DRAFT
ENVIRONMENTAL ASSESSMENT/
ENVIRONMENTAL IMPACT REPORT

TRACY MUNICIPAL AIRPORT MASTER PLAN

TRACY, CALIFORNIA

PREPARED FOR:

CITY OF TRACY, CALIFORNIA
AS LEAD AGENCY PURSUANT TO THE
CALIFORNIA ENVIRONMENTAL QUALITY ACT OF 1970

AND

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
AS LEAD FEDERAL AGENCY PURSUANT TO THE
NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

PREPARED BY:

P&D CONSULTANTS, INC.
OAKLAND, CALIFORNIA

This Environmental Assessment becomes a federal document when evaluated and signed by the responsible FAA official:

_____ _____
Responsible FAA Official Date

AUGUST 4, 1998

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EXECUTIVE SUMMARY

This report has been prepared as a combined document to meet the requirements of the National Environmental Policy Act (NEPA) of 1969 for an Environmental Assessment (EA), and the California Environmental Quality Act (CEQA) of 1970 for an Environmental Impact Report (EIR) for the proposed Tracy Municipal Airport Master Plan.[1]

PURPOSE AND REQUIREMENTS FOR EA/EIR

The adoption of the Airport Master Plan by the City of Tracy is subject to the environmental review criteria of CEQA. An environmental determination pursuant to NEPA is not required for the City to adopt the plan. But, the implementation of the proposed Tracy Airport Master Plan will require compliance with both NEPA and CEQA.

This document has been prepared in accordance with Section 1506.2 of the President's Council on Environmental Quality (CEQ) in an effort to reduce duplication of Federal and State environmental documentation. CEQA provides for the local agency to use the federal environmental document (an EA or EIS) rather than prepare an EIR or Negative Declaration if the federal document will be completed before the local environmental document, and if the federal document is in compliance with CEQA guidelines. In this instance, the two documents have been prepared jointly, with the City of Tracy as the CEQA Lead Agency and the Federal Aviation Administration (FAA) as the lead Federal agency under NEPA.

The FAA will use this document for purposes of determining the appropriate environmental finding for applicable project components. Airport Master Plan project components specifically subject to an FAA environmental determination include land acquisition involving the potential relocation of a farm and businesses, and proposed nonprecision instrument approaches to Runways 11, 25 and 29.

The purpose of the CEQA environmental review process as embodied in the EIR component of this report is to provide local governmental decision-making bodies and the public with sufficient information concerning the potential impacts of the proposed Master Plan project and project alternative to allow them to make intelligent and informed decisions or opinions concerning the environmental acceptability of the project, alternative, or action. As Lead Agency under CEQA, the City of Tracy has prepared a dual-purpose document designed to meet the requirements of both NEPA and CEQA. The resultant EA/EIR will be used by the City of Tracy to make a final environmental determination with regard to the proposed Airport Master Plan project in accordance with CEQA requirements.

[1] P&D Aviation, "Airport Master Plan--Tracy Municipal Airport," Final Report, July 8, 1998

TIMEFRAMES (CEQA/NEPA)

The Tracy Airport Master Plan project is proposed to be implemented between now and 2016 in response to anticipated community air service needs. The City of Tracy is requesting unconditional FAA approval of the Airport Layout Plan (ALP) and written Federal environmental approval for the Stage II (1998-2002) Master Plan Capital Improvement Program (CIP).[2] The Airport CIP program consists of the following components:

Stage I Projects (FY96-97 through FY97-98)[3]

A. Relocate Fuel Storage, Reconstruct Tiedown Apron
B. New Electrical System and Vault
C. Slurry Seals for Runways, Taxiways and Apron
D. Taxiway Construction (South)
E. Relocate 9 Portable Hangars, Construct 12 New Hangars
F. Electric Power/Lighting to Hangars
G. Slurry Seal (South Hangar Area)
H. Ramp/Taxiway Construction (Hangar 4 Area)

Stage II Projects (FY98-99 through FY01-02)

A. Land Acquisition (Approach Protection)
   1. Nelson Concrete (5.4 acres)
   2. Ellisagaray (4.7 acres)
   3. Basalite Easement (0.6 acres)
   4. Runway 25 RPZ Easements (9.3 acres)
   5. Runway 29 RPZ Easements (6.3 acres)
   6. So. Schulte (Western Corral) (23.7 acres)

B. Land Acquisition (Airport Expansion)
   1. Bureau of Reclamation Land Transfer (22.9 acres)
   2. Farm Site (22.4 acres)
   3. Navarra (3.4 acres)

C. Airport Development
   1. Extend/Upgrade Water System
   2. Extended/Connect Sewer System
   3. Portable Hangar - South Hangar Area (29 units)

[2] FAA approval is for a five-year period only.
[3] Stage I projects have been approved and are currently being implemented.

4. Pilot Lounge (Trailer)
5. Improve Main Entry
   a. Public Parking
   b. Main Entry Lighting
   c. Entranceway Construction
6. Shade Hangars (18 units), Lighting
7. Aircraft Wash Rack
8. Helicopter Pad
9. Storm Drain Upgrade
10. Fence Relocations

D. Reconstruct So. Tracy Blvd.
   1. Planning, Design, etc.
   2. Convert 10' VCP Sanitary Sewer
   3. Road Work
   4. Rehabilitate Existing Water Line

BACKGROUND

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

The Federal Government constructed the airstrip on land donated by the City in 1943 for use by the Army Air Corps as a training facility during World War II. The facility was returned to the City in 1946. Since then, there have been many attempts to make the airport into a full service aviation facility, but until recently it has remained largely undeveloped.

Tracy Airport is used for a variety of aeronautical uses, including flight training, and business and pleasure flying. The Airport does not provide scheduled air carrier or commuter airline services, although small aircraft are available for charter. The City of Tracy initiated the Master Plan study to guide future growth and development of the Tracy Airport and to identify needed improvements to the aircraft operating areas and aircraft basing facilities as a response to projected aviation demand.

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.

PROJECT OBJECTIVES

The City of Tracy proposes to implement the Airport Master Plan through a phased capital improvement program as set forth in the draft Master Plan, and in accordance with the following project objectives:

- Determine airfield and aviation facilities requirements in light of the demand being created by planned new development in the Airport environs;
- Ensure that airport development and community growth will be compatible with each other;
- Address requirements for utilities and service infrastructure, including water and sewage; and
- Develop an Airport Layout Plan which will be approved by the FAA.

PURPOSE AND NEED

The proposed Tracy Airport Master Plan is a management tool and policy document which, if adopted by the City of Tracy, will provide direction for the growth and development of the Tracy Municipal Airport through the year 2016. Based on aviation demand considerations discussed in the draft Airport Master Plan, the Airport is expected to continue in its historic role as a general aviation facility through the year 2016. The existing airfield provides sufficient annual and hourly capacity to allow it to continue to function in this role.[4]

The currently adopted Tracy Municipal Airport Master Plan is twenty-three years old, and the existing Airport Layout Plan (revised in May 1994) does not reflect current FAA airport design standards. The old Master Plan and ALP are out of date, and the proposed Master Plan and ALP will, when approved, provide the City with an up-to-date guide for future airport growth and development, consistent with current FAA guidelines and directives.

Requested Federal Action and Timeframe

As discussed in Section 1.6.5, the City of Tracy is requesting unconditional FAA approval of the proposed Airport Layout Plan and written Federal environmental approval for the Stage II (1998-2002) Master Plan Capital Improvement Program. Such approvals are anticipated in FY 1998.

[4] *Draft Master Plan*, pg. 5-1.

FAA NEPA Projects

Because NEPA and CEQA environmental review criteria differ to some extent with respect to what may or may not constitute a project, this section identifies three Master Plan elements which FAA Order 5050.4A requires be specifically evaluated in the EA component of the EA/EIR by the FAA.

The following project elements are classes of projects subject to specific analysis by the EA since federal financial participation or Airport Layout Plan approval is required:

Stage II Projects (FY 98-99 through FY01-02)

A. Land Acquisition (Approach Protection)
   1. Nelson Concrete (5.4 Acres)
B. Land Acquisition (Airport Expansion)
   2. Farm Site (22.4 Acres)
   3. Navarra Site (3.4 Acres)

Acquisition of the Nelson Concrete Parcel (Parcel A1) is required for airport approach protection purposes (a portion of the property is located within the Runway Protection Zone for Runway 11 and a silo on the concrete batch plant penetrates the FAR Part 77 approach surface for the runway). The acquisition of the parcel differs from other parcels proposed for acquisition for approach protection in that it will require disruption of a business activity on the site.

Acquisition of the farm site (parcel B2) is proposed for airport expansion purposes. An EA-level review of the proposed acquisition is required because of potential impacts involving endangered or threatened species.

Acquisition of the Navarra site is proposed for airport expansion purposes. Such acquisition could result in the disruption of business activities on the site.

Although not a specific CIP project, the Master Plan proposes the establishment of a straight-in nonprecision instrument approach to Runways 11, 25, and 29. Such approaches are also subject to the FAA's requirement for an EA.

All other proposed CIP projects would be categorically excluded from the FAA's requirement for EA-level environmental review.[5]

[5] FAA Order 5050.4A

Historical and Forecast Aviation Activities

Based on City and FAA estimates, the number of aircraft operations at the airport has remained relatively constant at around 53-55,000 annual operations since 1991. Based aircraft have grown from 71 in 1991 to 101 in 1995, and 106 in 1996.

Forecasts of aviation activity were developed in the draft Airport Master Plan to help determine future aviation facility requirements. Table ES-1 summarizes these forecasts:

TABLE ES-1

GENERAL AVIATION FORECAST (1996-2016)
Tracy Municipal Airport Master Plan

Annual Aircraft Operations				
Year Ending	1995[1]	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[2]	93	95	105	130
M-E Prop[3]	8	15	23	60
TurboJet[4]	0	0	1	5
Helicopter	0	0	1	5
TOTAL	101	110	130	200

Source: *P&D Aviation - February 1997*

1. FAA Form 5010-1
2. Single-engine propeller
3. Multi-engine propeller (including turboprop)
4. Light, quiet business jet

CONSULTATION AND COORDINATION WITH RESPONSIBLE AGENCIES

On July 29, 1997, the Tracy Community Development Department issued a Notice of Preparation (NOP) for the preparation of a Draft EA/EIR for the Tracy Municipal Airport Master Plan (see Appendix A). Comments on the NOP were received through August 29, 1997, and coordination and consultations conducted with responsible agencies

through September 4, 1997. The following agencies and organizations were among those consulted with respect to the preparation of the draft EA/EIR:

- Federal Aviation Administration
- CALTRANS Aeronautics Program
- State Clearinghouse
- California Department of Fish and Game
- San Joaquin County Council of Governments/Airport Land Use Commission
- San Joaquin Valley Unified Air Pollution Control District

Responses to the NOP were received from the following agencies (See Appendix B):

- CALTRANS Aeronautics Program
- SJCOG/Airport Land Use Commission
- State Department of Fish and Game

OVERVIEW OF ALTERNATIVES

A preferred alternative, the Tracy Municipal Airport Master Plan as described in Section 1.8.2,[6] and one alternative to the project have been identified and are examined in Section 3.0 (Affected Environment/Environmental Consequences). The selected alternative is defined as the:

- No Project (No Action) Alternative

DESCRIPTION OF ALTERNATIVES

Project

The proposed Airport Master Plan project is described in Section 1.8 (Project Description).

No Project Alternative

This alternative considers existing conditions with respect to airport facilities and anticipates what might reasonably be expected to occur in the foreseeable future under the demand forecasts if the proposed project were not approved, based on current plans and consistent with available infrastructure and community services. Under this alternative, some limited airport growth is anticipated, but facilities will not be present to meet demand.

[6] The FAA considers the "Project" an alternative under NEPA.

COMPARISON OF ALTERNATIVES

Table ES-2 compares the various components of the project as proposed with the alternative to the project.

Table ES-2
Comparison of Alternatives

	Alternatives	
Component	Airport Master Plan (The Project)	No Project Alternative
Based Aircraft 1995/2016)	101/200	101/125
Operations (1995/2016)	54,000/107,200	54,000/65,000
Airport Classification[a] (1995/2016)	B-II/B-II	B-II/B-II
Design Aircraft	Beech King Air 200	Beech King Air 200
Instrument Approach	GPS Straight-in (visibility = 1 mile)	AWOS/NDB (Circling)
Land Acquisition	16.6 acres easements 59.6 acres fee 22.5 acres transfer	None
Capital Improvements	As per Master Plan CIP	None

Notes:

a. Airport Reference Code (ARC) B-II includes aircraft with approach speeds of from 91 to 121 knots and wingspans of from 49 to 79 feet.

DESCRIPTION OF ENVIRONMENTALLY PREFERRED ALTERNATIVE

Because it lacks any specific development actions which could result in significant environmental effects, which cannot be adequately mitigated the No Project Alternative is the environmentally superior alternative. However, in such a case, CEQA requires that the EIR also "identify an environmentally superior alternative among the other alternatives." This alternative would be the project as proposed. Any adverse or potentially adverse impacts associated with the project can be mitigated to a less-than-significant level.

SUMMARY OF ENVIRONMENTAL IMPACTS

Both CEQA and NEPA require the identification and analysis of any significant environmental impacts associated with the proposed project and project alternative. The environmental impacts of the project and project alternative are discussed in Chapter 3.0, along with appropriate mitigation measures. Table ES-3 summarizes the environmental consequences of the Master Plan project and project alternative. Table ES-4 summaries mitigation measures proposed for the significant impacts identified in Table ES-3. Prior to certification of the Final EA/EIR the City will also adopt a Mitigation Monitoring Plan to show how the mitigation measures will be implemented.

AREAS OF CONTROVERSY

No significant or substantive areas of controversy were identified during the public and agency comment period for the Notice of Preparation other than the issues identified in the scoping process and discussed in this EA/EIR.

ENVIRONMENTAL JUSTICE

The proposed project and related activities will not result in any *"disproportionately high and adverse human health or environmental effects...on minority populations and low-income populations."*[7]

[7] Executive Order 12898, February 11, 1994.

Table ES-3
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

SPECIFIC IMPACT CATEGORY	Airport Master Plan Project	No Project Alternative
Noise		
• Aircraft Noise	○	○
• Surface Traffic Noise	○	○
• Construction Noise	◗	⊕
Compatible Land Use	○	○
Social	◗	○
Induced Socio-Economic	○	○
Air Quality		
• Motor Vehicle	○	○
• Aircraft	◗	○
• Construction (Dust)	◗	○
Water Quality		
• Storm Water	○	○
• Wash Rack	◗	○
• Construction	◗	○
DOT Sec. 4(f)	○	○
Historical, Archeological & Cultural Resources	◗	○
Biotic Communities Endangered Species		
• Swainson's Hawk	◗	⊕
• Burrowing Owl	◗	⊕
• Kit Fox	◗	⊕
Wetlands	–	–
Wild and Scenic Rivers	–	–
Farmland	○	⊕

SPECIFIC IMPACT CATEGORY	Airport Master Plan Project	No Project Alternative
Energy Supply/Natural Resources	○	○
Light Emissions	◗	○
Solid Waste Impacts	○	○
Construction	◗	○
Traffic/Transportation	○	○
Geology/Seismology	◗	○
Public Utilities	○	○
Hazardous Materials	○	○

Legend: CEQA Environmental Impact Assessment Classification

●	=	Class I Impact – Significant/Unavoidable
◗	=	Class II Impact – Significant/Mitigatable
○	=	Class III Impact - Less-Than-Significant
⊕	=	Class IV Impact - Beneficial
–	=	Not Applicable

Table ES-4
MITIGATION MEASURES

Specific Impact Category	Significant Impacts	Mitigation Measures	Impact after Mitigation	Residual Impact
Noise • Construction	Noise from construction vehicles and equipment may result in noise levels in excess of 65dBA at exterior locations as far as 1,000 feet from project-construction sites.	Construction noise reduction/avoidance measures such as scheduling of construction to minimize impacts, use of properly operating muffler systems on equipment, etc. shall be implemented (see full discussion of mitigation measures in Section 3.1.3)	Class III (less-than-significant)	Less-than-significant
Social Impacts	The proposed acquisition of Parcels A1, B2 and B3 (from the CIP) will require relocation of two existing businesses, a farming operation, and the relocation of the farm residents.	The City shall prepare and submit to the FAA, for its review and approval, a relocation plan for each affected business, the farm, and farm residents.	Class III	Less-than-significant
Air Quality • Construction	Fugitive dust generated during construction and from wind erosion over exposed earth surfaces has the potential for significant annoyance.	All construction contracts shall require contractors to control dust generation in accordance with City of Tracy and SJVUAPCD policies (see Section 3.5.3 for discussion).	Class III	Less-than-significant
Water Quality • Wash Rack	The proposed aircraft wash rack represents a potential source of water pollution if not properly designed and maintained.	The wash rack shall be designed and operated in accordance with all applicable water quality criteria, and the facility will be cleaned and maintained on a	Class III	Less-than-significant

Specific Impact Category	Significant Impacts	Mitigation Measures	Impact after Mitigation	Residual Impact
		regular basis.		
• Construction	Construction activities have the potential to degrade local surface waters through spills, grading, and erosion.	Construction activities shall be subject to stringent controls on the use and storage of fuels and other potential pollutants, grading activities, and erosion (see Section 3.6.3).	Class III	Less-than-significant
Historical, Archeological, and Cultural Resources	A slight potential exists for the discovery of human remains or cultural artifacts during project construction activities.	Construction personnel shall be alerted to the potential for uncovering artifacts or remains. Should such objects, or indicators thereof, be discovered construction shall be halted and a specialist and/or the County Coroner (as appropriate) be called in to evaluate the significance of the discovery (see Section 3.8.3).	Class III	Less-than-significant
Biotic Communities, and Endangered and Threatened Species	Full buildout of the Master Plan could result in the loss of up to 162 acres of non-native annual grassland, 9 acres of orchard, and 10 acres of dry land cultivated fields and could constitute a loss of habitat for special status wildlife species, including Swainson's Hawk, Burrowing Owl, and San Joaquin Kit Fox.	Purchase off-site, contiguous habitat as a preserve, or other financial compensation in accordance with the San Joaquin County habitat conservation Plan; contiguous habitat in accordance with CDFG mitigation requirements (see section 3.10.3).	Class III (Less-than-significant)	Less-than-significant
Light Emissions	Project implementation would increase the lighted areas on and around the airport, and could result in the	Lighting shall be designed and installed so as not to create any glare, or interfere with aircraft operations (see Section 3.18.3).	Class III	Less-than-significant

Specific Impact Category	Significant Impacts	Mitigation Measures	Impact after Mitigation	Residual Impact
	creation of glare or distraction.			
Construction	Various, as set forth above, including noise, cultural resources, air quality, and water quality.	Noise reduction and avoidance; posted procedures; dust control, water quality protection and control; project design (see various mitigation sections).	Class III	Less-than-significant
Geology and Seismology • Expansive Soils	Shrink/swell soils can cause damage to structures and paving.	A registered geotechnical engineer shall review project development and grading plans.	Class III	Less-than-significant
• Earthquake	The Black Butte Fault located 4 miles SW of the airport, is a potentially active earthquake fault.	All project structures shall be designed in conformity with UBC Seismic Zone 3 standards.	Class III	Less-than-significant

1.0 PURPOSE AND NEED/PROJECT DESCRIPTION

1.1 PROJECT APPLICANT

City of Tracy
City Hall
325 E. Tenth Street
Tracy, CA 95376

1.2 PROPERTY OWNER

City of Tracy
City Hall
325 E. Tenth Street
Tracy, CA 95376

1.3 PROJECT LOCATION

The Tracy Municipal Airport is located on approximately 310 acres at the southern edge of the city. Figure 1-1 depicts the airport's regional location and Figure 1-2 the airport site.

1.4 OTHER PROJECT INFORMATION

Name, address, and telephone number of persons to be contacted concerning this project. For questions concerning the Airport Master Plan and related projects and issues, the project sponsor's representative is:

Mr. Joseph Pellegrino
Transportation Coordinator
City of Tracy
400 East Tenth Street
Tracy, CA 95376
(209) 831-4330

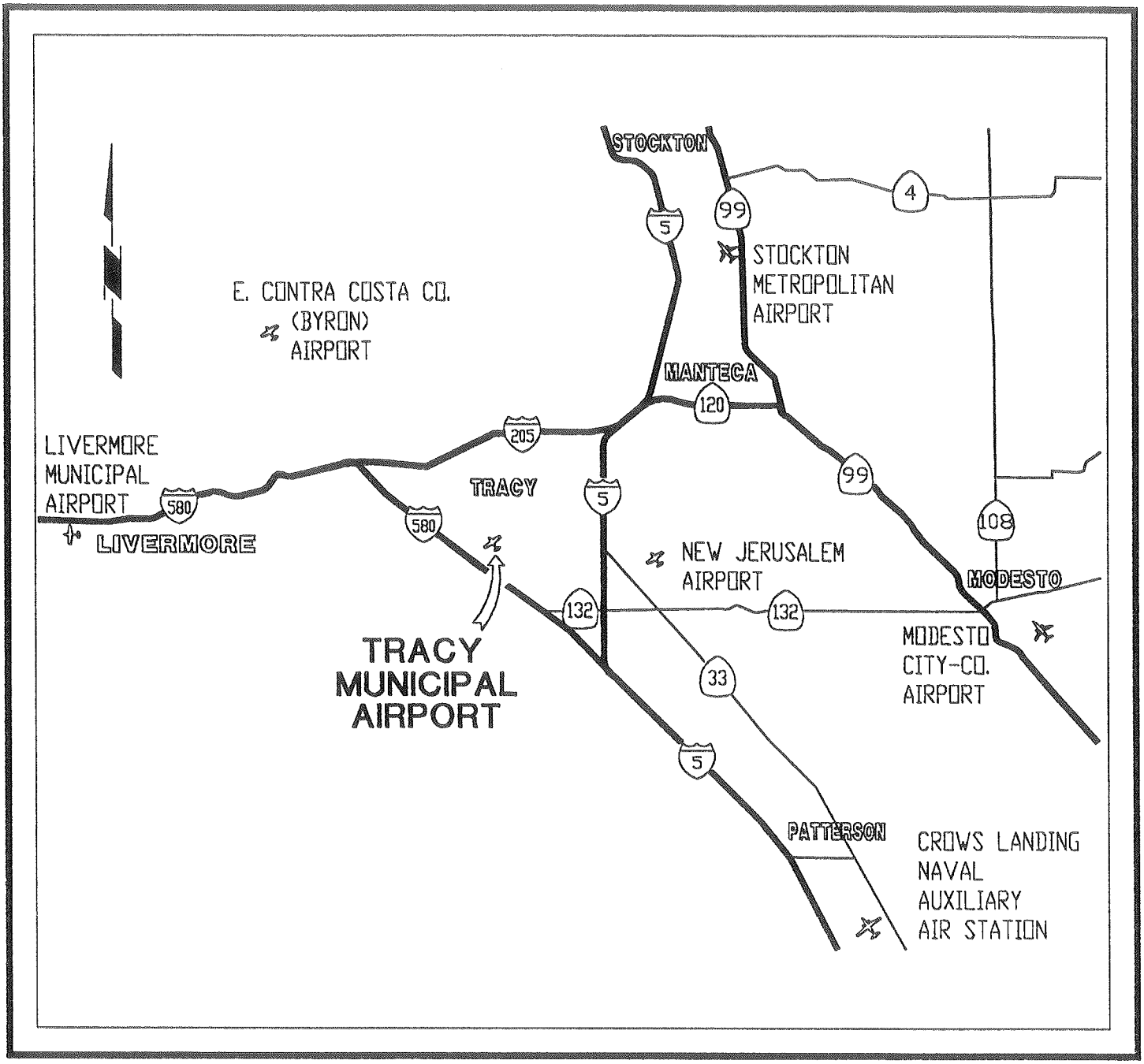


FIGURE 1-1

REGIONAL LOCATION MAP

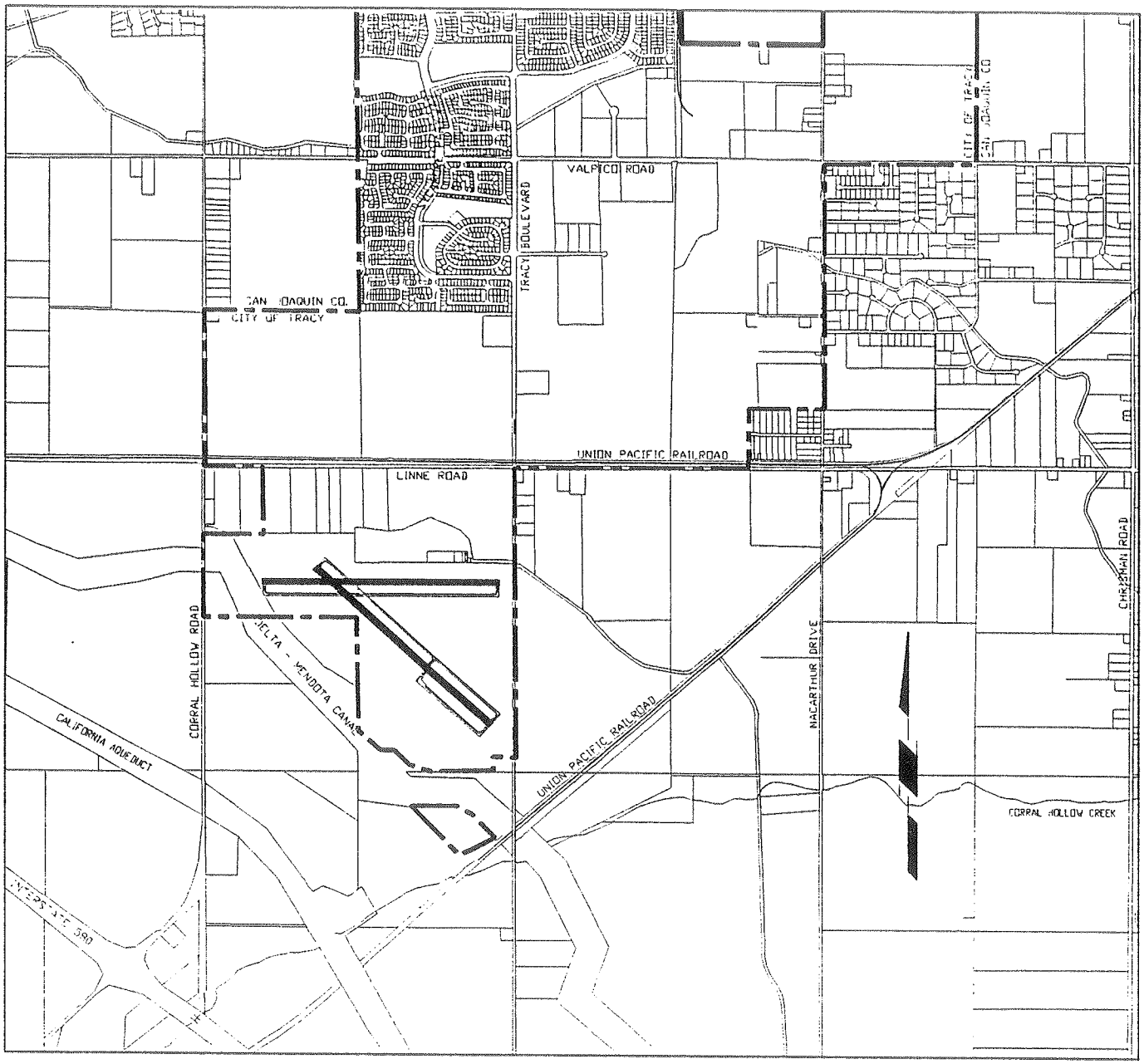


FIGURE 1-2

AIRPORT SITE MAP

For questions on the EA/EIR and related issues, the sponsor's representative is:

Mr. Robert Conant
City of Tracy
Community Development Department
520 Tracy Blvd.
Tracy, CA 95376
Telephone: (209) 831-4600

1.5 BACKGROUND/LEGAL AUTHORITY

This document has been prepared to comply with the requirements of the National Environmental Policy Act of 1969 (NEPA)[1] as implemented by Federal Aviation Administration (FAA) Order 1050.1D[2] and FAA Order 5050.4A[3] for the preparation of Environmental Assessments (EA), and to comply with the President's Council on Environmental Quality (CEQ) Regulations, Section 1506.2 to reduce duplication in federal and state environmental documentation. The report has also been prepared in accordance with the requirements of the California Environmental Quality Act of 1970 (CEQA)[4], the "*State CEQA Guidelines*,"[5] and the City of Tracy guidelines for administering the California Environmental Quality Act for the preparation of Environmental Impact Reports (EIRs).

These policy documents form the basis for the guidelines, procedures, and criteria to be used by the City of Tracy and the FAA in assessing the probable environmental impacts of the proposed master plan project and project alternatives. They also provide for the opportunity for citizens, all professional disciplines and public agencies to critically evaluate the environmental consequences of the proposed master plan project and the manner in which supporting technical data were used.

The following discussions are provided to give the reader a frame of reference for reviewing the technical data and findings set forth in this document. Key information contained in this chapter includes further information on the environmental review process as set forth by CEQA and NEPA, the project's location, project objectives, a description of the project's technical, economic, and environmental characteristics, the intended uses of the document, and identification of key project-related issues as

[1] National Environmental Policy Act of 1969, as amended (P.L. 91-190. 42 U.S.C).
[2] Department of Transportation, Federal Aviation Administration, Order 1050.1D, *Policies and Procedures for Considering Environmental Impacts*, December 12, 1983.
[3] Department of Transportation, Federal Aviation Administration, Order 5050.4A, *Airport Environmental Handbook*, October 8, 1985
[4] California Environmental Quality Act of 1970, as amended. Public Resources Code, Section 21000-21178.1.
[5] State of California, Office of Planning Research *Guidelines for the Implementation of the California Environmental Quality Act, Code of Regulations,* Chapter 3 Sections. 15000-15387.

determined as a result of the Notice of Preparation for the proposed Airport Master Plan EA/EIR.

1.6 PURPOSE OF THE EA/EIR

1.6.1 Requirement For an Environmental Impact Report

The purpose of the CEQA environmental review process as embodied in an EIR is to provide local governmental decision-making bodies and the public with sufficient information concerning the potential impacts of a proposed project and project alternatives to allow them to make intelligent and informed decisions or opinions concerning the environmental acceptability of the project, alternative, or action.[6] An EIR identifies the ways that environmental damage can be avoided or significantly reduced, requires changes to projects in the form of feasible alternatives and mitigation measures to prevent significant avoidable damage to the environment, and discloses to the public the reasons why an agency approved the project in the manner chosen if significant environmental effects are involved.[7]

In an effort to determine the scope of issues and concerns to be addressed in the EIR, the City of Tracy Community Development Department circulated a Notice of Preparation for the proposed Airport Master Plan Project EA/EIR. The public response period ended on August 29, 1997. Comments received as a result of this notification process addressing environmental concerns appropriate to the proposed master plan project have been considered in the preparation of this EA/EIR.

1.6.2 Requirement for an Environmental Assessment

Airport Layout Plan (ALP) approval of, or federal financial participation in, certain categories of projects are subject to the preparation of an Environmental Assessment (EA) and subsequent decision by the FAA to prepare either an Environmental Impact Statement (EIS) or a Finding Of No Significant Impact (FONSI).[8] The project will be reviewed by the FAA in the context of the following categories to make its determination:

- Airport location
- New runway
- Major runway extension

[6] State of California, "Guidelines," op. cit., Section 15002(a)(1)
[7] Ibid, Section 15002(a)(2)-(4)
[8] FAA Order 5050.4A, op. cit., Chapter 3 para. 22. Also see Appendix C, Glossary for definition of terms.

- Runway strengthening which would result in a 1.5 dB or greater increase in noise over any noise sensitive area located within the 65 DNL contour.[9]

- Construction or relocation of entrance or service road connections to public roads which adversely affect the capacity of such public roads.

- Land acquisition associated with any of the above items plus land acquisition which results in relocation of residential units when there is evidence of insufficient comparable replacement dwellings, major disruption of business activities, or acquisition which involves land covered under section 4(f) of the Department of Transportation (DOT) Act.[10]

- Establishment or relocation of an instrument landing system, or an approach lighting system.

- An airport development action that may be considered an extraordinary circumstance or which involves any of the following:

    a. Use of DOT section 4(f) land.

    b. Effect on property included in or eligible for inclusion in the National Register of Historic Places or other property of state or local historical, archaeological, or cultural significance.

    c. Land acquisition of farmland protected under the Farmland Protection Policy Act (FPPA) to nonagricultural use.

    d. Wetlands, coastal zones or floodplains.

    e. Endangered or threatened species.

[9] DNL is the Day-Night Average Sound Level expressed in decibels (dB). It may be abbreviated DNL, Ldn, or Ldn. It was developed as a single number measure of cumulative community noise exposure, and is used to predict the effects of average long term exposure to environmental noise on a population. A more complete definition of this noise metric and the related Community Noise Equivalent Level (CNEL) metric can be found in the glossary of terms in Appendix C.

[10] Department of Transportation Act of 1966, as amended (P.L. 89670, 49 U.S.C. 1653). Section 4 (f) Lands include publicly-owned parks, recreation areas, or wildlife and waterfowl refuges or national, State, or local significance or land of a historical site of similar significance.

1.6.3 Relationship of CEQA Environmental Review Criteria to NEPA Criteria

When a proposed Airport Master Plan Project requires compliance with both CEQA and NEPA, CEQA provides for the local agency to use the federal environmental document (usually an EIS or FONSI) rather than prepare an EA/EIR or Negative Declaration if the federal document will be completed before the local environmental document, and if the federal document is in compliance with CEQA guidelines.[11]

However, as Lead Agency under CEQA, the City of Tracy has elected to prepare a dual-purpose document which will meet the requirements of both CEQA and NEPA.[12] In this instance the resultant CEQA document is an EA/EIR which will be used by the City to make a final environmental determination with regard to the proposed Master Plan project. The FAA will also use this document as an EA for purposes of determining whether an EIS or Finding Of No Significant Impact (FONSI) will be prepared.

1.6.4 Intended Uses of the EA/EIR

The EA/EIR will be used to inform public agency decision-makers and the general public of any potentially significant environmental effects associated with the implementation of the proposed Airport Master Plan and its project components. It will also be used to identify possible ways to minimize any significant project effects, and describe potential alternatives to the project. The City of Tracy will use the document as an EIR for the adoption and implementation of the Airport Master Plan, and the FAA will use it as an EA for ALP approval and for funding implementation of eligible projects. The intent of the document is to minimize the need for any subsequent environmental review of individual Master Plan projects. However, supplemental analyses may be required in those instances where either a substantial period of time has elapsed since the certification of the EIR, or, in the case of land acquisition requiring relocation, a relocation plan must be developed.

1.6.5 Requested Federal Action and Timeframe

The City of Tracy is requesting unconditional FAA approval of the Airport Layout Plan developed in the Tracy Airport Master Plan and written federal environmental approval for the Stage II (1988-2002) Master Plan Capital Improvement Program.[13]

[11] State of California, "Guidelines," op. cit., Section 15221 et seq.
[12] Ibid, Section 15170.
[13] Stage I Projects have been approved and are currently being implemented.

1.7 RESPONSIBLE AND TRUSTEE AGENCIES

1.7.1 Agencies Expected to Use the EA/EIR in Decision Making

Various local, state and federal agencies exercise control over certain aspects of the project area. This document will provide environmental information for the use of those agencies affected by the project or which may have an interest in the project.

The following public agencies are anticipated to use the EA/EIR in their decision-making processes:

- City of Tracy
- Federal Aviation Administration
- San Joaquin County Council of Governments (COG)/Airport Land Use Commission (ALUC)
- San Joaquin Valley Unified Air Pollution Control District
- State of California, Caltrans Aeronautics Program
- State of California, Regional Water Quality Control Board

1.7.2 Permit Requirements And Other Public Agency Approvals Required For This Project[14]

1.7.2.1 City of Tracy. As the Lead Agency, the California Environmental Quality Act requires that the City make a determination of whether or not the proposed Tracy Airport Master Plan project would have a significant effect on the environment. It is the purpose of this document to provide the basis for such a determination. Upon review of the information presented herein, and from other sources, the City may find that (1) changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen its significant environmental effect,[15] (2) such changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or should be, adopted by such other agency,[16] or (3) specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives.[17] Upon approval of the Master Plan, the City will also be responsible for reviewing the proposed airport development projects and issuing building and other permits as necessary.

1.7.2.2 Federal Aviation Administration. The FAA requires candidate airport sponsors (including the City of Tracy) to maintain a current Airport Layout Plan (ALP).

[14] Section 15124(d)(1) of CEQA requires a list of the agencies expected to use the "EIR" and a list of approvals for which the "EIR" will be used, including permits.
[15] State of California, "*Guidelines*," op. cit., Section 15091(a)(1)
[16] Ibid., Section 15091(a)(2).
[17] Ibid., Section 15091(a)(3).

This drawing depicts existing facilities and staged physical improvements to meet projected aeronautical requirements. The FAA must formally approve an ALP as a condition of awarding grant monies for eligible projects. Approval of certain types of physical improvements (including an instrument approach procedure such as is contemplated in the Tracy Airport Master Plan) require a federal environmental finding. Thus, a federal finding is sought from the FAA.

1.7.2.3 Airport Land Use Commission. The San Joaquin County Council of Governments (SJCCOG), as the Airport Land Use Commission (ALUC) for San Joaquin County, is a responsible agency as defined by CEQA, and lead agencies must consult with the ALUC on any projects within its jurisdiction.[18] Under the applicable ALUC law, the City is required to refer the proposed master plan changes to the ALUC.[19] The ALUC must determine whether or not the proposed changes are consistent with its comprehensive land use plan. If found to be inconsistent, the ALUC must notify the City of its finding.

1.7.2.4 San Joaquin Valley Unified Air Pollution Control District. The San Joaquin Valley Unified Air Pollution Control District (UARD) is the designated air quality management agency for San Joaquin County. The UAPCD has prepared an air quality plan for San Joaquin County.[20] The EA/EIR will be used to assess the consistency and conformity of the Master Plan project with the regional air quality plan.

1.7.2.5 State of California - Caltrans Aeronautics Program. The State of California, Department of Transportation (Caltrans) requires all state airports to maintain a current Airport Operating Permit. The airport maintains a currently valid permit issued by Caltrans' Aeronautics Program. The contemplated physical improvements may require an updated or amended Airport Operating Permit.

1.7.2.6 California Regional Water Quality Control Board. This agency has been delegated the responsibility of issuing a water quality certificate for any applicable project components as may be necessary under provisions of the Clean Water Act. [21]

1.8 TRACY AIRPORT MASTER PLAN PROJECT DESCRIPTION

1.8.1. Project Characteristics

Specific technical development components characterizing the proposed Tracy Airport Master Plan are based on recommendations set forth in the final "*Airport Master Plan*" report.[22] This report is hereby incorporated by reference in its entirety. A copy of the

[18] The full authority of the ALUC is established by Article 3.5 of the State Public Utilities Code, Section 21670, et seq., as amended. [See also Appendix C for definitions].
[19] Ibid., Sections 21676(a through c).
[20] "Air Quality Attainment Plan (1991)."
[21] Federal Water Pollution Control Act of 1972, as amended by the Clean Water Act of 1977.
[22] City of Tracy , Final Report "Airport Master Plan, " Tracy Municipal Airport. July 8, 1998.

incorporated document is available for public review and inspection at the offices of the City of Tracy Community Development Department.

The existing airport layout is depicted on Figure 1-3. Both existing airport facilities and proposed improvements are illustrated in a master plan exhibit termed the Airport Layout Plan (ALP), which sets forth the location and extent of existing and future airport facilities.[23] This illustration is reproduced as Figure 1-4. All development projects as set forth on the ALP are the subjects of the approvals sought by the EIR component of this document. Approvals sought by the FAA are for only those projects requiring such approval during the period 1998-2002.

Based on the aviation demand considerations discussed in Chapter 3, "Aviation Activity Forecasts" of the draft final Airport Master Plan report, the Tracy Airport is expected to continue to fulfill its designated role as a general aviation facility through 2016. The existing airfield provides sufficient operational capacity to allow the airport to continue to function in this role, as explained in Chapter 4, "Demand/Capacity Analyses" of the Master Plan.

However, as noted in the draft Master Plan, in order to optimize the utility of the airfield and enhance the efficiency of landslide facilities, certain improvements and upgrades are proposed for the runway and taxiway systems, and for the aircraft basing and servicing areas.

