APPENDIX F: AIRPORT LAND USE COMPATIBILITY REPORT

Please see the next page.

City of San Luis Obispo

General Plan Update, Land Use & Circulation Element (LUCE)

Airport Land Use Compatibility Report - DRAFT

November 22, 2013

As updated June 2014 (see enclosed errata for overview of updates included)

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Errata Sheet

This errata sheet describes modifications to the finalized Airport Land Use Compatibility Report that clarify information or update data. Editorial changes such as sentence structure, word choice, punctuation, use of acronyms, spacing, style, spelling and capitalization have also been made, but are not recorded.

Page	Description
E-1	Clarification regarding forecasts.
2	Clarification regarding Airport Area Specific Plan (AASP).
5	Update to Figure 1-3 – Study Area.
6	Clarification regarding GIS mapping of Airport Land Use Commission's (ALUC's) Draft Dimensional Detail of Airport Safety Zones document and submittal and review of City's General Plan by the ALUC.
11	Clarification of California Airport Land Use Planning Handbook safety zone configurations.
14	Clarification regarding density and intensity and compatibility with airport activities.
38	FAA Terminal Area Forecast (TAF) shown in Table 5-1 was updated to reflect operational numbers released in January, 2014.
39	Forecast numbers updated in narrative to reflect FAA TAF operational numbers released in January, 2014.
41	FAA TAF numbers shown in Table 5-2 were updated to reflect operational numbers released in January, 2014.
59	Update to Figure 8-2 – Existing Land Uses.
66	Clarification regarding GIS mapping of ALUC's Draft Dimensional Detail of Airport Safety Zones document.
67	Update to Figure 8-4 – GIS-Mapped ALUP Safety Zones Compared to Handbook Safety Zones.
68	Clarification regarding GIS mapping of ALUC's Draft Dimensional Detail of Airport Safety Zones document.
70	Update to Table 9-1 to reflect recommendation to use California Airport Land Use Handbook density and land use surrounding airport.

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EXECUTIVE SUMMARY

The purpose of this Airport Land Use Compatibility Report is to establish the basis for the airport-area policies chapter in the City of San Luis Obispo General Plan, Land Use and Circulation Element (LUCE) Update.

This Report also provides updated technical information on the progress of airport development and operations since the completion of the most recent San Luis Obispo County Regional Airport (SBP) Master Plan Update. The Master Plan Update was completed in 2003, revised in 2004, and accepted by the Board of Supervisors of the County in 2005. In the 10 years since this planning was completed, much has changed in the aviation industry and as a result the forecasts of aviation activity at SBP require significant updates to align with the Federal Aviation Administration's (FAA's) official Terminal Area Forecast (TAF) for the facility[1]. Airport facilities, operations and related forecasts are critical elements for defining and assessing future land use compatibility. Supporting this updated information is accurate graphical information system (GIS) mapping of the Airport's safety zones, noise impact areas and overflight areas.

The City and the San Luis Obispo County Airport Land Use Commission (ALUC) have been trying to reconcile differences since 2012 between the details of the Airport Land Use Plan (ALUP), the Draft Dimensional Detail of Airport Safety Zones document, and compatible land use zoning within the City limits. The City assisted the ALUC in accurately mapping the assumptions behind the adopted ALUP zones into a GIS format to provide a basis for discussion and suggestions for an update to the ALUP that would balance the interests of the ALUC, the City, and the County. Currently there are four primary areas to resolve between the proposed update to the ALUP and proposed City land use zoning. These generally include:

1. ALUP Maneuvering Zone S-1b size and land use criteria, which are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria.
2. ALUP Sideline Zone S-1c size and land use criteria, which are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria.
3. ALUP Zone S-2 size and land use criteria, which are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria.
4. ALUP aircraft noise contours and associated land use criteria, which are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria, and based on outdated forecasts that are significantly more optimistic than those in the Airport Master Plan Update (2005), FAA forecasts, existing aviation activity, and reasonably foreseeable airport operations at SBP.

It is the intent of the City to continue working with the ALUC to find common ground and resolve these issues. This report provides information about land use compatibility guidelines in the State of California, existing and future facilities and activity at SBP, and other factual information on each of the above points to fully inform the review and deliberation process.

[1] FAA Advisory Circular 150/5070-6B: Airport Master Plans, May 1, 2007. See Sections 205.a.1) "Forecast of Demand" and 704.g. "Approval of Forecasts" for FAA planning review requirements and forecast update requirements.

The recommendations are based on the facts and substantial information that has been reviewed and assembled within this Report.

RECOMMENDATIONS

Recommendation 1: The City should continue to entertain discussions with the County to annex the Airport Area Specific Plan (AASP) area.

Recommendation 2: The City should use the SBP Master Plan forecasts of aviation activity as a reasonably foreseeable projection of ultimate aviation activity sufficient for long-term land use planning purposes, without regard for the date of 2023 because it is uncertain when the forecast levels of activity will be reached and to be consistent with the capital improvement plan for the Airport.

Recommendation 3: The City should use the aircraft noise analysis prepared for the SBP Environmental Assessment/Environmental Impact Report (EA/EIR) as an accurate mapping of the long term noise impact of the Airport's aviation activity that is tied to the ultimate facilities development depicted in the FAA-approved Airport Layout Plan (ALP) and the operational characteristics studied in the EA/EIR.

Recommendation 4: The City should continue working with the ALUC to resolve differences between specific ALUP safety zone configurations, sizes and land use criteria including the following specific recommendations for areas within the City limits:

1. Adopt the GIS-mapped versions of the ALUP Runway Protection Zones (ultimate planned locations based on the FAA-Approved ALP).
2. Adopt the GIS-mapped versions of the ALUP S-1a Inner Approach/Departure Zones.
3. Adopt the GIS-mapped versions of the ALUP S-1b Inner Turning Zones.
4. Adopt the GIS-mapped versions of the ALUP S-1b Outer Approach/Departure Zones.
5. Adopt the GIS-mapped versions of the ALUP S-1b Sideline Zones.
6. Eliminate ALUP Maneuvering Zone S-1b due to the fact that its size, configuration and land use criteria are inconsistent with California Airport Land Use Planning Handbook guidelines and criteria, i.e. there is no such equivalent zone in the Handbook. This zone is also unsubstantiated by the airport's activity forecasts as used for noise planning purposes, historical accident data at SBP, or safety zone adjustment factors as described in Table 3A of the Handbook.
7. Eliminate ALUP Sideline Zone S-1c due to the fact that its size, configuration and land use criteria are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria, i.e. there is no such equivalent zone in the Handbook. This zone is also unsubstantiated by the airport's activity forecasts as used for noise planning purposes, historical accident data at SBP, or safety zone adjustment factors as described in Table 3A of the Handbook.
8. Revise ALUP Zone S-2 size, configuration and land use criteria to be consistent with Zone 6 – Traffic Pattern of the California Airport Land Use Planning Handbook guidelines and criteria.
9. Adopt Title 14 Code of Federal Regulations (CFR) Part 77 surfaces for the safe, efficient use and preservation of navigable airspace as applied to the ultimate ALP for SBP.

Recommendation 5: Land use density and intensity surrounding SBP should be simplified and consistent with Caltrans Airport Land use Planning Handbook guidelines.

Recommendation 6: The City should preserve and maintain as a plausible alternative its constitutional land use authority to overrule the ALUC with regard to adopting an amendment to its General Plan LUCE

that is consistent with the Handbook, State Aeronautics Act and State Law, but only if agreement cannot be reached with the ALUC.

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1 INTRODUCTION

1.1 Purpose

The purpose of this Airport Land Use Compatibility Report (Report) is to establish the basis for the airport-area policies chapter in the City of San Luis Obispo General Plan, Land Use and Circulation Element (LUCE) Update. The San Luis Obispo Regional Airport (SBP or Airport) is located southeast of the City in San Luis Obispo County and its influence area impacts land use in the southern portion of the City. Consistent with the purposes of the California State Aeronautics Act (SAA)[2] and the California Public Utilities Code (PUC)[3], the City's goal in this airport land use compatibility planning effort is to "protect public health, safety, and welfare" by adopting land use measures within the City's jurisdiction that "minimize the public's exposure to excessive noise and safety hazards" near the San Luis Obispo County Airport "to the extent that these areas are not already devoted to incompatible uses." This Report provides the City with a mechanism by which to assess land use compatibility and development surrounding the Airport within the City limits and within those areas near the Airport considered for annexation into the City. The City's ultimate objective is to reach land use decisions that achieve a balance between quality of life, protection of natural assets and open spaces, airport safety, and compatible development that is responsive to the City's economic and quality of life needs.

This Report also provides updated technical information on the progress of airport development and operations since the completion of the most recent Airport Master Plan Update. The Airport Master Plan Update was completed in 2003, revised in 2004, and accepted by the Board of Supervisors of the County in 2005. In the 10 years since this planning was completed, much has changed in the aviation industry and as a result the forecasts of aviation activity reflected in the Airport Master Plan Update require significant updates to align with the Federal Aviation Administration's (FAA's) official Terminal Area Forecast (TAF) for the facility[4]. Existing and planned airport facilities, current operations, and related forecasts are critical elements for defining and assessing future land use compatibility. Supporting this updated information is accurate graphical information system (GIS) mapping of the Airport's safety zones, noise impact areas, and overflight areas.

1.2 Background

The City has been involved in compatible land use planning around the Airport for many years. The Airport is a key economic and transportation asset to the community and its long term viability and protection are critical to the City's future. As the local land use authority within its boundaries, the City is responsible for land use planning and entitlement of associated development.

San Luis Obispo County, as the airport owner and sponsor, completed and adopted an Airport Master Plan for SBP in 2005. In 2006 the County completed and certified an Environmental Assessment (EA) and Environmental Impact Report (EIR) for extension of the main Runway 11/29 and other suggested Airport improvements. In 2010 the County received FAA approval of the Airport Layout Plan (ALP), as

[2] California Public Utilities Code § 21001-21020

[3] California Public Utilities Code § 21670

[4] FAA Advisory Circular 150/5070-6B: Airport Master Plans, May 1, 2007. See Sections 205.a.1) "Forecast of Demand" and 704.g. "Approval of Forecasts" for FAA planning review requirements and forecast update requirements.

shown in *Figure 1-1*, depicting planned airport improvements that were developed through the master plan and environmental process. The Airport has since completed construction on a number of airport improvement projects that were identified in the Master Plan Update. These major projects include:

- Extending Runway 11/29 to 6,100 feet.
- Constructing an engineered material arresting system (EMAS) in the Runway 11/29 safety areas.
- Shifting and shortening Runway 7/25 to remove its intersection with Runway 11/29.
- Service road improvements.

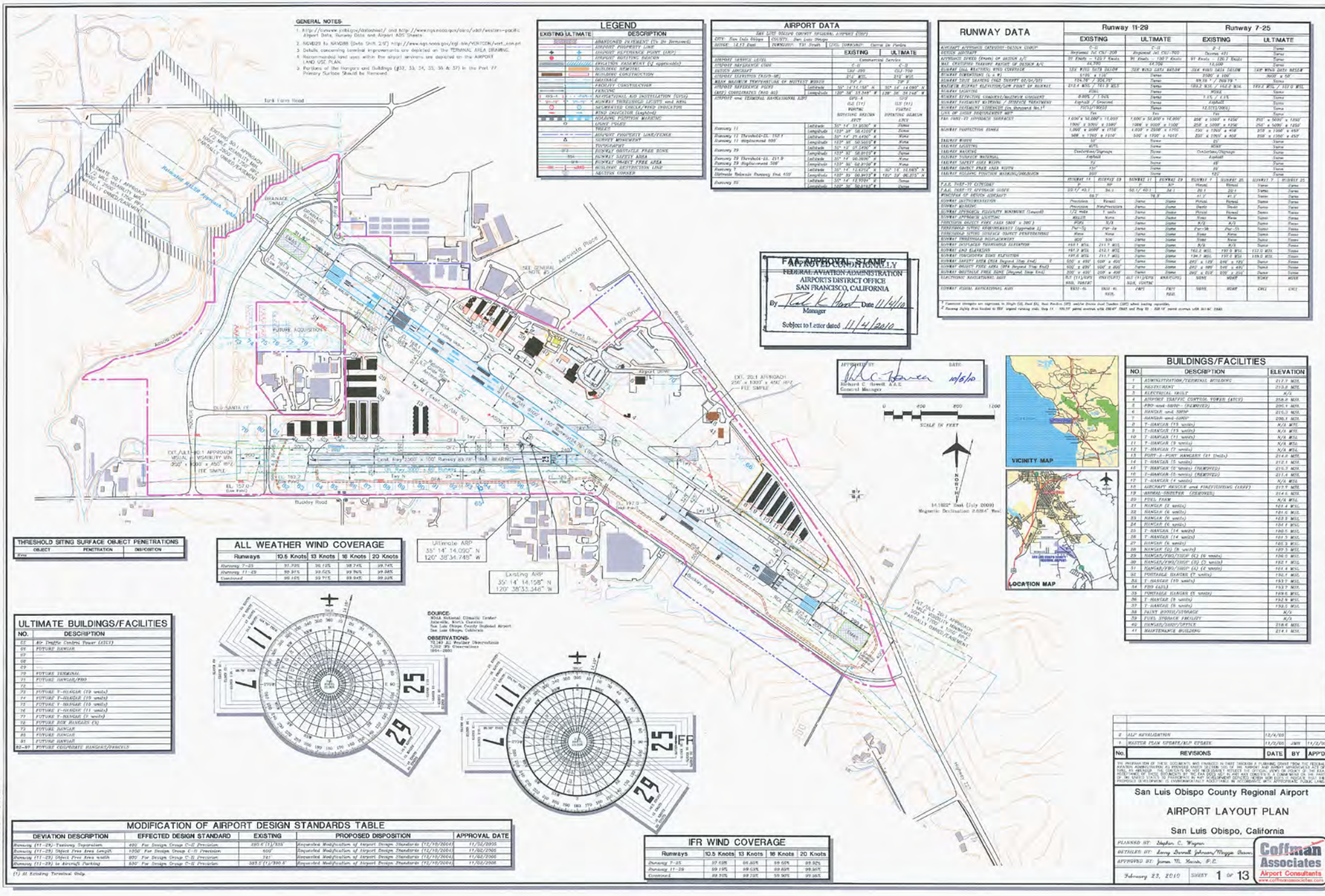
There are a number of other airfield improvements identified in the adopted Master Plan Update and FAA-approved ALP that remain to be completed over time. This Report assumes that these airfield improvements will be completed within the next 20 to 30 years as demand and activity warrant, and as funding is available and justified.

In addition to the areas of the City affected by airport operations, the City has an adopted Airport Area Specific Plan (AASP) that plans for the ultimate annexation of the land surrounding the Airport as well as the Airport property. Some of the land within the AASP has already been annexed but the largest portions still remain outside City limits. The AASP boundary is shown in *Figure 1-2*.

1.3 Study Area

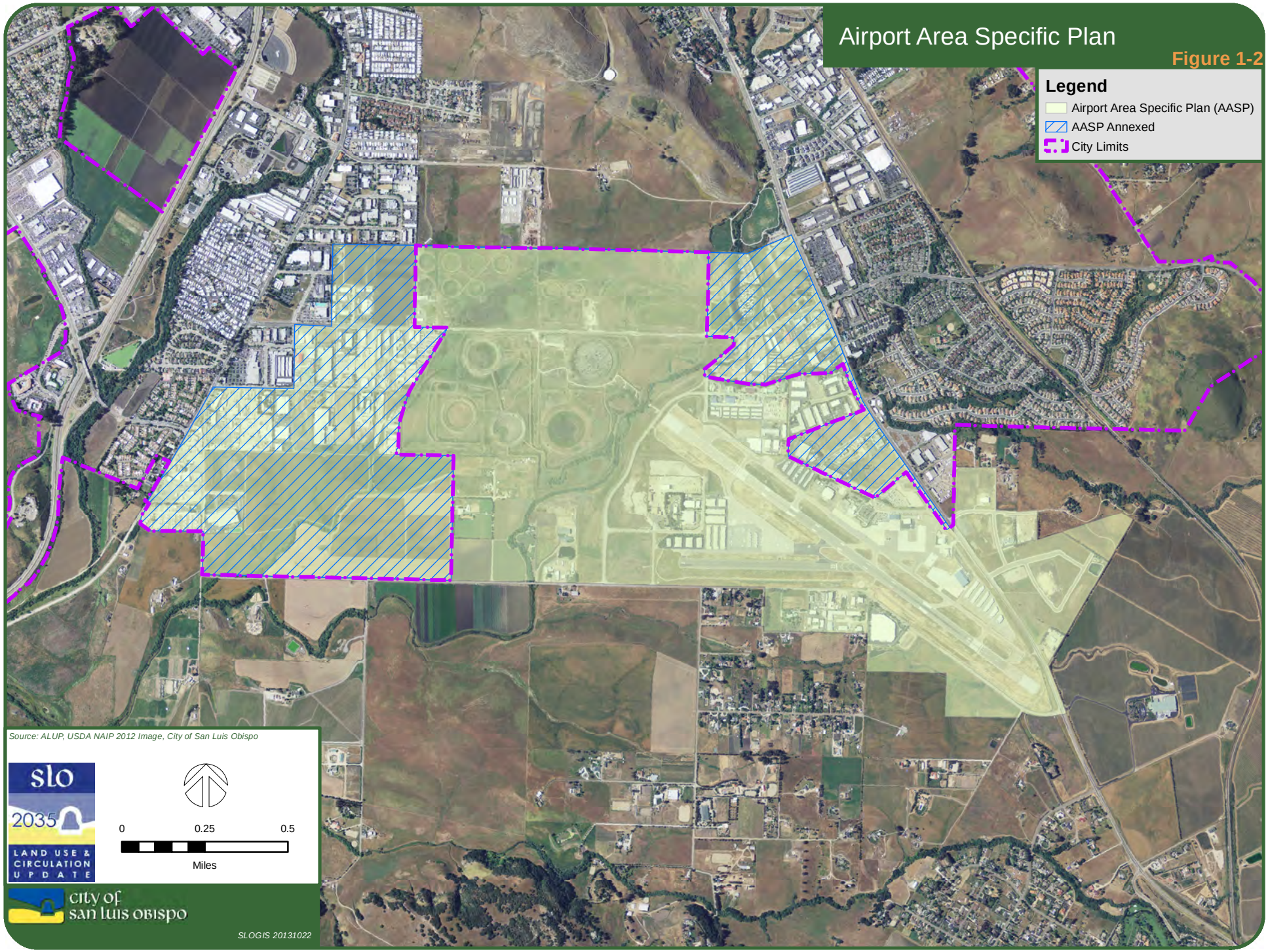
The study area for this Report and analysis is confined to the San Luis Obispo city limits and includes areas adjacent to these City limits that have been considered by the City for annexation in the Airport area (*Figure 1-3*). This study area is a subset of the larger airport influence area (AIA) as defined within the Airport Land Use Plan (ALUP). Specifically, this Report is focused on the area in which current or future airport-related noise, overflight, safety, or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses consistent with the purposes of the State Aeronautics Act.

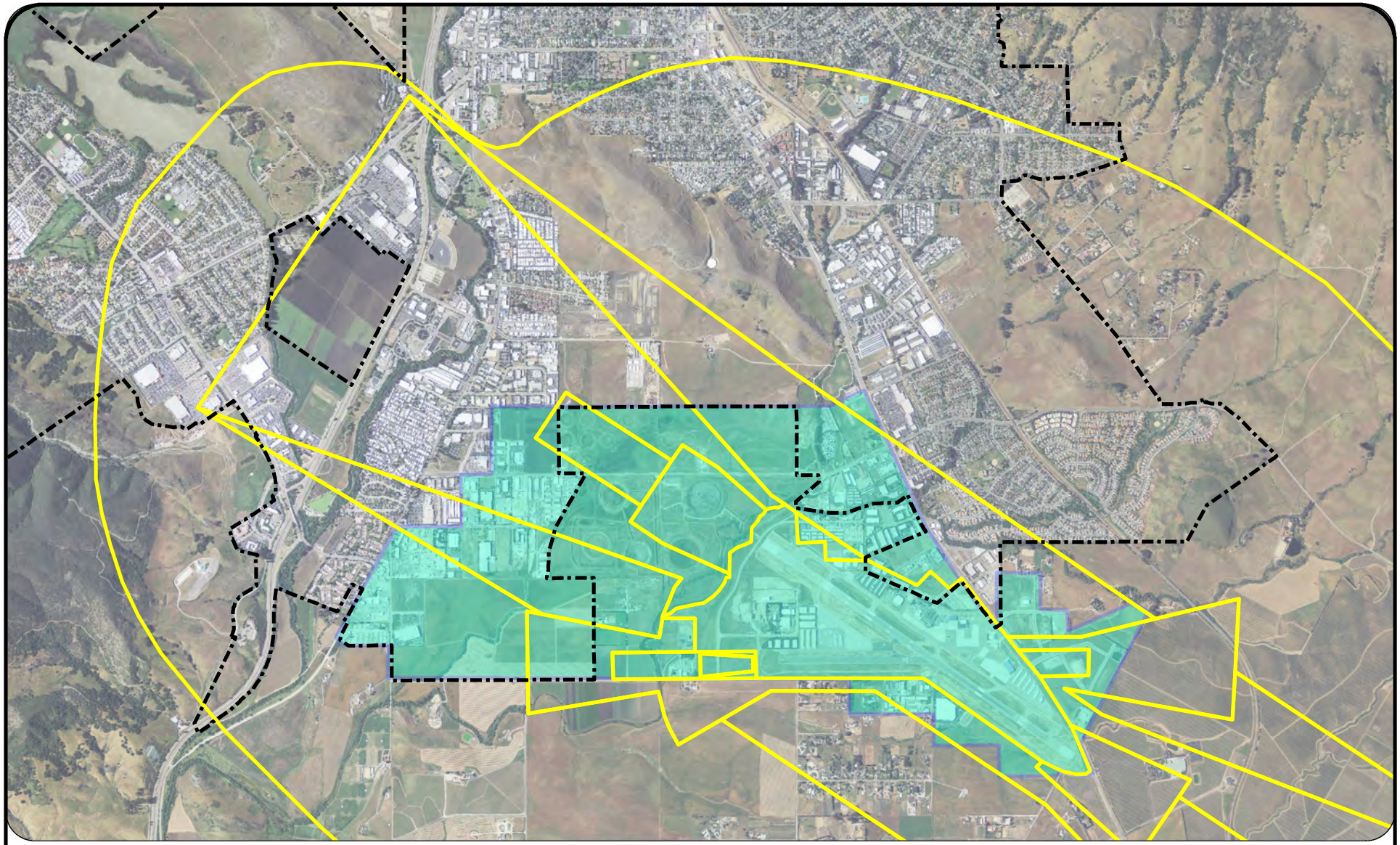
Figure 1-1 - San Luis Obispo Regional Airport FAA-Approved Airport Layout Plan



Airport Area Specific Plan

Figure 1-2





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city of san luis obispo

Figure 1-3
Study Area

1.4 Relationship to Airport Land Use Plan

The San Luis Obispo County Airport Land Use Commission (ALUC) is an independent body created by the State Legislature to support the orderly expansion of the airport and to coordinate compatible land use planning. The ALUC has two basic duties: 1) to prepare airport compatibility plans, and 2) to review referring agency actions and airport plans. The ALUC has developed, adopted, and amended the Airport Land Use Plan (ALUP) for SBP, the latest of which was amended in 2005. Between 2012 and 2013, the ALUC prepared a Draft Dimensional Detail of Airport Safety Zones document to address changes to the ALUP safety zones based on recommended improvements in the Master Plan Update. The City requested, and provided GIS staff and technical assistance to accurately map the described safety zones into a graphically-depicted GIS format. The ALUC is currently considering an update to the ALUP.

The City will be required to submit its General Plan amendment to the ALUC for review and the ALUC will be required to provide a Consistency Determination on the City's General Plan amendment. Prior to this required submittal, review and determination, the City and the ALUC have been trying to reconcile differences since 2012 between the details of the ALUP, the Draft Dimensional Detail of Airport Safety Zones document, and compatible land use zoning within the City limits. The City has offered suggestions on an update to the ALUP that would balance the interests of the ALUC, the City, and the County. Currently there are four primary areas to resolve between the ALUP, the Draft Dimensional Detail of Airport Safety Zones document, and proposed City land use zoning. These generally include:

1. Maneuvering Zone S-1b size and land use criteria, which are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria.
2. Sideline Zone S-1c size and land use criteria, which are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria.
3. Zone S-2 size and land use criteria, which are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria.
4. Aircraft noise contours and associated land use criteria, which are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria and are not based on forecasts in the adopted Airport Master Plan or corresponding Environmental Assessment/Environmental Impact Report (EA/EIR) completed in 2006.

It is the intent of the City to continue working with the ALUC to find common ground and resolve these issues.

This Report provides information about land use compatibility guidelines in the State of California, existing and future facilities and activity at SBP, and other factual information on each of the above points to inform the review and deliberation process.

2 LAND USE COMPATIBILITY CRITERIA

Land use compatibility in the vicinity of airports is about protecting persons and property on the ground from aircraft hazards, and limiting the public's exposure to aircraft noise. The Federal Aviation Administration (FAA) has no regulatory power to require or empower communities to implement land use planning, except that the airport sponsor's[5] ability to receive FAA grant funds is tied to land use compatibility. As outlined in Grant Assurance 21[6], "all airports that accept federal money must take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to, or in the immediate vicinity of, the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft".

Consequently, it is important that airports and local communities work together to establish compatible land uses around airports, and for state governments to provide for specific airport land use planning legislation. The FAA does provide resources on topics related to land use issues, such as noise, but it is up to the local airport sponsor to implement the recommendations in these various resource documents. Additionally, in California, the State Department of Transportation, Aeronautics Division publishes *The California Airport Land Use Planning Handbook* as an implementation of the State Aeronautics Act that has detailed standards to guide airport compatibility planning efforts.

Planners, developers, and airport sponsors should rely on the height, use, noise, safety, and density criteria that are compatible with airport operations. These criteria are set forth in FAA AC 150/5300-13A, *Airport Design* (2012), Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace* (1993), FAR Part 150, *Airport Noise Compatibility Planning Program*, FAA AC 150/5020-1, *Noise Control and Compatibility Planning for Airports* (1983), FAA AC 150-5190-4A, *A Model Zoning Ordinance to Limit Height of Objects around Airports* (1987), the California Airport Land Use Planning Handbook (2011), and Sections 5001 to 5037, 21661 to 21669.6, and 21670 to 21679.5 of the California Public Utilities Code.

2.1 Noise

Noise can be a controversial topic for persons living near an airport. As per the California Public Utilities Code, "noise-sensitive land use" means residential uses, including detached single-family dwellings, multifamily dwellings, high rise apartments or condominiums, mobile homes, public and private educational facilities, hospitals, convalescent homes, churches, synagogues, temples, and other places of worship.

Even though the level of noise acceptable to a person residing in the vicinity of an airport has been determined by the FAA and the State of California to be a community noise equivalent level (CNEL) of 65 decibels (dB), it is not uncommon for individual perceptions to differ. Noise may be controlled or reduced by discouraging aircraft with higher noise levels from operating at the airport, encouraging approach and departure flight paths away from noise-sensitive land uses, planning runway utilization schedules that take into account noise sensitive periods, employing natural or man-made noise shielding, acquiring avigation easements, using acoustical insulation (interior noise level standards have

[5] An airport sponsor is an agency, such as an airport authority, authorized by the FAA to own and operate an airport and be able to meet all applicable requirements of current laws and regulations.
[6] See FAA Grant Assurances – Airport Sponsors, April 2012, http://www.faa.gov/airports/aip/grant_assurances/media/airport_sponsor_assurances_2012.pdf

been established in the California Building Code [CBC] at 45 dB in any habitable room), or acquiring land where acoustical insulation is not an option. However, the best way to protect persons from excessive noise exposure is for the airport to carry out a Part 150 Noise Compatibility Program (NCP).

A Part 150 NCP shows what measures the airport operator has taken, or proposes to take, to reduce noncompatible land uses and prevent the introduction of additional noncompatible land uses within the area covered by the airport's noise exposure map (NEM). Table 1 in Appendix A of FAR Part 150 (duplicated here as *Table 2-1*) describes compatible land use as a function of yearly day-night average sound levels (YDNL). Compatible or noncompatible land use is determined by comparing the predicted or measured YDNL values at a site with the values given.

Table 2-1 – FAR Part 150 Land Use Compatibility

TABLE 1—LAND USE COMPATIBILITY* WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS

	Yearly day-night average sound level (L_{dn}) in decibels					
Land use	**Below 65**	**65-70**	**70-75**	**75-80**	**80-85**	**Over 85**
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	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(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y

Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	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

NOTES:

SLUCM=Standard Land Use Coding Manual.

Y (Yes) =Land Use and related structures compatible without restrictions.

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 use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

(1) Where the community determines that residential or school 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 residential 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.

(2) Measures to achieve NLR 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.

(3) Measures to achieve NLR of 30 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.

(4) Measures to achieve NLR 35 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 level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

Noise contours and details about the noise environment at SBP are provided in Chapter6, *Airport Noise*. The existing noise restrictions set in the ALUP are described in Section 6.2, *Airport Land Use Plan Noise Analysis Review*.

2.2 Safety

Land use nearest the runways is controlled by runway protection zones (RPZs). RPZs were originally established to define land areas underneath aircraft approach paths in which control by the airport operator was highly desirable to prevent the creation of air navigation hazards. Ultimately, it is desirable for airport owners to own the property under the runway approach and departure areas to at least the limits of the RPZ, clear the entire RPZ of all above-ground objects, or at least maintain the RPZ clear of all facilities supporting incompatible activities.

As per the most recent FAA interim land use guidance[7], the following land uses within an RPZ require coordination with the FAA: 1) Buildings and structures such as residences, schools, churches, hospitals, or commercial and industrial buildings, 2) Recreational land use such as golf courses, sports fields, amusement parks, and other places of public assembly, 3) Transportation facilities such as rail facilities, public roads and highways, and vehicular parking facilities, 4) Fuel storage facilities (above and below ground), 5) Hazardous material storage (above and below ground), 6) Wastewater treatment facilities, and 7) Above-ground utility infrastructure (i.e. electrical substations), including any type of solar panel installations.

Beyond the RPZ, land use compatibility deals with protecting the airspace surrounding the airport from obstructions, whether natural growth, terrain, or permanent or temporary construction. As per FAR Part 77 regulations, the FAA requires notification for the following: 1) any construction or alteration of more than 200 feet above ground level (AGL), 2) any construction or alteration of greater height than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from a runway end at airports having at least one runway 3,200 feet in length, 3) any highway, railroad, or other traverse way for mobile objects, 4) any construction or alteration that would be in an instrument approach area, and 5) any construction or alteration at an airport listed in the Airmen's Information Manual (AIM) and Alaska or Pacific Airman's Guide, an airport under construction, or an airport operated by the US armed forces.

Obstruction clearance must also be provided for all en route and terminal (airport) instrument procedures including the approach, landing, missed approach, and departure segments, as per the United States Standard for Terminal Instrument Procedures (TERPS), described in FAA Order 8260.3B (June, 2009). Neither the ground nor any obstacles can penetrate a TERPS surface without need to modify the procedure.

The One-Engine Inoperative (OEI) Obstacle Identification surface must also be free from obstructions. This surface starts at the same elevation as the departure end of the runway and slopes upward at 1 foot vertically to 62.5 feet horizontally (62.5:1). The inner width of the OEI surface is 600 feet, the outer width is 12,000 feet, and the surface extends for a distance of 50,000 feet along the extended runway centerline. Specific dimensions for safety areas surrounding SBP are provided in Chapter 4*, Safety and Airspace Protection*.

While RPZs and Part 77 surfaces can been used as a starting point for establishing safety compatibility zones, there are shortcomings for purposes of land use safety, and historical accident location patterns must be identified. The California Airport Land Use Planning Handbook states that "runway protection zones encompass only the most highly concentrated areas of accident locations near runways, and while FAR Part 77 surfaces cover a much greater geographic area, they were established for the purposes of airspace protection, not safety compatibility for people and land uses on the ground". An analysis of accidents at SBP is provided in Section 4.2, *Accidents at SBP*.

2.3 Safety Compatibility Zones

California Public Utilities Code (PUC), Section 21675(a) requires preparation of an airport land use compatibility plan (ALUCP) for each public use airport in the State of California, and that land use plan must be guided by the creation of safety compatibility zones as per the California Airport Land Use Planning Handbook (2011).

[7]Interim Guidance on Land Uses within a Runway Protection Zone, Memorandum, dated September 27, 2012; http://www.faa.gov/airports/planning_capacity/media/interimLandUseRPZGuidance.pdf.

There are two components to safety compatibility policies: 1) identification of the locations where safety (risk of aircraft accidents) is a concern, and 2) definition of appropriate land use measures addressing those risks. The California Airport Land Use Planning Handbook provides examples of different safety zone configurations based on runway configuration and type of airport (general aviation, large air carrier, or military) to assist in the delineation of safety zones for a given airport.

Figure 2-1 depicts the following safety zones as recommended by the California Airport Land Use Planning Handbook that are applicable to an airport like SBP:

Zone 1: Runway protection zone and within runway object free area adjacent to the runway.

Zone 2: Inner approach/departure zone.

Zone 3: Inner turning zone.

Zone 4: Outer approach/departure zone.

Zone 5: Sideline zone.

Zone 6: Traffic pattern zone (not applicable to large air carrier airports).

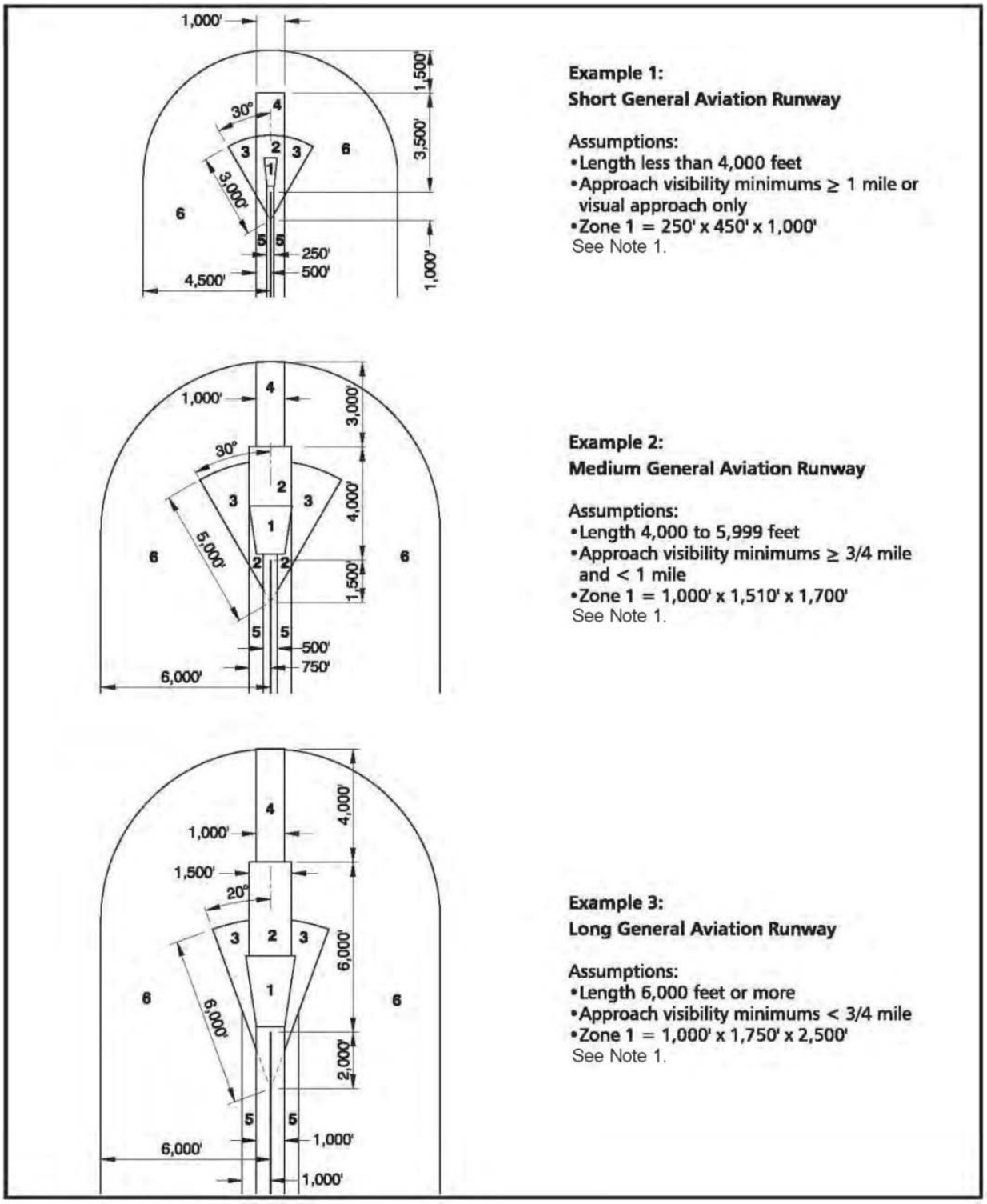
Example 1 in *Figure 2-1* should be applied to Runway 7-25, and Example 3 should be applied to Runway 11-29. The application of these zones to SBP is shown in *Figure 2-2*. While ALUCs are not mandated to use the sample zones provided in the Handbook, they are mandated to use the Handbook's guidance to create zones that have easily definable geometric shapes, are as compact as possible, have a distinct progression in the degree of risk represented, and are limited to a realistic number (five or six should be adequate in most cases).

Adjustments to the safety zones recommended by the California Airport Land Use Planning Handbook should be made if there are certain physical and operational characteristics present at the airport such as high terrain, roads, or non-standard instrument approach procedures. These characteristics are summarized in Table 3A of the Handbook, which is included in this report as Appendix A, *Handbook Safety Zone Adjustment Factors*.

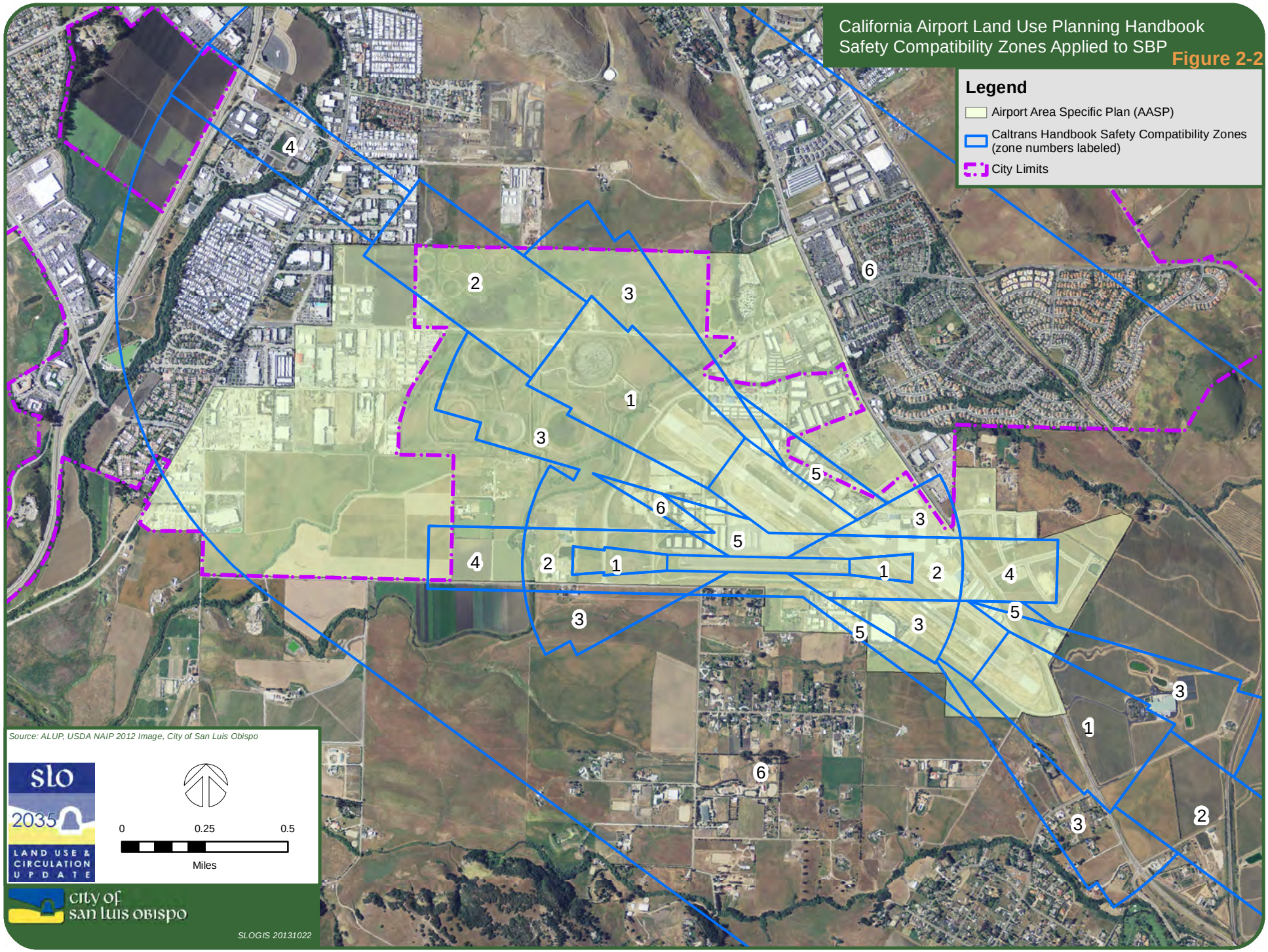
An assessment of whether any of these adjustment factors apply to SBP is provided in Section 4.3, *Safety Zone Adjustment Factors*.

