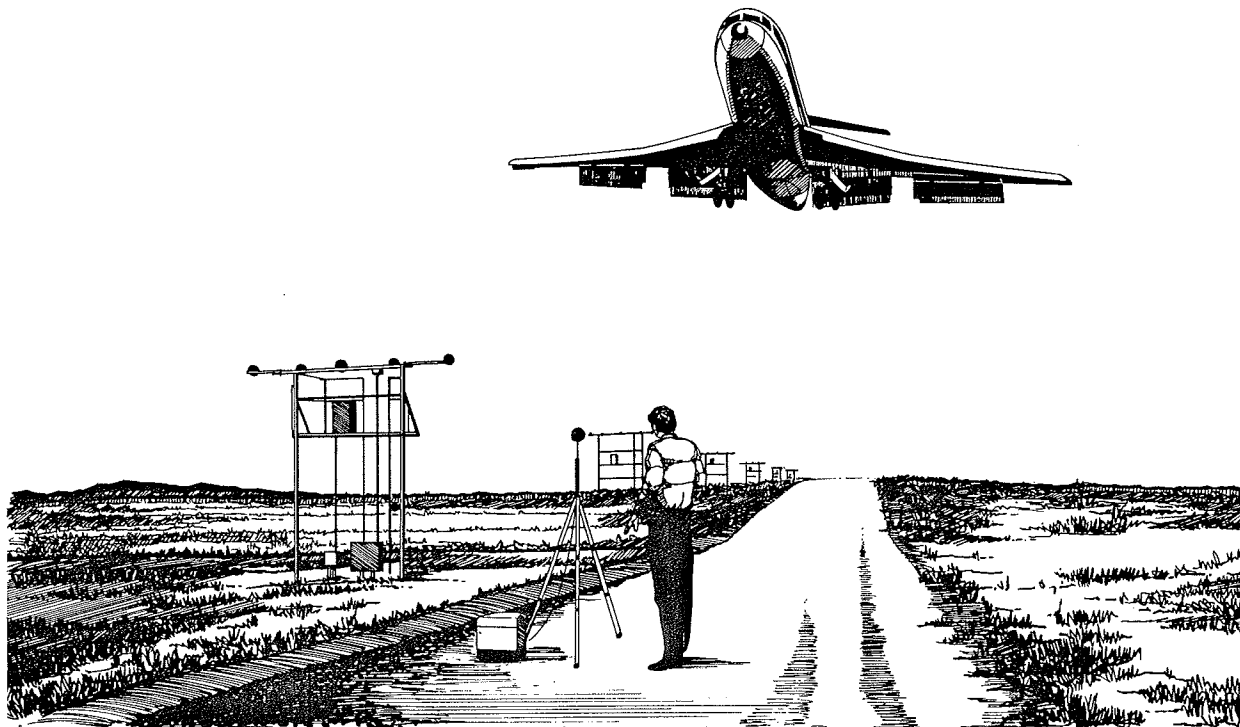


**Part One**  
**NOISE EXPOSURE MAPS**

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## Part One NOISE EXPOSURE MAPS

The Noise Exposure Maps and required documentation constitute the first of two parts required for a complete Noise Compatibility Study under F.A.R. Part 150. In its simplest form, the Noise Exposure Maps section is a documentation of the present levels of airport noise impacts and the levels expected to prevail in five years under present operational policies and procedures. The Noise Exposure Maps must contain sufficiently detailed information so that reviewers unfamiliar with local conditions and the local public unfamiliar with the technical aspects of aviation noise can fully understand the findings.

The following items, cited in the FAA's Advisory Circular 150/5020-1 checklist, are required for Noise Exposure Maps documentation:

- Base Maps - with land uses, airport boundaries, runway locations and alignments, and flight tracks.
- Ldn Noise Contours - for Ldn 65, 70, and 75, with estimates of population in each contour, and depicted on a detailed land use background.
- Descriptions of agencies having jurisdiction in the Ldn 65 contour with a brief analysis of available land use controls.
- Noncompatible land uses in the Ldn 65 contour, with locations of noise-sensitive public buildings.
- Locations of any noise monitoring sites.
- Forecasts of aircraft operations.
- Summary of consultations with public, users, and other agencies.
- Certification by the Sponsor that maps are true and complete.

The checklist items outlined above are minimum requirements as extracted by the FAA directly from F.A.R. Part 150. Additional details which might further assist in documenting existing and five year impacts, as well as the order in which that description is provided, is left to local preferences as long as consistency with Part 150 is maintained.

The following outline summarizes the Noise Exposure Maps documentation to be included in the Sky Harbor International Airport F.A.R. Part 150 Noise Compatibility Study:

#### 1. Existing Conditions

- Map and description of airfield facilities and property.
- Historical data and description of aircraft operations.
- Description of airspace and air traffic control.
- Delineation of study area.
- Description of local political jurisdictions and responsibility.
- Description of local regulatory framework.
- Description of area socioeconomic factors.