1.8.2 Proposed Development (The Master Plan Project)

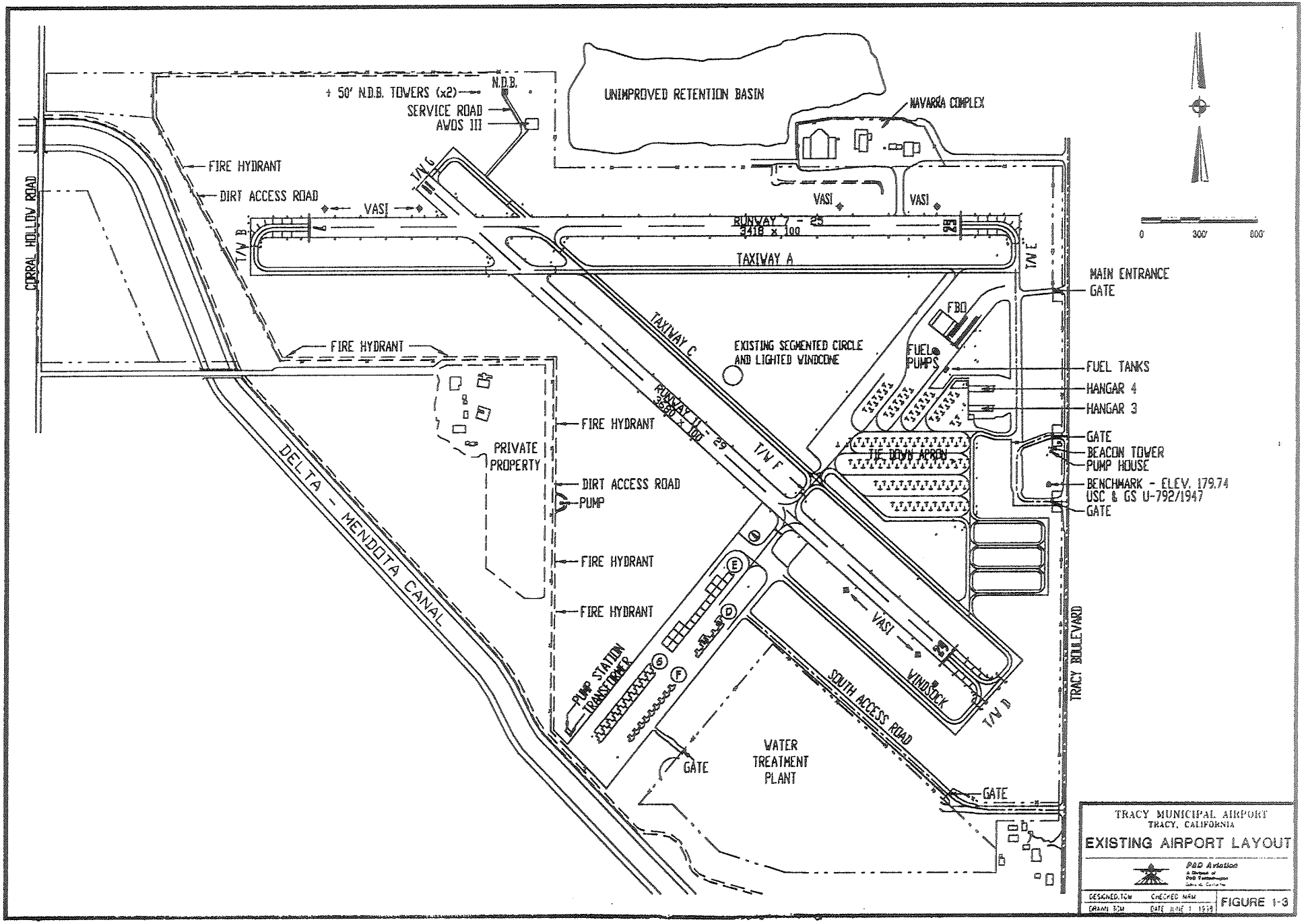
The draft Master Plan recommends the following improvements be made at the Tracy Municipal Airport:

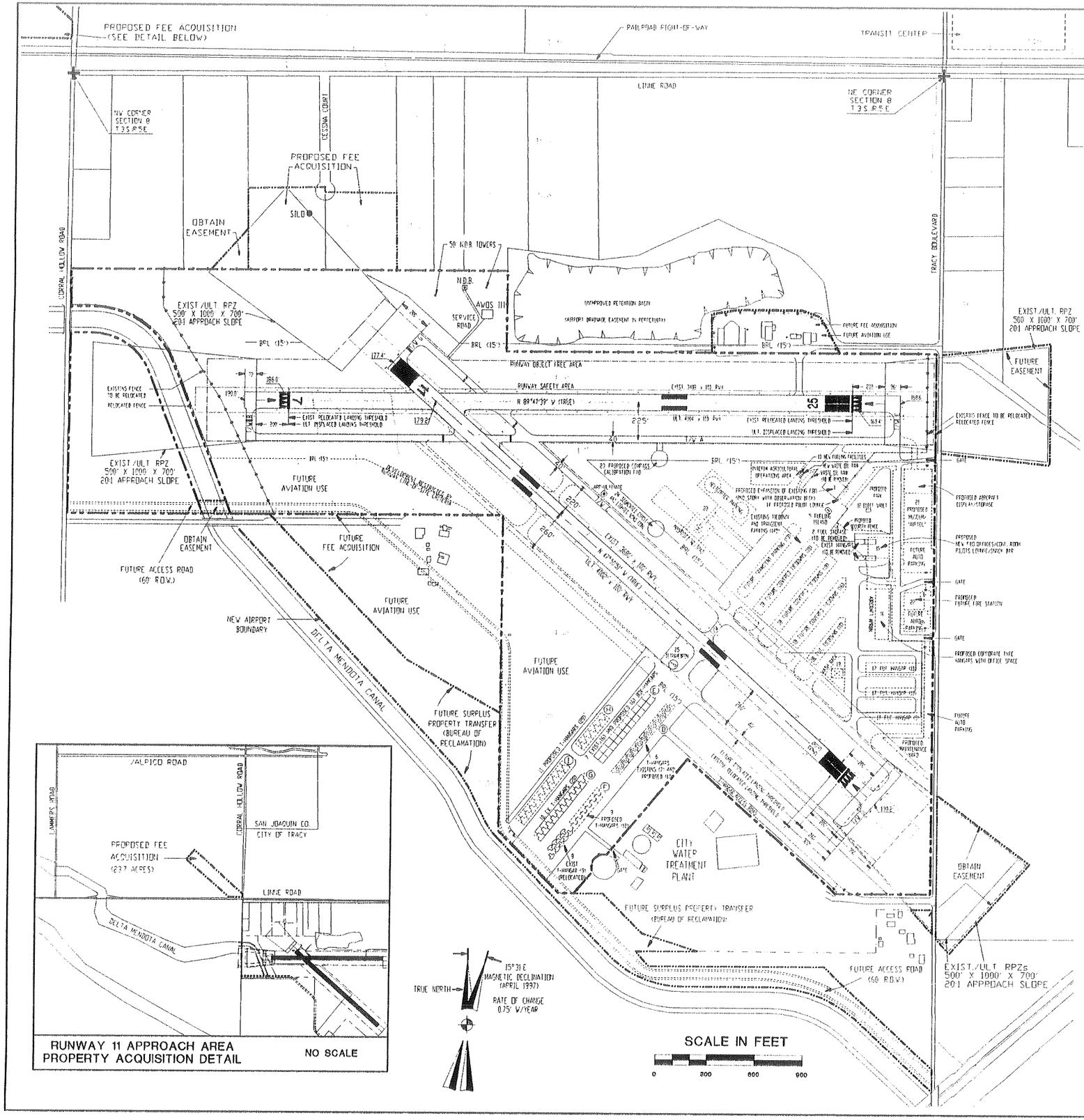
1.8.2.1. Based Aircraft Facilities. Master Plan aviation demand forecasts suggest that based aircraft requirements will increase from a current level of 101 aircraft to 200 by 2016. Facilities for the additional 99 based aircraft would be required as follows:

AIRCRAFT TYPE	BASED AIRCRAFT	PROJECTED NEED	TOTAL (2016)
Single-Engine	93	37	130
Multi-Engine Prop	8	52	60
Turbojet	0	5	5
Rotorcraft	0	5	5
Total	**101**	**99**	**200**

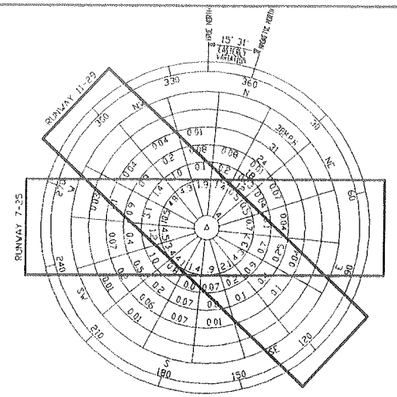
Source: Master Plan, Table 3-2.

[23] CEQA, Section 15124 requires that the "precise location and boundaries of the proposed project ...be shown on a detailed map..."


+ 50' N.D.B. TOWERS (x2)
N.D.B.
SERVICE ROAD
AWOS III
UNIMPROVED RETENTION BASIN
NAVARRA COMPLEX
CORRAL HOLLOW ROAD
FIRE HYDRANT
DIRT ACCESS ROAD
VASI
T/W C
T/W B
RUNWAY 7 - 25
3418 x 100
25
TAXIWAY A
T/W E
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
3581 x 100
T/W F
TIE DOWN APRON
GATE
BEACON TOWER
PUMP HOUSE
BENCHMARK - ELEV. 179.74
USC & GS U-792/1947
GATE
PRIVATE
PROPERTY
FIRE HYDRANT
DIRT ACCESS ROAD
PUMP
DELTA - MENDOTA CANAL
FIRE HYDRANT
FIRE HYDRANT
PUMP STATION
TRANSFORMER
VASI
VINDSOCK
T/W D
SOUTH ACCESS ROAD
TRACY BOULEVARD
GATE
WATER
TREATMENT
PLANT
GATE
0
300'
600'
TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA
EXISTING AIRPORT LAYOUT
P&D Aviation
DESIGNED: TOM
CHECKED: MAM
DRAWN: TOM
DATE: JUNE 1, 1998
FIGURE 1-3



RUNWAY 11 APPROACH AREA
PROPERTY ACQUISITION DETAIL — NO SCALE



WIND ROSE

WIND COVERAGE: 12 MPH WIND COVERAGE
RUNWAY 7-25 = 98.8%
RUNWAY 11-29 = 96.8%
ALL RUNWAYS = 99.6%
Δ = 35.1% CALMS: 0-3 MPH

SOURCE: TRACY MUNICIPAL AIRPORT
PERIOD: JANUARY-DECEMBER, 1973
(24 HOUR OBSERVATIONS)

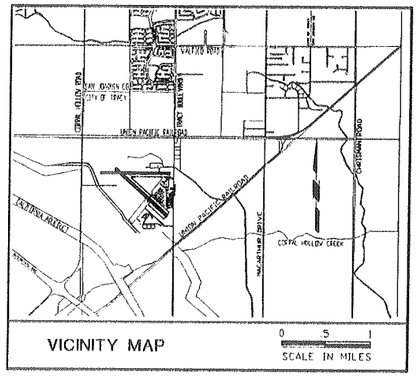
AIRPORT DATA	EXISTING	ULTIMATE
AIRPORT ELEVATION	196'	SAME
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD83)	LAT. 37°41.21' LONG 121°26.31'	LAT. 37°41.27' LONG 121°26.37'
AIRPORT and TERMINAL NAVIGATION AIDS	AWOS/NDB	SAME
MEAN MAX TEMPERATURE OF HOTTEST MONTH	95.9° F	SAME
AIRPORT REFERENCE CODE	B-II	SAME
DESIGN AIRCRAFT	KING AIR 200	SAME
GPS AT AIRPORT	NONE	NON-PRECISION (NOT LESS THAN 1 MILE)

LEGEND	EXISTING 1997	PROPOSED 1998-2018	REFERENCE 2003-2018
AIRPORT PROPERTY/EASEMENT LINE			
BUILDINGS			
RUNWAY - TAXIWAY - APRON			
AIRPORT REFERENCE POINT	⊙	SAME	SAME
BOUNDARY FENCE			SAME
PROPERTY DIVISION OR LEASE LINE			
BUILDING RESTRICTION LINE			

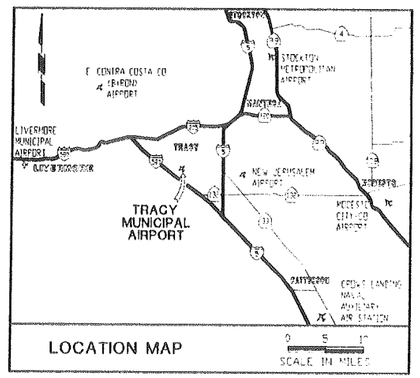
RUNWAY END COORDINATES (NAD83)		LATITUDE	LONGITUDE
RUNWAY 7 - END	EXIST.	37° 41' 25.7"	121° 26' 54.1"
	ULT.	37° 41' 25.9"	121° 26' 56.5"
RUNWAY 11 - END	EXIST.	37° 41' 28.1"	121° 26' 45.9"
	ULT.	37° 41' 28.1"	121° 26' 45.9"
RUNWAY 25 - END	EXIST.	37° 41' 26.0"	121° 26' 11.1"
	ULT.	37° 41' 25.7"	121° 26' 11.7"
RUNWAY 29 - END	EXIST.	37° 41' 0.47"	121° 26' 11.7"
	ULT.	37° 41' 1.7"	121° 26' 9.1"

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/AIRTEL/MUSEUM	-	21
FIRE STATION	-	22
COMPASS CALIBRATION PAD	-	23
SEGCIRCLE/LIGHTED WIND CONE	24	24
TETRAHEDRON	25	25

RUNWAY DATA	RUNWAY 7-25		RUNWAY 11-29	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
RUNWAY DIMENSIONS	3438 X 100	4004' X 100	3660 X 100	4002 X 100
% OF WIND COVERAGE AT 12 MPH	98.8 %	SAME	96.8 %	SAME
RUNWAY EFFECTIVE GRADIENT	0.53 %	SAME	0.32 %	SAME
PAVEMENT STRENGTH	12,500 lb. S.W.L.	SAME	12,500 lb. S.W.L.	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'/382'	NONE
RUNWAY THRESHOLD DISPLACEMENT	NONE	270'/296'	NONE	0'/382'
RUNWAY MARKING/TYPE	VISUAL/VISUAL	VIS./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 SFTY AREA BEYOND RWY END (150' WIDE)	300'/300'	215'/300'	300'/300'	300'/300'
ROFA BEYOND RWY END (500' WIDE)	300'/293'	215'/230'	300'/300'	240'/300'
ROFZ 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'	4008'/4008'
ACCELERATE-STOP DISTANCE AVAIL (ASDA)	3599'/3431'	3919'/3934'	3242'/3680'	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



VICINITY MAP — 0 .5 1 SCALE IN MILES



TRACY MUNICIPAL AIRPORT

LOCATION MAP — 0 5 10 SCALE IN MILES

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: MRM	FIGURE 1-4
DRAWN: TGM	DATE: JUNE 30, 1998	

It is important to note that these numbers are only generally representative of the actual numbers of aircraft of each class which might desire to be based at the airport over the forecast period. As noted in the Master Plan, various factors could affect actual demand over the 20-year time period. More importantly, it is not possible to identify, in advance, the specific locations (whether at FBOs or in City-operated facilities) where specific aircraft would be based, since these aspects of demand are largely indeterminate. Thus, the draft Master Plan defines only the broader areas which could, or should, be developed for aircraft basing purposes. Figures 1-5, *"Terminal Area Plan,"* and 1-6, *"South Hangar Area Plan,"* depict the recommended locations for the proposed improvements.

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 1-5 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 (62 aircraft spaces minimum).

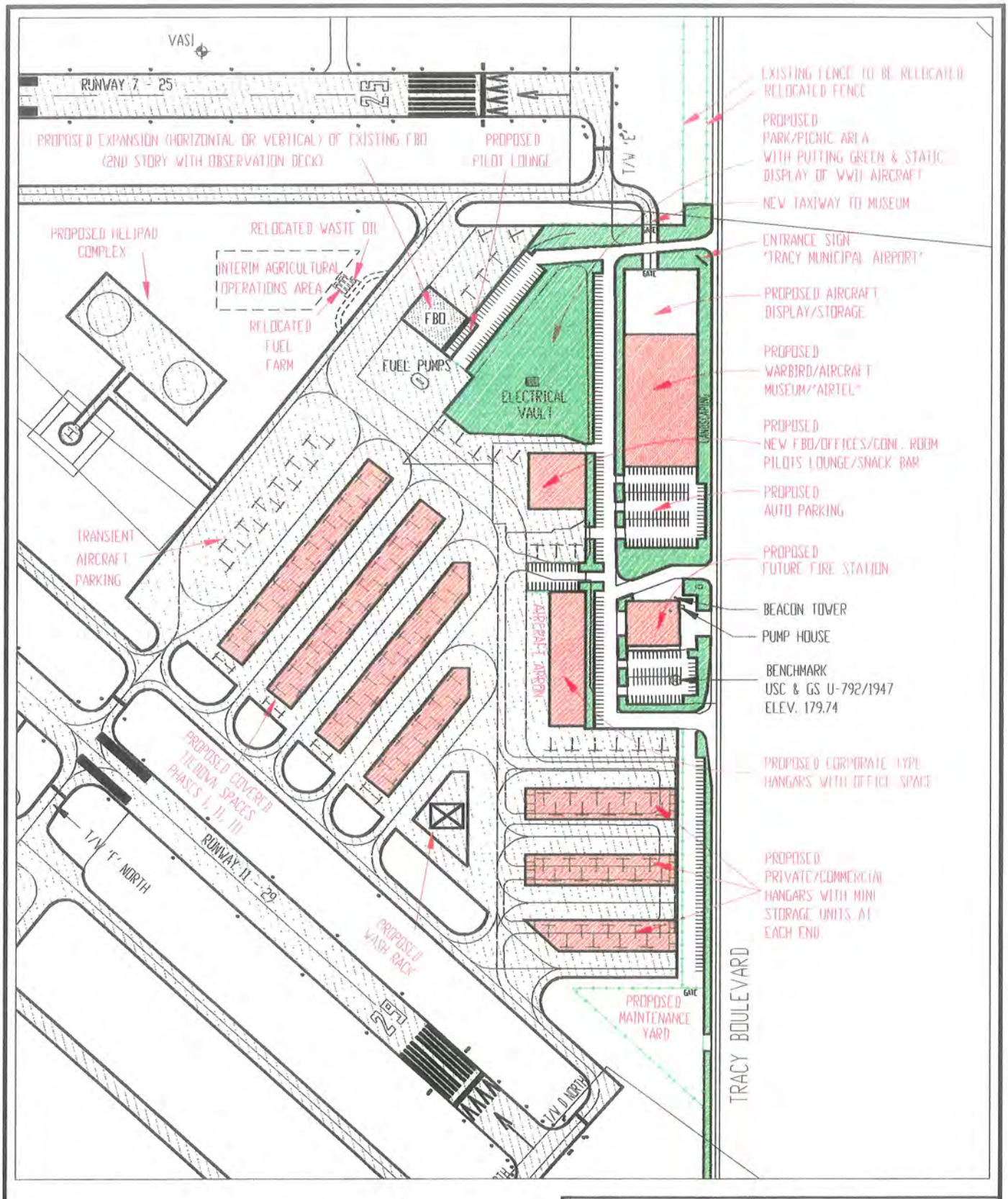
Development of the proposed corporate hangars will require the removal of existing City-owned Hangars 3 and 4. Hangars 3 and 4 would be replaced by the proposed private/ commercial hangars (a net increase of 18 fully-enclosed hangar spaces). Total covered hangar spaces in the Terminal Area would total 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.

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



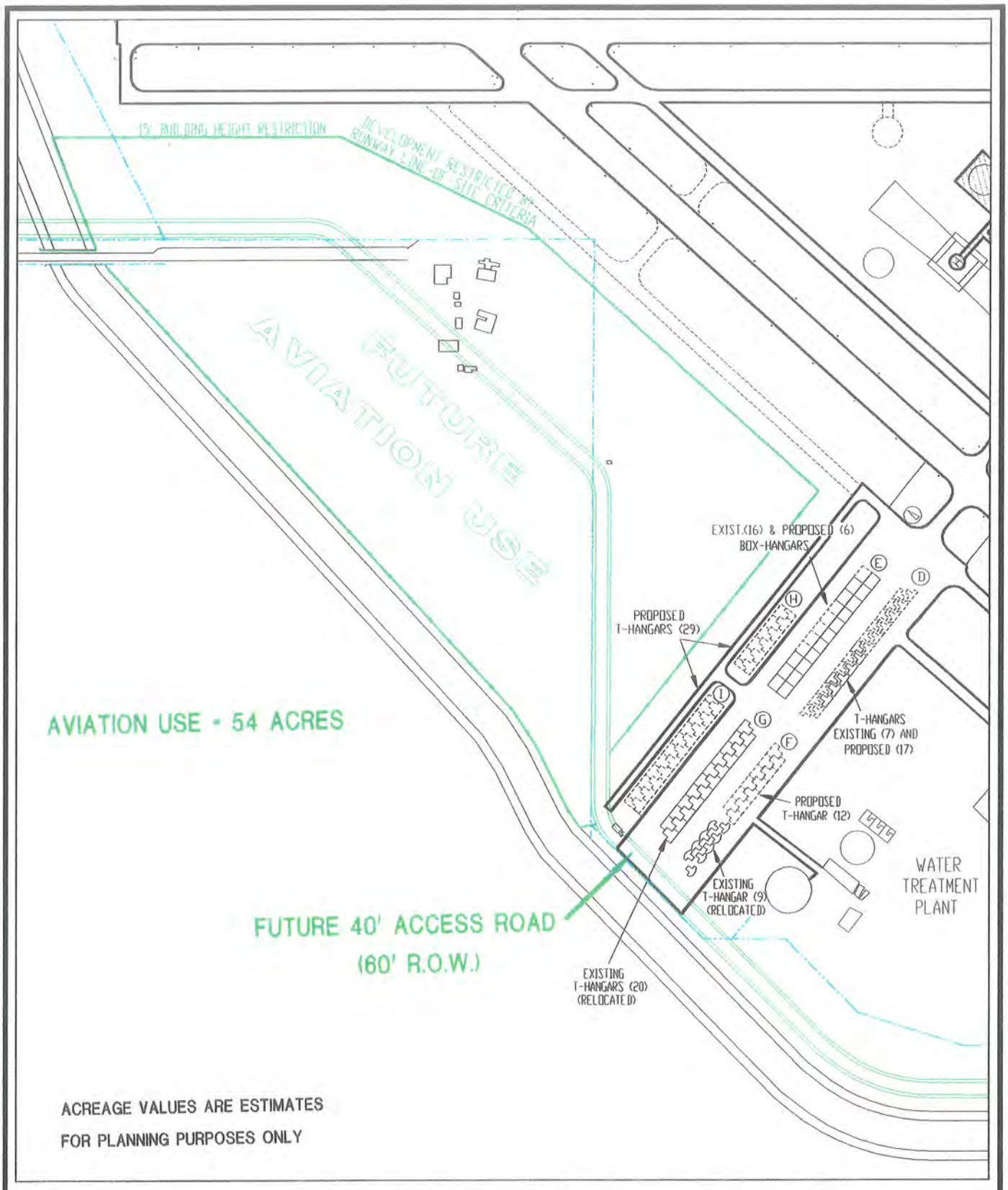
TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA

MASTER PLAN PROJECT
TERMINAL AREA PLAN

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

DESIGNED: MRM	CHECKED:MRM
DRAWN: TGM	DATE: JUNE 30, 1998

FIGURE 1-5



TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA

MASTER PLAN PROJECT
SOUTH HANGAR AREA PLAN

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

DESIGNED: MRM	CHECKED: MRM	FIGURE 1-6
DRAWN: TGM	DATE: JUNE 30, 1998	

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.

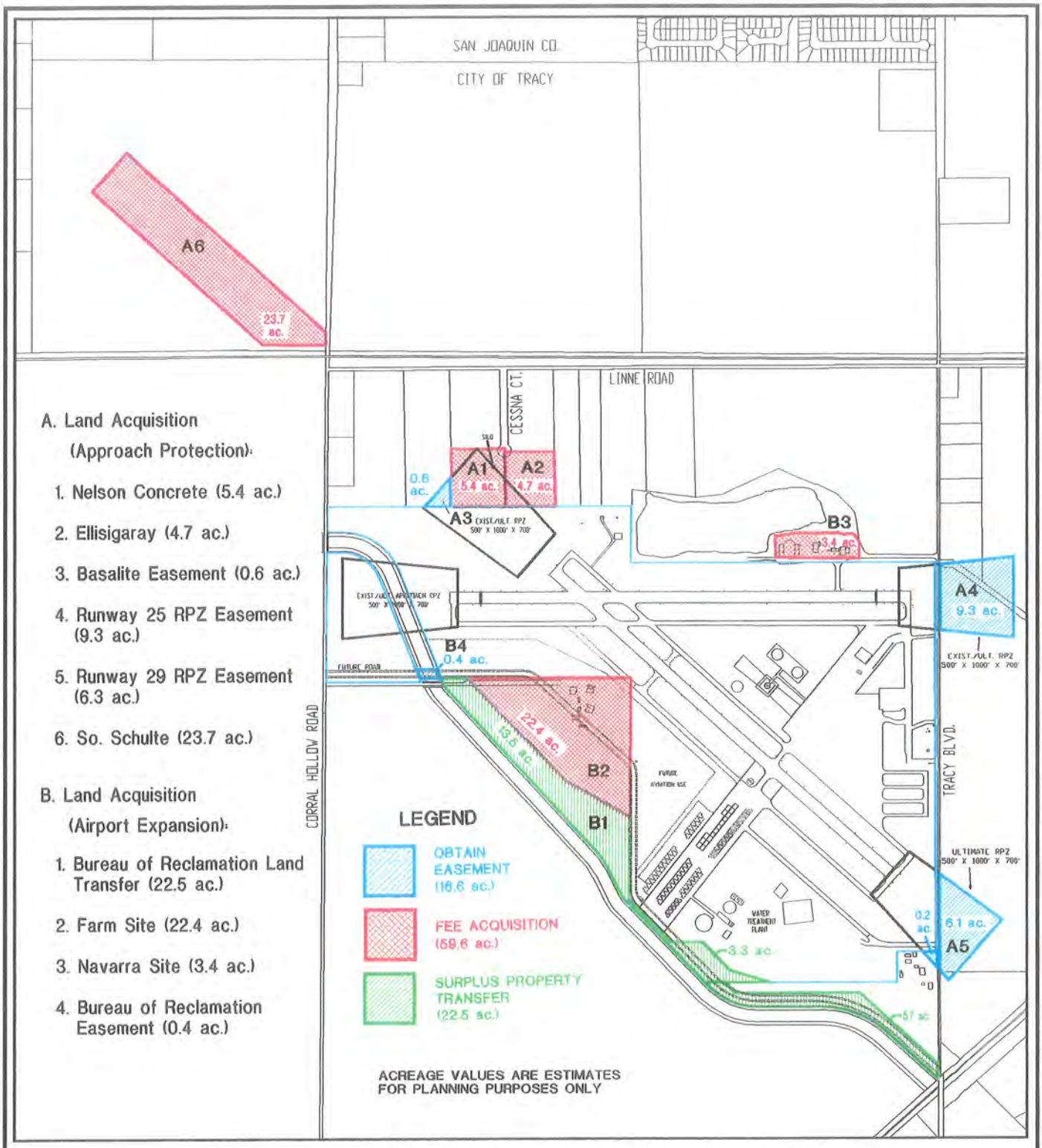
Visitor Services. As the area around the airport develops, it is anticipated that overnight hotel accommodations will be required. The airport is well situated to meet this need. To make such a facility more attractive, it has been suggested that it be developed on an aviation theme with a display of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

South Hangar Area. Figure 1-6, *"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. This would result in a total of 94 T-Hangars and 22 Box Hangars in this area for an overall total of 116 Hangars.

1.8.2.2. Land Acquisition. The Master Plan notes that most of the land required to support current airport needs and future improvements is already under fee ownership of the City. However, the recommended improvement to the airport's low-visibility approach capabilities, i.e., straight-in non-precision instrument approaches, necessitates the acquisition of some additional land and easements, as follow:

Future Uses. Figure 1-6 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 (13.5 acres). An additional 0.4 acre easement is proposed to ensure unrestricted access to the site from Corral Hollow Road. The City also proposes 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 airport purposes. Figure 1-7, *"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 1-7 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:



A. Land Acquisition
(Approach Protection):

1. Nelson Concrete (5.4 ac.)
2. Ellisigaray (4.7 ac.)
3. Basalite Easement (0.6 ac.)
4. Runway 25 RPZ Easement (9.3 ac.)
5. Runway 29 RPZ Easement (6.3 ac.)
6. So. Schulte (23.7 ac.)

B. Land Acquisition
(Airport Expansion):

1. Bureau of Reclamation Land Transfer (22.5 ac.)
2. Farm Site (22.4 ac.)
3. Navarra Site (3.4 ac.)
4. Bureau of Reclamation Easement (0.4 ac.)

SOURCES: P&D Aviation, 1997 and City of Tracy, "Proposed Land Exchange Between The City of Tracy and the U.S. Bureau of Reclamation Along the Delta Mendota Canal." 6-30-1992

SCALE IN FEET
0 500' 1000'

TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA

MASTER PLAN PROJECT
LAND ACQUISITION PLAN

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

DESIGNED: MRM	CHECKED:MRM
DRAWN: TGM	DATE: JUNE 17, 1998

FIGURE 1-7

5.4 acres off Cessna Court in RPZ for approach protection ("Nelson Concrete")[24]
- 4.7 acres off Cessna Court adjacent to RPZ for approach protection ("Ellisagaray")[25]
- 23.7 acres northwest of Linne Road/Corral Hollow Road for approach protection ("Western Corral")[26]
- 3.4 Acres on North Side for future airport development ("Navarra")[27]
- 22.4 acres on west side for future airport development ("Farm site")[28]

Easement Acquisition. Figure 1-7 also depicts four parcels, totaling 16.6 acres, recommended for acquisition of easements, as follows:

- 0.6 acres located within RPZ for Runway 11
- 9.3 acres within RPZ for Runway 25
- 6.1 acres within RPZ for Runway 29
- 0.2 acres within RPZ for Runway 29
- 0.4 acres for access across Delta-Mendota Canal

1.8.2.3 Utilities. As noted in the Master Plan, the airport is currently on the urban fringe, and only rudimentary utility services are provided. According to the Master Plan, 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.

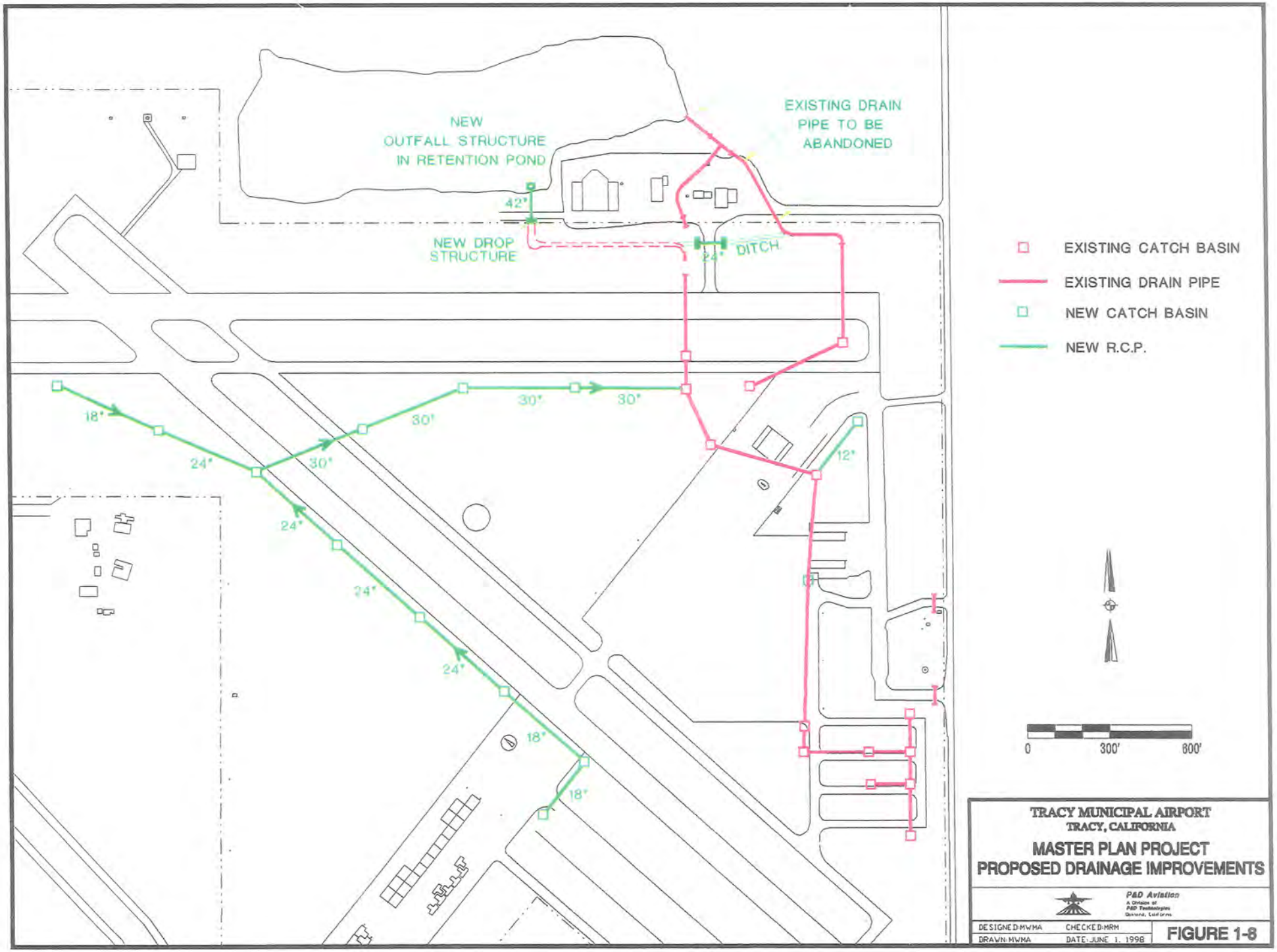
To this end the Master Plan recommends certain utilities improvements. Among these are the provision of electrical, water and sewer services to the hangar areas. Without these essential services, the City is not able to lease its hangar units at the most optimal rate, and new development is not encouraged. 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.

1.8.2.4 Storm Drainage. The airport's storm drainage system is in need of upgrading. 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.

[24] The Nelson property is located in the RPZ for Runway 11.
[25] A portion of this property is located in the RPZ.
[26] This parcel would afford extended approach protection for Runway 11.
[27] This site has a "through-the-fence" agreement with the City.
[28] This parcel would be combined with surplus Bureau of Reclamation property.

Figure 1-8, *"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.


NEW
OUTFALL STRUCTURE
IN RETENTION POND
EXISTING DRAIN
PIPE TO BE
ABANDONED
42"
NEW DROP
STRUCTURE
24" DITCH
18"
24"
30"
30"
30"
30"
24"
24"
24"
18"
18"
12"
EXISTING CATCH BASIN
EXISTING DRAIN PIPE
NEW CATCH BASIN
NEW R.C.P.
0
300'
600'
TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA
MASTER PLAN PROJECT
PROPOSED DRAINAGE IMPROVEMENTS
P&D Aviation
A Division of
P&D Technologies
Oakland, California
DESIGNED-MWMA
CHECKED-MRM
DRAWN-MWMA
DATE-JUNE 1, 1998
FIGURE 1-8

1.8.3. Infrastructure and Development Phasing

The recommended Master Plan Capital Improvement Program has been proposed as a phased plan to accommodate long-range utilization of the facility. Stage I CIP projects are currently underway and include the following projects which have received prior environmental review:

CURRENT PROJECTS - Stage I (FY 96-97 through FY 97-98

- Relocate Fuel Storage, Reconstruct Tiedown Apron
- New Electrical System and Vault
- Slurry Seals—Runways, Taxiways, and Aprons
- Taxiway Construction (South)
- Relocate 9 Portable Hangars, Construct 12 New Hangars
- Electric Power/Lighting to Hangars
- Slurry Seal (South Hangar Area)
- Ramp/Taxiway Construction (Hangar 4 Area)

Proposed new projects as recommended in the Master Plan Include:

NEW PROJECTS - Stage II (FY 98-99 through FY 01-02)

A. Land Acquisition (Approach Protection)
   1. Nelson Concrete (5.4 acres)
   2. Ellisagaray (4.7 acres)
   3. Basalite Easement (0.6 acres)
   4. Runway 25 RPZ Easements (9.3 acres)
   5. Runway 29 RPZ Easements (6.3 acres)
   6. So. Schulte (Western Corral) (23.7 acres)

B. Land Acquisition (Airport Expansion)
   1. Bureau of Reclamation Land Transfer (22.9 acres)
   2. Farm Site (22.4 acres)
   3. Navarra (3.4 acres)

C. Airport Development
   1. Extend/Upgrade Water System
   2. Extended/Connect Sewer System
   3. Portable Hangars - South Hangar Area (29 units)
   4. Pilot Lounge (Trailer)
   5. Improve Main Entry

   a. Public Parking
   b. Main Entry Lighting
   c. Entranceway Construction
6. Shade Hangars (18 units), Lighting
7. Aircraft Wash Rack
8. Helicopter Pad
9. Storm Drain Upgrade
10. Fence Relocations

D. Reconstruct So. Tracy Blvd.
1. Planning, Design, etc.
2. Convert 10' VCP Sanitary Sewer
3. Road Work
4. Rehabilitate Existing Water Line

Other Projects-Not Programmed

The Master Plan also considers other development projects which are not included in the City's Capital Improvement Program. Included in these projects are a proposed "Airtel" (Airport Hotel) and Aircraft Museum, additional corporate aviation facilities (including executive aircraft hangars), and other projects which would be funded by private capital. These projects are included in the Master Plan as being representative of the types of development anticipated on selected areas of the airport. However, given that such uses are largely market-driven, there are no assurances as to when, or if they would be implemented. This EA/EIR considers their potential impacts on both a generic and cumulative basis, but, depending on the timing and extent of such development, supplementary environmental analyses may be required in the future.

1.9 PURPOSE AND NEED

1.9.1 Problem Identification

The currently adopted Tracy Municipal Airport Master Plan is twenty-three years old. The existing Airport Layout Plan, as revised in 1994, does not reflect current FAA airport design standards.[29] The old Master Plan and ALP are out of date, and the proposed Master Plan and ALP will, when approved, provide the City with an up-to-date guide for future airport growth and development, consistent with current FAA guidelines and directives. In addition, the proposed Master Plan seeks to correct land use in-compatibilities in the airport's runway protection zones and proposes land acquisition for future airport development.

[29] The ALP was revised to depict a larger runway protection zone (RPZ) for Runway 11.

1.9.2 Requested Federal Action and Timeframe

As noted in Section 1.6.5, the City of Tracy is requesting unconditional FAA approval of the proposed Airport Layout Plan and written Federal environmental approval for the Stage II (1998-2002) Master Plan Capital Improvement Program. Such approvals are anticipated in FY 1998.

1.9.2.1 FAA NEPA Projects. Because NEPA and CEQA environmental review criteria differ to some extent with respect to what may or may not constitute a project, this section identifies three Master Plan elements which FAA order 5050.4A requires be specifically evaluated in the EA component of the EA/EIR by the FAA.

The following specific project elements are classes of projects subject to analysis by the EA since federal financial participation or Airport Layout Plan approval is required:

Stage II Projects (FY 98-99 through FY01-02)

A. Land Acquisition (Approach Protection)
   1. Nelson Concrete (5.4 Acres)
B. Land Acquisition (Airport Expansion)
   2. Farm Site (22.4 Acres)
   3. Navarra Site (3.4 Acres)

Acquisition of the Nelson Concrete Parcel (Parcel A1) is required for airport approach protection purposes (a portion of the property is located within the Runway Protection Zone for Runway 11 and a silo on the concrete batch plant penetrates the FAR Part 77 approach surface for the runway). The acquisition of the parcel differs from other parcels proposed for acquisition for approach protection in that it will require disruption of a business activity on the site.[30]

Acquisition of the farm site (parcel B2) is proposed for airport expansion purposes. An EA-level review of the proposed acquisition is required only because of potential impacts involving endangered or threatened species (adequate replacement housing is available in the area, and is not at issue).[31]

Acquisition of the Navarra site is proposed for airport expansion purposes. Such acquisition could result in the disruption of business activities on the site.

All other proposed CIP projects are categorically excluded from the FAA's requirement for EA-level environmental review.[32]

[30] If relocation of a business or farm is involved, the owner must be offered assistance in finding a new location and in re-establishing the business.
[31] The City's UMP/GP anticipates and provides for a wide range of housing types in the Tracy Planning Area.
[32] FAA Order 5050. 4A. PP. 9-11.

1.9.3 Activity Statistics

Based on City and FAA estimates, the number of aircraft operations at the airport has remained relatively constant at around 53-54,000 annual operations since 1991. Based aircraft have grown from 71 in 1991 to 101 in 1995.

Forecasts of aviation activity were developed in the draft Airport Master Plan to help determine future aviation facility requirements. Table 1-1 sets forth these forecasts.[33]

TABLE 1-1
GENERAL AVIATION FORECAST (1996-2016)
Tracy Municipal Airport Master Plan

Annual Aircraft Operations				
Year Ending	1995[1]	2001	2006	20016
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[2]	93	95	105	130
M-E Prop[3]	8	15	23	60
TurboJet[4]	0	0	1	5
Helicopter	0	0	1	5
TOTAL	101	110	130	200

Source: *P&D Aviation – February 1997*

1. FAA Form 5010-1
2. Single-engine propeller
3. Multi-engine propeller (including turboprop)
4. Light, quiet business jet

Although not a specific CIP project, the Master Plan proposes the establishment of a straight-in nonprecision instrument approach to Runways 11, 25, and 29. Such approaches are also subject to the FAA's requirement for an EA.[34]

[33] Master Plan, PP. 3-1 to 3-9.

Although not a specific CIP project, the Master Plan proposes the establishment of a straight-in nonprecision instrument approach to Runways 11, 25, and 29. Such approaches are also subject to the FAA's requirement for an EA.[34]

1.9.4 Implications of "No Action"

If the recommended improvements to the Tracy Municipal Airport were no to be implemented, it is quite likely that the air service needs of the Tracy area would have to be met by other area airports. As a result, the City could be left with an under-capitalized, underused facility, which could become a drain on City financial resources.

1.10 APPLICABLE FEDERAL, STATE OR LOCAL LAWS AND PERMITS

Key federal, state and local statues, regulations, and guidelines with which the FAA and the City of Tracy must comply as related to implementation of the Proposed Master Plan project are presented in Appendix D. Types of federal and federally mandated permits that may be required of Tracy in implementing the Master Plan Project are listed in Appendix E

1.11 AREAS OF POTENTIAL SIGNIFICANT IMPACT

Table ES-2 (Executive Summary Section) provides a tabular listing of the potential environmental consequences of the proposed project and alternative to the project.

[34] Ibid., P. 10.

2.0 PROJECT ALTERNATIVES

A preferred alternative, the Tracy Municipal Airport Master Plan as described in Section 1.8.2, and one alternative to the project have been identified. Both are examined in Section 3.0 (Affected Environment/Environmental Consequences). The selected alternative is defined as the:

- No Project (No Action) Alternative

Other alternatives were also considered, but were rejected (see Section 2.3).

2.1 DESCRIPTION OF ALTERNATIVES

2.1.1 Project

The proposed Airport Master Plan project is described in Section 1.8.2 (Proposed Development).

2.1.2 No Project Alternative

This alternative considers existing conditions with respect to airport facilities. It anticipates what might reasonably be expected to occur in the foreseeable future under the demand forecasts, if the proposed project were not approved (based on current plans and consistent with available infrastructure and community services). Under this alternative, some limited airport operational growth is anticipated, but facilities will not be present to meet demand. No construction impacts will occur.

2.2 COMPARISON OF ALTERNATIVES

Table 2-1 compares the various components of the project as proposed with the alternative to the project.

Table 2-1 Comparison of Alternatives		
	Alternatives	
Component	Airport Master Plan (The Project)	No Project Alternative
Based Aircraft 1995/2016)	101/200	101/125
Operations (1995/2016)	54,000/107,200	54,000/65,000
Airport Classification[a] (1995/2016)	B-II/B-II	B-II/B-II
Design Aircraft	Beech King Air 200	Beech King Air 200
Instrument Approach	GPS Straight-in (visibility = 1 mile)	AWOS/NDB (Circling)
Land Acquisition	16.6 acres easements 59.6 acres fee 22.5 acres transfer	None
Capital Improvements	As per Master Plan CIP	None

Notes:

a. Airport Reference Code (ARC) B-II includes aircraft with approach speeds of from 91 to 121 knots and wingspans of from 49 to 79 feet.

2.3 ALTERNATIVES CONSIDERED AND REJECTED

Among the airport development alternatives considered, the closure and relocation of the airport, and its associated traffic, to a new or another existing airport site was the most significant alternative eliminated from further study. The prospective closure of the Tracy Municipal Airport and development of a new replacement airport was eliminated for the following reasons:

- Potentially excessive capital costs;
- Lack of availability or confirmation of federal funding assistance; and
- Lack of identified ability to recover full asset value from sale and conversion of facilities.

The closure of the Tracy Municipal Airport and the relocation of based aircraft to another existing airport (e.g., E. Contra Costa County, Livermore, Stockton) was eliminated for the following reasons:

- Airport closure (without building a replacement airport) would be in conflict with FAA grant conditions.
- The alternative airports would not efficiently serve the air transportation needs of the Tracy Planning Area.

Two other airport development alternatives were considered, but were rejected as well. The first was the implementation of the existing Tracy Airport Master Plan as is set forth on the currently approved Airport Layout Plan (May 24, 1994) Under this alternative the airport would grow to accommodate over 900 based aircraft, require an additional 3,250 foot-long runway, and Runway 11-29 would be extended from its existing length of 3,680 feet to 5,250 feet. The extension of Runway 11-29 would require the acquisition of property northwest of the current runway end past the intersection of Linne Road and Corral Hollow Road, including the Basalite property. This alternative was rejected as being neither reasonable nor feasible, in that its implementation would be against current City policy[1] and not consistent with the aviation activity forecasts set forth in the updated Airport master Plan.

The second additional airport development alternative to be considered and rejected was that of a "less intensive" development (i.e. fewer hangars, less tiedown space, etc.). This alternative was rejected for two principal reasons. The first is that this alternative would not be consistent with the City's adopted goals and objectives for the airport[2]. The second was that upon completion of the environmental review of the project as set forth in Section 3 of this document, it was determined that implementation of the project as proposed would not result in any significant adverse environmental consequences which cannot be mitigated to a less than significant impact.

The use of other transportation modes, including passenger rail and inter-city buses was also rejected as not being a reasonable or feasible alternative. Although such services are available to travelers in the Tracy area, the decision to use the airport is not one in which a choice is made between bus, rail or air transportation modes. This is principally due to the fact that unlike rail or bus transit, the Tracy Municipal Airport does not offer scheduled passenger service.

2.4 SELECTION OF PREFERRED ALTERNATIVE

The proposed Master Plan was selected by the project's Technical Advisory Committee and Airport Commission as the preferred project alternative. This alternative was subsequently endorsed by the Tracy City Council on March 4, 1997 as the design goal for this study. All subsequent discussions of the preferred alternative are reflective of

[1] Staff Report by Guy A. Erickson, Director of Public Works, March 21, 1995
[2] Master Plan, PP. 2-4 to 2-7

the project as proposed and are based on the criteria applicable to Airport Reference Code B-II with non-precision, straight-in approaches to Runways 11, 25 and 29.