The safety zones currently described in the ALUP are summarized in Section 8.4, *Land Use within Existing ALUP Safety Zones*.

Figure 2-1 – California Airport Land Use Planning Handbook Safety Compatibility Zones for GA Runways



Source: California Airport Land Use Planning Handbook


California Airport Land Use Planning Handbook
Safety Compatibility Zones Applied to SBP
Figure 2-2
Legend
Airport Area Specific Plan (AASP)
Caltrans Handbook Safety Compatibility Zones (zone numbers labeled)
City Limits
Source: ALUP, USDA NAIP 2012 Image, City of San Luis Obispo
slo 2035 LAND USE & CIRCULATION UPDATE
0
0.25
0.5
Miles
city of san luis obispo
SLOGIS 20131022

2.4 Density

Land use density criteria are the result of careful balancing between noise impacts and the progression in the degree of reduced safety risk further away from the runway end and the extended runway centerline. Density criteria are critical to actual land use compatibility control measures that result from the planning process.

To be compatible with airport activities, the number of dwelling units per acre or intensity of commercial development should not exceed the criterion specified for the safety compatibility zone where the use would occur. In general, the California Airport Land Use Planning Handbook suggests limiting the maximum number of dwellings or people in areas close to the airport, and avoiding highly risk-sensitive uses, such as schools, hospitals, and other uses in which the mobility of occupants is effectively limited. Critical public infrastructure should be avoided. Aboveground storage of large quantities of highly flammable or hazardous materials also should be avoided near airports. Appendix B*, California Airport Land Use Planning Handbook Safety Zone Criteria*, shows Figures 4B through 4G from the Handbook, which outlines the density criteria suitable for each recommended safety zone. This density criterion as well as the most stringent allowed and prohibited land uses are summarized in *Table 2-2*.

The density criteria listed in the ALUP are summarized in Section 8.4, *Land Use within Existing ALUP Safety Zones*.

Table 2-2 - California Airport Land Use Planning Handbook Density Criteria and Land Use - San Luis Obispo County Regional Airport

Zone	Maximum Densities: Non-residential (persons/acre)[1]	Maximum Densities: Residential (dwelling units/acre)[1]	Prohibited Uses	Normally Allow
1 - RPZ and ROFA adjacent to runway	0[1]	0	All new structures and residential land uses.	None
2 - Inner app/dep zone	10-40 (rural); 40-60 (suburban); 60-80 (urban); Allow infill at up to average intensity of comparable surrounding uses (dense urban).	For rural, maintain current zoning if less than density criteria for suburban setting; 1 per 10-20 acres (suburban); 0 (urban, dense urban)	Theatres, meeting halls and other assembly uses. Office buildings greater than 3 stories. Labor-intensive industrial uses. Children's schools, large daycare centers, hospitals, nursing homes. Stadiums, group recreational uses. Hazardous uses (e.g. aboveground bulk fuel storage).	Agriculture (non-group recreational uses). Low-hazard materials storage, warehouses. Low-intensity light industrial uses (auto, aircraft marine repair services).[2]
3 - Inner turning zone	50-70 (rural); 70-100 (suburban); 100-150 (urban); allow infill at up to the average of surrounding residential area (dense urban).	For rural, maintain current zoning if less than density criteria for suburban setting; 1 per 2-5 acres (suburban); allow infill at up the average of surrounding residential area (urban, dense urban).	Major shopping centers, theaters, meeting halls, and other assembly facilities. Children's schools, large daycare centers, hospitals, nursing homes. Stadiums, group recreational uses.	Uses allowed in Zone 2. Greenhouses, low-hazard materials storage, mini-storage, warehouses. Light industrial, vehicle repair services. [2]
4 - Outer app/dep zone	70-100 (rural); 100-150 (suburban); 150-200 (urban); allow infill at up to average density/intensity of comparable surrounding users (dense urban).	For rural, maintain current zoning if less than density criteria for suburban setting; 1 per 2-5 acres (suburban); allow infill at up the average of surrounding residential area (urban, dense urban).	Children's schools, large daycare centers, hospitals, nursing homes. Stadiums, group recreational uses.	Uses allowed in Zone 3. Restaurants, retail, industrial. [2]
5 - Sideline zone	50-70 (rural); 70-100 (suburban); 100-150 (urban); allow infill at up to average of surrounding residential area (dense urban).	For rural, maintain current zoning if less than density criteria for suburban setting; 1 per 1-2 acres (suburban); allow infill at up to the average of surrounding residential area (urban, dense urban).	Stadiums, group recreational uses. Children's schools, large daycare centers, hospitals, nursing homes.	Uses allowed in Zone 4 (subject to height limitations for airspace protection). All common aviation-related activities provided that FAA height-limit criteria are met. [2]
6 - Traffic pattern zone	150-200 (rural); 200-300 (suburban); no limit in urban and dense urban areas, although large stadiums and similar uses should be avoided.	No limit in rural, suburban, urban, and dense urban areas, although noise and overflight should be considered.	None	Residential uses (however, noise and overflight impacts should be considered where ambient noise levels are low). [2]

[1/]Exceptions can be permitted for agricultural activities, roads, and automobile parking provided that FAA criteria are satisfied.

[2/]Other uses may be allowed as per the guidelines in the California Airport Land Use Planning Handbook.

Source: California Airport Land Use Planning Handbook

3 SAN LUIS OBISPO REGIONAL AIRPORT FACILITIES

The San Luis Obispo County Regional Airport (SBP) is located on 340 acres of land in the west-central portion of San Luis Obispo County, 3.5 miles southeast of the City of San Luis Obispo. The Airport has one main runway (Runway 11-29) and one smaller runway (Runway 7-25). The Airport is served by two regional carriers: US Airways Express and United Express. Two all-cargo operators also serve the airport: Ameriflight for UPS and WestAir Inc. for FedEx.

As per the 2013-2017 National Plan of Integrated Airport Systems (NPIAS) and California Aviation System Plan (CASP), SBP is classified as a primary, commercial service airport.

3.1 Existing Facilities

The design aircraft for SBP is the Canadair Regional Jet, which has an airport reference code of C-II. The design aircraft determines the airport design standards for runways, taxiways, and other facilities. There are two runways at SBP. Runway 11-29 is the runway used for the majority of aircraft operations. Runway 7-25 is mostly used by small, light, general aviation aircraft during crosswind conditions. Both runways have parallel taxiways.

The existing passenger terminal building is approximately 14,400 square feet and was constructed in 1983. It was remodeled in 2000 to provide additional baggage area, arrival area, and departure lounge area. There are two fixed based operators (FBOs) at SBP: ACI Aviation Services and San Luis Obispo Fuel Service. These two FBOs offer aviation fuel, aircraft hangars, a passenger terminal and lounge, aircraft charters, aircraft maintenance, catering, rental cars, and courtesy transportation. The Airport features 65 newer aircraft storage hangars, which opened in the spring of 2007. This six-building complex includes two restrooms as well as lighting and electrical outlets in each hangar. Three apron areas at the Airport serve scheduled flights and provide tie-down areas for single and multi-engine based aircraft and transient aircraft.

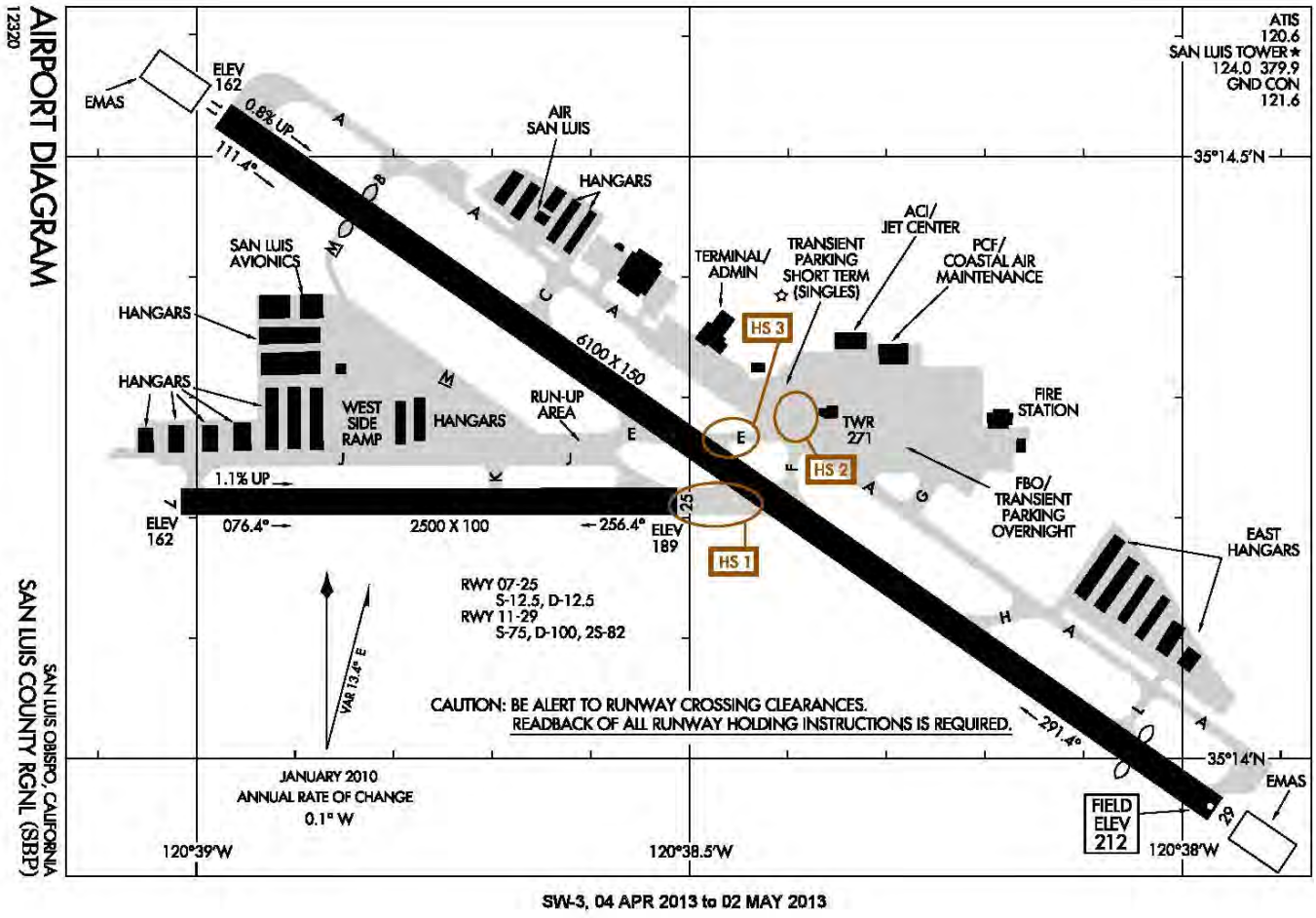
Figure 3-4 is an illustrative depiction of the existing facilities as per the 2013 Airport Facility Directory (AFD).

In addition to these two FBOs, the following businesses are located on the Airport, as per the Master Plan Update that was adopted in 2005:

- Air San Luis – Flight training, aircraft rental, aerial tours/sightseeing, aircraft charters, aircraft maintenance/modifications, aircraft painting/interiors.
- Coastal Air Maintenance – Aircraft maintenance, aircraft parts, oxygen service.
- Experimental Aircraft Association (EAA), Chapter 170 –Aviation organization.
- Golden State Propeller – Aircraft maintenance, aircraft parts.
- Helipro Inc. – Flight training, aircraft rental, aerial tours/sightseeing.
- MarcAir – Aircraft charter.
- PCF Aviation – Passenger terminal and lounge, flight training, aircraft rental, aerial tours/sightseeing, aircraft charters, pilot supplies, Internet access.

- San Luis Avionics – Avionics sales and service.
- San Luis Obispo Pilots Association (SLOPA) – Aviation organization.
- Shoreline Helicopter – Scenic tours.
- Spirit of San Luis – Restaurant.
- Victory Aviation – Flight Training.
- Vintage Aero – Aircraft maintenance, aircraft parts.

Figure 3-1 - Existing Airport Facilities



3.2 Planned Facilities

Since the completion of the most recent SBP Master Plan Update, an engineered material arresting system (EMAS) has been constructed at each end of Runway 11-29, thereby extending the useable length from 5,300 feet to 6,100 feet. Both runway ends have displaced thresholds. A displaced threshold is a runway threshold located at a point other than the physical beginning or end of the runway pavement. The portion of the runway so displaced may be used for takeoff but not for landing. Landing aircraft may use the displaced area on the opposite end for roll out. The runway at SBP is displaced 800 feet at the Runway 11 end and 500 feet at the Runway 29 end. The length of Runway 25 has been reduced by 760 feet to remove the previous intersection with Runway 11-29 and to focus its use by smaller aircraft.

Other planned airside improvements, as per the most recent SBP Master Plan Update, include relocating the Runway 11 ILS glideslope by 800 feet, thereby removing the current 800-foot displacement, extending Runway 7 by 500 feet, reducing the width of Runway 7-25 from 100 feet to 60 feet, and building a new airport rescue and firefighting (ARFF) station. Several sites have been designated for hangar development as well as a new air traffic control tower (ATCT). Land acquisition to protect aircraft approach areas, and drainage and access improvements were also recommended in the Master Plan Update. *Figure 3-2* depicts the recommended facilities at SBP. The FAA-approved Airport Layout Plan (ALP) dated November 4, 2010 (shown in this Report as *Figure 1-1)* depicts the ultimate planned development of SBP facilities, including runways and associated safety areas.

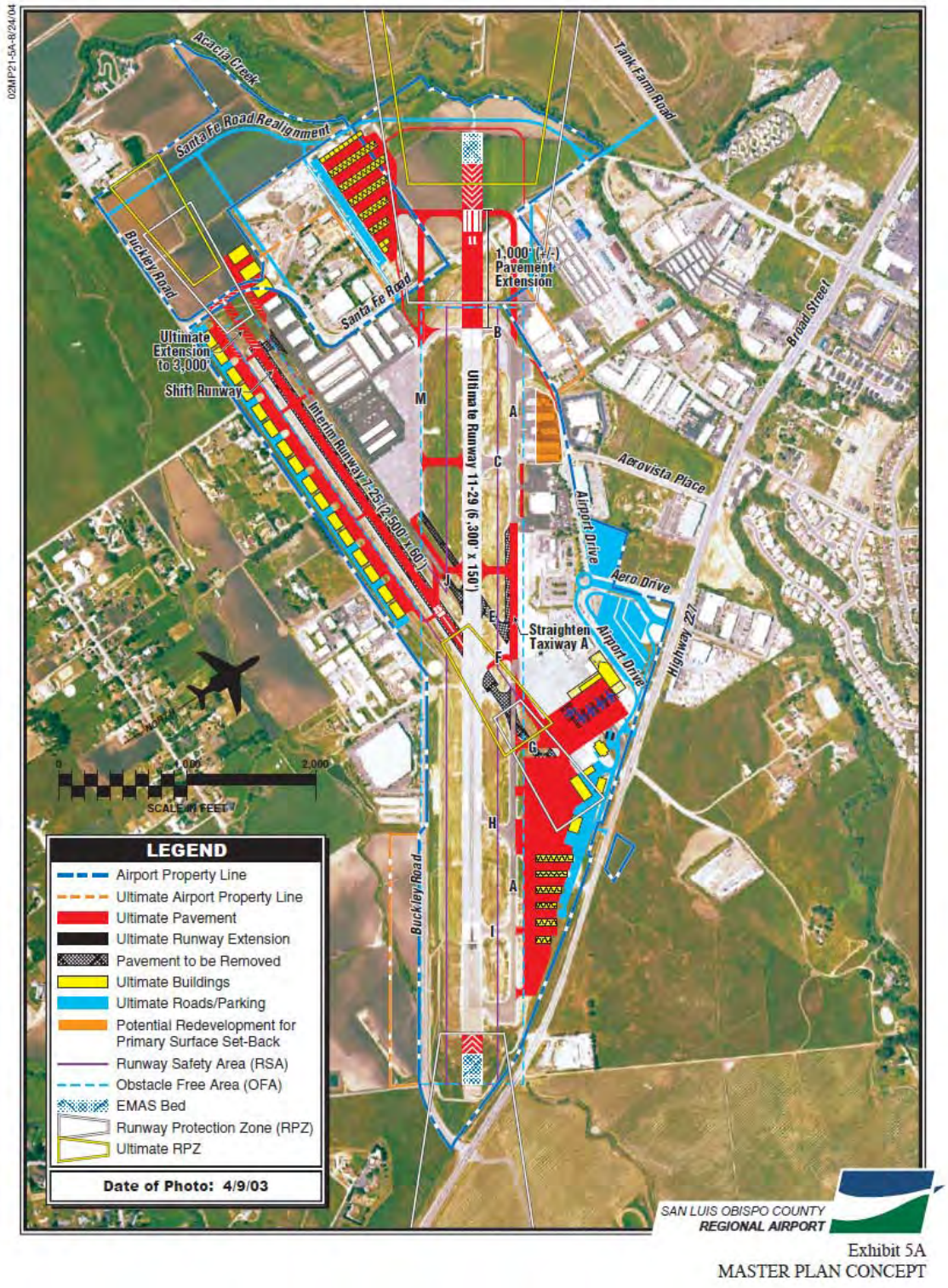
On August 18, 2010, Airport Services accepted a grant under the FAA Airport Improvement Program (AIP) for design services of a new terminal building. On March 6, 2012 the County Board approved a three phased New Terminal Design Development project. The project funding comes from an AIP grant and Passenger Facility Charges (PFC) collected from enplaning passengers to meet the local share requirements. On March 5, 2013 the Board accepted the results of Phase 1 of Terminal Design Development and approved the request to move to Phase 2. Airport Services and its consultant have completed the second phase of the work titled Schematic Design. The footprint of the new facility will be approximately 49,000 square feet.

The planned facilities identified in the SBP Master Plan Update and on the FAA-approved ALP are directly correlated to forecast demand. However, as noted in the SBP Master Plan Update, “the cost-effective, efficient, and orderly development of an airport should rely more upon actual demand at an airport than on a time-based forecast figure”. This is why the planning of facilities at SBP is based on milestones of short, intermediate, and long term aviation activity versus actual years.

“The development schedule is initially divided into the three planning horizons: short term (0-5 years), intermediate term (6-10 years), and long term (11-20 years). The highest priority development items are generally reflected in the first five years of the plan” (SBP Master Plan Update, adopted 2005).

The SBP Capital Improvement Program, based on a three-phase approach that is driven by specific activity levels being reached is shown in *Figure 3-3*. The activity levels that must be reached to justify development are shown in *Figure 3-4*. A summary of the existing and planned airport environment at SBP is provided in *Table 3-1*. More information about existing and forecast activity at SBP is provided in Chapter 5, Airport *Operations*.

Figure 3-2 - Planned Airport Facilities



Source: SBP Master Plan Update (adopted 2005)

Figure 3-3 – SBP Master Plan Update Capital Improvement Program

TABLE 5C
San Luis Obispo County Regional Airport
Capital Improvement Program

Year	Project Description	Total Cost	AIP Eligible	Local Share
2005	Midfield Taxiway Construction	$1,500,000	$1,425,000	$75,000
	East Hangar/Tie-Down Area	$1,500,000	$1,425,000	$75,000
	East Hangar Construction	$2,670,000	$0	$2,670,000
	Sub-Total	$5,670,000	$2,850,000	$2,820,000
2006	Land Acquisition (3 Parcels)	$12,500,000	$11,875,000	$625,000
	EMAS Installation (Runway 29)	$3,000,000	$2,850,000	$150,000
	Runway 11-29 Design (Phases I&II)	$500,000	$475,000	$25,000
	Santa Fe Relocation/Rwy 11-29/Twy A Extension	$15,000,000	$14,250,000	$750,000
	Sub-Total	$31,000,000	$29,450,000	$1,550,000
2007	Terminal Design (Phase II)	$2,500,000	$2,375,000	$125,000
	Terminal Construction (Phase I)	$5,000,000	$4,750,000	$250,000
	Sub-Total	$7,500,000	$7,125,000	$375,000
2008	Terminal Construction (Phase II)	$16,000,000	$14,400,000	$1,600,000
	Sub-Total	$16,000,000	$14,400,000	$1,600,000
2009	Terminal Construction (Phase III)	$16,000,000	$14,400,000	$1,600,000
	Sub-Total	$16,000,000	$14,400,000	$1,600,000
2010	Airport Sweeper	$200,000	$180,000	$20,000
	Sub-Total	$200,000	$180,000	$20,000
	Sub-Total Phase I (2005-2010)	$76,370,000	$68,405,000	$7,965,000
2011-2015	**Project Description**	**Total Cost**	**AIP Eligible**	**Local Share**
	Relocation of Taxiway A (Partial at Terminal)	$1,000,000	$900,000	$100,000
	Buckley Road Site Development	$1,000,000	$900,000	$100,000
	Extension of Taxiway M	$3,000,000	$2,700,000	$300,000
	Navaid/Lighting Upgrade - Runway 11-29	$1,000,000	$900,000	$100,000
	West Side Hangar Development (Phase I)	$3,000,000	$1,000,000	$2,000,000
	Pavement Rehabilitation	$5,000,000	$4,500,000	$500,000
	Equipment Replacement	$1,000,000	$900,000	$100,000
	Land Acquisition	$5,000,000	$4,500,000	$500,000
	Master Plan Update/Environmental Evaluations	$1,000,000	$900,000	$100,000
	Sub-Total Phase II (2011-2015)	$21,000,000	$17,200,000	$3,800,000
2016-2025	**Project Description**	**Total Cost**	**AIP Eligible**	**Local Share**
	Runway 7-25 Parallel Taxiway	$1,000,000	$900,000	$100,000
	West Side Hangar Development (Phase II)	$3,000,000	$1,000,000	$2,000,000
	Runway 7-25/Taxiway J Extension	$2,500,000	$2,250,000	$250,000
	ATCT Siting Study	$200,000	$180,000	$20,000
	ATCT Relocation	$5,000,000	$4,500,000	$500,000
	Pavement Rehabilitation	$5,000,000	$4,500,000	$500,000
	Equipment Replacement	$1,000,000	$900,000	$100,000
	Land Acquisition	$5,000,000	$4,500,000	$500,000
	Master Plan Update/Environmental Evaluations	$1,000,000	$900,000	$100,000
	Sub-Total Phase III (2016-2025)	$23,700,000	$19,630,000	$4,070,000
	Totals	$121,070,000	$105,235,000	$15,835,000

Revised 11/18/04

Source: SBP Master Plan Update (adopted 2005)

Figure 3-4 – Activity Levels Required for Development

TABLE 5B
Aviation Activity Planning Horizons
San Luis Obispo County Regional Airport

	Current Levels	Short Term	Intermediate Term	Long Term
Annual Enplanements	155,177	198,000	232,000	301,000
Commercial Operations	14,710	13,600	13,000	15,000
Air Taxi Operations	1,630	1,800	2,000	2,200
Military Operations	769	850	850	850
General Aviation Operations	92,155	101,300	107,800	122,000
Total Operations	109,264	117,550	123,650	140,050
Total Air Cargo (pounds)	1,242,592	1,400,000	1,600,000	2,000,000
Based Aircraft	301	320	350	400

Source: SBP Master Plan (adopted 2005)

Table 3-1 - Airport Environment - San Luis Obispo County Regional Airport

General Information:	**Airport Planning Documents:**
Airport Ownership: County of San Luis Obispo	
Property Size: 340 acres	Airport Master Plan Update for San Luis Obispo County Regional Airport (Accepted by the Board of Supervisors of the County of San Luis Obispo January, 2005)
Elevation: 212 feet MSL	
NPIAS & CASP Classification: Primary, Commercial Service Airport	San Luis Obispo County Regional Airport Master Plan Update Final EA/EIR (July, 2006)
FAR Part 139, ARFF Index A	San Luis Obispo County Regional Airport, Airport Layout Plan (FAA Approved, October 2010)
ATCT attended 6AM to 5PM	
Existing Facilities:	**Planned Facilities:**
Passenger terminal building - 14,400 sq.ft.	Relocating RWY 11 glideslope 800 feet
Two fixed-based operators offering fuel, hangars, lounge, charters, maintenance, catering, rental cars, and courtesy transport.	Extending RWY 7 by 500'; reducing RWY 07/25 width to 60'
	Build new ARFF station
	New hangar development
Other services: aircraft rental, flight training, aerial tours, aircraft painting, aircraft parts, oxygen service, avionics sales and service, propeller maintenance, EAA, SLOPA, and restaurant.	Land acquisition to protect approach areas
	Drainage and access improvements
	Build new ATCT
65 aircraft hangars; 161 aircraft tiedowns.	Build new terminal building; 49,000 sq.ft.

Runways:

Design Element	**Runway 11-29**		**Runway 07-25**	
Aircraft Design Group	C-II		B-I	
Parallel Taxiway	Yes		Yes	
Runway Dimension (LxW)	6,100' x 150'		2,500' x 100'	
	11	29	7	25
Lighting	MALSR. VASI(V4L)	REIL. VASI(V4L)	N/A	N/A
Threshold Remarks	Thld dsplcd 800´	Thld dsplcd 500´	N/A	N/A
Arresting Gear/System	EMAS	EMAS	N/A	N/A
FAR Part 77 Category	Precision	Non-Precision	Visual	Visual
Approach Visibility Minimum	1/2 mile	1 mile	Visual	Visual
RWY Safety Area *Length beyond Runway End*	1,000	1,000	240	240
Length prior to Threshold	600	600	240	240
Width	500	500	120	120
RWY Object Free Area *Length beyond Runway End*	1,000	1,000	240	240
Length prior to Threshold	600	600	240	240
Width	800	800	400	400
RWY Obstacle Free Zone *Length beyond Runway End*	200	200	200	200
Width	400	400	250	250
Precision Obstacle Free Zone *Length*	200	N/A	N/A	N/A
Width	800	N/A	N/A	N/A
RWY Protection Zone *Length*	2,500	1,700	1,000	1,000
Inner Width	1,000	500	500	500
Outer Width	1,750	1,010	700	700

Approach and Departure Procedures and Traffic Patterns:

AVILA Departure - Runway heading to 900 feet, then climbing right turn to AVILA Intersection.

CREPE THREE Departure - Climb runway heading to CREPE Intersection.

WYNNR TWO Departure - Turn right heading 130 degrees to MISHI Intersection.

RNAV (GPS) RWY 11, LOC RWY 11, ILS RWY 11 App.	Right-turn traffic pattern at 1,212' MSL (1000' above airport elevation); 1,203' MSL (991' above airport elevation) for single engine; 1,703' MSL (1,491' above airport elevation) for multi–engine, jet and high performance.
RNAV (GPS) RWY 29 Approach	
VOR or TACAN-A Approach	

4 SAFETY AND AIRSPACE PROTECTION

Land use compatibility and safety around airports is primarily concerned with protecting the locations around an airport that are at the greatest risk of experiencing an aircraft incident or accident. Protection involves designating areas around the ends of runways that must be free of objects, limiting the height of objects in the surrounding airspace, and understanding historical accident patterns.

Table 4-1 summarizes the design standards for Runway 11-29 and Runway 7-25 at SBP as per the FAA design standards outlined in FAA AC150/5300-13A, *Airport Design* (2012). All runway safety areas at SBP meet FAA design standards. As per the FAA-approved ALP, these existing standards will not change for ultimate development at SBP.

Table 4-1 – Runway Design Standards

San Luis Obispo Airport				
Runway Design Standards				
Design Element	Runway 11-29		Runway 07-25	
Aircraft Design Group	C-II		B-I	
Runway Dimension (LxW)	6,100' x 150'		2,500' x 100'	
	11	29	7	25
FAR Part 77 Category	Precision	Non-Precision	Visual	Visual
Approach Visibility Minimum	1/2 mile	1 mile	Visual	Visual
Runway Safety Area				
Length beyond Runway End	1,000	1,000	240	240
Length prior to Threshold	600	600	240	240
Width	500	500	120	120
Runway Object Free Area				
Length beyond Runway End	1,000	1,000	240	240
Length prior to Threshold	600	600	240	240
Width	800	800	400	400
Runway Obstacle Free Zone				
Length beyond Runway End	200	200	200	200
Width	400	400	250	250
Precision Obstacle Free Zone				
Length	200	N/A	N/A	N/A
Width	800	N/A	N/A	N/A
Runway Protection Zone				
Length	2,500	1,700	1,000	1,000
Inner Width	1,000	500	500	500
Outer Width	1,750	1,010	700	700

Source: FAA AC150/5300-13A, Airport Design; SBP Airport Layout Plan

For airports, the most geographically extensive compatibility concern is the airspace defined by Federal Aviation Regulations (FAR) Part 77 surfaces. The airspace surrounding an airport is divided into segments called imaginary surfaces, which protect aircraft landing at and departing from an airport. Under Part 77 those airspace protection surfaces are defined and applied to airport runways (primary surface, approach surface, transitional surface, horizontal surface, conical surface). These imaginary surfaces are used to establish the standards for determining obstructions to air navigation. The California Airport Land Use Planning Handbook uses RPZs and certain Part 77 surfaces to help delineate recommended safety zones around airports. The Handbook recognizes that all Part 77 surfaces encompass much more area than is required for safety zones.

The size of each imaginary surface is based on the category of each runway and the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach (existing or planned) for that runway end. The paragraphs below indicate the Part 77 surfaces for Runway 7-25 and Runway 11-29. *Table 4-2* summarizes these surfaces and *Figure 4-1* graphically depicts the runway protection zones and Part 77 surfaces surrounding SBP. As per the FAA-approved ALP, these existing standards will not change for ultimate development at SBP.

(a) Horizontal surface. A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each runway end. The radius of each arc is:

(1) 5,000 feet for all runways designated as utility or visual.

(2) 10,000 feet for all other runways.

(b) Conical surface. A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

(c) Primary surface. A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway.

The width of a primary surface is:

(1) 250 feet for utility runways having only visual approaches.

(2) 500 feet for utility runways having nonprecision instrument approaches.

(3) For other than utility runways the width is:

(i) 500 feet for visual runways having only visual approaches.

(ii) 500 feet for nonprecision instrument runways having visibility minimums greater than three-fourths statute mile.

(iii) 1,000 feet for a nonprecision instrument runway having a nonprecision instrument approach with visibility minimums as low as three-fourths of a statute mile, and for precision instrument runways.

(d) Approach surface. A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface.

(1) The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:

(i) 1,250 feet for that end of a utility runway with only visual approaches.

(ii) 1,500 feet for that end of a runway other than a utility runway with only visual approaches.

(iii) 2,000 feet for that end of a utility runway with a nonprecision instrument approach.

(iv) 3,500 feet for that end of a nonprecision instrument runway other than utility, having visibility minimums greater than three-fourths of a statute mile.

(v) 4,000 feet for that end of a nonprecision instrument runway, other than utility, having a nonprecision instrument approach with visibility minimums as low as three-fourths statute mile.

(vi) 16,000 feet for precision instrument runways.

(2) The approach surface extends for a horizontal distance of:

(i) 5,000 feet at a slope of 20 to 1 for all utility and visual runways.

(ii) 10,000 feet at a slope of 34 to 1 for all nonprecision instrument runways other than utility.

(iii) 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1 for all precision instrument runways.

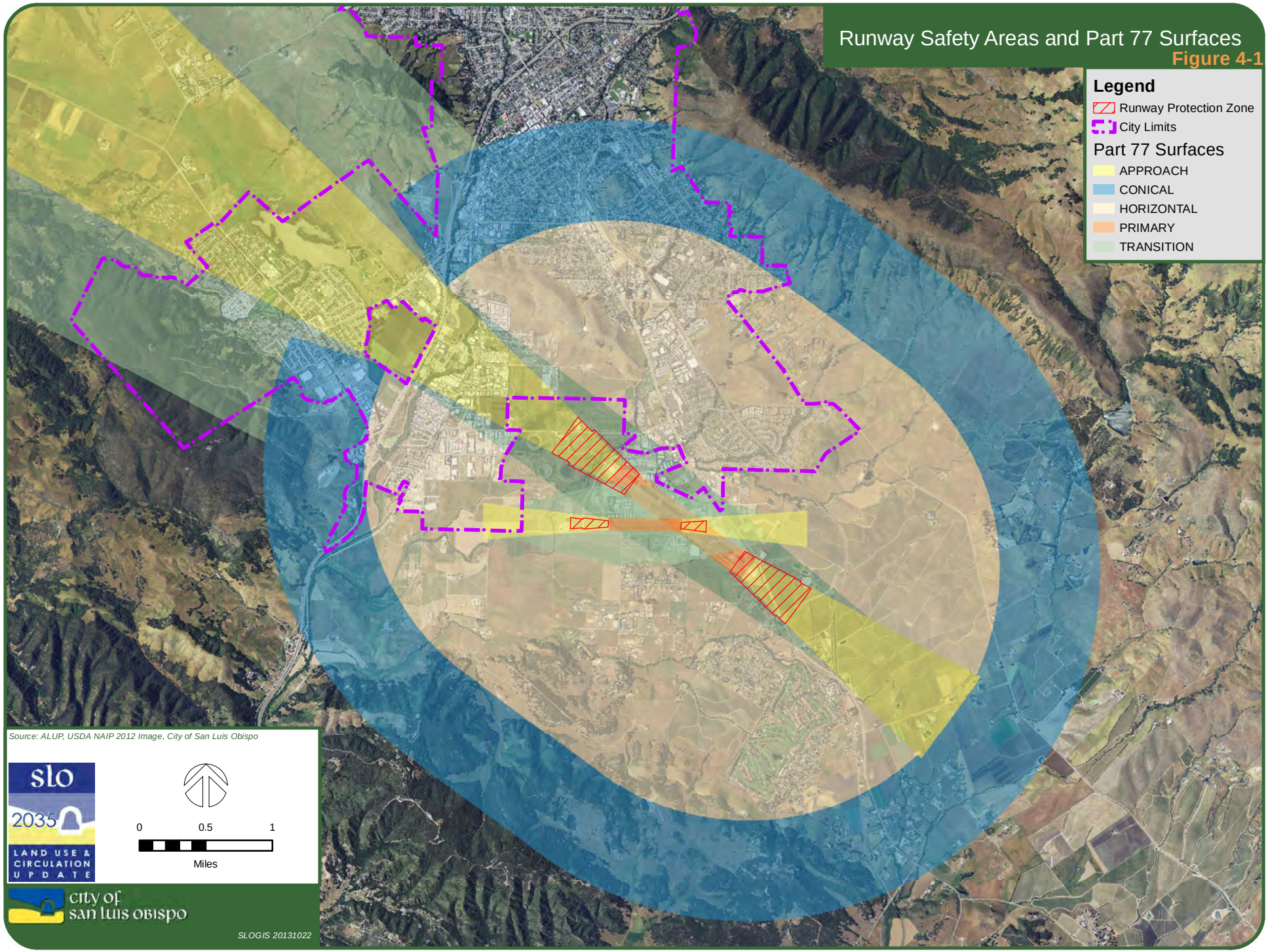
(e) ***Transitional surface.*** These surfaces extend outward and upward at right angles to the runway centerline and the runway centerline is extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

Table 4-2 – Part 77 Surfaces at SBP

San Luis Obispo Airport
Part 77 Surfaces

Part 77 Surface	*Runway 11*	*Runway 29*	*Runway 7-25*
Horizontal	150 feet above airport elevation (212 AMSL); 10,000 foot swinging arc from center of each runway end.	150 feet above airport elevation (212 AMSL); 10,000 foot swinging arc from center of each runway end.	150 feet above airport elevation (212 AMSL); 5,000 foot swinging arc from center of each runway end.
Conical	20:1 slope from horizontal surface; 4,000 foot horizontal distance.	20:1 slope from horizontal surface; 4,000 foot horizontal distance.	20:1 slope from horizontal surface; 4,000 foot horizontal distance.
Primary	200 feet beyond runway end; 500 feet wide for RWY29.	200 feet beyond runway end; 1,000 feet wide for RWY 11.	200 feet beyond runway end; 250 feet wide.
Approach	3,500 foot inner edge, extending 10,000 feet at 34:1 slope for RWY 29.	16,000 foot inner edge, extending 10,000 feet at 50:1 slope for RWY 11.	1,250 foot inner edge, extending 5,000 feet at 20:1 slope.
Transitional	7:1 slope from primary and approach surface, 5,000 feet horizontally from edge of approach surface.	7:1 slope from primary and approach surface, 5,000 feet horizontally from edge of approach surface.	7:1 slope from primary and approach surface, 5,000 feet horizontally from edge of approach surface.

Source: Part 77, Objects Affecting Navigable Airspace (1993)


Runway Safety Areas and Part 77 Surfaces
Figure 4-1
Legend
Runway Protection Zone
City Limits
Part 77 Surfaces
APPROACH
CONICAL
HORIZONTAL
PRIMARY
TRANSITION
Source: ALUP, USDA NAIP 2012 Image, City of San Luis Obispo
slo 2035 LAND USE & CIRCULATION UPDATE
0
0.5
1
Miles
city of san luis obispo
SLOGIS 20131022

4.1 Air Traffic Procedures at SBP

Pilots navigate to and from an airport using visual flight rules (VFR) or instrument flight rules (IFR). Pilots flying IFR must use procedures published by the FAA, which are based on the class of airspace and equipment available at the airport and inside the aircraft. San Luis Obispo Airport currently has five published instrument approach procedures (LOC RWY 11, ILS RWY 11, RNAV GPS RWY 11, RNAV GPS RWY 29, VOR or TACAN-A) and three departure procedures (AVILA THREE Departure, CREPE THREE Departure, WYNNR TWO Departure). The instrument approach and departure "plates" for these procedures are provided in Appendix C, *Instrument Approach Procedures (IAPs) and Standard Instrument Departures (SIDs) at SBP*. The instrument procedures at SBP provide straight-in final approaches to Runway 11 and Runway 29 with vertical guidance for pilots flying in instrument weather conditions creating the safest approach possible and avoiding the need to use circling approaches.

The Airport has a right-turn traffic pattern off Runway 11-29 at the following altitudes: 1,212 feet above mean sea level (AMSL) (1000 feet above airport elevation); 1,203 feet AMSL (991 feet above airport elevation) for single engine; 1,703 feet MSL (1,491 above airport elevation) for multi–engine, jet and high performance. There are no traffic patterns off Runway 7-25 and all arriving and departing aircraft using this runway enter the traffic pattern for Runway 11-29. This improves safety for all aircraft operating at SBP.

Understanding where and how aircraft fly into and out of an airport determines the geography of risk around an airport. The California Airport Land Use Planning Handbook states that, "the geography of risk is determined by the runway configuration, approach and departure procedures, and other factors that determine where aircraft fly and where accidents occur. Except where features on the ground influence where aircraft actually fly—high terrain or a noise abatement route, for instance—safety zones should be defined independent of existing and future land uses and other geographic features."

Figure 4-2 is an illustrative diagram of the approach and departure procedures at SBP.

4.2 Accidents at SBP

As per the California Airport Land Use Planning Handbook, "the first step in creating safety compatibility zones is to identify historical accident location patterns". From a land use planning perspective, the risk associated with where accidents may occur in the future based on where they have occurred in the past, comes down to frequency and consequences. However, where accidents have occurred in the past is no guarantee that they will occur again in precisely the same location, especially at an airport where a limited amount of data is not likely to be statistically significant.

At airports with limited accident history data, a better option for determining accident risk is to review the 2002 and 2010 Aircraft Accident Research provided in Appendix E of the California Airport Land Use Planning Handbook. The 2002 research analyzed accident data between the years 1983 and 1992. The 2010 research is an update to the information provided in the 2002 Handbook and focuses on accidents that occurred between the years 2000 and 2009, exclusively in California (research in 2002 focused on accident data nationwide). The task of gathering and reviewing data from the National Transportation Safety Board (NTSB) was accomplished by the University of California, Berkeley, Institute of Transportation Studies working under contract to the California Department of Transportation Division of Aeronautics. To form the best reasoning for risk, the following criteria were applied: 1) Only accidents, no incidents, 2) Only accidents that occurred off runway (beyond primary surface), 3) Only accidents that occurred during takeoff, climb, approach and landing, 4) Only accidents that occurred

within 5 miles of the airport, 5) Only fixed wing, powered aircraft, and 6) Only NTSB records with latitude and longitude information for the accident locations (the latitude and longitude information was compared to the narrative for accuracy).

After applying these criteria, the 2010 research found 70 accident records fit for study. The 2002 Handbook examined 873 records that fit the above criteria. The 2010 records, plotted on an X and Y axis, as well as records from the study performed in 2002, are found in Appendix D, *California Airport Land Use Planning Handbook Accident Study*. These two studies form the basis for the recommended safety zones in the 2011 Handbook.

Some of the major findings from the research in the 2002 Handbook and 2011 Handbook are as follows[8]:

- Over two-thirds of both general aviation (68%) and commercial (67%) aircraft accidents take place on an airport.
- Another 3% of general aviation and 7% of commercial aviation are en route accidents— defined as ones occurring more than 5 miles from an airport.
- 29% of general aviation and 26% of commercial aviation accidents can be classified as airport-vicinity accidents—within 5 miles of an airport.
- Three-fourths (77%) of all general aviation landing accidents occur during touchdown or roll-out (usually hard or long landings, ground loops, etc.). The remaining 23% of general aviation landing accidents take place in the landing pattern, on final approach, or during a go-around attempt.
- Accidents on or near the runway range from 64% for air carrier operations, to 51% for commuter operations, to 58% for air taxi operations.
- Accident sites tend to be fairly close to the extended runway centerline and closer to the runway end than at points farther away.
- The greatest proportion of general aviation takeoff/departure accidents (some 65%) take place during the initial climb phase.
- For single-engine airplanes, a high percentage of accidents can be expected to occur within 7,000 to 9,000 feet of the start of takeoff roll.
- For multi-engine airplanes, including jets, a high percentage of accidents can be expected to occur within 5,000 to 10,000 feet of the start of takeoff roll.
- Approximately 86% of all general aviation accidents and 61% of commercial aircraft accidents take place during dawn, daylight, or dusk with about 14% of general aviation accidents and 39% of commercial aviation accidents occurring in hours of darkness.

