURPOSE. To provide procedures for the use of the Tracy aerobatic box and the New Jerusalem aerobatic area.

2. SCOPE. This Letter of Agreement outlines procedures to be followed for use of the aerobatic box at Tracy Airport and use of the aerobatic area at New Jerusalem Airport. These procedures are only valid between sunrise and sunset when flight visibility is five (5) statute miles or greater or the ceiling, if a ceiling exists, is 3500 feet MSL or greater. Aerobatic maneuvers shall be conducted at least 500 feet below the clouds and 2000 feet laterally from the clouds.

3. RESPONSIBILITIES. Upon notification from the Northern California Aerobatic Club Chapter 38 to Stockton Tower/TRACON, the Aerobatic Club may utilize the New Jerusalem aerobatic area from 500 feet AGL to 4000 feet AGL and/or the Tracy aerobatic box from 500 feet AGL to 3000 AGL feet. With specific authorization, a vertical limit of 4000 feet AGL may be used in the Tracy aerobatic box. Pilots operating within the Tracy or New Jerusalem aerobatic box/area are responsible for their own separation from other aircraft.

4. PROCEDURES.

a. Northern California Aerobatics Club shall:

(1) For use of the New Jerusalem aerobatic box, notify Rancho Murieta AFSS at (800) 752-7860 at least four (4) hours before operations begin and request that a *Notice to Airmen* be disseminated. The *Notice to Airmen* shall constitute notification of Stockton Tower/TRACON.

(2) For use of the Tracy aerobatic box:

(a) Advise the Area Supervisor at Stockton Tower/TRACON at (209) 946-6023 or (209)982-4744 or on 123.85 MHz a minimum of fifteen (15) minutes before aerobatic activities begin, and again when the flight activity is completed. The altitude to be used in the Tracy aerobatic box shall also be coordinated.

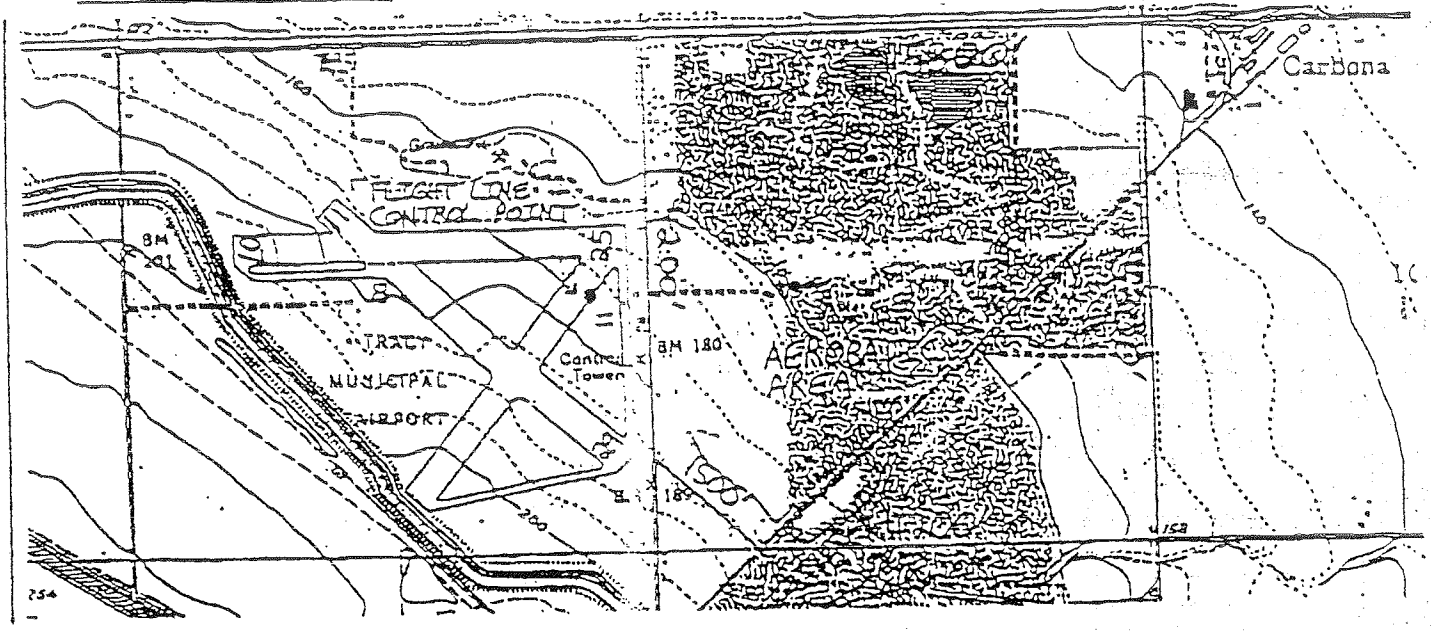
(b) Staff the telephone at the Tracy Flight Center, (209) 835-4266, to provide Stockton Tower/TRACON with an alternate means of contacting participating pilots when the aerobatic box at Tracy Airport is used.