2.4.1 Options Within Preferred Alternative

To comply with FAA environmental review requirements the three Master Plan elements identified in Section 1.9.2 as being subject to EA-level analyses are identified as separate action options within the preferred alternative. These options are reiterated as follows:

Option A1. Nelson Concrete land acquisition
Option B2. Farm Site land acquisition
Option B3. Navarra land acquisition

These options are the subject of separate environmental impact analyses, where appropriate, in Chapter 3.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES - SPECIFIC IMPACT CATEGORIES AND MITIGATION

Both NEPA and CEQA require the identification and analysis of any significant or potentially significant environmental impacts associated with the proposed project or project related actions.[1] This section analyzes the potential environmental impacts of the Tracy Airport Master Plan project as proposed, and an alternative to the project on the basis of the specific impact categories set forth in paragraph 47(e) of FAA Order 5050.4A and other categories of impact as may be required by CEQA. The following Specific Impact Categories are analyzed in this section:

1. Noise
2. Compatible Land Use
3. Social Impacts
4. Induced Socioeconomic Impacts
5. Air Quality
6. Water Quality
7. Department of Transportation Act, Section 4(f)
8. Historic, Architectural, Archeological and Cultural Resources
9. Biotic Communities
10. Endangered and Threatened Species of Flora and Fauna
11. Wetlands
12. Floodplains
13. Coastal Zone Management Program
14. Coastal Barriers
15. Wild and Scenic Rivers
16. Farmland
17. Energy Supply and Natural Resources
18. Light Emissions
19. Solid Waste Impacts
20. Construction Impacts
21. Traffic and Transportation*[2]
22. Geology and Seismology*
23. Public Utilities*
24. Hazardous Materials*

Classes of potential project impacts are identified in accordance with CEQA environmental impact assessment criteria, as follows:

[1] FAA Order 5050.4A op. cit., para 47(e) and CEQA Guidelines, op. cit., Sec. 15126.
[2] *= Not a specific impact category in FAA Order 5050.4A

Class I Impact: A significant, unavoidable, adverse impact for which the CEQA decision-makers must approve a "Statement of Overriding Considerations."[3] These are impacts for which *"specific economic, social or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR."*

Class II Impact: A significant adverse impact that can be feasibly mitigated to a less than significant level. CEQA Section 15091(a)(1) requires that "Findings" be made indicating that changes or alterations have been required in the project to substantially lessen impacts.

Class III Impact: An adverse impact that has been found to be less-than-significant under CEQA guidelines.

Class IV: A beneficial impact.

Mitigation measures to reduce significant impacts to less-than-significant levels are also included, where appropriate.

3.1 NOISE

3.1.1 Setting/Affected Environment

The off-airport effects of aircraft noise emissions are and will continue to be an important planning consideration as part of the Tracy Municipal Airport Master Plan implementation process. The forecast growth in aircraft operations and projected changes to the aircraft fleet mix at Tracy Airport has the potential to affect a growing population in the vicinity of the airport. The contributions of other potential project noise sources, surface vehicle traffic and construction activities in particular, are also considered.

The objectives of the noise analyses in this section are to:

1. Illustrate and authoritatively describe aircraft overflight and the derivative noise exposure effects of aircraft operations on the airport environs (to comply with the noise analysis requirements of CEQA and the Federal Aviation Administration, noise contours have been developed in terms of the Community Noise Equivalent Level [CNEL] metric [see Appendix C for definition]. The noise contours were

[3] Op. cit., Sec. 15093(b)

prepared on the basis of generally accepted noise modeling techniques approved by the FAA and State of California).

2. Graphically compare the relative noise effects of present-day and forecast aircraft operations.

The results of these analyses are described in Section 3.1.2 below.

3.1.1.1 Aircraft Noise Descriptors. This analysis is concerned primarily with cumulative descriptors of aircraft noise. A cumulative noise metric provides a single measure of continuous or multiple noise events over an extended period of time. Single-event noise metrics, as the name implies, measure the sound level of a single noise event (e.g., an aircraft flyover). Appendix F, *"Characteristics of Noise and Noise Regulations,"* provides additional background and details on these and other noise descriptors.

Cumulative Noise. The FAA's Integrated Noise Model (INM), Version 5.1, was used to perform calculations and produce contours of equal noise exposure for this study. The validity of noise modeling conducted for this study is supported by a thorough inventory[4] of all pertinent variables which influence aircraft noise generation. Specific variables in the noise modeling effort include runway configuration and utilization, flight track utilization, existing and forecast levels of aircraft activity, the time of day of operations and flight procedures in use. Table 3-1, *"INM Input Data for Tracy Municipal Airport"* summarizes the data used in the preparation of the noise contours.

The data describing these variables were arranged and input to the FAA computer noise model to produce contours of equal cumulative noise levels expressed in Community Noise Equivalent Level (CNEL) metric (see Appendix G, *"Noise Model Inputs"*). CNEL is the methodology specified in the California Airport Noise Standards[5] and is nearly identical to the yearly Day-Night Average Sound Level (DNL) described in federal regulations. Both metrics penalize individual aircraft events by 10dB for increased annoyance during nighttime (10:00 p.m. to 7:00 a.m.) hours. CNEL adds an additional 5dB penalty to events occurring during evening (7:00 p.m. to 10:00 p.m.) hours.

[4] In the absence of specific records, estimates were made of operations of specific types of aircraft (see Master Plan text, op. cit.).

[5] State of California, Code of Regulations, Title 21, Subchapter 6, *"Noise Standards."*

Table 3-1
INTEGRATED NOISE MODEL INPUT DATA FOR TRACY MUNICIPAL AIRPORT

Input Parameter	Existing 1996	Forecast 2016
Average Daily Operations		
Single Engine Piston	131	193
Multi-Engine Piston / Turboprop	16	95
Turbojet	0.6	4
Helicopter	0.4	2
Total	148	294
Percent of Operations by Time Period		
Day (7:00AM - 7:00PM)	80%	80%
Evening (7:00PM - 10:00PM)	15%	15%
Night (10:00PM - 7:00AM)	5%	5%
Total	100%	100%
Percent of Operations by Runway End		
Runway 7	1%	1%
Runway 25	10%	10%
Runway 11	12%	12%
Runway 29	77%	77%
Total	100%	100%
Percent Touch-and-Go*	67.6%	55.0%

* Includes "stop and go" traffic pattern training.

Source: Tracy Municipal Airport Master Plan, Table 3-2

Single-Event Noise Exposure. Research by the U.S. Air Force and others has indicated that up to 10 percent of the people residing within the CNEL 55-60dB noise contours would be highly annoyed by aircraft noise. The basis for such annoyance is individual aircraft operations. Annoyance has been identified as the most common outward symptom of stress related to noise. Acoustical studies have indicated that annoyance due to aircraft noise is directly proportional to the intensity and duration of the noise event. The continued use of Tracy Municipal Airport will perpetuate effects which are perceived on a single flyover basis, but which may be masked by conventional cumulative noise (CNEL) analysis techniques. However, the duration and

intensity of existing and proposed aircraft operations at the Tracy Airport are significantly below the threshold levels identified as having any long lasting or harmful effects. Such effects are typically associated with residents living close-in to major air carrier and military airports.

Surface Vehicle Noise. Primary sources of surface-generated noise in the vicinity of the Tracy Airport include area streets and highways, industrial activities (principally aggregate extraction), and agricultural operations. South Tracy Boulevard, Linne Road and Corral Hollow Road have the potential for increased noise impacts as a result of project implementation.

Construction Noise. Construction noise associated with project implementation also has the potential for significant noise impacts.

3.1.1.2 Policies. The analysis of potential noise impacts from implementation of the proposed Airport Master Plan must be conducted on the basis of applicable state and local standards and policies for compliance with the California Environmental Quality Act and federal standards and criteria for compliance with the National Environmental Policy Act as set forth below:

State Policies and Standards. The State of California has specified a cumulative noise level of CNEL 65dB as the standard which airports must meet to protect existing residential communities and schools from unacceptable aircraft noise levels.[6] The State has determined that a criterion noise level of CNEL 65dB is the level deemed acceptable to a reasonable person residing in urban residential areas where residences are of typical California construction and may have windows partly open. It has been selected with reference to speech interference, sleep interference and community reaction. Single and multiple family residences, schools, medical facilities, and churches are deemed incompatible uses if located within the CNEL 65dB noise contour for an airport unless there is an avigation easement for noise or sufficient acoustical insulation in the structure.[7]

The State Department of Health Services has developed criteria and guidelines for local agencies to use in setting standards for human exposure to noise and establishing compatible land uses. These guidelines are set forth in Table 3-2.

[6] *"Noise Standards,"* op. cit., Section 5000, et seq.
[7] Ibid.

Where land use is denoted as "Normally Acceptable" in Table 3-2, the highest noise level in that range should be considered the maximum desirable for existing or conventional building construction which does not incorporate any special acoustic treatment. The acceptability of noise environments classified as "Conditionally Acceptable" or "Normally Unacceptable" should include consideration of the type of noise source, the sensitivity of the noise receptor, the noise reduction likely to be provided by structures, and the degree to which the noise source may interfere with speech, sleep or other activities that are characteristic of the land use.[8] As can be determined from Table 3-2, the recommended outdoor noise limit for single-family residences is CNEL 60dB, and CNEL 65dB for multiple-family residences.

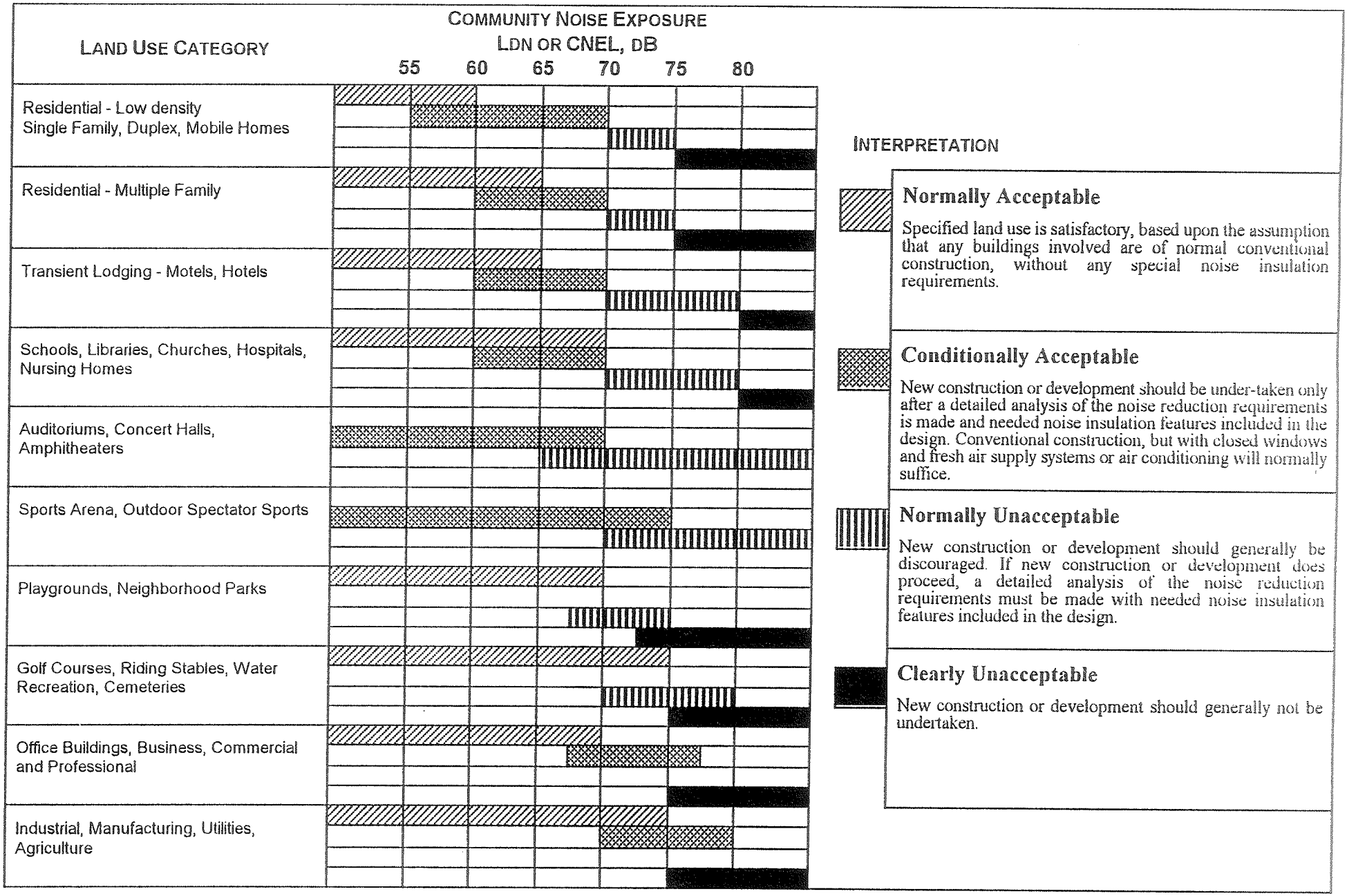
The state noise insulation standards[9] establish minimum noise insulation performance standards to protect persons within new hotels, motels, apartment house and dwellings other than detached single-family residences. The standards state that interior noise levels with windows closed shall not exceed a noise level of CNEL 45dB in any habitable room. In addition, residential buildings or structures within a CNEL 65dB contour from airport, highway, railroad, or industrial noise sources shall require an acoustical analysis showing that the proposed building has been designed to limit intruding noise to the allowable CNEL 45dB interior noise standard.

City Policies and Standards. The City of Tracy General Plan contains specific goals and policies relating to airport noise, including:[10]

GOAL No. 1:	**Provide appropriate exterior and interior noise levels for land uses to protect citizens from excessive noise.**
Policy No. 1.1.	Discourage noise sensitive land uses in noisy exterior environments unless measures can be implemented to reduce exterior and interior noise to acceptable levels. Alternatively, encourage less sensitive uses in areas adjacent to major noise generators but require appropriate interior working environments.
GOAL No. 2.	**Facilitate proper land use planning by separating significant noise generators from sensitive receptor areas.**

[8] California Dept. of Health Services. Op. Cit.
[9] California Code of Regulations, Title 24.
[10] Op. cit. PP. 35-37.

TABLE 3-2 LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



Source: California Department of Health Services, *"Guidelines for the Preparation and Content of the Noise Element of the General Plan,"* Revised 1987.

Policy 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.
Policy No. 2.2.	Assure that areas subject to noise hazards are identified, quantified, and mapped in a form that is available to decision maker.
Policy No. 2.3.	Coordinate planning efforts such that noise sensitive land uses are not located near major stationary noise sources.
Policy No. 2.4.	Minimize conflicts between land uses and the circulation network.
GOAL No. 3.	**Promote the control of noise between land uses.**
Policy No. 3.1.	Establish the maximum permitted noise levels at property lines to minimize impact on adjacent land uses.
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.
Policy No. 4.4.	Regulate noise from construction activities.
GOAL No. 5.	**Consideration of noise issues in the planning process.**
Policy No. 5.1.	Consider Noise Implications as part of project review procedures.
Policy No. 5.2.	Undertake project review for noise conflicts.
Policy No. 5.2.	Mitigate all significant noise impacts as a condition of project approval.

The Tracy General Plan Noise Element establishes land use compatibility criteria for land uses in the city (see Table 3-3). The city's standard differs from that recommended by the state, in that cumulative noise levels of up to DNL (CNEL)

65dB[11] are considered acceptable for all forms of residential land uses, including low density single family homes and mobile homes.

TABLE 3-3
Noise Maximums Within Zoning Districts
(Measured in DNL [CNEL] at the Property Line)

Land Use	Interior Standard[a]	Exterior Standard
Residential	45dB	65dB
Public Uses[b]	-	-
	50dB (living/office areas) 45dB (sleeping areas)	65dB (school play-grounds)
Commercial	-	70
Industrial	-	75

Notes
a. Pursuant to Title 24 of the Calif. Code of Regulations
b. Applies only to sensitive land uses such as hospitals, convalescent homes, and schools

Source: City of Tracy, General Plan Noise Element

The City also has a Noise Ordinance which specifies that "it shall be unlawful... to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property in the applicable Base District Zone on which the sound is produced exceeds [certain] limits," as follow:[12]

Base District Zone	Sound Level Limits (Decibels)
1. Residential Districts	55
2. Commercial Districts	65
3. Industrial Districts	75
4. Agricultural Districts	75
5. Aggregate Mineral Overlay Zone	75

[11] The intensity, or acoustic energy of sound is measured in decibels (dB). The A-weighted decibel scale (dBA) corrects for those frequencies heard by the human ear. Ambient noise levels generally range from 30 dbA (very quiet) to 100dBA (very loud). The State of California has established CNEL 65dB as the threshold level for determining noise impact.

[12] Tracy Municipal Code, Article 9, "Noise Control".

The above criteria differ from the criteria set forth in Table 3-3, in that they are based on the "One Hour Average Sound Level" or LEQ_1, whereas the criteria set forth in Table 3-3 are based on the 24-Hour Average Day-Night Sound Level, or DNL. DNL and its California counterpart, CNEL (Community Noise Equivalent Level) have penalty weightings for time of day (i.e., 5dB for evening operations and 10dB for nighttime operations). Hence, DNL/CNEL is the more stringent criterion and is used as the basis for the noise analyses in this report.

Federal Aviation Administration Policies. FAA Order 5050.4A, "*Airport Environmental Handbook*," states that "*No noise analysis is needed for proposals involving Design Group I and II airplanes on utility...or transport...type airports whose forecast operations in the period covered by the environmental assessment do not exceed 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations*," since these levels of activity would not result in cumulative noise levels exceeding CNEL 60dB more than 5,500 feet from start of takeoff roll or CNEL 65dB on the runway itself.[13]

Annual aircraft operations at Tracy Airport in 1995 (54,000) were well below the FAA's threshold. However, the proposed Master Plan's year 2016 forecast scenario, assumes 105,741 annual operations by propeller aircraft, and 1,460 turbojet operations. Hence, noise impact analyses were prepared.

3.1.2 Environmental Impacts

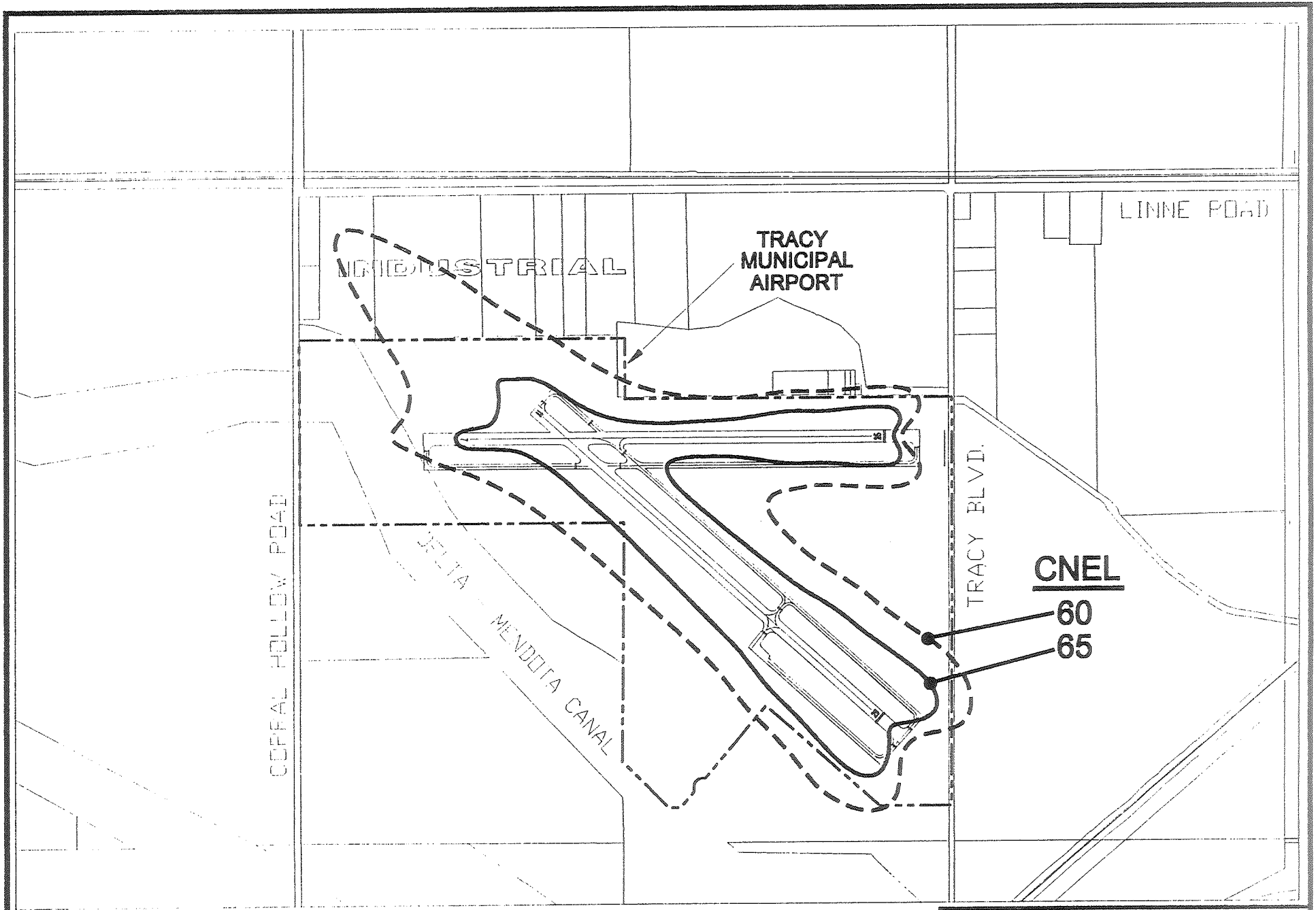
3.1.2.1 Master Plan Project. Potential noise impacts resulting from the implementation of the Tracy Airport Master Plan project can be broken down into three separate categories: aircraft noise, surface traffic noise, and construction noise impacts.

Aircraft Noise Impacts. Figure 3-1 sets forth the calculated cumulative noise exposure contours, as expressed by the CNEL metric, for existing (1996) operational conditions at Tracy Airport. Figure 3-2 depicts projected 2016 aircraft noise exposure conditions at the airport.

On the basis of the information set forth on Figures 3-1 and 3-2, implementation of the proposed Master Plan project would not result in any federal, state or local cumulative noise impact criteria or standards being exceeded *(i.e., **there would be no existing or proposed non-compatible land uses located within the CNEL 65dB or above noise contour for Tracy Municipal Airport.*** This would be a Class III (less-than-significant) impact.

FAA Action Options. None of the three FAA action options identified in section 1.9.2.1. would have any effect on, or be affected by, projected 2016 noise exposure

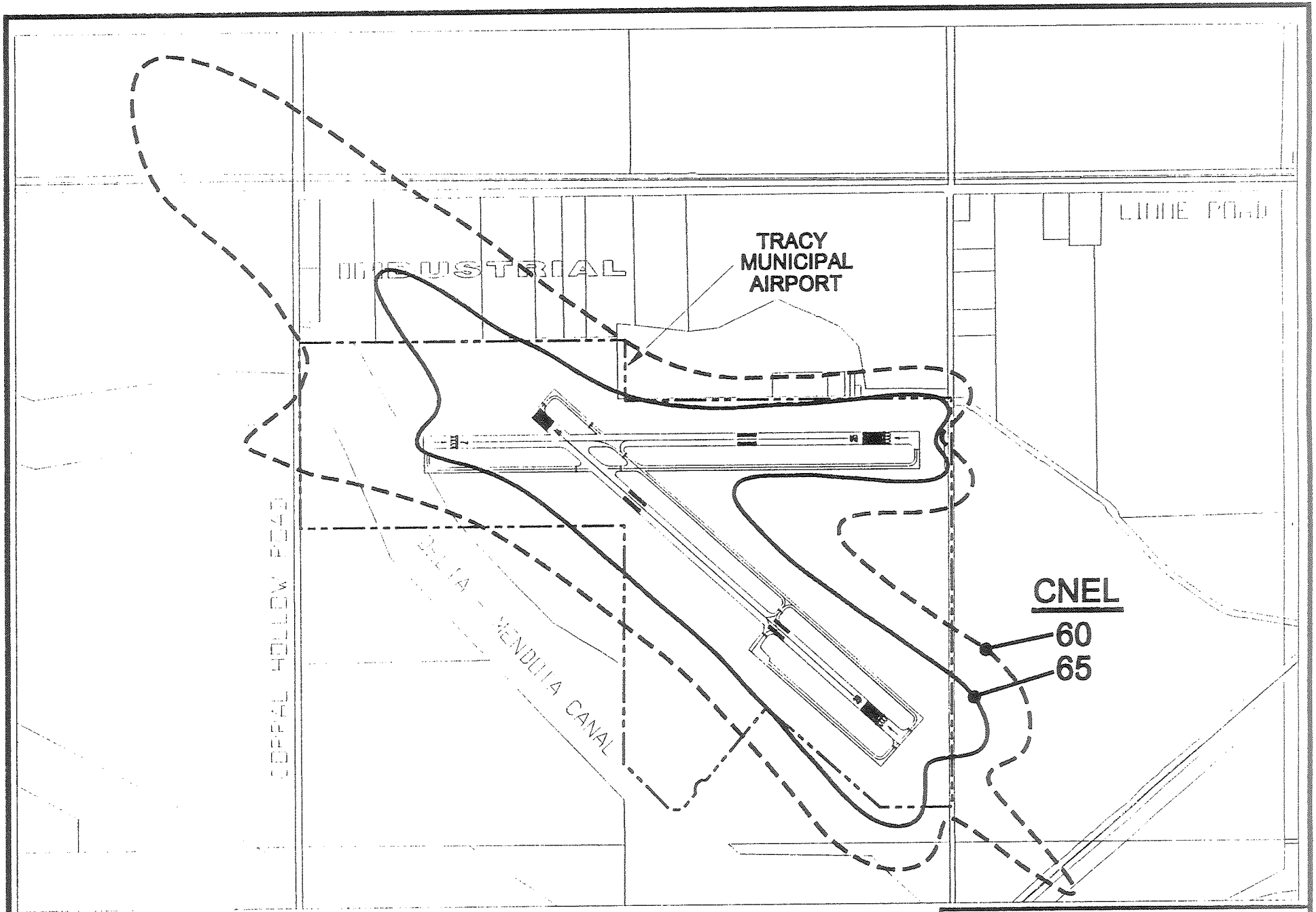
[13] Op. cit., para 47(e)(1)(a).



CONTOURS BASED ON 54,000 ANNUAL OPERATIONS

TRACY MUNICIPAL AIRPORT
MASTER PLAN PROJECT

FIGURE 3-1
YEAR 1996 NOISE CONTOURS



CONTOURS BASED ON 107,200 ANNUAL OPERATIONS

TRACY MUNICIPAL AIRPORT
MASTER PLAN PROJECT

FIGURE 3-2
YEAR 2016 NOISE CONTOURS

conditions, including the proposed straight-in nonprecision instrument approaches to Runways 11, 25, and 29.

Surface Vehicle Noise Impacts. Noise impacts from surface vehicles resulting from Master Plan implementation would result in an estimated increase of vehicle trips at the airport from approximately 222 average daily weekday trips in 1996[14] to an estimated 922 average daily weekday vehicle trips in 2016.[15]

For existing (1996) conditions, the CNEL 65dB noise contour for South Tracy Boulevard adjacent to the airport is located within the street right-of-way[16] This includes the estimated 222 average daily trips currently generated to and from the airport and significant heavy truck traffic, as well.[17]

By 2016, with buildout of the Master Plan project, an additional 700 ADT would be anticipated to and from the airport. These 922 total airport ADT would represent approximately 50 percent of the estimated total average daily two-way traffic volume on South Tracy Boulevard. However, by 2016 it is anticipated that the current volume of heavy (i.e., 18-wheel) truck volume on South Tracy Boulevard adjacent to the airport will diminish significantly as a result of proposed new street and highway improvements in the area, and as a result of the reduction of gravel mining activities in the immediate airport area.

At buildout the Tracy General Plan/UMP anticipates no change to traffic noise levels on South Tracy Boulevard.[18] Therefore, the resultant contribution of Master Plan-generated traffic to cumulative highway noise levels on South Tracy Boulevard would be marginal, and, on the basis of the fact that it would require an overall 26 percent increase in total traffic volume to raise cumulative traffic noise levels by 1.0dB, project implementation would not result in a significant noise impact on South Tracy Boulevard or other streets and highways in the area. Therefore, surface traffic noise resulting from project implementation by 2016 is classified as a Class III (less-than-significant) impact.

FAA Action Options. None of the three FAA action options would have a significant effect on, or be affected by, surface traffic noise under projected 2016 conditions.

[14] Based on ITE trip generation rate of 3.0 average weekday vehicle trip ends per flight (1 flight = 2 operations).
[15] Based on buildout under the Master Plan's CIP program and proposed hotel (9.5 VTE/Room @ 50 rooms).
[16] City of Tracy, "UMP/GP EIR", P. 228. This roadway link is also considered a truck route.
[17] Ibid. Existing ADT is estimated at 720 vehicles/day.
[18] Ibid. PP. 238 and 240.

Construction Impacts. Noise from construction equipment on the project site may create adverse environmental impacts. The various development components of the project, including proposed infrastructure and capital improvements in particular, will involve varying degrees of construction activity. As a result, exterior locations within 1,000 feet of the construction site could experience occasional noise levels in excess of 65dBA. Heavy trucks transporting materials to and from the construction sites would also present a potential source of excessive noise. The extent of this impact would be highly variable and dependent upon the intensity of construction activities, the amount of material that must be transported, the number of access routes, and the location of noise-sensitive use in relation to the construction site and access points. This must be considered a Class II impact (a significant adverse impact that can feasibly be mitigated to a less-than-significant impact.)

FAA Action Options. None of the three land acquisition options would have any direct construction noise impacts. No construction is required for the proposed non-precision instrument approaches.

3.1.2.2 No Project Alternative. Under the no project alternative, none of the Master Plan project components would be implemented.

Aircraft Noise Impacts. As a consequence of not developing the airport facilities recommended in the airport Master Plan to accommodate projected aviation demand, it is unlikely that aircraft operations would reach forecast activity levels by 2016. Hence, aircraft noise levels in 2016 would be less than projected for the Master Plan project. Given that no significant aircraft noise impacts would accrue from Master Plan project implementation in 2016, the No Project Alternative would also have no significant adverse impacts. This would also be a Class III impact (i.e., **no noise-sensitive land uses would be located within the CNEL 60dB and above noise contours**).

Surface Vehicle Noise Impacts. Since this alternative would result in less overall aviation and aviation-related activity in 2016, the surface vehicle noise impacts would also be less than that of the Master Plan project. (Class III impact).

Construction Noise Impacts. Class IV (beneficial) impact since none of the project components would be implemented. Thus, the No Project Alternative would not produce any construction noise impacts.

3.1.3 Mitigation Measures

Mitigation measures are required only in those cases where significant adverse impacts have been found to occur, and where such impacts can be feasibly mitigated to less-than-significant levels. Such impacts are classified as Class II impacts. Class II noise

impacts were identified only for construction noise with respect to the Master Plan project.

The following noise mitigation measures, which when implemented, will reduce potential construction noise impacts to a less-than-significant level:

1. Construction within 1,000 feet of noise-sensitive uses shall be restricted to the daytime period between 8:00 a.m. and 6:00 p.m. In addition, no construction within 1,000 feet of noise-sensitive uses shall be permitted on weekends or on legal holidays.

2. Construction equipment shall have sound-control devices (i.e., mufflers) that are as effective than those provided on original equipment. No equipment with unmuffled exhaust systems shall be permitted.

3. Construction equipment shall comply with any and all federal, state, and local standards for noise control.

4. At the discretion of the City, contractors shall implement appropriate additional noise mitigation measures, including changing the location of stationary construction equipment, shutting down idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction activity, installing acoustic barriers around stationary noise sources, designating haul routes or rerouting heavy trucks to avoid noise-sensitive uses.

3.1.4 **Residual Impacts.** With implementation of the above noise mitigation measures, no residual noise impacts are anticipated from the Master Plan project.

3.2 COMPATIBLE LAND USE

3.2.1 Setting/Affected Environment

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. Figure 3-3, "General and Specific Plan Land Uses," depicts both existing and planned land uses within that portion of the TPA which includes the airport.

3.2.1.1 **Existing and Planned Land Uses** With the exception of some intensive industrial development along Linne Road northwest of the airport, 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 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 3-3).

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 91.0 acres.[19] The proposed project was recently approved by the Tracy City Council.

To the immediate north of the airport, on the south side of Linne Road at Tracy Boulevard, the currently undeveloped "Teichert Bros." 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 a total of approximately 1,250 dwelling units.[20]

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.[21] The South Schulte Specific Plan is currently in hearings before the City Planning Commission. It is anticipated that the Tracy City Council will hold hearings on this project later this year. Figure 3-3 also depicts the locations of proposed South Schulte Specific Plan land uses and Table 3-4 lists the proposed specific plan land uses:

[19] City of Tracy, "Draft EIR for the Bank of America General Plan Amendment Planned Development," February, 1997

[20] City of Tracy, "Final Negative Declaration for the Cheng Planned Unit Development," August 10, 1994.

[21] City of Tracy, "South Schulte Specific Plan Draft EIR," March 1997.

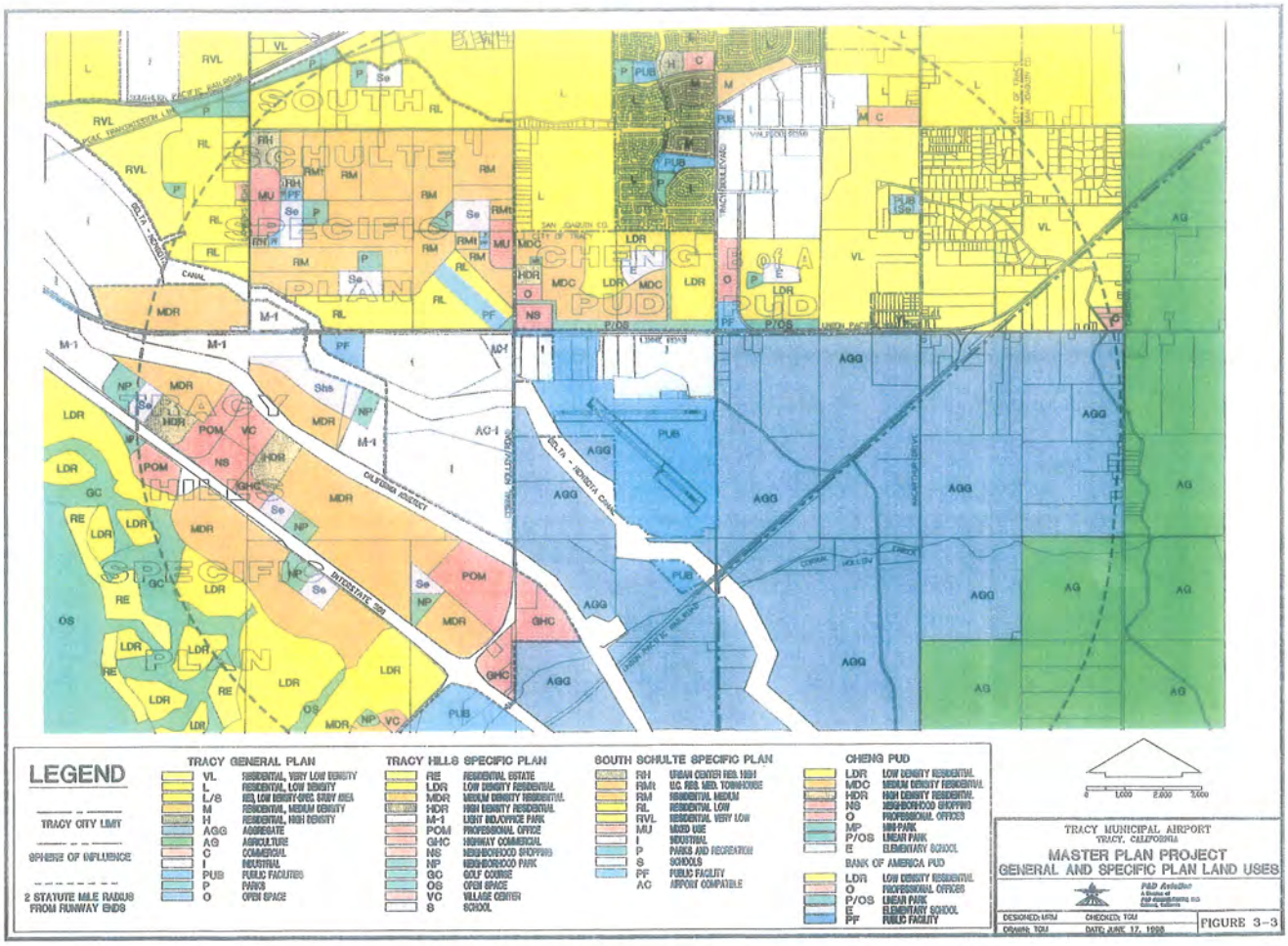

SOUTH SCHULTE SPECIFIC PLAN
CHENG of A PUD
TRACY HILLS SPECIFIC PLAN
SOUTHERN PACIFIC RAILROAD
DELTA - MENDOTA CANAL
CALIFORNIA AQUEDUCT
INTERSTATE 205
CORRAL HOLLOW CREEK
UNION PACIFIC RAILROAD
LEGEND
TRACY CITY LIMIT
SPHERE OF INFLUENCE
2 STATUTE MILE RADIUS FROM RUNWAY ENDS
TRACY GENERAL PLAN
VL RESIDENTIAL, VERY LOW DENSITY
L RESIDENTIAL, LOW DENSITY
L/S RES. LOW DENSITY-SPEC. STUDY AREA
M RESIDENTIAL, MEDIUM DENSITY
H RESIDENTIAL, HIGH DENSITY
AGG AGGREGATE
AG AGRICULTURE
C COMMERCIAL
I INDUSTRIAL
PUB PUBLIC FACILITIES
P PARKS
O OPEN SPACE
TRACY HILLS SPECIFIC PLAN
RE RESIDENTIAL ESTATE
LDR LOW DENSITY RESIDENTIAL
MDR MEDIUM DENSITY RESIDENTIAL
HDR HIGH DENSITY RESIDENTIAL
M-1 LIGHT INDUSTRIAL PARK
POM PROFESSIONAL OFFICE
GHC HIGHWAY COMMERCIAL
NS NEIGHBORHOOD SHOPPING
NP NEIGHBORHOOD PARK
GC GOLF COURSE
OS OPEN SPACE
VC VILLAGE CENTER
S SCHOOL
SOUTH SCHULTE SPECIFIC PLAN
RH URBAN CENTER RES. HIGH
RMH U.C. RES. MED. TOWNHOUSE
RM RESIDENTIAL MEDIUM
RL RESIDENTIAL LOW
RVL RESIDENTIAL VERY LOW
MU MIXED USE
I INDUSTRIAL
P PARKS AND RECREATION
S SCHOOLS
PF PUBLIC FACILITY
AC AIRPORT COMPATIBLE
CHENG PUD
LDR LOW DENSITY RESIDENTIAL
MDC MEDIUM DENSITY RESIDENTIAL
HDR HIGH DENSITY RESIDENTIAL
NS NEIGHBORHOOD SHOPPING
O PROFESSIONAL OFFICES
MP MINI-PARK
P/OS LINEAR PARK
E ELEMENTARY SCHOOL
BANK OF AMERICA PUD
LDR LOW DENSITY RESIDENTIAL
O PROFESSIONAL OFFICES
P/OS LINEAR PARK
E ELEMENTARY SCHOOL
PF PUBLIC FACILITY
0 1,000 2,000 3,000
TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA
MASTER PLAN PROJECT
GENERAL AND SPECIFIC PLAN LAND USES
P&D Aviation
DESIGNED: MRM
CHECKED: TGM
Drawn: TGM
DATE: JUNE 17, 1998

FIGURE 3-3

Table 3-4
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

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. The Tracy Hills Specific Plan was approved by the Tracy City Council on January 5, 1998 and annexation proceedings have been completed. From Figure 3-3 it can be determined that this 6,175 acre area is proposed for a combination of industrial, residential and other uses as follows:

Table 3-5
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
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

3.2.1.2 **Schools and Places of Public Assembly**. Figure 3-3 also depicts the locations of both existing and proposed schools and places of public assembly in the airport environs. There are no existing schools or places of public assembly within one mile of the runways at the airport. There are two proposed elementary schools located in the Cheng PUD and B of A PUD within one mile of the runways, and portions of one proposed elementary school in the South Schulte and one proposed high school in the Tracy Hills Project areas within one mile of the runways.

There is one existing public elementary school and eight proposed elementary schools within 2 miles of the runways. There are a total of 20 new public facilities (i.e., parks, libraries, etc.) proposed within two miles of the runways, as well (see Fig. 3-3).

3.2.1.3 **Population.** 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.[22] With the exception of some rural centers, the majority of existing development in the TPA is concentrated within the Tracy city limits. The areas of this potential growth are illustrated on Figure 3-3. For purposes of this environmental review, it is assumed that both the airport and the environs area depicted on Figure 3-3 will be fully developed by 2016.

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.[23] 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.[24]

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,[25] with its population being concentrated in seven cities. These cities are: Stockton, Tracy,

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

[22] City of Tracy, "Final EIR for the City of Tracy General Plan/Urban Management Plan", July 19, 1993, p.37.

[23] Ibid.

[24] County of San Joaquin, *"San Joaquin General Plan 2010,"* July 1992.

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.[28]

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

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.

3.2.1.4 **Industrial and Commercial Growth Characteristics.** 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.

3.2.1.5. **Public Parks and Recreation Areas, and Wildlife and Waterfowl Refuges.** No public parks, recreation areas, or wildlife or waterfowl refuges would be directly affected by the proposed project. Although the Master Plan anticipates development of an on-airport park and potential aircraft museum, these uses are compatible with airport operations.

3.2.1.6 **Farmlands.** Farmland and orchards abut the airport on the east side of the Delta-Mendota Canal and to the west of the Corral Hollow Road. However, these farmlands and orchards are designated for aggregate mineral extraction and industrial uses on the local General Plans.

[28] Ibid.

3.2.1.7 **Contemplated Future Actions and Other Plans.** Full scale development of the areas depicted on Figure 3.3, 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 twelve new schools in the airport environs.

3.2.1.8 **Policies.** Land use compatibility standards and criteria promulgated by state and local agencies, and the federal government must be considered in land use compatibility planning and analysis.

State Land Use Compatibility Standards. Under current California Airport Noise Standards residential areas subject to aircraft noise levels of CNEL 65dB and above are considered to be noise-impacted. The CNEL 65dB value has been determined to be the "acceptable" standard for aircraft noise exposure within residential areas. This value became the State standard for determining "Noise Impacted Areas" on January 1, 1986, and is still in effect.

The CNEL 65dB criterion for establishing the state's noise impact boundary was based on the noise-sensitive nature of residential land uses, including single-family and multiple-family dwellings, trailer parks, and schools of standard construction. Certain other land uses which may occur within the CNEL 65dB and above noise contour may be deemed compatible uses, and have been excluded from the calculation of the airport noise impact area. From the standpoint of the State Airport Noise Standards, the following land uses have been deemed to be compatible:

- Agricultural;
- Airport Property;
- Industrial Property;
- Commercial Property;
- Property subject to an avigation easement for noise; and
- Zoned open space.

Local Land Use Compatibility Standards And Land Use Control Authority. The airport environs consists of lands located entirely within the Tracy Planning Area (TPA). California municipalities are required to adopt general plans and zoning regulations to guide land use within the city and its sphere of influence. Land use within general law cities such as Tracy is subject to local zoning laws. Zoning regulations identify the location of specific land uses, types of uses, and specific design criteria such as building height, density and setbacks. Zoning in these areas must be consistent with the City's General Plan. Variances and conditional use permits are subject to review and approval by the local administrative agency (Community Development Director, Planning Commission, City Council, etc.) of the City. Land subdivisions are governed by the State Subdivision Map Act and must be approved by the City Council and must be consistent with the City's General Plan and local subdivision ordinance. Land

development proposals within the City of Tracy generally follow the planning and regulatory guidelines outlined above.