#### 2. Forecasts

- Assessment of forecasts of annual volume and forecasts of the mix of aircraft operations.
- Validation of forecasts of the number and forecasts of the mix of based aircraft.
- Forecasts of the ratio of day and night operations by aircraft mix.

#### 3. Aviation Noise

- Explanation of noise metrics.
- Description and mapping of noise measurements.
- Detailed description of noise model input data.
- Mapping of noise contours reflecting current conditions.
- Mapping of 5-year forecast noise contours without additional noise abatement.

#### 4. Community Noise

- Mapping and description of background noise measurements.
- Mapping and description of total noise exposure.
- Evaluation of background noise levels.

#### 5. Noise Impacts

- Mapping and description of existing land use pattern.
- Identification of land use growth trends.
- Determination of potential growth risk.
- Quantification of present and potential aviation noise impacts on residential population.
- Quantification and mapping of present and potential impacts on noise-sensitive land uses.

The Noise Exposure Map documentation will be produced during the course of the study and, at the appropriate time, assembled and presented to the FAA as part of the F.A.R. Part 150 program.

## **CHECKLIST FOR NOISE EXPOSURE MAPS**

The Noise Exposure Maps discussed in this section are identified in this checklist and their location in this document are referenced.

### **Checklist Item 1. - Noise Exposure Maps (NEMs) Submittal**

#### **Checklist Item 1.a. - Sponsor Submitted NEMs**

<Part 150 Reference - 150.21(a),(c)>

The airport sponsor is submitting five or more copies of the NEM documents and one copy of all written comments to the Regional Director of the Western Region of the Federal Aviation Administration.

#### **Checklist Item 1.b. - Certification by Sponsor that NEMs, description of consultation and opportunity for public comment are true and complete.**

<Part 150 Reference - 150.21(e)>

The airport operator's certification as to the authenticity and completeness of the Noise Exposure Maps, description of consultation and opportunity for public comment are true and complete is included on the page following this checklist for certification of the entire document, and on the four following Exhibits for certification of each Noise Exposure Map.

#### **Checklist Item 1.c. - Prior study exemption**

<Part 150 Reference - A150.101(f)>

<Technical Report Reference - Not applicable>

### **Checklist Item 2. - Noise Exposure Maps**

#### **Checklist Item 2.a. - INM, or other FAA approved Methodology**

<Part 150 Reference - A150.103(a)>

<Technical Report Reference - Chapter 2, pages 2-1 to 2-4>

The Integrated Noise Model, Version 3.8 was used to calculate noise exposure levels on or around Phoenix Sky Harbor International Airport for both existing (1987) and future (1992) conditions. All modeled aircraft other than the Boeing 737-300 and the BAe 146 were drawn directly from the INM's data base. These two aircraft were not included in the Version 3.8 data base and were defined based on preliminary data of the Version 3.9 data base.

#### **Checklist Item 2.a.(1) - Current year (1987) Noise Exposure Map**

<Part 150 Reference - 150.21(a)>

The 1987 Noise Exposure Map is presented immediately following the Sponsor's certification at the end of this checklist.

#### **Checklist Item 2.a.(2) - Fifth year after year of submittal (1992) Noise Exposure Map**

<Part 150 Reference - 150.21(a)(1)>

The 1992 Noise Exposure Map is presented immediately following the 1987 Noise Exposure Map referenced in the previous Checklist item.

#### **Checklist Item 2.b. - Data for contour generation**

<Part 150 Reference - A150.103(b)>

<Technical Report Reference -

Chapters One and Two, and Appendix A>

#### **Checklist Item 2.b.(1) - Map Scale 1 inch - 8,000 feet**

<Part 150 Reference - A150.103(b)(1)>

The base maps for the Noise Exposure Maps in this document are provided at a scale of 1 inch = 6,000 feet.

#### **Checklist Item 2.b.(1)(a) - Runway Lengths**

<Part 150 Reference - A150.103(b)(1)>

Runway 8R-26L at Phoenix Sky Harbor Airport is 10,310 feet in length and 150 feet wide. Runway 8L-26R is 11,001 feet long by 150 feet wide.

**Checklist Item 2.b.(1)(b) - Runway Alignment**

<Part 150 Reference - A150.103(b)(1)>

Both runways at Phoenix Sky Harbor International are oriented 08-26.

**Checklist Item 2.b.(1)(c) - Landing Thresholds**

<Part 150 Reference - A150.103(b)(1)>

None of the runways at Phoenix Sky Harbor International Airport have displaced landing thresholds.