There have been 33 accidents investigated by the NTSB at SBP between 1982 and 2013. *Table 4-3* summarizes this accident information and Appendix E, *NTSB Records of Probable Cause for Accidents at SBP* provides the probable cause for each of these accidents. Of the investigated accidents, six were fatal and meet the same criteria used by the University of California, Berkeley to form the best reasoning for risk (*Figure 4-3*). These six fatal accidents occurred during the takeoff, climb, approach or landing phase of flight and within five miles of the airport. There were 13 fatalities, none of which involved people on the ground.

[8] This data is summarized from the 2011 California Airport Land Use Planning Handbook, Appendix E.

During this time frame there has been one accident and one incident involving commercial airlines. On August 24, 1984 Wings West Flight 628 collided midair with a Rockwell 112 TC (single-engine aircraft) approximately eight miles west-northwest of SBP. Both aircraft crashed on open terrain and there were 17 fatalities. On May 13, 1997 the flight crew operating a Wings West flight experienced a power failure of both left and right engines during initial climb. After about 20 seconds, the engines recovered sufficient power, and the flight crew was able to land on the departure runway.

The California Airport Land Use Planning Handbook requires the assessment of historical accident data at an airport as a first step in defining safety zones. However, the historical accident data at SBP is insufficient to draw conclusions about risk of accidents in the future based on frequency and consequence. The Handbook recognizes that many general aviation airports will have limited accident history data (such as SBP) and suggests that a better option for determining accident risk is to review the 2002 and 2010 Aircraft Accident Research provided in Appendix E of the California Airport Land Use Planning Handbook. As seen in *Figure 4-3*, the accidents that have occurred at SBP fall within the safety zones recommended by the Handbook for an airport like SBP, which means that using these safety zones should adequately cover risk of future accidents at SBP.

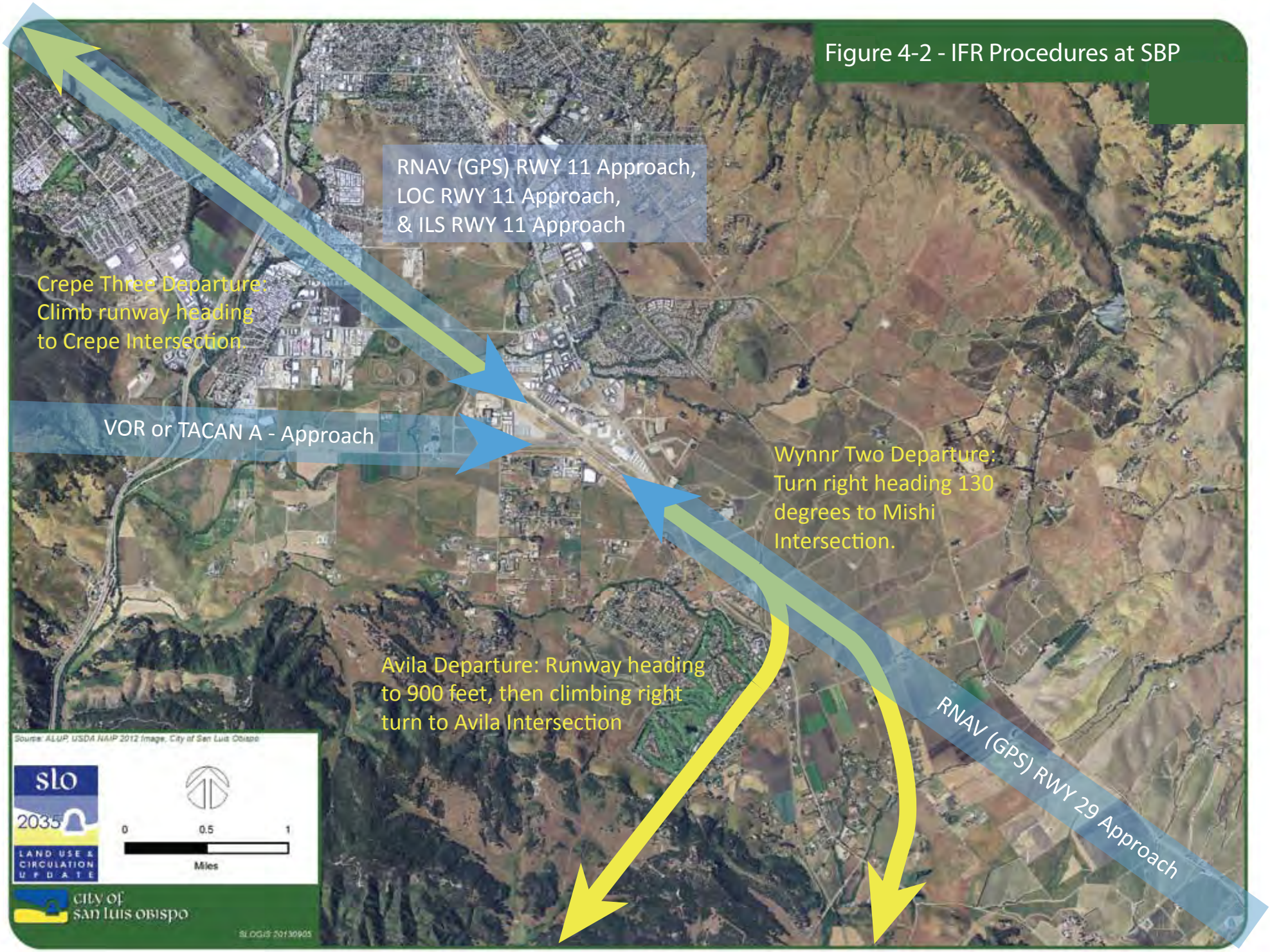


Figure 4-2 - IFR Procedures at SBP
RNAV (GPS) RWY 11 Approach,
LOC RWY 11 Approach,
& ILS RWY 11 Approach
Crepe Three Departure:
Climb runway heading
to Crepe Intersection.
VOR or TACAN A - Approach
Wynnr Two Departure:
Turn right heading 130
degrees to Mishi
Intersection.
Avila Departure: Runway heading
to 900 feet, then climbing right
turn to Avila Intersection
RNAV (GPS) RWY 29 Approach
Source: ALUP, USDA NAIP 2012 Image, City of San Luis Obispo
slo
2035
LAND USE & CIRCULATION UPDATE
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city of
san luis obispo

Table 4-3 - Accidents at San Luis Obispo Airport 1982 - 2013													
Investigation Type	Accident Number	Event Date	Airport Code	Injury Severity	Aircraft Damage	Make	Model	Number of Engines	Purpose of Flight	Total Fatal Injuries	Total Uninjured	Weather Condition	Broad Phase of Flight
Accident	WPR13FA289	6/24/2013	SBP	Fatal(1)	Destroyed	CESSNA	P337H	2	Personal	1	Not Reported	VMC	Not Reported
Accident	WPR11LA102	1/20/2011	SBP	Non-Fatal	Substantial	PIPER	PA-28-235	1	Personal	Not Reported	1	VMC	LANDING
Accident	WPR09CA157	3/17/2009	SBP	Non-Fatal	Substantial	PIPER	PA-24-250	1	Personal	Not Reported	1	VMC	LANDING
Accident	LAX08CA124	4/7/2008	KSBP	Non-Fatal	Substantial	Cessna	172S	1	Instructional	Not Reported	1	VMC	Landing
Accident	LAX07CA228	7/18/2007	SBP	Non-Fatal	Substantial	DTA Sari	Combo FC 912	1	Instructional	Not Reported	2	VMC	LANDING
Accident	LAX05FA255	8/1/2005	SBP	Fatal(1)	Destroyed	Piper	PA-28-151	1	Business	1	Not Reported	IMC	CLIMB
Accident	LAX05LA158	5/7/2005	KSBP	Non-Fatal	Substantial	Champion	7ECA	1	Personal	Not Reported	Not Reported	VMC	Cruise
Accident	LAX04LA169	3/21/2004	SBP	Non-Fatal	Substantial	Stanley	Glasair SH-2	1	Personal	Not Reported	Not Reported	VMC	CRUISE
Accident	LAX03LA007	10/13/2002	SBP	Non-Fatal	Substantial	Piper	PA-28-151	1	Instructional	Not Reported	1	VMC	TAXI
Accident	LAX01LA260	7/25/2001	SBP	Non-Fatal	Substantial	Cessna	140	1	Personal	Not Reported	1	VMC	LANDING
Accident	LAX01LA075B	1/15/2001	SBP	Non-Fatal	Substantial	Cessna	310	2	Business	Not Reported	3	VMC	STANDING
Accident	LAX01LA075A	1/15/2001	SBP	Non-Fatal	Substantial	Cessna	T210L	1	Business	Not Reported	3	VMC	TAXI
Accident	LAX01FA070	1/6/2001	SBP	Fatal(2)	Destroyed	Cessna	172F	1	Personal	2		IMC	CLIMB
Accident	LAX00LA270	7/18/2000	SBP	Non-Fatal	Substantial	Piper	PA-38-112	1	Personal	0	1	VMC	TAXI
Accident	LAX99LA248	7/10/1999	KSBP	Non-Fatal	Substantial	Piper	PA-24-180	1	Instructional	Not Reported	2	VMC	Takeoff
Accident	LAX98LA170	5/21/1998	SBP	Non-Fatal	Substantial	Robinson	R22B	1	Instructional	0	2	VMC	LANDING
Accident	LAX98LA115	3/14/1998	SBP	Non-Fatal	Substantial	Robinson	R22 BETA	1	Instructional	0	2	VMC	APPROACH
Accident	LAX96LA309	8/19/1996	SBP	Non-Fatal	Substantial	Cessna	195A	1	Personal	0	2	VMC	LANDING
Accident	LAX96FA228	6/6/1996	SBP	Non-Fatal	Substantial	British Aerospace	BA-3100/3201	2	Positioning	0	2	IMC	TAKEOFF
Accident	LAX95LA324	9/4/1995	SBP	Non-Fatal	Substantial	WELLES	KITFOX SPEEDSTER	1	Personal	0	1	VMC	TAKEOFF
Accident	LAX94FA308	8/7/1994	SBP	Fatal(4)	Destroyed	PIPER	PA-28R-200	1	Instructional	4		VMC	TAKEOFF
Accident	LAX93LA265	6/21/1993	SBP	Non-Fatal	Substantial	CULVER	LCA	1	Personal	0	1	VMC	TAKEOFF
Accident	LAX92LA038	11/2/1991	SBP	Non-Fatal	Substantial	QUESTAIRE	VENTURE	1	Personal	0	1	VMC	LANDING
Accident	LAX91LA283	6/30/1991	SBP	Non-Fatal	Substantial	BOEING	E75	1	Personal	0	1	VMC	LANDING
Accident	LAX90FA332	9/24/1990	SBP	Fatal(4)	Destroyed	CESSNA	500	2	Personal	4	0	IMC	APPROACH
Accident	LAX88FA314	9/7/1988	SBP	Fatal(1)	Destroyed	CESSNA	177RG	1	Personal	1	0	IMC	GO-AROUND
Accident	LAX88LA039	11/11/1987	SBP	Non-Fatal	Substantial	CESSNA	210A	1	Business	0	2	VMC	DESCENT
Accident	LAX87LA163	3/27/1987	SBP	Non-Fatal	Substantial	PIPER	PA-28-235	1	Personal	0	2	VMC	TAKEOFF
Accident	LAX86LA133	3/4/1986	SBP	Non-Fatal	Substantial	CESSNA	152	1	Instructional	0	1	VMC	LANDING
Accident	DCA84AA034B	8/24/1984	SBP	Fatal(17)	Destroyed	Rockwell	112TC	1	Instructional	17	0	VMC	DESCENT
Accident	DCA84AA034A	8/24/1984	SBP	Fatal(17)	Destroyed	BEECH	C-99	2	Unknown	17	0	VMC	CLIMB
Accident	LAX83LA178	4/5/1983	SBP	Non-Fatal	Substantial	PIPER	PA 32-300	1	Positioning	0	0	VMC	TAKEOFF
Accident	LAX82DA076	2/17/1982	SBP	Non-Fatal	Substantial	CESSNA	172M	1	Personal	0	2	VMC	LANDING
Source: National Transportation Safety Board Aviation Accident Database													

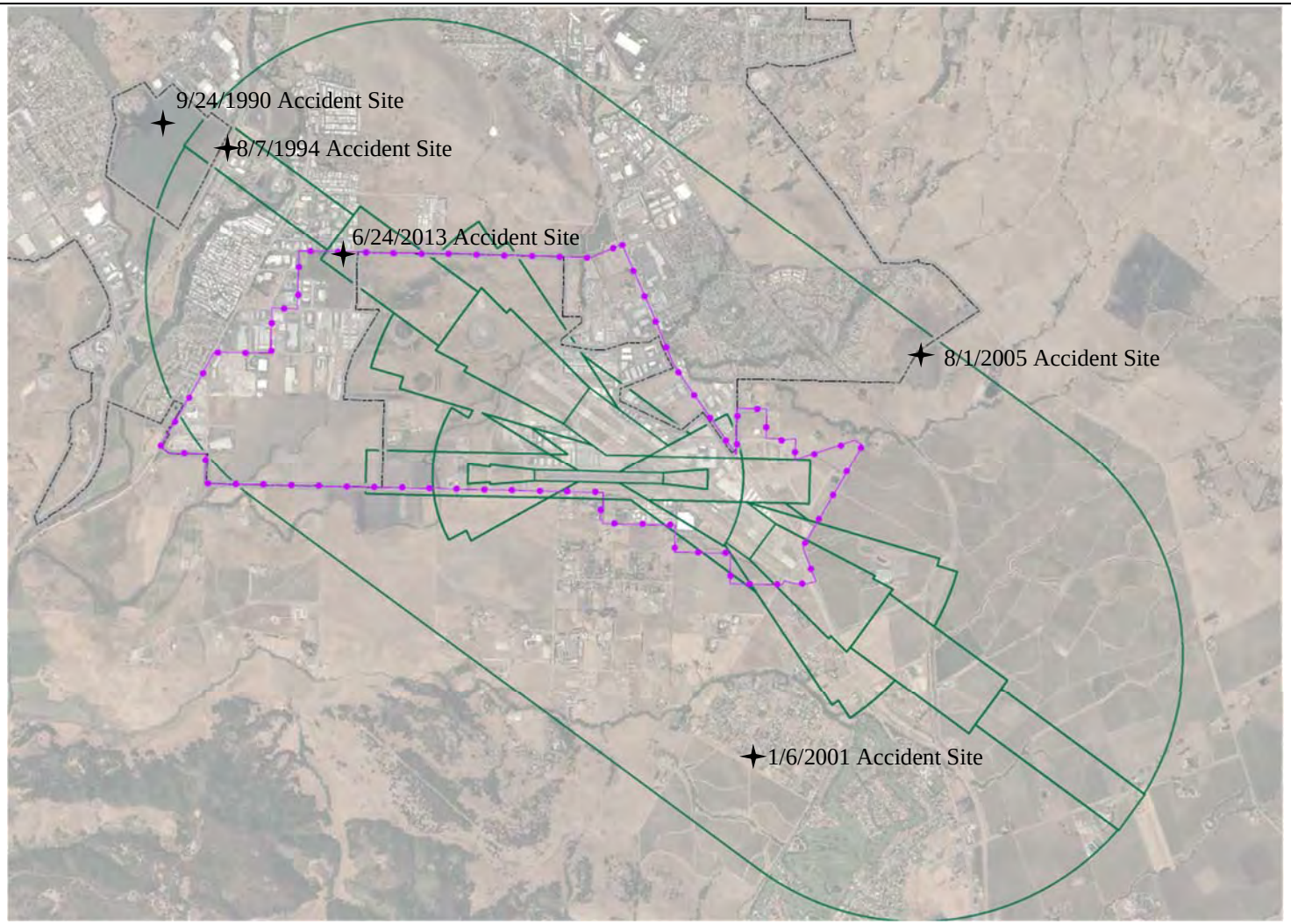


Figure 4-3

SBP Fatal Aircraft Accidents - National Transportation Safety Board Data 1982-2013

4.3 Safety Zone Adjustment Factors

As mentioned in Chapter 2 of this Report, the California Airport Land Use Planning Handbook provides examples of different safety zone configurations to assist in the delineation of safety zones for a given airport. While ALUCs are not mandated to use the sample zones provided in the Handbook, they are mandated to create zones that have easily definable geometric shapes, are as compact as possible, have a distinct progression in the degree of risk represented, and are limited to a realistic number (five or six should be adequate in most cases).

Adjustments to the safety zones recommended by the California Airport Land Use Planning Handbook should be made if there are certain physical and operational characteristics at the airport such as high terrain, roads, or non-standard instrument approach procedures. These characteristics are summarized in Table 3A of the Handbook, which is included in this report as Appendix A, *Handbook Safety Zone Adjustment Factors*.

An analysis of the Handbook Safety Zone Adjustment Factors was completed for SBP and the findings, presented below, indicate that no safety zone adjustments from those recommended by the Handbook are required.

- Airport Area Topography: The presence of high terrain, the edge of a precipice, or other such features may influence the location of aircraft traffic patterns and may need to be considered.
    - High terrain exists in the area of SBP but does not impede the standard traffic pattern or preclude precision and non-precision instrument approaches and departures. Nearby Morro Bay (MQO) VOR provides positive course guidance, positive terrain avoidance and aircraft holding for precision and non-precision instrument procedure missed approaches. **No safety zone adjustments required.**
- Boundaries Based on Geographic Features: Safety zone shapes and sizes might be adjusted in response to existing urban development such as roads, water courses, parcel lines, etc. With the advent of graphic information systems (GIS) this approach is less necessary than in years past.
    - The City and County of San Luis Obispo employ GIS for accurate mapping purposes. **No safety zone adjustments required.**
- Instrument Approach Procedure(s): Non-standard instrument procedures should be identified, as well as the extent to which they are used.
    - Circling Approaches: Circling approaches are charted for SBP including RNAV (GPS) RWY 11, RNAV (GPS) RWY 29, LOC RWY 11 and VOR or TACAN-A but no circling north of Runway 11-29 is allowed for any of these procedures. The circling minimum altitudes for these procedures are at standard traffic pattern altitudes. Even though these procedures are available, there are safer, straight-in approaches available for both runway ends of Runway 11-29. **No safety zone adjustments required.**
    - Non-Precision Approaches at Low Altitudes: Non-precision instrument approaches are charted for SBP including RNAV (GPS) RWY 11, RNAV (GPS) RWY 29, LOC RWY 11 and VOR or TACAN-A but the minimum descent altitudes for these procedures preclude descending below standard traffic pattern altitudes within the airport influence area. **No safety zone adjustments required.**

  - Non-Precision Approaches Not Aligned with the Runway: One non-precision instrument approach charted for SBP (VOR or TACAN-A) is not aligned with a runway but no circling north of Runway 11-29 is allowed for this procedure. The circling minimum altitudes for this procedure are at or above standard traffic pattern altitudes. Even though this procedure is available, there are safer, straight-in approaches available for both runway ends of Runway 11-29. **No safety zone adjustments required.**

- Other Special Flight Procedures or Limitations: Single-sided traffic patterns, nearby airports, high terrain, or noise-sensitive land uses may dictate where and at what altitude aircraft fly and may need to be taken into account during safety zone delineation.
  - Voluntary noise abatement procedures are established for SBP but when used, increase aircraft altitudes and increase safe operating altitudes. **No safety zone adjustments required.**
- Runway Use By Special-Purpose Aircraft: Fire attack, agricultural, military airplanes, and helicopters often have their own flight procedures, which need to be considered during the shaping of safety zones.
  - Military transport-type aircraft and helicopters make use of the SBP runways. Military aircraft fly standard arrival and departure procedures and helicopters likewise fly standard procedures for approach, departure and closed traffic patterns. **No safety zone adjustments required.**
- Small Aircraft Using Long Runways: When small airplanes take off from long runways (especially runways in excess of 8,000 feet in length), it is common practice for them to turn toward their intended direction of flight before passing over the far end of the runway, which can create a safety issue.
  - The longest runway at SBP is 6,100 feet long and is considered a standard general aviation runway (less than 8,000 feet long). The presence of an air traffic control tower and voluntary noise abatement procedures preclude early turns before an aircraft reaches the end of the departure runway and prior to reaching safe turning altitudes. **No safety zone adjustments required.**
- Runways Used Predominantly in One Direction: This factor does not apply to any of the runways at SBP. **No safety zone adjustments required.**
- Displaced Landing Thresholds: Runway 11 has a displaced threshold of 800 feet and Runway 29 has a displaced threshold of 500 feet. The safety zones have not been adjusted to reduce their length commensurate with these displaced thresholds thereby increasing the safety factor for each runway. **Safety Zone Reduction Possible.**

5 AIRPORT OPERATIONS

San Luis Obispo Airport has had a mix of commercial airline service and general aviation operations for most of its history. Between 1946 and 1956 Southwest Airways operated passenger flights, and in 1969, Swift Aire Lines started scheduled flights. By the time the control tower opened in 1988, SkyWest Airlines, WestAir, and Wings West (later merged into American Eagle) were in operation.

The recession that began in 2007 had a great impact on air travel. SBP lost nearly 34% of its enplanements as carriers responded to the rising price of oil, declining demand and realigned air service networks. American Eagle ceased all service into San Luis Obispo in 2008 and closed its maintenance base at the Airport. Delta Connection service to Salt Lake City also ceased in this time period.

Two regional airlines now serve San Luis Obispo: United Express and US Airways Express. United Express flies to Los Angeles and San Francisco while US Airways Express flies to Phoenix. The Airport offers convenient access to and from the Central Coast for residents and visitors. Two all-cargo airlines also operate out of SBP: West Air Inc. for FedEx Express and Ameriflight for UPS.

The Airport is home to full service general aviation and corporate flight facilities, including aircraft maintenance, aircraft rental, charter services, flight instruction, and fuel services. The recession and soaring aviation fuel prices have also impacted general aviation. The amount of leisure flying and business travel on private jets has decreased.

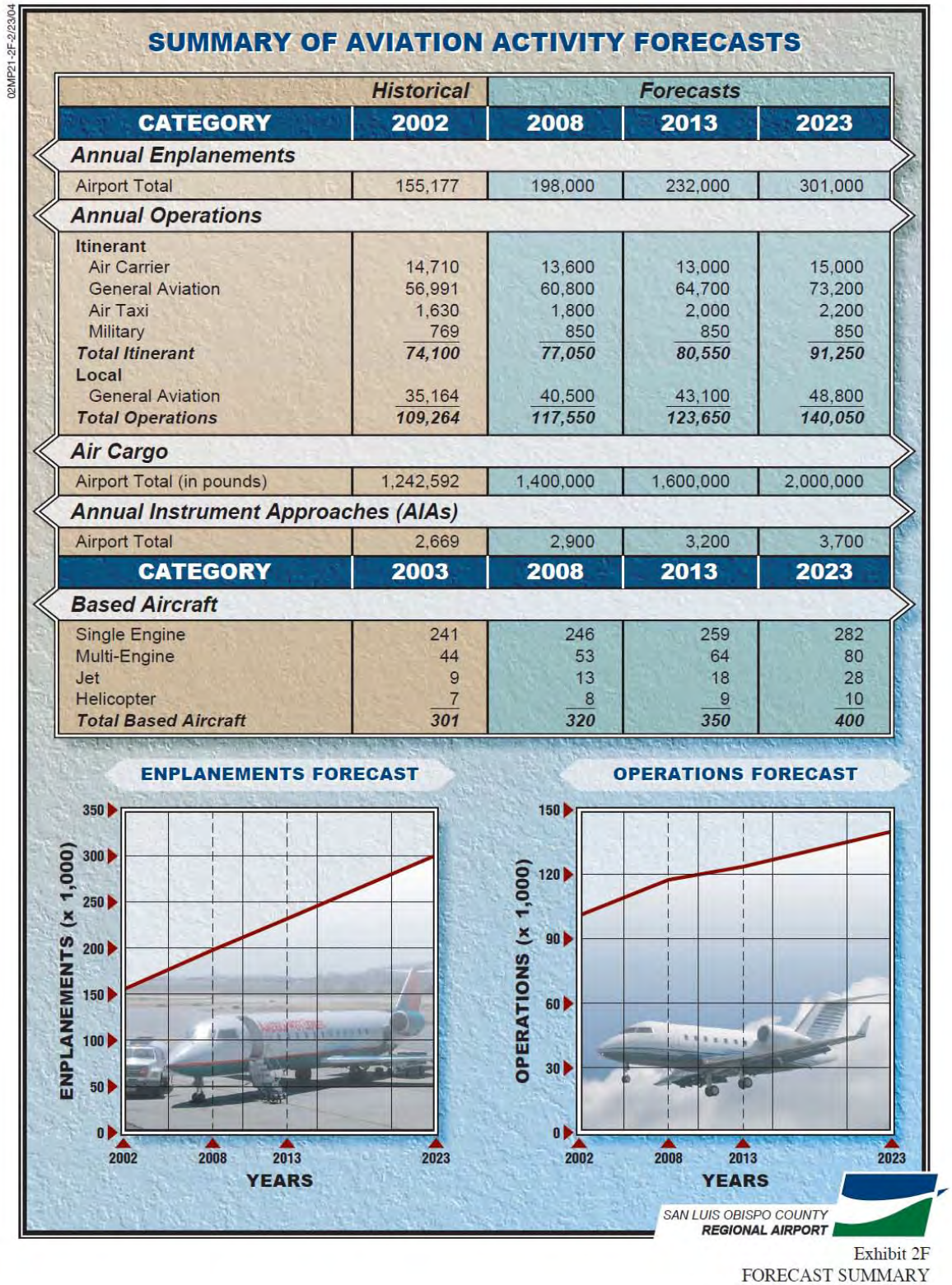
At the time of the SBP Master Plan Update (adopted in 2005), the fleet mix at SBP consisted of the following: 241 single-engine aircraft, 44 multi-engine aircraft, nine jets, and seven helicopters. Business aviation accounted for approximately 5% of general aviation operations, with the majority of general aviation operations being flight training and leisure flying. The split of general aviation operations at the Airport averaged 60 percent itinerant and 40 percent local, and military operations accounted for less than one percent of total operations. Enplaned air cargo at the Airport was growing at an average annual rate of 2.4 percent. The forecasts prepared for the master plan update are shown in *Figure 5-1*.

These forecasts were used as the basis for noise modeling in the SBPEA/EIR completed in 2006, which stated:

> The FAA and State of California require that annual average daily aircraft activity levels be used for the calculation of noise exposure as defined by the CNEL for federally-sponsored airport improvement projects. The annual average number of daily aircraft operations is determined by dividing the total number of aircraft operations occurring over the year by 365. This means that the number of aircraft operations assumed for the preparation of noise contours is likely to be less than the number of operations that occur on a busy day and greater than the number of operations that occur on a slow day. As previously stated, annual average levels of aircraft activity are generally used for assessment of the long-term or cumulative effects of noise from aircraft and other transportation sources.

The average annual daily aircraft operations and day/evening/night split used for noise modeling in the SBPEA/EIR are shown in *Figure 5-2* and *Figure 5-3*.

Figure 5-1 – SBP Master Plan Update Forecast



Source: SBP Master Plan Update (adopted in 2005)

Figure 5-2–SBPEA/EIR Annual Average Daily Aircraft Operations

TABLE 5.1-2
ANNUAL AVERAGE DAILY AIRCRAFT OPERATIONS: 2004-2023
SAN LUIS OBISPO COUNTY REGIONAL AIRPORT

Aircraft	Baseline Conditions (2004)	No Action Alternative (2010)	Proposed Action (2010)	Proposed Action (2023)
Itinerant Operations:				
EMB 120	20.0	18.63	6.99	0
20-35 Seat Commuter (Saab 340)	12.0	11.18	3.99	0
Embraer 140	2.0	2.30	4.39	8.22
CRJ-200/EMB 175/190	8.0	9.18	17.57	32.88
36-70 Seat Commuter (Q400)	0	4.58	3.66	0
Business Jets	21.03	22.4	22.40	26.3
Twin engine turboprop.	3.25	3.46	3.46	4.06
Twin engine piston prop.	12.13	12.68	12.68	14.88
Single engine prop.	133.41	139.36	139.36	163.56
Helicopter	6.12	6.40	6.40	7.50
Military	1.15	2.31	2.31	2.31
Subtotal	**219.09**	**232.48**	**223.21**	**259.71**
Local Operations:				
Twin engine piston prop.	7.70	8.44	8.44	9.92
Single engine prop.	84.58	92.82	92.82	109.04
Helicopter	3.88	4.26	4.26	5.00
Subtotal	**96.16**	**105.52**	**105.52**	**123.96**
Daily Totals	**315.25**	**338.00**	**328.73**	**383.67**
Annual Totals	**115,066**	**123,370**	**119,989**	**140,049**

NOTE: 2004 operations data was collected from the San Luis Obispo County Regional Airport

SOURCE: San Luis Obispo County Regional Airport Master Plan Update, 2005.

Source: SBPEA/EIR (2006)

Figure 5-3 – SBPEA/EIR Day/Evening/Night Split

TABLE 5.1-3
TEMPORAL DISTRIBUTION OF AIRCRAFT OPERATIONS FOR SAN LUIS OBISPO COUNTY REGIONAL AIRPORT

	Arrivals			Departures		
Aircraft Category	7a–7p	7p–10p	10p–7a	7a–7p	7p–10p	10p–7a
Commuter/Air Taxi	*67%*	*19%*	*14%*	*67%*	*19%*	*14%*
Twin Eng. Prop.	71%	21%	8%	71%	21%	8%
Single Eng. Prop.	85%	11%	4%	85%	11%	4%
GA Jet	90%	10%	-0-	90%	10%	-0-
Helicopter	80%	20%	-0-	80%	20%	-0-

SOURCE: Airline Schedules 2004; 1998 San Luis Obispo Airport Master Plan EA/EIR.

Source: SBPEA/EIR (2006)

Aviation demand in a region is based on driving factors such as population, employment and income. The more vibrant a community, the more likely it is to have a population that can afford to fly. Other factors such as the price of fuel, price of aircraft rental, travel options, airline ticket prices, and destinations served by airlines can also have a strong effect on consumer choices about business and leisure travel.

Since the preparation of the master plan update and forecasts, operations at the Airport have changed significantly, mostly due to the recession mentioned earlier in this chapter, but also as a result of demographics in the region. The City's population growth was half as fast in the past decade than during the 1990s. Retail, accommodation, and food services continues to be the largest industry group employer in the City, but also represents the group with the lowest median annual earnings (approximately $10,000), and there is a high student population working part time. Even though the median price of a house dropped to $400,000, the qualifying income is about $95,000, which is more than twice the median household income of $42,500. (San Luis Obispo General Plan Update [October, 2013] and Economic Development Strategic Plan [October, 2012]). *Table 5-1* summarizes historical and forecast operations at SBP, as prepared by the FAA.

Table 5-1 – FAA TAF Enplanements, Operations, Based Aircraft at SBP

SBP - FAA TAF Enplanements, Operations, Based Aircraft

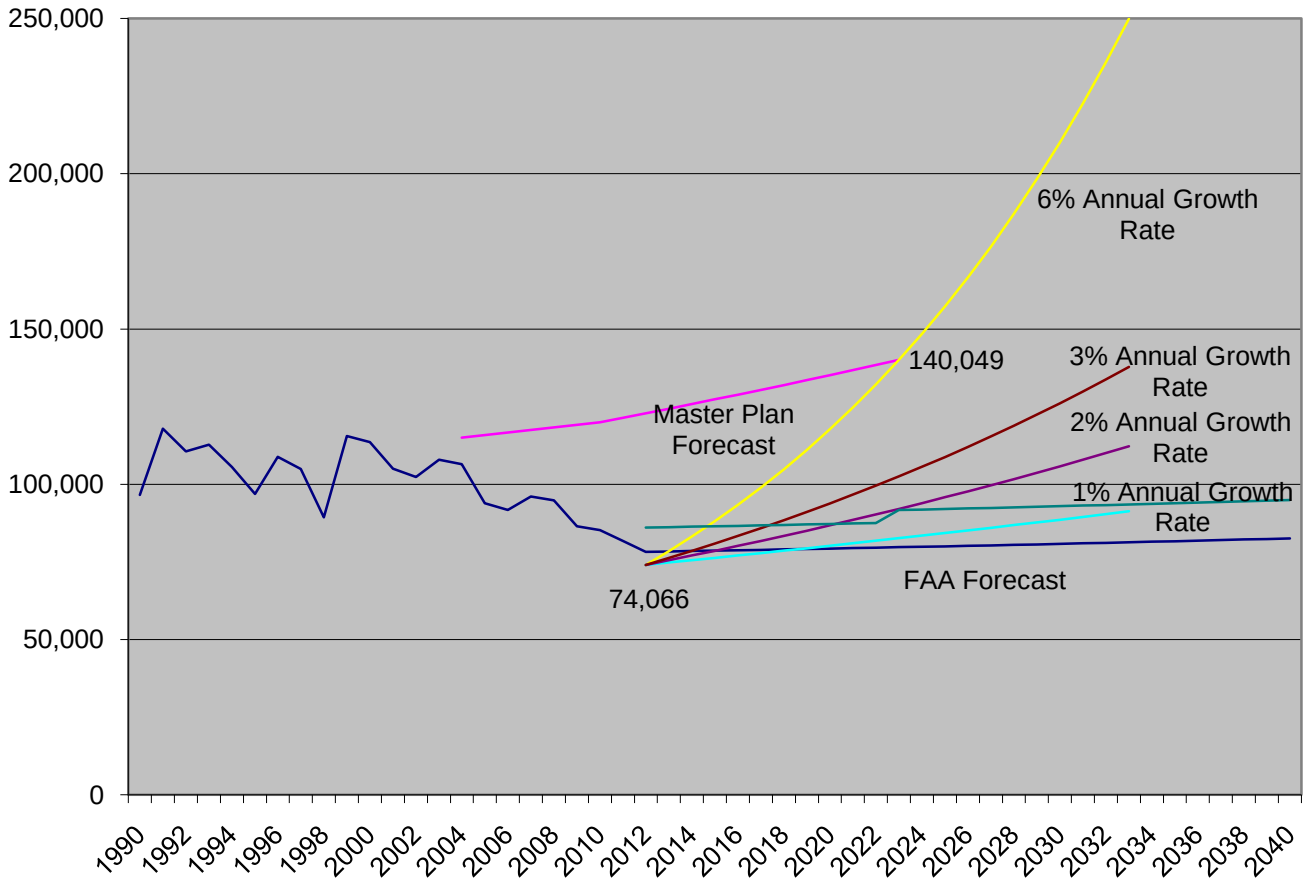
YEAR	**Total Enplanements**	Itinerant Operations	Local Operations	**Total Operations**	*Total Based Aircraft*
2000	**149,084**	68,653	44,882	**113,535**	*255*
2001	**149,810**	65,056	39,954	**105,010**	*242*
2002	**136,235**	67,053	35,339	**102,392**	*242*
2003	**141,648**	63,500	44,380	**107,880**	*243*
2004	**152,132**	65,479	40,992	**106,471**	*301*
2005	**168,540**	58,822	35,122	**93,944**	*301*
2006	**174,784**	57,462	34,278	**91,740**	*494*
2007	**176,211**	64,113	31,967	**96,080**	*319*
2008	**165,716**	60,995	33,829	**94,824**	*307*
2009	**117,884**	55,152	31,361	**86,513**	*293*
2010	**123,824**	53,391	31,866	**85,257**	*257*
2011	**134,623**	52,431	29,323	**81,754**	*269*
2012	**129,386**	50,994	28,804	**79,798**	*272*
2013	**129,079**	44,417	23,578	**67,995**	*275*
2014	**132,866**	43,861	22,817	**66,678**	*277*
2015	**136,766**	44,026	22,813	**66,839**	*278*
2016	**140,779**	44,193	22,809	**67,002**	*280*
2017	**144,913**	44,363	22,805	**67,168**	*283*
2018	**149,168**	44,535	22,801	**67,336**	*285*
2019	**153,545**	44,709	22,797	**67,506**	*287*
2020	**158,053**	44,886	22,793	**67,679**	*289*
2025	**182,653**	45,805	22,773	**68,578**	*300*
2030	**211,084**	46,785	22,753	**69,538**	*310*
2035	**243,938**	47,834	22,733	**70,567**	*320*
2040	**281,909**	48,955	22,713	**71,668**	*330*

Source: FAA Terminal Area Forecast Issued January 2014

Note: Numbers in yellow highlighted cells indicate forecast prepared by FAA

The trends predicted in the SBP Master Plan Update have not come to fruition. Actual annual aviation activity at SBP has been significantly lower than the SBP Master Plan forecasts. For example, the Master Plan Update forecast 117,550 total operations in 2008. However, the actual total operations recorded for that year was 94,824—a difference of approximately 24 percent. It is also important to note that while the Master Plan Update forecast operations, enplanements, and based aircraft growing each year, the actual numbers have declined. Actual annual aviation activity at SBP was 66% lower than the SBP Master Plan forecast for 2012 and it appears that this gap will grow larger in 2013 with even lower SBP aircraft operations. While it is plausible that at some point in its future SBP will reach the 140,050 total operations forecast in the Master Plan Update, it is uncertain when this threshold will be reached. The more modest prediction in the FAA TAF of 68,212 total operations in 2023 appears to be more in line with current trends as total operations continue to decline. *Figure 5-4* is an illustrative depiction of various comparative growth trends for the Airport provided for perspective.

Figure 5-4 – Comparison of Forecasts at SBP



Forecasts must be submitted to the FAA for approval. As per FAA AC 150/5070-6B, *Airport Master Plans*, master plan forecasts for operations, based aircraft, and enplanements are considered to be consistent with the TAF if they differ by less than 10 percent in the 5-year forecast and 15 percent in the 10-year period for "other commercial service airports" like SBP.

Regardless of this requirement, the SBP EA/EIR (2006) noise analysis used the SBP Master Plan Update forecasts, and these forecasts were also used to validate that noise analysis, the results of which are summarized in Chapter 6, *Airport Noise*. Even though the SBP Master Plan Update forecast is based on

aggressive growth at SBP, and trends that are not in line with existing activity and the FAA forecast, it substantiates the ultimate development of the Airport, which is shown on the FAA-approved ALP. *Table 5-2* summarizes historical and existing activity at SBP, as well as the FAA TAF and Master Plan Update forecasts prepared for the Airport.

Table 5-2 - Airport Activity - San Luis Obispo County Regional Airport

Based Aircraft:

Historical (2004)	Existing (2011)	TAF Forecast (2023)	MP Forecast (2023)
301[1]	269[1]	296[1]	400[2]

General Aviation Fleet Mix[2]:

Type	MP Existing (2004)	MP Forecast (2023)
Single-Engine	241 (80.1%)	282 (70.5%)
Multi-Engine	44 (14.6%)	80 (20.0%)
Jets	9 (3.0%)	28 (7.0%)
Helicopters	7 (2.3%)	10 (2.5%)
Total	301 (100%)	400 (100%)

Operations:

Historical (2004)	Existing (2011)	TAF Forecast (2023)	MP Forecast (2023)
106,471[1]	81,754[1]	68,212[1]	140,050[2]

Annual Average Daily Aircraft Operations[3]:

Type	Existing (2004)	Proposed (2023)
Itinerant Operations		
EMB 120	20	0
20-35 Seat Comm (Saab 340)	12	0
Embraer 140	2	8.22
CRJ-200/EMB 175/190	8	32.88
36-70 Seat Comm (Q400)	0	0
Business Jets	21.03	26.3
Twin-Engine Turboprop	3.25	4.06
Twin-Engine Pistonprop	12.13	14.88
Single-Engine Prop	133.41	163.56
Helicopters	6.12	7.5
Military	1.15	2.31
Subtotal	***219.09***	***259.71***
Local Operations		
Twin-Engine Pistonprop	7.7	9.92
Single-Engine Prop	84.58	109.04
Helicopters	3.88	5
Subtotal	***96.16***	***123.96***
Daily Totals	***315.25***	***383.67***
Annual Totals	***115,066***	***140,049***

Flight Track Allocation - Baseline and Future[3]:

Departures	
Runway 11	23%
Runway 29	77%
Runway 25	3%
Note: Runway 25 has GA propeller operations only	
Arrivals	
Runway 11	23%
Runway 29	77%
Touch and Go	
Runway 11	23%
Runway 29	77%

Air Cargo Freight (total in pounds):

Historical (2002)[2]	Existing (2011)[4]	Forecast (2023)[2]
1,242,592	2,698,682	2,000,000

Temporal Distribution of Aircraft Operations[3]:

	Arrivals			*Departures*		
Aircraft Category	7a-7p	7p-10p	10p-7a	7a-7p	7p-10p	10p-7a
Commuter/Air Taxi	67%	19%	14%	67%	19%	14%
Twin Eng. Prop.	71%	21%	8%	71%	21%	8%
Single Eng. Prop.	85%	11%	4%	85%	11%	4%
GA Jet	90%	10%	0%	90%	10%	0%
Helicopters	80%	20%	0%	80%	20%	0%

Source: [1/]FAA Terminal Area Forecast Report (2014); [2/]SBP Master Plan Update, Preferred Planning Forecast (2003);
[3/]SBP EA/EIR (2006); [4/]SBP Statistics (www.sloairport.com)

6 AIRPORT NOISE

Airport noise impact control through preventive measures is one of the fundamental airport land use compatibility planning considerations. Airport noise compatibility criteria are set by the FAA and similar guidelines have been adopted in California with additional guidance provided by Caltrans for noise analysis within airport land use plans.