Under provisions of the state Public Utilities Code,[27] the San Joaquin County Council of Governments (SJCCOG) has been designated the Airport Land Use Commission (ALUC) for San Joaquin County. The State's Airport Land Use Commission Law charges ALUCs with the responsibility to:

- Protect public health, safety, and welfare through the adoption of land use standards that minimize the public's exposure to safety hazards and excessive levels of noise.

- Prevent the encroachment of incompatible land uses around public-use airports, thereby preserving the utility of these airports into the future.

These purposes are implemented through Airport Land Use Commissions, which are required in every county with a public use airport or with an airport served by a scheduled airline. The San Joaquin County Council of Governments has been designated the ALUC for the county. Under the provisions of the law, the ALUC has certain responsibilities conferred upon it and specific duties to perform. While ALUCs work closely with cities, counties, and airport operators, they are autonomous agencies.

It should be noted that ALUC law does not give the Airport Land Use Commission jurisdiction over the operation of any airport. The ALUC, therefore, has no power over such things as the number of aircraft which can be based at an airport, the number of operations which can occur, the flight patterns which aircraft use, or the hours during which aircraft can use an airport.

The Airport Land Use Commission fulfills its responsibilities in four basic ways:

1. The adoption of a basic Airport Land Use Commission Policy Plan;

2. The adoption of land use plans for individual airports called "Comprehensive Land Use Plans" (CLUPs) which contain land use compatibility guidelines for height, noise, and safety;

3. The incorporation of the land use compatibility guidelines contained in the CLUP into the general plan and land use regulations by cities and counties with jurisdiction over any geographic area subject to the CLUP; and

[27] Sec.21670 and 21670.1, "Airport Land Use Commission Law."

4. ALUC review and determination of compatibility of individual development proposals, general plan amendments, and other land use plans and regulations around airports, including Airport Master Plans.

The Comprehensive Land Use Plan (CLUP) is the key to implementation of the ALUC Plan. It provides the land use compatibility guidelines on which compatibility of land uses are determined. It also establishes the planning boundaries around the airport. Planning boundaries are established for height, noise, and safety.

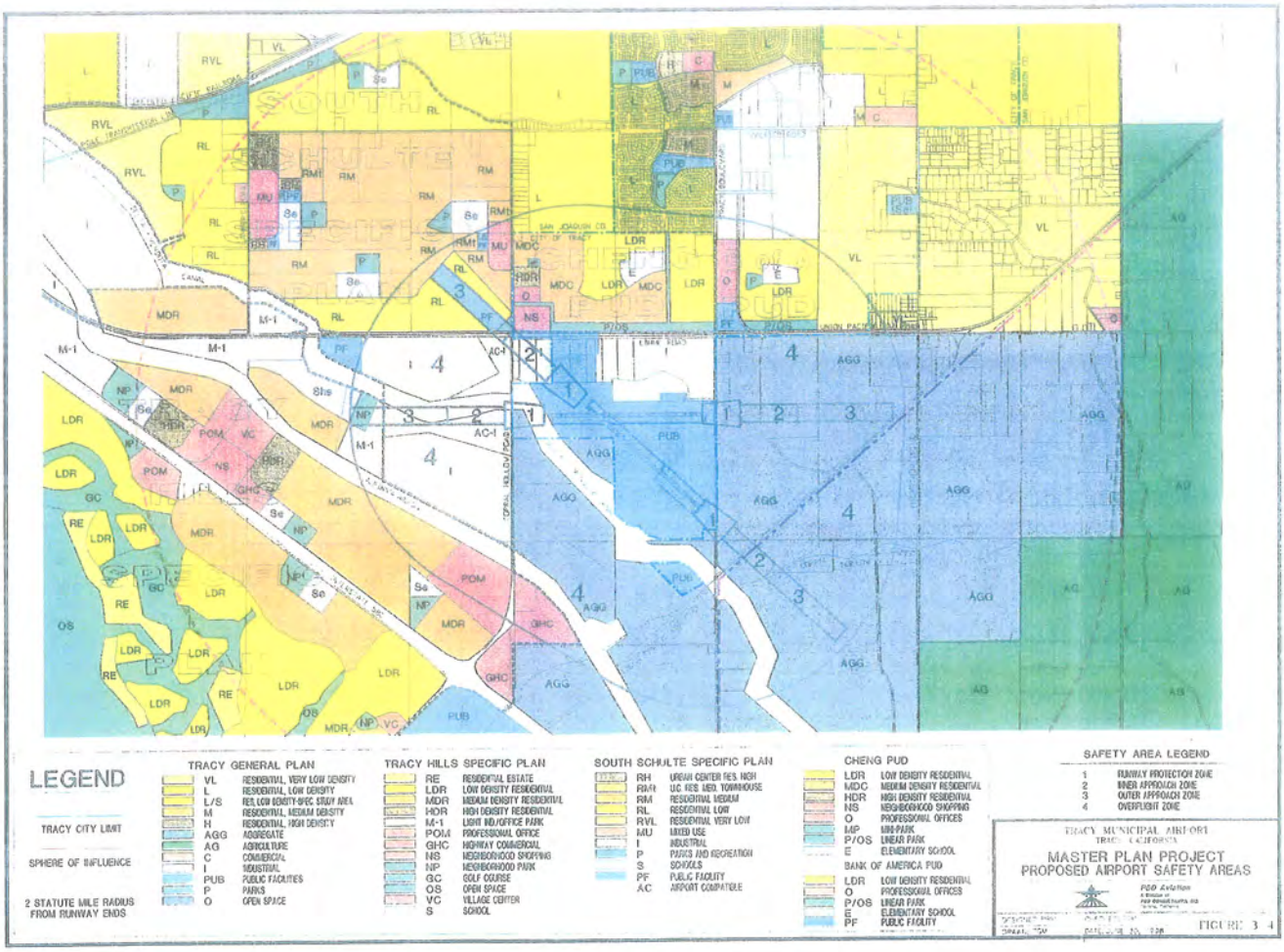
In August 1993, the ALUC amended its "Airport Land Use Plan for San Joaquin County Airports" or "CLUP." Under ALUC law, Airport Land Use Commissions are required to "review the compatibility of Airport Master Plan modifications with adopted ALUC plans..."[28] The ALUC's review of the draft Tracy Airport Master Plan found it to be inconsistent with the existing, but largely out of date, CLUP. As a result, the ALUC will use the Master Plan as the basis for an amendment to the CLUP's height, noise and safety policies when adopted.[29] Figure 3-4 sets forth the proposed airport safety areas for inclusion in the CLUP for Tracy Municipal Airport.

Federal Land Use Compatibility Standards. Federal Aviation Regulations (FAR) Part 150 *"Airport Noise Compatibility Planning"* is the FAA standard for land use compatibility in the airport environs. Noise exposure levels of CNEL 65dB and above are considered to be incompatible with residential land uses, schools, and other public facilities. However, the FAA leaves local zoning and land use planning determinations up to the local jurisdiction, unless the proposed use would represent a demonstrated hazard to air navigation.

The Master Plan identifies six separate parcels needed for airport land use compatibility reasons (i.e., approach protection). These parcels are depicted on Figure 1-7, and include the fee acquisition of two parcels (Nelson and Ellisagaray) and one easement (Basalite) to protect the approaches to Runway 11. Portions of all three parcels are located within the Runway Protection Zone (RPZ) for Runway 11. The "Nelson" parcel (Parcel A1) also has a structure on it which penetrates the FAR Part 77 approach surface for Runway 11.

[28] Ibid.

[29] On May 7, 1997 the ALUC adopted amendments to the Tracy Airport CLUP. Such amendments are to become effective after the City of Tracy has approved the Airport Master Plan and after a public hearing before the COG.


LEGEND
TRACY CITY LIMIT
SPHERE OF INFLUENCE
2 STATUTE MILE RADIUS FROM RUNWAY ENDS
TRACY GENERAL PLAN
VL RESIDENTIAL, VERY LOW DENSITY
L RESIDENTIAL, LOW DENSITY
L/S RES. LOW DENSITY-SPEC. STUDY AREA
M RESIDENTIAL, MEDIUM DENSITY
H RESIDENTIAL, HIGH DENSITY
AGG AGGREGATE
AG AGRICULTURE
C COMMERCIAL
I INDUSTRIAL
PUB PUBLIC FACILITIES
P PARKS
O OPEN SPACE
TRACY HILLS SPECIFIC PLAN
RE RESIDENTIAL ESTATE
LDR LOW DENSITY RESIDENTIAL
MDR MEDIUM DENSITY RESIDENTIAL
HDR HIGH DENSITY RESIDENTIAL
M-1 LIGHT IND./OFFICE PARK
POM PROFESSIONAL OFFICE
GHC HIGHWAY COMMERCIAL
NS NEIGHBORHOOD SHOPPING
NP NEIGHBORHOOD PARK
GC GOLF COURSE
OS OPEN SPACE
VC VILLAGE CENTER
S SCHOOL
SOUTH SCHULTE SPECIFIC PLAN
RH URBAN CENTER RES. HIGH
RMH U.C. RES. MED. TOWNHOUSE
RM RESIDENTIAL MEDIUM
RL RESIDENTIAL LOW
RVL RESIDENTIAL VERY LOW
MU MIXED USE
I INDUSTRIAL
P PARKS AND RECREATION
S SCHOOLS
PF PUBLIC FACILITY
AC AIRPORT COMPATIBLE
CHENG PUD
LDR LOW DENSITY RESIDENTIAL
MDC MEDIUM DENSITY RESIDENTIAL
HDR HIGH DENSITY RESIDENTIAL
NS NEIGHBORHOOD SHOPPING
O PROFESSIONAL OFFICES
MP MINI-PARK
P/OS LINEAR PARK
E ELEMENTARY SCHOOL
BANK OF AMERICA PUD
LDR LOW DENSITY RESIDENTIAL
O PROFESSIONAL OFFICES
P/OS LINEAR PARK
E ELEMENTARY SCHOOL
PF PUBLIC FACILITY
SAFETY AREA LEGEND
1 RUNWAY PROTECTION ZONE
2 INNER APPROACH ZONE
3 OUTER APPROACH ZONE
4 OVERFLIGHT ZONE
TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA
MASTER PLAN PROJECT
PROPOSED AIRPORT SAFETY AREAS
FIGURE 3-4

An additional 23.7 acre parcel (parcel A6) is proposed for fee acquisition. This parcel coincides with the proposed ALUC Outer Approach Zone for Runway 11. Easements are proposed for those areas within the RPZs for Runways 25 and 29 (the RPZ for Runway 7 is on airport property). With the acquisition of these parcels, the airport will have achieved control over land uses within the RPZs and, in the case of Parcel A6, provided an additional measure of safety in the proposed residential area northwest of the airport.

3.2.2 Environmental Impacts

3.2.2.1 Master Plan Project. As was discussed in Section 3.1, CNEL contours describing current (1996) conditions are shown in Figure 3-1[30]. This exhibit would normally depict the locations of noise-sensitive, non-compatible land use and public facilities for CNEL levels of 65dB and above in accordance with FAA requirements and local noise and land use compatibility planning guidelines. For 1996 operational conditions at Tracy Municipal Airport there were no noise-sensitive land uses exposed to noise levels of CNEL 65dB or greater. The criterion CNEL 65dB contour lies entirely within airport property.

Figure 3-2 presents the 2016 forecast CNEL noise contours associated with the airfield. As is the current case, there would be no forecast noise-sensitive land uses exposed to noise levels of CNEL 65dB or greater by the horizon year 2016. Similarly, the criterion CNEL 65dB contour lies almost entirely within airport property. This is a Class III (less-than-significant) impact.

FAA Action Options. Of the six parcels proposed for acquisition by the City, (see Figure 1-7) either by fee or easement, all but Parcel A6 are required for the City to comply with existing agreements with the FAA concerning land use compatibility. From the standpoint of compatible land use and air safety, the acquisition of all six parcels represents a Class IV (beneficial impact). No land acquisition is required for the proposed nonprecision instrument approaches.

3.2.2.2 No Project Alternative. As with the above, this alternative would have no significant land use compatibility impact (Class III impact).

3.2.3 Mitigation

Although Class III impacts do not require mitigation, two factors suggest that the City nonetheless consider a comprehensive preventive operational and land use compatibility control program: (1) the demonstrated overflight of developing populated

[30] In 1997 the airport had an estimated 56,750 operations. This is 5 percent more operations than in 1996, but would only result in a 0.2db increase in the noise contours. This is well within the 1.5db tolerance of the FAA's Integrated Noise Model.

areas, and (2) the FAA requires that appropriate action has or will be taken to restrict the use of land in the vicinity of the airport to "activities and purposes compatible with normal airport operations:"[31]

3.2.3.1 **Master Plan Project.** The following operational mitigations will be implemented by the City:

- The City and airport users will continue to implement operational noise abatement measures designed to lessen aircraft noise impacts, including preferred aircraft approach and departure flight tracks to help reduce noise impacts over existing and planned residential areas.

The following specific land use control measures are recommended to be adopted by the City of Tracy and the San Joaquin County ALUC by the year 2000, including:

Easement Dedication. Avigation easements will be required of all new noise sensitive developments within the Tracy Airport Area of Influence as defined by the San Joaquin County ALUC.

Requirement For Notice of Airport Noise. The provisions of California Civil Code Section 1102 et seq. require the San Joaquin County Board of Realtors to adhere to a fair disclosure requirement for the sale or lease of homes or other noise-sensitive real property within the airport area of influence boundary.[32] Whenever such property is offered for sale, rent or lease, the seller, lessor, broker, or agent should notify the prospective owner or tenant that the property is located in an area subject to potentially high levels of aircraft noise and overflight.

3.2.3.2 **No Project Alternative.** The No Project Alternative is not a "no-growth" alternative. Hence, some increase in aircraft operations is also anticipated under this alternative as well. The above-mentioned land use control measures would similarly apply.

3.2.4 Residual Impacts

Implementation of the above-recommended mitigation measures would maintain compatible land use impacts at a less-than-significant level.

[31] FAA Order 5050.4A Op. cit., para 47(e)(2)(b).

[32] This is typically the area under the 5,000' radius FAR Part 77 Horizontal Surface for the airport.

3.3 SOCIAL IMPACTS

3.3.1 Setting/Affected Environment

The Tracy Airport is located on a site dedicated specifically to airport and airport-related activities. However, to provide land for approach protection and airport growth, the City must acquire additional land.

3.3.1.1 **Policies.** FAA Order 5050.4A requires that the Environmental Assessment consider the impacts of the proposed project and project alternatives on "*relocation or other community disruption which may be caused by the proposal.*"[33] Executive Order 12898, "*Environmental Justice*," requires that a proposed project may not result in any "*disproportionately high and adverse human health or environmental effects...on minority populations and low income populations.*"[34]

3.3.2 Environmental Impacts

3.3.2.1 **Master Plan Project.** Implementation of the Master Plan project would not significantly alter surface transportation patterns; disrupt orderly, planned development; or create any appreciable change in employment. Nor would it result in any "disproportionately" high or adverse human health or environmental effects. This is a Class III (less-than-significant impact). However, since the project anticipates the fee acquisition of three parcels of land, two of which have active businesses (parcel A1- Nelson Concrete and parcel B3- Navarra), and one with an operating farm/orchard, the project would result in the need to relocate both residents and businesses (see figure 1-7). This is a Class II (significant, but mitigable impact).

FAA Action Options. The acquisition of parcels A1 (Nelson), B2 (Farm) and B3 (Navarra) will require the relocation of two existing business, a farming operation, and the relocation of the residents of the farm. This is a class II (significant, but mitigable impact). The proposed nonprecision instrument approach will not require any land acquisition or relocation of any businesses or residents. This would be a Class III impact.

3.3.2.2 **No Project Alternative.** No significant impacts (Class III), since no land acquisition is required.

[33] Op. cit., para. 47(e)(3).
[34] Op. cit., February 11, 1994.

3.3.3. Mitigation

Relocation of the two businesses on the Nelson Concrete and Navarra parcels and the farm are subject to the provisions of the federal "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970." This act requires that the owners of the businesses and the farm be offered assistance in finding a location and reestablishing the business. At such time as the City of Tracy is prepared to move ahead with the acquisition of any one, or all of the parcels it shall:

1. Prepare a relocation plan for each property and business entity affected, including the farm. Such relocation plan shall be submitted to the FAA for its review and approval, and include information on scheduling, alternative locations, and proposed relocation benefits and costs.

2. Prepare a relocation plan for the relocation of any residents of the farm site (owners and/or tenants). Such relocation plan will contain the following information:

    a) An estimate of the numbers of families or individuals to be relocated, including the characteristics of their households (e.g., minorities, income, renter or owner, tenure, elderly, etc.).

    b) An indication of the City's ability to provide adequate relocation housing for the types of family, families, or individuals to be displaced.

    c) A description of any special relocation advisory services shall be provided, if required, for any elderly, handicapped or illiterate regarding interpretation of benefits or other assistance available.

3.3.4 Residual Impacts

None.

3.4 INDUCED SOCIOECONOMIC IMPACTS

3.4.1 Setting/Affected Environment

For major airport development proposals there is the potential for induced or secondary impacts on surrounding communities.[35] Such impacts would include recognizable shifts

[35] FAA Order 5050.4A, "*Airport Environmental Handbook*" defines "major airport development: as requiring shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity."

in patterns of population movement and growth, public service demands, and changes in business and economic activity.

3.4.1.1 **Policies.** FAA Order 5050.4A notes that "*induced impacts will normally not be significant except where there are also significant impacts in other categories, especially noise, land use, or direct social impacts.*"[36]

3.4.2 Environmental Impacts

3.4.2.1 **Master Plan Project.** Implementation of the Master Plan project would not trigger the FAA's threshold of significance for an analysis of induced socioeconomic impacts. The magnitude of the proposed project is not sufficient to result in such factors as shifts in patterns of population movement and growth, public service demands, or significant changes in business and economic activity. Class III (less-than-significant) impact.

FAA Action Options. The acquisition of parcels A1, B2 and B3 and the relocation of the businesses, farm, and farm residents is not sufficient to result in a significant adverse impact (Class III impact).

3.4.2.2 **No Project Alternative.** This alternative would have no induced socio-economic impacts (Class III impacts).

3.4.3 Mitigation

Mitigation not required for Class III impacts.

3.4.4 Residual Impacts

None.

3.5 AIR QUALITY

3.5.1 Setting/Affected Environment

The project is located within the San Joaquin Valley Air Basin (SJVAB). The air quality of the basin is determined by the primary pollutant emissions added daily and by the primary and secondary pollutants already in the air mass. Primary pollutants are those emitted directly from a source and include: carbon monoxide (CO), nitric oxide (NO), sulfur dioxide (SO_2), particulates (PM) and various hydrocarbons (HC). Motor vehicles are the most significant source of air pollutants within urban areas of the San Joaquin

[36] Op. cit., para. 47(e)(4).

Valley. Secondary pollutants are created from chemical reactions in the air mass and include ozone (O_3), nitrogen dioxide (NO_2) and photochemical aerosols. Thus, air quality in the study area is a function of the primary pollutants emitted locally, the existing regional ambient air quality, and the meteorological and topographic factors which influence the dispersion of locally emitted pollutants and the intrusion of pollutants into the area from sources outside the immediate vicinity (i.e., the Bay Area).

The San Joaquin Valley is a major geographic, population, and agricultural sub-region of California. The district, and the corresponding air basin, includes the counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the Valley portion of Kern County. Comprising nearly 25,000 square miles, it represents approximately 16% of the geographic area of California. The Valley has a population of over 3 million people, with major urban centers in Bakersfield, Fresno, Modesto, Stockton, and Tracy.[37]
The SJVAB consists of a continuous inter-mountain valley approximately 250 miles long and averaging 80 miles wide. On the western edge is the Coast Mountain range, with peaks reaching 5,020 feet, and on the east side of the Valley is the Sierra Nevada range with some peaks exceeding 14,000 feet. The Tehachapi Mountains form the southern boundary of the Valley.

3.5.1.1. Climate and Meteorology. Meteorology and climate play important roles in determining the levels of air pollution in the Valley. Some meteorological patterns cause higher levels of air pollution by preventing the dispersion of pollutants. Pertinent meteorological parameters include wind speed and direction, ambient atmospheric temperature and inversion layers (i.e., layers where the air temperature increases with height), and precipitation.

The climate of the San Joaquin Valley is characterized by hot, dry summers and cool, rainy winters. The most significant single control of the weather pattern is the semi-permanent subtropical high pressure belt, often referred to as the "Pacific High." It is located off the west coast of North America and is a cell in which air descends almost continuously. The descending air is compressed, thereby raising its temperature and lowering the relative humidity.[38]

When this pressure cell is dominant, there are no major storms nor any region-wide precipitation. This belt of high pressure migrates north and south seasonally, such that the San Joaquin Air Basin comes under its influence almost continuously during summer months. In winter, the influence of the Pacific High is intermittent, giving rise to

[37] San Joaquin Valley Unified Air Pollution Control District, "PM-10 Attainment Plan," May 15, 1997. P. 3-1.

[38] Unger, C.D., 1974. ""Climate of the San Joaquin Valley Air Basin." State of California Air Resources Board. Division of Technical Services. Air Basin Climatology Series. John Gibson, Editor. December 1974.

alternate periods of stormy, unsettled weather and periods of stable, rainless conditions.

The San Joaquin Valley floor is characterized by warm to hot, dry summers and cooler winters. The average mean temperature over a 30-year period is 65 degrees F. High daily temperature readings in summer average 95 degrees F in the Valley. The Valley also experiences mild winters; the winter average daily low temperature is 45 degrees F. Over the last 30 years, the Valley averaged 106 days per year 90 degrees or hotter, and 40 days a year 100 degrees or hotter. The daily summer temperature variation can exceed 30 degrees F. The Valley has an "inland Mediterranean" climate averaging over 260 sunny days per year.

3.5.1.2 Air Quality Standards. The responsibility for air quality regulation and monitoring lies with a number of federal, state and local agencies. Regulation of air quality occurs through the attainment of standards for ambient air concentrations of specific pollutants and the enforcement of emission limits for individual sources.

Applicable State and Federal ambient air quality standards are set forth in Table 3-6.

Table 3-6
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Federal Primary Std.	State Standard
Ozone (Oxidant)	1-hour	0.12 PPM	0.09 PPM
Carbon Monoxide	8-hour 1-hour	9.0 PPM 35.00 PPM	9.00 PPM 20.00 PPM
Nitrogen Dioxide	Annual 1-hour	0.05 PPM ---	--- 0.25 PPM
Sulfur Dioxide	Annual 24-hour 1-hour	0.03 PPM 0.14 PPM ---	--- 0.04 PPM 0.25 PPM
Suspended Particulates (PM_{10})	Ann. Avg. 24-hour	50 ug/m3 150 ug/m3	30 ug/m3 50 ug/m3

PPM = Parts Per Million
ug/m3 = Micrograms per cubic meter
Source: State of California, Air Resources Board, December 1994.

Federal Standards. The U.S. Environmental Protection Agency (EPA) has put forth national ambient air quality standards (NAAQS) for a variety of pollutants as required by the Clean Air Act Amendments of 1977. The Clean Air Act requires that the standards be set at a level that protects public health and welfare, and allows for an adequate margin of safety. NAAQS have been established for ozone (O_3), carbon monoxide

(CO), nitrogen dioxide (NO_2) sulfur dioxide (SO_2), suspended particulate matter (PM_{10}), and lead (Pb) as well as a small number of other pollutants. The Federal Clean Air Act provides that NAAQS can be exceeded no more than once a year. Areas which exceed the standard two or more times per year can be considered "non-attainment areas" and are subject to more stringent planning and pollution control requirements.

The San Joaquin Valley Air Basin, which includes the project area, has been designated as a non-attainment area for ozone and PM_{10} by the Federal government on the basis of air quality measurements taken at the nearest monitoring station.[39]

State and Local Standards. Responsibility for regulation of air quality in California lies with the California Air Resources Board (ARB), the multi-county Air Quality Management Districts and Air Pollution Control Districts (APCDs) with oversight responsibility held by the EPA. California state ambient air quality standards are set by the State Air Resources Board which is responsible for regulation of mobile source emissions, establishment of state ambient air quality standards, research and development, and oversight and coordination of the activities of the regional and local air quality agencies. The regional and local air quality agencies are primarily responsible for regulating stationary source emissions and for monitoring ambient pollutant concentrations. The ARB also classifies air basins or portions thereof as "attainment" or "non-attainment" with respect to the NAAQS. The classification is based on air quality monitoring data.

California standards are more stringent than the corresponding NAAQS. Therefore, past air quality planning activities have focused on attaining the NAAQS. The state air quality standards are levels which are not meant to be equaled or exceeded.

3.5.1.3 Ambient Air Quality. The San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is the local agency responsible for air quality regulation in the San Joaquin Valley Air Basin. The District maintains two air quality monitoring stations in Stockton (Hazelton St. and Wagner Holt School). Data used in this report are from the Hazelton Street site, which monitors both gaseous emissions and particulate matter. Air quality trends monitored at this site are discussed below.

Ozone (O_3). The most pervasive air quality problem in the San Joaquin Valley Air Basin is high O_3 concentrations. Ozone is not emitted directly, but is a secondary pollutant produced in the atmosphere through a complex series of photochemical reactions involving hydrocarbons (HC) and nitrogen oxides (No_x) in the presence of sunlight. Ozone is a regional air pollutant because it is transported and diffused by wind concurrent with the photochemical reaction process. Motor vehicles are the major source of ozone precursors in the basin. Light winds, low mixing heights and abundant sunshine combine to produce conditions favorable for maximum production of O_3.

[39] This station is located on Hazelton Street in Stockton.

Exposure to ozone concentrations of 0.30 ppm for 1 hour may cause eye and respiratory irritation, reduce resistance to lung infection and may aggravate pulmonary conditions in persons with lung disease. Headaches, coughing and dizziness are other symptoms related to ozone exposure. It is also damaging to vegetation and untreated rubber. Based on measured air quality data, the Stockton/Tracy area is a non-attainment area for ozone (see Table 3-7)

Table 3-7
COMPARISON OF LOCAL AMBIENT AIR QUALITY[1]
WITH FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Federal Primary Std.	State Standard	Max. Value of Exceedance [2]
Ozone (Oxidant)	1-hour	0.12 PPM	0.09 PPM	0.13 PPM
Carbon Monoxide	8-hour 1-hour	9.0 PPM 35.00 PPM	9.00 PPM 20.00 PPM	N/A [3] N/A
Suspended Particulates (PM_{10})	Ann. Avg. 24-hour	50 ug/m^3 150 ug/m^3	30 ug/m^3 50 ug/m^3	36.8 ug/m^3 109 ug/m^3

[1] The monitoring site nearest Tracy is on Hazelton Street in Stockton.
[2] Based on observation period of 1993 through 1995.
PPM = Parts Per Million
ug/m^3 = Micrograms per cubic meter
[3] Stockton was found in attainment for CO on November 9, 1994.

Sources: California Air Resources Board (1994) and SJVUAPCD (1997)

Carbon Monoxide (CO). Carbon Monoxide is a colorless, odorless, toxic gas produced by incomplete combustion of carbon-containing substances. Carbon monoxide concentrations are generally higher in the winter when meteorological conditions favor the build-up of directly emitted contaminants. Internal combustion engines, principally in automobiles, contribute carbon monoxide due to incomplete fuel combustion. Various industrial processes also produce carbon monoxide emissions through incomplete combustion. Gasoline-powered motor vehicles are the major source of this contaminant in the Basin.

Carbon monoxide does not irritate the respiratory tract, but passes through the lungs directly into the blood stream and, by interfering with the transfer of fresh oxygen to the blood, deprives sensitive tissues of oxygen. Exposure of individuals to concentrations in excess of 15-18 ppm over an 8-hour period can cause decreased exercise capacity in individuals with heart problems. No recent exceedances of the state and federal carbon

monoxides standards have been recorded in the county since Stockton was found to be in attainment in November 1994.

Particulates (PM_{10}). Atmospheric particulates are made up of finely divided solids or liquids such as soot, dust, aerosols, fumes and mists. In areas close to major sources, particulate concentrations are generally higher in the winter, when more fuel is burned, and meteorological conditions favor the buildup of directly-emitted contaminants. However, in areas remote from major sources and subject to photochemical smog, particulate concentrations are higher during summer months.

Particulate matter consists of particles in the atmosphere resulting from many kinds of dust and fume-producing industrial and agricultural operations, from combustion, and from atmospheric photochemical reactions In the respiratory tract very small particles of certain substances may produce injury by themselves, or may contain absorbed gases that are injurious. Suspended in the air, particulates of aerosol size can both scatter and adsorb sunlight, producing haze and reducing visibility. They can also cause a wide range of damage to materials. The Stockton monitoring site has recorded exceedances of the 24-hour and annual average standards several times over the past several years. The Stockton/Tracy area is a nonattainment area for PM_{10}.

3.5.1.4 Policies. The Federal Clean Air Act Amendments of 1990 required that areas which had not attained the federal ozone standard, to prepare a plan to achieve the standard. The San Joaquin Valley Unified Air Pollution Control District prepared a "PM-10 Attainment Demonstration Plan" as the region's plan to attain the federal and state PM_{10} standards.

Likewise, the Tracy General Plan contains policies which are designed to assist in maintaining and improving air quality. Included among these policies are the following:

GOAL AQ1: **PRESERVATION AND IMPROVEMENT OF AIR QUALITY THROUGH LAND USE PLANNING IN THE TRACY PLANNING AREA.**

Policy AQ 1.1: Promote a pattern of land uses which reduces the number and length of motor vehicle trips.

Policy AQ 1.2: Encourage new development that helps create and maintain a balance between job and housing opportunities.

GOAL AQ 2: **DEVELOPMENT THAT MINIMIZES AIR POLLUTANT EMISSIONS AND THEIR IMPACT ON SENSITIVE RECEPTORS, AS A RESULT OF INDIRECT AND STATIONARY SOURCES.**

Policy AQ 2.1: Reduce air pollutant emissions by mitigating air quality impacts associated with development projects to the greatest extent feasible.

Policy AQ 2.2: Minimize land use conflicts between emission sources and sensitive receptors.

GOAL AQ 3: **A DIVERSE AND EFFICIENT TRANSPORTATION SYSTEM THAT MINIMIZES AIR POLLUTANT EMISSIONS.**

Policy AQ 3.1: Develop regulations and incentives to reduce the number and length of motor vehicle trips.

Policy AQ 3.2: Develop an effective transportation system in conjunction with growth areas.

GOAL AQ 4: **THE EFFECTIVE COORDINATION OF AIR QUALITY IMPROVEMENT EFFORTS IN THE SAN JOAQUIN VALLEY AIR BASIN.**

Policy AQ 4.1: Coordinate air quality planning efforts with other local, regional and state agencies as well as engender community participation in air quality planning.

The following air quality analyses are directed at determining the effects of the proposed Master Plan project and project alternative on ambient air quality and general conformity with the Federal Clean Air Act Amendments of 1990, section 176(c); which states:

"A Federal action must not adversely affect the timely attainment and maintenance of National Air Quality Standards or emission reduction progress plans, cause or contribute to any new violations of an air quality standard, increase the frequency of severity of any exiting violation, or delay 'Timely Attainment' of any standard or required interim emission reductions or milestones in any applicable area."[40]

3.5.2 Environmental Impacts

Sources of air pollutants at airports include:

- exhaust gases from aircraft
- fuel evaporation during aircraft refueling

[40] Federal Register, Vol. 58, No. 228, 40 CFR Parts 6, 51 and 93.

- exhausts from aircraft service vehicles and equipment
- combustion of fuels for space and water heating in terminals and other buildings
- exhausts from autos, buses, taxis and other vehicles which utilize the airport

Of these sources, exhaust gases from aircraft and surface vehicles are the primary generators of pollutant emissions. Automobile traffic, like aircraft operations, has an effect on air quality outside the immediate airport environs. Trips to and from the airport create air pollutant emissions over the entire area served by the airport. Current and future year airport-related automobile emissions have been calculated using the URBEMIS computer program, version 5.0 (URBEMIS 5.0) developed by the California Air Resources Board (see Table 3-8 and Appendix I).

The San Joaquin Valley Unified Air Pollution Control District has established specific thresholds to be used in determining the level of impact significance for increases in various pollutants. Table 3-8 summarizes the airport's estimated pollutant emissions for 1996 conditions:

Table 3-8
1996 AIRPORT EMISSIONS INVENTORY AND SJVUAPCD INTERIM THRESHOLDS OF SIGNIFICANCE

	TONS/YEAR		
	NO_x	ROG	PM_{10}
Threshold Value	10.0	10.0	15.0
Motor Vehicles	0.4	0.5	0.04
Aircraft	0.9	5.3	N/A
Total	**1.3**	**5.8**	**0.04**

Source: ***URBEMIS 5 Model and data (see Appendix I for surface vehicle emissions calculations and aircraft emissions calculations).***

As can be determined from Table 3-8, 1996 pollutant emissions for both automobile and aircraft sources did not exceed any of the above-listed SJCUAPCD thresholds of significance, and the airport operated within the limits of the regional air quality plan for NOx, hydrocarbons (ROG), and PM_{10}.

3.5.2.1 **Master Plan Project.** As can be determined from Table 3-9, buildout of the project by 2016 would result in 2.5 tons per year of NO_2, an estimated 11.1 tons per year of hydrocarbons/ROG from both motor vehicle trips and aircraft operations, and 0.14 tons per year of particulates. Both Nitrogen Dioxide and particulates would be less than the SJVUAPCD thresholds of significance (Class III impacts). However, the production of reactive organic gases (ROG) have the potential to exceed the District's

threshold of significance by 0.3 ton in 2016. This would be a Class II (significant, but mitigable impact).[41]

Table 3-9
CURRENT AND FUTURE AIRPORT-RELATED REGIONAL EMISSIONS
(Tons Per Year)

Pollutant	Source	1996 Base Year	2016 Project	2016 No Project
Nitrogen Dioxide	Autos	0.4	0.8	< Project
	Aircraft	0.9	1.7	
TOTAL		1.3	2.5	
Hydrocarbons/ROG	Autos	0.5	8.5	< Project
	Aircraft	5.3	9.8	
TOTAL		5.8	10.3	
PM10	Autos	0.04	0.14	< Project
	Aircraft	N/A	N/A	N/A
TOTAL		0.04	0.14	

Source: P&D Consultants from California Air Resources Board (ARB) URBEMIS 5 Model (autos), and APR-42 (Aircraft).

As can be seen from the following tabulation the long term regional impacts of implementing the Airport Master Plan are miniscule when compared to the regional impacts of the implementation of the City's Urban Master Plan:[42]

Pollutant	Airport Buildout	UMP Buildout
Nitrogen Oxide	2.5 tons/year	8,285/tons/year
Reactive Organic Gases	10.3 tons/year	6,707 tons/year
Particulates	0.14 tons/year	1,387 tons/year

Hence, the potential long term regional impacts of Master Plan implementation are considered to be less-than-significant (see also conformity determination on following page).

Construction Impacts. Over the anticipated twenty-year life of the project, several construction projects have the potential to generate air pollutants during their respective periods of construction. Key among these projects are the construction of new airport pavement areas for both aircraft and surface vehicle parking. These projects, in

[41] See Appendix I for emissions calculations.
[42] City of Tracy UMP/GP EIR, July 19, 1993. P. 206

particular, would have the greatest potential for short-term pollutant emissions. Sources of pollutants include exhaust emissions and dust from additional construction vehicle traffic, heavy trucks, and grading equipment. The evaporation of hydrocarbons from curing asphalt, drying paint, solvents, and adhesives are also potential sources of pollution.

Of the above construction sources, fugitive dust is the most significant and has the greatest nuisance potential. Fugitive dust is emitted both during construction activity and as a result of wind erosion over exposed earth surfaces. Grading and earth-moving activities comprise the major source of construction dust emissions, but traffic on and off paved areas and general disturbance of the soil also generate significant dust emissions. Dust generation is not constant but highly variable. The amount of dust generated on a given day is highly dependent on the types and amount of construction activity, and the meteorological and soil conditions. The highest potential for dust generation occurs during the summer months when winds are highest on average and soil moisture is lowest.

Short-term increases in localized pollutant emissions from construction equipment and activities is anticipated. But, with the exception of fugitive dust, is considered to have a less-than-significant (Class III) impact. The generation of fugitive dust has the potential for significant adverse (Class II) impacts, but can be mitigated to a less-than-significant level.

Conformity Determination. The minimum thresholds for ozone that forms from volatile organic compounds (VOCs) or nitrogen oxides (NO_X) vary according to the air quality classification of each non-attainment area or region. The following "de minimis" thresholds would apply to the Master Plan project and any project alternatives requiring the use of federal funds:

Ozone (VOCs or NO_X)	=	100 tons/year
Nitrogen Dioxide (NO_2)	=	100 tons/year
Carbon Monoxide (CO)	=	100 tons/year

The year 2016 regional emissions projected for the Master Plan project are all well below the "de minimis" thresholds which would require a federal conformity determination. This is a Class III (less-than-significant) impact.

FAA Action Options. None of these options would have any individually or cumulatively significant air quality impacts.

3.5.2.2 **No Project Alternative.** This alternative would also result in less overall regional emissions and impacts than the Project. Class III impact (less-than-significant).

3.5.3 Mitigation

3.5.3.1 Master Plan Project. Because the Master Plan project would not exceed existing SJVUAPCD thresholds of significance for No_x or PM_{10}, mitigation is not required for these emissions. Mitigation of the potentially significant ROG emissions is mitigated by a combination of existing goals, policies, and actions set forth in the Tracy General Plan/UMP.[43] Such mitigation should help to reduce potential project ROG impacts to a less than-significant-level.

Construction. Short-term construction impacts can be mitigated to a less-than-significant level by the following additional means:

a. All construction projects on sites larger than 20,000 square feet shall prevent dust from leaving the site during construction activities and off hours.

   a1. During construction, water trucks or sprinklers shall be used to keep areas of disturbed soil damp enough to prevent significant amounts of dust from leaving the site.

   a2. If significant amounts of dust, as determined by the City inspector(s), leave the site for prolonged periods of time, all grading and excavation activities shall stop until sufficient watering can be applied to prevent dust from leaving the site.

b. In order to form a crust on the soil, all areas of disturbed soil that can be reached by a water truck or sprinklers shall be watered at the end of the work day after all vehicle movement (except the water truck) has stopped.

c. If areas of disturbed soil and/or stockpiles have been left unworked for more than two weeks, causing significant amounts of dust to leave the site, the City Inspector may require that a non-toxic soil stabilizer be applied.

d. Vehicle speeds shall not exceed 15 miles per hour on unpaved areas of the site.

e. The contractor or builder shall designate a person or persons to monitor the dust control program and to order increased watering as necessary, in order to prevent transport of dust off-site. Their duties shall include holiday and weekend periods when work may not be in progress. They shall be

[43] Op. Cit., Mitigation Measures M37.4-37.6, p. 207.

available during construction activities and their name(s) and telephone number(s) shall be provided to the City staff.

f. If enough soil material to create airborne dust is carried onto paved roads, the roads shall be swept at the end of the day with water sweepers.

g. All construction equipment engines and emission systems shall be maintained in proper operating order, in accordance with manufacturer's specifications, to reduce ozone precursor emissions from stationary and mobile construction equipment.

h. All construction projects on sites larger than 15 acres shall provide temporary traffic control (e.g., flag person) to avoid unnecessary delays to traffic during construction activities which interrupt normal traffic flow.

i. If feasible, electricity from power poles or ground lines shall be used in place of temporary diesel - or gasoline powered generators.

With implementation of the above measures, fugitive dust may be reduced by up to 50 percent and mitigated to a less-than-significant level of impact.

3.5.3.2 No Project Alternative. No mitigation would be required for this alternative.

3.5.4 Residual Impacts.

None.

3.6 WATER QUALITY

3.6.1 Setting/Affected Environment

The geology of the Tracy area includes surface alluvial deposits underlain by the Tulare formation, which consists of water-bearing sand and gravel of moderate permeability. An extensive layer of clay separates the Tulare formation into upper and lower zones. The lower zone contains freshwater and is sealed off from the Delta by the clay layer. This lower section of the Tulare formation, which occurs at depths of approximately 300 to 700 feet, is the primary source of groundwater in the Tracy Planning Area. Contrary to other areas within the San Joaquin Valley groundwater basin, the Tulare formation has not experienced overdraft of groundwater resources.[44]

The City currently obtains its water from two sources: (1) surface water from the Central Valley Project via the Delta-Mendota Canal, and (2) groundwater from City-owned

[44] City of Tracy, "UMP/GP EIR," P. 154.

wells. The City's total available water supply is estimated to be approximately 16,000 acre-feet/year.[45] The City's water treatment plant is located adjacent to the Tracy Municipal Airport.

3.6.1.1 Policies. The Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, provides the authority to establish water quality standards, control discharges into surface and subsurface waters, develop waste treatment management plans and practices, and issue permits for discharge. FAA Order 5050.4A requires the environmental assessment to describe the means to be used in the design, construction, and operation of the proposed project to meet state water quality standards and permit requirements.

Section 402 of the Clean Water Act also requires that facilities discharging storm water runoff into navigable waters have a National Pollutant Discharge Elimination System (NPDES) permit.

3.6.2 Environmental Impacts

The airport drainage area consists of the airport site (approximately 248 acres), the City water treatment plant (26.4 acres), and the farm site/Bureau of Reclamation property west of the airport (39.2 acres). This represents a total area of approximately 314.3 acres (13,690,112 sq.ft.). The following conditions exist in this area:

Paved area	2,922,672 sq. ft.	(67.1 ac)
Compacted soil	900,000 sq. ft.	(20.7 ac)
Unpaved/Open area	9,867,440 sq. ft.	(226.5 ac)
TOTALS	13,690,112 sq. ft.	(314.3 ac)

Total runoff volume for the existing airport drainage area is calculated at 32.38 acre-feet for the 10-year, 48-hour storm.[46] Stormwater runoff drains into an existing detention basin located adjacent to the airport's northerly boundary on the Teichert & Sons property. The City has an easement for the use of this basin (a former gravel pit), which has an estimated holding capacity of approximately 580 acre-feet.[47]

3.6.2.1 Master Plan Project. Implementation of the Master Plan project by 2016 would result in approximately 62.0 acres of new or additional pavement and other impervious surfaces in the airport drainage area. As a result the total stormwater runoff would increase by a factor of 11.76 acre-feet, for a total volume of 44.14 acre-feet. This is well within the capacity of the detention basin (Class III impact).

[45] Loc. Cit.
[46] P&D Consultants, Inc. "Tracy Airport Retention Basin Run-off/Volume Calculations," August 28, 1996.
[47] Ibid.

Aircraft Wash Rack Impacts. Development of the aircraft wash rack could result in contaminated wash water entering the stormwater detention basin, and ultimately the local aquifer, if not properly designed. This would represent a Class II (significant, but mitigable) impact.

Construction Impacts. Construction activities associated with the project implementation have the potential to result in significant water quality impacts, if not properly mitigated. These activities have the potential to 1) cause erosion; 2) create sedimentation; and 3) cause off-site (groundwater) contamination.

Sediments resulting from the excessive erosion of disturbed soils is the primary pollutant of concern. However, other pollutants of concern include construction chemicals and construction vehicle fuels, oils, and lubricants, which can be washed into the airport's in-storm water detention basin. The potential for the degradation of local water quality from surface runoff as a result of construction activities is judged to be a Class II (significant) impact, which can be mitigated to a less-than-significant level.

FAA Action Options. None of the proposed actions would have any significant direct or indirect water quality impacts.

3.6.2.2 No Project Alternative. This alternative would not result in increased runoff, or any potentially adverse water quality impacts, since no projects would be built under this alternative. This alternative would represent a Class III (less-than-significant) impact on hydrology and water quality.

3.6.3 Mitigation

3.6.3.1 Master Plan Project. No mitigation would be required for overall project impacts, as all potential sources of water quality degradation (i.e., fuel storage and dispensing, aircraft parking, etc.) must be designed to State and Federal standards. However, the proposed aircraft wash rack and construction activities will require the following supplemental mitigation measures to reduce potential impacts to a less-than-significant level:

Aircraft Wash Rack. The following mitigation measures shall be incorporated into the design and construction of the wash rack:

1. The aircraft wash rack will be designed and operated to meet all applicable water quality criteria, including the use of a clarifier and/or oil-water separator to remove grease, grit, and other contaminants.