STOCKTON TOWER/TERMINAL RADAR APPROACH CONTROL AND
NORTHERN CALIFORNIA AEROBATIC CLUB CHAPTER 38
LETTER OF AGREEMENT

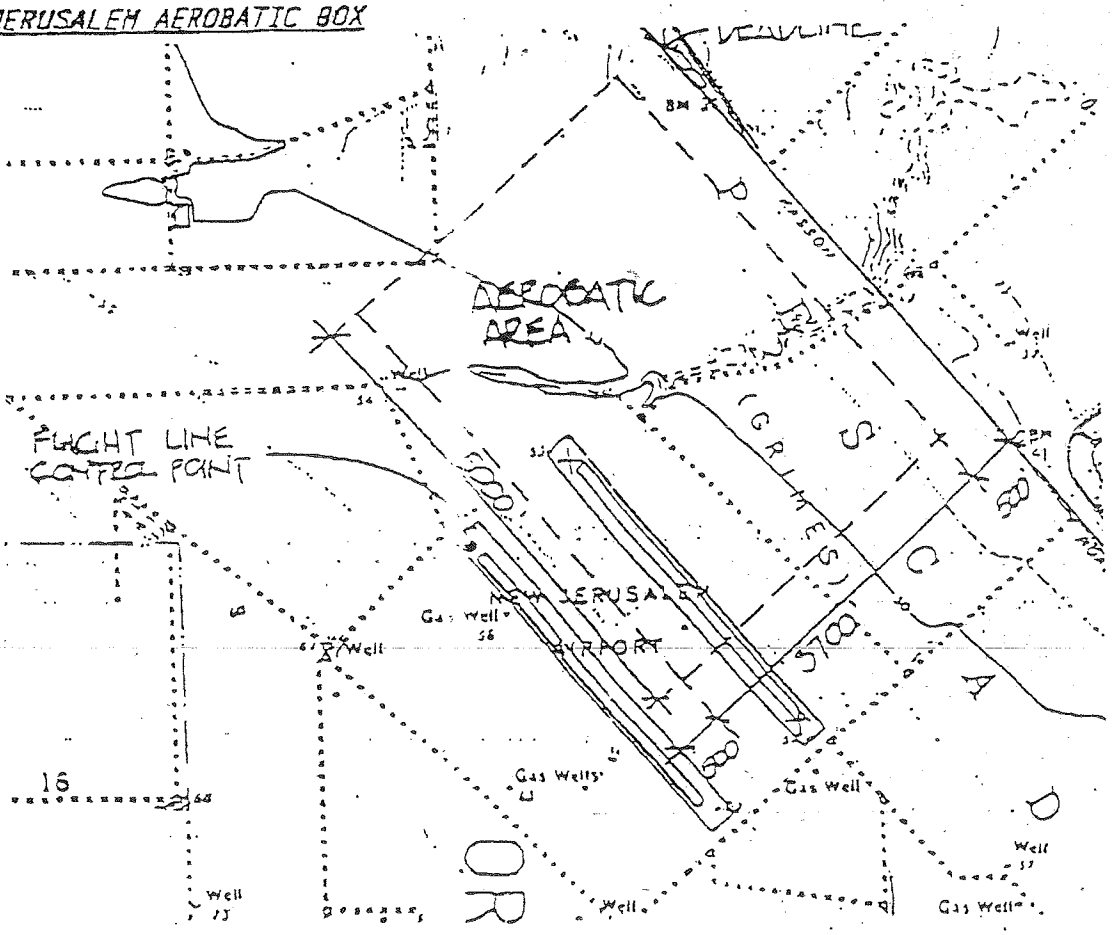
Attachment

Subject: Use of Tracy and New Jerusalem Aerobatic Areas

TRACY AEROBATIC BOX



NEW JERUSALEM AEROBATIC BOX



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