Aircraft noise and its impact on people and property is federally regulated by the FAA[9]. The State of California has also established regulations for the maximum normally accepted aircraft noise levels to be consistent with federal aircraft noise regulations. This standard is the 65 dB yearly average noise level (using the Day-Night Level [DNL] for federal purposes and the Community Noise Equivalent Level [CNEL[10]] for California as officially recognized by the FAA for use in the State) for residential and other noise sensitive land uses. Federal interior noise levels are set for structures within the 65 dB CNEL contour and experiencing 45 dB or higher of interior noise with windows closed. Current guidance by the FAA allows local jurisdictions to set formal noise standards at 60 dB CNEL for land use compatibility planning if agreed to formally by both the airport sponsor (in this case the County of San Luis Obispo) and the local jurisdiction, however the 45 dB interior noise standard remains[11].

As discussed in Section 2.1, *Noise*, the best way to protect persons from excessive noise exposure is for the airport sponsor to carry out a Part 150 Noise Compatibility Program (NCP). A Part 150 NCP shows what measures the airport operator has taken, or proposes to take, to reduce noncompatible land uses and prevent the introduction of additional noncompatible land uses within the area covered by the airport's noise exposure map (NEM). The FAA reviews and approves airport NCPs and NEMs under 14 CFR Part 150, *Airport Noise and Compatibility Planning*. The FAA requires specific information to review and approve the program including assumptions on the type and frequency of aircraft operations, number of nighttime operations, flight patterns, airport layout including planned airport development, planned land use changes and demographic changes within the 65 dB CNEL noise contours. The FAA tracks all airports in the United States that have applied to the program and the status of those NCPs and NEMs as they are periodically updated. San Luis Obispo Airport is included in this tracking list, but to date, has not submitted a NCP or NEM to the FAA for review and approval[12]. As per the SBP EA/EIR (2006) there are no noise sensitive land uses within the existing 65 dB CNEL or 60 dB CNEL noise contours, or for the forecast noise contours.

There is significant guidance material regarding airport noise compatibility planning within the updated 2011 California Airport Land Use Planning Handbook. *Figure 6-1* is a summary of the suggested applicable standards for consideration by ALUCs and local communities.

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[9] See http://www.faa.gov/airports/environmental/airport_noise/ for links to the full body of FAA information on Airport Noise Compatibility Planning.

[10] The DNL standard provides a 10 times nighttime noise penalty to aircraft operations taking place between 10 PM and 7 AM. This is the effect of one nighttime operation counting as 10 operations toward the total noise impact on the airport community and reflects the higher sensitivity toward nighttime noise when ambient noise levels are generally lower. The CNEL standard provides this same DNL nighttime penalty but it also adds a three-times evening penalty from 7 PM to 10 PM. This is the effect of one evening operation counting as three operations toward the total noise impact.

[11] See Paragraph 812.b.2. for specific FAA guidance on locally approved noise standards http://www.faa.gov/airports/aip/guidance_letters/media/pgl_12_09_NoiseInsulation_attach1.pdf

[12] http://www.faa.gov/airports/environmental/airport_noise/part_150/states/?state=California

Figure 6-1 - Caltrans Handbook Noise Compatibility Criteria Alternatives

For purposes of airport land use compatibility planning, Caltrans advises that 65 dB CNEL is not an appropriate criterion for new noise-sensitive development around most airports. At a minimum, communities should assess the suitability and feasibility of setting a lower standard for new residential and other noise-sensitive development .

TABLE 4B: NOISE COMPATIBILITY CRITERIA ALTERNATIVES (NEW RESIDENTIAL LAND USES)

CNEL	Criteria	Suggested Applicability
65 dB	Set by the FAA and other federal agencies as the level above which residential land uses may be incompatible if not acoustically treated. Established by California state regulations as the maximum normally acceptable noise level for residential and certain other land uses at county-designated noise-problem airports.	Generally not appropriate for most new development. May be acceptable in noisy urban locations and/or in hot climates where most buildings are air conditioned.
60 dB	The contour within which California Building Code (Section 1207.11) requires an acoustical analysis of proposed residential structures, other than detached single-family dwellings. Suggested by the California Governor's Office of Planning and Research *General Plan Guidelines* as the maximum "normally acceptable" noise exposure for residential areas. [Note: Individual noise events will occasionally cause significant interference with residential land use activities, particularly outdoor activities, in quiet suburban/rural communities.]	Suitable for new development around most airports. Particularly appropriate in mild climates where windows are often open.
55 dB	Identified by the EPA as the level below which "undue interference with activity and annoyance" will not occur. [Note: Individual noise events will seldom significantly interfere with residential land use activities (e.g., interference with speech). In urban areas, aircraft contribution to this noise level may be less than that of other noise sources.]	Suitable for airports in quiet, rural locations.

Note: When setting criteria for a specific airport, other characteristics of the airport and its environs also need to be considered.

See Table 4A for normalization factors.

The City of San Luis Obispo is an urbanized area according to the 2010 US Census[13]. Based on this designation and the land use planned in the Airport Influence Area, Caltrans guidelines suggest that existing residential and noise sensitive land uses are appropriate up to the 65 dB CNEL contour, but that new residential development and noise sensitive uses should be limited to the 60 dB CNEL contour or less.

6.1 SBP Master Plan EA/EIR Noise Analysis Review

The aircraft noise analysis prepared for the SBP Master Plan Update in the 2006 EA/EIR provides an accurate mapping of the long term noise impact of the Airport's aviation activity that is tied to the ultimate facilities development depicted in the FAA-approved ALP. Accurate future airport noise impacts are based on total aircraft operations by each aircraft type, the time of day when those

[13] Federal Register, Department of Commerce, Bureau of the Census, Qualifying Urban Areas for the 2010 Census; Notice, March 27, 2012, http://www.gpo.gov/fdsys/pkg/FR-2012-03-27/pdf/2012-6903.pdf

operations occur, runway utilization, and the flight paths of arriving and departing aircraft. The SBPEA/EIR provides a detailed account of these variables in its noise section for the baseline airport activity that was occurring in 2004 as well as for the activity forecasts provided in the SBP Master Plan Update. The activity levels used to model the community noise impact associated with SBP are summarized in Chapter 5, *Airport Operations*.

"For determining the CNEL values around the Airport, Integrated Noise Model (INM) Version 6.1 was used. Version 6.1 is the latest version of the INM and represents the "state-of-the-art" in aircraft noise prediction models. It is also the noise model required by the FAA for use in quantifying aircraft noise exposure for the Federal Aviation Regulation (FAR) Part 150 noise compatibility planning process and for assessing the noise-related impacts of proposed airfield improvement projects." (SBP EA/EIR, 2006).

Noise contours were developed for the SBP EA/EIR at the 65 dB CNEL to 75 dB CNEL levels. For information purposes the SBP EA/EIR also prepared 60 dB CNEL noise contours, even though these contours were not valid for determining impacts. The noise analysis focused on the anticipated impacts resulting from three principal sources of noise: aircraft noise, surface transportation (vehicular traffic and railroad) noise, and construction noise during those periods when construction contemplated by the project is occurring.

To determine the SEL values around SBP, noise measurement sites were selected in cooperation with San Luis Obispo County staff. *Table 6-1* shows the noise monitoring locations and the primary noise sources affecting those locations.

Table 6-1 – SBP Master Plan Update Final EA/EIR Noise Monitoring Locations

TABLE 5.1-1
NOISE MONITORING LOCATIONS

Number	Description	Primary Noise Sources
1	3860 South Higuera Street	aircraft, traffic on South Higuera Street
2	4329 Poinsettia Street	aircraft, traffic on State Route 227
3	Davenport Creek Road	aircraft, traffic on Buckley Road
4	260 Hacienda Avenue	aircraft, traffic on Hacienda Avenue
5	5414 Edna Road	aircraft, traffic on Edna Road

Note: Site number 3 was located 500 feet from the intersection of Davenport Creek Road and Buckley Road.

SOURCE: ESA, 2005

As mentioned in the beginning of this section, to prepare the CNEL contours, aircraft operations data was taken from the forecasts contained within the SBP Master Plan Update. The day/evening/night distribution of commuter aircraft operations at SBP was estimated by reviewing the airline schedules provided by the Airport. The day/evening/night distribution of other aircraft operations was estimated based upon discussions with San Luis Obispo County staff, and previous noise studies conducted for the Airport. Runway use and flight tracks were determined from information provided by the FCT air traffic manager.

According to the EA/EIR, "there are three principal sources of noise in the SBP environs and a number of minor sources. The most obvious principal source is aircraft noise. Depending upon the location of a specific receiver, aircraft noise may be mostly caused by aircraft in flight (i.e., landings, takeoffs, pattern

operations) or aircraft moving about the airfield. However, like most urban or suburban areas, surface traffic noise, which is the second principal source, is pervasive in the Airport environs. The third principal source is railroad noise".

The Proposed Action for SBP assumes that Runway 11 will be extended by 800 feet to the west to accommodate existing passenger loads by the regional jet aircraft that currently operate at SBP, such as the Canadair 601.

The changes in the 2010 CNEL contours for the Proposed Action show that approximately 1.4 additional acres will be within the 65 CNEL contour under the Proposed Action compared to the No Action Alternative in 2010. The EA/EIR states that ***"no noise-sensitive land uses exist within this area where this increase in noise would occur. Therefore, the number of residents within the 65 CNEL noise contour would be zero, which is the same as the number of residents within the 65 CNEL noise contour under the No Action Alternative".***

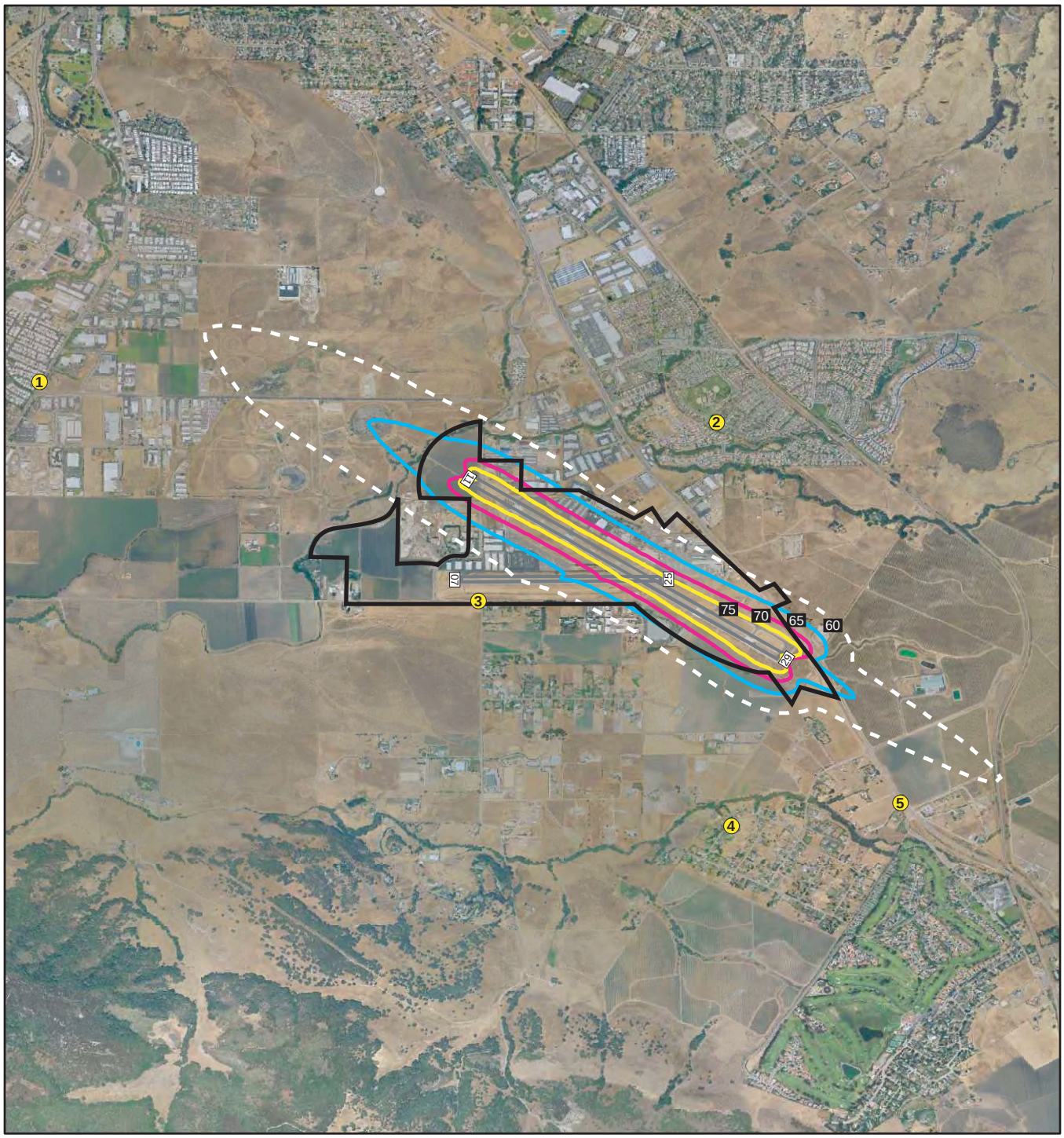
By 2023, approximately 39.9 additional acres will be within the 65 CNEL contour, however there would still not be any noise-sensitive land uses within this contour. This holds true for the 2023 CEQA analysis as well.

Under CEQA analysis, the EA/EIR states that ***"approximately 6.6 additional acres would be within the CNEL contour under the Proposed Action compared to the Baseline Condition in 2004. However, no noise-sensitive land uses or residents exist within this area where this increase in noise would occur".***

With regards to surface traffic noise for both 2010 and 2023, the EA/EIR states that ***"compared to the Baseline Conditions, the Proposed Action would result in an increase in traffic volumes on State Route 227 of about three percent. This is substantially less than the doubling in traffic volumes that would be required for a 3.0 dB increase to occur on roadways in the SBP vicinity. This is a less-than-significant impact".***

With regards to construction noise for both Phase I and Phase II of airport development, the EA/EIR states that ***"the construction noise that would occur under the Proposed Action would result in noise levels that are comparable to common noise events that occur in any residential neighborhood. Therefore, this is a less-than-significant impact".***

The noise contours associated with this analysis are shown in *Figure 6-2* and *Figure 6-3*.



AERIAL SOURCE: Airphoto USA, 8-01-03

0 2600
Foot

1 Noise Monitoring Sites

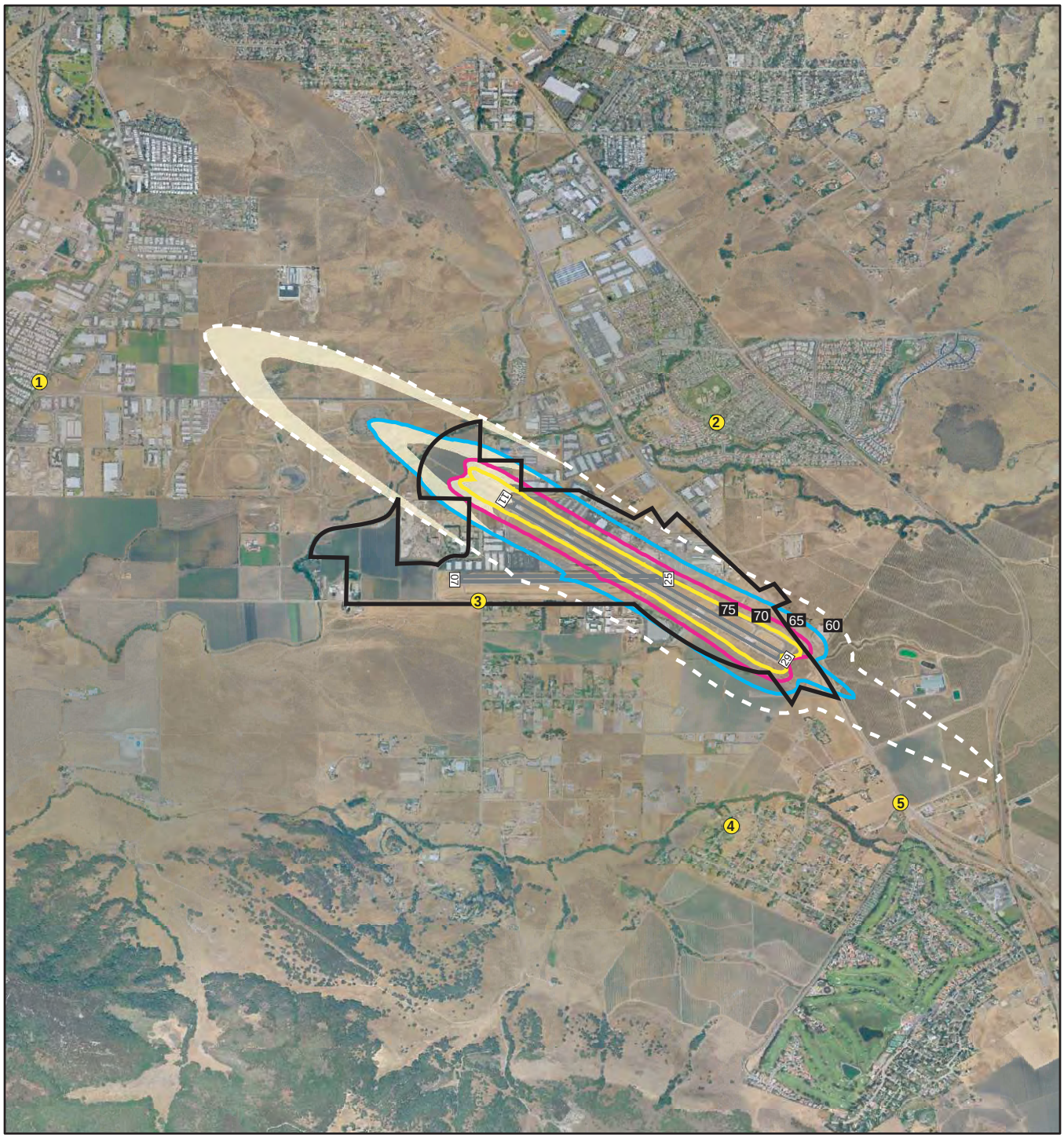
San Luis Obispo County Regional Airport (Sbp) Boundary

Note: The 60 CNEL noise contour is provided for informational purposes only and is not used to determine impact significance.

SOURCE: ESA Airports, 2005

San Luis Obispo County Regional Airport Master Plan Update EA-EIR . 203092

Figure 6-2
Proposed Action
2023 CNEL Noise Contours at SBP



AERIAL SOURCE: Airphoto USA, 8-01-03

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Foot

1 Noise Monitoring Sites

San Luis Obispo County Regional Airport (Sbp) Boundary

Area of Noise Increase Compared to Baseline Conditions

Note: The 60 CNEL noise contour is provided for informational purposes only and is not used to determine impact significance.

SOURCE: ESA Airports, 2005

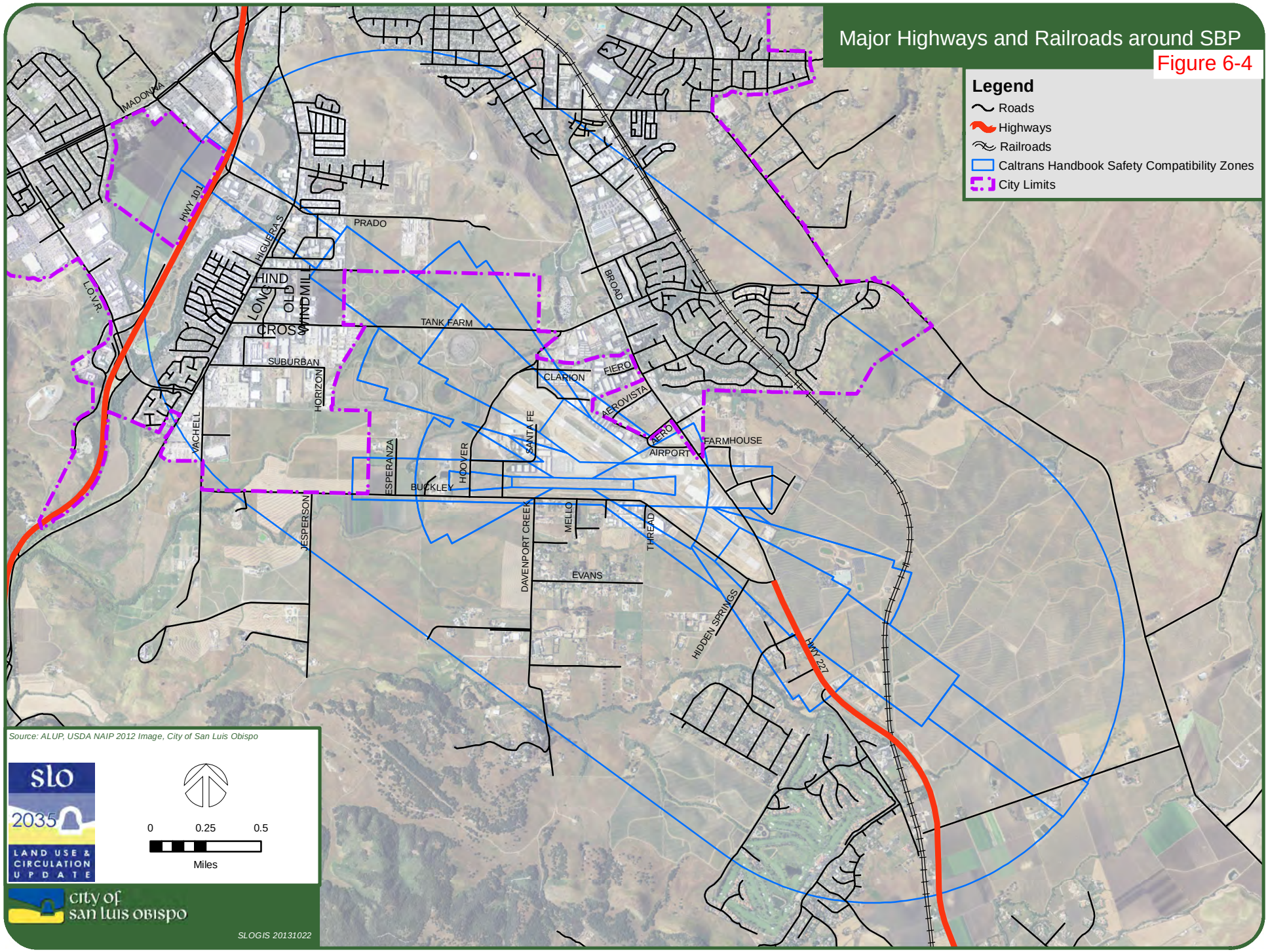
Figure 6-3

Comparison of 2023 CNEL Noise Contours for the Proposed Action with the 2004 CNEL Noise Contours for the Baseline Conditions

Urbanized areas within the City to the north, northwest and west of the airport generate their own background and ambient noise character during daytime hours. The following discussion of other noise considerations is from the SBPEA/EIR completed in July, 2006:

> There are several major roadways that pass adjacent to the Airport or that are in the areas affected by existing aircraft noise levels of approximately 60 CNEL or greater. Those roadways are U.S. Highway 101, State Route 227 (Broad Street/Edna Road), South Higuera Street, and Tank Farm Road. There are many other smaller (i.e., less traveled) roadways that are located in the Airport environs that do not generate noise levels exceeding 60 DNL at typical residential setbacks.
>
> The Union Pacific Railroad (formerly the Southern Pacific Transportation Co.) mainline is located about ½ miles east of the Airport. Based upon noise measurements reported by the Noise Element, maximum noise levels generated by passing trains in the San Luis Obispo area ranged from approximately 78 to 104 dBA at 50 feet from the tracks, depending upon whether or not warning horns were in use. The approximate distances from the center of the track to the 60 DNL contour, are 352 feet in areas removed from grade crossings and 525 feet in areas within 1,000 feet of a grade crossing.

Figure 6-4 depicts the roadways and intersections in proximity of SBP.


Major Highways and Railroads around SBP
Figure 6-4
Legend
Roads
Highways
Railroads
Caltrans Handbook Safety Compatibility Zones
City Limits
MADONNA
HWY 101
HIGUERA S
PRADO
LOVR
HIND
LONG
OLD
WINDMILL
CROSS
TANK FARM
SUBURBAN
HORIZON
VACHELL
ESPERANZA
BUCKLEY
HOOVER
SANTA FE
CLARION
FIERO
AEROVISTA
AERO
AIRPORT
FARMHOUSE
BROAD
JESPERSON
DAVENPORT CREEK
MELLO
THREAD
EVANS
HIDDEN SPRINGS
HWY 227
Source: ALUP, USDA NAIP 2012 Image, City of San Luis Obispo
slo 2035 LAND USE & CIRCULATION UPDATE
0 0.25 0.5
Miles
city of san luis obispo
SLOGIS 20131022

It is important to reiterate that the SBPEA/EIR found no existing or planned noise impact on the surrounding community as a result of the full build out of the Airport. In particular, the future forecast of aircraft operations used for the environmental analysis has been found to be a reasonable forecast of airport operations commensurate with the planned ultimate development of the Airport.

6.2 Airport Land Use Plan Noise Analysis Review

The San Luis Obispo County ALUC adopted its most recent update to the San Luis Obispo ALUCP in 2005. State Law requires that an ALUC must adopt a plan that, "shall be based on a long-range master plan…that reflects the anticipated growth of the airport during at least the next 20 years" (Public Utilities Code §21675. [a]). While the adopted ALUCP includes a summary of the SBP Master Plan Update airport activity forecasts (Section 3, Page 9 of the ALUCP), it does not include this information in the specific land use policies related to noise. The adopted ALUCP instead relies on a noise study dated April 2001 by Brown, Buntin Associates[14]. A note on Figure 1, Airport Noise Contours (in Section 4, Page 14-A of the ALUCP) states, "Airport Noise Contours are projected to runway capacity," and the noise section in the ALUCP makes assumptions about future noise impacts that are not consistent with the requirements under State Law or the California Airport Land Use Planning Handbook:

> ALUCs are not empowered to determine what the future airfield configuration, airport role, or activity levels will be. State statutes direct that an ALUCP must be based upon an airport master plan.
>
> State law anticipates that ALUCs will devise ALUCPs to support the future aviation uses selected by the airports' owners. If an airport's owner has selected a future airfield configuration, role, or activity level that an ALUC considers unrealistic or inappropriate, the ALUC has few options. The most that ALUCs can do is negotiate with the airport owner in an effort to have the airport plan modified to be more realistic or appropriate. Ultimately, state law forces ALUCs to accept plans adopted by airport owners, even if the ALUC considers the plans either unrealistically grandiose or too modest.[15]

The ALUP noise contours are not based on the SBP Master Plan forecast operations but rather on a theoretical "capacity" of the runways with no connection to the underlying demand or proven usage characteristics of the runways, resulting in an unrealistic and vastly over-stated noise impact. The ALUC does not present the underlying assumptions or technical facts used to create the noise contours provided in the ALUP and has not made this information available for review.

The ALUCP goes on to justify the use of a 55 dB CNEL contour for operations that are not consistent with the SBP Master Plan Update, adopting the 55 dB CNEL contour as the maximum acceptable residential noise level. This also applies to redevelopment of existing residential land uses. "Redevelopment may not increase the number of residential units located within the 55 dB CNEL airport noise contour" (ALUP, amended May, 2005). The basis of this justification is through the use of the Handbook's process for "normalization" of noise standards for land use planning. The result is a greatly compounded future noise impact area that is not based on reasonable future activity levels for SBP.

[14] The City of San Luis Obispo submitted a California Public Records Act request for a copy of the noise study identified in the ALUCP in October 2013. To date, this study has not been provided to allow a review of the facts and assumptions used to produce the noise contours published in the Adopted ALUCP.
[15] California Airport Land Use Planning Handbook, Page 3-47

The ALUC is faced with two very different land use settings around the Airport. In areas to the south and southeast of the Airport it is farm land and pockets of suburban residential land uses. In areas to the north and northwest within the City and the AASP area it is urban and planned urban areas of the City. While 55 dBs may be the FAA and Caltrans planning standard for areas outside of the City and AASP area, it is not the FAA and Caltrans planning standard for the "urban" land uses within the City.

6.3 Existing and Projected Noise Environment at SBP

As shown in *Table 6-2*, seventy-five percent of all aircraft noise complaints collected by County Airport officials over the last five years have been generated by three individuals.

Table 6-2 – Noise Complaints at SBP

Noise Complaint Origin:	Noise Complaint:						Percent of Total	Cumulative Percent
Caller #	Engine Runups	Low Flying	Noise	Other	Overflight	Grand Total		
Caller #101		3	237	7	477	724	41.1%	41.1%
Caller #36	1	231	185	4	49	470	26.7%	67.8%
Caller #15		44	10	2	69	125	7.1%	74.9%
Caller #83		5	34		31	70	4.0%	78.9%
Caller #67		2	18		38	58	3.3%	82.2%
Caller #98		1	2	1	33	37	2.1%	84.3%
Caller #56	3		16			19	1.1%	85.4%
Caller #93		5	1		13	19	1.1%	86.5%
Caller #40	1	3			8	12	0.7%	87.2%
Caller #95	1	1	5		5	12	0.7%	87.8%
Caller #94		3			7	10	0.6%	88.4%

Source: San Luis Obispo County Regional Airport (SBP)

According to the California Department of Transportation, there are 10 airports in California that have been designated by their County Board of Supervisors under Title 21, Section 5000 of the California Code of Regulations to be "noise problem" airports. These are: Bob Hope Airport, John Wayne Airport – Orange County, Long Beach Daugherty Field Airport, Los Angeles International Airport, Metropolitan Oakland International Airport, Norman Y. Mineta - San Jose International Airport, Ontario International Airport, San Diego International Airport, San Francisco International Airport, and Van Nuys Airport. SBP is not included in the list of ten "noise problem" airports in California as defined in the California Code of Regulations, Title 21, Section 5000, et seq. In addition, the San Luis Obispo County Board of Supervisors has not applied to the State to have SBP defined as a "noise problem" airport in California.

The 65 dB CNEL aircraft noise contour is the FAA and state aircraft noise planning standard for urban residential areas that are not classified as "noise problem" airports in California as defined in the California Code of Regulations, Title 21, Section 5000, et seq.

Figure 6-5 depicts the projected noise contours for the 2023 Proposed Action using the latest INM model (Version 7.0d) and the forecasts provided in the adopted 2005 SBP Master Plan Update and 2006 EA/EIR. This model validates the noise contours produced in the 2006 EA/EIR as accurate and in line with future facilities development at SBP as per the Master Plan Update.

Figure 6-5

SBP Airport Noise Contours - 2023 Master Plan EIR Proposed Action

7 AIR TRAFFIC OVER-FLIGHT

Heavily used flight corridors to and from metropolitan areas can generate noise complaints from communities near airports as well as many miles beyond any defined noise contour. Commonly, when overflight impacts are discussed in a community, the focus is on the modification of flight routes, or the buyer awareness measure, which, rather than applying direct restrictions on the types of land uses, seeks to inform the public of potential annoyances associated with overflight.

The California Land Use Planning Handbook provides the following additional details about disclosure requirements:

> The Business and Professions Code Sections 11010(a) and (b)(13) require that, any person who intends to offer subdivided lands for sale or lease shall file with the Department of Real Estate an application for a public report consisting of a notice of intention and a completed questionnaire on a form prepared by the department. The notice of intention shall contain the location of all existing airports, and of all proposed airports shown on the general plan of any city or county, located within two statute miles of the subdivision.
>
> California real estate law also requires that sellers of real property disclose 'any fact materially affecting the value and desirability of the property' (Civil Code, Section 1102.1(a)). Section 731a of the Code of Civil Procedure specifies: 'Whenever any city, city and county, or county shall have established zones or districts under authority of law wherein certain manufacturing or commercial or airport uses are expressly permitted, except in an action to abate a public nuisance brought in the name of the people of the State of California, no person or persons, firm or corporation shall be enjoined or restrained by the injunctive process from reasonable and necessary operation in any such industrial or commercial zone or airport of any use expressly permitted therein, nor shall such use be deemed a nuisance without evidence of the employment of unnecessary and injurious methods of operation….'
>
> It is interpreted that these sections of law establish a requirement for disclosure of information regarding the effects of airports on nearby property provided that the seller has "actual knowledge" of such effects.

The most useful tool for determining the location of overflight boundaries are flight tracks. Flight track data depicts not only where aircraft typically operate, but also at what altitudes. If flight track data is not available, understanding the standard operating procedures of the airport will establish overflight boundaries. Common instrument flight rules (IFR) arrival and departure routes can also identify overflight areas of concern.

The California Airport Land Use Planning Handbook addresses overflight concerns through the development of Safety Zone 6. As per the Handbook, residential development is allowed in this zone, however, noise and overflight impacts should be considered where ambient noise levels are low, and prospective property owners should be made aware of potential noise impacts from overflying aircraft through buyer awareness measures such as recorded deed notices and real estate disclosure statements. Table 4D from the Handbook is shown in this Report as *Table 7-1* and "summarizes the concepts and issues involved with establishing overflight compatibility criteria…and sample policies."

Table 7-1 – Handbook Overflight Compatibility Summary

TABLE 4D: OVERFLIGHT COMPATIBILITY SUMMARY

Objective:	Notify people near airports of the presence of overflights in order to minimize or avoid annoyance associated with these conditions.
Measurement:	Recorded flight tracks; information on standard operations and traffic patterns of the airport (see Chapter 3, pg.3-12).
Strategies:	Buyer awareness measures.
Basis:	Experience and information from airport proprietors and ALUCs on the noise concerns of the community; state law.
Sample Policies:	Policy 1: California state statutes require that, as part of many residential real estate transactions, information be disclosed regarding whether the property is situated within an AIA. When disclosure is required, state law dictates that the following statement be provided: NOTICE OF AIRPORT IN VICINITY: This property is presently located in the vicinity of an airport, within what is known as the airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Policy 2: As a condition for agency approval of residential land use development, an overflight notification shall be recorded. a. The notification shall contain language as dictated by state law with regard to real estate transfer disclosure (see Policy 1). b. The notification shall be evident to prospective buyers or renters of a property. c. A separate recorded overflight notification is not required where an avigation easement is required. d. An overflight notification is not required for nonresidential development.

Departure and arrival flight tracks, for use during noise modeling, were developed for the SBP EA/EIR completed in 2006. As per the EA/EIR, these flight tracks were developed through discussions with the FCT Air Traffic Manager at SBP and San Luis Obispo County staff, and through field observations. It was acknowledged in the EA/EIR that these generalized flight tracks did not indicate all areas where aircraft overflights could possibly occur.

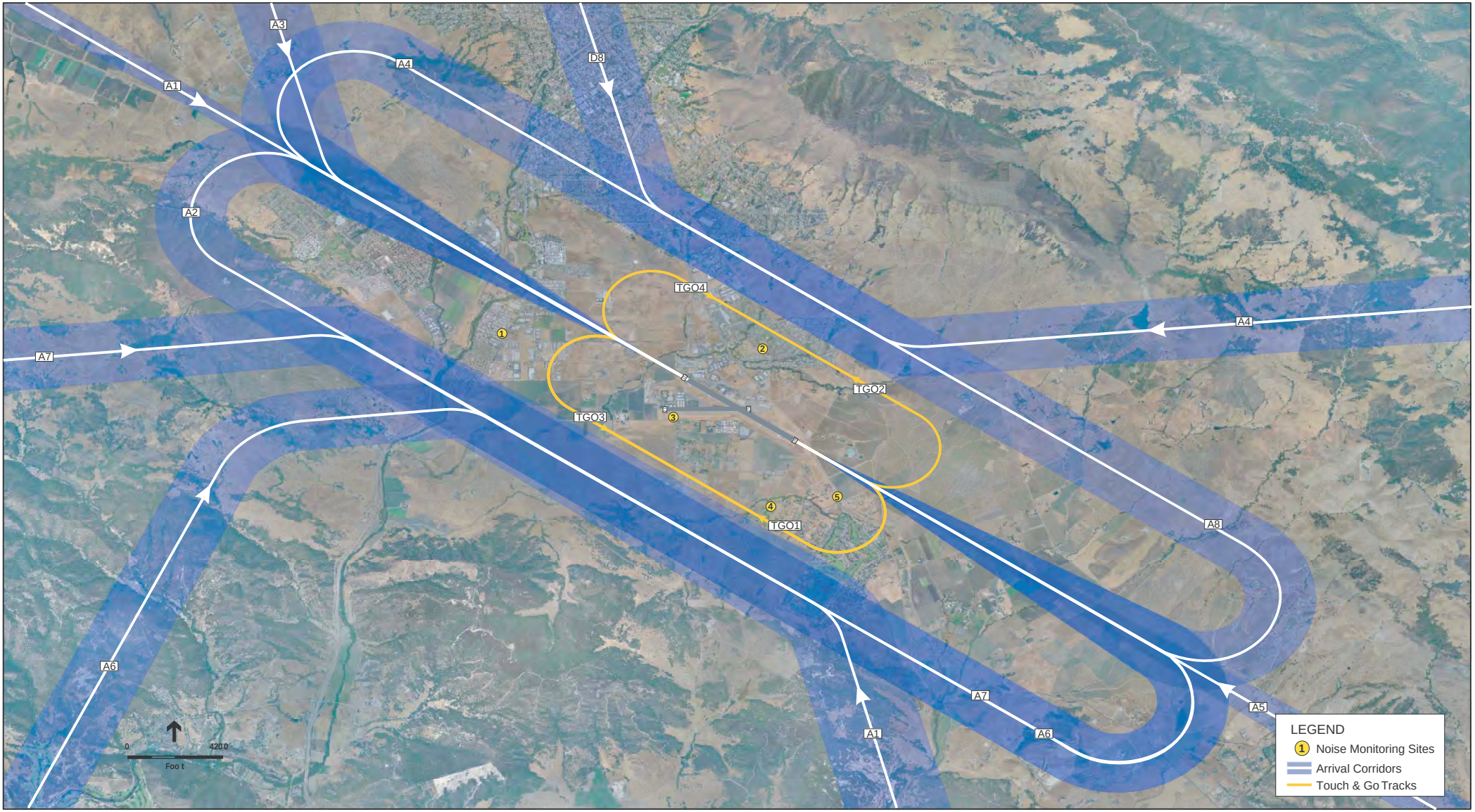
Figure 7-1 shows the generalized departures tracks, and *Figure 7-2*shows the generalized arrival and local pattern flight tracks that were used for noise modeling. Since noise modeling is confined to an area that is within the immediate Airport vicinity, the locations of assumed aircraft flight tracks at greater distances from the Airport were not analyzed or depicted.

Figure 7-1 - SBP Departure Tracks used for EA/EIR Noise Modeling

AERIAL SOURCE: Airphoto USA, 8-01-03

SOURCE: ESA Airports, 2005

Figure 7-2 - SBP Arrival Tracks used for EA/EIR Noise Modeling



AERIAL SOURCE: Airphoto USA, 8-01-03

SOURCE: ESA Airports, 2005

8 ZONING AND LAND USE

8.1 Existing City Zoning and Land Use

The Airport and land immediately surrounding the Airport are under County jurisdiction. However, much of the approach and departure paths, safety zones, and obstruction surfaces for the Airport are within the City of San Luis Obispo. The Airport and surrounding area are also within the San Luis Obispo Airport Area Specific Plan (AASP) and the City plans to annex much of this area.