2. Clarifiers and separators shall be cleaned and maintained on a regular basis.

Construction Mitigation. The following mitigation measures are set forth to reduce potential project construction impacts on water quality to a less-than-significant level:

1. A separate construction storm water pollution prevention plan (CSWPPP) will be prepared by the contractor prior to the beginning of any construction.

2. During construction the CSWPPP shall be referred to frequently and refined as changes occur in construction operations which may have a significant effect on the potential for the discharge of pollutants.

3. The CSWPPP will contain approved Best Management Practices (BMP) to be used to (a) minimize erosion and sedimentation during construction, (b) describe measures to eliminate pollution of storm runoff by any chemicals and materials used during construction, and (c) show areas of long-term post-construction control measures.

4. BMPs selected for erosion and sediment control shall be designed to meet water quality protection objectives based on specific site conditions, construction activities, and cost-effectiveness. The following BMPs shall be considered to minimize the area of construction disturbance:

    a) Do not disturb any portion of the site unless an improvement is to be constructed there.

    b) The staging and timing of construction can minimize the size of exposed areas and the length of time the areas are exposed and subject to erosion.

    c) The staging of grading operations should limit the amount of areas exposed to erosion at any one time. Only the areas that are actively involved in cut and fill operations or are otherwise being graded should be exposed. Exposed areas should be stabilized as soon as grading is complete in that area.

    d) Retain existing vegetation and ground cover where feasible, especially along watercourses and along the downstream perimeter of the site.

    e) Do not clear any portion of the site until active construction begins.

f) Quickly complete construction on each portion of the site.

g) Install landscaping and other improvements that permanently stabilize each part of the site immediately after the land has been graded to its final contour.

h) Minimize the amount of denuded areas and any new grading activities during the wet months of October through April.

i) Construct any required post-construction storm water control facilities (e.g., detention basins) early in the project and use for sediment trapping, slope stabilization, velocity reduction, etc. during the construction period.

3.6.3.2 No Project Alternative. No mitigation is required.

3.6.4 Residual Impacts

Implementation of the above mitigation measures would reduce any residual impacts from the project or any project alternative to a less-than-significant level.

3.7 DEPARTMENT OF TRANSPORTATION ACT SECTION 4(f)

3.7.1 Setting/Affected Environment

The U.S. Department of Transportation (DOT) Act, Section 4(f)[48] is concerned with publicly owned parks, recreation areas, wildlife and waterfowl refuges, or historic sites or national, state or local significance.

3.7.1.1 Policies. Section 4(f) of the U.S. Department of Transportation Act provides that the Secretary of Transportation "*shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national state, or local significance or land of an historic site...*"[49]

3.7.2 Environmental Impacts

3.7.2.1 Master Plan Project. None of the land areas affected by the proposed Tracy Airport Master Plan qualifies as DOT Section 4(f) land (i.e., no lands subject to acquisition or development under the Master Plan are used as a public park, recreation

[48] Recodified at 49 USC, Subtitle I, Sec. 303.
[49] FAA Order 5050.4A, para 47(e)(3).

area, or wildlife or waterfowl refuge). Consequently, there would be no significant impact (Class III impact).

FAA Action Options. None of the proposed actions would entail the use of DOT section 4(f) Lands.

3.7.2.2 **No Project Alternative.** No impacts (Class III impact).

3.7.3 Mitigation Measures

Class III impacts do not require mitigation.

3.7.4 Residual Impacts

None.

3.8 HISTORIC, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

3.8.1 Setting/Affected Environment

Cultural resources include places of historic, cultural, archaeological or architectural significance.

3.8.1.1 **Policies**. Two basic federal laws apply to this category of impact: (1) the National Historic Preservation Act of 1966, as amended; and (2) the Archeological and Historic Preservation Act of 1974. Pursuant to these laws, FAA Order 5050.4A requires an initial review to determine if any properties "*in or eligible for inclusion in the National Register of Historic Places*" would be located within the area of the proposed project's potential impact.[50] Under provisions of the Archeological and Historic Preservation Act of 1974, analyses are required only if "there is reason to believe that significant scientific, prehistoric, historic, archeological, or paleontological resources will be lost or destroyed by the proposed action."[51]

3.8.2 Environmental Impacts

[50] FAA Order 5050.4A, para 47(3)(8)(b).
[51] Op. Cit., para. 47(3)(8)(c).

3.8.2.1 **Master Plan Project.** An initial review was made to determine if properties in or eligible for inclusion in the National Register of Historic Places were within the area of potential project impact. This and discussions with City staff have indicated that there are no known cultural, archaeological or historic resources located on the airport property, or on any of the properties proposed for acquisition. Most of the airport property has been re-graded and otherwise disturbed (this is termed a "ruderal" landscape) over the years to the point that any potential resources would have been either discovered, covered over, or destroyed. This is also true of those parcels proposed for acquisition for airport approach protection and airport expansion.

As a result, the proposed Master Plan project should not result in any significant impact to known historic or cultural resources. However, since the Tracy Planning Area has numerous documented cultural sites, a potential still exists for the discovery of archaeological artifacts or human remains during development. Although small, this potential represents a Class II impact (a significant adverse impact which can feasibly be mitigated to a less-than-significant level).

FAA Action Options. None of the three parcels proposed for land acquisition is known to contain any historical, cultural or archaeological sites.[52] The Nelson property (Parcel A1) is fully developed with a concrete batch plant. Parcel B2 (the farm site) has been actively farmed for more than twenty years, and includes a mature fruit orchard. Parcel B3 (the Navarra site) is also a developed site. For these reasons, a pedestrian survey of the three sites does not appear to be warranted.

3.8.2.2 **No Project Alternative.** This alternative would not require any grading or earthwork. Hence, the potential for uncovering human remains or cultural artifacts is relatively remote. This is a Class III impact (less-than-significant).

3.8.3 Mitigation Measures

3.8.3.1 **Master Plan Project.** All construction personnel shall be alerted to the potential for uncovering artifacts and human remains. If any human remains are found they would most likely be those of a Native American and, under State Law, a defined course of action must be taken. Section 7050.5 of the Health and Safety Code requires that, upon the discovery of any human remains, the County Coroner be notified immediately. Such notification shall be made by the contractor. Should the remains be determined to be those of a Native American, the Coroner shall notify the Native American Heritage Commission within 24 hours. The Commission would then decide on the appropriate method of dealing with the remains.

Should human remains be discovered, or distinct cultural objects, or significant changes in soil color be observed, construction shall be halted and a specialist and/or the

[52] Central California Information Center, California State College, Stanislaus (April 1991).

County Coroner, as appropriate, be called in to evaluate the potential of any finds. County contracts shall include wording to this effect. Implementation of the above mitigation measures reduces the potential impact to archaeological resources to an insignificant level.

3.8.3.2 **No Project Alternative.** Mitigation is not required for Class III impacts.

3.8.4 Residual Impacts

Implementation of the above mitigation measures would reduce any potential cultural resources impacts to a less-than-significant level.

3.9 BIOTIC COMMUNITIES

A biological assessment of the Tracy Airport project site was conducted by Zander Associates to characterize existing biotic communities on the site, evaluate the potential for the occurrence of sensitive species or habitats on the site, identify potential impacts of the proposed airport development project on biological resources in the project area, and recommend possible mitigation measures to reduce the magnitude of these impacts. The following assessment is based on review of existing background information, including the California Department of Fish and Game's Natural Diversity Data Base (CNDDB) and the "Tracy Hills Multi-Species Habitat Management Plan" (HMP),[53] a field reconnaissance survey conducted on March 28, 1997 by Zander Associates, and the Tracy UMP/GP EIR.

3.9.1 Setting/Affected Environment

The Tracy Municipal Airport project site is located in the northern San Joaquin Valley, near the southern Tracy City limit. The area in the vicinity of the project site is characterized by flat terrain dominated by large-scale agriculture and urban/industrial land uses. This region was once characterized by extensive perennial grasslands and broad riparian zones associated with the San Joaquin River and its tributaries. Drainage and conversion of these areas to agriculture, along with intensive grazing of native grasslands, have largely eliminated these natural communities from the northern San Joaquin Valley. The area is currently transected by two major irrigation canals, the California Aqueduct and the Delta-Mendota Canal, the latter of which forms the southeastern boundary of the Tracy Municipal Airport project site.

[53] EIP Associates, 1996. San Joaquin County has not yet adopted the HMP.

The majority of the project site consists of existing runways, buildings and roads associated with the airport operation. Undeveloped portions of the site contain non-native annual grasslands, an orchard and a dryland cultivated field. The general features and dominant vegetation on the site are described below.

Non-Native Annual Grassland. Non-native annual grassland vegetation is found in the northern and western portions of the site. These grasslands cover approximately 115 acres on the site, and consist primarily of dense patches of ripgut brome (*Bromus diandrus*) and barley (*Hordeum* sp.). At the time of the 1997 field survey, no annual herbaceous species were observable in these grasslands, though they may be present earlier in the year when grass growth is less dense. Most of the grassland areas adjacent to the existing runways are mowed or disked as part of the regular maintenance of the airport grounds.

Annual grasslands provide habitat for a variety of wildlife species. Reptiles typically found in these habitats include the western fence lizard (*Sceloporus occidentalis*) and gopher snake (*Pituophis melanoleucus*). Birds such as the western meadowlark (*Sturnella neglecta*) and savannah sparrow (*Passerculus sandwichensis*) are year-round residents of annual grasslands, and many other species forage in grasslands during spring and autumn migrations. Mammals commonly found in annual grasslands include the black-tailed hare (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*) and western harvest mouse (*Reithrodontomys megalotis*). These small mammals provide a prey base for raptors such as the red-tailed hawk (*Buteo jamaicensis*), and carnivores such as the coyote (*Canis latrans*) and red fox (*Vulpes vulpes*).

Orchard. A portion of the project site not currently part of the Tracy Municipal Airport property contains an apricot orchard associated with an existing residence (Parcel B2). This orchard covers approximately 9 acres. Orchard habitats of this type are typically dominated by a single cultivated tree species with an open understory. The ground layer may support low-growing grasses or other herbaceous plants, but is often managed to prevent growth of understory vegetation.

Orchard habitats in general do not support the diversity of wildlife species found in more natural plant communities. However, they can provide foraging habitat, moisture, and cover for some birds and small mammals. Birds that commonly forage in orchards include the American robin (*Turdus migratorius*), American crow (*Corvus brachyrhynchos*), and house finch (*Carpodacus mexicanus*). Orchard crops can also provide a food source for mammals such as the California ground squirrel and western harvest mouse.

Dryland Cultivated. The property containing the orchard also includes a dryland cultivated field that covers approximately 10 acres in the southwest section of the project site. Dryland fields are normally cultivated with grain crops such as wheat and

barley, which comprise the dominant vegetative component. These fields also support a variety of ruderal (weedy) herbaceous species and non-native annual grasses. Periodic disking and planting of these fields exerts a dominant influence on the structure and species composition of these communities.

Cultivated grain fields generally provide lower wildlife habitat value than annual grasslands, but can support a variety of opportunistic birds and mammals which feed on the seasonally abundant vegetation or seed crops. Common bird species that forage in this habitat include the mourning dove (*Zenaida macroura*), American crow and Brewer's blackbird (*Euphagus cyanocephalus*). Mammals found in these habitats include the black-tailed hare, desert cottontail (*Sylvilagus audubonii*), and various rodents such as ground squirrels and pocket gophers. These mammals in turn provide a prey base for raptors and other predators.

Developed Areas. The developed areas on the site include the airport runways, existing buildings, and roadways. Most of these areas are paved or have gravel surfaces. There are no trees present within the developed areas on the airport property.

Developed areas generally provide relatively low habitat value for wildlife, but can support birds and rodents that are adapted to human disturbance. Typical bird species found in developed areas include the mockingbird (*Mimus polyglottos*), American robin, Brewer's blackbird and house sparrow (*Passer domesticus*).

Other Features. An artificial drainage channel is located in the grassland area at the northeastern end of the airport property. This channel covers approximately 700 linear feet and drains toward a detention basin immediately north of the airport property. The channel is approximately 4 feet wide and is devoid of vegetation.

A shallow swale is located in the grassland area in the southeastern section of the airport property. This swale covers approximately 950 linear feet, and receives drainage from the adjacent water treatment plant, which is discharged through a PVC drainage pipe onto the airport property. The swale area supports a narrow zone of moisture-tolerant (hydrophytic) vegetation, including cattail (*Typha* sp.), rabbitfoot grass (*Polypogon monspeliensis*), spiny cocklebur (*Xanthium spinosum*), and monkeyflower (*Mimulus guttatus*).

3.9.1.1 Policies. FAA Order 5050.4A requires a series of thresholds to be examined to determine if a proposed project has the potential for significant impact on biotic communities. These thresholds are defined as follows:

1. If the proposal would impact only man-dominated areas such as previously disturbed airport property, populated areas or farmland, it is assumed that there would be no significant impact on biotic communities.

2. If the proposal would impact other than man-dominated areas, but the impacts would primarily be transient rather than permanent, such as dislocation or other impacts due to construction activities, it may be assumed that there would be no significant impact on biotic communities. The environmental assessment shall document the transient nature of the impacts and any mitigation measures.

3. If the proposal would cause only a minor permanent alteration of existing habitat, it may be assumed that there would be no significant impact on biotic communities. "Minor alteration" generally refers to removal of a few acres of habitat which represent a small percentage of the area's inventory or which support a limited variety or number of common wildlife species. ...The environmental assessment ...shall document the basis for the assumption of no significant impact and shall also document any mitigation measures.

4. If the proposal would involve the removal of a sizable amount of habitat, or of habitat which supports rare species, or of a small, sensitive tract, but the accompanying loss of plant communities and displacement of wildlife do not result in significant long term loss to the area, it may be assumed that there would be no significant impact on biotic communities. ...The environmental assessment shall document the impacts and mitigation measures and shall include supporting letters [from state and local review and other informal coordination as necessary]. Mitigation measure may include: (a) design adjustments to minimize impacts on sensitive areas or species; (b) purchase of contiguous habitat as a preserve for dislocated wildlife or as a buffer zone.

5. If the evaluation, using the thresholds [above], does not lead to the assumption that there would be no significant impact on biotic communities, the proposal is considered to be one with potential significant impacts.

The proposed plan for development of the Tracy Municipal Airport was evaluated with reference to the above thresholds and existing conditions on the site to determine whether impacts of the project would potentially be significant and/or require mitigation. These impacts and mitigation measures are discussed below.

3.9.2 Environmental Impacts.

3.9.2.1. Master Plan Project. The proposed project would develop new airport support facilities on an 80± acre area in the western portion of the project site, which includes property between the current airport property boundary and the Delta-Mendota Canal(see figure 1-6). A new access road would be constructed to connect the existing airport and proposed expansion area to Tracy Boulevard to the southeast, and Corral Hollow Road to the west, crossing the Delta-Mendota Canal. Additional runway

approach buffer zones would be established in areas to the east and northwest of the current airport boundary(see figure 1-7).

The area proposed for development of airport facilities includes approximately 57.5 acres of non-native annual grassland, 9 acres of orchard land, 10 acres of dryland cultivated field and 3.4 acres of developed residential land. The residence and cultivated lands are "man-dominated areas" as defined under FAA Order 5050.4A § 9 (d); therefore, development of these areas would not constitute a significant impact to biotic resources under this order. The annual grassland on the site is a common and widespread plant community dominated by non-native, invasive species. Furthermore, these areas are regularly mowed or disked, which further diminishes their habitat value. Therefore, removal of this grassland would not constitute a significant impact with respect to biological resources in general. However, removal of grassland and adjacent cultivated lands could result in the loss of foraging habitat for wildlife, including the federally-endangered and state-threatened San Joaquin kit fox. This impact is discussed below in the Endangered and Threatened Species section.

New Airport Access Road. The proposed road alignment would cover approximately 7,250 linear feet along a 60-foot wide right of way (see Figure 2-6). Construction of the southeastern segment between Tracy Boulevard and the current airport property boundary would result in removal of approximately 3.5 acres of non-native annual grassland adjacent to the Delta Mendota Canal. The middle segment of the road is included in the proposed expansion area; therefore, impacts associated with construction of this segment are included in the impact for the Expansion Area discussed above. Construction of the western segment would involve installation of a new bridge crossing the Delta Mendota Canal, and would result in removal of an additional 1.0 acre of non-native annual grassland west of the canal to Corral Hollow Road. The resulting removal of 4.5 acres of annual grassland for construction of the proposed access road would not constitute a significant impact to biotic resources in general, because this habitat is dominated by non-native, invasive species, and is regularly mowed or disked. However, removal of this grassland could result in the loss of foraging habitat for wildlife, including the federally-endangered and state-threatened San Joaquin kit fox. This impact is discussed below in the Endangered and Threatened Species section.

Runway Approach Zones. The runway approach buffer areas would total approximately 50 acres outside of the current airport property boundaries. Existing land use and vegetation would not be affected in these areas, except for the maintenance of height restrictions. These areas currently support agricultural fields and are devoid of trees, with the exception of a 0.2 acre easement on a farm property bordering the southeast corner of the airport. Trees in this 0.2 acre area would likely be removed or trimmed. Because establishment of these zones would not substantially alter existing conditions in these areas, or would affect only a few ornamental trees in a small area associated with an existing residence, this would not constitute a significant impact.

FAA Action Options. Because of their already developed nature, the acquisition of parcels A1 and B3, would have no direct or indirect impacts on Biotic Communities. Acquisition of parcel B2 would result in the removal of potential San Joaquin kit fox foraging habitat.

3.9.2 No Project Alternative. This alternative would not result in any significant impact to biotic resources.

3.9.3 Mitigation

3.9.3.1 Master Plan Project.

No mitigation is required for general impacts to biotic resources resulting from proposed airport development as those would be less than significant. Mitigation for potential specific impacts to special-status wildlife species is discussed below in the Endangered and Threatened Species section.

Airport Access Road. No mitigation is required for general impacts to biotic resources resulting from construction of the proposed access road. Mitigation for potential specific impacts to special-status wildlife species is discussed below in the Endangered and Threatened Species section.

Runway Approach Zones. No mitigation is required.

3.9.3.2 No Project Alternative. No mitigation is required.

3.9.4 Residual Impacts. None

3.10 ENDANGERED AND THREATENED SPECIES OF FLORA AND FAUNA

3.10.1 Setting/Affected Environment

Zander Associates reviewed the CNDDB (Tracy quadrangle, February 1997), Tracy Urban Management Plan/General Plan EIR (City of Tracy 1993), Draft Habitat Conservation Plan for the San Joaquin Kit Fox (EIP Associates 1998), and other relevant background reports to identify sensitive species of plants and animals that could potentially occur on or in the vicinity of the project site. Species considered in this assessment include: (1) those species listed, proposed for listing, or candidates for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the federal Endangered Species Act (ESA); (2) those listed or candidates for listing as threatened or endangered by the California Department of Fish and Game

(CDFG) under the California Endangered Species Act (CESA); (3) any additional sensitive species identified in the background reports that could potentially occur on the site. A list of these species and their habitat requirements is provided in Table 3-10.

The potential for these species to occur on the project site was evaluated by considering the current distributions and habitat requirements of these species with reference to the existing biotic communities, vegetation and habitat features on the project site. Based on this assessment, the project site is not expected to support any endangered or threatened plant species, and no sensitive plant species were observed during the site survey. However, the site could potentially provide habitat for three special-status animal species. These species are discussed below.

Swainson's Hawk. Swainson's hawk (*Buteo swainsoni*) is a large, broad-winged hawk that inhabits open country. Adults range in color from light to dark or reddish brown. Swainson's hawk preys on small mammals, birds and insects. The species nests in large trees, typically in riparian areas or along irrigation canals, adjacent to open agricultural fields, pastures or grasslands that provide an abundant prey base. Swainson's hawk migrates from wintering grounds in South America to breeding grounds in western North America, including the Central Valley of California.

Swainson's hawks are not known to nest in the immediate vicinity of the project site, but have been identified nesting within 10 miles of the site in locations north and east of Tracy. The CDFG considers the foraging range of this species to include open grasslands and agricultural fields within 10 miles of an established nest site. According to this criterion, the grassland and dryland cultivated areas on the project site could be considered potential foraging habitat for Swainson's hawk. Because the project site is relatively far from known Swainson's hawk nesting sites, and the proposed

development areas are in close proximity to active airport runways, their potential value as foraging habitat for this species is likely to be relatively low.

Western Burrowing Owl. The western burrowing owl (*Speotyto cunicularia hypugea*) is a medium-sized owl with sandy-colored, spotted plumage and long legs. Burrowing owls inhabit open grasslands as well as deserts, arid scrublands and dryland cultivated fields. This species is semi-colonial, and typically occurs in scattered colonies in open habitats. The availability of rodent burrows or other similar shelters for roosting and nesting is an essential component of this species' habitat. Burrowing owls feed mostly on insects, but may also eat small mammals, reptiles, birds, and carrion.

Table 3-10: **Sensitive Plant and Animal Species Potentially Occurring in the Vicinity of the Tracy Municipal Airport Project Site**

Plant Species	Status[1] Fed/CA	Habitat	Findings
Large-flowered fiddleneck (*Amsinckia grandiflora*)	E/E	Grassland and woodland habitats; known natural occurrences limited to Corral Hollow area	Not expected to occur; site is outside of species range
Caper-fruited tropidocarpum (*Tropidocarpum caparideum*)	SC/--	Alkaline soils in valley and foothill grasslands of northwestern San Joaquin Valley	Not expected to occur; presumed extirpated

Animal Species	Status[1] Fed/CA	Habitat	Findings
California tiger salamander (*Ambystoma californiense*)	C/CSC	Grasslands and open oak woodlands; requires seasonal ponds for breeding that do not support predatory fish or frogs; uses rodent burrows in upland areas as estivation sites	Not expected to occur; habitat not present on site
California red-legged frog (*Rana aurora draytoni*)	T/CSC	Lowlands and coastal foothills near permanent sources of deep water; prefers shorelines or wetlands with extensive emergent vegetation	Not expected to occur; habitat not present, and site is outside of species range
Giant garter snake (*Thamnophis gigas*)	T/T	Aquatic habitats; prefers freshwater marshes and low gradient streams, but has adapted to drainage canals and irrigation ditches	Not expected to occur; habitat not present on site
Swainson's hawk (*Buteo swainsoni*)	--/T	Riparian woodlands adjacent to open fields; nests in large trees along rivers, creeks, or irrigation canals; forages in agricultural fields, pastures or grasslands	Reported to nest within 10 miles of site; grassland and cultivated fields could provide foraging habitat
Western burrowing owl (*Speotyto cunicularia hypugea*)	--/CSC	Flat grasslands, deserts, and agricultural areas; nests in abandoned ground squirrel burrows	Reported to occur near site; grassland and cultivated fields could provide nesting or foraging habitat
San Joaquin kit fox (*Vulpes macrotis mutica*)	E/T	Grassland habitats in the San Joaquin Valley and adjacent hills of Coast Ranges; occupies dens in open areas with loose-textured soils or excavated from abandoned rodent burrows.	Previously observed in vicinity of site; grassland and cultivated fields could provide foraging habitat

Table 3-10 **(continued)**

[1] Status Explanations

Federal (Fed):

E	=	listed as endangered under the federal Endangered Species Act.
T	=	listed as threatened under the federal Endangered Species Act.
C	=	candidate for listing as threatened or endangered. Includes those species designated as "category 1 candidate species" by the USFWS prior to February 1996.
SC	=	designated as a "special concern" species by the USFWS. Includes those species designated as "category 2 candidate species" by the USFWS prior to February 1996.

California State (CA):

E	=	listed as endangered under the California Endangered Species Act.
T	=	listed as threatened under the California Endangered Species Act.
CSC	=	designated as a "species of special concern" by the CDFG.

Burrowing owls once occurred widely throughout the valley lowlands in the vicinity of Tracy prior to urban and residential development of the area, but are now mostly limited to lower elevations in the Tracy Hills west of the project site[54] (LSA Associates 1991 *in* City of Tracy 1993). An active burrowing owl burrow was recently identified approximately 1.5 miles north of the Tracy Airport. No burrowing owl burrow sites were observed in Zander's field reconnaissance of the Tracy Municipal Airport project site. However, open grassland areas adjacent to airfields have been found to support burrowing owls, and are thought to provide relatively good habitat for the species [55]

San Joaquin Kit Fox. The San Joaquin kit fox (*Vulpes macrotis mutica*) is a small, tan to grayish-colored fox with large ears. Kit foxes inhabit arid grasslands, scattered brush and open oak woodlands in the San Joaquin Valley and surrounding low hills and valleys of the Coast Ranges. The San Joaquin kit fox uses underground dens for shelter and breeding, which are typically located in flat to moderately-sloping terrain and are often excavated from existing ground squirrel burrows. The diet of this species consists mostly of California ground squirrels and black-tailed hares in the northern part of their range. The kit fox breeds from December to February, and the young are born in February or March in a single litter containing four pups on average. The pups remain with their parents until early summer and then disperse up to several miles from their parents' home range. This species was once widely distributed throughout the Central Valley, but has been displaced from much of its historic range by agricultural and urban development. The northern extent of its current range includes the Tracy area and adjacent hills of the Diablo Range in eastern Alameda County and southeastern Contra Costa County.

Reported occurrences of this species in the Tracy area are mostly concentrated in areas west of the Delta Mendota Canal, where habitat conditions are more favorable than in the more human-dominated landscape east of the canal. However, several San Joaquin kit foxes have been identified in the vicinity of the project site, and a San Joaquin kit fox was reportedly observed on the Tracy Municipal Airport property in 1991.[56] Tracks of kit foxes were also identified at scent stations approximately 2 miles north of the airport.[57] No denning sites were identified in areas surveyed in the vicinity of the project site. These observations indicate that kit foxes may move through or forage on the project site, though they are unlikely to breed there due to lack of potential denning sites and persistent human disturbance.

3.10.1.1 Policies. Section 7 of the ESA and FAA Order 5050.4A requires the FAA to insure that any action authorized, funded, or carried out by it not jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of habitat for such species.

[54] City of Tracy UMP EIR, July 1993
[55] Telephone conversation between D. Gifford (CDFG) and Zander Associates (October 1, 1997)
[56] City of Tracy, UMP EIR, July 1993. p.p. 112-117
[57] Ibid

If endangered or threatened species are determined by the USFWS to be potentially present in the area affected by the proposed action, a biological assessment shall identify the extent to which the species or critical habitat are likely to be affected by the action. If the assessment indicates no adverse effects on the species or critical habitat, it may be assumed that there would be no significant impact on endangered or threatened species. If, however, the biological assessment indicates an adverse effect on endangered or threatened species or critical habitat, the proposal is considered to be one with potential significant impact.

3.10.2 Environmental Impacts

3.10.2.1 Master Plan Project. Implementation of the project would result in removal of approximately 62 acres of non-native annual grassland in the proposed west side expansion area and access road right of way, and approximately 9 acres of orchard and 10 acres of dryland cultivated field in the proposed expansion area. Approximately 71 acres of grassland in the northern and southeastern sections of the site, would not be affected under the proposed plan. The removal of grassland and cultivated areas on the project site could result in losses of foraging habitat for the following special-status wildlife species:

Swainson's Hawk. The CDFG considers potential foraging habitat for this species to include open grasslands and agricultural fields within 10 miles of an established nest site. Although this species is not known to nest in the immediate vicinity of the project site, Swainson's hawk nests have been reported within 10 miles of the Tracy Municipal Airport, north and east of the City of Tracy. Consequently, removal of approximately 62 acres of non-native annual grassland and 10 acres of dryland cultivated field under the proposed plan could constitute a loss of approximately 72 acres of potential foraging habitat for this species. This is a potentially significant (Class II) impact.

Burrowing Owl. Although this species has not been identified on the project site, burrowing owls have been reported to occur near the Tracy Municipal Airport in areas with similar habitat characteristics. Based on these occurrences, and the presence of suitable burrowing owl habitat in the proposed expansion area, it is assumed that this species could potentially occur on the project site. Removal of approximately 72 acres of non-native annual grassland and dryland cultivated field on the site could constitute a loss of potential habitat for burrowing owls, and could potentially displace individual owls from the project site. This is a potentially significant (Class II) impact.

San Joaquin Kit Fox. The grassland and dryland cultivated areas on the project site could provide potential foraging habitat for the San Joaquin kit fox. This species has been identified both on and in the vicinity of the airport property. The project site is also adjacent to the Core Conservation Area for the San Joaquin kit fox, as defined in the Draft Habitat Conservation Plan (HCP) for this species (EIP Associates 1998), and a portion of the airport property designated as a runway approach buffer zone intersects

the core area between the Delta Mendota Canal and Corral Hollow Road. Removal of approximately 72 acres of non-native annual grassland and dryland cultivated field could constitute a loss of potential foraging habitat for the San Joaquin kit fox. In addition, the USFWS regards orchards adjacent to grasslands as potential foraging habitat for this species. USFWS policy designates a 300-foot buffer zone in orchards adjacent to grassland as potential foraging habitat for the San Joaquin kit fox (S. Larsen, pers. comm.). Based on this criterion, an additional 8 acres of potential foraging habitat for San Joaquin kit fox would be removed in the orchard area. The resulting removal of approximately 80 acres of potential foraging habitat for this species is a potentially significant (Class II) impact.

FAA Action Options. The acquisition of Parcel B2 (the farm site) has the potential to result in a significant adverse impact on the following special-status wildlife species:

1. Swainson's Hawk
2. Burrowing Owl
3. San Joaquin Kit Fox

3.10.2.2 No Project Alternative. This alternative would not result in any significant impact to endangered, threatened, or other special-status species (Class III impact).

3.10.3 Mitigation Measures

3.10.3.1 Master Plan Project. Implementation of the proposed airport development project shall require the following mitigation measures to reduce project impacts on special-status species to a less-than significant level:

Swainson's Hawk. The applicant shall compensate for the removal of potential foraging habitat for Swainson's hawk by providing habitat management (HM) land for this species, in accordance with CDFG mitigation guidelines. The applicant shall provide HM land either by 1) establishment of a conservation easement in the unaffected grassland area in the northern section of the site, or 2) purchase of off-site land as a preserve for Swainson's hawk, in an area determined by the CDFG to provide suitable foraging habitat for the species. Mitigation shall not be required for land currently in urban use or for lands that have no existing or potential value for foraging by Swainson's Hawks

Burrowing Owl. Prior to implementation of the project, pre-construction surveys for burrowing owl shall be conducted by a qualified biologist on the project site and the surrounding area of suitable habitat within 500 feet of the site. These surveys shall be conducted both during the wintering season (between December 1 and January 31), and during the nesting season (between April 15 and July 15), unless the species is detected on the first survey. If any burrows occupied by burrowing owls are identified

on the project site, passive relocation methods shall be employed to remove and relocate owls, as specified in the CDFG burrowing owl mitigation guidelines. For each occupied burrow found, two new burrows shall be created, and a minimum of 6.5 acres of habitat shall be permanently protected in a designated habitat preserve area for each breeding pair or unpaired resident owl displaced from the project site. This preserve area may be provided either by 1) establishment of a conservation easement in the unaffected grassland area in the northern section of the site, or 2) purchase of off-site land as a preserve for burrowing owl, in an area determined by the CDFG to provide suitable habitat for the species. Off-site mitigation for burrowing owl may be included in the acreage acquired to mitigate potential impacts to the San Joaquin kit fox, as discussed below.

San Joaquin Kit Fox. The applicant shall compensate for the removal of potential foraging habitat for the San Joaquin kit fox by purchase of off-site, contiguous habitat in a designated preserve area for this species. Off-site acreage shall be provided through establishment of a conservation easement or by fee acquisition of a suitable habitat area in western San Joaquin County, as determined through consultation with the USFWS and CDFG. Part of this acreage requirement could be satisfied by establishment of an on-site conservation easement in the unaffected grassland area in the northern section of the site, as discussed above for Swainson's hawk and burrowing owl.

3.10.3.2 No Project Alternative. No mitigation is required.

3.10.4 Residual Impacts. None.

3.11 WETLANDS

3.11.1 Setting/Affected Environment

Wetlands are defined as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (U.S. Army Corps of Engineers, 1987). There are no jurisdictional or seasonal wetlands associated with any of the Airport Master Plan Project areas.

3.11.2 Environmental Impacts

3.11.2.1 Master Plan Project. Implementation of the proposed Master Plan project would not involve any wetland areas (Class III impact).

FAA Action Options. No wetlands areas would be affected.

3.11.2.2 No Project Alternative. This alternative would not result in any impact to wetlands (Class III impact).

3.11.3 Mitigation

3.11.3.1 Master Plan Project. No mitigation is required for the project as proposed.

3.11.3.2. No Project Alternative. No mitigation is required for this alternative.

3.12 FLOODPLAINS

3.12.1 Setting/Affected Environment

Floodplains are defined by FAA Advisory Circular 5050.4A, as *"the lowland and relatively flat areas adjoining inland...waters, including...area[s] subject to a one percent or greater chance of flooding in any given year, i.e., the area that would be inundated by a 100-year flood."*[58] A review of FEMA Flood Insurance Rate Maps (FIRM) for the Tracy area indicates no floodplains or flood prone areas on the project site.

[58] FAA, *"Airport Environmental Handbook,"* P. 47 and Executive Order 11988.

3.12.2 Environmental Impacts

3.12.2.1 Master Plan Project. Implementation and buildout of the proposed Airport Master Plan would result in up to a 70 percent increase in the developed area of the airport and an estimated 36.3 percent increase in the volume of stormwater runoff, respectively, from the airport site (see Section 3.6, "Water Quality"). This is well within the capacity of airport drainage Facilities and would not represent a significant impact (Class III).

3.12.2.2 No Project Alternative. This alternative would have no adverse impacts on floodplains, and would as such represent a Class III impact.

3.12.3 Mitigation.

3.12.3.1 Master Plan Project. Mitigation not required for Class III impacts

3.12.3.2 No Project Alternative. No mitigation is required for this alternative.

3.12.4 Residual Impacts

None.

3.13 COASTAL ZONE MANAGEMENT PROGRAM

This specific impact category is not applicable to the proposed project, as the project site is located approximately 65 miles inland from the coast.

3.14 COASTAL BARRIERS

This specific impact category is not applicable to the proposed project, as the Coastal Barriers Resources Act applies to only the Atlantic and Gulf coasts.

3.15 WILD AND SCENIC RIVERS

This specific impact category is not applicable, as there are no federally designated wild and scenic rivers in western San Joaquin County.

3.16 FARMLAND

3.16.1 Setting/Affected Environment

The Farmland Protection Policy Act (FPPA)[59] authorizes the U.S. Department of Agriculture (USDA) to develop criteria for identifying the effects of Federal programs on the conversion of farmland to nonagricultural uses. The guidelines developed by the USDA became effective in August 1984 and are applicable to FAA-funded Airport Improvement Projects (AIP). However, Airport Layout Plan (ALP) approval, involving only development shown on an ALP which is not to be federally funded, even if farmland is involved, is exempt from the FPPA. Similarly, the FPPA does not include land already in, or committed to, urban development.[60] Prime farmland "committed to urban development" includes all such land or industrial uses that is not protected by zoning code or ordinance, or a comprehensive land use plan.

3.16.2 Environmental Impacts

Although some of the undeveloped areas proposed for acquisition and development are currently in agricultural use (principally dry farming and orchard), the areas affected by the Master Plan are committed to development through the City's Urban Master Plan/General Plan and through its current zoning designation. The farm site is also subject to the provisions of a "Williamson Act" contract, such a contract would be binding on the City until such time as application was made to rescind the contract. This, and the fact the property proposed for acquisition is not considered prime farmland,[61] results in a Class III (less-than-significant) impact for the Master Plan project. A Class IV (beneficial) impact would result from the No Project Alternative, as no development would take place on the farm site.

3.16.3 Mitigation Measures

Class III and IV impacts do not require mitigation.

3.16.4 Residual Impacts

None.

3.17 ENERGY SUPPLY AND NATURAL RESOURCES

3.17.1 Setting/Affected Environment

[59] P.L. 97-98.

[60] FAA Order 5050.4A. P. 55.

[61] Parcel B2 has Storie Index of 66 (in San Joaquin County a Storie Index of 80 or above is required for a Prime Farmland designation). UMP/GP EIR. P. 69.

This section addresses the effects of the proposed Master Plan project on energy supply and natural resources. Energy requirements associated with the project and project alternatives fall generally into two categories:

- Those which relate to changed demands for stationary facilities (e.g., airport and airfield lighting, and the heating of airport buildings); and
- Those which involve the movement of aircraft and ground vehicles.

Natural resources typically affected by a project such as the Master Plan are those used in project construction, and include mineral resources like sand and gravel.

3.17.1.1 Policies. FAA Order 5050.4A is concerned only with "major changes in stationary facilities which would have a measurable effect on local supplies."[62] For most airport actions, Order 5050.4A notes that *"changes in energy or other natural resources consumption will not result in significant impacts,"* unless such resources are in short supply.

3.17.2 Environmental Impacts

3.17.2.1 Master Plan Project. The day-to-day operation of Tracy Municipal Airport will continue to require the consumption of energy and natural resources. Electrical energy will be required to heat, cool, and light airport facilities. Electrical energy will also be required to operate airport navigational aids. The principal consumers of energy resources are the aircraft, airport support vehicles, and pilot/passenger vehicles which require fossil fuels for their operation. Ongoing airport development and maintenance will require the use of water and construction materials, including sand and gravel, cement, lumber, and other building materials, but would not result in the use of any unusual materials, or any materials considered to be in short supply.

Implementation of the proposed Master Plan project would result in an incremental increase in the consumption of electrical energy as a result of runway and taxiway lighting requirements for the proposed instrument landing system. Additional consumption of petroleum products would come about as a result of increases in aviation activity and surface vehicle trips to and from the airport resulting from forecast growth of aircraft operations and based aircraft. Short-term consumption of petroleum products would occur as a result of airport and airfield construction activities.

While implementation of the project would result in some increases in the use of energy and natural resources as described above, the overall impact would be less than significant. This would be a Class III impact.

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[62] Op. Cit. P. 57.

3.17.2.2 **No Project Alternative.** This alternative would have no significant adverse impacts and would be considered to be a Class III impact.

3.17.3 Mitigation

Mitigation is not required for Class III impacts.

3.17.4 Residual Impacts

No residual impacts are anticipated.

3.18 LIGHT EMISSIONS

3.18.1 Setting/Affected Environment

Existing Airport facilities are illuminated by a variety of lighting types, including runway and taxiway lighting, and security lighting for building and aircraft parking areas. Of concern is the potential for the installation of lighting systems that could impact pilots approaching the airport, or result in excessive light or glare for nearby residents or for drivers on local streets.

3.18.1.1 **Policies.** FAA Order 5050.4A requires that consideration be given to the extent to which any lighting associated with the airport action will create an annoyance among people in the vicinity of the installation. Only in unusual circumstances, for example when high intensity strobe lights would shine directly into people's homes, will the impact of light emissions be considered significant.[63]

3.18.2 Environmental Impacts

3.18.2.1 **Master Plan Project.** Implementation of the Master Plan project would increase the lighted area on the airport. Enhancements to the existing nonprecision instrument approaches would include new lighting equipment, but, the intensity of such lighting should not result in the creation of glare or annoyance to area residents or affect the safety of drivers. However, lighting of the development parcels and airport support facilities could impact a pilot's night vision or make it difficult to distinguish runway or taxiway lights if not properly directed or shielded. This would represent a Class II impact, but is capable of being fully mitigated.

3.18.2.2 **No Project Alternative.** This alternative would result in no new light emissions at the airport, and would be a Class III impact.

3.18.3 Mitigation Measures

[63] Op. Cit. P. 58.

3.18.3.1 **Master Plan Project**. The potential adverse impacts of project lighting on aviation safety can be mitigated to a level of insignificance by the following means:

- All new lighting of parking lots, aircraft aprons, and building areas is to be of sodium vapor type. The lighting shall be designed and installed so as to create no glare or interference with aircraft air or ground operations, and ensure only minimal light spillage for adjacent residents or drivers. The lighting shall be arrayed in such a manner that it cannot be mistaken for airport approach or runway lights by pilots making an approach in adverse weather conditions.

3.18.3.3 **No Project Alternative**. Mitigation is not required for Class III impacts.

3.18.4 Residual Impacts

Implementation of the above mitigation measures would reduce any residual impacts to a less-than-significant level.

3.19 SOLID WASTE

3.19.1 Setting/Affected Environment

Of concern to the FAA is the location, or potential location of any solid waste disposal facilities within 3,000 meters (or 10,000 feet) of any runway planned to be used by turbojet aircraft. Although the airport, is, and will continue to be used by turbojet aircraft, there are no existing or planned solid waste disposal facilities within 3,000 meters of the airport.[64]

3.19.2 Environmental Impacts

Since there are no nearby solid waste disposal facilities in proximity to the airport, this represents a Class III (less-than-significant) impact.

3.19.3 Mitigation Measures

Mitigation is not required for Class III (less-than-significant) impact.

[64] The FAA's concern is based on the potential bird hazard such facilities could represent. The old Tracy landfill site is just outside the 3,000 meter area, and was closed several years ago.

3.19.4 Residual Impacts

None.

3.20 CONSTRUCTION IMPACTS

3.20.1 Setting/Affected Environment

Certain construction activities have the potential to create adverse environmental impacts. These activities include noise from construction vehicles, noise and dust from the delivery of construction materials and supplies, grading and site preparation activities, and air and water pollution.

3.20.2 Environmental Impacts

Potential construction-related impacts are discussed separately in the preceding sections, as listed below:

- Noise
- Historic, Architectural, Archeological, and Cultural Resources
- Air Quality
- Water Quality

3.20.3 Mitigation Measures

Mitigation measures for construction-related impacts are set forth in the above-listed sections.

3.20.4 Residual Impacts

None.

3.21 TRAFFIC AND TRANSPORTATION

This section of the EA/EIR considers the potential surface vehicle traffic impacts on local streets and highways of the Master Plan project within the context of the adopted goals and policies of the Tracy UMP/GP and UMP/GP EIR, which incorporates a range of traffic mitigation measures designed to reduce such impacts to a less-than-significant level.

3.21.1 Setting/Affected Environment

Primary access to the airport site is via South Tracy Boulevard. South Tracy Boulevard is classified as a two-lane rural highway in the UMP/GP EIR.[65] The roadway south of Linne Road currently is in poor condition as a result of heavy truck traffic and consists of only one lane in each direction. The UMP/GP anticipates that the roadway in this area will be upgraded and widened to two lanes in each direction.[66] The roadway currently accommodates an estimated 720 vehicles per day, including heavy trucks and the 222 ADT estimated to be generated by the airport. The roadway and intersection with Linne Road currently operate at LOS C or better.[67]

3.21.2 Environmental Impacts

Implementation and buildout of the Airport Master Plan could result in a total of 922 ADT generated by the airport and airport-related uses. These 922 ADT would most likely be divided among South Tracy Boulevard (80%) and Corral Hollow Road (20%) as a result of development of the airport's west side and the construction of a connector roadway between So. Tracy Boulevard and Corral Hollow Road (see Fig1-6). This would result in the following impacts:

Road Segment	Est. Capacity	Projected Volume	LOS
Tracy Blvd. South of Linne Road	9,400 ADT	2,400[a]	C
Corral Hollow Rd. South of Linne Road	9,400 ADT	1,850[b]	C

a. Based on UMP/GP and South Schulte Specific Plan estimates.
b. P&D estimate.

As can be determined from the above, the capacities of So. Tracy Boulevard and Corral Hollow Road, along with proposed UMP/GP improvements would be relatively unaffected by project-generated traffic. Specific mitigation measures are set forth in the UMP/GP EIR which would also serve to reduce intersection LOS to a less-than-significant level at UMP/airport buildout (Class III impact).[68] The airport will, however, contribute to the reconstruction of South Tracy Boulevard adjacent to airport property.

[65] Op. Cit., P. 173.
[66] Ibid., P. 74.
[67] Ibid., P. 168.
[68] UMP/GP EIR, PP. 172-188, and South Schulte Specific Plan Draft EIR, P. 4.3-35.

3.21.3 Mitigation Measures

Mitigation not required for Class III impacts.

3.21.4 Residual Impacts

None.

3.22 GEOLOGY AND SEISMOLOGY

3.22.1 Setting/Affected Environment

The geology of the project site is characterized by Holocene to Pleistocene-age alluvial fan and terrace deposits. These include unconsolidated silts, clays, sands and gravels derived from the Coast Range to the southwest. Surface soils within the project area are classified as Zacharias gravelly clay loam, and according to the U.S. Soil Conservation Service's Land Capability Classification rates the Zacharias gravely loam as a Class IV soil. Soils in LCCS Class IV have very severe limitations that restrict the choice of plants, or require very careful management, or both.[69] Because of its high clay content, this soil type also has a moderate shrink/swell potential.[70]

The Tracy UMP/GP EIR also identifies potential geologic hazards within the project area. Of significance is the Black Butte Fault which is located approximately 4 miles southwest of the airport site. This fault is categorized as Category 2 fault (potentially active).[71]

3.22.2 Environmental Impacts

"Shrink/swell" soils can damage structures and pavement areas if proper steps are not taken to minimize soil expansion. This represents a Class II (significant, but mitigable impact.

The maximum intensity seismic event expected within the TPA is around 7 on the Modified Mercalli Intensity Scale, and the Black Butte Fault has an identified surface rupture potential. Such potential is limited to the immediate vicinity of the fault, but associated ground shaking could affect the project area.[72] This is a Class II impact.

[69] City of Tracy UMP/GP EIR. PP. 68-72.
[70] Ibid., P. 253.
[71] Ibid., PP. 248-252.
[72] Ibid., P. 268.

3.22.3 Mitigation

The following mitigation measures will reduce potential impacts to a less-than-significant level:

- Mitigation for shrink/swell potential shall include review of site development and grading plans by a registered engineer specializing in geotechnical assessments to ensure that the soils can support the load.

- All project structures shall be designed in conformity with Uniform Building Code Seismic Zone 3 standards.

3.22.4 Residual Impacts

None.

3.23 PUBLIC UTILITIES

3.23.1 Setting/Affected Environment

The City of Tracy owns and operates an extensive wastewater collection system, and all development within the City is required to be connected to the sewer system where available. The Tracy Waste Water Treatment Plant (WWTP) has a design capacity of 9.0 million gallons per day (mgd), and is proposed to be expanded to accommodate up to 12.2 mgd.[73] Beyond this, a new facility would be required.[74] Average flows to the plant in 1990 were 4.5 and 7.1 mgd in the winter and summer, respectively. The higher summer flow is due primarily to fruit and vegetable cannery operations.

The City currently obtains water from two sources: surface water from the Central Valley Project via the Delta-Mendota canal and groundwater from ten City-owned wells. The City's total available water supply is estimated to be approximately 16,000 acre-feet/year. According to the City's 1994 Water Master Plan, usage in 1990 totaled approximately 10,800 acre-feet, on an average daily demand of 9.64 mgd.[75] The City will need to supplement its water supply from other sources if it is to meet the growth projections set for the in the UMP/GP.

The Airport Master Plan project anticipates specific improvements to the airport's utilities systems, including the upgrading of airport water distribution and sewage disposal systems. For all intents and purposes, these will be new systems and they will be contained entirely on-airport. The only off-airport utilities component of the Master Plan involves the extension of a new sewer trunk line into the airport site at some point

[73] South Schulte Draft EIR, p. 4.10-10
[74] City of Tracy, UMP/GP, p. 278
[75] Tracy Hills Specific Plan Draft EIR, p.4.10-1

in the future. It is anticipated that no action will be taken with respect to this project until such time as the land adjacent to the airport's north side is actually developed. Similarly, no major airport development (i.e., the proposed airport hotel or museum) would be constructed until the proper sewer connections were available.

3.23.2 Environmental Impacts

Impacts to wastewater treatment facilities are considered to be significant only if implementation of the project would result in any of the following:

- Require a substantial expansion or alteration of the City's wastewater treatment and collection facilities beyond their ability to provide capacity;
- Require the extension of sewer trunk lines with the capacity to serve new development; or
- Result in a substantial increase in wastewater flow over current conditions

Impacts on the local water supply depend on the availability of water and the required infrastructure to serve the project area. An impact to water supply or distribution is considered to be significant if project implementation would result in an increase in demand for municipal water beyond the limits of the current delivery and supply system.

On a comparative basis, the implementation of the Airport Master Plan is only a small part (estimated at less than 1%) of the total development anticipated in the City's UMP/GP, and as a stand alone project would have little or no impact on the City's wastewater on water distribution system. Hence, implementation of the proposed Airport Master Plan would have no significant adverse environmental impact on public utilities, as these utilities are proposed to be upgraded or extended as part of the Tracy UMP/GP to support the implementation of other planned development in the project area. This would be a Class III (less-than-significant) impact.

3.23.3 Mitigation Measures

Mitigation is not required for Class III impacts.

3.23.4 Residual Impacts

None.

3.24 HAZARDOUS MATERIALS

3.24.1 Setting/Affected Environment

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR) to ascertain if the Tracy Municipal Airport or any nearby properties were on any lists of environmentally impaired properties. The search results indicated evidence of a former leaking underground fuel storage tank, and solid waste disposal facility on the site.[76]

3.24.1.1 Policies. The following regulations apply to hazardous materials on, or near the airport site:

Underground Storage Tanks. The Leaking Underground Storage Tank (LUST) Incident Reports contain an inventory of reported leaking underground storage tanks. The data come from the State Water Resources Control Board Leaking Underground Storage Tank Information System. The Tracy Airport is a listed site.

Cortese List. This database identifies public drinking water wells with detectable levels of contamination, hazardous substance sites, sites with known toxic material, and leaking underground storage tanks. The Tracy Airport is listed.

National Priorities List. The National Priorities List (NPL), maintained by the Environmental Protection Agency (EPA) under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), is a database of the more serious uncontrolled and/or abandoned hazardous waste sites which have been identified and designated for priority remedial actions. The Tracy Airport is not on this list.

Comprehensive Environmental Response, Compensation and Liability Information System. The CERCLIS was developed by EPA pursuant to CERCLA, and is maintained as an inventory of sites where releases of hazardous substances, contaminated property, or suspected environmental impacts to the property are known. The Tracy Airport is not listed.

Resource Conservation and Recovery Act. The RCRA identifies and tracks hazardous waste from "cradle to grave." Generators of hazardous waste are required to register and those facilities which treat, store or dispose of hazardous waste (TSD facilities) are required to go through an extensive permitting process. The Tracy Airport is not on the RCRA TSD List.

[76] Environmental Data Resources, Inc., Inquiry No. 0201835.1R, Sept. 30, 1997.

CALSITES List. The CALSITES List is a database of information regarding known and suspected hazardous waste sites maintained by the California EPA, Department of Toxic Substances Control, Site Mitigation Branch. Inclusion of a property on the CALSITES List does not necessarily imply that an environmental hazard exists on the property, because such listings are sometimes derived from sources such as telephone and business directories (e.g., radiator shops or plating companies). The Tracy Airport is not on the Calsites list.

3.24.2 Environmental Impacts

3.24.2.1 Master Plan Project. A review of the EDR records search indicates a relatively low risk for existing hazardous materials sites on the airport, even though several such sites are listed. These sites are as follow:

LUST/Cortese. The Tracy Municipal Airport is listed on these data bases as having a leaking underground fuel storage tank.[77] According to the data base a preliminary site assessment work plan has been submitted. The City is currently constructing an above-ground fuel storage facility. Upon completion of this facility, the existing underground tanks will be removed.

Other. The Tracy Airport Land Treatment Facility Site, located off Corral Hollow Road is listed on state's Waste Management Unit Database System (WMUDS).[78] This site was judged to represent a "minor threat to water quality" and is currently in the process of remediation.[79]

Remediation activities at these sites have reduced any potential impacts to a less-than-significant (Class III impact) level.

3.24.2.2 No Project Alternative. No significant impacts would be associated with this alternative. This would be a Class III impact.

3.24.3 Mitigation

3.24.3.1 Master Plan Project. Mitigation not required for Class III impacts.

3.24.3.2 No Project Alternative. No mitigation would be required for this alternative.

3.24.4 Residual Impacts

None.

[77] LUST Case No. 390391.
[78] Waste Discharge ID No. 5B390313001.
[79] EDR, P. 12.

3.25 ENVIRONMENTAL CONSEQUENCES - OTHER CONSIDERATIONS

Based on the analyses, information, and mitigations set forth in sections 3.1 through 3.24, it has been determined that the proposed Airport Master Plan project would be:

- In substantial conformance with plans, goals, policies, or controls that have been adopted for the area in which the airport is located, including the Tracy UMP/GP;
- Consistent with approved federal, state, or local plans and laws;
- Sufficiently mitigated to reduce any projected project impacts to a less-than-significant level; and
- Non-controversial on environmental grounds based on the thresholds of significance set forth in paragraph 47(e) of FAA Order 5050.4A.

4.0 LONG TERM EFFECTS OF THE PROJECT

4.1 GROWTH INDUCING IMPACTS

CEQA Guidelines require that an EIR include a discussion of the ways in which the proposed project could foster economic or population growth.[1] Of concern are the ways in which the proposed project could directly or indirectly result in the construction of additional housing, the removal of obstacles to population growth, or other activities that significantly affect the environment.

The proposed Airport Master Plan project is neither precedent-setting in terms of its proposed development, nor would it result in the removal of any barriers to future urban growth (e.g., utilities are being upgraded and extended, and existing zoning controls proposed future land uses). This leaves but one major project characteristic which could be associated with growth inducement:

- Creation of new employment opportunities which may require recruitment from outside the local area.

Implementation of the project could result in new employment opportunities. It is anticipated that many of these new employees would have to relocate to The Tracy area. As a consequence, implementation of the Airport Master Plan would induce growth on and near the Airport, but such growth would not exceed the limits imposed by the Tracy Urban Management Plan/General Plan.

4.2 CUMULATIVE IMPACTS

Cumulative impacts refer to two or more individual impacts, which, when considered together, may be considerable or which may compound or increase other environmental impacts. Cumulative impacts can result from individually minor, but collectively significant projects taking place over a period of time.[2]

The Airport is located in a designated growth management area. Overall the cumulative effects of airport development are minor in comparison to the effects of the Tracy UMP/GP and other proposed development in the Airport environs, which would result in the long-term commitment of existing vacant and undeveloped lands to specific urban uses.

Locally the cumulative development of residential, commercial, industrial and other uses would be accompanied by area-wide increases in traffic, noise, air emissions,

[1] Op. cit., Sec. 15126(g)
[2] "*Guidelines,*" op. cit., Sec. 15355.

consumption of resources, demands for services and utilities, and changes in landscape character.[3] Such impacts are not exclusive to any one development or class of development, but would occur to some degree with any type of new development. However, from the standpoint of the proposed Airport Master Plan, such development as is currently proposed would be compatible with airport operations and vice versa.

Similarly, the Tracy UMP/GP Final EIR notes that:

> "impacts related to services and utilities are not significantly cumulative in long-term –term, as these impacts are more a matter of ensuring that the service or utility is able to plan ahead to accommodate project growth levels. The most significant cumulative impacts are those which travel across regional boundaries and affect shared resources, such as biological resources. agricultural resources, air quality, transportation systems, [and] etc."[4]

From a cumulative impact perspective, implementation of the Tracy Airport Master Plan would not result in any cumulatively significant impacts which would travel across regional boundaries or adversely affect shared resources.

4.3 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY.

CEQA guidelines require that an EIR discuss the long-term adverse effects of the project on the environment. Special attention is to be given to impacts that narrow the range of beneficial uses of the environment or pose long-term risks to health and safety. Why the project is considered to be justified now rather than reserving an option for future alternatives is explained.

If the Master Plan project were to be approved and implemented, a variety of short- and long-term impacts would result. These impacts include:

4.3.1 Short-Term

1. Increased noise and dust from construction activities.
2. Increased traffic from construction vehicles.
3. Minor erosion may occur until project landscaping is established.

These impacts are temporary and can be mitigated to a less-than-significant level.

[3] Tracy UMP/GP, P. 337.
[4] Op.Cit., P. 333

4.3.2 Long-Term

The long-term effect of the Master Plan project would be to increase the intensity of both operations and development at the Tracy Municipal Airport. This would entail substantial changes to vacant or undeveloped land on the Airport, including lands currently used for farming. The long-term effects of Master Plan project implementation include:

1. Loss of vacant or unused land
2. Localized increases in peak hour traffic volumes
3. Minor degradation of air quality
4. Increased aircraft noise emissions.

None of the above impacts are sufficient to pose long-term risks to health or safety, but the project would serve to further narrow the range of beneficial uses of the environment as a result of development.

The Master Plan project is also proposed for implementation between now and 2016. Under these circumstances, the option for future alternatives is not foreclosed, as the Tracy Airport Master Plan provides for periodic updating or revisions as may become necessary.

4.4 SIGNIFICANT IRREVERSIBLE CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

In general, "irreversible change" to the environment can be defined as the use of non-renewable resources or the commitment thereof, which dictates the activities of future generations. Implementation of the Master Plan project would result in the following irretrievable environmental changes:

- The commitment of currently vacant or unused land, or land used for farming, to support airport and airport-related development;
- Development on lands currently seen as open space;
- The use of various non-renewable materials such as fossil fuels, wood and metals in construction activities;
- The use of fossil fuels over the life of the project for heating, cooling, lighting, and vehicular transportation; and

- Incremental increases in surface traffic, which could lead cumulatively to additional congestion, noise and annoyance, and perceived changes in the quality and manner of life.

4.5 SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED.

An unavoidable significant adverse environmental impact is an impact which cannot be reduced to an insignificant level through implementation of mitigation measures. Class I impacts fall into this category.

Implementation of the proposed Airport Master Plan project would **not** result in any significant adverse environmental impacts which cannot be mitigated to a less-than-significant level.

5.0 REFERENCES AND ORGANIZATIONS, AGENCIES AND INDIVIDUALS CONSULTED

5.1 REFERENCES

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- California Code of Regulations, Title 24.
- *"California Environmental Quality Act (CEQA) of 1970,"* as amended. Public Resources Code, Section 21000 et seq.
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- _____, Office of Planning and Research. *Guidelines for the Implementation of the California Environmental Quality Act*, Administrative Code, Chapter 3, Division 6, Title 14, as amended.

- Transportation Research Board, *Transportation Research Circular (TRC) 212.*

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5.2 ORGANIZATIONS, AGENCIES AND INDIVIDUALS CONSULTED

5.2.1 Organizations and Agencies

United States Government

- U.S. Department of Agriculture, Soil Conservation Service
  Stockton, California

- U.S. Environmental Protection Agency, Region IX
  San Francisco, California

- U.S. Fish and Wildlife Service
  Sacramento, California

- Federal Aviation Administration, Airports District Office
  Burlingame, California

- Federal Emergency Management Agency (FEMA), Region IX

San Francisco, California

State of California

- Air Resources Board, Emission Inventory Branch
  Stationary Source Control Division, Sacramento, California
- State Department of Fish and Game
  Rancho Cordova, California
- State Department of Transportation (Caltrans)
  Aeronautics Program
  Sacramento, California
- State Department of Transportation (Caltrans)
  Planning
  Sacramento, California
- State Office of Historic Preservation
  Sacramento, California
- State Resources Agency
  Sacramento, California
- State Lands Commission
  Sacramento, California
- California Highway Patrol
  Office of Special Projects
  Sacramento, California
- Air Resources Board
  Sacramento, California
- Regional Water Quality Control Board
  Region 5
  Sacramento, California

5.2.2 Individuals Consulted/Contacted

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San Francisco, California

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Federal Aviation Administration
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State of California

Department of Transportation, Aeronautics Program

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Environmental Planner
Sacramento, CA

Department of Fish and Game

- Mr. Dan Gifford
Rancho Cordova

6.0 LIST OF PREPARERS AND FAA EVALUATORS

This EA/EIR was prepared for the City of Tracy and the Federal Aviation Administration by P&D Consultants, Inc. of Oakland, California under a contract with the City. The efforts of an interdisciplinary team, consisting of specialists in various fields, were required to accomplish this study. Disciplines involved in the preparation of the EA/EIR included airport planning, noise and land use compatibility, air and water quality, traffic, biology and others. It should also be noted that, while an interdisciplinary approach has been used, all decisions with regard to the scope and content of the final EA/EIR are those of the FAA.

As required by FAA Order 5050.4A, Paragraph 87, the names and qualifications of the principal contributors to the EA/EIR are set forth below. Unless specifically indicated, preparers and contributors will have participated in both the draft EA/EIR and final EA/EIR:

6.1 PRINCIPAL PREPARERS

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Thomas G. Merrill. - Sr. Engineer. B.S. - Civil Engineering. Eighteen years' experience. Responsible for aircraft noise modeling and airport plans.

Wesley Myles. - Engineer. B.S. - Civil Engineering. Five years' experience. Computer-assisted drafting and engineering analyses.

Patricia Fairbrother. - Editor/Word Processor. M.A. - Semantics. B.A. - English Language and Literature. Twenty years' experience. Writing, editing, word processing, computer design. Administrative Draft.

Vicki Nelson. - Editor/Word Processor. B.A. - French Literature, U.C. Berkeley. Administrative EA/EIR.

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Leslie J. Zander. - Principal Biologist. Twelve years experience in the characterization of biological resources and mitigation, rare and endangered species, and habitat evaluation and management. B.A., Biology, Cal State University, Fresno.

Daniel T. Clemens. - Biologist. Eight years of experience, with expertise in environmental biology and functional ecology of animals. PhD., Biology, U.C. California, Los Angeles. B.A., Biology, U.C. Santa Cruz.

City of Tracy

Joe Pellegrino - Transportation Coordinator

Robert Conant - Sr. Planner

6.2 FEDERAL AVIATION ADMINISTRATION EVALUATORS

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Joseph Rodriguez. - Airports District Office, Burlingame.

APPENDIX A

NOTICE OF PREPARATION

CITY OF TRACY

Community Development Department
520 Tracy Boulevard
Tracy, CA 95376

Telephone: (209) 831-4600
Fax: (209) 831-4606

NOTICE OF PREPARATION

DATE: July 29, 1997

TO: Responsible Agencies, Organizations, and Interested Persons

LEAD AGENCY:
CITY OF TRACY
520 TRACY BOULEVARD
TRACY, CA 95376

CONTACT:
MR. ROBERT CONANT
SENIOR PLANNER
(209) 831-4600

CONSULTANT:
P & D CONSULTANTS, INC.
1000 BROADWAY, SUITE 390
OAKLAND, CA 94607

CONTACT:
MR. MICHAEL MCCLINTOCK
PROJECT MANAGER
(510) 839-7337

SUBJECT:

NOTICE OF PREPARATION FOR THE
TRACY MUNICIPAL AIRPORT MASTER PLAN EIR/EA

Pursuant to the requirements of Section 15021 of the California Environmental Quality Act (CEQA) 1995 Guidelines, the City of Tracy (as Lead Agency) shall prepare an Environmental Impact Report/Environmental Assessment for the Tracy Municipal Airport Master Plan.

In accordance with Section 15082 of the CEQA Guidelines, the City has prepared this Notice of Preparation (NOP) to provide sufficient information describing the potential environmental effects of the proposed project.

An Initial Study has not been prepared because the City of Tracy has determined that an EIR will be clearly required for this project as allowed by Section 15060(c) of the CEQA Guidelines.

For specific concerns regarding this project, please send written comments within thirty (30) days to Mr. Robert Conant at the address shown above. Correspondingly, please include the name of a contact person in your agency or organization for future reference.

PROJECT TITLE: TRACY MUNICIPAL AIRPORT MASTER PLAN EIR/EA

PROJECT LOCATION: TRACY MUNICIPAL AIRPORT
29633 S. TRACY BOULEVARD
TRACY, CALIFORNIA

PROJECT DESCRIPTION: The proposed Tracy Municipal Airport Master Plan provides for the orderly development of new and upgraded aviation facilities to meet Tracy's air service needs through the year 2016. The Master Plan sets forth detailed facility requirements, phasing, costs and suggested methods of financing. Proposed projects include $1.48 million in capital improvements programmed for FY 1996-97, including the relocation of the Airport's fuel storage area, a new electrical system and vault, runway and taxiway construction (principally slurry seals), and new hangar facilities. Capital projects proposed for FY 1997-98 through FY 2001-02 total an estimated $13.72 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 and drainage improvements. A helicopter landing pad is also proposed. Detailed information on the proposed Airport Master Plan Project can be found in the Draft Final "Airport Master Plan for Tracy Municipal Airport," dated July 23, 1997. Copies of the report are available for public review in the offices of the Community Development Department, 520 Tracy Boulevard, Tracy, California.

PROBABLE ENVIRONMENTAL EFFECTS: The proposed project may have significant environmental effects in the areas of noise, air and water quality, traffic, plant and animal life, rare and endangered species, compatible land use, and air safety.

PUBLIC SCOPING MEETING: A public meeting to help in identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in the EIR/EA will be held on Thursday, August 28, 1997, at 7:00 p.m., in the Tracy Community Center, Conference Room A, 300 E. 10th Street, Tracy, California.

DATE: July 29, 1997 SIGNATURE: Adam M Contreras

TITLE: SENIOR PLANNER

PHONE NO.: (209) 831-4600

State of California

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH

1400 TENTH STREET

SACRAMENTO 95814

PETE WILSON
GOVERNOR

LEE GRISSOM
DIRECTOR

DATE: July 30, 1997

TO: Reviewing Agencies

RE: TRACY MUNICIPAL AIRPORT MASTER PLAN EIR/EA
SCH# 97072100

Attached for your comment is the Notice of Preparation for the TRACY MUNICIPAL AIRPORT MASTER PLAN EIR/EA draft Environmental Impact Report (EIR).

Responsible agencies must transmit their concerns and comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

ROBERT CONANT
CITY OF TRACY
520 TRACY BLVD.
TRACY, CA 95376

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call Kristen Derscheid at (916) 445-0613.

Sincerely,

ANTERO A. RIVASPLATA
Chief, State Clearinghouse

Attachments

cc: Lead Agency

NO[illegible]istribution List

S = sent by lead agency
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SCH 7/8/97

APPENDIX B

RESPONSES TO NOTICE OF PREPARATION

STATE OF CALIFORNIA–BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
AERONAUTICS PROGRAM M.S. #40
1120 N STREET - ROOM 3300
P.O. BOX 942874
SACRAMENTO, CA 94274-0001
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August 28, 1997

Mr. Robert Conant
City of Tracy
520 Tracy Boulevard
Tracy, CA 95376

Dear Mr. Conant:

The City of Tracy's Notice of Preparation for the Tracy Municipal Airport Master Plan Environmental Impact Report/Environmental Assessment

The California Department of Transportation's Aeronautics Program has reviewed the above-referenced document with respect to CEQA. The following comments are offered for your consideration.

The Notice of Preparation (NOP) is for the Tracy Municipal Airport Master Plan Environmental Impact Report/Environmental Assessment (EIR/EA). The Tracy Municipal Airport Master Plan should provide for the orderly development of new and upgraded aviation facilities to meet anticipated air service needs through the year 2016. Proposed projects in the Master Plan include the relocation of the Airport's fuel storage area, a new electrical system and vault, runway and taxiway construction (principally slurry seals), new hangar facilities, land acquisition, improvements to the Airport water and sewer systems, a pilot's lounge, improvements to the Airport's entrance, an aircraft wash rack with drainage improvements, and a helicopter landing pad.

According to the NOP, the project may have a significant environmental effect in the areas of noise, air and water quality, traffic, plant and animal life, rare and endangered species, compatible land use, and air safety. The environmental issues of particular concern to the Aeronautics Program include airport-related noise and safety impacts and the need to maintain compatible land uses in the vicinity of an airport. We concur with the need to thoroughly address these issues in the EIR/EA. In addition to receiving the Draft, we also request copies of the Final EIR/EA and the Notice of Determination once the EIR/EA has been approved. The proposal should also be submitted to the San Joaquin County Airport Land Use Commission (ALUC) for review.

Thank you for the opportunity to review and comment on this proposal. We look forward to reviewing the Draft EIR/EA. Please call me at 916/654-5314 if you have any questions.

Sincerely,

Sandy Hesnard

SANDY HESNARD
Environmental Planner

cc: Mr. Joe Pelligrino, Tracy Municipal Airport Manager
Ms. Lara Delaney, San Joaquin County ALUC

San Joaquin Valley
Unified Air Pollution Control District

August 28, 1997

SEP - 3 1997

Robert Conant
City of Tracy
Community Development Department
520 Tracy Blvd.
Tracy, CA 95376

SUBJECT: NOTICE OF PREPARATION FOR THE TRACY MUNICIPAL AIRPORT MASTER PLAN EIR/EA

Dear Mr. Conant:

The San Joaquin Valley Unified Air Pollution Control District has reviewed the proposed project and offers the following comments:

The San Joaquin Valley's air quality has been designated nonattainment by the EPA and by the Air Resources Board (ARB) for O_3 (ozone) and PM-10 (fine particulate matter, dust). The Federal Clean Air Act (CAA) and the California Clean Air Act require areas that are designated nonattainment to reduce emissions until standards are met.

The District recommends that the air quality section of the EIR have three main components. **Section one** should provide a description of the regulatory environment and existing air quality conditions impacting the San Joaquin Valley. **Section two** should provide estimates of existing emissions and projected pollutant emissions related to any increases in population, vehicle use, and construction activities along with an analysis of the effects of these increases. **Section three** should identify and discuss all feasible measures which, after implementation, will reduce the air quality impacts generated by this project.

Section 1: ***description of the regulatory environment and existing air quality conditions impacting the San Joaquin Valley.***

The District has several sources of information available to assist with the existing air quality and regulatory environment section of the EIR. The District's ***Air Quality Guidelines for General Plans***, although slightly outdated, contains discussions of the

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(209) 545-7000 • Fax (209) 545-8652

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existing air quality conditions and trends of the San Joaquin Valley Air Basin, including those pollutants of particular concern (ozone, PM-10, and carbon monoxide). In addition, it provides an overview of the regulatory environment governing air quality at the federal, state, and regional levels. The ***PM-10 Attainment Demonstration Plan - May 15, 1997*** contains information and control strategies for PM-10. In addition, the District can provide air monitoring data and other relevant information.

Section 2: ***estimates of existing emissions and projected pollutant emissions related to the increase in population, vehicle use, and construction.***

The growth-inducing and cumulative impacts analyses should take into consideration the existing and planned development both within the project area and in the surrounding areas. The District recommends the use of the URBEMIS 5 modeling program to calculate the pollutant emissions resulting from motor vehicle trips generated by the airport expansion.

Additionally, the EIR should quantify emissions that are individually small but cumulatively significant sources of pollution. This includes, but is not limited to, emissions from natural gas combustion for space and water heating and emissions from gas-powered lawn and garden maintenance equipment. Emission factors for these sources of pollution are available from the South Coast Air Quality Management District **CEQA Air Quality Handbook,** the Sacramento Metropolitan Air Quality Management District, and from this District.

Section 3: ***Mitigation Measures.***

Mitigation measures must be included in the EIR that reduce the emissions of reactive organic gases (ROG), nitrogen oxides, carbon monoxide, and PM-10 to the maximum extent feasible. Site design and building construction measures that would reduce air quality impacts should be included. In addition, Transportation Control Measures (TCM) should be stressed to the maximum extent feasible. SJVUAPCD staff should be consulted for input on appropriate TCMs.

Thank you for the opportunity to comment on this project. If you have any questions, please feel free to contact me at (209)545-7000.

Sincerely,

Tracy Roemer Bettencourt

Tracy Roemer Bettencourt
Environmental Planner
Northern Region

APCD REF # 970321

STATE OF CALIFORNIA - THE RESOURCES AGENCY

PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
REGION 2
1701 NIMBUS ROAD, SUITE A
RANCHO CORDOVA, CALIFORNIA 95670
Telephone (916) 358-2900

September 4, 1997

Mr. Robert Conant
City of Tracy
520 Tracy Boulevard
Tracy, California 95376

Dear Mr. Conant:

The Department of Fish and Game (DFG) has reviewed the Notice of Preparation of a draft Environmental Impact Report (EIR) for the Tracy Municipal Airport Master Plan project (SCH #97072100). The project consists of a plan to upgrade existing and construct new aviation facilities at the existing Tracy Airport located south of Tracy , in San Joaquin County.

Wildlife habitat resources consist of runways and taxiways and their associated grassland open space areas in and around the Airport. Significant resources of the project include California Natural Diversity Data Base records of the San Joaquin kit fox (*Vulpes macrotis mutica*) , burrowing owl (*Athene cunicularia*), and caper-fruited Tropidocarpum (*Tropidocarpum capparideum*) within the project vicinity.

The draft EIR should address and provide mitigation for the following:

1. The project's impact upon fish and wildlife and their habitat.

2. The project's impact upon significant habitat such as wetlands including vernal pools. The project should be designed so that impacts to wetlands are avoided. Mitigation should be provided for unavoidable impacts based upon the concept of no net loss of wetland habitat values or acreage.

3. The project's impact to special status species including State and Federally listed plant and animal species. We are particularly concerned with the project's potential for impacts to the kit fox and the burrowing owl.

4. The project's growth inducing and cumulative impacts upon fish, wildlife, water quality, and vegetative resources.

The EIR should contain an evaluation of the proposed project's consistency with San Joaquin County's draft Kit Fox Habitat Conservation Plan. Additionally, the draft EIR should provide an analysis of specific alternatives which reduce impacts to fish, wildlife, water quality, and vegetative resources

This project will have an impact to fish and/or wildlife habitat. Assessment of fees under Public Resources Code Section 21089 and as defined by Fish and Game Code Section 711.4 is necessary. Fees are payable by the project applicant upon filing of the Notice of Determination by the lead agency.

Pursuant to Public Resources Code Sections 21092 and 21092.2, the DFG requests written notification of proposed actions and pending decisions regarding this project. Written notifications should be directed to this office.

Thank you for the opportunity to review this project. If the DFG can be of further assistance, please contact Mr. Dan Gifford, Associate Wildlife Biologist, at telephone (209) 369-8851 or, Ms. Edna Maita, Environmental Specialist III, at telephone (916) 358-2921.

Sincerely,

David S. Zezulak
Environmental Specialist IV, Supervisor

cc: Mr. Dan Gifford
Ms. Edna Maita
Department of Fish and Game
Rancho Cordova, California

Ms. Sheila Larsen
U.S. Fish and Wildlife Service
3310 El Camino Avenue, Suite 130
Sacramento, CA 95821-6340

APPENDIX C

GLOSSARY OF TERMS
USED IN AIRPORT PLANNING

APPENDIX C

GLOSSARY OF TERMS USED IN AIRPORT PLANNING

PREPARED FOR

CITY OF TRACY
AND
FEDERAL AVIATION ADMINISTRATION

TRACY MUNICIPAL AIRPORT MASTER PLAN
ENVIRONMENTAL ASSESSMENT / IMPACT REPORT

AUGUST 4, 1998

PREPARED BY

P&D CONSULTANTS, INC.
1000 BROADWAY, SUITE 390
OAKLAND, CALIFORNIA 94607
(510) 839-7337

PREFACE

Many technical terms and expressions are used in airport planning and environmental studies. This glossary has been prepared for those persons who are or will be involved in reviewing the environmental impact report/environmental assessment for the Tracy Airport Master Plan. The definitions were compiled from various sources including government publications such as Federal Aviation Administration (FAA) Advisory Circulars, FAA Orders and the professional literature.

GLOSSARY OF TERMS

A-WEIGHTED SOUND LEVEL (dBA) - The human ear does not respond equally to all sound frequencies. It is less efficient at low and high frequencies than it is at medium or speech-range frequencies. Thus, to obtain a single number representing the sound level of a noise having a wide range of frequencies in a manner representative of the ear's response, it is necessary to reduce the effects of the low and high frequencies with respect to the medium frequencies. The resultant sound level is said to be A-weighted, and the units are decibels (dB); hence, the abbreviation is dBA. The A-weighted sound level is also called the noise level. Sound level meters have an A-weighting network for measuring A-weighted sound level.

ABOVE GROUND LEVEL (AGL) - An elevation datum given in feet above ground level.

ABSORPTION - Absorption is a property of materials that reduces the amount of sound energy reflected. Thus, the introduction of an "absorbent" into the surfaces of a room will reduce the sound pressure level in that room because sound energy striking the room surfaces will not be totally reflected. The process of absorption is entirely different from that of transmission loss through a material, which determines how much sound enters a room via the walls, ceiling, and floor. The effect of absorption merely reduces the resultant sound level in the room produced by energy that has already entered the room.

AC - See **ADVISORY CIRCULAR**.

ACOUSTICS - (1) The science of sound, including the generation, transmission, and effects of sound waves both audible and inaudible; (2) The physical qualities of a room or other enclosure (such as size, shape, amount of noise) that determine the audibility and perception of speech and music.

ADT - See **AVERAGE DAILY TRAFFIC**.

ADVISORY CIRCULAR (AC) - A series of external FAA publications consisting of all non-regulatory material of a policy, guidance, and informational nature.

AFFECTED LOCAL GOVERNMENT AGENCIES - The local government agencies which have the authority to control land uses in areas that are adversely affected by aviation activities.

AGL - See **ABOVE GROUND LEVEL**.

AIP PROGRAM - See **AIRPORT IMPROVEMENT PROGRAM**.

AIR CARRIER - A legal entity who undertakes directly by lease or other arrangements, to engage in air transportation.

AIR CARRIER, CERTIFICATED ROUTE - An air carrier holding a Certificate of Public Convenience and Necessity, issued by the U.S. Department of Transportation under Part 121 of the Federal Aviation Regulations (FAR), to conduct scheduled services over specified routes and a limited amount of nonscheduled operations.

AIR CARRIER, COMMUTER - An air taxi operator who, under FAR Part 135, (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a contract with the U.S. Postal Service.

AIRCRAFT ACCIDENT - An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, and in which any person suffers death or serious injury as a result of being in or upon the aircraft or by direct contact with the aircraft or anything attached thereto, or in which the aircraft receives substantial damage.

AIRCRAFT PARKING LINE LIMIT (APL) - A line established by the airport authorities beyond which no part of a parked aircraft should protrude.

AIRFIELD CAPACITY (HOURLY) - The maximum number of aircraft operations (landings or takeoffs) that can take place on an airfield in one hour under specific conditions.

AIRPORT - An area of land or water that is used or intended to be used for the landing and taking off of aircraft, and includes its buildings and facilities, if any.

AIRPORT ELEVATION - The highest point of an airport's usable runways, measured in feet above mean sea level.

AIRPORT ENVIRONS - The area surrounding an airport that is considered to be directly affected by the presence and operation of that airport.

AIRPORT HAZARD - Any structure or natural object located on or in the vicinity of a public airport, or any use of land near such airport, that obstructs the airspace required for the flight of aircraft landing, taking off, or taxiing at the airport.

AIRPORT IMPROVEMENT PROGRAM (AIP) - The AIP program is administered to provide financial grants-in-aid for airport development projects such as runways, taxiways, aircraft parking aprons, terminal buildings and land acquisition associated with airport development including runway protection zones and approach protection.

AIRPORT LAND USE COMMISSION (ALUC) - In California, a state-authorized body existing in each county having the responsibility to develop plans for achieving land use compatibility between airports and their environs.

AIRPORT LAND USE PLAN (ALUP) - In California, the formal plan, developed and adopted by an ALUC, setting forth criteria, policies and specifications for the preservation of long-term, land use compatibility between an airport and its environs.

AIRPORT LAYOUT PLAN - A plan (drawings) for an airport showing boundaries and proposed additions to all areas owned or controlled by the sponsor for airport purposes, the location and nature of existing and proposed airport facilities and structures, and the location on the airport of existing and proposed non-aviation areas and improvements thereon.

AIRPORT MASTER PLAN - An assembly of appropriate documents and drawings covering the development of a specific airport from a physical, economic, social, and political jurisdictional perspective. The Airport Layout Plan is a part of this plan.

AIRPORT NOISE COMPATIBILITY PLANNING STUDY - A study designed to increase the compatibility of land and facilities in the areas surrounding an airport that are most directly affected by the operation of the airport. The specific purpose is to reduce the adverse effects of noise as much as possible by implementing both on-airport noise control measures and off-airport land use control programs. The basic products of an Airport Noise Compatibility Planning Study typically include:

(1) workable on-airport noise abatement actions such as preferential runway use programs, new or preferential flight tracks, curfews, etc.;
(2) off-airport land use control programs and regulations such as land acquisition, soundproofing, or special actions and programs; and
(3) policies and procedures related to the implementation of on-airport and off-airport programs.

A community involvement program is usually carried on throughout all phases of the study. Conduct of such studies are eligible for federal funding participation. (Also see FAR Part 150.)

AIRPORT PROPRIETOR - Owner of an airport or other party having authority to control airport operations. In California, the holder of an airport permit issued by the Department of Transportation, Division of Aeronautics pursuant to Article 3, Chapter 4, Part 1, Division 9, Public Utilities Code.

AIRPORT RADAR SERVICE AREA (ARSA) - Regulatory airspace surrounding designated airports wherein FAA Air Traffic Control provides radar vectoring and sequencing on a full-time basis for all IFR and VFR aircraft. As of September 1993, the term ARSA has been replaced by the term Class C Airspace.

AIRPORT REFERENCE POINT - A point established on an airport, having an equal relationship to all existing and proposed landing and takeoff areas, and used to geographically locate the airport for other planning purposes.

AIRPORT SPONSOR - A public agency or tax-supported organization, such as an airport authority, that is authorized to own and operate an airport, to obtain property interests, to obtain funds, and to be legally, financially, and otherwise able to meet all applicable requirements of the current laws and regulations.

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

AIRPORT TRAFFIC AREA - Unless otherwise specifically designated in FAR Part 93, that airspace within a horizontal radius of 5 statute miles from the geographical center of any airport at which a control tower is operating, extending from the surface up to, but not including, an altitude of 3,000 feet above the elevation of an airport. Unless otherwise authorized by ATC, no person may operate an aircraft within an airport traffic area except for the purpose of landing at

or taking off from an airport within that area. ATC authorizations may be given as individual approval of specific operations or may be contained in written agreements between airport users and the tower concerned.

AIRPORT TRAFFIC CONTROL TOWER (ATCT) - A terminal facility that uses air-to-ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area.

AIR ROUTE SURVEILLANCE RADAR (ARSR) - Air route traffic control center (ARTCC) radar used primarily to detect an aircraft's position which en route between terminal areas, enabling controllers to provide radar air traffic control service when aircraft are within the ARSR coverage.

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

AIR TAXI - Operations performed by operators of aircraft holding an air taxi certificate under Part 135 of the Federal Aviation Regulations. This category includes commuter airline operations (excluding certificated commuter airlines), mail carriers under contract with the U.S. Postal Service, and operators of nonscheduled air taxi services. Typically, air taxis do not utilize aircraft with a payload capacity over 7,500 pounds or capable of carrying more than 30 passengers.

AIR TRAFFIC - Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

AIR TRAFFIC CLEARANCE/ATC CLEARANCE - An authorization by air traffic control, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace.

AIR TRAFFIC CONTROL (ATC) - A service operated by appropriate authority (the FAA) to promote the safe, orderly, and expeditious flow of air traffic.

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

ALERT AREA - A special use airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither or which is hazardous to aircraft.

ALTITUDE - The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL).

ALUC - See **AIRPORT LAND USE COMMISSION**.

ALUP - See **AIRPORT LAND USE PLAN**.

AMBIENT NOISE - The total of all noise in a system or situation, independent of the presence of the specific sound to be measured. In acoustical measurements, strictly speaking, ambient

noise means electrical noise in the measurement system. However, in popular usage ambient noise means is also used with the same meaning as "background noise" or "residual noise."

APPROACH CLEARANCE - Authorization by ATC for a pilot to conduct an instrument approach at an airport with appropriate facilities.

APPROACH LIGHT SYSTEM (ALS) - An airport lighting system which provides visual guidance enabling a pilot to align the aircraft with the extended runway centerline during final approach to landing.

APPROACH SPEED - The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration.

APRON/RAMP - A defined area on an airport or heliport intended to accommodate aircraft for purposes of loading passengers or cargo, refueling, parking, or maintenance.

ARSR - See **AIR ROUTE SURVEILLANCE RADAR.**

ARTCC - See **AIR ROUTE TRAFFIC CONTROL CENTER.**

ASNA - See **AVIATION SAFETY AND NOISE ABATEMENT ACT OF 1979.**

ASR - See **AIRPORT SURVEILLANCE RADAR.**

ATC - See **AIR TRAFFIC CONTROL.**

ATIS - See **AUTOMATIC TERMINAL INFORMATION SERVICE.**

AUTOMATED WEATHER OBSERVING SYSTEM (AWOS) - Airport electronic equipment which automatically measures meteorological parameters, reduces and analyzes the data via computer, and broadcasts weather information which can be received on aircraft radios.

AUTOMATIC TERMINAL INFORMATION SERVICE (ATIS) - The continuous broadcast of recorded non-control information in selected terminal areas.

AVERAGE DAILY TRAFFIC (ADT) - An expression of traffic volume, ADT means the average number of vehicles per day that pass over a given point.

AVIATION SAFETY AND NOISE ABATEMENT ACT OF 1979 (ASNA) - Public Law 96-193, enacted February 18, 1980. The purpose of the Act is to provide assistance to airports in preparing and carrying out noise compatibility programs and in assuring continued safety for aviation. The Act also contains provisions that extend, until January 1, 1988, the requirement for certain types of aircraft to comply with Part 36 of the Federal Aviation Regulations (see also FAR Part 36 and FAR Part 150). Funding for the noise studies has been appropriated by the U.S. Congress and has commenced in 1983. Funding for program implementation, including acquisition and soundproofing of affected residences, has been approved by FAA and is being implemented at several U.S. airports.

AVIGATION EASEMENT - A type of land acquisition that involves less-than-fee purchase (see also LESS-THAN-FEE ACQUISITION). One form of avigation easement grants an airport the right to perform aircraft operations over the designated property, including operations that might cause noise, vibration, and other effects. A stronger form of easement is a deed restriction that may include (1) the right to perform aircraft operations of the property, and (2) public acquisition of a landowner's rights restricting future development of the property for any use more intensive than that existing at the time of the transaction. This easement may also include specific prohibitions on the uses for which the property may be developed. Maximum heights of structures and other objects may also be specified.

AZIMUTH - Horizontal direction or bearing; usually measured from the reference point of 0 degrees clockwise through 360 degrees.

BACKCOURSE APPROACH - A non-precision instrument approach utilizing the rearward projection of the ILS localizer beam.

BACKGROUND NOISE - See **AMBIENT NOISE**.

BAFFLE - A baffle is a shielding structure or series of partitions used to increase the effective length of the external transmission path between two points in an acoustic system. For example, baffles may be used in sound traps (as in air conditioning ducts) or in automotive mufflers to decrease the sound transmitted while affording a path for air flow.

BASED AIRCRAFT - Aircraft stationed at an airport on a long-term basis.

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

BLAST PAD - A paved area, of runway width, extending beyond the runway takeoff threshold for a sufficient distance (typically 150 to 300 feet) to prevent soil erosion caused by jet engine backblast.

BUILDING CODE - A legal document that sets forth requirements to protect the public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures. The code establishes the minimum acceptable conditions for matters found to be in need of regulation. Topics generally covered are exits, fire protection, structural design, sanitary facilities, light, and ventilation. Sound insulation may also be included.

BUILDING RESTRICTION LINE (BRL) - A line established with respect to the runway centerline to assure that structures will not project above the imaginary surfaces required by Federal Aviation Regulations, Part 77, *"Obstruction Clearance Criteria,"* (FAR Part 77).

CBD - Central Business District.

CEILING - Height above the earth's surface to the lowest layer of clouds or obscuring phenomena.

CEQ - See **COUNCIL ON ENVIRONMENTAL QUALITY**.

CEQ 1500 - Regulations of the Federal Council on Environmental Quality (CEQ) for implementing the procedural provisions of the National Environmental Policy Act (NEPA).

CERTIFICATED ROUTE AIR CARRIER - See **AIR CARRIER, CERTIFICATED ROUTE.**

CIRCLING APPROACH/CIRCLE-TO-LAND MANEUVER - A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or not desirable.