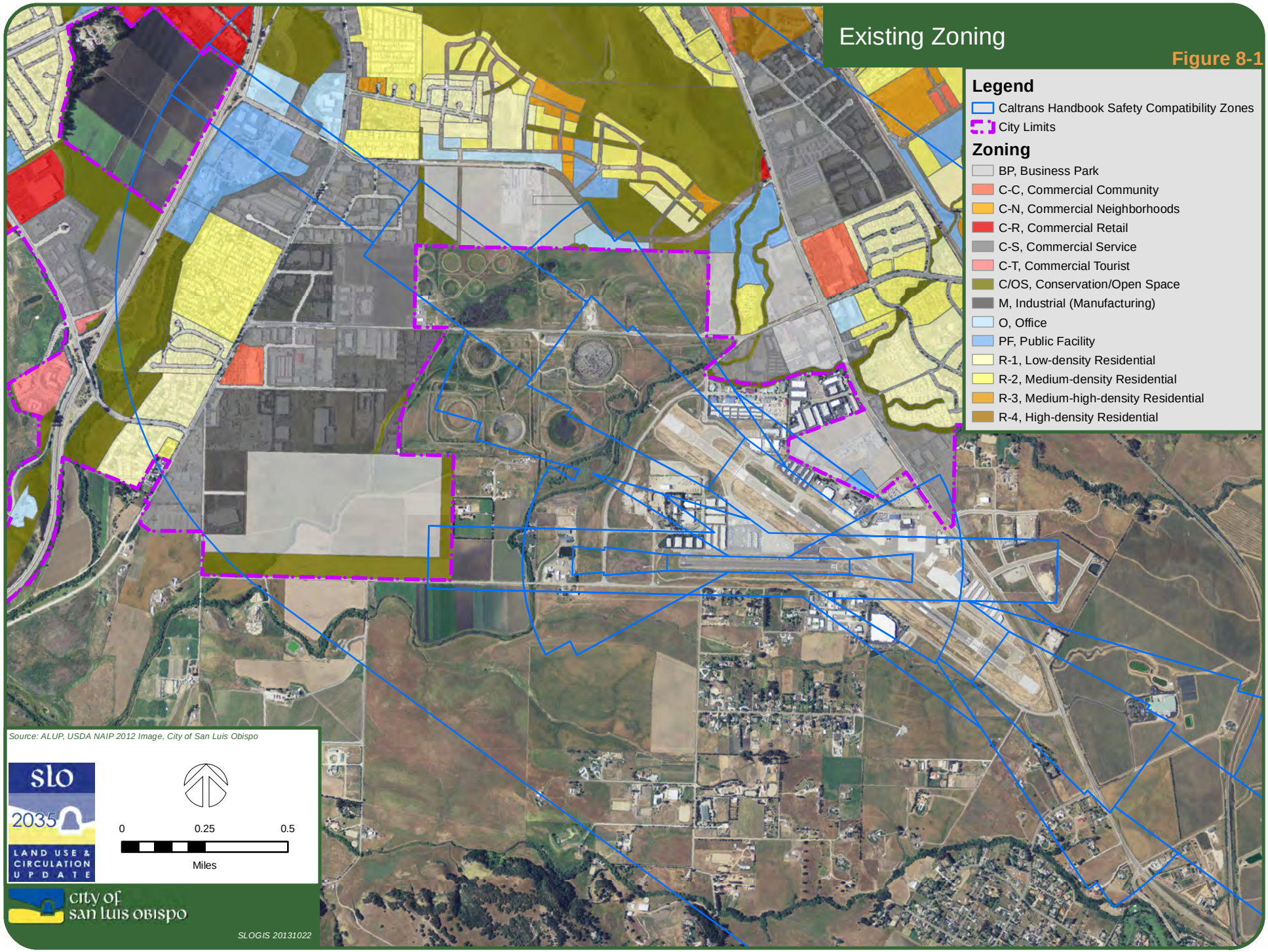
The San Luis Obispo County Regional Airport Master Plan Update Final EA/EIR, completed July 2006, describes existing land use as follows:

> The County designates land immediately adjacent to the Airport as either Commercial Service or Industrial. One parcel at the intersection of SR 227 and Aero Drive is designated Commercial Retail and land to the northwest is designated Recreation.
>
> Existing land use is generally consistent with the land use designations. Development directly north of the Airport, on either side of Tank Farm Road, is light industrial, commercial, and residential, including a mobile home park. Development east of the Airport along SR 227 includes commercial/light industrial businesses, as well as a winery and vineyard, single family residences, a church, and a driving range. Much of the land to the south is undeveloped, but is being farmed; developed areas include industrial and commercial uses south of Buckley Road, with single-family residences extending from Thread Lane to Davenport Creek Road. Agricultural activities such as row crops and light agricultural businesses also occur along Buckley Road. Development to the west includes light industrial activities, commercial businesses, as well as some farming along Santa Fe Road.
>
> Although SBP is currently under the County's jurisdiction, the Airport vicinity lies within the City of San Luis Obispo Urban Reserve Area. The City has identified this area for future urban expansion as described in the AASP.
>
> Besides designating the Airport and County-owned properties as Public, the AASP designates land immediately to the southeast and southwest as Services and Manufacturing, and a small parcel to the southeast as Open Space. Land to the northeast is designated Services and Manufacturing Business Park. The Chevron Tank Farm property is designated Open Space and a small amount of property to the northwest is designated Agriculture. The AASP does not designate any additional land for development. The City's next step will be to rezone the land within its jurisdiction and pre-zone unincorporated properties.

Figure 8-1 depicts the existing zoning around SBP, and *Figure 8-2* depicts existing land use. *Table 8-1* summarizes the City's general land use policies around SBP.

Existing Zoning

Figure 8-1



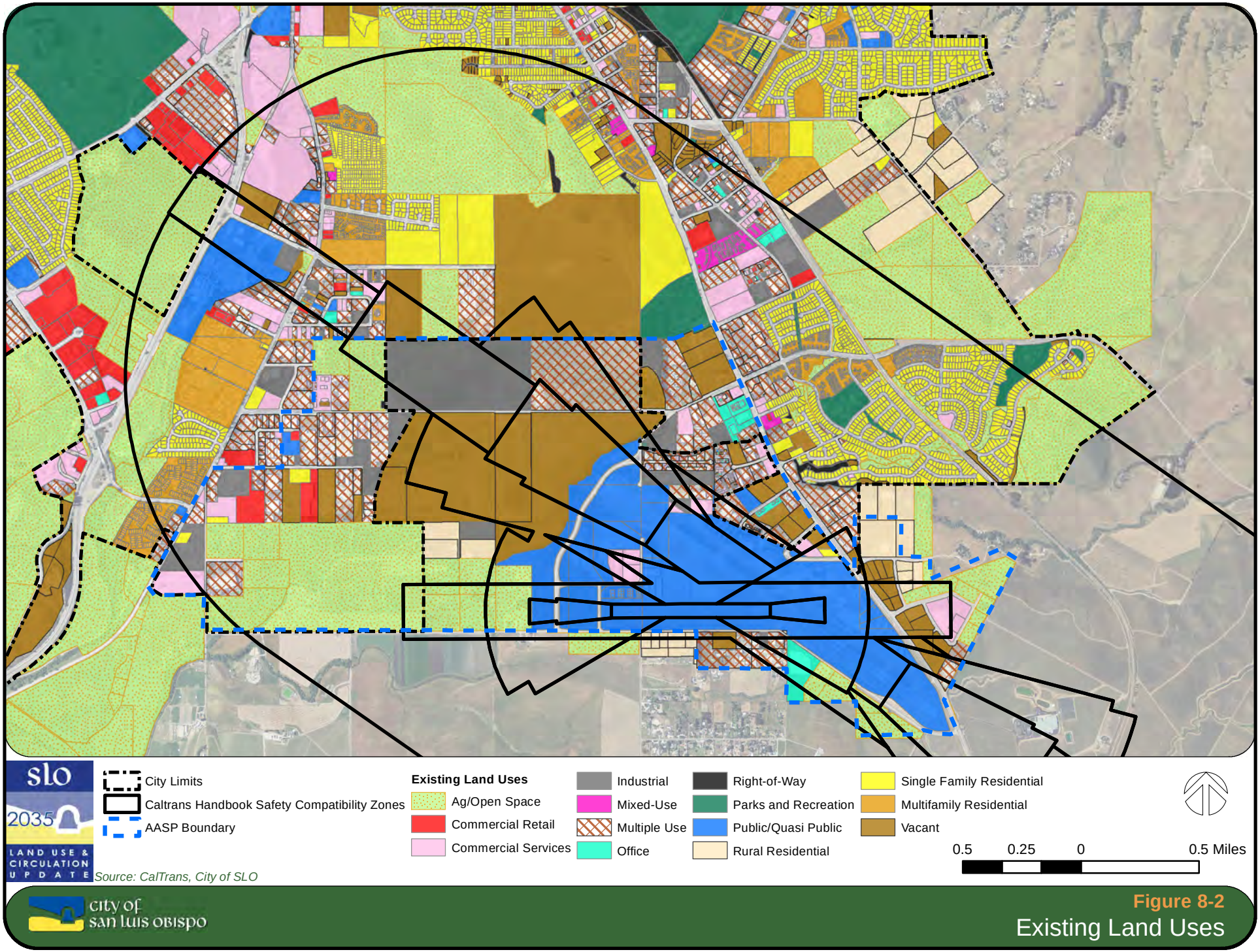


Figure 8-2
Existing Land Uses

Table 8-1 - City of San Luis Obispo - Airport Zoning and Land Use Policy

Airport Site:	**Land Use Jurisdictions:**
340 acres of land	County of San Luis Obispo
3.5 miles south of City of San Luis Obispo	City of San Luis Obispo
Terrain:	**Community Plans:**
The County is bisected by the Santa Lucia Mountain Range. The Airport is located on a relatively flat alluvial plain with few visually significant natural features. The area provides sweeping views of the rural and agricultural open space and distinctive peaks and ridgelines. Local climate is mild year-round with a dense fog along the coast and more dramatic temperature variations inland.	Economic Benefits Analysis (2003) Economic Development Strategic Plan (2012) San Luis Obispo General Plan (2010) Airport Area Specific Plan (AASP) (2005) Margarita Area Specific Plan (MASP) (Amended 2012) Orcutt Area Specific Plan (OASP) (2010)
Existing Airport Area Land Uses & Zoning: Commercial Service & Retail; Industrial; Recreation; Residential; Agriculture; Vineyards; Church; Open Space C/OS - Conservation/Open Space R-1 - Low-density Residential R-2 - Medium-density Residential BP - Business Park C-S - Service Commercial M - Industrial (Manufacturing) PF - Public Facility C-C - Community Commercial	**Planned Airport Area Land Uses:** AASP - 23% Open Space; 32% Service & Manufacturing; 24% Government; 15% Business Park; 1% Residential MASP - 44% Open Space; 17% Residential; 17% Business Park; 3% Neighborhood Commercial and Parks OASP - 48% Residential; 33% Open Space; 1% Community Commercial/Mixed-Use

Airport Compatibility Measures:

Land use and development should be consistent with approved Airport Master Plan.

Land use and development should be consistent with SBP Airport Land Use Plan.

City intends to actively pursue annexation of airport area; County urban development shall be consistent with City development.

Annexation of airport area shall be consistent with maintaining areas outside urban reserve line in rural, predominantly open space uses.

Areas designated for urban uses, should include open areas, protect resources, and preserve wildlife corridors.

Areas designated for eventual urban development may be developed during the interim with rural residential or rural commercial uses.

Transit service linking development sites with citywide bus system should be concurrent with urban development in airport area.

Business parks may be developed in designated areas to accommodate research and development and light manufacturing. Building location and intensity standards will be provided in specific plans for each business park. The ratio of building floor area to site area shall not exceed 1.0.

Sources: SBP EA/EIR; SLO General Plan

8.2 Existing Land Use within ALUP Safety Zones

The Airport Land Use Commission (ALUC), as per the Airport Land Use Plan (ALUP) for SBP (amended 2005), designated the safety areas described in the paragraphs below for the purposes of land use planning around SBP. These zones are graphically depicted in *Figure 8-3.* The densities allowed in these zones as well as the most stringent allowed and prohibited land uses in these zones are summarized in *Table 8-2*.

Runway Protection Zones– Areas immediately adjacent to the ends of each active runway, within which the level of aviation safety risk is very high and in which, consequently, structures are prohibited and human activities are restricted to those which require only very low levels of occupancy. The size and configuration of the Runway Protection Zones are specified by Federal Aviation Regulations. The Runway Protection Zones are also referred to as the "clear zones" for each runway.

Safety Area S-1– The area, as designated in *Figure 8-3*, within the vicinity of which aircraft operate frequently or in conditions of reduced visibility at altitudes of 500 feet above ground level (AGL).

Safety Area S-2– The area, as designated in *Figure 8-3*, within the vicinity of which aircraft operate frequently or in conditions of reduced visibility at altitudes between 501 and 1000 feet AGL. Aviation safety hazards to be considered in this area include mechanical failures, fuel exhaustion, loss of control during turns from downwind to base legs or from base to final legs of the traffic pattern, stall/spin incidents during engine-out maneuvers in twin engine aircraft, and midair collisions. Operational factors of concern include circle-to land instrument approaches south of Runway 11-29, extensive 'pattern work' by student pilots in fixed-wing aircraft (predominantly, but not exclusively to the south and west of the airport), and extensive practice flight by students in rotary-wing aircraft to the north of the airport. Nonetheless, because aircraft in Area S-2 are at greater altitude and are less densely concentrated than in other portions of the Airport Planning Area, the overall level of aviation safety risk is considered to be lower than that in Area S-1 or the Runway Protection Zones.

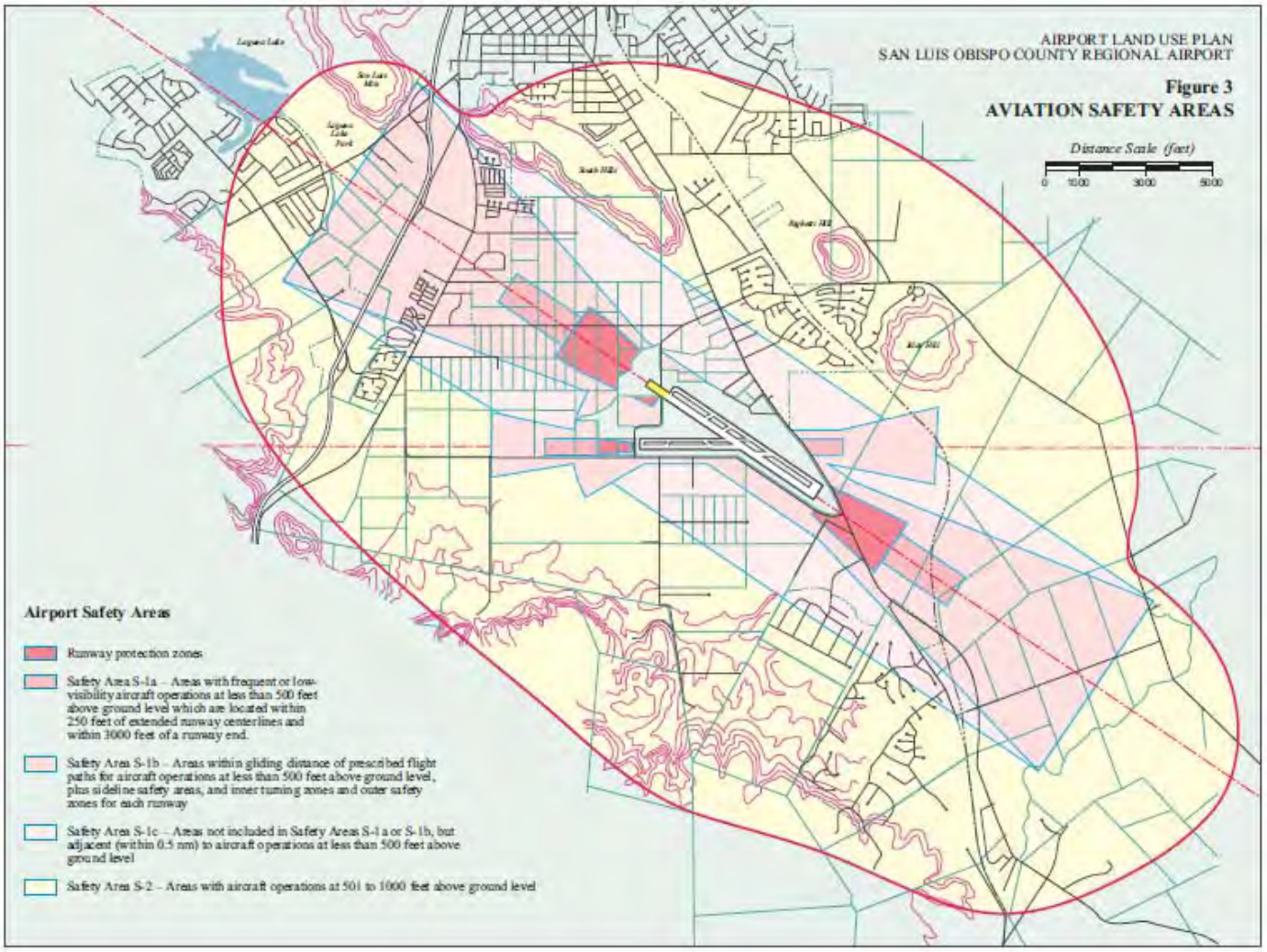
Safety Area S-1a– Those portions of Safety Area S-1 which are located within 500 feet of the extended runway centerline of Runway 11-29 and within 5,000 feet of an existing or planned runway end or which are within 250 feet of the extended runway centerline of Runway 7-25 and within 3,000 feet of the runway end.

Safety Area S-1b– Those portions of Safety Area S-1 which are not included in Safety Area S-1a, but are within probable gliding distance for aircraft on expected approach or departure courses; also includes State-defined sideline safety areas, inner turning zones and outer safety zones for both Runway 11-29 and Runway 7-25 and portions of existing Airport Land Use Zone 3. Aviation safety hazards to be particularly considered in this area include mechanical failures, fuel exhaustion, deviation from glideslope or MDA during IFR operations (due to pilot error or equipment malfunction), loss of control during short approach procedures, stall/spin incidents during engine-out maneuvers in multi-engine aircraft, loss of control during "go around" or missed approach procedures, and midair collisions.

Safety Area S-1c– Those portions of Safety Area S-1 which are not included in Safety Areas S-1a or S-1b, but are adjacent to (within 0.5 nm) frequent or low-visibility aircraft operations at less than 500 feet above ground level. Aviation safety hazards to be considered in this area include mechanical failures, deviation from localizer or VOR during IFR operations (due to pilot error or

equipment malfunction), stall/spin incidents during engine-out maneuvers in multi-engine aircraft, loss of control during 'go around' or missed approach procedures, and loss of visual references by aircraft performing circle-to-land procedures.

Figure 8-3 – Existing ALUP Safety Zones



Source: SBP Airport Land Use Plan

Table 8-2 - Existing ALUP Safety Zone Density Criteria

Zone	Maximum Densities: Non-residential (persons/acre)[1]	Maximum Densities: Residential (dwelling units/acre)[1]	Prohibited Uses	Allowed Development
Runway Protection Zone	0-5 compatible	0 compatible	**All uses prohibited** except: animal raising and keeping, crop production (except staked crops), grazing, outdoor sports and recreation, rural recreation and picnicking (no camping), above-ground pipelines (non-flammable liquids).	Animal raising and keeping. Crop production (except staked crops), grazing. Outdoor sports and recreation, rural recreation and picnicking (no camping). Above-ground pipelines (non-flammable liquids).
S-1 - Frequent ops or ops in reduced visibility (500 ft AGL).				
S-1a - Within 500 ft of extended runway centerline and 5,000 ft of runway end for Runway 11-29; 300ft and 3,000 ft respectively for RWY 7-25.	0-30 compatible; 40< incompatible	0-0.2 compatible; 0.2< incompatible	Vineyards and staked crops. Amusement parks, fairgrounds. Daycare facilities for children or adults. Convention/exhibit centers, auditoriums. Schools (pre-school to high school). Sports stadiums, racetracks, temporary events. Hazardous corrosive, or flammable chemicals, electrical generating plants, petroleum refining or bulk storage. Nursing, residential and personal care facilities. Petroleum extraction. Retail sales (fuels, lubricants, propane, etc.). Hospitals (acute or convalescent). Airfields, landing strips, heliports, helipads. High voltage transmission lines, above-ground pipelines (flammable liquids).	Animal raising and keeping. Crop production (except staked crops), grazing. Antennas, repeater stations. Cemeteries, mausoleums, columbariums. Outdoor sports and recreation, rural recreation and picnicking (no camping). Above-ground pipelines (non-flammable liquids) [2]
S-1b - Within gliding distance of app/dep aircraft, safety areas, inner turning zones, and outer safety zones.	0-40 compatible; 50< incompatible	0-0.2 compatible; 0.2< incompatible	Amusement parks, fairgrounds. Daycare facilities for children or adults. Convention/exhibit centers, auditoriums. Schools (pre-school to high school). Sports stadiums, racetracks, temporary events. Hazardous corrosive, or flammable chemicals, electrical generating plants, petroleum refining or bulk storage. Nursing, residential and personal care facilities. Petroleum extraction. Retail sales (fuels, lubricants, propane, etc.). Hospitals (acute or convalescent). Airfields, landing strips, heliports, helipads. High voltage transmission lines, above-ground pipelines (flammable liquids).	Animal raising and keeping. Crop production, vineyards and other staked crops. Antennas, repeater stations. Cemeteries, mausoleums, columbariums. Outdoor sports and recreation, rural recreation and picnicking (no camping). Above-ground pipelines (non-flammable liquids). [2]
S-1c - Within 0.5nm or frequent or low-visibility aircraft ops at less than 500 ft AGL.	0-50 compatible; 120< incompatible	0-0.2 compatible; 0.2< incompatible	Uses prohibited in Zone S-1b	Uses allowed in Zone S-1b
S-2 - Frequent ops or ops in reduced visibility (501-1,000 ft AGL).	0-150 compatible	0-6 compatible	Amusement parks, fairgrounds.	Uses allowed in Zone S-1b

[1/]Other densities (between compatible and incompatible thresholds) may be allowed if certain requirements are met as per the SBP ALUP.

[2/]Other uses may be allowed if certain requirements are met as per the ABP ALUP.

Source: SBP ALUP

Since the completion of the SBP Master Plan Update (adopted 2005) the ALUC released a draft document titled: Dimensional Detail of Airport Safety Zones (2013) to reflect changes in safety zones based on proposed changes to the runways at SBP as specified in the Master Plan Update (*Table 8-3*). *Table 8-4* compares the revisions made to the ALUP safety zones with the safety zones recommended by the California Airport Land Use Planning Handbook. Revisions made to the ALUP safety zones do not affect allowed densities or land uses as described in *Table 8-2*.

Table 8-3 – Modifications to Runways at SBP

	Completed Modifications	Planned (Potential) Modifications
Runway 11	• Pavement length has been extended 800 feet to the northwest • Runway threshold has been displaced 800 feet from end of runway	• ILS glideslope to be relocated 600 feet to the northwest • Runway threshold to be relocated 800 feet to the northwest (to end of pavement)
Runway 29	• Pavement length has been extended 500 feet to the southeast • Runway threshold has been displaced 500 feet from end of runway	
Runway 7		• Runway length to be extended 500 feet to the east • Runway width to be narrowed from 100 feet to 60 feet
Runway 25	• Runway length has been reduced by 760 feet • Runway threshold has been moved 760 feet to the east (to current end of pavement)	• Runway width to be narrowed from 100 feet to 60 feet

Source: Draft Dimensional Detail of Airport Safety Zones (January, 2013)

Table 8-4 – Comparison of Revised ALUP Safety Zones to Caltrans Recommended Safety Zones

SLO ALUP Zones (Draft Dimensional Document, Jan. 2013)		Caltrans Handbook Zones	
Designation	**Size**	**Designation**	**Size**
Runway Protection Zone	FAA standard dimensions	Zone 1 – Runway Protection Zone	FAA standard dimensions
S-1a	1,000' wide and 5,800' beyond RWY 11 end	Zone 2 – Inner approach/departure	1,500' wide and 6,000' beyond runway end
S-1b Inner turning	6,000' at 20° arc from runway centerline	Zone 3 – Inner turning	6,000' at 20° arc from runway centerline
S-1b Outer app/dep (references Handbook)	500' wide either side of runway centerline extended and 4,000' beyond Zone 2	Zone 4 – Outer approach/departure	500' wide either side of runway centerline extended and 4,000' beyond Zone 2
S-1b Maneuvering Area	**See Table 8-5** – wide trapezoidal area around outer app/dep area	No equivalent	No equivalent
S-1b Sideline Zones (references Handbook)	1,000' either side of runway centerline	Zone 5 – Sideline	1,000' either side of runway centerline
S-1c	3,038.1' (1/2 nautical mile) either side of runway and 22,382' long	No equivalent	No equivalent
S-2	10,000' either side of runway and 10,000' arc beyond runway end	Zone 6 – Traffic pattern	6,000' either side of runway and 10,000' arc beyond runway end

Table 8-5 – ALUP Generalized Configuration of Maneuvering Zones

	Runway 11		Runway 29		Runway 7		Runway 25	
	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2
Constants								
A_{gs}	3.0±0.7°	3.0±0.7°	≥3.0°	≥3.0°	3.0±0.7°	3.0±0.7°	3.0±0.7°	3.0±0.7°
W_{gs}	n/a	3.0°	n/a	5.0°	n/a	5.0°	n/a	5.0°
A_{ms}	16.32879514°	19.32879514°	21.52175368°	26.52175368°	16.32879514°	21.32879514°	16.32879514°	21.32879514°
D_a	800 ft.		500 ft.		500 ft.		500 ft.	
D_b	10370 ft.	8661 ft.	7704 ft.	6088 ft.	6076 ft.	6076 ft.	6076 ft.	6076 ft.
D_c	12449 ft.		9541 ft.		6576 ft.		6576 ft.	
D_d	600 ft.		500 ft.		500 ft.[1]		0 ft.	
W_{max}	3038 ft.		3038 ft.		1780.1 ft.	2372.5 ft.	1780.1 ft.	2372.5 ft.
Calculated values								
h	$0.040164149d^2$		$0.052407779d^2$		$0.040164149d^2$		$0.040164149d^2$	
W	$0.292966d$	$0.350759d$	$0.394349d$	$0.499056d$	$0.292966d$	$0.390462d$	$0.292966d$	$0.390462d$
$2W$	$0.585932d$	$0.701518d$	$0.788698d$	$0.998112d$	$0.585932d$	$0.780924d$	$0.585932d$	$0.780924d$

[1] The shape of the area to be added is not rectangular. See specific comments regarding Rwy 7
[2] d = Distance from touchdown zone (in feet) along extended runway centerline

Source: Draft Dimensional Detail of Airport Safety Zones (January, 2013)

To better understand the safety zones proposed in the Draft Dimensional Detail of Airport Safety Zones document and their impacts to land use around the Airport, the City's GIS department first mapped the existing 2005 ALUP Safety Zones. *Figure 8-4* depicts the GIS-mapped ALUC safety zones, as well as the safety zones recommended by the California Department of Transportation in the California Airport Land Use Planning Handbook.

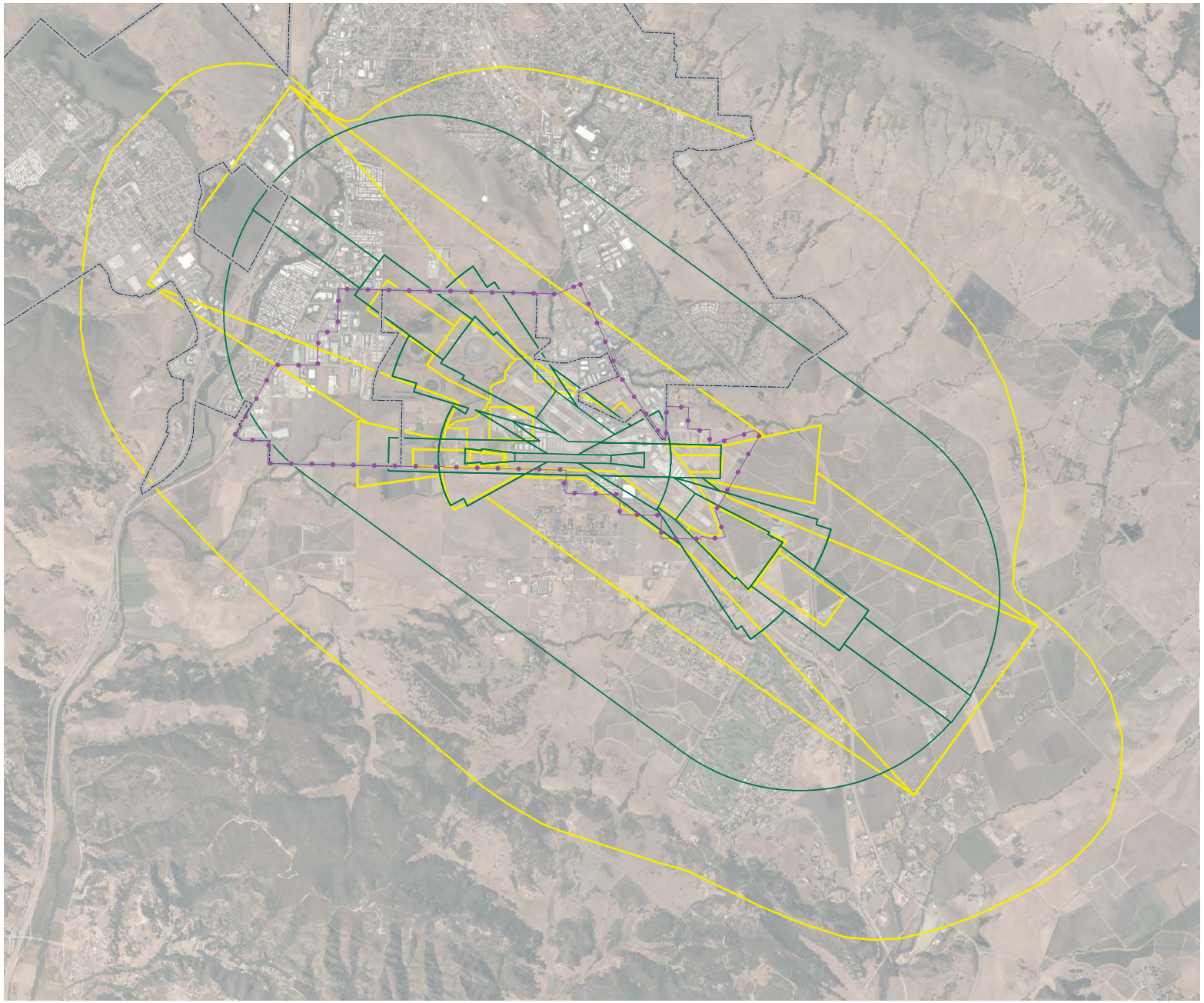
There is substantial agreement between the City and the ALUC as to significant portions of the GIS-mapped ALUC safety zones as defined and depicted in the Draft Dimensional Document (January 2013), including the size, configuration and land use criteria for the following:

1. Runway Protection Zones (ultimate planned locations based on the FAA-Approved Airport Layout Plan).
2. S-1a Inner Approach/Departure Zones.
3. S-1b Inner Turning Zones.
4. S-1b Outer Approach/Departure Zones.
5. S-1b Sideline Zones.

The following safety zones created by the ALUC are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria, however, appropriate justification has not been provided by the ALUC or within the ALUP to warrant such safety zones or the restrictions placed within them:

1. Maneuvering Zone S-1b size and land use criteria.
2. Sideline Zone S-1c size and land use criteria.
3. Zone S-2 size and land use criteria.

Figure 8-4 - GIS-Mapped ALUN Safety Zones Compared to Handbook Safety Zones



Comparison of Airport Safety Areas

Handbook Zones (HBZ) were created using dimensions on CA Airport Land Use Palnning Handbook.

Dimensional Document Zones (DDZ) were created using dimensions on Dimensional Details of Airport Safety Areas by Dr. Tefft.

Existing ALUP Zones (EAZ) were created by georeferencing the Figure 3 in the current Airport Land Use Plan.

Noise levels for 2023 and 2004 are 75 dB (most inner), 70 dB, 65 dB, and 60 dB.

Legend

- Noise Level-2023
- Noise Level-2004
- Noise Level-ALUP
- AASP Boundary
- City Limit
- DDZ exceeding HBZ
- Maneuvering Zones not in HBZ
- Handbook Zones
- Dimensional Document Zones
- Existing ALUP Zones

General Plan Zones

- Agriculture
- Airport Property
- Business Park
- Commercial
- Industrial/Manufacturing
- Office
- Open Space
- Public Facilities
- Recreation
- Residential
- Rural Lands
- Rural Residential
- Suburban Residential

N W E S

0 5,000 10,000 Feet

SLOGIS 20130207

9 RECOMMENDATIONS

This section provides recommendations for the City of San Luis Obispo to consider during its deliberations with the San Luis Obispo County ALUC regarding the airport land use guidelines to include in the City's LUCE of its General Plan Amendment. The recommendations are based on the facts and substantial information that has been reviewed and assembled within this report.

Generally, there is agreement between the City and the ALUC as to significant portions of the GIS-mapped ALUP safety zones as depicted and described in the Draft Dimensional Document (January 2013) provided by the ALUC. All ALUC safety zone references in these recommendations refer to those safety zones depicted and described by the ALUC in the Draft Dimensional Document (January 2013). The City also supports the long term development of SBP airport facilities as depicted in the FAA-approved ALP dated November 4, 2010. However, there are a few discrepancies in the ALUP that must be resolved as they have a direct impact on the City's ability to set reasonable land use planning guidelines for land within the City's jurisdiction.

RECOMMENDATIONS

Recommendation 1: The City should continue to entertain discussions with the County to annex the Airport Area Specific Plan (AASP) area.

Recommendation 2: The City should use the SBP Master Plan forecasts of aviation activity as a reasonably foreseeable projection of ultimate aviation activity sufficient for long-term land use planning purposes, without regard for the date of 2023 because it is uncertain when the forecast levels of activity will be reached and to be consistent with the capital improvement plan for the Airport.

Recommendation 3: The City should use the aircraft noise analysis prepared for the SBP EA/EIR as an accurate mapping of the long term noise impact of the Airport's aviation activity that is tied to the ultimate facilities development depicted in the FAA-approved ALP and the operational characteristics studied in the EA/EIR.

Recommendation 4: The City should continue working with the ALUC to resolve differences between specific ALUP safety zone configurations, sizes and land use criteria including the following specific recommendations for areas within the City limits:

1. Adopt the GIS-mapped versions of the ALUP Runway Protection Zones (ultimate planned locations based on the FAA-Approved ALP).
2. Adopt the GIS-mapped versions of the ALUP S-1a Inner Approach/Departure Zones.
3. Adopt the GIS-mapped versions of the ALUP S-1b Inner Turning Zones.
4. Adopt the GIS-mapped versions of the ALUP S-1b Outer Approach/Departure Zones.
5. Adopt the GIS-mapped versions of the ALUP S-1b Sideline Zones.
6. Eliminate ALUP Maneuvering Zone S-1b due to the fact that its size, configuration and land use criteria are inconsistent with California Airport Land Use Planning Handbook guidelines and criteria, i.e. there is no such equivalent zone in the Handbook. This zone is also unsubstantiated by the airport's activity forecasts as used for noise planning purposes, historical accident data at SBP, or safety zone adjustment factors as described in Table 3A of the Handbook.
7. Eliminate ALUP Sideline Zone S-1c due to the fact that its size, configuration and land use criteria are more restrictive than California Airport Land Use Planning Handbook guidelines and criteria,

i.e. there is no such equivalent zone in the Handbook. This zone is also unsubstantiated by the airport's activity forecasts as used for noise planning purposes, historical accident data at SBP, or safety zone adjustment factors as described in Table 3A of the Handbook. .

8. Revise ALUP Zone S-2 size, configuration and land use criteria to be consistent with Zone 6 – Traffic Pattern of the California Airport Land Use Planning Handbook guidelines and criteria.
9. Adopt Title 14 Code of Federal Regulations Part 77 surfaces for the safe, efficient use and preservation of navigable airspace as applied to the ultimate ALP for SBP.

Recommendation 5: Land use density and intensity surrounding SBP should be simplified and consistent with Caltrans Airport Land use Planning Handbook guidelines. Recommended safety zone density criteria for SBP are provided in *Table 9-1*.

Recommendation 6: The City should preserve and maintain as a plausible alternative its constitutional land use authority to overrule the ALUC with regard to adopting an amendment to its General Plan LUCE that is consistent with the Handbook, State Aeronautics Act and State Law, but only if agreement cannot be reached with the ALUC.

Table 9-1 - Recommended Density and Land Use Surrounding SBP

	Maximum Densities/Intensities (Urban)					
Zone	Non-residential (persons/acre)[1]	Residential (dwelling units/acre)[1]	Maximum Single Acre (persons/acre)	Required Open Land	Prohibited Uses	Normally Allow
1 - RPZ and ROFA adjacent to rnwy (Equivalent to RPZ in ALUP)	0[1]	0	0	All undeveloped land clear of objects.	All new structures and residential land uses.	None
2 - Inner app/dep zone (Equivalent to S-1a Zone in ALUP)	60-80[3]	0	120-160[3]	30%	Theatres, meeting halls and other assembly uses. Office buildings greater than 3 stories. Labor-intensive industrial uses. Children's schools, large dacare centers, hospitals, nursing homes. Stadiums, group recreational uses. Hazardous uses (e.g. aboveground bulk fuel storage).	Agriculture (non-group recreational uses). Low-hazard naterials storage, warehouses. Low-intensity light industrial uses (auto, aircraft marine repair services).[2]
3 - Inner turning zone (Equivalent to S-1b Inner Turning Zone in ALUP)	100-150[3]	Allow infill at up to average density/intensity of surrounding residential area.[3]	300-450[3]	20%	Major shopping centers, theaters, metting halls, and other assembly facilities. Children's schools, large daycare centers, hospitals, nursing homes. Stadiums, group recreational uses.	Uses allowed in Zone 2. Greenhouses, low-hazard materials storage, mini-storage, warehouses. Light industrial, vehicle repair services. [2]
4 - Outer app/dep zone (Equivalent to S-1b Outer Approach and Departure Zone in ALUP)	150-200[3]	Allow infill up to average density/intensity of surrounding uses.[3]	450-600[3]	20%	Children's schools, large daycare centers, hospitals, nursing homes. Stadiums, group recreational uses.	Uses allowed in Zone 3. Restaurants, retail, industrial. [2]
5 - Sideline zone (Equivalent to S-1b - Sideline Zone in ALUP)	100-150[3]	Allow infill at up to average density/intensity of surrounding residential area.[3]	300-450[3]	30%	Stadiums, group recreational uses. Children't schools, large daycare centers, hospitals, nursing homes.	Uses allowed in Zone 4 (subject to height limitations for airspace protection). All common aviation-related activities provided FAA height-limit criteria are met. [2]
6 - Traffic pattern zone (Equivalent to S-2 Zone in ALUP)	No limit.[4]	No limit.[5]	No limit. [4]	10%	None	Residential uses (however, noise and overflight impacts should be considered where ambient noise levels are low). [2]

[1/]Exceptions can be permitted for agricultural activities, roads, and automobile parking provided that FAA criteria are satisfied.

[2/]Other limited uses may be allowed.

[3/] In Dense Urban allow infill at up to average density/intensity of comparable surrounding uses.

[4/] Large stadiums and similar uses should be avoided.

[5/] Noise and overflight should be considered.

Source: California Airport Land Use Planning Handbook

Appendix A, *Handbook Safety Zone Adjustment Factors*

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TABLE 3A: SAFETY ZONE ADJUSTMENT FACTORS (AIRPORT OPERATIONAL VARIABLES)

The generic sets of compatibility zones shown in Figures 3A and 3B may need to be adjusted to take into account various operational characteristics of a particular airport runway. Among these characteristics are the following:

- Instrument Approach Procedure s—At least within the final two to three miles, which are of greatest interest for compatibility planning, the flight paths associated with precision instrument approach procedures are highly standardized. Other types of instrument approach procedures are less uniform, however. If such procedures are available at an airport, ALUCs should identify the flight paths associated with them and the extent to which they are used. Procedures that are regularly used should be taken into account in the configuration of safety zones (and in setting height limits for airspace protection). Types of procedures which may warrant special consideration include:
  - o Circling Approaches: Most instrument approach procedures allow aircraft to circle to land at a different runway rather than continue straight-in to a landing on the runway for which the approach is primarily designed. When airports have straight-in approaches to multiple runway ends, circling approaches are seldom necessary. However, when only one straight-in approach procedure is available and the wind direction precludes landings on that runway, aircraft may be forced to circle to land on at another runway end. Pilots must maintain sight of the runway while circling, thus turns are typically tight. Also, the minimum circling altitude is often less than the traffic pattern altitude. At airports where circling approaches are common, giving consideration to the associated risks when setting safety zone boundaries is appropriate.
  - o Non-Precision Approaches At Low Altitudes: Non-precision instrument approach procedures often involve aircraft descending to a lower altitude farther from the runway than occurs on either precision instrument or visual approaches. An altitude of 300 to 400 feet as much as two to three miles from the runway is not unusual. The safety (and noise) implications of such procedures need to be addressed at airports where they are in common use. (A need for corresponding restrictions on the heights of objects also exists along these routes.)
  - o Non-Precision Approaches Not Aligned With The Runway: Some types of non-precision approaches bring aircraft toward the runway along a path that is not aligned with the runway. In many cases, these procedures merely enable the aircraft to reach the airport vicinity at which point they then proceed to land under visual conditions. In other instances, however, transition to the runway alignment occurs close to the runway and at a low altitude.
- Other Special Flight Procedures Or Limitations—Single-sided traffic patterns represent only one type of special flight procedure or limitation that may be established at some airports. Factors such as nearby airports, high terrain, or noise- sensitive land uses may affect the size of the airport traffic pattern or otherwise dictate where and at what altitude aircraft fly when using the airport. These procedures may need to be taken into account in the design of safety compatibility zones.
- Runway Use By Special-Purpose Aircraft—In addition to special flight procedures, certain special-purpose types of aircraft often have their own particular flight procedures. Most common among these aircraft are fire attack, agricultural, and military airplanes. Helicopters also typically have their own special flight routes. The existence of these procedures needs to be investigated and, where warranted by the levels of usage, may need to be considered in the shaping of safety zones.
- Small Aircraft Using Long Runways—When small airplanes take off from long runways (especially runways in excess of 8,000 feet length), it is common practice for them to turn toward their intended direction of flight before passing over the far end of the runway. When mishaps occur, the resulting pattern of accident sites will likely be more dispersed around the runway end than is the case with shorter runways. With short runways, accident sites tend to be more tightly clustered around the runway end and along the extended runway centerline because aircraft are still following the runway heading as they begin their climb.
- Runways Used Predominantly In One Direction—Most runways are used sometimes in one direction and, at other times, in the opposite direction depending upon the direction of the wind. Even when used predominantly in one direction, a busy runway may experience a significant number of operations in the opposite direction (for example, a runway with 100,000 total annual operations, 90% of which are in one direction, will still have 10,000 annual operations in the opposite direction). Thus, in most situations, the generic safety zones—which take into account both takeoffs and landings at a runway end—are applicable. However, when the number of either takeoffs or landings at a runway end is less than approximately 2,000 per year, adjustment of the safety compatibility zones to reflect those circumstances may be warranted.
- Displaced Landing Thresholds—A displaced threshold moves the landing location of aircraft down the runway from where they would land in the absence of the displacement. The distribution pattern of landing accident sites as shown in Appendix F would thus shift a corresponding amount. The pattern of accident locations for aircraft taking off toward that end of the runway does not necessarily shift, however. Whether the runway length behind the displaced threshold is usable for takeoffs toward that end of the runway is a key factor in this regard. The appropriateness of making adjustments to safety zone locations in response to the existence of a displaced threshold needs to be examined on a case-by-case basis. The numbers of landings at and takeoffs toward the runway end in question should be considered in making this determination.

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Appendix B, *California Land Use Planning Handbook Safety Zone Criteria*

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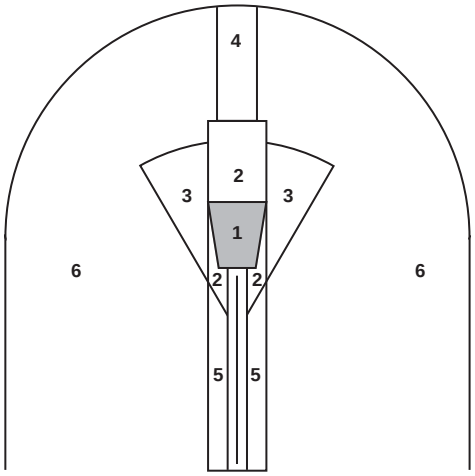
Nature of Risk

- Normal Maneuvers:
  - Aircraft on very close final approach or departure – very high risk
- Altitude
  - Less than 200 feet above runway
- Common Accident Types
  - Arrival: Downdrafts and wind gusts. Low glide paths
  - Departure: Runway overruns, aborted takeoffs and engine failures
- Risk Level
  - Very high
- Percentage of near-runway accidents in this zone: 20% - 21%

SHORT FINAL

Basic Compatibility Policies

- Normally Allow
  - None
- Limit
  - None
- Avoid
  - Nonresidential uses except if very low intensity in character and confined to the outer sides
  - Parking lots, streets, roads
- Prohibit
  - All new structures and residential land uses
- Other Factors
  - Airport ownership of property encouraged
  - Uses on airport property subject to FAA standards



Refer to Chapter 3 for dimensions.

	Maximum Residential Densities	Maximum Nonresidential Intensities	Maximum Single Acre
	Average number of dwelling units per gross acre	Average number of people per gross acre	2x the Average number of people per gross acre
Rural	0	0 – See Note A	0
Suburban	0	0 – See Note A	0
Urban	0	0 – See Note A	0
Dense Urban	0	0 – See Note A	0

Note A: Exceptions can be permitted for agricultural activities, roads, and automobile parking provided that FAA criteria are satisfied.

FIGURE 4B

Safety Zone 1 – Runway Protection Zone

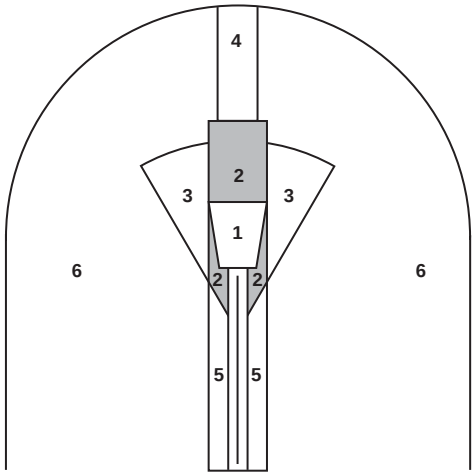
Nature of Risk

- Normal Maneuvers
  - Aircraft overflying at low altitudes on final approach and straight-out departures
- Altitude
  - Between 200 and 400 feet above runway
- Common Accident Types
  - Arrival: Similar to Zone 1, aircraft under-shooting approaches, forced short landings
  - Departure: Similar to Zone 1, emergency landing on straight-out departure
- Risk Level
  - High
  - Percentage of near-runway accidents in this zone: 8% - 22%

FINAL APPROACH

Basic Compatibility Policies

- Normally Allow
  - Agriculture; non-group recreational uses
  - Low-hazard materials storage, warehouses
  - Low-intensity light industrial uses; auto, aircraft, marine repair services
- Limit
  - Single-story office buildings
  - Nonresidential uses to activities that attract few people
- Avoid
  - All residential uses except as infill in developed areas
  - Multi-story uses; uses with high density or intensity
  - Shopping centers, most eating establishments
- Prohibit
  - Theaters, meeting halls and other assembly uses
  - Office buildings greater than 3 stories
  - Labor-intensive industrial uses
  - Children's schools, large daycare centers, hospitals, nursing homes
  - Stadiums, group recreational uses
  - Hazardous uses (e.g. aboveground bulk fuel storage)



Refer to Chapter 3 for dimensions.

	Maximum Residential Densities	Maximum Nonresidential Intensities	Maximum Single Acre
	Average number of dwelling units per gross acre	Average number of people per gross acre	2x the Average number of people per gross acre
Rural	See Note A	10 – 40	50 – 80
Suburban	1 per 10 - 20 ac.	40 – 60	80 – 120
Urban	0	60 – 80	120 – 160
Dense Urban	0	See Note B	See Note B

Note A: Maintain current zoning if less than density criteria for suburban setting.
Note B: Allow infill at up to average intensity of comparable surrounding uses.

FIGURE 4C

Safety Zone 2 – Inner Approach/Departure Zone

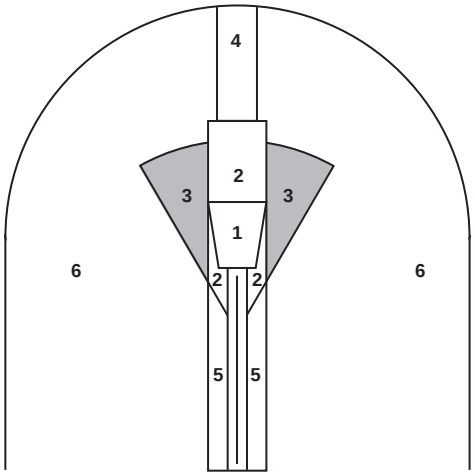
Nature of Risk

- Normal Maneuvers
  - Aircraft—especially smaller, piston-powered aircraft— turning base to final on landing approach or initiating turn to en route direction on departure
- Altitude
  - Less than 500 feet above runway, particularly on landing
- Common Accident Types
  - Arrival: Pilot overshoots turn to final and inappropriately cross controls the airplane rudder and ailerons while attempting to return to the runway alignment causing stall, spin, and uncontrolled crash
  - Departure: Mechanical failure on takeoff; low altitude gives pilot few options on emergency landing site; or, pilot attempts to return to airport and loses control during tight turn
- Risk Level
  - Moderate to high
  - Percentage of near-runway accidents in this zone: 4% - 8%

TURNING TO FINAL

Basic Compatibility Policies

- Normally Allow
  - Uses allowed in Zone 2
  - Greenhouses, low-hazard materials storage, mini-storage, warehouses
  - Light industrial, vehicle repair services
- Limit
  - Residential uses to very low densities
  - Office and other commercial uses to low intensities
- Avoid
  - Commercial and other nonresidential uses having higher usage intensities
  - Building with more than 3 aboveground habitable floors
  - Hazardous uses (e.g., aboveground bulk fuel storage)
- Prohibit
  - Major shopping centers, theaters, meeting halls and other assembly facilities
  - Children's schools, large daycare centers, hospitals, nursing homes
  - Stadiums, group recreational uses



Refer to Chapter 3 for dimensions.

	Maximum Residential Densities	Maximum Nonresidential Intensities	Maximum Single Acre
	Average number of dwelling units per gross acre	Average number of people per gross acre	3x the Average number of people per gross acre
Rural	See Note A	50 – 70	150 – 210
Suburban	1 per 2 - 5 ac.	70 – 100	210 – 300
Urban	See Note B	100 – 150	300 – 450
Dense Urban	See Note B	See Note B	See Note B

Note A: Maintain current zoning if less than density criteria for suburban setting.
Note B: Allow infill at up the average of surrounding residential area.

FIGURE 4D

Safety Zone 3 – Inner Turning Zone

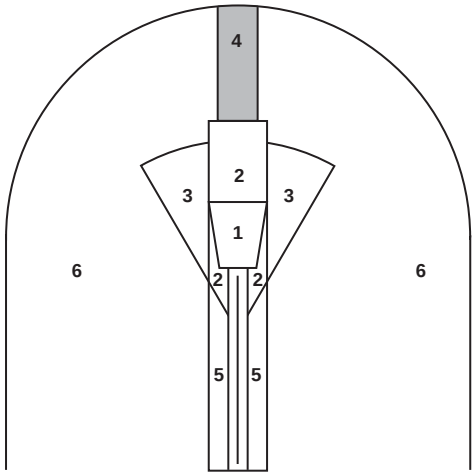
Nature of Risk

- Normal Maneuvers
  - Approaching aircraft usually at less than traffic pattern altitude. Particularly applicable for busy general aviation runways (because of elongated traffic pattern), runways with straight-in instrument approach procedures, and other runways where straight-in or straight-out flight paths are common
- Altitude
  - Less than 1,000 feet above runway
- Common Accident Types
  - Arrival: Pilot undershoots runway during an instrument approach, aircraft loses engine on approach, forced landing
  - Departure: Mechanical failure on takeoff
- Risk Level
  - Moderate
  - Percentage of near-runway accidents in this zone: 2% - 6%

LONG FINAL

Basic Compatibility Policies

- Normally Allow
  - Uses allowed in Zone 3
  - Restaurants, retail, industrial
- Limit
  - Residential uses to low density
- Avoid
  - High-intensity retail or office buildings
- Prohibit
  - Children's schools, large daycare centers, hospitals, nursing homes
  - Stadiums, group recreational uses
- Other Factors
  - Most low to moderate intensity uses are acceptable. Restrict assemblages of people
  - Consider potential airspace protection hazards of certain energy/industrial projects



Refer to Chapter 3 for dimensions.

	Maximum Residential Densities	Maximum Nonresidential Intensities	Maximum Single Acre
	Average number of dwelling units per gross acre	Average number of people per gross acre	3x the Average number of people per gross acre
Rural	See Note A	70 – 100	210 – 300
Suburban	1 per 2 - 5 ac.	100 – 150	300 – 450
Urban	See Note B	150 – 200	450 – 600
Dense Urban	See Note B	See Note B	See Note B

Note A: Maintain current zoning if less than density criteria for suburban setting.
Note B: Allow infill at up average density/intensity of comparable surrounding users.

FIGURE 4E

Safety Zone 4 – Outer Approach/Departure Zone

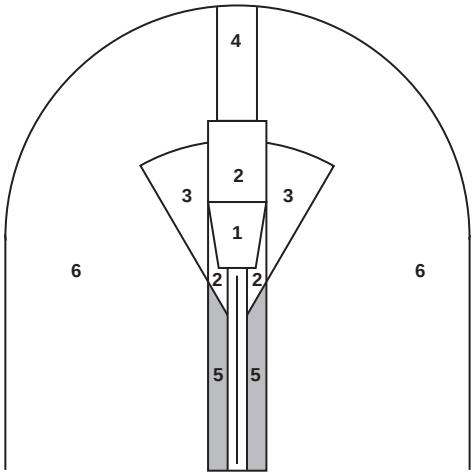
Nature of Risk

- Normal Maneuvers
  - Area not normally overflown; primary risk is with aircraft (especially twins) losing directional control on takeoff, excessive crosswind gusts or engine torque
- Altitude
  - Runway elevation
- Common accident types
  - Arrival and Departure: Aircraft losing directional control and veering off the side of the runway
- Risk Level
  - Low to moderate
  - Percentage of near-runway accidents in this zone: 3% - 5%

INITIAL LIFT-OFF OR LANDING TOUCHDOWN

Basic Compatibility Policies

- Normally Allow
  - Uses allowed in Zone 4 (subject to height limitations for airspace protection)
  - All common aviation-related activities provided that FAA height-limit criteria are met
- Limit
  - Nonresidential uses similarly to Zone 3
- Avoid
  - Residential uses unless airport related (noise usually also a factor)
  - High-intensity nonresidential uses
- Prohibit
  - Stadiums, group recreational uses
  - Children's schools, large daycare centers, hospitals, nursing homes



Refer to Chapter 3 for dimensions.

	Maximum Residential Densities	Maximum Nonresidential Intensities	Maximum Single Acre
	Average number of dwelling units per gross acre	Average number of people per gross acre	3x the Average number of people per gross acre
Rural	See Note A	50 – 70	150 – 210
Suburban	1 per 1 - 2 ac.	70 – 100	210 – 300
Urban	See Note B	100 – 150	300 – 450
Dense Urban	See Note B	See Note B	See Note B

Note A: Maintain current zoning if less than density criteria for suburban setting.
Note B: Allow infill at up the average of surrounding residential area.

FIGURE 4F

Safety Zone 5 – Sideline Zone

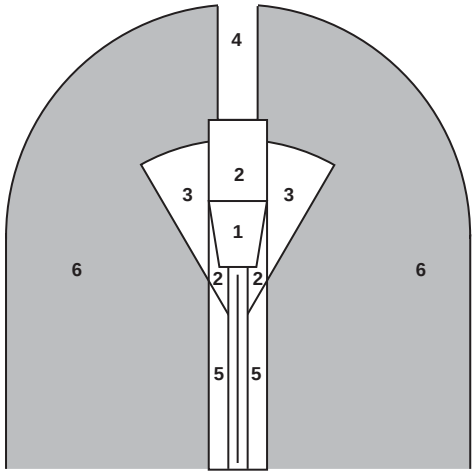
Nature of Risk

- Normal Maneuvers
  - Aircraft within a regular traffic pattern and pattern entry routes
- Altitude
  - Ranging from 1,000 to 1,500 feet above runway
- Common Accident Types
  - Arrival: Pattern accidents in proximity of airport
  - Departure: Emergency landings
- Risk Level
  - Low
  - Percentage of near-runway accidents in this zone: 18% - 29% (percentage is high because of large area encompassed)

IN TRAFFIC PATTERN

Basic Compatibility Policies

- Normally Allow
  - Residential uses (however, noise and overflight impacts should be considered where ambient noise levels are low)
- Limit
  - Children's schools, large day care centers, hospitals, and nursing homes
  - Processing and storage of bulk quantities of highly hazardous materials
- Avoid
  - Outdoor stadiums and similar uses with very high intensities
- Prohibit
  - None



Refer to Chapter 3 for dimensions.

	Maximum Residential Densities	Maximum Nonresidential Intensities	Maximum Single Acre
	Average number of dwelling units per gross acre	Average number of people per gross acre	4x the Average number of people per gross acre
Rural	No Limit – See Note A	150 – 200	600 – 800
Suburban	No Limit – See Note A	200 – 300	800 – 1,200
Urban	No Limit – See Note A	No Limit – See Note B	No Limit – See Note B
Dense Urban	No Limit – See Note A	No Limit – See Note B	No Limit – See Note B

Note A: Noise and overflight should be considered.
Note B: Large stadiums and similar uses should be avoided.

FIGURE 4G

Safety Zone 6 – Traffic Pattern Zone

Appendix C, *Instrument Approach Procedures (IAPs) and Standard Instrument Departures (SIDs) at SBP*

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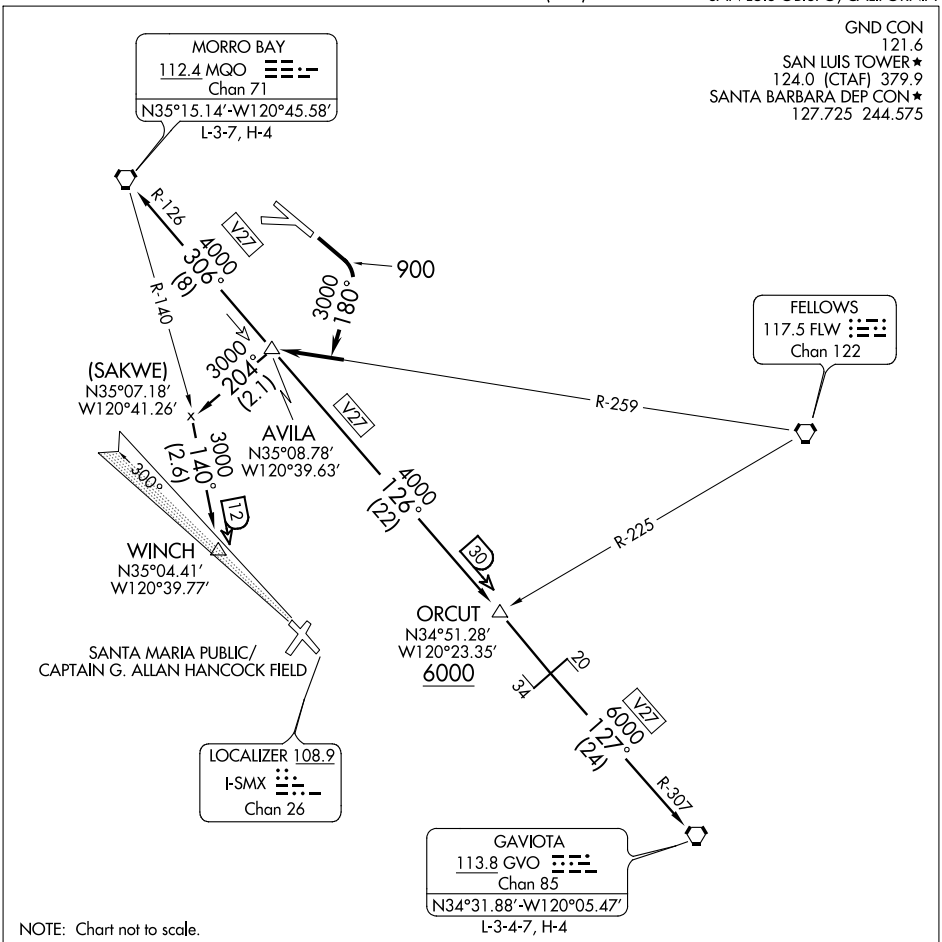
AVILA THREE DEPARTURE

SL-989 (FAA)

SAN LUIS COUNTY RGNL (SBP)
SAN LUIS OBISPO, CALIFORNIA



DEPARTURE ROUTE DESCRIPTION

TAKE-OFF RUNWAY 11: Maintain runway heading to 900', then climbing right turn to 3000' or assigned altitude, heading 180° to intercept FLW R-259 to AVILA INT, then via (transition) or (assigned route).

GAVIOTA TRANSITION (AVILA3.GVO): From over AVILA INT via V27 to GVO VORTAC.

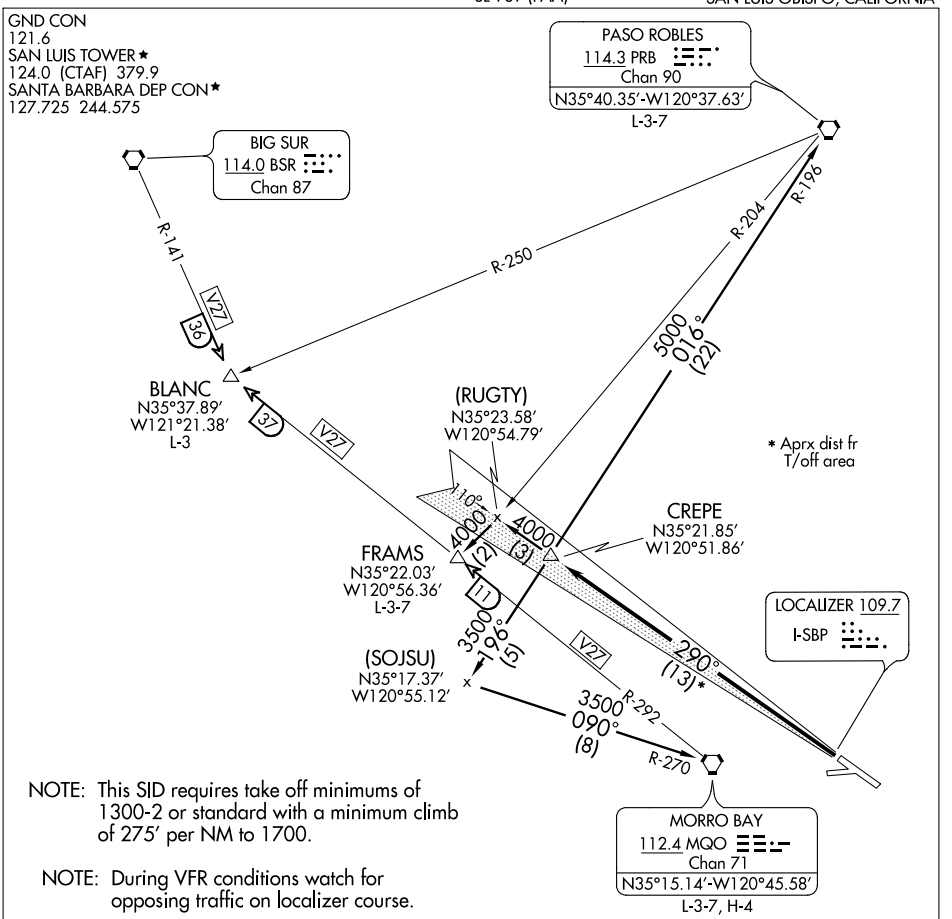
MORRO BAY TRANSITION (AVILA3.MQO): From over AVILA INT via V27 to MQO VORTAC.

WINCH TRANSITION (AVILA3.WINCH): From over AVILA INT via heading 204° 2.1 NM, to intercept MQO R-140 to WINCH INT 2.6 NM.

CREPE THREE DEPARTURE

SL-989 (FAA)

SAN LUIS COUNTY RGNL (SBP)
SAN LUIS OBISPO, CALIFORNIA



NOTE: This SID requires take off minimums of 1300-2 or standard with a minimum climb of 275' per NM to 1700.

NOTE: During VFR conditions watch for opposing traffic on localizer course.

NOTE: This procedure applicable to Runway 29 departures only.

NOTE: Chart not to scale.

DEPARTURE ROUTE DESCRIPTION

TAKE-OFF RUNWAY 29: Climb via San Luis Obispo localizer I-SBP west course to CREPE INT; thence via (transition) or (assigned route).

FRAMS TRANSITION (CREPE3.FRAMS): From over CREPE INT via I-SBP LOC west course and PRB R-204 to FRAMS INT.

MORRO BAY TRANSITION (CREPE3.MQO): From over CREPE INT via PRB R-196 and MQO R-270 to MQO VORTAC.

PASO ROBLES TRANSITION (CREPE3.PRB): From over CREPE INT via PRB R-196 to PRB VORTAC.

SW-3, 04 APR 2013 to 02 MAY 2013

LOC I-SBP	APP CRS	Rwy Idg	5300
109.7	110°	THRE	168
		Apt Elev	212

LOC RWY 11

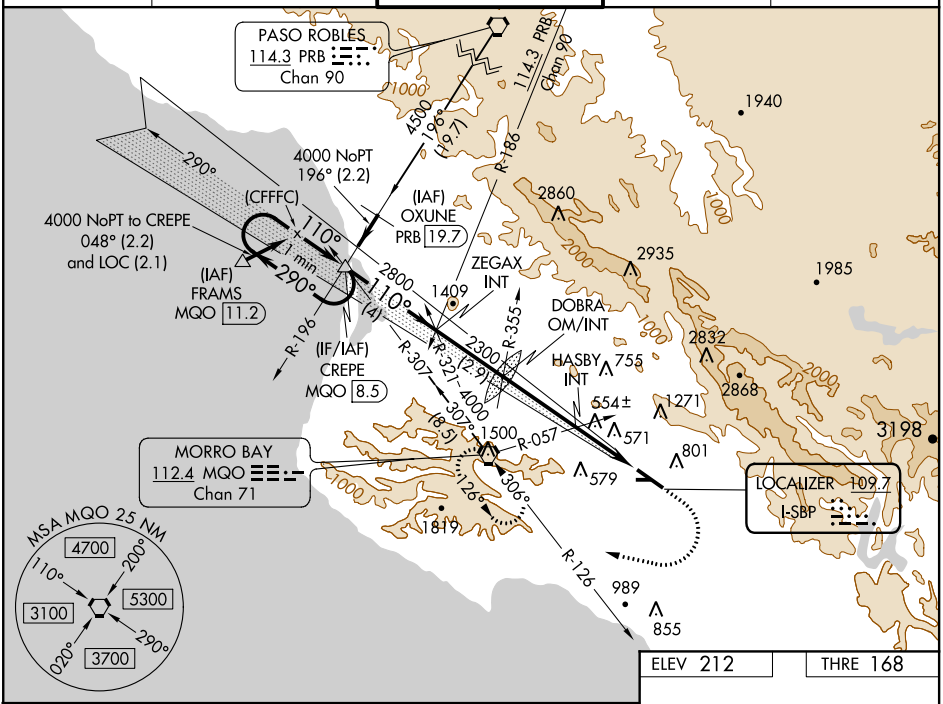
SAN LUIS COUNTY RGNL (SBP)

Circling NA north of Rwy 11-29.

MALSR

MISSED APPROACH: Climb to 1200 then climbing right turn to 3300 on heading 267° and on MQO VORTAC R-126 to MQO VORTAC and hold.

ATIS	SANTA BARBARA APP CON★	SAN LUIS TOWER★	GND CON	UNICOM
120.6	127.725 244.575	124.0 (CTAF) 379.9	121.6	122.95

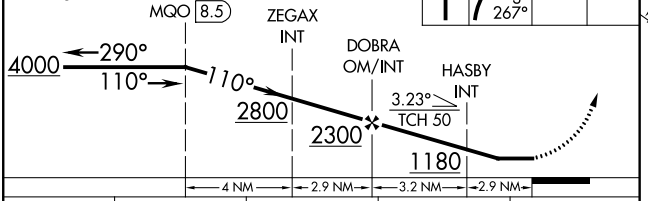


ELEV 212 THRE 168

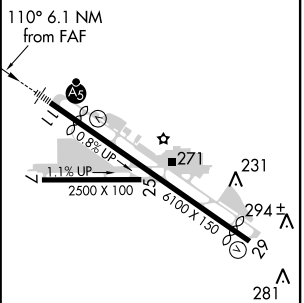
VGSI and descent angles not coincident (VGSI Angle 3.00/TCH 50).

1200	3300	MQO	MQO
	hdg 267°	R-126	

One Minute Holding Pattern



CATEGORY	A	B	C	D
S-11	1180-¾ 1012 (1000-¾)	1180-1 1012 (1000-1)	1180-2½ 1012 (1000-2½)	
CIRCLING	1180-1¼ 968 (1000-1¼)	1180-1½ 968 (1000-1½)	1180-3 968 (1000-3)	1240-3 1028 (1100-3)
HASBY INT MINIMUMS (DUAL VOR RECEIVERS REQUIRED)				
S-11	760-½ 592 (600-½)		760-1¼ 592 (600-1¼)	
CIRCLING	840-1 628 (700-1)	960-1 748 (800-1)	1160-2¾ 948 (1000-2¾)	1240-3 1028 (1100-3)



REIL Rwy 29
HIRL Rwy 11-29

FAF to MAP 6.1 NM					
Knots	60	90	120	150	180
Min:Sec	6:06	4:04	3:03	2:26	2:02

SW-3, 04 APR 2013 to 02 MAY 2013
SW-3, 04 APR 2013 to 02 MAY 2013

WAAS	APP CRS	Rwy Idg	5300
CH 50328	110°	THRE	168
W11A		Apt Elev	212

RNAV (GPS) RWY 11

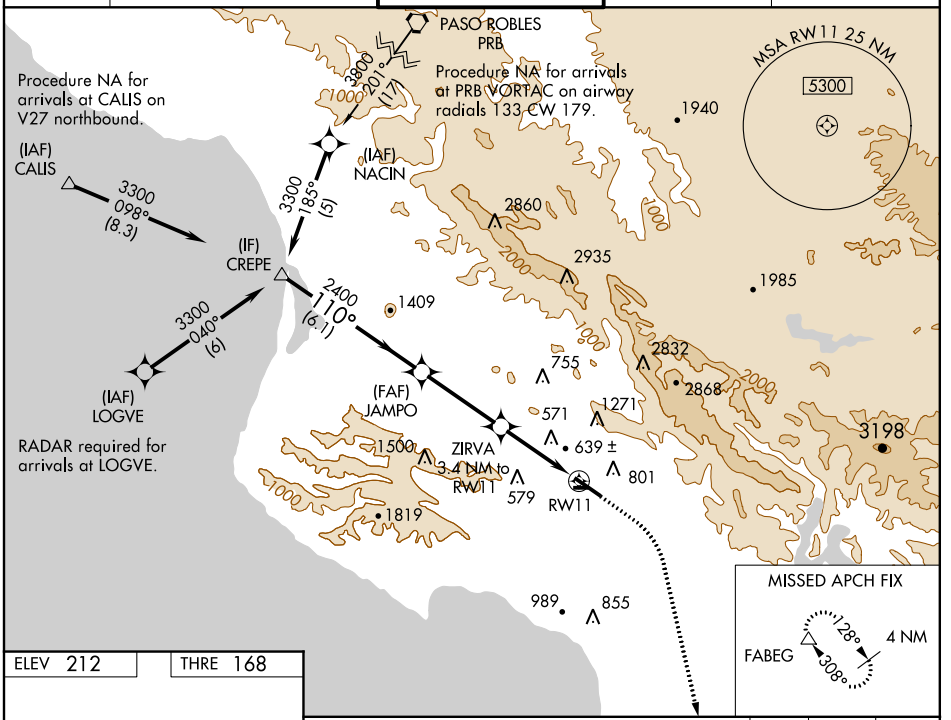
SAN LUIS COUNTY RGNL (SBP)

For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C (5°F) or above 42°C (107°F). Circling NA north of Rwy 11-29. DME/DME RNP-0.3 NA.

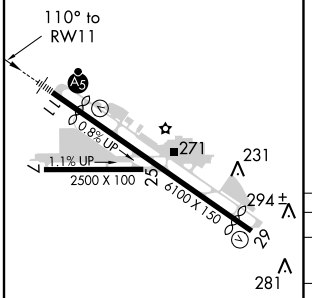
MALSR

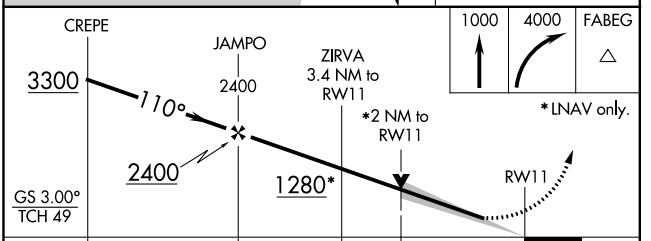
MISSED APPROACH: Climb to 1000 then climbing right turn to 4000 direct FABEG and hold.

ATIS	SANTA BARBARA APP CON★	SAN LUIS TOWER★	GND CON	UNICOM
120.6	127.725 244.575	124.0 (CTAF) 379.9	121.6	122.95



ELEV 212 | THRE 168





CATEGORY	A	B	C	D
LPV DA	368-½ 200 (200-½)			
LNAV/VNAV DA	958-2¼ 790 (800-2¼)			
LNAV MDA	860-½ 692 (700-½)		860-1½ 692 (700-1½)	
CIRCLING	860-1 648 (700-1)	960-1 748 (800-1)	1160-2¾ 948 (1000-2¾)	1240-3 1028 (1100-3)

HIRL Rwy 11-29
REIL Rwy 29

SW-3, 04 APR 2013 to 02 MAY 2013
SW-3, 04 APR 2013 to 02 MAY 2013

SAN LUIS OBISPO, CALIFORNIA

APP CRS	Rwy Idg	5600
290°	TDZE	209
	Apt Elev	209

AL-989 (FAA)

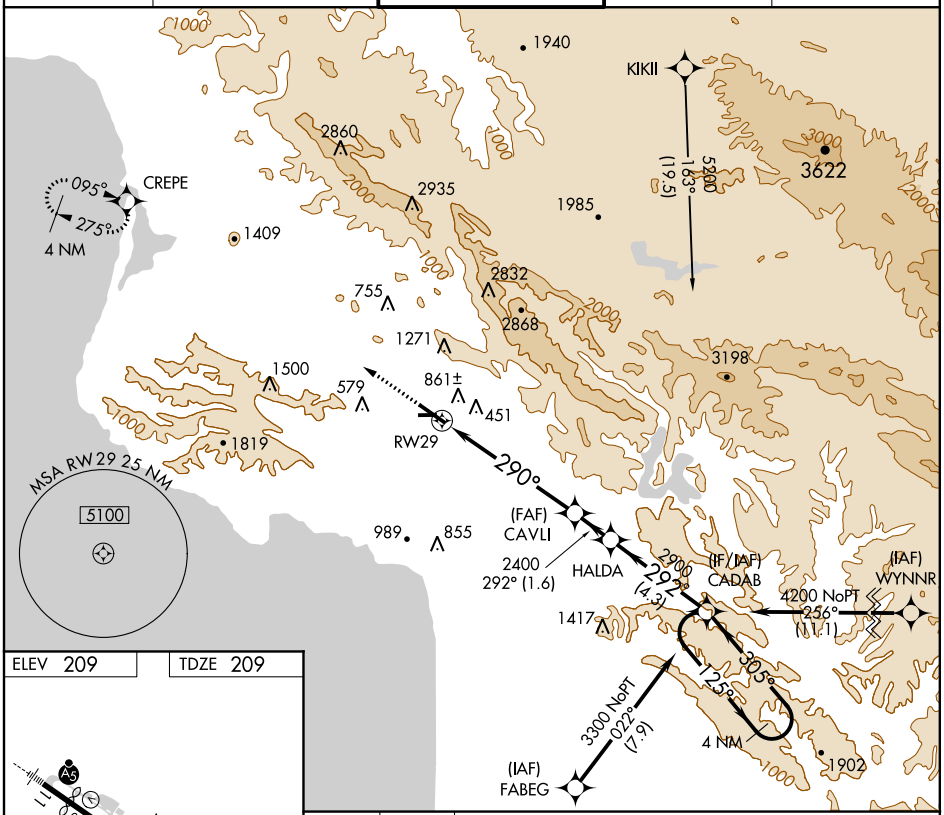
RNAV (GPS) RWY 29

SAN LUIS COUNTY RGNL (SBP)

NA — GPS or RNP- 0.3 required. DME/DME RNP- 0.3 NA. Circling NA north of Rwy 11-29.

MISSED APPROACH: Climb to 4000 via 290° course to CREPE WP and hold.

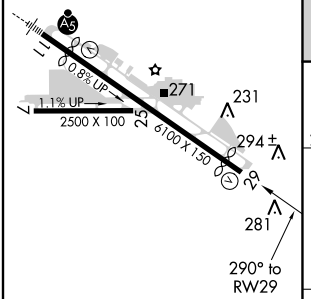
ATIS	SANTA BARBARA APP CON★	SAN LUIS TOWER★	GND CON	UNICOM
120.6	127.725 244.575	124.0 (CTAF) 379.9	121.6	122.95



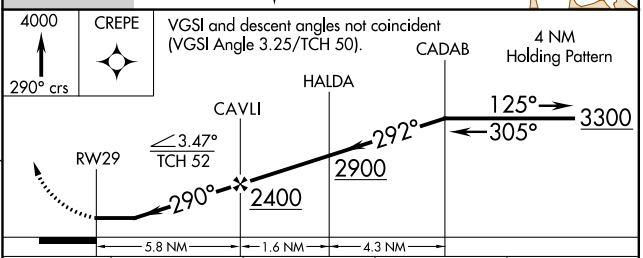
SW-3, 04 APR 2013 to 02 MAY 2013

SW-3, 04 APR 2013 to 02 MAY 2013

ELEV 209 | TDZE 209



HIRL Rwy 11-29
REIL Rwy 29



CATEGORY	A	B	C	D
LNAV MDA	1040-1 831 (900-1)	1040-1¼ 831 (900-1¼)	1040-2½ 831 (900-2½)	1040-2¾ 831 (900-2¾)
CIRCLING	1180-1¼ 971 (1000-1¼)	1180-1½ 971 (1000-1½)	1180-3 971 (1000-3)	1220-3 1011 (1100-3)

SAN LUIS OBISPO, CALIFORNIA

Orig 12152

35°14'N-120°39'W

SAN LUIS COUNTY RGNL (SBP)

RNAV (GPS) RWY 29

VORTAC MQO 112.4 Chan 71	APP CRS 084°	Rwy Idg N/A TDZE N/A Apt Elev 209

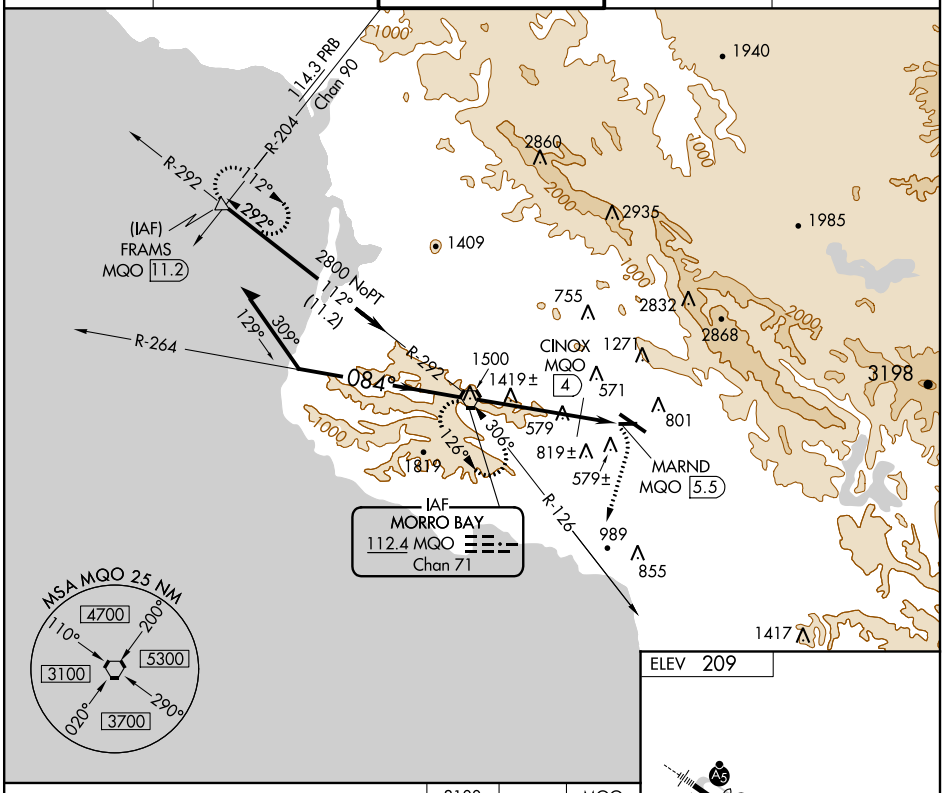
VOR or TACAN-A

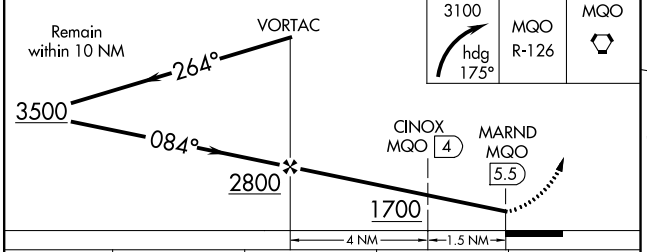
SAN LUIS COUNTY RGNL (SBP)

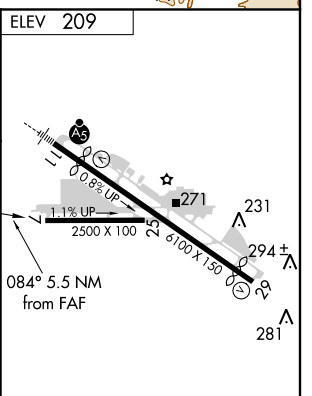
T A Circling NA north of Rwy 11-29.

MISSED APPROACH: Climbing right turn to 3100 via heading 175° and MQO R-126 to MQO VORTAC and hold. (TACAN Aircraft continue climb to 4000 via MQO R-292 to FRAMS 11.2 DME and hold east, right turns, 292° inbound.)

ATIS	SANTA BARBARA APP CON ★	SAN LUIS TOWER ★	GND CON	UNICOM
120.6	127.725 244.575	124.0 (CTAF) L 379.9	121.6	122.95







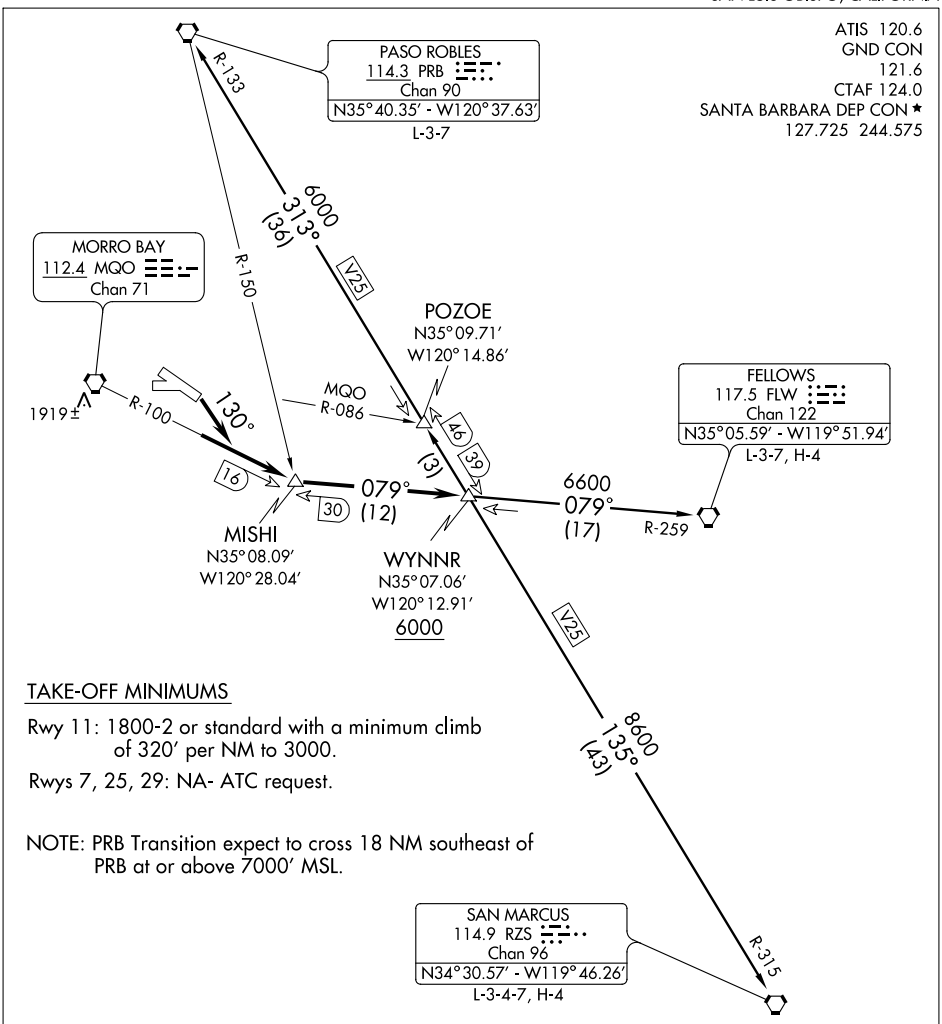
CATEGORY	A	B	C	D
CIRCLING	1700-1¼ 1491 (1500-1¼)	1700-1½ 1491 (1500-1½)	1700-3 1491 (1500-3)	
TACAN OR DME MINIMA				
CIRCLING	1120-1¼ 911 (1000-1¼)		1160-2¾ 951 (1000-2¾)	1280-3 1071 (1100-3)

HIRL Rwy 11-29
REIL Rwy 29

FAF to MAP 5.5 NM

Knots	60	90	120	150	180
Min:Sec	5:30	3:40	2:45	2:12	1:50

SW-3, 04 APR 2013 to 02 MAY 2013
SW-3, 04 APR 2013 to 02 MAY 2013



TAKE-OFF MINIMUMS

Rwy 11: 1800-2 or standard with a minimum climb of 320' per NM to 3000.