CLEAR ZONE - See **RUNWAY PROTECTION ZONE.**

CLEARWAY - For turbine engine powered airplanes certificated after August 29, 1959, an area beyond the runway, not less than 500 feet wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of clearway plane, extending from the end of the runway with an upward slope not exceeding 1.25 percent, above which no object nor any terrain protrudes. However, threshold lights may protrude above the plane if their height above the end of the runway is 26 inches or less and if they are located to each side of the runway.

CNEL - See **COMMUNITY NOISE EQUIVALENT LEVEL.**

COMPASS LOCATOR - A low power, low or medium frequency radio beacon installed at the site of the outer or middle marker of an instrument landing system (ILS).

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL) - A method of predicting, by a single number rating, cumulative aircraft noise that affects communities in airport environs. As defined in the California Airport Noise Standards, CNEL represents the average daytime noise level during a 24-hour day, adjusted to an equivalent level to account for the lower tolerance of people to noise during evening and nighttime periods relative to the daytime period. Weighting factors equivalent to penalties of about five decibels and ten decibels are applied to operations conducted from 7:00 pm to 10:00 pm and from 10:00 pm to 7:00 am, respectively, to account for increased sensitivity during those periods.

COMMUTER AIR CARRIER - See **AIR CARRIER, COMMUTER.**

COMPREHENSIVE LAND USE PLAN (CLUP) - See **ALUP.**

COMPUTER MODELING - An analytical process which employs an electronic digital computer to perform difficult, laborious calculations involving mathematical functions or formulas. Computation of cumulative noise exposure (Ldn or CNEL) contours requires the use of computer modeling in order to process enormous quantities of data concerning aircraft traffic, performance and operating procedures.

CONTROLLED AIRSPACE - Any of several types of airspace within which some or all aircraft may be subject to air traffic control.

COUNCIL ON ENVIRONMENTAL QUALITY (CEQ) - Established by the National Environmental Policy Act (NEPA) of 1969, the Council is composed of three members

appointed by the President. A major purpose of the Council is to formulate and recommend national policies to promote the improvement of environmental quality.

DATA BASE - A computer file (or set of files) containing a field of related numerical information (data) for use in automated analysis or processing. A computerized "land use data base" is a computer file containing the coordinates, dimensions and areas of all individual land use polygons which comprise the pattern of land use within a specific geographic area.

DAY-NIGHT AVERAGE SOUND LEVEL (Ldn) - A method for predicting, by a single number rating, cumulative aircraft noise that affects communities in airport environs. The Ldn value represents decibels of noise as measured by an A-weighted sound-level meter (see also). In the Ldn procedure, the noise exposure from each aircraft takeoff or landing at ground level around an airport is calculated, and these noise exposures are accumulated for a typical 24-hour period. (The 24-hour period often used is the average day of the year being analyzed.) Daytime and nighttime noise exposures are considered separately. A weighting factor equivalent to a penalty of 10 decibels is applied to operations between 10:00 pm and 7:00 am to account for the increased sensitivity of people to nighttime noise. The Ldn values can be expressed graphically on maps using contours of equal noise exposure. Ldn may also be used for measuring other noise sources, such as automobile traffic, to determine combined noise effects.

dB - See **DECIBEL**.

DEREGULATION ACT - Airline regulatory reform act of 1978. Designed, among other things, to encourage competition among domestic air carriers, the Act allows an air carrier greater freedom to enter and leave any given market.

DEVELOPMENT RIGHTS - Rights of landowners to develop a parcel of land according to the zoning of that parcel. Land is often assessed on a combination of its "resource" value and its "commodity" value. The resource value is the value of the property in its natural state; the commodity value is an artificial value placed on it by the marketplace - that is, its value for development purposes. In less-than-fee acquisition (see also), the airport sponsor purchases only the development rights; the ownership of the land remains unchanged.

DIGITIZE - A mechanical-electronic process whereby the locations, sizes and identities of individual polygons, noise contours or other physical features are translated into a set of numerical data within a computer data file or data base for subsequent automated analysis, sorting or manipulation.

DISPLACED THRESHOLD - A runway landing threshold that is located at a point other than the designated beginning of the runway (where departures would begin).

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

DME - See **DISTANCE MEASURING EQUIPMENT**.

DOWNWIND LEG - A flight path parallel to the landing runway in the direction opposite the landing direction.

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

EA - See **ENVIRONMENTAL ASSESSMENT**.

EFFECTS - See **IMPACT**.

ENGINE RUN-UP AREA - An area on an airport where aircraft engines are serviced or tested. The noise from such servicing or testing can affect neighborhoods adjacent to the airport.

ENVIRONMENTAL ASSESSMENT (EA) - An assessment of the environmental effects of a proposed action for which federal financial assistance is being requested or for which federal authorization is required. The EA serves as the basis for the FAA's Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI), as specified in FAA Orders 1050.1D and 5050.4.

ENVIRONMENTAL IMPACT STATEMENT (EIS) - A document prepared under the requirements of the National Environmental Policy Act of 1969 (NEPA), Section 102(2)(c). The EIS represents a federal agency's evaluation of the effect of a proposed action on the environment. New regulations relating to the preparation of an EIS are published in FAA Orders 1050.1D and 5050.4.

ENPLANED/DEPLANED PASSENGERS - The volume of passengers outbound from an airport (enplaned) or inbound to an airport (deplaned). The annual passenger volume of an airport is the total of enplaned and deplaned passengers.

EPA - The U.S. Environmental Protection Agency.

FAA - See **FEDERAL AVIATION ADMINISTRATION**.

FAA NOISE POLICY - The Aviation Noise Abatement Policy of the Department of Transportation, Federal Aviation Administration issued on November 18, 1976. The policy outlines the responsibilities and actions that may be taken to reduce adverse effects of aviation-related noise.

FAA ORDER - An internal FAA directive which sets standards, procedures and guidelines for FAA execution of its various regulatory and grant administration mandates.

FAA ORDER 1050.1D - An order published by the FAA, dated December 21, 1983, entitled *"Policies and Procedures for Considering Environmental Impacts."* This order was prepared in response to the CEQ 1500 Regulations.

FAA ORDER 5050.4A - This document, entitled *"Airport Environmental Handbook,"* was revised by the FAA on October 8, 1985. It contains all of the essential information an airport sponsor needs to meet both procedural and substantive environmental requirements, including relevant text from Order 1050.1D.

FAR PART 36 - Federal Aviation Regulations, Part 36. Establishes noise standards for the civil aviation fleet. Some extensions for compliance are included in the Aviation Safety and Noise Abatement Act of 1979 (see also).

FAR PART 77 - Federal Aviation Regulations, Part 77. Establishes standards for identifying obstructions to aircraft in navigable airspace.

FAR PART 77 SURFACES - Imaginary surfaces established with relation to each runway of an airport. There are five types of surfaces: (1) primary, (2) approach, (3) transitional, (4) horizontal, and (5) conical.

FAR PARTS 121 AND 135 - The parts of Federal Aviation Regulations that deal with certification and operational requirements for commercial operators of large aircraft and air taxis, respectively.

FAR PART 150 - Federal Aviation Regulations, Part 150. Effective February 28, 1982, FAR Part 150 is the regulation which implements the noise compatibility standards and provisions contained in the Aviation Safety and Noise Abatement Act of 1979 (ASNA). FAR Part 150 prescribes procedures for airport sponsors who wish to develop Noise Exposure Maps and Airport Noise Compatibility Plans to identify and mitigate airport - land use compatibility problems. FAR Part 150 was published in the Federal Register in amended form September 14, 1993.

FEDERAL AVIATION ADMINISTRATION - The FAA is the agency of the U.S. Department of Transportation that is charged with (1) regulating air commerce to promote its safety and development; (2) achieving the efficient use of navigable airspace of the United States; (3) promoting, encouraging, and developing civil aviation; (4) developing and operating a common system of air traffic control and air navigation for both civilian and military aircraft; and (5) promoting the development of a national system of airports.

FEE-SIMPLE LAND ACQUISITION (PURCHASE) - The full purchase by the airport sponsor of land and improvements. The land is usually maintained for airport purposes or leased for uses that are compatible with airport operations. Alternatively, the airport sponsor can resell the land with an avigation easement (see also) and deed restrictions that specify the compatible land uses that are permitted. The resale option has the benefit that the land is returned to the tax rolls.

FINDING OF NO SIGNIFICANT IMPACT (FONSI) - An administrative determination by the FAA that a proposed action by the airport sponsor will have no significant impact (on the environment). Specific guidelines for the preparation of a FONSI report (see EA) are included in FAA Orders 1050.1D and 5050.4A.

FIXED BASE OPERATOR (FBO) - A business operating at an airport that provides aircraft services to the general pubic, including but not limited to sale of fuel and oil; aircraft sales, rental, maintenance and repair; parking and tie down or storage of aircraft; flight instruction; air taxi/charter operations; and specialty services, such as instrument and avionics maintenance, painting, overhaul, aerial application, aerial photography, aerial hoists or pipeline patrol.

FLIGHT SERVICE STATION - **FAA** facilities which provide pilot briefings on weather, airports, altitudes, routes, and other flight planning information.

FONSI - See **FINDING OF NO SIGNIFICANT IMPACT**.

GENERAL AVIATION - Operations performed by all civil aircraft not classified as air carrier or air taxi aircraft.

GENERAL AVIATION (GA) - All civil aviation except that classified as air carrier or air taxi. The types of aircraft typically used in general aviation activities vary from multi-engine jet aircraft to single-engine piston aircraft.

GLIDE SLOPE - An electronic signal radiated by a component of an ILS to provide descent path guidance to approaching aircraft.

GLOBAL POSITIONING SATELLITE SYSTEM (GPS) - A navigational system utilizing satellites to provide nonprecision guidance in azimuth, elevation, and distance measurement.

HELICOPTER - Rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.

HELIPAD - A small, designated area, usually with a prepared surface, on a heliport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters.

HUD - The U.S. Department of Housing and Urban Development.

IFR - See **INSTRUMENT FLIGHT RULES**.

IFR CONDITIONS - Weather conditions that require aircraft to be operated in accordance with instrument flight rules.

IFR MINIMUMS AND DEPARTURE PROCEDURES (FAR PART 91) - Prescribed takeoff rules. For some airports, obstructions or other factors require the establishment of nonstandard takeoff minimums or departure procedures, or both. Both may be required to assist pilots in avoiding obstacles during climb to the minimum en-route altitude.

ILS - See **INSTRUMENT LANDING SYSTEM**.

IMPACT - In environmental and noise control studies, the word "impact" is used to express the extent or severity of an environmental problem, e.g., the number of persons exposed to a given noise environment. As indicted in CEQ 1500 (Section 1508.8), impacts and effects are considered to be synonymous. Effects or impacts may be ecological, aesthetic, historic, cultural, economic, social, or health related, and they may be direct, indirect, or cumulative.

IMPACT INSULATION CLASS (IIC) - A single-figure rating that is intended to permit comparisons of the sound-insulating merits of floor-ceiling assemblies in terms of a reference contour.

INCOMPATIBLE LAND USE - Residential, public, recreational and certain other noise-sensitive land uses which are designated as unacceptable within specific ranges of cumulative (Ldn) noise exposure as set forth in Table 2 of Appendix A of FAR Part 150.

INSTRUMENT APPROACH PROCEDURE - A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority.

INSTRUMENT FLIGHT RULES (IFR) - Rules specified by the FAA for flight under weather conditions in which visual reference cannot be made to the ground and the pilot must rely on instruments to fly and navigate.

INSTRUMENT LANDING SYSTEM (ILS) - An electronic system which provides the aircraft with lateral, longitudinal and vertical guidance necessary for an instrument landing.

INSTRUMENT OPERATION - An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal control facility.

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

ITINERANT OPERATION - An arrival or departure performed by an aircraft from or to a point beyond the local airport area.

LAND USE COMPATIBILITY - The compatibility of land uses surrounding an airport with airport activities and particularly with the noise from aircraft operations.

LAND USE COMPATIBILITY ASSURANCE - Documentation provided by an airport sponsor to the FAA. The documentation is related to an application for an airport development grant. Its purpose is to assure that a reasonably appropriate action, including the adoption of zoning laws, has been taken or will be taken to restrict the use of land adjacent to the airport or in the immediate vicinity of the airport. Such uses are limited to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft. This assurance is required of airport sponsors by Section 511 (a) (5) of the Airport and Airway Improvement Act of 1981. (Also see AIP Program.)

LAND USE CONTROLS - Controls established by local or state governments to carry out land use planning. The controls include zoning, subdivision regulations, land acquisition (in fee simple, lease-back, or easements), building codes, building permits, and capital improvement programs (or provide sewer, water, utilities, or other service facilities).

LAND USE PLANNING - Comprehensive planning carried out by units of local government, for all areas under their jurisdiction, to identify the optimum uses of land and to serve as a basis for the adoption of zoning or other land use controls.

LARGE AIRCRAFT - An aircraft of more than 12,500 pounds maximum certificated takeoff weight.

Ldn - See **DAY-NIGHT AVERAGE SOUND LEVEL.**

LEAD AGENCY - In California, the public agency which has the principal responsibility for carrying-out or approving a project. The Lead Agency will decide whether an EIR or Negative Declaration will be required for the project and will cause the document to be prepared. Criteria for determining which agency will be the Lead Agency for a project are contained in Section 15051 of the CEQA guidelines.

LESS-THAN-FEE ACQUISITION (PURCHASE) - The purchase of development rights (see also) from landowners by airport sponsors in areas that should remain at very low densities or in open space uses. The airport sponsor negotiates with the landowner to determine the fair market value of the unused development rights. Once sold, the land cannot be developed except in specified ways. (See also **FEE-SIMPLE m LAND ACQUISITION.**)

LOC - See **LOCALIZER.**

LOCAL AGENCY - In California, any public agency other than a state agency, board, or commission. "Local Agency" includes but is not limited to cities, counties, charter cities and counties, districts, school districts, special districts, redevelopment agencies, local agency formation commissions, and any board, commission, or organizational subdivision of a local agency when so designated by order or resolution of the governing legislative body of the local agency.

LOCAL OPERATION - An aircraft operation which remains no more than 25 nautical miles from the departure point, or which terminates at the point of departure, or which does not include a stop of a greater duration than 15 minutes. Touch-and-go operations are local operations.

LOCALIZER (LOC) - The component of an ILS which provides horizontal course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA) - A NAVAID used for non-precision instrument approaches with utility and accuracy comparable to a localizer, but which is not part of a complete ILS and is not aligned with the runway.

LOUDNESS - The judgment of the intensity of a sound by a person. Loudness depends primarily on the sound pressure of the stimulus. Over much of the loudness range it takes about a tenfold increase in sound pressure (approximately 10 decibels) to produce a doubling of loudness.

MAJOR AIRPORT DEVELOPMENT - Airport development of such a scale as to require shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity.

MARKER BEACON - The component of an ILS which informs pilots that they are at a significant point on the approach course.

MASKING - The action of making one sound (audible when heard alone) inaudible or unintelligible by the introduction of another sound. The masking is most marked when the masked sound is of higher frequency than the masking sound.

MEAN SEA LEVEL (MSL) - An elevation datum given in feet above mean sea level.

MICROWAVE LANDING SYSTEM (MLS) - An advanced electronic system of ground-based devices and aircraft avionics which provides the aircraft with lateral, longitudinal and vertical guidance necessary for an instrument landing. In the U.S., MLS technology has been supplanted by GPS (which see).

MILITARY - Operations performed by military groups, such as the Air National Guard, the U.S. Air Force, U.S. Army, U.S. Marine Corps, or the U.S. Navy.

MILITARY OPERATIONS AREA (MOA) - A type of special use airspace established to separate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted.

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

MISSED APPROACH - A maneuver conducted by a pilot when an instrument approach to a landing cannot be completed.

MITIGATION MEASURE - An action that can be planned or taken to alleviate (mitigate) an adverse environmental impact. As set forth in CEQ 1500 (Section 1508.20), "mitigation" includes:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.
(b) Minimizing the impact by limiting the degree or magnitude of the action and its implementation.
(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
(e) Compensating for the impact by replacing or providing substitute resources or environments.

A proposed airport development project, or alternatives to that project, may constitute a mitigation measure as defined by the CEQ.

MLS - See **MICROWAVE LANDING SYSTEM**.

NATIONAL AIRSPACE SYSTEM/NAS - The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information

and services; rules, regulations and procedures, technical information, and manpower and material. Included are system components shared jointly with the military.

NAVAID - See **NAVIGATIONAL AID**.

NAVIGATIONAL AID (NAVAID) - Any visual or electronic device (airborne or on the ground) that provides point-to-point guidance information or position data to pilots of aircraft in flight.

NEPA - National Environmental Policy Act of 1969 (PL 91-190).

NOISE - Any sound that is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying.

NOISE ABATEMENT PROCEDURES - Changes in operational procedures affecting runway use, in flight approach and departure routes and procedures, and in other air traffic procedures that are made to shift adverse aviation effects away from noise-sensitive areas (such as residential neighborhoods).

NOISE ATTENUATION OF BUILDINGS - The use of building materials to reduce noise through absorption, transmission loss, and reflection of sound energy.

NOISE COMPLAINT - A recorded complaint concerning aircraft noise made by an individual and kept on file at an airport.

NOISE CONTOURS - Lines drawn on a map that connect points of equal noise exposure (Ldn or CNEL) values. They are usually drawn in 5-dB intervals, such as Ldn 75 dB values, Ldn 70 dB values, Ldn 65 dB values, and so forth.

NOISE CONTROL PLANS - Documentation by the airport sponsor of actions to be taken by the sponsor to reduce the effect of aviation noise. These actions are to be taken by the sponsor either alone or in cooperation with the FAA, airport users, and affected units of local government, with appropriate comments from affected citizens. Alternative actions should be considered, particularly where proprietary use restrictions (see also) on aircraft operations are involved).

NOISE LEVEL REDUCTION (NLR) - The noise reduction between indoor and outdoor environments of two rooms is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of "noise level reduction" combines the effect of the transmission loss performance of the structure plus the effect of acoustic absorption present in the receiving room.

NOISE-SENSITIVE LAND USE - Land uses that can be adversely affected by high levels of aircraft noise. Residences, schools, hospitals, religious facilities, libraries, and other similar uses are often considered to be sensitive to noise.

NONCOMPATIBLE LAND USE - See **INCOMPATIBLE LAND USE**.

NONDIRECTIONAL BEACON (NDB) - A radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his bearing to or from the radio beacon and "home" on or track to or from the station.

NONPRECISION APPROACH PROCEDURE - A standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, GPS, or LOC (which see).

NONPRECISION INSTRUMENT RUNWAY - A runway with an instrument approach procedure utilizing air navigation facilities, with only horizontal guidance, or area-type navigation equipment for which a straight-in non-precision instrument approach procedure has been approved or planned, and no precision approach facility or procedure is planned.

OBSTACLE - An existing object, object of natural growth, or terrain, at a fixed geographical location, or which may be expected at a fixed location within a prescribed area, with reference to which vertical clearance is or must be provided during flight operation.

OBSTACLE FREE ZONE (OFZ) - A volume of space above and adjacent to a runway and its approach lighting system if one exists, free of all fixed objects except FAA-approved frangible aeronautical equipment and clear of vehicles and aircraft in the proximity of an airplane conducting an approach, missed approach, landing, takeoff, or departure.

OBSTRUCTION - An object that exceeds a limiting height or penetrates an imaginary surface described by current Federal Aviation Regulations (Part 77).

OPERATION - A take-off or a landing.

ORDER - See **FAA ORDER**.

OUTER MARKER - A marker beacon at or near the glide slope intercept position of an ILS approach.

POLYGON - An irregular geometric figure, encoded into a computer data base, coincident with the physical conterminous boundaries of a single land use category. Individual polygons are encoded into a computer data base using a process termed "digitizing."

PRECISION APPROACH PATH INDICATOR (PAPI) - An airport landing aid similar to a VASI, but which has light units installed in a single row rather than two rows.

PRECISION INSTRUMENT PROCEDURE - A standard instrument procedure for an aircraft to approach an airport in which an electronic glide slope is provided, e.g., an instrument landing system (ILS) or military precision approach radar.

PRECISION INSTRUMENT RUNWAY - A runway with an instrument approach procedure utilizing an instrument landing system (ILS), microwave landing system (MLS), precision approach radar (PAR), or GPS.

PREFERENTIAL RUNWAY USE (PROGRAM) - A noise abatement action whereby the FAA Air Traffic Division, in conjunction with the FAA Airports Division, assists the airport sponsor in

developing a program that gives preference to the use of a specific runway(s) to reduce overflight of noise-sensitive areas.

PROPRIETARY USE RESTRICTIONS - Restrictions by an airport sponsor on the number, type, class, manner, or time of aircraft operations at the airport The imposition of a curfew is an example of a proprietary use restriction.

PUBLIC AGENCY - In California, includes any state agency, board, or commission and any local or regional agency, as defined in the CEQA guidelines. It does not include the courts of the state. The term does not include agencies of the federal government.

RADAR APPROACH CONTROL FACILITY - A terminal ATC facility that uses radar and non-radar capabilities to provide approach control services to aircraft arriving, departing, or transiting airspace controlled by the facility. Provides radar ATC services to aircraft operating in the vicinity of one or more civil and/or military airports in a terminal area. Specific facility nomenclatures are used for administrative purposes only and are related to the physical location of the facility and the operating service generally as follows:

- Army Radar Approach Control/ARAC (Army),
- Radar Air Traffic Control Facility/RATCF (Navy/FAA),
- Radar Approach Control/RAPCON (Air Force/FAA),
- Terminal Radar Approach Control/TRACON (FAA),
- Tower/Airport Traffic Control Tower/ATCT (FAA) [only those towers delegated approach control authority].

RELIEVER AIRPORT - An airport serving general aviation aircraft that might otherwise use a congested air carrier airport.

RESPONSIBLE AGENCY - In California, a public agency which proposed to carry out or approve a project, for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration. For purposes of CEQA, the term "Responsible Agency" includes all public agencies other than the Lead Agency which have discretionary approval power over the project.

RESTRICTED AREA - Designated airspace within which the flight of aircraft, while not wholly prohibited, is subject to restriction.

RETROFIT - The retroactive modification of existing jet aircraft engines for noise abatement purposes.

RUNWAY PROTECTION ZONE - A trapezoidal area at ground level whose perimeter conforms to the projection on the ground of the innermost portion of the Approach Surface as defined in FAR Part 77. The runway protection zone is centered o the extended runway centerline and begins at the end of the FAR Part 77 Primary Surface, terminating below the line where the Approach Surface reaches a height of 50 feet above the elevation of the runway end. FAA regulations require that runway protection zones be kept free of obstructions and any uses which cause an assemblage of persons.

RUNWAY EDGE LIGHTS - Lights used to define the lateral limits of a runway.

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

RUNWAY SAFETY AREA - A cleared, drained, graded, and preferably turfed area symmetrically located about the runway which, under normal conditions, is capable of supporting snow removal, fire fighting, and rescue equipment and of accommodating the occasional passage of aircraft without causing major damage to the aircraft.

RUNWAY THRESHOLD - The beginning of that portion of a runway usable for landing or takeoff. (See also **DISPLACED THRESHOLD**.)

RUNWAY USE PROGRAM - See **PREFERENTIAL RUNWAY USE PROGRAM**.

SEVERE NOISE EXPOSURE - Exposure to aircraft noise that is likely to interfere with human activity in noise-sensitive areas; repeated vigorous complaints can be expected and group action is probable. This exposure may be specified by a cumulative noise descriptor as a level of noise exposure, such as the Ldn (or CNEL) 75 dB level. (See also **SIGNIFICANT NOISE EXPOSURE**.)

SHIELDING - The attenuation of a sound by placing walls, buildings, plants, or other barriers between a sound source and the receiver.

SIGNIFICANT NOISE EXPOSURE - Exposure to aircraft noise that is likely to interfere with human activity in noise-sensitive areas; individual complaints may be expected and group action is possible. This exposure may be specified by a cumulative noise descriptor as a level of noise exposure, such as the Ldn (or CNEL) 65 dB level. (See also **SEVERE NOISE EXPOSURE**.)

SOUND INSULATION - (1) The use of structures and materials designed to reduce the transmission of sound from one room or area to another, or from the exterior to the interior of a building, (2) the degree of reduction in sound transmission by means of sound insulating structures and materials.

SOUND LEVEL (NOISE LEVEL) - The weighted sound pressure level obtained by the use of a sound level meter having a standard frequency filter for attenuating or accentuating part of the sound spectrum.

SOUND LEVEL METER - An instrument, comprising a microphone, an amplifier, an output meter, and frequency weighting networks, that is used to measure noise and sound levels in a specified manner.

SOUND TRANSMISSION CLASS (STC) - The preferred single figure rating system designed to give an estimate of the sound insulation properties of a partition or a rank ordering of a series of partitions. It is intended for use primarily when speech and office noise constitute the principal noise problem.

SOUND TRANSMISSION LOSS - A measure in decibels of sound insulation provided by a structural configuration.

SPECIAL USE AIRSPACE - Airspace of defined horizontal and vertical dimensions wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities.

STANDARD - A specific statement by an authority of permitted environmental conditions.

STANDARD INSTRUMENT DEPARTURE (SID) - A pre-planned instrument flight rules (IFR) air traffic control departure procedure printed for pilot use in graphic and/or textual form. SIDs provide transition from the terminal to the appropriate en route structure.

STANDARD TERMINAL ARRIVAL ROUTE (STAR) - A pre-planned instrument flight rules (IFR) air traffic control arrival route published for pilot use in graphic and/or textual form. STARs provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area.

STOPWAY - An area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the aircraft during an aborted takeoff, without causing structural damage to the aircraft, and designated by the airport authorities for use in decelerating the aircraft during an aborted takeoff.

STRAIGHT-IN INSTRUMENT APPROACH - An instrument approach wherein final approach is begun without first having executed a procedure turn; it is not necessarily completed with a straight-in landing or made to straight-in landing weather minima.

SUBDIVISION REGULATIONS (ORDINANCE) - Regulations promulgated by local governments to guide development in defined ways and by prescribed methods to control the use of private land in the public interest. Subdivision regulations were initially established to prevent (1) the uncontrolled subdivisions of land that often left communities without adequate streets, water mains, or sewers, and (2) disorderly, chaotic growth - urban sprawl.

TAXILANE - The portion of the aircraft parking area used for access between taxiways, aircraft parking positions, hangars, storage facilities, etc.

TAXIWAY - A defined path, from one part of an airport to another, selected or prepared for the taxiing of aircraft.

TERMINAL AIRSPACE - See **TERMINAL AREA**.

TERMINAL AREA - A general term used to describe airspace in which approach control service or airport traffic control service is provided.

TERMINAL INSTRUMENT PROCEDURES (TERPS) - Procedures for instrument approach and departure of aircraft to and from civil and military airports. There are four types of terminal instrument procedures: (1) precision approach, (2) non-precision approach, (3) circling, and (4) departure.

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

TOUCH-AND-GO - A practice maneuver consisting of a landing and a takeoff performed in one continuous movement. A touch-and-go is considered as two operations.

TOWER - See **AIRPORT TRAFFIC CONTROL TOWER (ATCT).**

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

TRANSFER OF DEVELOPMENT RIGHTS (TDR) - TDR involves separate ownership and use of the various rights associated with a parcel of real estate. Under the TDR concept, some of the property's development rights (see also) are transferred to another location where they may be used to intensify allowable development. For example, lands within an area affected by aircraft noise could be kept in open space or agricultural uses, and development rights for residential or other uses could be transferred to locations outside the area. Landowners could be compensated for the transferred rights by their sale at the new locations, or the rights could be purchased by the airport. Depending on market conditions and legal requirements, the airport could either hold or resell the rights.

TRANSIENT AIRCRAFT - Aircraft not based at the airport.

TRANSMISSOMETER - An apparatus used to measure runway visibility on an ILS runway.

TRANSPORT AIRPORT - An airport designed, constructed, and maintained to serve airplanes having approach speeds of 121 knots or more.

UNICOM (Aeronautical Advisory Station) - A non-government air/ground radio communication facility which may provide airport information at certain airports.

UTILITY AIRPORT - An airport designed, constructed, and maintained to serve airplanes having approach speeds less that 121 knots.

URBAN GROWTH MANAGEMENT (UGM) - The identification and management of the demands on municipal facilities, improvements or services created by any proposed residential, commercial, industrial, or other type of development. UGM is intended to (1) provide the means for satisfying such demands, 92) identify any harmful effects of development, and (3) protect the jurisdictions and their residents against such harmful effects by minimizing the costs of municipal facilities, improvements, and services. The intent of UGM is usually not to prevent development or growth, but rather to avoid free or disorganized development or growth in the UGM area, which is generally located in and around the fringe of an urban area. The UGM area usually is either relatively undeveloped or predominantly agricultural and lacks most, if not all, municipal facilities, improvements, or services.

VASI - See **VISUAL APPROACH SLOPE INDICATOR.**

VECTOR - A heading issued to a pilot to provide navigational guidance by radar.

VERY HIGH FREQUENCY OMNIDIRECTIONAL RADIO RANGE (VOR) - The standard navigational aid used throughout the airway system to provide bearing information to aircraft.

When combined with Tactical Air Navigation (TACAN) the facility, called VORTAC, provides distance as well as bearing information.

VFR - See VISUAL FLIGHT RULES.

VFR CONDITIONS - Weather conditions that permit aircraft to be operated in accordance with visual flight rules.

VICTOR AIRWAY - A control area or portion thereof established in the form of a corridor, the centerline of which is defined by VOR's.

VISUAL APPROACH - An approach to an airport wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of a radar facility and having an air traffic control authorization, may deviate from the prescribed instrument approach procedure and proceed to the airport of destination, served by an operational control tower, by visual reference to the surface.

VISUAL APPROACH SLOPE INDICATOR (VASI) - An airport landing aid which provides a pilot with visual descent (approach slope) guidance while on approach to landing. See also **PAPI.**

VISUAL FLIGHT RULES (VFR) - Rules that govern the procedures for conducting flight under visual conditions (Federal Aviation Regulations, Part 91).

VISUAL RUNWAY - A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved airport layout plan.

VOR - See **VERY HIGH FREQUENCY OMNIDIRECTIONAL RADIO RANGE.**

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

WIND SHEAR - A change in wind speed and/or wind direction in a short distance resulting in a tearing or shearing effect. It can exist in a horizontal or vertical direction and occasionally in both.

ZONING AND ZONING ORDINANCES - Ordinances that divide a community into zones or districts according to the present and potential use of properties for the purpose of controlling and directing the use and development of those properties. Zoning is concerned primarily with the use of land and buildings, the height and bulk of buildings, the proportion of a lot which buildings may cover, and the density of population of a given area. As an instrument of plan implementation, zoning deals principally with the use and development of privately owned land and buildings. The objective of zoning legislation is to establish regulations that provide locations for all essential uses of land and buildings and to ensure that each use is located in the most appropriate place. In FAR Part 150 planning, zoning can be used to achieve two major airs: (1) to reinforce existing compatible land uses and promote the location of future compatible uses in vacant or undeveloped land, and (2) to convert existing noncompatible uses to compatible uses over time.

END OF GLOSSARY

APPENDIX D

LIST OF RELEVANT FEDERAL, STATE AND LOCAL STATUTES, REGULATIONS AND GUIDELINES

APPENDIX D
LIST OF RELEVANT FEDERAL, STATE, AND LOCAL STATUTES, REGULATIONS, AND GUIDELINES

Resource	Project Activity	Authority/Guideline	Agency
Air Quality	Changes in vehicle traffic levels of aircraft operations; changes in emissions from construction activity or the establishment or removal of any stationary source of emissions.	Clean Air Act, 42 USC §§7401 et seq.; 40 CFR Parts 50-87; California Clean Air Act; California Health and Safety Code Chapter 1568; Central Coast Air Quality Management District plans and regulations.	U.S. Environmental Protection Agency; California Environmental Protection Agency; California Air Resources Board; Santa Barbara County Unified Air Pollution Control District.
	Analysis of environmental impact of development or improvement of a public airport.	Federal Aviation Administration (FAA) Order 5050.4A.	U.S. Department of Transportation - Federal Aviation Administration.
	Improvement of a federal funded Highway project.	23 USC §109 (Standards for Federal Aid Highways); The Clean Air Act, 42 USC §7506; Air Quality Conformity and Priority Procedures for use in Federal-Aid Highway and Federally Funded Transit Programs, 23 CFR Part 770.	U.S. Department of Transportation - Federal Highway Administration
Biological Resources	Consultation regarding federal or federally permitted projects to impound, divert, or control surface waters with a total surface area greater than 10 acres.	Fish and Wildlife Coordination Act, 16 USC §§661 et seq., Natural Resources Act.	Department of the Interior-U.S. Fish and Wildlife Service.
	Dredge and fill activities in jurisdictional wetlands.	Clean Water Act, 33 USC §1251 et seq.; Executive Order 11990 (Protection of Wetlands).	Department of the Interior U.S. Fish and Wildlife Service; U.S. Environmental Protection Agency; Department of Defense - Army Corps of Engineers; California Environmental Protection Agency.
	Activities that may affect habitat of migratory birds.	Migratory Bird Treaty Act 16 USC §§701 et seq.; 50 CFR Part 21.	Department of the Interior-U.S. Fish and Wildlife Service.
	Reservoir development and stream modification projects including specific fish and wildlife habitat improvements.	Watershed Protection and Flood Prevention Act, 16 USC §§1001 et seq., 33 USC §701-1.	U.S. Department of Agriculture - Soil Conservation Service.
	Project activities that could affect stream beds.	California Fish and Game Code, Sections 1601 and 1603.	California Department of Fish and Game.

Resource	Project Activity	Authority/Guideline	Agency
Biological Resources (continued)	Project activities that may affect federally and/or state listed endangered or threatened species.	Endangered Species Act, 7 CFR Part 355 16 USC §§1531-1543, 7 CFR Part 335; California Fish and Game Code, §§2050-2098, "California Endangered Species Act of 1984".	Department of the Interior-U.S. Fish and Wildlife Service; California Department of Fish and Game.
	Transportation programs or projects that may require the use of any park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance.	Department of Transportation Act of 1966, 49 USC §303(c); Federal-Aid Highway Act, 23 USC §138.	U.S. Department of Transportation.
Cultural Resources	Project activities that may affect properties with archaeological, historic, architectural, or cultural value that are listed or are eligible for listing in the National Register of Historic Places. Project activities that may affect traditional Native American resources. Project activities that may affect paleontological resources.	Antiquities Act of 1906; 111, Rev. Stal. Ch. 127; Historic Sites Act, 16 USC §§461 et seq.; National Historic Preservation Act, 16 USC §§470 et seq.; Protection of Historic and Cultural Properties, 36 CFR Part 800; National Register of Historic Places, 36 CFR Part 60; California Historic Preservation Act. Determination of Eligibility for inclusion in the NRHP, 36 CFR Part 63; The Secretary of the Interior's Standards for Historic Preservation Projects, 36 CFR Part 68 (Executive Order 11593); American Indian Religious Freedom Act, 42 USC §1996; Archaeological Resources Protection Act, 16 USC §470aa-11; Act for the Preservation of American Antiquities, 16 USC §§431-433; Archaeological and Historic Preservation Act, 16 USC §469.	Department of the Interior-National Park Service; Advisory Council on Historic Preservation, State Historic Preservation Office
	Transportation programs or projects that will require the use of or have significant impacts on land of an historic site of national, state, or local significance.	Department of Transportation Act of 1966 49 USC §303; Section 15(a) of the Federal-Aid Highway Act; 23 USC §138	U.S. Department of Transportation.

Resource	Project Activity	Authority/Guideline	Agency
Environmental	Project activities that include surface mining.	California Environmental Quality Act, California Public Resources Code, Division 13 §2100 et seq.	California Resources Agency.
Soils and Geology	Project activities that include surface mining.	California Public Resources Code, Chapter 9, §2710-2795, "Surface Mining and Reclamation Act of 1975".	California Division of Mines and Geology.
	Project activities that convert unique, prime farmland to nonagricultural use.	Farmland Protection Policy Act, 7 USC §§4201-4209; 7 CFR Part 658.	U.S. Department of Agricultural - Soil Conservation Service.
Land Use	Disposal of excess federal property and facilities.	McKinney Homeless Assistance Act, 42 USC §11411.	Department of Housing and Urban Development - Department of Health and Human Services.
	Control of height of structures.	Federal Aviation Regulations (FAR) Part 77.	U.S. Department of Transportation; Federal Aviation Administration.
Noise	Aircraft noise.	FAR Part 150 (14 CFR 150); U.S. Housing and Urban Development guidelines; Environmental Protection Agency guidelines; California Noise Standards, Title 21, Subchapter 6.	U.S. Department of Transportation - Federal Aviation Administration; U.S. Department of Housing and Urban Development - Federal Housing Administration; California Department of Transportation - Aeronautics Program.
Transportation	Airspace use and air traffic.	Federal Aviation Act of 1958, as amended (P.L. 85-726); Federal Aviation Administration Handbooks 7400.2C and 8260.3.	U.S. Department of Transportation - Federal Aviation Administration.
Hazardous Materials and Hazardous Waste Management	Remediation of past discharges of hazardous substances.	Comprehensive Environmental Response, Compensation and Liability Act, 42 USC §§9601 et seq. 40 CFR Part 300; Executive Order 12580 (Superfund Implementation).	U.S. Environmental Protection Agency; Department of Defense; California Environmental Protection Agency.
	Generation and temporary storage of hazardous substances.	Resource Conservation and Recovery Act, 42 USC §§6901 et seq., 40 CFR Part 260-271.	U.S. Environmental Protection Agency; Department of Defense; California Environmental Protection Agency.

Resource	Project Activity	Authority/Guideline	Agency
Hazardous Materials and Hazardous Waste Management (continued)	Identification of asbestos-containing materials in facilities.	Clean Air Act, 42 USC §§7401 et seq., National Emission Standards for Hazardous Air Pollutants, 40 CFR 61; Air Force Policy on the Management of Asbestos at Closing Bases; Occupational Safety and Health Act, 29 USC §669 et. seq.	Department of Defense - U.S. Environmental Protection Agency.
	Disposal of pesticides and pesticide containers.	Federal Insecticide, Fungicide and Rodenticide Act, 7 USC §§136 et. seq.	U.S. Environmental Protection Agency.
	Closure of underground storage tanks.	Resource Conservation and Recovery Act; 42 USC §§6991 - 6991; California Administrative Code, Title 23, Subchapter 16.	U.S. Environmental Protection Agency.
	Removal and storage of polychlorinated biphenyls (PCBs).	Toxic Substance Control Act P.L. 100-368, CCR Title 22, Chapter 30, California Health and Safety Code, Chapter 6.5.	U.S. Environmental Protection Agency; California Environmental Protection Agency.
	Location of PCB-contaminated electrical equipment.	PCB Transformer Fire Rule, 50 CFR 29, 177.	California Fire Marshall.
	Disposal of medical/biohazardous waste.	California Medical Waste Management Act; California State Health and Safety Code, Chapter 6.1 §§20515-20589.3.	California Department of Environmental Health Services.
Water	Discharge of wastewater	Clean Water Act, 33 USC §§1251 et seq.; The National Pollutant Discharge Elimination System permit, 40 CFR Part 122.	U.S. Environmental Protection Agency; California Environmental Protection Agency.
	Discharge of dredge or fill material into waters of the United States.	Clean Water Act, 33 USC §§1251 et seq., 40 CFR Part 230.	Department of Defense - Army Corps of Engineers.
	Public drinking water systems.	Safe Drinking Water Act, as amended, 42 USC §§300f to 300j-26.	
	Construction in/alteration of floodplain.	Executive Order 11988 (Floodplain Management).	Department of Defense - Army Corps of Engineers.

APPENDIX E

LIST OF FEDERAL PERMITS, LICENSES AND ENTITLEMENTS

APPENDIX E:
FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

Federal Permit, License, or Entitlement	Typical Activity, Facility, or Category of Persons Required to Obtain the Federal Permit, License, or Entitlement	Regulatory Agency	Authority
Title V permit under the Clean Air Act (CAA), as amended by the 1990 Clean Air Act Amendments	Any major source (source that emits more than 100 tons/year of criteria pollutant in nonattainment area for that pollutant or is otherwise defined in Title 1 of CAA as a major source); affected sources as defined in Title IV of CAA; sources subject to Section 111 regarding New Source Performance Standards; sources of air toxics regulated under Section 112 or CAA; Sources required to have new source or modification permits under Parts C or D of Title 1 of CAA: and other source designated by EPA regulations	U.S. Environmental Protection Agency (EPA); Applicable state Air Pollution Control District if state has EPA-approved air quality control program	Title V of CAA
National Pollutant Discharge Elimination System (NPDES) permit	Discharge of pollutant from any point source into waters of the United States	U.S. EPA; State Water Quality Control Board	Section 402 of Federal Water Pollution Act, 33 USC §1342; California Water Code §13376
Section 404 (Dredge and Fill) Permit	Any project activities resulting in the discharge of dredged or fill material into bodies of water, including wetlands, within the United States	U.S. Army Corps of Engineers, in consultation with U.S. EPA	U.S. Army Corps of Engineers, in consultation with U.S. EPA Section 404 of Federal Water Pollution Act, 33 USC §1344
Underground Injection Control (UIC) permit	Owners or operators of certain types of underground injection wells	U.S. EPA; California EPA	Safe Drinking Water Act, 42 USC §300h(b); 40 CFR Part 144; California Water Code §§13382, 13382.5
Hazardous waste treatment, storage, or disposal (TSD) facility permit	Owners or operators of certain types of underground injection wells	U.S. EPA; California EPA	Resource Conservation and Recovery Act (RCRA) as amended, 42 USC §3005; 40 CFR Part 270; California Health & Safety Code §25201
EPA manifest identification number	Generators or transporters (off-site transport) of hazardous waste	U.S. EPA	40 CFR §262.10 (generators); 40 CFR Part 263, Subpart B (transporters)
Antiquities permit	Excavation and/or removal of archaeological resources from public lands or Indian lands and carrying out activities associated with such excavation and/or removal	U.S. Dept. of the Interior, National Park Service	Archaeological Resource Protection Act of 1979, 16 USC §470cc
Endangered Species Act §10 permit	Taking endangered or threatened wildlife species; engaging in certain commercial trade of endangered or threatened plants or removing such plants on property subject to Federal jurisdiction	U.S. Dept. of Interior, Fish & Wildlife Service	Section 10 of Endangered Species Act, 16 USC §1539; 50 CFR Part 17, Subparts C,D,F, & G
Airport Operating Certificate	Operating a land airport serving any scheduled or unscheduled passenger operation of air carrier aircraft designed for more than 30 passenger seats	U.S. Dept. of Transportation, Federal Aviation Administration	Federal Aviation Act of 1958, 49 USC App. §1432

APPENDIX F

CHARACTERISTICS OF NOISE AND NOISE REGULATIONS

APPENDIX F:
CHARACTERISTICS OF NOISE AND NOISE REGULATIONS

ENVIRONMENTAL NOISE DESCRIPTORS

Sound waves are complex forms of acoustical energy which travel outward from a source and, when reaching human ears, may be perceived as beautiful, desirable, or unwanted. Unwanted sound is normally referred to as noise. Sound levels or "noise" levels are measured in decibels. A decibel (dB) is a logarithmic unit of sound energy intensity (loudness). Environmental noise is usually described in terms of A-weighted decibels (dBA). The A-weighting is a correction factor applied to the decibel scale which corrects for the variation in frequency response of the human ear. Some representative noise sources, encountered in daily life, and their relative loudness are set forth in Table F-1.

Environmental noise levels typically fluctuate over time, and different types of noise descriptions are used to account for this variability. Some noise descriptors are intended to characterize the average noise environment, while others are primarily intended to focus on individual, or intrusive noise events. There is no one, single noise descriptor that can fully characterize all noise environments. In this report, noise is described using two descriptors: (1) The Community Noise Equivalent Level (CNEL) for describing the cumulative (energy average) noise environment, and (2) The Sound Exposure Level (SEL) for describing the potential intrusiveness of individual (single) noise events.

The Community Noise Equivalent Level metric is the methodology specified in the California Airport Noise Standards[1] and is nearly identical to the yearly Day-Night Average Sound Level (DNL or Ldn) used by the U.S. Department of Transportation and FAA. Both methodologies penalize individual noise events by 10dB for increased annoyance during nighttime hours (10:00 PM - 7:00 AM). CNEL adds an additional 5dB penalty to events occurring during evening hours (7:00 PM - 10:00PM).