Rwys 7, 25, 29: NA- ATC request.

NOTE: PRB Transition expect to cross 18 NM southeast of PRB at or above 7000' MSL.

DEPARTURE ROUTE DESCRIPTION

TAKE-OFF RUNWAY 11: Turn right heading 130° to intercept and proceed via MQO R-100 to MISHI INT, then via FLW R-259 to WYNNR INT. Thence via (transition) or assigned route.

FELLOWS TRANSITION (WYNNR2.FLW): From over WYNNR INT via FLW R-259 to FLW VORTAC.

PASO ROBLES TRANSITION (WYNNR2.PRB): From over WYNNR INT via PRB R-133 to PRB VORTAC.

SAN MARCUS TRANSITION (WYNNR2.RZS): From over WYNNR INT via RZS R-315 to RZS VORTAC.

SW-3, 04 APR 2013 to 02 MAY 2013
SW-3, 04 APR 2013 to 02 MAY 2013

LOC I-SBP	APP CRS	Rwy Idg	5300
109.7	110°	THRE	168
		Apt Elev	212

ILS RWY 11

SAN LUIS COUNTY RGNL (SBP)

MALSR

MISSED APPROACH: Climb to 900 then climbing right turn to 3300 on heading 175° and on MQO VORTAC R-126 to MQO VORTAC and hold, continue climb-in-hold to 3300.

ATIS	SANTA BARBARA APP CON★	SAN LUIS TOWER★	GND CON	UNICOM
120.6	127.725 244.575	124.0 (CTAF) 379.9	121.6	122.95

PASO ROBLES
114.3 PRB
Chan 90

4000 NoPT
196° (2.2)
(IAF)
OXUNE
PRB 19.7

4000 NoPT to CREPE
048° (2.2)
and LOC (2.1)

(CFFFC)
110°
1 min
290°

(IAF)
FRAMS
MQO 11.2

2400
to
GS INTCP
110°
(6.1)

(IF/IAF)
CREPE
MQO 8.5

DOBRA
OM

MORRO BAY
112.4 MQO
Chan 71

LOCALIZER 109.7
I-SBP

MSA MQO 25 NM
4700
5300
3100
3700
110°
200°
020°
290°

When GS not used, use LOC RWY 11 procedure.

ELEV 212 | THRE 168

110° 6.1 NM
from OM

0.8% UP
1.1% UP
2500 X 100
6100 X 150

One Minute
Holding Pattern

CREPE INT
MQO 8.5

900	3300	MQO	MQO
	hdg 175°	R-126	

4000
290°
110°
110°
2400
DOBRA
OM
2186

GS 3.00°
TCH 49

6.9 NM
6.1 NM

CATEGORY	A	B	C	D
S-ILS 11	368-½	200 (200-½)		

REIL Rwy 29
HIRL Rwy 11-29

SW-3, 04 APR 2013 to 02 MAY 2013

SW-3, 04 APR 2013 to 02 MAY 2013

Appendix D, *California Airport Land Use Planning Handbook Accident Study*

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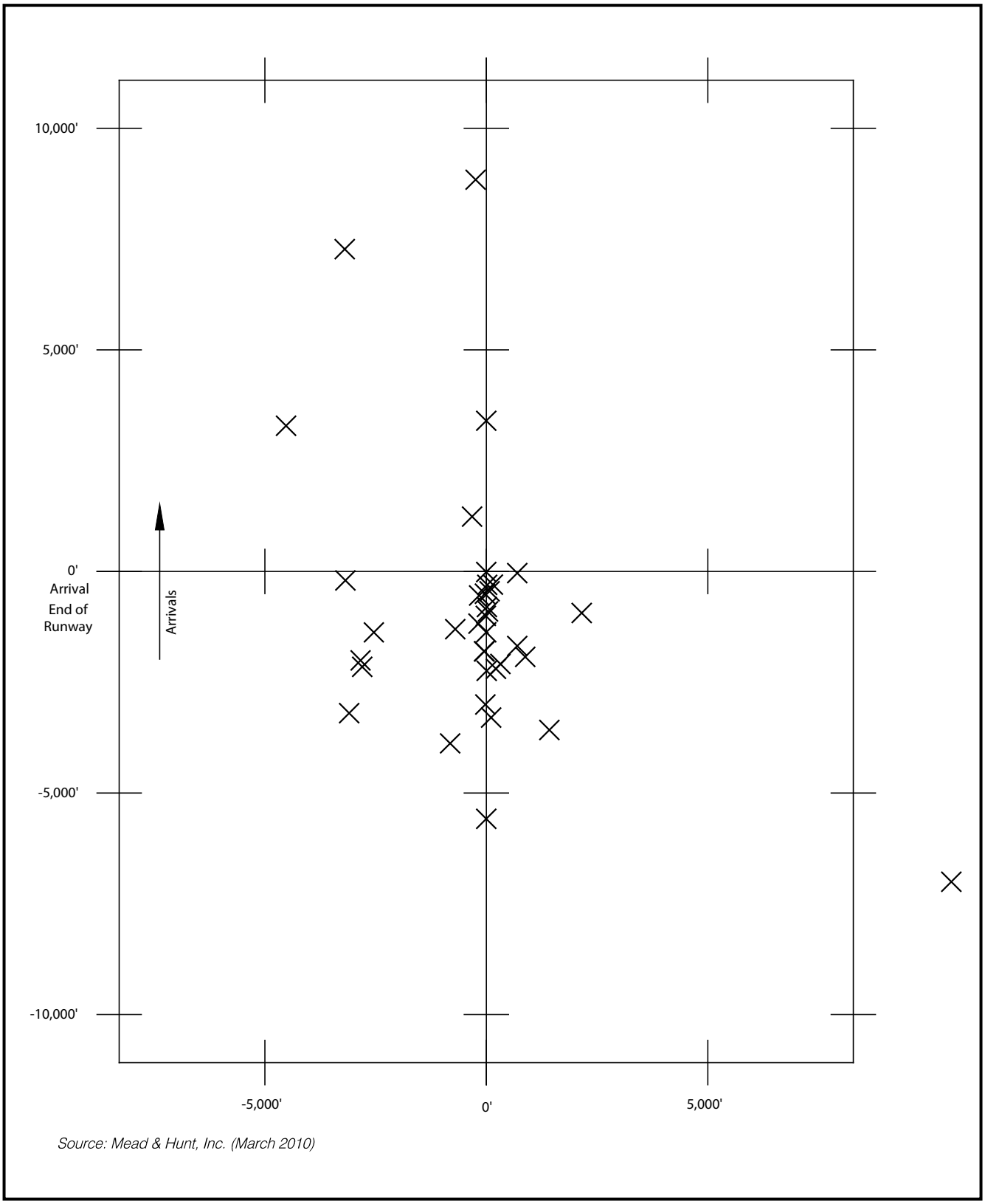

Source: Mead & Hunt, Inc. (March 2010)

FIGURE E1

All Categories – Arrival Accidents (2002 Handbook Data)

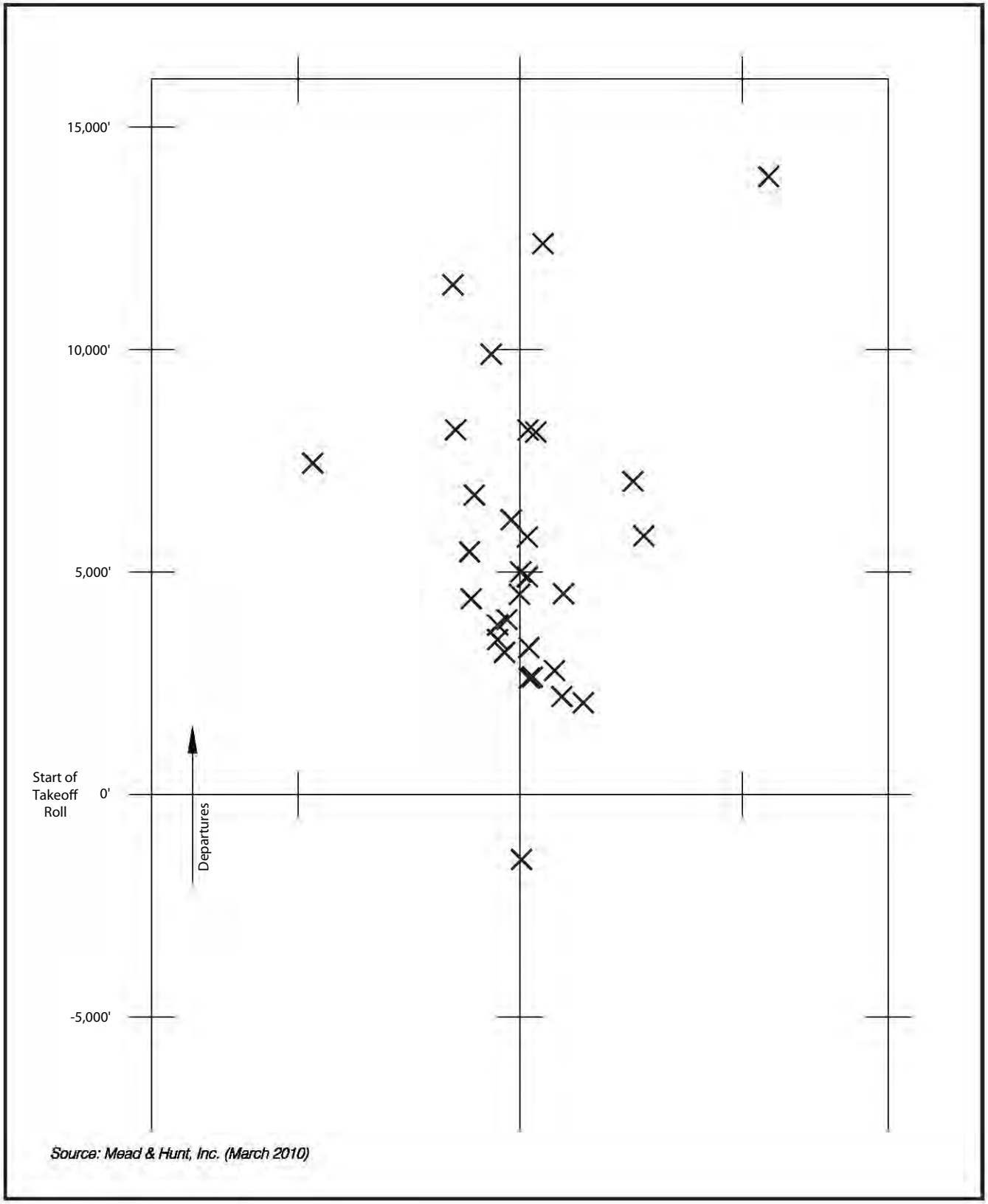

FIGURE E2

All Categories – Departure Accidents (2002 Handbook Data)

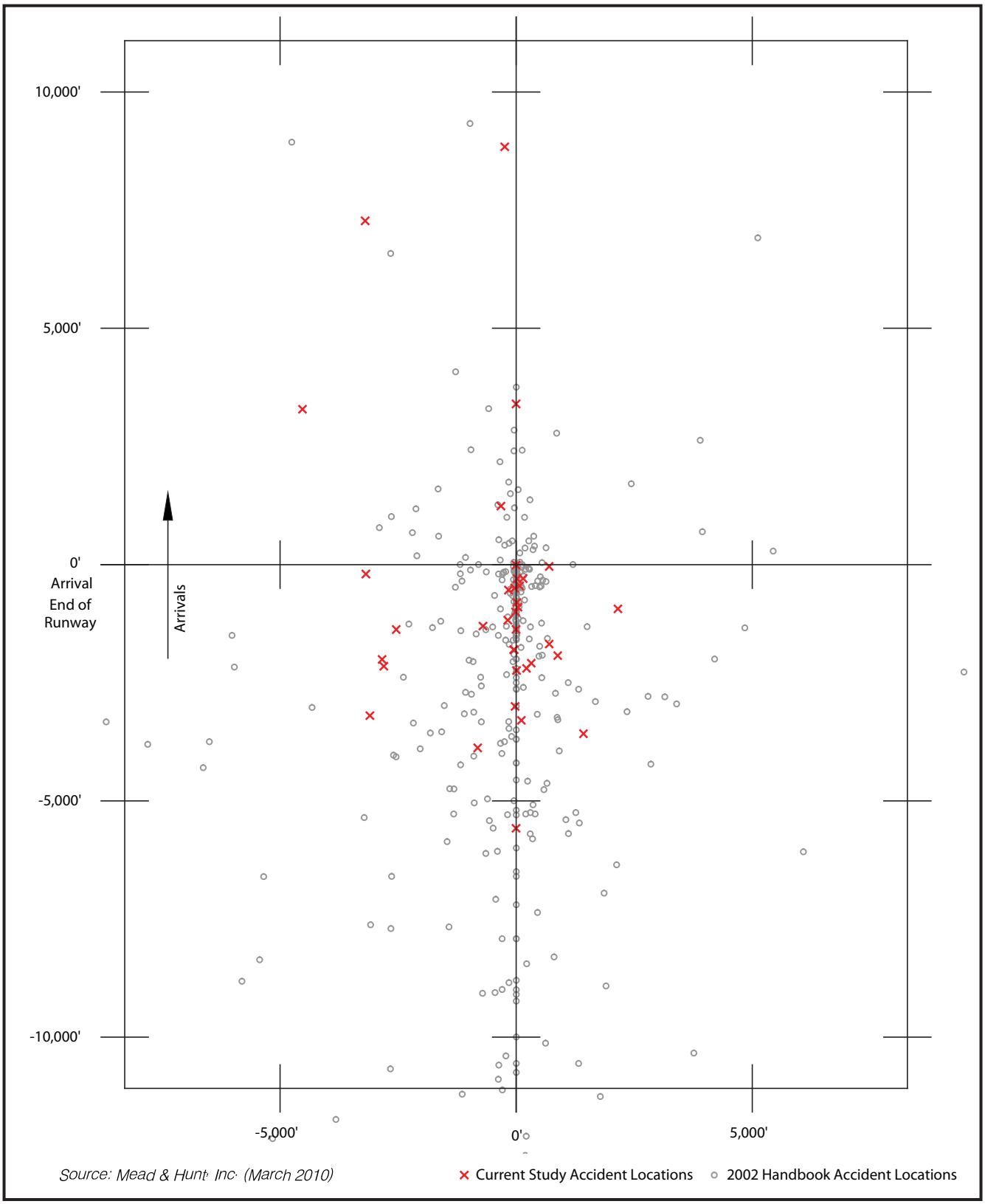

EXHIBIT E1

All Categories – Arrival Accidents

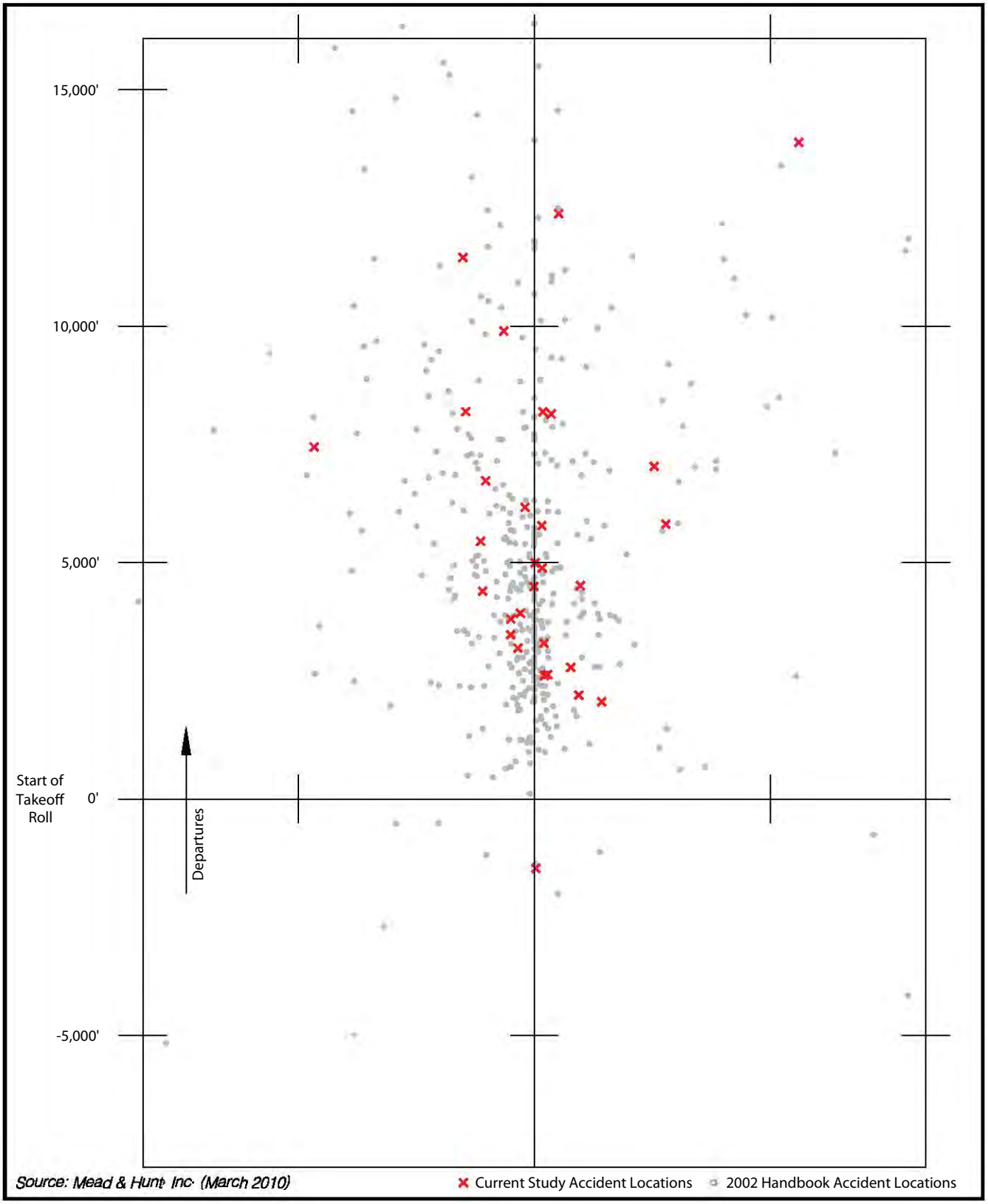

EXHIBIT E2

All Categories – Departure Accidents

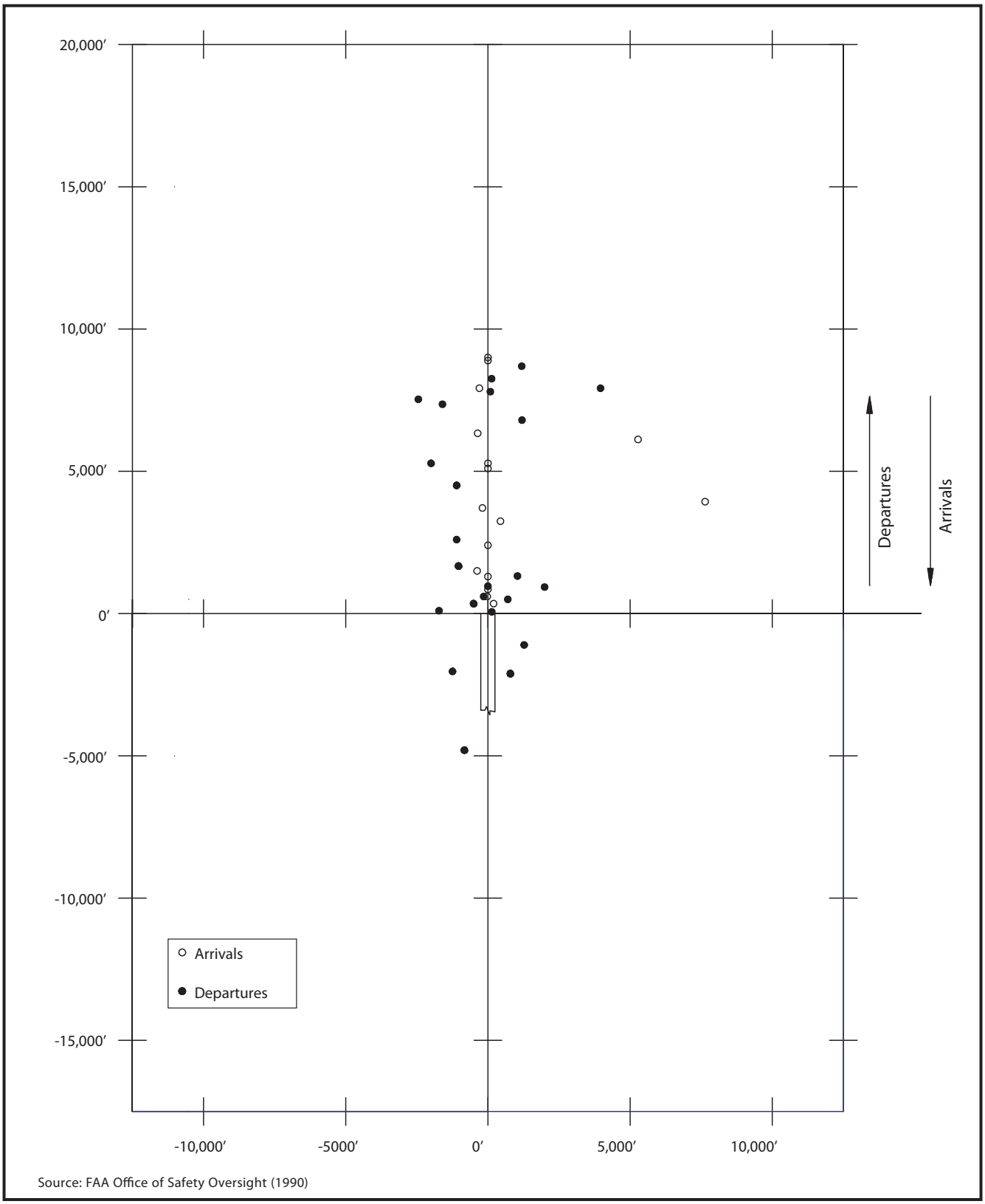

FIGURE E6

Commercial Aircraft Accident Location Pattern

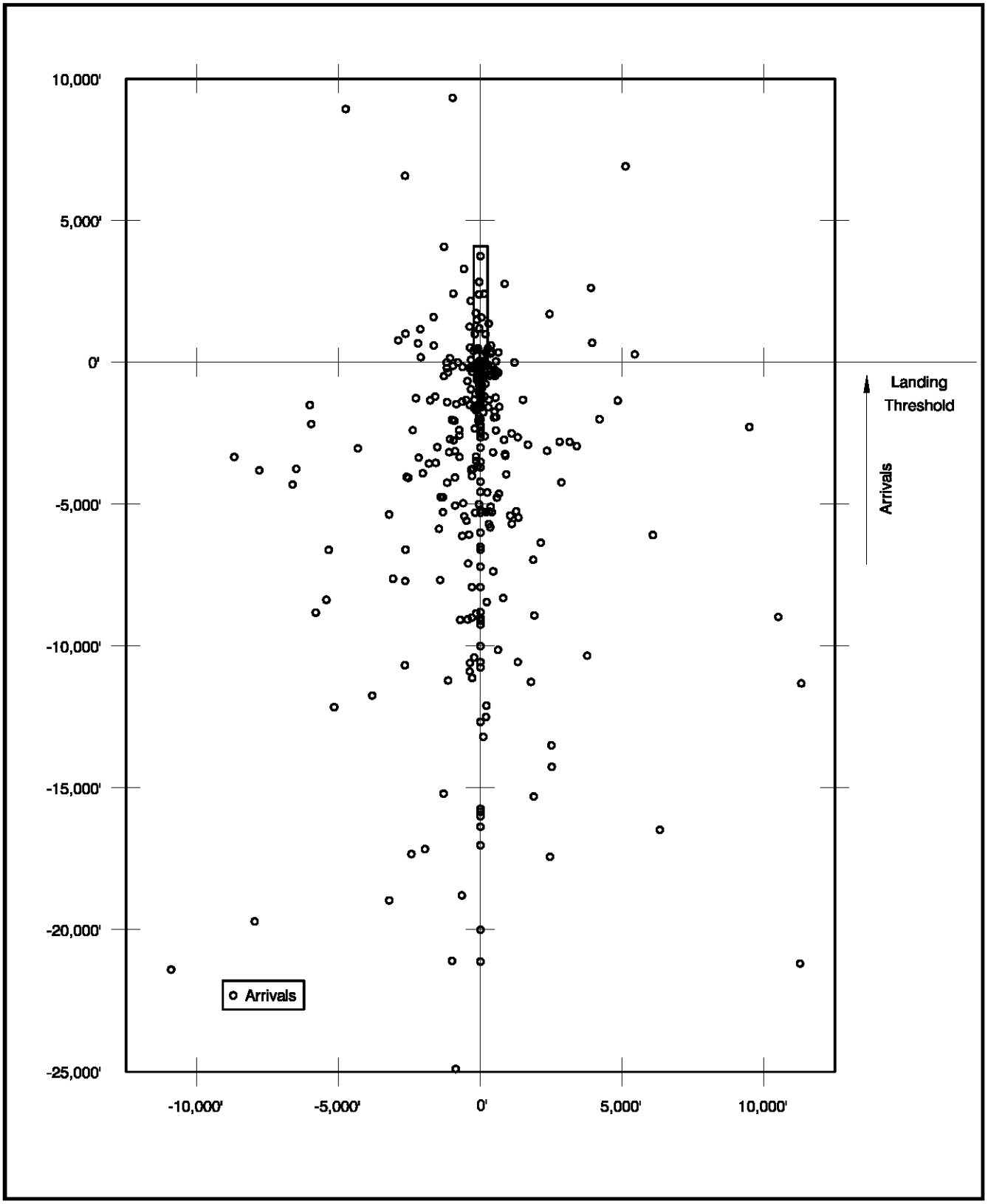

FIGURE E7

Arrival Accidents

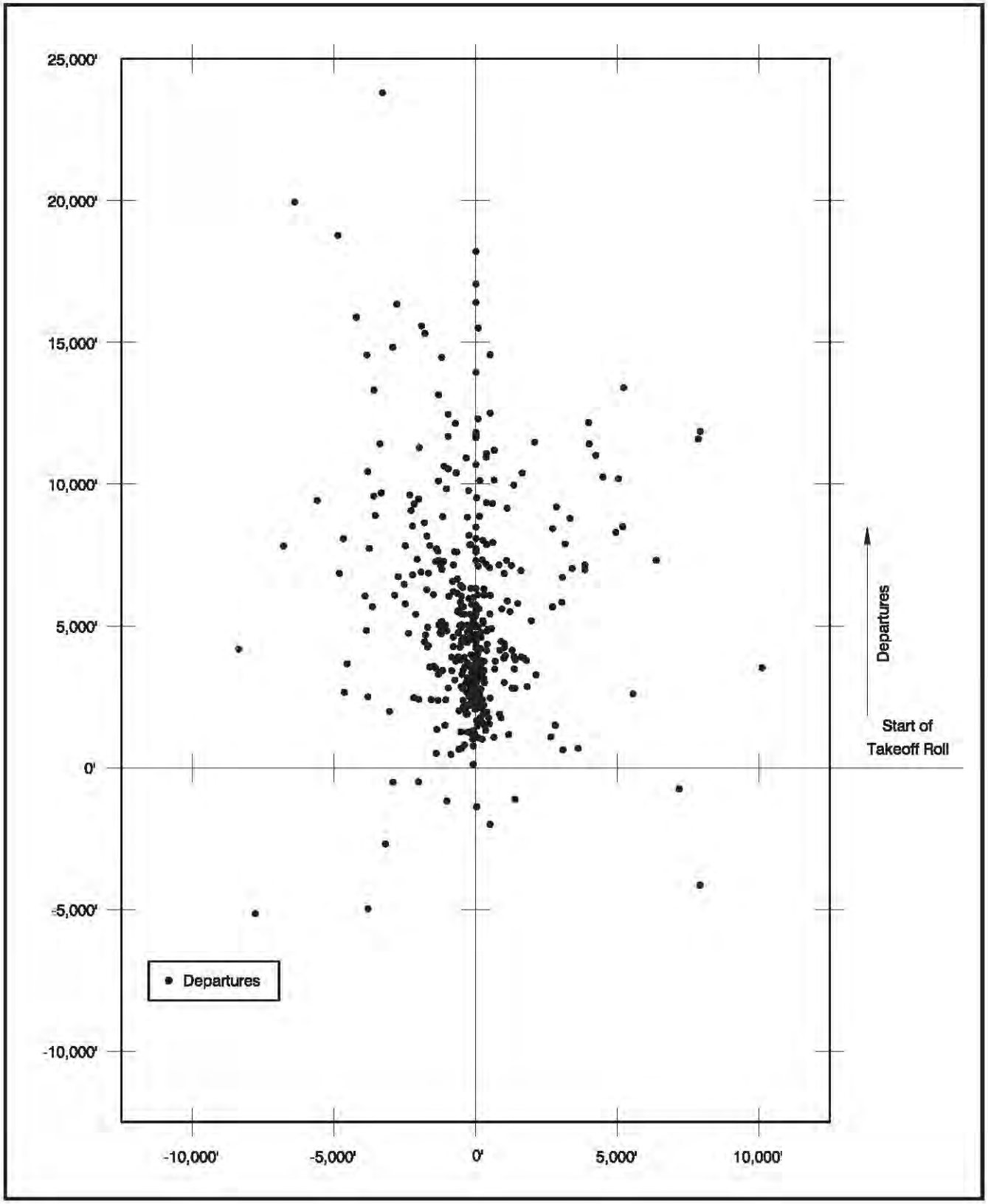

FIGURE E8

Departure Accidents

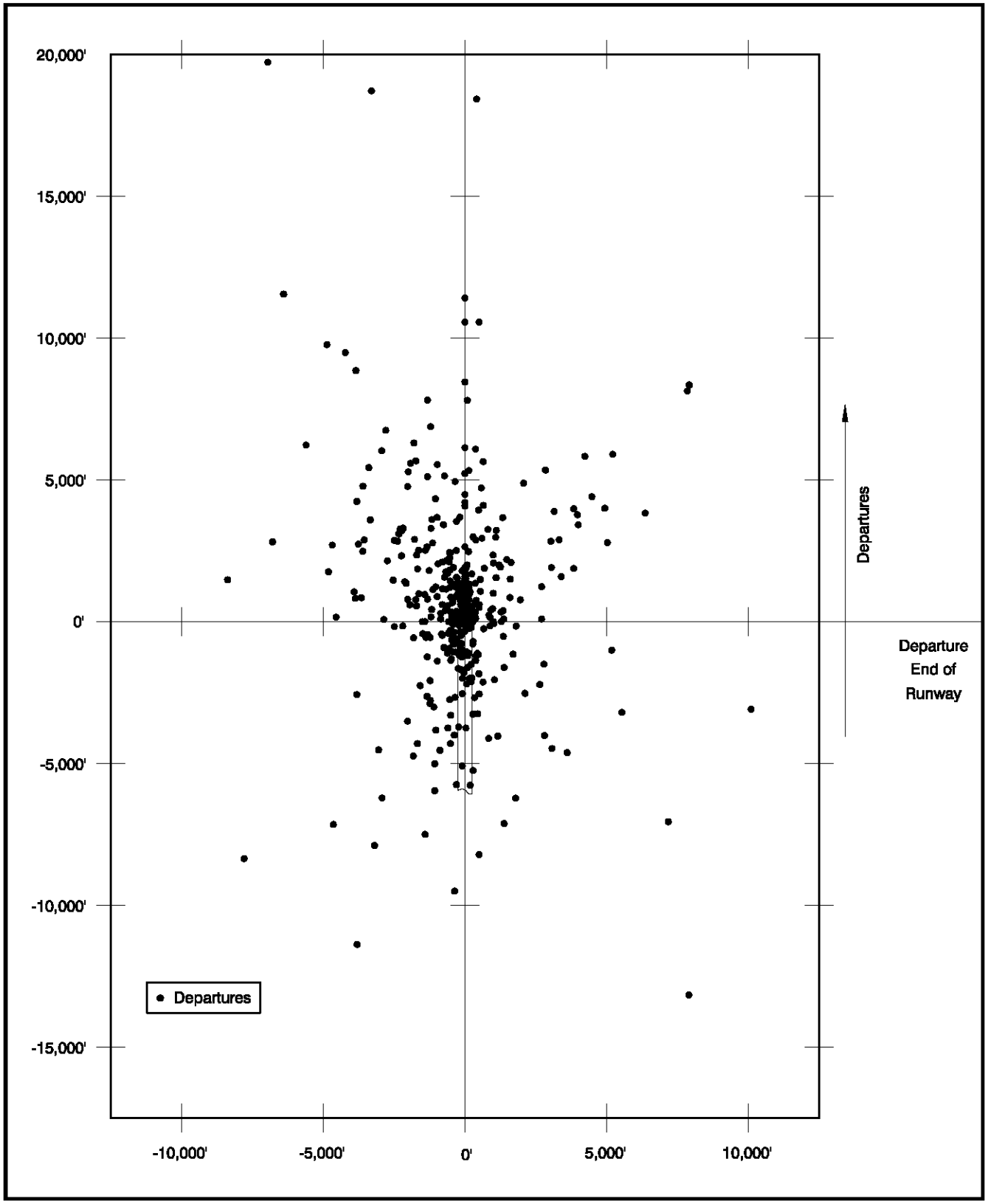

FIGURE E9

Departure Accidents – Normalized

Appendix E, *NTSB Records of Probable Cause for Accidents at SBP*

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NTSB Identification: DCA84AA034A.
The docket is stored on NTSB microfiche number 25365.
Scheduled 14 CFR
Accident occurred Friday, August 24, 1984 in SAN LUIS OBISPO, CA
Aircraft: BEECH C-99, registration: N6399U
Injuries: 17 Fatal.

AT ABOUT 1118, A BEECH C-99 (WINGS WEST FLT 628), N6399U, & A ROCKWELL 112TC, N112SM, COLLIDED IN MIDAIR ABOUT 8 MI WEST-NORTHWEST OF THE SAN LOUI OBISPO COUNTY ARPT. THE ROCKWELL 112TC HAD DEPARTED PASO ROBLES, CA & WAS DESCENDING TOWARD THE SAN LOUI OBISPO COUNTY ARPT. THE BEECH C-99 HAD DEPARTED SAN LOUI OBISPO & WAS CLIMBING ON A FLT TO SAN FRANCISCO. THEY COLLIDED HEAD-ON AT ABOUT 3400 FT MSL IN CLEAR WX. THE C-99 CREW HAD JUST CONTACTED LOS ANGELES ARTCC. AT THAT TIME, THE AIRCREWS OF BOTH ACFT WERE GOVERNED BY THE 'SEE-AND-AVOID' CONCEPT WITH REGARD TO EACH OTHER. AN INVESTIGATION REVEALED THAT THE STANDARD DEPARTURE & INSTRUMENT APCH PROCEDURES SHARED A COMMON TRACK. THE C-99 WAS DEPARTING ALONG THE DEPARTURE TRACK. JUST PRIOR TO THE COLLISION, THE 112TC CREW HAD CONTACTED UNICOM & REPORTED AT THE DOBRA INTERSECTION WHICH WAS ON THE ILS APCH COURSE. AFTER COLLIDING, BOTH ACFT CRASHED ON OPEN TERRAIN & BURNED. THE CONTROLLER HAD ONLY SECONDS TO APPRAISE RADAR DATA & ISSUE A SAFETY ADVISORY. WINGS WEST REQD 1 RADIO ON COMPANY FREQ.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

ARTCC SERVICE..DELAYED..PILOT IN COMMAND

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

RADAR ASSISTANCE TO VFR AIRCRAFT..NOT USED..PILOT OF OTHER AIRCRAFT

Contributing Factors

INSUFF STANDARDS/REQUIREMENTS,OPERATION/OPERATOR..COMPANY/OPERATOR MGMT

Contributing Factors

VISUAL LOOKOUT..INADEQUATE..PILOT IN COMMAND

Contributing Factors

VISUAL LOOKOUT..INADEQUATE..PILOT OF OTHER AIRCRAFT

Index for Aug1984 | Index of months

NTSB Identification: DCA84AA034B.
The docket is stored on NTSB microfiche number 25365.
Accident occurred Friday, August 24, 1984 in SAN LUIS OBISPO, CA
Aircraft: Rockwell 112TC, registration: N112SM
Injuries: 17 Fatal.

AT ABOUT 1118, A BEECH C-99 (WINGS WEST FLT 628), N6399U, & A ROCKWELL 112TC, N112SM, COLLIDED IN MIDAIR APRX 8 MI WEST-NORTHWEST OF THE SAN LOUI OBISPO COUNTY ARPT. THE ROCKWELL 112TC HAD DEPARTED PASO ROBLES, CA & WAS DESCENDING TOWARD THE SAN LOUI OBISPO COUNTY ARPT. THE BEECH C-99 HAD DEPARTED SAN LOUI OBISPO & WAS CLIMBING ON A FLT TO SAN FRANCISCO. THEY COLLIDED HEAD-ON AT ABOUT 3400 FT MSL IN CLEAR WX. THE C-99 CREW HAD JUST CONTACTED LOS ANGELES ARTCC. AT THAT TIME, THE AIRCREWS OF BOTH ACFT WERE GOVERNED BY THE 'SEE-AND-AVOID' CONCEPT WITH REGARD TO EACH OTHER. AN INVESTIGATIONREVEALED THAT THE STANDARD DEPARTURE & INSTRUMENT APCH PROCEDURES SHARED A COMMON TRACK. THE C-99 WAS DEPARTING ALONG THE DEPARTURE TRACK. JUST PRIOR TO THE COLLISION, THE 112TC CREW HAD CONTACTED UNICOM & REPORTED AT THE DOBRA INTER- SECTION WHICH WAS ON THE ILS APCH COURSE. AFTER COLLIDING, BOTH ACFT CRASHED ON OPEN TERRAIN & BURNED. THE CONTROLLER HAD ONLY SECONDS TO APPRAISE RADAR DATA & ISSUE A SAFETY ADVISORY. WINGS WEST REQD 1 RADIO TO BE TUNED TO COMPANY FREQ.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

RADAR ASSISTANCE TO VFR AIRCRAFT..NOT USED..PILOT IN COMMAND

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

ARTCC SERVICE..DELAYED..PILOT OF OTHER AIRCRAFT

Contributing Factors

VISUAL LOOKOUT..INADEQUATE..PILOT IN COMMAND

Contributing Factors

VISUAL LOOKOUT..INADEQUATE..PILOT OF OTHER AIRCRAFT

Index for Aug1984 | Index of months

Contributing Factors

PROCEDURE INADEQUATE..COMPANY/OPERATOR MANAGEMENT

Contributing Factors

INSUFF STANDARDS/REQUIREMENTS,OPERATION/OPERATOR..FAA(ORGANIZATION)

Index for Dec1987 | Index of months

NTSB Identification: LAX00LA270.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Tuesday, July 18, 2000 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 11/01/2001
Aircraft: Piper PA-38-112, registration: N2400P
Injuries: 1 Uninjured.

NTSB investigators may have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The pilot was taxiing from the ramp to the runway. Prior to releasing the parking brake to move out of the parking spot, he visually verified that there were no people or vehicles in the area. While conducting the brake check he looked down into the cockpit to verify that he had a standby option on his radio. He noted that he did not have a standby option and returned his attention to the outside of the airplane and started the airplane moving in a forward direction. When he looked up from inside the cockpit he saw a refueling truck had positioned itself outside of the yellow parking space line. He attempted to avoid the vehicle by engaging full left rudder and left brake; however, the right wingtip collided with the vehicle.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's inadequate visual lookout while taxiing to the runway, which resulted in his failure to see and avoid the fuel truck.

Full narrative available

Index for Jul2000 | Index of months

NTSB Identification: LAX01FA070.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Saturday, January 06, 2001 in San Luis Obispo, CA
Probable Cause Approval Date: 07/15/2002
Aircraft: Cessna 172F, registration: N383CA
Injuries: 2 Fatal.

NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report.

During the instrument flight rules initial climb after takeoff, in fog, to visual conditions on top, the airplane collided with the ground about 1 mile from the departure runway. Prior to departure on runway 11, the pilot contacted the control tower to request the instrument departure to on-top and was advised to standby. During the course of communication the pilot was advised the "tops" were 300 feet above ground level, and was issued a clearance to taxi to the runway. The tower advised the pilot that they were closing and to contact ARTCC for release. The pilot obtained the IFR clearance and was released to on-top. The pilot's release included a standard instrument departure that required a right turn to 130 degrees after departure. There was no further communication with the pilot and radar contact was never established. The airplane subsequently collided with the ground, south of the runway, in a steep right wing down attitude on a magnetic heading of 180 degrees. Examination of the airplane wreckage did not reveal any system anomalies. The vacuum pump drive shear-shaft was found intact and there was rotational scoring of the attitude indictor gyroscope rotor.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain a proper climb rate to VFR conditions on-top.

Full narrative available

Index for Jan2001 | Index of months

NTSB Identification: LAX01LA075A
Accident occurred Monday, January 15, 2001 in San Luis Obispo, CA
Probable Cause Approval Date: 01/02/2002
Aircraft: Cessna T210L, registration: N2508S
Injuries: 3 Uninjured.

NTSB investigators may have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The pilot of the taxing Cessna T210L reported that the morning sun was shining directly down the taxiway and made it very difficult to see. He continued taxiing and his left wing struck the right propeller of a Cessna 310 in the run-up area. The resulting collision caused damage to the right engine, propeller, and tip tank of the 310, and severed 5 feet from the T210L's left wing.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to ensure adequate taxi clearance between aircraft. A factor in the accident was glare from the morning sun.

Full narrative available

Index for Jan2001 | Index of months

NTSB Identification: LAX01LA075B
Accident occurred Monday, January 15, 2001 in San Luis Obispo, CA
Probable Cause Approval Date: 01/02/2002
Aircraft: Cessna 310, registration: N890GR
Injuries: 3 Uninjured.

NTSB investigators may have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The pilot reported that he was in the run-up area for runway 29 and had just completed cycling the props when he noticed movement to the right side of the aircraft. He looked over and saw a Cessna T210L approaching from his right and slightly behind. The T210L's left wing struck the right tip tank then passed through the propeller arc of the right engine and was severed approximately 5 feet inboard. Both aircraft were shutdown and there were no injuries. The pilot of the taxing T210L reported the morning sun restricted his vision, but he continued to taxi.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The failure of the other pilot to ensure adequate taxi clearance between aircraft.

Full narrative available

Index for Jan2001 | Index of months

NTSB Identification: LAX01LA260.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Wednesday, July 25, 2001 in San Luis Obispo, CA
Probable Cause Approval Date: 02/25/2003
Aircraft: Cessna 140, registration: N2903N
Injuries: 1 Uninjured.

NTSB investigators may have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The pilot made an uneventful three-point touchdown. Thereafter, the airplane veered left, and the pilot applied rudder pressure and engine power to correct for the yawing moment. The pilot reported that the swerve happened so fast he was unable to take effective corrective action. Airplane control was lost and it nosed over.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain directional control during landing that resulted in dragging the wing and nosing over.

Full narrative available

Index for Jul2001 | Index of months

NTSB Identification: LAX03LA007.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Sunday, October 13, 2002 in San Luis Obispo, CA
Probable Cause Approval Date: 10/28/2004
Aircraft: Piper PA-28-151, registration: N75164
Injuries: 1 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The airplane collided with an airport sign while taxiing from the runway to parking. The student pilot landed and received an air traffic control instruction to taxi to parking via a specified route. The student departed the runway while attempting to follow the instruction and taxied into a runway remaining distance sign, which she had failed to observe.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain obstacle clearance due to her inadequate visual lookout.

Full narrative available

Index for Oct2002 | Index of months

NTSB Identification: LAX04LA169.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Sunday, March 21, 2004 in San Luis Obispo, CA
Probable Cause Approval Date: 06/08/2005
Aircraft: Stanley Glasair SH-2, registration: N309TS
Injuries: 1 Minor.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The airplane experienced a loss of engine power and impacted a ditch during the pilot's forced landing in a field. While approaching the proximity of the destination airport, the pilot observed the engine gauges indicating rising oil temperature. About 5 miles from the airport, the engine emitted a loud noise and he declared an emergency due to an engine failure. Realizing that he would be unable to make it to the runway, the pilot executed a forced landing in a field; during the landing roll, the airplane impacted a ditch and tumbled. Post-accident external visual examination by a Federal Aviation Administration (FAA) inspector revealed that the engine sustained a catastrophic failure, with a hole knocked in the upper case spine above the rear cylinders. Looking through the hole, the inspector observed that the right rear piston had seized in the No. 3 cylinder and its respective connecting rod was broken just above crankshaft rod end flare. The inspector could not identify the rod end cap or the bearing shells. The No. 3 piston skirt was visibly scorched in the direction of piston travel. A visual examination of the engine, disclosed that all of the cylinders were worn and scored. After the accident, the owner took the engine to a maintenance facility that examined the engine and reported that rod bearing in the No. 3 cylinder failed. The facility declined to provide detailed observations on the internal condition of the engine, the rod fracture, and condition of the bearing. The FAA inspector said the pilot told him that prior to the accident, the engine was experiencing excessive oil consumption. In response, the pilot removed the No. 3 cylinder from the engine and employed an engine shop to change the piston in an effort to alleviate the excessive oil consumption problems. After the maintenance was preformed, the pilot reinstalled the cylinder. The inspector added that sometime prior to the accident the pilot had also modified the engine by installing larger pistons.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The loss of engine power due to the failure of the #3 cylinder piston and connecting rod for undetermined reasons.

Full narrative available

Index for Mar2004 | Index of months

NTSB Identification: LAX05FA255.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Monday, August 01, 2005 in San Luis Obispo, CA
Probable Cause Approval Date: 02/26/2007
Aircraft: Piper PA-28-151, registration: N4401X
Injuries: 1 Fatal.

NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report.

While on the crosswind leg during initial climb, the pilot cruised into upsloping terrain about 0.9 miles from the runway. The pilot's day began when he departed his residence about 0700. Thereafter, he commuted to work, which involved flying a borrowed airplane to a neighboring city. Upon completing work, the pilot was dropped off at the airport. The pilot intended either to fly home or to the location where his next day's work was to be performed. He was due to report to work the following morning at 0730. It was a dark night, and an overcast ceiling existed at 800 feet above the ground. No moon or stars were visible from the airport. A hill was located about 1 mile northeast of the airport. The pilot departed using runway 11, made a left crosswind turn, and impacted the hill while climbing in controlled flight. Fire department personnel responding to the accident site said that the clouds were nearly at ground level and that the forward (horizontal) visibility was between 1/4- and 1/2-mile. The pilot had received his private pilot certificate the preceding month, at a total flight time of 69.6 hours, including 3.5 hours at night.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's continued flight into instrument meteorological conditions, and his failure to maintain clearance from the rising hilly terrain. Contributing factors were the pilot's inexperience regarding flying during the dark, nighttime condition, and the low ceiling.

Full narrative available

Index for Aug2005 | Index of months

NTSB Identification: LAX05LA158.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Saturday, May 07, 2005 in San Luis Obispo, CA
Probable Cause Approval Date: 04/25/2006
Aircraft: Champion 7ECA, registration: N42LC
Injuries: 1 Minor.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The pilot landed the airplane in a soccer field and impacted a power pole. The pilot could not remember the circumstances of the accident. Witnesses indicated that the airplane was circling the soccer field with a sputtering engine, prior to the landing. During the landing ground roll, the airplane skidded into a power pole. There was a strong odor of fuel at the accident site and an observed post accident fuel leak from the left wing. Investigators examined the airplane after the accident and the engine was successfully test run. No airframe or engine anomalies were identified. The closest weather observation station was within 10 miles of the accident site and was reporting a temperature and dew point of 8 and 7 degrees Celsius, respectively. Review of a carburetor icing probability chart disclosed that the temperature and dew point was in the center of the area for serious icing at any power setting.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

a loss of engine power due to carburetor icing and the pilot's failure to use carburetor heat.

Full narrative available

Index for May2005 | Index of months

NTSB Identification: LAX07CA228.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Wednesday, July 18, 2007 in San Luis Obispo, CA
Probable Cause Approval Date: 10/31/2007
Aircraft: DTA Sari Combo FC 912, registration: N599CA
Injuries: 2 Uninjured.

NTSB investigators used data provided by various entities, including, but not limited to, the Federal Aviation Administration and/or the operator and did not travel in support of this investigation to prepare this aircraft accident report.

The airplane collided with the runway while practicing a touch-and-go landing. The flight instructor stated that just as the airplane was rounding out in the flare the airplane made a quick pitch down, which the instructor thought was due to a sudden power reduction by the student. The airplane nose gear impacted the runway and collapsed. The instructor stated that he felt the accident could have been avoided by maintaining steady partial power, maintaining a slight nose-up pitch attitude, and landing farther down the runway. The instructor and student pilot reported no preimpact mechanical malfunctions with the aircraft.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The student pilot's improper flare, which resulted in a hard landing. Also causal was the instructor's inadequate supervision.

Full narrative available

Index for Jul2007 | Index of months

NTSB Identification: LAX08CA124
14 CFR Part 91: General Aviation
Accident occurred Monday, April 07, 2008 in San Luis Obispo, CA
Probable Cause Approval Date: 06/30/2008
Aircraft: Cessna 172S, registration: N65630
Injuries: 1 Uninjured.

NTSB investigators used data provided by various entities, including, but not limited to, the Federal Aviation Administration and/or the operator and did not travel in support of this investigation to prepare this aircraft accident report.

The airplane's descent was uneventful. The wind was reported as 300 degrees at 19 knots gusting to 25 knots. After touchdown, the airplane porpoised. The pilot then taxied the airplane to the hangar. Although the landing was very rough, the pilot was unaware that the airplane was damaged. Post-flight examination revealed that the propeller blades were slightly bent to the rear, and the firewall was dented.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's inadequate landing flare, resulting in a hard landing. Contributing to the accident was the gusty wind condition.

Full narrative available

Index for Apr2008 | Index of months

NTSB Identification: LAX82DA076
14 CFR Part 91: General Aviation
Accident occurred Wednesday, February 17, 1982 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 02/17/1983
Aircraft: CESSNA 172M, registration: N6585H
Injuries: 2 Uninjured.

DURING LANDING, THE AIRCRAFT BOUNCED TWICE. ON THE THIRD TOUCHDOWN, THE NOSEWHEEL FAILED, THE NOSEWHEEL TIRE BLEW OUT AND THE FIREWALL WAS BENT. THE PILOT REPORTED THAT THE WIND WAS GUSTING TO 15 KNOTS.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

LEVEL OFF..IMPROPER..PILOT IN COMMAND

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

RECOVERY FROM BOUNCED LANDING..IMPROPER..PILOT IN COMMAND

Contributing Factors

WEATHER CONDITION..GUSTS

Index for Feb1982 | Index of months

NTSB Identification: LAX83LA178.
The docket is stored on NTSB microfiche number 22351.
Accident occurred Tuesday, April 05, 1983 in SAN LUIS OBISPO, CA
Aircraft: PIPER PA 32-300, registration: N15278
Injuries: 1 Minor.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

THE ACFT DEPARTED RWY 29, & AT ABOUT 200 FT AGL THE ENG WAS HEARD TO SPUTTER & SURGE. THE ACFT WAS THEN OBSERVED IN A STEEP LEFT BANK TOWARD RWY 7. THE WINGS LEVELED JUST PRIOR TO IMPACT ABOUT 100 FT SHORT OF RWY 7. ARPT POLICE PERSONNEL INSPECTED THE ACFT IMMEDIATELY AFTER THE ACCIDENT & FOUND THE FUEL SELECTOR POSITIONED TO THE LEFT TIP TANK. THE LEFT TIP TANK WAS EMPTY & BOTH MAINS WERE FULL. THE PLT STATED HE HAD SWITCHED THE FUEL TANK TO LEFT MAIN PRIOR TO TAKEOFF.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

FLUID,FUEL..STARVATION

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

FUEL TANK SELECTOR POSITION..NOT IDENTIFIED..PILOT IN COMMAND

Index for Apr1983 | Index of months

NTSB Identification: LAX86LA133.
The docket is stored on NTSB microfiche number 30169.
Accident occurred Tuesday, March 04, 1986 in SAN LUIS OBISPO, CA
Aircraft: CESSNA 152, registration: N49429
Injuries: 1 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

ON MARCH 4, 1986 A CESSNA 152 COLLIDED WITH THE RUNWAY SURFACE AFTER THE NOSE WHEEL COLLAPSED. THE STUDENT PILOT WAS ON HIS THIRD CONSECUTIVE SOLO FLIGHT SINCE HIS SOLO ENDORSEMENT. ON HIS THIRD APPROACH THE AIRCRAFT BOUNCED ON LANDING AND BECAME AIRBORNE WITH A NOSE HIGH ATTITUDE. HE APPLIED FORWARD PRESSURE ON THE YOKE TO LEVEL THE NOSE AND THE AIRCRAFT LANDED ON THE NOSE WHEEL AND BEGAN TO PORPOISE. ON THE THIRD OSCILLATION THE NOSE WHEEL COLLAPSED AND THE AIRCRAFT CAME TO AN ABRUPT STOP. THE INSTRUCTOR PILOT WAS A NEW CFII WITH LESS THAN 1000 HOURS FLIGHT EXPERIENCE WHO HAD JUST RECEIVED HIS RATING THREE MONTHS AGO. HE HAD CHECKED THE WEATHER AND BRIEFED THE STUDENT PILOT PRIOR TO THE FLIGHT.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

PREFLIGHT PLANNING/PREPARATION..POOR..FLIGHT INSTRUCTOR(ON GROUND)

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

FLARE..ATTEMPTED..PILOT IN COMMAND

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

RECOVERY FROM BOUNCED LANDING..POOR..PILOT IN COMMAND

Contributing Factors

WEATHER CONDITION..UNFAVORABLE WIND

Contributing Factors

LACK OF TOTAL EXPERIENCE..FLIGHT INSTRUCTOR(ON GROUND)

Contributing Factors

INADEQUATE SURVEILLANCE OF OPERATION..COMPANY/OPERATOR MGMT

Contributing Factors

LACK OF TOTAL EXPERIENCE..PILOT IN COMMAND

Index for Mar1986 | Index of months

NTSB Identification: LAX87LA163.
The docket is stored on NTSB microfiche number 33203.
Accident occurred Friday, March 27, 1987 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 05/02/1988
Aircraft: PIPER PA-28-235, registration: N9306W
Injuries: 2 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

AFTER TAKE-OFF, THE PILOT WAS FLYING A DOWNWIND DEPARTURE WHEN THE ENGINE QUIT. THE PILOT WAS UNABLE TO RETURN TO THE RUNWAY AND COLLIDED WITH THE TERRAIN A HALF MILE FROM THE AIRPORT. INSPECTION OF THE ENGINE AT THE TIME OF THE ACCIDENT FOUND THAT THE MAIN FUEL LINE TO THE CARBURETOR CONTAINED NO FUEL. THE LEFT TIP TANK WAS FOUND TO CONTAIN A QUARTER OF A TANK OF FUEL, THE LEFT MAIN WAS THREE QUARTERS FULL, THE RIGHT MAIN WAS FULL AND THE RIGHT TIP WAS EMPTY. THE PILOT STATED HE WAS FLYING ON THE LEFT MAIN. THERE WAS NO OTHER DISCREPANCIES NOTED AT THAT TIME. THE ENGINE WAS THEN RUN FOR SEVERAL MINUTES AT DIFFERENT POWER SETTINGS, THERE WERE NO MECHANICAL FAILURES OR MALFUNCTIONS NOTED.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

REASON FOR OCCURRENCE UNDETERMINED

Contributing Factors

TERRAIN CONDITION..ROUGH/UNEVEN

Contributing Factors

FLUID,FUEL..STARVATION

Index for Mar1987 | Index of months

NTSB Identification: LAX88FA314.
The docket is stored on NTSB microfiche number 39097.
Accident occurred Wednesday, September 07, 1988 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 07/09/1990
Aircraft: CESSNA 177RG, registration: N33283
Injuries: 1 Fatal.

NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report.

WHILE ENROUTE IFR TO SANTA BARBARA THE WX CONDITIONS WENT BELOW MINIMUMS. THE PLT FIRST ASKED ABOUT SANTA MARIA (SMX) AS AN ALTERNATE BUT THE WX WAS BELOW MINIMUMS AS WELL. THE PLT THEN SELECTED SAN LUIS OBISPO (SBP) FOR HIS ALTERNATE DEST. RADAR DATA SHOWED THE ACFT WAS HIGH DURING THE LOCALIZER APPROACH TO SBP AND PASSED OVER THE AIRPORT AT 2,600 FT MSL (2,300 AGL). THE CONTROLLER ISSUED A CLIMB TO 5,000 FT AND TOLD THE PLT TO EXECUTE THE MISSED APPROACH AS PUBLISHED. THERE WAS CONFUSION ABOUT THE INSTRUCTION. THE PLT STATED 'MISSED APPROACH AS PUBLISHED,' TO WHICH THE CONTROLLER RESPONDED 'AFFIRMATIVE'. RADAR DATA SHOWED THE ACFT DESCENDED TO 2,200 FT, WHERE RADAR CONTACT WAS LOST. ON SITE EXAM REVEALED THE ACFT HIT THE TOP OF A HILL IN A LEVEL STD RATE TURN TO THE LEFT. TWO APPROACH PLATES WERE ON THE PLTS CLIPBOARD, THE SMX ILS & THE SBP LOCALIZER. THE SMX MISSED APPROACH SPECIFIES A CLIMBING LEFT TURN TO 2,000 BACK TO THE VOR. BOTH APPROACH PLATES LOOK SIMILIAR.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

PILOTS ERRONEOUS INTERPRETATION OF HIS MISSED APPROACH CLEARANCE, AND, HIS PERFORMANCE OF THE PUBLISHED MISSED APPROACH PROCEDURE FOR THE SANTA MARIA ILS INSTEAD OF THE SAN LUIS OBISPO LOCALIZER.

Index for Sep1988 | Index of months

NTSB Identification: LAX88LA039.
The docket is stored on NTSB microfiche number 34883.
Accident occurred Wednesday, November 11, 1987 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 04/24/1989
Aircraft: CESSNA 210A, registration: N9505X
Injuries: 2 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

WHILE APPROACHING THE ARPT THE PLT STATED THAT HE SLIPPED THE ACFT FROM 1800 FEET TO 1400 FEET, LEVELED THE WINGS, STILL DESCENDING, AND ENTERED THE PATTERN AT 1200 FEET. WHILE ON FINAL APPROACH THE ENGINE QUIT. UNABLE TO LAND ON THE RWY, THE PLT LANDED IN A SOFT FIELD WHERE THE ACFT NOSED OVER. INVESTIGATION REVEALED NO PREIMPACT MECHANICAL MALFUNCTIONS OR FAILURES.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

POWERPLANT..UNDETERMINED

Contributing Factors

PROPER GLIDEPATH..NOT ATTAINED..PILOT IN COMMAND

Contributing Factors

TERRAIN CONDITION..SOFT

Index for Nov1987 | Index of months

NTSB Identification: LAX90FA332.
The docket is stored on NTSB microfiche number 45517.
Accident occurred Monday, September 24, 1990 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 05/28/1993
Aircraft: CESSNA 500, registration: N79DD
Injuries: 4 Fatal.

NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report.

THE FLT WAS CLRD FOR A LOC RWY 11 APCH. ABOUT 3 MIN LATER, THE 2ND-IN-COMMAND (SIC) RPRTD ' . . . WE DON'T GET THE LOCALIZER CAN YOU SEE IF WE'RE ON COURSE.' THE LAX ARTCC R-15 CTLR CONFIRMED THE FLT WAS RGT OF COURSE & BELOW THE RQRD ALT. THE ACFT'S MODE C INDCD AN ALT OF 1400 FT; THE CTLR ADZD THE FLT CREW TO MAINT AT LEAST 2300 FT UNTIL PAST THE FINAL APPROACH FIX (FAF). THE CREW THEN REPLIED THAT THEY WERE IN VMC. RADAR SVC WAS TERMINATED & A FREQ CHANGE TO TOWER WAS APPROVED. SHORTLY THEREAFTER, THE ACFT HIT A EUCALYPTUS TREE AT ABT 90 FT AGL, 2.05 MI FM THE APCH END OF THE RWY & ABT 195 FT RGT OF THE LOC. ELEV OF THE CRASH SITE WAS 101 FT; MIN DSCNT ALT (MDA) FOR THE APCH WAS 640 FT. THE 0645 PDT WX WAS, IN PART: INDEFINITE CEILING, 100 FT OBSCURED, VIS 1/8 MI WITH FOG, WIND FROM 220 DEG AT 4 KTS. NO PREIMPACT PART FAILURE OR MALFUNCTION OF THE ACFT WAS FOUND.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

THE PILOT'S IMPROPER IFR (INSTRUMENT) PROCEDURE, AND HIS FAILURE TO MAINTAIN THE MINIMUM DESCENT ALTITUDE (MDA) FOR THE APPROACH. THE ADVERSE WEATHER WAS A RELATED FACTOR.

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NTSB Identification: LAX91LA283.
The docket is stored on NTSB microfiche number 43667.
Accident occurred Sunday, June 30, 1991 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 01/25/1993
Aircraft: BOEING E75, registration: N68809
Injuries: 1 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

THE PILOT HAD MADE ONE LANDING AND TAKEOFF ON THE 4800 FT LONG AND 100 FT WIDE RUNWAY. WHEN ON THE DOWNWIND LEG THE SURFACE WINDS SHIFTED TO A QUARTERING TAILWIND. THE LOCAL CONTROLLER DID NOT ADVISE THE PILOT OF THE WIND CHANGE AND CLEARED THE FLIGHT TO LAND. UPON TOUCH DOWN THE AIRPLANE GROUND LOOPED AND NOSED OVER. THE PILOT IMPROPERLY USED THE FLIGHT CONTROLS AND BRAKES TO ARREST THE GROUND LOOP. EXAMINATION OF THE BRAKES AND TAILWHEEL ASSEMBLY DISCLOSED NO EVIDENCE OF ANY MALFUNCTIONS OR FAILURES.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

THAT THE PILOT FAILED TO PROPERLY COMPENSATE OF THE EXISTING QUARTERING TAILWIND, IMPROPERLY USING THE FLIGHT CONTROLS AND BRAKES.

Index for Jun1991 | Index of months

NTSB Identification: LAX92LA038.
The docket is stored on NTSB microfiche number 45867.
Accident occurred Saturday, November 02, 1991 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 04/27/1993
Aircraft: QUESTAIRE VENTURE, registration: N71T
Injuries: 1 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

ON THE LANDING ROLL OUT, THE AIRCRAFT BEGAN A GRADUAL RIGHT TURN WHICH THE PILOT WAS UNABLE TO CORRECT DUE TO A FAILURE OF THE LEFT BRAKE AND NOSE WHEEL STEERING SYSTEMS. THE AIRCRAFT EXITED THE RIGHT SIDE OF THE RUNWAY AND THE NOSE GEAR FORK FAILED. THE AIRCRAFT NOSED OVER. THE AIRCRAFT WAS EXAMINED BY AN FAA AIRWORTHINESS INSPECTOR. THE INSPECTOR NOTED THAT THE HYDRAULIC BRAKE AND NOSE WHEEL STEERING SYSTEMS WERE INTERCONNECTED. THE 'O' RING SEALS IN THE BRAKE SYSTEM WERE FOUND TO BE BADLY DETERIORATED AND HE REPORTED THAT THE HYDRAULIC FLUID HAD LEAKED OUT. THE KIT MANUFACTURER RECOMMENDS USING AN AUTOMOTIVE TYPE FLUID IN THE SYSTEM. THE INSPECTOR STATED HIS OPINION THAT THE AUTOMOTIVE BRAKE FLUID WAS INCOMPATIBLE WITH THE 'O' RING MATERIAL.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

THE PILOT'S INABILITY TO CONTROL THE AIRCRAFT DURING THE LANDING ROLL DUE TO A FAILURE OF THE LEFT BRAKE AND NOSE WHEEL STEERING SYSTEMS. THE FAILURE OF THE BRAKE AND STEERING SYSTEMS WAS DUE TO A DETERIORATION OF THE 'O' RING SEALS CAUSED BY THE USE OF HYDRAULIC FLUID INCOMPATIBLE WITH THE RUBBER MATERIAL IN THE SEALS. A FACTOR IN THE ACCIDENT WAS THE INADEQUATE SYSTEM DESIGN BY THE KIT MANUFACTURER.

Index for Nov1991 | Index of months

NTSB Identification: LAX93LA265.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Monday, June 21, 1993 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 06/30/1994
Aircraft: CULVER LCA, registration: N29396
Injuries: 1 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

THE PILOT SAID HE WAS PICKING UP THE AIRCRAFT, WHICH HIS FATHER IN LAW HAD JUST PURCHASED, AND WAS GOING TO FLY IT TO WASHINGTON STATE. THE PILOT NOTED THAT HE INTENDED TO STAY IN THE TRAFFIC PATTERN TO DO SEVERAL TAKEOFFS AND LANDINGS PRIOR TO PROCEEDING ON THE DELIVERY FLIGHT. THE RESPONDING FAA INSPECTOR REPORTED THAT THE PILOT'S LAST TAIL WHEEL AIRCRAFT EXPERIENCE WAS IN 1985, AND, AT THAT TIME, HIS TOTAL TAIL WHEEL EXPERIENCE WAS 250 HOURS. GROUND WITNESSES TO THE ACCIDENT REPORTED THAT THE AIRCRAFT BECAME AIRBORNE AFTER A GROUND ROLL OF ABOUT 600 FEET AND IMMEDIATELY YAWED AND ROLLED TO THE LEFT. THE AIRCRAFT COLLIDED WITH THE GROUND ADJACENT TO THE RUNWAY. THE PILOT REPORTED THAT DURING THE TAKEOFF GROUND ROLL ON RUNWAY 29 HE LOOKED DOWN AT THE AIRSPEED INDICATOR, AND, WHEN HE LOOKED UP AGAIN, THE AIRCRAFT HAD LIFTED OFF AND WAS ROLLING TO THE LEFT. THE PILOT STATED THAT HE COULD NOT CORRECT THE ROLL IN TIME TO PREVENT A NOSE DOWN COLLISION WITH THE GROUND. THE WINDS AT THE TIME WERE REPORTED BY THE CONTROL TOWER AT 300 DEGREES AT 18 KTS.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

THE PILOT'S FAILURE TO MAINTAIN CONTROL OF THE AIRCRAFT DURING TAKEOFF. A FACTOR IN THE ACCIDENT WAS THE PILOT'S LACK OF RECENT FLIGHT EXPERIENCE IN TAIL WHEEL AIRCRAFT.

Full narrative available

Index for Jun1993 | Index of months

NTSB Identification: LAX94FA308.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Sunday, August 07, 1994 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 05/16/1995
Aircraft: PIPER PA-28R-200, registration: N6959J
Injuries: 4 Fatal.

NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report.

A FEW MINUTES AFTER TAKEOFF, WITNESSES REPORTED SEEING THE AIRCRAFT IN THE NIGHT SKY FLYING BETWEEN 50 AND 100 FEET AGL, WESTBOUND, APPROXIMATELY 3 1/2 MILES FROM THE AIRPORT. THE AIRCRAFT WAS NEXT OBSERVED IN A LEFT DESCENDING TURN OVER THE FREEWAY WITH THE ENGINE MAKING LOUD AND UNUSUAL NOISES. THE AIRCRAFT SUBSEQUENTLY STRUCK A SECTION OF OVERHEAD HIGH-TENSION ELECTRICAL LINES THAT SPANNED THE FREEWAY. THE DRIVER OF A NORTHBOUND VEHICLE REPORTED THAT HIS VEHICLE COLLIDED WITH THE AIRCRAFT AS IT SLID ACROSS THE NORTHBOUND LANES OF TRAFFIC. THE AIRCRAFT CAME TO REST IN THE NORTHBOUND EMERGENCY LANE. AT THE TIME OF THE CRASH, THE ONLY OUTSIDE ILLUMINATION WAS FROM GROUND LIGHTS IN THE CITY. UPON INITIAL INSPECTION, IT WAS NOTED THAT THE ENGINE CASE WAS FRACTURED IN THE AREA OF THE NO. 4 CYLINDER. A FURTHER EXAMINATION OF THE INTERNAL COMPONENTS REVEALED THAT THE NO. 4 ROD AND END CAP HAD SEPARATED FROM THE CRANKSHAFT. METALLURGICAL EXAMINATION OF THE FAILED COMPONENTS TO DETERMINE THE FAILURE MODE WAS UNSUCCESSFUL DUE TO DAMAGE SUSTAINED ON THE FRACTURE FACES.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

the failure of the No. 4 cylinder connecting rod for undetermined reasons. The dark night lighting conditions, which hampered the ability of the pilots to detect the power lines, was a factor in this accident.

Full narrative available

Index for Aug1994 | Index of months

NTSB Identification: LAX95LA324.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Monday, September 04, 1995 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 03/21/1996
Aircraft: WELLES KITFOX SPEEDSTER, registration: N912JW
Injuries: 1 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

THE PILOT SAID THE AIRCRAFT WAS ABOUT 300 FEET INTO THE TAKEOFF GROUND ROLL ON RUNWAY 29 WHEN HE LOST DIRECTIONAL CONTROL. THE AIRCRAFT VEERED LEFT OFF THE RUNWAY AND GROUND LOOPED IN THE DIRT, DAMAGING A WING.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

the pilot's failure to maintain directional control.

Full narrative available

Index for Sep1995 | Index of months

NTSB Identification: LAX96FA228.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Thursday, June 06, 1996 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 03/31/1998
Aircraft: British Aerospace BA-3100/3201, registration: N926AE
Injuries: 2 Uninjured.

NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report.

The first officer, who was 6 months past due for a proficiency check in the aircraft, was in the left seat for the ferry flight and applied power on takeoff. At 40 knots he transitioned from tiller to rudder steering while the captain was setting takeoff power. Moments later the crew felt the aircraft jerk to the left. The captain took the controls and brought both power levers back to flight idle and then into reverse. The captain attempted to control the aircraft but did not have access to the tiller from his position in the aircraft. Full application of rudder and differential braking could not bring the aircraft under control as it veered off the left side of the runway, then back to the right edge. Following the accident, the nose wheel steering, brakes, and propellers were functionally tested in accordance with the aircraft maintenance manuals, with no discrepancies noted. The FDR showed that the airspeed peaked at 58 knots. The rudder effectiveness increases incrementally from 40 knots IAS to full authority at 70 knots. A CVR tape sound spectrum analysis revealed that the left engine was in the start lock position during the takeoff. Normal procedure after engine start is to bring the props into reverse momentarily to bring them out of the start locks. There is no cockpit indicator for the position of the propellers relative to the start locks.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The flight crew's loss of directional control resulting from an attempted takeoff with the left propeller on the start lock. Factors in the accident were: the lack of cockpit caution/warning system/lights available to verify that the propellers are out of the start locks; and the captain's location in the right seat without access to the nosewheel steering tiller.

Full narrative available

Index for Jun1996 | Index of months

NTSB Identification: LAX96LA309.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Monday, August 19, 1996 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 05/30/1997
Aircraft: Cessna 195A, registration: N4478C
Injuries: 2 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The pilot stated that during the landing roll, the aircraft began to swerve to the right. When he applied corrective action, the airplane ground looped, and the left wing contacted the ground. The pilot, a certificated aircraft mechanic, said that the airplane did not experience any preimpact malfunction or failure.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

the pilot's failure to maintain directional control, which resulted in a ground loop/swerve.

Full narrative available

Index for Aug1996 | Index of months

NTSB Identification: LAX98LA115.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Saturday, March 14, 1998 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 02/15/2001
Aircraft: Robinson R22 BETA, registration: N4079M
Injuries: 2 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The flight instructor reported that he and the dual student were doing traffic pattern operations to a grass area parallel to runway 29. The CFI stated that while they were on the downwind leg of the first pattern about 500 feet agl, the student was on the controls and was preparing for the approach with the prelanding checklist. The student reached down to apply carburetor heat, but instead pulled the mixture to idle. The engine stopped and the instructor then took over the controls and performed an autorotation to the grass field. The helicopter continued forward on the ground after the touchdown and the front portion of the skids became imbedded in the ground and the helicopter then nosed over. The blades hit the ground and the helicopter rolled over and came to rest on its right side.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The student pilot's inadvertent pulling of the mixture, instead of the carburetor heat, while preparing for the approach, and the flight instructor's inadequate supervision.

Full narrative available

Index for Mar1998 | Index of months

NTSB Identification: LAX98LA170.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Thursday, May 21, 1998 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 02/11/2000
Aircraft: Robinson R22B, registration: N2312N
Injuries: 2 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The flight instructor asked the student to demonstrate an autorotation from a hover approximately 2 to 3 feet high. The CFI stayed on the controls throughout the maneuver. After they closed the throttle, the helicopter moved backwards and to the left. As the helicopter touched the ground, the rear portion of the left skid became imbedded in the runway surface and the aircraft rolled over onto its left side. The aircraft came to rest approximately 180 degrees from its original heading. The winds at the time were reported to be from a direction of 310 degrees at a velocity of 18 knots gusting to 22 knots. The CFI reported that they conducted all their maneuvers into the wind.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The flight instructor's inadequate compensation for wind conditions, and his failure to maintain aircraft control. Contributing was wind gusts.

Full narrative available

Index for May1998 | Index of months

NTSB Identification: LAX99LA248.
The docket is stored in the Docket Management System (DMS). Please contact Records Management Division
Accident occurred Saturday, July 10, 1999 in SAN LUIS OBISPO, CA
Probable Cause Approval Date: 08/14/2001
Aircraft: Piper PA-24-180, registration: N6597P
Injuries: 2 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The instructor said that the power came up smoothly on the takeoff roll, but that the engine suddenly quit at 600 feet agl. The flight instructor took the controls, lined up on a major interstate highway, and touched down in the northbound lanes. The right wing struck a bush, which spun the airplane off the highway and down the embankment next to the highway. An engine teardown disclosed that the crankshaft idler gear (left magneto) was detached from the mounting pad at the back of the crankcase. The crankshaft gear was not secured to the crankshaft, and the locating dowel pin was fractured and separated. Further examination of the idler gear shaft and attaching parts revealed severe wear signatures on the attachment bolts and locking plate, and the bolts displayed signatures consistent with prolonged contact with the rotating idler gear. The bore at the idler gear shaft-mounting pad was also severely worn and elongated. The crankshaft counterbore and corresponding gear revealed fretting and corrosion signatures at the mating surfaces, and the dowel pin was separated in line with the parting surfaces of the gear and counterbore. The dowel pin fracture surface displayed fatigue. A propeller overhaul was completed 20 hours prior to the accident. The Hartzell propeller manual prohibits balance weights in excess of 0.9 ounces (25.51 grams) in any one location on the spinner. Weights totaling 36 grams were found on one location on the airplane spinner.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The failure/separation of the crankshaft idler gear and the fatigue failure and subsequent separation of the crankshaft dowel pin due to the improper static and dynamic balance of the propeller by maintenance personnel.

Full narrative available

Index for Jul1999 | Index of months

NTSB Identification: WPR09CA157
14 CFR Part 91: General Aviation
Accident occurred Tuesday, March 17, 2009 in San Luis Obispo, CA
Probable Cause Approval Date: 06/11/2009
Aircraft: PIPER PA-24-250, registration: N8215P
Injuries: 1 Uninjured.

NTSB investigators used data provided by various entities, including, but not limited to, the Federal Aviation Administration and/or the operator and did not travel in support of this investigation to prepare this aircraft accident report.

The pilot reported that during touchdown he felt a change in the right crosswind component and his downwind (left) landing gear contacted the ground first. Subsequent right rudder corrections were insufficient and the airplane veered off of the left side of the runway, down an embankment, and impacted an airport perimeter fence. The right wing received an 18-inch-deep by 8-inch-wide indentation approximately 4 feet outboard of the wing root and impact damage to the right wing tip fuel tank.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's inadequate compensation for the crosswinds during touchdown.

Full narrative available

Index for Mar2009 | Index of months

NTSB Identification: WPR11LA102
14 CFR Part 91: General Aviation
Accident occurred Thursday, January 20, 2011 in San Luis Obispo, CA
Probable Cause Approval Date: 01/17/2012
Aircraft: PIPER PA-28-235, registration: N8608W
Injuries: 1 Uninjured.

NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report.

The pilot reported that, while on approach to the runway, the vacuum pump failed, then the engine lost power. The pilot initiated a forced landing to a field, and the airplane impacted multiple metal poles. Postaccident examination of the engine revealed that the left magneto drive gear and the left idler gear shaft were separated from their mount. Both of the attachment bolts for the left idler gear shaft were separated from the crankcase, and their respective bolt bores were elongated. One of the attachment bolts for the left idler gear shaft was fractured, and metallurgical examination revealed that the fracture surface was consistent with fatigue. Metallurgical analysis determined that the fatigue was due to a lack of sufficient preload on the bolts. Maintenance records showed that the last logged maintenance activity in which the bolts could have been manipulated was performed about 20 years before the accident. The engine had accumulated about 1,400 operating hours since that time.

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The loss of engine power due to the fatigue fracture of one attachment bolt for the left idler gear shaft, which resulted from an insufficient preload on both attachment bolts.

Full narrative available

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NTSB Identification: WPR13FA289
14 CFR Part 91: General Aviation
Accident occurred Monday, June 24, 2013 in San Luis Obispo, CA
Aircraft: CESSNA P337H, registration: N337LJ
Injuries: 1 Fatal.

This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected when the final report has been completed. NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report.

On June 24, 2013, at 1255 Pacific daylight time, a Cessna P337H, N337LJ, collided with power distribution lines, a building, and a delivery truck following takeoff from San Luis Obispo County Regional Airport, San Luis Obispo, California. The airplane was registered to CSC Solutions LLC, and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91. The private pilot sustained fatal injuries; the airplane was destroyed by impact forces and post impact fire. The cross-country personal flight departed San Luis Obispo at 1254, with a planned destination of Palo Alto Airport of Santa Clara County, Palo Alto, California. Visual meteorological conditions prevailed, and no flight plan had been filed.

The NTSB investigator traveled in support of this investigation.

According to air traffic control personnel located in San Luis Obispo Control Tower, the pilot reported that he intended to perform a high speed taxi, followed by a circuit in the traffic pattern, a touch-and-go landing, and then finally a departure. A series of security cameras located at a Fixed Base Operator (FBO) adjacent to the midfield of runway 29 recorded various segments of the flight sequences. The recordings revealed that during the final departure, following the touch-and-go, the airplane appeared to utilize almost the full runway length for the ground roll, then climbed to an altitude of about 150 feet above ground level (agl). A short time later, the pilot transmitted, “Mayday Mayday” over the tower frequency; the tower controller responded, and a broken transmission of, “uh” was then received.

A security camera located at a tire service center, about 1 mile west-northwest of the departure end of runway 29 recorded the airplane's departure path. The camera was facing northeast, and recorded the airplane flying on a northwest track at an altitude of between 100 and 200 feet agl. The airplane remained level as it passed from the right side of the camera's view to the center. It then began to descend out of view, and 4 seconds later, power to the camera was lost. About 20 seconds later power was restored, and the camera recorded a plume of smoke in the vicinity of the airplane’s descent path.

Multiple witnesses located at various locations within the airport perimeter recounted observations corroborating the camera recordings. They all recalled that their attention was initially drawn to the airplane because it was producing an unusual sound during the departure roll. A tower controller reported that she heard the sound of a bang, and looked over towards the airplane as it passed the tower at midfield. Another witness described the airplane as producing a “popping” sound, with another stating the sound was similar to a radial engine. A witness located at an FBO at midfield, reported that he looked up when he heard the sound of “propellers out of sync” and when he did so, he observed the airplane traveling northwest along the runway.

According to friends of the pilot, the airplane had been experiencing a problem with the rear engine during the month leading up to the accident. He left the airplane with a maintenance facility at San Luis Obispo Airport about 1 week prior, where a series of troubleshooting steps were performed. Work orders indicated that the engine was, "stuttering at 2,000 rpm." Maintenance personnel were unable to resolve the discrepancy, and the pilot requested that they discontinue the work. The airplane remained on the ramp, and was not flown again until the day of the accident. Another mechanic at a maintenance facility located at Palo Alto Airport reported that the airplane was brought to him about 2 weeks prior, and that he had attempted to diagnose the same problem. He briefed the pilot on the most likely cause, and was subsequently approached again by the pilot, who agreed to fly the airplane back to his facility on the day of the accident for further diagnostic evaluation.

WRECKAGE AND IMPACT INFORMATION

The main wreckage came to rest adjacent to a cement-block building in a business park, 1 mile beyond, and directly in line with, the departure end of runway 29. The initial point of impact was characterized by damage to a series of three power distribution lines located on the border of the street, which separated the building from a strawberry field. Two of the lines had become separated from their insulator supports on top of the 35-foot-tall wooden power pole. Two pine trees adjacent to the distribution lines were topped at the 35-foot level. A second tree, 50 feet to the northwest, exhibited a 40-feet-wide swath of cut branches at an angle 45 degrees relative to the ground. The debris field, consisting of tree branches and limbs, continued another 25 feet to the building. The building's east-facing wall was about 30 feet tall, and constructed of cement blocks. The right wing was located on the roof of the building, just above a series of diagonal white, blue, and black paint transfer marks on the face of the wall. Additionally, the debris field, consisting of the rear engine's turbocharger inlet wheel and shroud, as well as cowling fragments, continued to the main wreckage, which had come to rest impinged against the front of a delivery truck. The entire cabin area was consumed by fire, and the odor of fuel was present at the site.

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