SEL is a logarithmic measure of the time integrated energy of a single noise event. SEL reflects both the duration and magnitude of a given noise event, and is used in computing aircraft acoustical energy contribution to Ldn/CNEL.

Aircraft operations typically affect ambient noise levels over a wider geographical area than does surface vehicle traffic. Hence, the following discussion focuses primarily on aircraft-related noise regulations, but a brief discussion of relevant traffic noise standards is also provided.

1. State of California, Code of Regulations, Title 21, Subchapter 6, *"Noise Standards."*

Table F-1
Sound Levels (dB) and Relative Loudness of Typical Noise Sources in Indoor and Outdoor Environments

dB(A)	Overall Level	Community Noise Levels (Outdoor)	Home and Industry Noise Levels (Indoor)	Subjective Loudness (Relative to 70dB)
120	Uncomfortably loud	Military jet aircraft take-off from aircraft carrier with afterburner at 50ft..... 130 dB	Oxygen torch..... 121dB	32 times as loud
110		Turbo-fan aircraft at takeoff power at 200 ft..... 118dB	Riveting machine .. 110dB Rock band..... 108-114dB	16 times as loud
100	Very loud	Boeing 707 or DC-8 aircraft at one nautical mile (6080 ft.) before landing ..... 106dB Jet flyover at 1000 ft.. 103dB Bell J-2A helicopter at 100 ft..... 100 dB		8 times as loud
90		Boeing 737 or DC-9 aircraft at one nautical mile (6080 ft.) before landing ..... 97dB Power mower ..... 96dB Motorcycle at 25 ft..... 90dB	Newspaper press.... 97dB	4 times as loud
80		Car wash at 20 ft..... 89dB Propeller plane flyover at 1000 ft..... 88dB Diesel truck 40 mph at 50 ft..... 84dB Diesel train 45 mph at 100 ft..... 83dB High urban ambient sound80	Food blender..... 88dB Milling machine ..... 85dB Garbage disposal.... 80dB	2 times as loud
70	Moderately loud	Passenger car 65 mph at 25 ft..... 77dB Freeway at 50ft. from pavement edge 10:00 a.m.76	Living room music... 76dB Radio or TV-audio, vacuum cleaner 70dB	70dB(A)
60		Air conditioning unit at 100 ft..... 60dB	Cash register at 10 ft. ..... 65-70dB Electric typewriter at 10 ft. ..... 64dB Dishwasher (Rinse) at 10 ft. ..... 60dB Conversation..... 60dB	½ as loud
50	Quiet	Large transformers at 100 ft..... 50dB		¼ as loud
40		Bird calls..... 44dB Lowest limit of urban ambient sound..... 40dB		1/16 as loud
dB Scale Interrupted				
10	Just audible			
0	Threshold of hearing			

Source: **M.C. Branch, et. al. 1970 "*Outdoor Noise and the Metropolitan Environment*," Los Angeles, California: Department of City Planning, City of Los Angeles (from Federal Interagency Committee on Noise, "*Federal Agency Review of Selected Airport Noise Analysis Issues*," August 1992).**

AIRCRAFT NOISE STANDARDS

The authority to establish noise standards for individual aircraft is vested exclusively in the Federal government. The basic federal legislation is the *Federal Aviation Act of 1958*. A 1968 amendment to this Act required the Federal Aviation Administration (FAA) to consider noise as a criterion in its certification of aircraft and airports, and directed the FAA to prescribe rules and regulations to provide for the control and abatement of aircraft noise. Under this authority, the FAA has adopted uniform noise emission standards for all aircraft operating in the United States (including small aircraft of the type anticipated to use the Lompoc Airport).[2]

These standards are contained in Federal Aviation Regulations (FAR) Part 36 and comprise three different "stages." Stage 1 reflects the older technology turbojet aircraft; Stage 2 is an intermediate stage representing more modern aircraft; and Stage 3 includes the latest engine noise suppression technology. Operations by Stage 1 aircraft have been generally prohibited in the United States since 1985. In 1990, the federal government adopted the *Airport Noise and Capacity Act* (ANCA) to establish a national aircraft noise policy. The ANCA requires a phaseout of the relatively noisy Stage 2 aircraft by year 2000. However, certain provisions of the ANCA allow for the possible extension of this phase-out deadline.

Restrictions on Aircraft Use. Authority to control the manner and distribution of aircraft operations is shared by federal and state agencies. An airport proprietor, such as the City of Lompoc, also has authority in this area, but this authority is limited by federal law. FAA's first priority is to ensure that aircraft operations are conducted in a safe manner; therefore, noise regulations which may affect the safety of aircraft operation, such as specifications for climbout procedures or turns, must meet the FAA's tests of safety and compatibility with other aircraft operations in the surrounding airspace.

Even if safety considerations are met, under general principles of federal law, an airport operator cannot impose regulations that affect airport access in an arbitrary, unreasonable, or discriminatory manner; that unduly burden interstate commerce, or that create an exclusive right to operate. The ANCA specifically precludes an airport operator from establishing additional restrictions on FAR Part 36 Stage 3 aircraft, unless the operator demonstrates the feasibility of the restrictions through a detailed cost-benefit analysis, and obtains the approval of the FAA.

Federal Airport Noise Standards. The *Federal Aviation Safety and Noise Abatement Act of 1979* granted authority to the FAA to issue regulations addressing airport noise compatibility planning. These regulations, codified in Federal Aviation Regulations (FAR) Part 150, became effective in January 1985. FAR Part 150 sets forth the methods and procedures that are to be followed by those airport operators who wish to prepare noise maps and develop land use compatibility programs.

Federal land use compatibility criteria are set forth in Table F-2. Federal funding is provided to the airport operator for this work if the specified methodologies and procedures are followed. Once these maps and programs have been approved by the FAA, the airport operator becomes eligible

2. Small aircraft are defined as those aircraft that have a maximum gross takeoff weight (MGTOW) of from 12,500 pounds to 60,000 pounds.

for federal funding of identified noise control (on-airport) and noise mitigations (off-airport) programs.

In accordance with Section 123 of the *Airport and Airway Safety, Capacity, Noise Improvement, and Intermodal Transportation Act of 1992*, the FAA was required to conduct a study to analyze the social, economic, and health effects of aircraft noise on people residing in a noise environment of less than Ldn (CNEL) 65 dBA. On March 29, 1993, the FAA issued a notice in the Federal Register indicating that the FAA plans to use the research and recommendations of the Federal Inter-Agency Committee on Noise (FICON) to fulfill that requirement. Consistent with the FICON report, published in August 1992, the FAA currently recommends that Ldn (CNEL) continue to be used as the principle means to describe long-term noise exposure for aircraft operations. The FAA has found that the dose-response relationship, as represented by Ldn (CNEL) and "Percent Highly Annoyed", remains the best available approach to analyze total health and welfare impacts for the vast majority of transportation noise analysis situations. The FAA indicates that a noise exposure of Ldn (CNEL) 65 dBA or less is acceptable for residential uses.

California Airport Noise Standards. These standards, first adopted in 1972, are enforced by county governments, under the review of the California Department of Transportation (Caltrans) Division of Aeronautics. The criterion noise level of the Airport Noise Standards is CNEL 65 dBA, and the CNEL 65 dBA noise contour developed for aircraft operations at an airport determines the airport's Noise Impact Boundary.[3]

The CNEL 65 dBA criterion noise level used in the California Airport Noise Standards is consistent with FAA noise and land use compatibility guidelines.

Within the Noise Impact Boundary, the airport proprietor is required to ensure that all land uses are compatible with the aircraft noise environment or the airport proprietor must secure a variance from Caltrans. The preferred methods for ensuring compatibility involve aircraft noise abatement procedures and preventive land use compatibility planning strategies.

3. The CNEL 65 dBA criterion noise level used in the California Airport Noise Standards is consistent with FAA noise and land use compatibility guidelines. In accordance with Section 123 of the Airport and Airway Safety, Capacity, Noise Improvement, and Intermodal Transportation Act of 1992, the FAA was required to conduct a study to analyze the social, economic, and health effects of aircraft noise on people residing in a noise environment of less than Ldn (CNEL) 65 dBA. On March 29, 1993, the FAA issued a notice in the *Federal Register* indicating that the FAA plans to use the research and recommendations of the Federal Inter-Agency Committee on Noise (FICON) to fulfill that requirement. Consistent with the FICON report, published in August 1992, the FAA currently recommends that Ldn (CNEL) continue to be used as the principle means to describe long-term noise exposure for aircraft operations. The FAA has found that the dose-response relationship, as represented by Ldn (CNEL) and "Percent Highly Annoyed," remains the best available approach to analyze total health and welfare impacts for the vast majority of transportation noise analysis situations. The FAA indicates that a noise exposure of Ldn (CNEL) 65 dBA or less is acceptable for residential uses.

Table F-2
FAR Part 150 Land Use Compatibility Designations*

Land Use Class: FAR Part 150 Land Use Categories	Yearly Day-Night Average Sound Level (Ldn) in Decibels**					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(a)	N(a)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(a)	N(a)	N(a)	N	N
Public Use						
Schools	Y	N(a)	N(a)	N	N	N
Hospitals, and nursing homes	Y	25	30	N	N	N
Churches, auditoriums and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(b)	Y(c)	Y(d)	Y(d)
Parking	Y	Y	Y(b)	Y(c)	Y(d)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm	Y	Y	Y(b)	Y(c)	Y(d)	N
equipment	Y	Y	25	30	N	N
Retail trade-general	Y	Y	Y(b)	Y(c)	Y(d)	N
Utilities	Y	Y	25	30	N	N
Communication						
Manufacturing and Production						
Manufacturing general	Y	Y	Y(b)	Y(c)	Y(d)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(f)	Y(g)	Y(h)	Y(h)	Y(h)
Livestock farming and breeding	Y	Y(f)	Y(g)	N	N	N
Mining and fishing, resource production and extractions	Y	y	y	Y	Y	Y
Recreation						
Outdoor sports arenas and spectator sports	Y	Y(e)	Y(e)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

FAR Part 150, Appendix A, Table 2, *"Land Use Compatibility With Yearly Day-Night Average Sound Levels."* The designations contained in this table are based upon the above-referenced source, and in neither case represent a Federal determination that any use of land covered by the Part 150 program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses remains with local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land use.

For comparative purposes, letters in parentheses and numbers refer to notes (see following page) and noise level reductions (NLR), respectively. Ldn is deemed equal to CNEL .

Source: Federal Aviation Administration and P&D Aviation, October 1994.

KEY TO Table F-2

Y	Yes, land use and related structures compatible without restriction.
N	No, land use and related structures are not compatible, and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25,30 or 35	Land uses and related structures generally considered compatible; measures to achieve NLR of 25, 30, or 35 must be incorporated into design and construction of structures.
(a)	Where the community determines that residential uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.
(b)	Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
(c)	Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings were the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
(d)	Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings were the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
(e)	Land use compatible provided special sound reinforcement systems are installed.
(f)	Residential buildings require an NLR of 25.
(g)	Residential buildings require an NLR of 30.
(h)	Residential buildings not permitted.

Under the California Airport Noise Standards, residences within the Noise Impact Boundary (NIB) are deemed to be incompatible, unless:

(1) an avigation easement (an easement which acknowledges the potential for aircraft overflight and consequent noise) for aircraft noise has been acquired by the airport proprietor;

(2) the dwelling unit was in existence at the same location prior to January 1, 1989, and has adequate acoustic insulation to ensure an interior CNEL of 45 dB or less in all habitable rooms;

(3) the residence is a high rise apartment or condominium having an interior CNEL of 45 dB or less in all habitable rooms due to aircraft noise, and an air conditioning system as appropriate;

(4) the airport proprietor has made a genuine effort to acoustically treat affected residences or acquire avigation easements, or both, but the property owners have refused to take part in the program; or

(5) the residence is owned by the airport proprietor.

The California Airport Noise Standards also specify that schools, hospitals and convalescent homes, and places of worship are incompatible uses within the Noise Impact Boundary unless an avigation easement has been acquired by the airport proprietor, or unless the structures have adequate acoustic performance to ensure an interior CNEL of 45 dB or less due to aircraft noise.

MOTOR VEHICLE NOISE STANDARDS

Federal Highway Administration. The Federal Quiet Communities Act of 1978 amended the Noise Control Act of 1972 to encourage noise control programs at the state and community level. As part of the implementing regulations, the Federal Highway Administration (FHWA) developed a set of maximum noise levels for use in determining when noise mitigation is necessary for highway improvements funded with FHWA monies. Caltrans is the state agency responsible for implementing the FHWA noise regulations and uses the same criteria for state-funded projects. If construction of a new highway or improvements to an existing highway (e.g., road widening, signal synchronization, capacity increases) will result in noise levels as identified in Table F-3, Caltrans needs to consider incorporation of noise mitigation measures into the design of the highway project. Noise mitigation options available for highways are commonly berms or sound walls. Reductions of 5-10 dBA may be available depending upon the particular situation.

Table F-3
FHWA Noise Standards

Hourly A-Weighted Sound Level [a]		Land Use
Leq(h)	L10(h)	
(Exterior)		
57 dBA	60 dBA	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
67dBA	70dBA	Picnic areas, recreation areas, playgrounds, active sports areas, and public or private parks which are not included in Category A and residences, motels, hotels, public meeting rooms, schools, churches, libraries and hospitals.
72 dBA	75dBA	Developed lands, properties or activities not included in categories above.
-	-	Undeveloped lands.
52dBA	55dBA	Residences, motels, hotels, schools, churches, public meeting rooms, libraries, hospitals, and auditoriums.

Source: Federal Highway Administration, Federal Highway Program Manual Transmittal 348 (7-7-3), August 9, 1982.

Note: Either L10(h) or Leq(h) (but not both) may be used on a project. L10 are noise levels exceeded ten percent of the time. They are commonly used to express peak hour noise levels (since peak hour traffic volumes are typically 10 percent of the daily traffic volumes). Leq values are typically 3dBA lower than L10 values for the same time period.

STATE OF CALIFORNIA

The California Motor Vehicle Code sets operational noise limits for motor vehicles (Section 23130), requires an adequate muffler in constant operation and properly maintained (Section 27150), prohibits the sale or installation of a motor vehicle exhaust system unless it meets regulations or standards (Section 27150.1), prohibits the modification of the exhaust system to amplify or increase the noise above that of the original system (Section 27151), prohibits the sale of new vehicles exceeding the noise limits (Section 27160), and sets noise limits for the operation of off-road motor vehicles (Section 38280) as shown in Table F-4. The California Highway Patrol, and the Yolo County Sheriff's Department are responsible for enforcing the Motor Vehicle Code within the County limits.

Table F-4
California Motor Vehicle Noise Limits

Type of Vehicles	Date of Manufacture	dB(A) Value at 50 Feet
Motorcycles	Before 1970	92
Motorcycles, other than motor-driven cycles	1970-72	88
	1973-74	86
	1975-85	83
	After 1985	80
Vehicle with a gross vehicle weight over 6,000 lbs.		
	1968-72	88
	1973-74	86
	1975-77	83
Over 8,500 lbs.	1978-81	83
Over 6,000 lbs. up to 8,500 lbs.	After 1977	80
Over 8,500 lbs. up to 10,000 lbs.	After 1981	80
Over 10,000 lbs.	1982-85	83
Over 10,000 lbs.	After 1985	80
Any other motor vehicle	1968-72	86
	1973-74	84
	After 1974	80
Noise level limits for the operation of off-road motor vehicles		
	Before 1973	92
	1973-74	88
	After 1974	86

Operation of Vehicle	Speed Limit ≤ 35 mpg	Speed Limit >35 and ≤ 45 mph	Speed Limit > 45 mph

Source: California Motor Vehicle Code

APPENDIX G

NOISE MODEL INPUTS

APPENDIX G:
NOISE MODEL IMPUTS

Several important variables influence aircraft noise generation. This appendix briefly describes the data and information sources which were used to reflect the following variable categories:

- Existing and forecast aircraft activity,
- Aircraft fleet mix,
- Time of day of operations,
- Runway geometry and use,
- Flight track geometry and use, and
- Aircraft operating procedures.

Existing and forecast aircraft activity. Information on current air traffic activity was obtained for the Tracy Municipal Airport during the development of the Airport Master Plan. The average day of the 12-month period of January 1 through December 31, 1996 was used as the design day for development of the existing conditions noise exposure map. On average, approximately 148 daily aircraft operations were conducted during this twelve month period.

Forecast aircraft activity levels and mix for the year 2016 were used to produce contours describing future conditions. Year 2016 conditions reflect an increase in daily activity to some 294 operations.

Aircraft fleet mix. Noise from aircraft operations reflect a fleet composed of single-engine and twin-engine reciprocating propeller aircraft, turboprop aircraft and turbojets. Single-engine reciprocating propeller aircraft will form the greater part of total demand through the forecast period, but are expected to grow at gradually declining rates because the national inventory of such types is declining. Twin-engine operations are expected to grow at a slightly higher rate.

Although the general aviation fleet is dominated by light single- and twin-engine propeller aircraft, high-performance aircraft serving corporate aviation are expected to represent a greater portion of total general aviation traffic in future years. Turboprop aircraft currently account for less than 1,000 annual operations. Because of the projected growth in economic activity in the Tracy Planning Area, turboprop operations are expected to increase substantially by 2016. The Airport is also used frequently by turbojet itinerant aircraft. Such operations are estimated at about 204 operations per year at present. It is anticipated that turbojet activity would increase at a rate slightly less than that for turboprop aircraft.

Time of day of operations. The percentage split of day, evening and nighttime operations for existing conditions was verified with the City staff and airport users during

the Master Plan process. The splits of day, evening and nighttime operations for the year 2016 were extrapolated from existing conditions.

Runway geometry and use. Contours were produced for the existing runways as depicted on the ALP. The noise exposure of existing conditions reflects the existing runway geometry. Year 2016 conditions reflect pjroposed changes to runway markings.

Flight track geometry and use. Flight track geometry and loading was verified by City and airport users during the Master Plan process and suggests that all operations of both light propeller and sophisticated turbojet and turboprop aircraft would occur on relatively predictable flight tracks (see Figure G-1). Flight track geometry is influenced by a variety of factors including peak hour aircraft demand levels and derivative air traffic requirements, aircraft performance, and published Airport noise abatement policies.

Aircraft operating procedures. Operating procedures for specific types of aircraft may vary widely because of such factors as pilot technique, user operating procedures, the requirements of air traffic conditions and meteorology. Thus, for example, turboprop aircraft of the same type operated by different users bound for the same destination may use somewhat different flap (and throttle) settings resulting in different rates of climb, throttle application and resultant noise emissions.

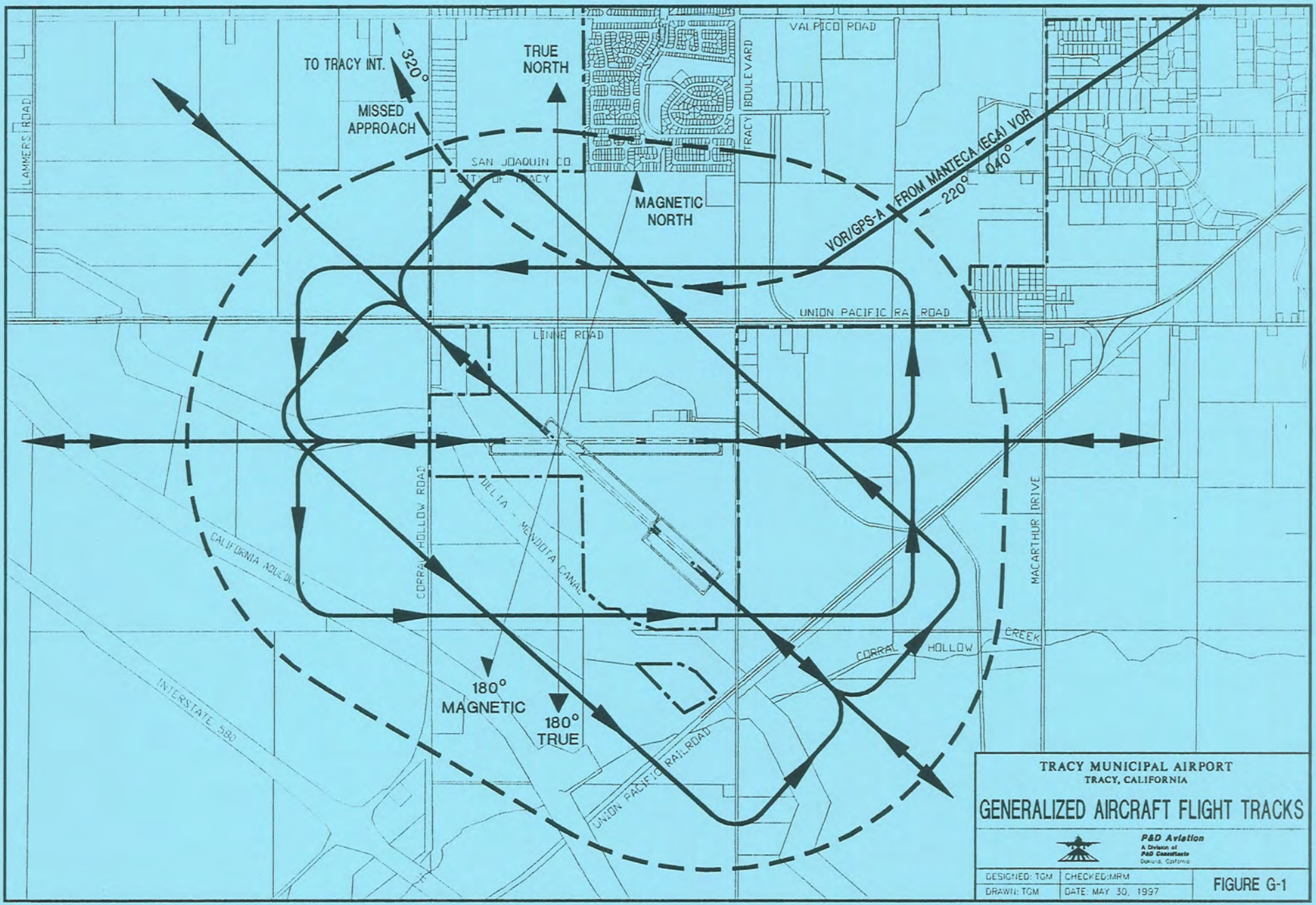
The noise exposure modeling conducted for this study presumes that all aircraft use standard, predictable departure and arrival procedures. It is anticipated that variations to standard procedures, which frequently occur in practice, will both over and under-state aircraft performance and other operational parameters and, thus, converge on the predicted procedure.

Noise model limitations and caveats. The validity and accuracy of CNEL calculations depend on the basic information used in the calculations. For future airport activities, the reliability of CNEL calculations may be affected by such factors as:

- Aviation activity levels -- number of operations, mix of aircraft types, times of operations, and flight tracks -- are forecasts of what probably will occur.

- Aircraft acoustical and performance characteristics are also forecasts. When new aircraft designs are involved in the projections, noise data and operational characteristics must be estimated.

- The noise descriptors and interpretational criteria used in the CNEL procedure represent average human response (and reaction) to aircraft noise. Because people differ substantially in their response to noise, and because the physical measure of noise accounts for only a portion of an individual's reaction to that noise, the CNEL scale can show only an average response to aircraft noise.


TO TRACY INT.
320°
MISSED APPROACH
TRUE NORTH
MAGNETIC NORTH
VALPICO ROAD
TRACY BOULEVARD
LAMMERS ROAD
SAN JOAQUIN CO.
CITY OF TRACY
VOR/GPS-A FROM MANTECA (ECA) VOR
040°
220°
UNION PACIFIC RAILROAD
LINNE ROAD
CORRAL HOLLOW ROAD
DELTA - MENDOTA CANAL
CALIFORNIA AQUEDUCT
MACARTHUR DRIVE
CORRAL HOLLOW CREEK
INTERSTATE 580
180° MAGNETIC
180° TRUE
UNION PACIFIC RAILROAD
TRACY MUNICIPAL AIRPORT
TRACY, CALIFORNIA
GENERALIZED AIRCRAFT FLIGHT TRACKS
P&D Aviation
A Division of P&D Consultants
Oakland, California
DESIGNED: TGM
CHECKED: MRM
DRAWN: TGM
DATE: MAY 30, 1997
FIGURE G-1

In view of these uncertainties, CNEL mapping was developed as a tool to assist in land use planning around airports. The mapping is best used for comparative purposes, rather than for providing absolute values. That is, CNEL calculations provide valid comparisons between different projected conditions, so long as consistent assumptions and base data are used for all calculations. Thus, sets of CNEL calculations can show which of the simulated situations are better, and generally how much better, from a noise impact viewpoint. However, a fine line drawn on a map by a computer does not permit an inference that a particular noise condition exists on one side of that line and not on the other. CNEL calculations are merely a means for comparing noise impacts, and do not precisely define such impacts relative to specific parcels of land. Nevertheless, CNEL contours can be used to:

- highlight an existing or potential aircraft noise problem that requires attention.
- assist in the preparation of airport environs land use plans.
- provide guidance in the development of land use control devices, such as zoning ordinances, subdivision regulations, and building codes.
- provide easy comparison of the relative magnitudes of noise impact associated with different developmental and operational alternatives and forecast horizons.

APPENDIX H

NOISE AND ANNOYANCE

APPENDIX H:
NOISE AND ANNOYANCE

Annoyance due to individual aircraft noise events should not be construed to be indicative of any significant potential for hearing loss or other adverse health effects. Such effects are only associated with long-term continuous exposure to high noise levels. For example, in a 1982 article on the effects of noise, Richard Procunier, former chief of the EPA's noise control program, was quoted as saying:

> *"(t)he real danger is in constant din. If the day-night noise average in a community is above 70 decibels, 24 hours a day, 365 days a year, then we're in trouble. Hearing losses might occur. A level of 65 decibels is what the average business office produces...".*

In the San Francisco Bay Area, the average day-night sound level is approximately 55dB, which Procunier believed to be *"acceptable and realistic within the context of the times."*[1]

Moreover, it is often difficult to point to one specific area of our environment as being the cause of a physical or psychological problem. For example, environments that suffer from high levels of noise often have other characteristics (e.g. pollution, poor housing, high levels of population density) that may also (adversely) affect behavior and health.[2]

Nonetheless it is well established that continuous exposure to high levels of noise will adversely affect human health. The most obvious effect is that of hearing loss or impairment. A number of studies have been sponsored by the FAA to determine the effect of aircraft noise on hearing, and especially with regard to the effects of noise on individuals regularly exposed to aircraft noise, such as those who reside in proximity to airports. Among the studies specifically addressing the question of community hearing loss around airports is a 1972 study comparing the hearing acuity of two groups of residents, with one group near Los Angeles International Airport (LAX), and the other group from a relatively quiet area away from the Airport.[3] The report concluded that there was no significant difference in the hearing acuity of the two groups of people, and that there was no correlation between hearing acuity and length of residency near the Airport. Other studies have corroborated these findings, and it has generally been established that under normal circumstances the people in a community surrounding an airport are in no danger of hearing damage due to aircraft noise.

Sleep interference is another cause of annoyance associated with aircraft operations. A 1975 research paper assessed the impacts of aircraft noise on sleep using criteria based on the combined effect of the loudness of a noise and its duration.[4] The technical term for the combination of these two factors is the sound exposure level or SEL. SEL can be thought of as

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1. Al Morch, *"Getting Louder All The Time,"* San Francisco Examiner, July 11, 1982.
2. Sheldon Cohen, *"Aircraft Noise and Children: Longitudinal and Cross-Sectional Evidence on Adaptation to Noise and the Effectiveness of Noise Abatement,"* Journal of Personality and Social Psychology, Vol. 40, Nol 2. 1980.
3. Parnell, Nagel and Cohen, *"Evaluation of Hearing Levels of Residents Living Near a Major Airport,"* Report FAA=RD 72-72, June 1972.
4. Jerome Lukas, *"Noise and Sleep: A Literature Review and a Proposed Criterion for Assessing Effect,"* Journal of the Acoustical Society of America, Volume 58, No. 6, 1975.

the total noise within 10dB of the peak noise level of a given noise event compressed into a 1-second period. In the respect SELs always result in a higher number than the maximum noise level associated with the event. The SELs given in Table H-1 represent the level measured inside a bedroom. The relationship between the indoor and outdoor SEL depends on whether the bedroom windows are closed, the type of windows, the exterior wall construction of the home, and the presence of any other penetrations in the wall. As an example, a California home of normal construction, with windows partially open generally affords an exterior-to-interior noise level reduction of about 20dB.

Sleep disturbance studies have also been conducted by Charles M. Salter Associates, a San Francisco-based acoustical consulting firm, for hospitals undergoing remodeling to determine the potential for construction noise to interfere with hospital activities. During these studies, many measurements were made within various hospitals. One of the conclusions of the study was that ambient noise levels in hospitals are not low. Typical levels range from 40 to 70dBA in hospital rooms. There is also a significant number of interruptions of patients' rest by nurses, etc., during their daily routine. The study concluded that if intrusive noises that occur on a sporadic basis do not exceed 65dBA, then significant impacts on hospital activities would not be expected.

Speech interference is another source of annoyance associated with aircraft noise. In offices, where speech interference would be the primary criterion, studies have shown that if noise levels exceed 60dBA, there would be some disruption of speech at normal voice levels, causing people to raise their voices If the noise level exceeds 70dBA, it would become difficult to carry on a conversation even on the telephone. This is also true for residential uses, but the speech interference criterion level is set at 65dB. In a 1963 study sponsored by the British government, researchers found that aircraft noise levels of 75dB annoyed eighty percent of the test population when they interfered with television viewing.

In a classroom, where it is necessary to communicate new concepts and new vocabularies, it is desirable to have low background sound levels. Teachers will, to a certain extent, compensate for increased background noise levels by raising their voices. If the background sound level exceeds 55dBA, it becomes more difficult for a teacher to communicate accurately. Additionally, increased sound levels due to random events can sometimes disrupt a class.

Non-auditory effects of aircraft noise typically relate to the effects on physical, mental and emotional health Frequently, statements and claims are made that aviation noise damages the health of airport neighbors. It is generally accepted that aircraft noise above a certain level annoys airport neighbors but whether or not that noise causes any physical or mental damage is far less well-established.

Table H-1
SOUND EXPOSURE LEVEL AND SLEEP DISTURBANCE

Indoor SEL (dB)	Percent*
66	20
69	30
72	40
75	50
78	60
82	70
85	80

* Percent of subjects experiencing sleep disturbance.

In 1968, the FAA was mandated to protect the "public health and welfare" as a guide in prescribing and amending aviation standards and regulations. Recent federal court decisions have defined Public Health and Welfare to include both physical and mental health effects. Physical effects are fairly well defined (such as hearing loss), but welfare effects can be interpreted to cover many things, most recent definition of welfare define it as the mental or emotional reaction to noise, often characterized as annoyance or interference with a normal activity (speech, sleep or solitude). As a result of this mandate, the FAA recommends that both the physical and mental health effects of airport noise be addressed in the environmental review process.

In 1981, the FAA conducted a study reviewing the available scientific journal articles and reports dealing with possible health and welfare effects of airport noise on residents. of neighboring airport communities. It was determined that most available studies attempting to relate aircraft noise and physical and/or mental health lacked scientifically valid methodologies or sufficient content on which their findings could be judged. It is interesting to note that a recent EPA-sponsored survey judged only one study out of 83 to rate higher than "4" on a scale of 0 to 9. Thus, in general, it is difficult to prove -- or disprove -- any connection between mental or physical health and airport noise.

In a 1978 publication by the Environmental Protection Agency it was stated that there is a growing body of evidence which strongly suggests a link between exposure to noise and the development and aggravation of a number of heart disease problems.[5] The article also stated that no one has yet shown that noise inflicts any measurable damage to the heart itself; what is a factor is the effect of the incurring stress and its related reactions (e.g., increased adrenaline, changes in heart rate, and elevated blood pressure). Studies in this area have focused on the effects of high levels of industrial noise. These are typically very high noise levels over long durations, as opposed to high levels for short durations like those incurred under the flight paths at major air carrier airports.

5. U.S. Environmental Protection Agency, *"Noise: A Health Problem,"* August 1978.

In a 1972-1976 study of elementary school students' reading scores conducted by the Institute of Environmental Medicine, students reading below grade level were assigned noise exposure scores based on noise contours for New York City airports.[6] It was found that an additional 3.6% of the students in the noisiest schools read at least 1 year below grade level and the percent reading below grade level increased as noise level increased. The subject schools were located inside airport noise contours equivalent to CNEL 57.1 to 75.5dB. There are no schools in the Marina Municipal Airport environs that would be subjected to cumulative noise levels in excess of CNEL 55dB.

Community response to aircraft noise can be affected by factors other than the noise itself. Fear of crashes, other forms of pollution, and proximity to aircraft flight tracks are three non-noise aspects that are related to airport noise contours and complaint patterns. These factors were studied in a 1980 article in the Journal of Sound and Vibration[7] which concluded that the fear of crashes appeared to be less strongly related to response to aircraft noise than other studies have suggested.[8] Two other non-noise effects of aircraft -- vibration and air pollution -- were found to be significantly related in some cases to the reported effects of aircraft noise. Overall the study suggests that all four factors investigated -- fear of crashes, air pollution, vibration, and location relative to flight racks -- show some relationship with response to aircraft noise, although the relationship was not always very strong.

In a similar study published in 1981, the subject of annoyance created by fear of overflying aircraft was investigated.[9] The investigators theorized that if, as has been suggested, expressions of annoyance attributable to aircraft noise may reflect, in part, fear of aircraft overflights and possible crashes, then residents of areas where crashes have occurred should express more annoyance. To test their hypothesis the investigators established two test groups, one in an area where a recent air crash involving fatalities had occurred and another in a similar area nearby without such a history. It was predicted that those in the crash area would express more fear and would more often identify aircraft as a source of noise annoyance. The study results supported the hypothesis, and results were much the same in another similar study. In both studies the crash-area groups had strong associative fear and noise annoyance responses. The same was true, albeit to a lesser extent, in the non-crash area. If any conclusion can be drawn from the above studies, it may be that a variety of factors, including direct overflight, the fear of crashes, vibration, and concerns over pollution, are contributory to the number of noise complaints received from areas outside of the CNEL 65dB noise contour at airports.

The preceding has been an overview of the single-event noise assessment methodology used in evaluating noise conditions at the new Tracy Airport, and the effects of noise on people. A review of the above-cited studies indicates that the cumulative and single-event noise levels associated with existing and projected levels of aircraft activity at Tracy Airport would not result in any significant adverse impacts on people, other than the occasional annoyance associated with

6. Kendall Green, Ph.D., *"Effects of Aircraft Noise on Reading Ability of School-Age Children,"* Archives of Environmental Health, Vol. 37, No. 1, January/February 1982.
7. F.L. Hall, S.M. Taylor and S.E. Birnie, *"Spatial Patterns in Community Response to Aircraft Noise Associated with Non-Noise Factors,"* Journal of Sound and Vibration, 71(3), 1980.
8. W.K. Connor and H.P. Patterson, NASA CR-1761, *"Community Reaction to Airport Noise,"* Vol. I, p. 58, 1970, and A.C. McKennell, *"Transportation Noises, Seattle,"* University of Washington Press, pp. 228-244, 1970.
9. S. V. Moran, W. J. Gunn and M. Loeb, *"Annoyance by Aircraft Noise and Fear of Overflying Aircraft in Relation to Attitudes Toward the Environment and Community,"* The Journal of Auditory Research, Volume 21, pp. 217-225, 1981.

overflights by noisy aircraft, including short-term speech interruption, potential sleep interference, and fear responses from factors other than noise.

Any other adverse effects of noise on people as a result of aircraft noise are associated with airports significantly larger than Tracy Airport and having more operations by larger, noisier aircraft. In addition, any such impacts are associated with very high cumulative noise levels, i.e., in excess of CNEL 70dB.

APPENDIX I

AIR QUALITY METHODOLOGY AND ASSUMPTIONS

APPENDIX I:
AIR QUALITY METHODOLOGY AND ASSUMPTIONS

NOTE:

The Urbemis5 computer model was used to assess potential air quality impacts from the Master Plan project and the project alternative. Input for Tracy area conditions were used to override default settings (where appropriate) in the model. The total organic gases (TOG) estimate provided by Urbemis5 were converted to reactive organic compounds (ROC) or reactive organic gases (ROG) by the factors specified by the ARB.

The following pages contain the output data from the Urbemis5 model for surface traffic emissions, and APR-42 aircraft emissions.

APPENDIX I
AIRCRAFT EMISSION FACTORS AND CALCULATIONS

Methodology

The basic methodology for calculating aircraft emissions begins with a determination of aircraft fleet mix and activity levels. The fleet mix at theTracy Airport is entirely general aviation (as compared with air carrier or military) aircraft.

The landing/takeoff (LTO) cycle provides a basis for calculating aircraft emissions. During each mode of operation, the aircraft engines operate at a fairly standard power setting for a given aircraft category. Emissions for one complete cycle for a given aircraft can be calculated by knowing emission factors for specific aircraft engines at those power settings. Then, if the activity of all aircraft in the modeling zone can be determined for the inventory period, the total emissions can be calculated.

Pollutant Emissions

Aircraft pollutants of significance are hydrocarbons (HC), carbon monoxide (CO), oxides of nitrogen (NOx), sulfur dioxide (SO_2), and particulates (PM_{10}). The factors that determine the quantity of pollutant emitted are the emission index for each operating mode (pounds of pollutant per 1000 pounds of fuel consumed), the fuel consumption rate, and duration of each operating mode. HC and CO emission indexes are very high during the taxi/idle phases when aircraft engines are at low power and operate at less than optimum efficiency. The emission indexes fall as the aircraft moves into the higher power operating modes of the LTO cycle. Thus, operation in the taxi/idle mode, when aircraft are on the ground at low power, is a significant factor in calculating total HC and CO emissions. NO_x emissions, on the other hand, are low when engine power and combustion temperature are low but increase as the power level is increased and combustion temperature rises. Therefore the takeoff and climbout modes have the highest NOx emission rates.

Sulfur emissions typically are not measured when aircraft engines are tested. In evaluating sulfur emissions, it is assumed that all sulfur in the fuel combines with oxygen during combustion to form sulfur dioxide. Thus, sulfur dioxide emission rates are highest during takeoff and climbout when fuel consumption rates are high. Nationally the sulfur content of fuel remains fairly constant from year to year at about 0.05% wt. for commercial jet fuel, 0.025% wt. for military fuel, and 0.006% wt. for aviation gasoline.

Particulates form as a result of incomplete combustion. Particulate emission rates are somewhat higher at low power rates than at higher rates since combustion efficiency improves at higher engine power. However, particulate emissions are highest during takeoff and climbout because the fuel flow rate also is high. It is particularly difficult to estimate the emissions of this pollutant. Direct measurement of particulate emissions

from aircraft engines typically are not available, although emission of visible smoke is reported as part of the engine certification procedure.

General Aviation Aircraft Emissions

Defining the mix and activity level of general aviation aircraft is more difficult than for commercial aviation. The FAA does not track operations by aircraft model for general aviation aircraft and no other sources for these data exist. Whatever information is generally available comes from the State or from the operations officials at individual airports. Detailed model information for aircraft operating in the inventory area is difficult to locate, and may add only relatively small improvement in accuracy to the emissions inventory compared to treating general aviation as though they were made up of a representative mix of aircraft. A single emission index can be used which is made up of a representative fleet mix, which gives a rough estimate of emissions for the category. The following indexes were calculated based on 1988 fleet data for general aviation aircraft by the EPA:

HC	0.394 pounds per LTO
No_x	0.065 pounds per LTO

Calculations (1996 Annual Operations)

HC = 0.394 LBS/LTO x 54,000 annual OPS / 2(=LTO)/2000 = 5.32 tons per year.
No_x = 0.065 LBS/LTO x 54,000 annual OPS / 2(=LTO)/2000 = 0.88 tons per year.

Calculations (2016 Annual Operations)

HC = 0.394 LBS/LTO x 107,200 annual OPS / 2 (=LTO)/2000 = 10.55 tons per year.
No_x = 0.065 LBS/LTO x 107,200 annual OPS / 2 (=LTO)/2000 = 1.74 tons per year.

Sources

U.S. Department of Transportation. FAA Aircraft Engine Emission Database (FAEED), Office of Environment and Energy, Federal Aviation Administration 1991.

U.S. Environmental Protection Agency, September, 1985. Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, AP-42, (Aircraft data from February 1980). Ann Arbor, Michigan

PROJECT NAME: **TRACY AIRPORT MASTER PLAN - BASE CASE 1996** Date: January 12, 1998

Project Area:

Analysis Year: **1996 Temperature (F): 75 Season: Summer**

EMFAC Version: Emfac7f1.1(12/93)

Summary of Land Uses:

Note: Urbemis5 does not list "airport" as a land use choice for air quality modeling. However, since the vehicle mix and trip generation rates for the "Industrial Park" category are the most similar to those of a small general aviation airport, the industrial park category was used as the basis for airport surface vehicle emissions modeling. Airport ADT were converted to an equivalent industrial park size for modeling purposes (i.e., the airport's 224 ADT are the approximate equivalent of the traffic generated by a 32,000 sq. ft. industrial park facility with a trip generation rate of 7 trips per 1,000 sq. ft.).

Unit Type	Trip Rate	Size	Tot Trips
Industrial Park	7.0/100 sq. ft.	32,000	224

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	72.3	2.4	96.9	0.6
Light Duty Trucks	16.3	1.3	97.8	0.9
Med. Duty Trucks	5.4	2.8	97.2	0.0
Hvy. Duty Trucks	2.4	28.7	71.3	N/A
Hvy. Duty Trucks	0.8	N/A	N/A	100.0
Motorcycles	2.8	100.0	N/A	N/A

Travel Conditions:

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	4.7	2.4	5.2	4.2	3.6
% Started Cold	88.3	40.2	58.3	77.4	27.2
Trip Speed	25	25	25	30	30
Percent Trip	27.3	21.2	51.5	N/A	N/A

Project Emissions Report in Pounds/Day:

Unit Type	TOG	CO	NO_X	ROG (ROC)	FUEL (Gal.)	PM_{10}	SO_X
Industrial Park	2.72	21.12	2.17	N/A	40.5	0.21	0.13
Totals	2.72	21.12	2.17	N/A	40.5	0.21	0.13

PROJECT NAME: **TRACY MUNICIPAL AIRPORT MASTER PLAN - 2016**

Date: January 12, 1998

Project Area:

Analysis Year: **2016 Temperature (F): 75 Season: Summer**

EMFAC Version: Emfac7f1.1(12/93)

Summary of Land Uses:

As with the base case scenario, the "industrial park" land use category is used to model airport surface vehicle emissions. The projected 442 airport ADT in 2016 are comparable to a 63,000 sq. ft. industrial park facility. The airport hotel is assumed to have 50 rooms.

Unit Type	Trip Rate	Size	Tot Trips
Industrial Park	7.0/1000 sq. ft.	63,000	442
Hotel	9.6/unit	50 units	480

Vehicle Assumptions:
Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	72.3	0.0	100.0	0.0
Light Duty Trucks	16.3	0.0	100.0	0.0
Med. Duty Trucks	5.4	0.0	100.0	0.0
Hvy. Duty Trucks	2.4	11.0	89.0	N/A
Hvy. Duty Trucks	0.8	N/A	N/A	100.0
Motorcycles	2.8	100.0	N/A	N/A

Travel Conditions:

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	4.7	2.4	5.2	4.2	3.6
% Started Cold	88.7	40.5	59.0	78.0	27.8
Trip Speed	25	25	25	30	30
Percent Trip	27.3	21.2	51.5	N/A	N/A

Project Emissions Report in Pounds/Day:

Unit Type	TOG	CO	NO_X	ROG (ROC)[1]	FUEL (Gal.)	PM_{10}	SO_X
Industrial Park	1.51	14.17	2.27	1.40	79.3	0.38	0.25
Hotel	1.42	13.05	2.28	1.32	81.4	0.39	0.26
TOTALS	2.93	27.22	4.55	2.72	160.7	0.76	0.52

1. ROG = TOG x 0.928 for 2015.