**Checklist Item 2.b.(1)(d) - Takeoff Points**

<Part 150 Reference - A150.103(b)(1)>

<Technical Report Reference - Chapter 1, page 1-2, 1-3 and Exhibit 1B>

**Checklist Item 2.b.(1)(e) - Airport Boundary**

<Part 150 Reference - A150.103(b)(1)>

Airport boundaries indicated on the Noise Exposure Maps are drawn from the current Airport Layout Plan and are appropriate for the time period associated with each map.

**Checklist Item 2.b.(1)(f) - Flight Tracks**

<Part 150 Reference - A150.103(b)(1)>

<Technical Report Reference - Chapter 2, pages 2-27 to 2-28, and Exhibits 2E and 2F>

During the planning process, a technician was stationed at Phoenix Terminal Radar Approach Control (TRACON) at the airport during a two-week period. Among other things, this individual was responsible for recording data relative to aircraft type, runway used, and type of operations, in addition to tracing the actual route flown by the aircraft. In conjunction with interviews with ATCT and TRACON personnel, these flight

tracks were analyzed and consolidated to form arrival and departure tracks describing the operational characteristics of the airport. These tracks are used in the Noise Exposure Map of existing conditions. The Noise Exposure Map for future conditions also indicates these flight tracks. In order to avoid cluttering the maps, only these consolidated flight tracks are shown on the Noise Exposure Maps. Greater detail indicating the range of observed flight tracks are indicated on Exhibits 2E and 2F.

**Checklist Item 2.b.(2)- Airport activity statistics, including the number of aircraft, aircraft types, flight track use by aircraft type**

<Part 150 Reference - A150.103(b)(2)>

<Technical Report Reference - Chapter 2, pages 2-12 to 2-27 and pages 2-31 to 2-32, Appendix A, INM Noise Contour Data>

**Checklist Item 2.b.(3)- For landings: glideslope and intercept altitudes and engine power levels**

<Part 150 Reference - A150.103(b)(3)>

<Technical Report Reference - Appendix A, INM Noise Contour Data>

**Checklist Item 2.b.(4)- For takeoffs: flight profile, engine power levels, takeoff weight or stage length**

<Part 150 Reference - A150.103(b)(4)>

<Technical Report Reference - Chapter 2, pages 2-28 to 2-30, Appendix A, INM Noise Contour Data>

**Checklist Item 2.b.(4)(c) - Noise abatement procedures**

<Part 150 Reference - A150.103(b)(4)>

<Technical Report Reference - Chapter 1, pages 1-12 to 1-14>

**Checklist Item 2.b.(5) - Topographic and airspace restrictions**

<Part 150 Reference - A150.103(b)(5)>

<Technical Report Reference - Chapter 1, pages 1-14 to 1-16>

**Checklist Item 2.b.(6) - Government data on aircraft characteristics**  
<Part 150 Reference - A150.103(b)(6)>

The aircraft characteristics are included in the INM Version 3.8 computer data.

**Checklist Item 2.b.(7) - Airport elevation and average temperature**  
<Part 150 Reference - A150.103(b)(7)>  
<Technical Report Reference - Appendix A, INM Noise Contour Data>

Phoenix Sky Harbor International Airport field elevation is 1,133 feet mean sea level and average annual temperature is 71 degrees fahrenheit.

**Checklist Item 3. - Current Conditions**

**Checklist Item 3.a. - Current Maps**  
<Part 150 Reference - 150.21>

The Noise Exposure Map for current conditions follows this checklist.

**Checklist Item 3.b.(1) - Maps must identify runway locations**  
<Part 150 Reference - A150.101 (e)(1)>  
<Technical Report Reference - 1987 Noise Exposure Map; Chapter 1, pages 1-2 to 1-3 and Exhibit 1B>

**Checklist Item 3.b.(2) - Maps must identify flight tracks**  
<Part 150 Reference - A150.101 (e)(2)>  
<Technical Report Reference - 1987 Noise Exposure Map; Chapter 2, pages 2-27 to 2-28 and Exhibits 2E and 2F>

**Checklist Item 3.b.(3) - Maps must identify noise exposure contours of Ldn 65, 70, and 75 dB(YDNL)**  
<Part 150 Reference - A150.101 (e)(3)>  
<Technical Report Reference - 1987 Noise Exposure Map; Chapter 2, page 2-32 to 2-34, Exhibit 2J>

The noise contours depicted on the noise exposure maps are calculated in the Day

Night Sound Level (Ldn) Noise Metric. A discussion of Ldn is contained in Chapter 2, page 2-2 to 2-5.

**Checklist Item 3.b.(4) - Maps must indicate the airport boundaries**  
<Part 150 Reference - A150.101 (e)(4)>  
<Technical Report Reference - 1987 Noise Exposure Map; Chapter 1, page 1-2, Exhibit 1B>

**Checklist Item 3.b.(5) - Maps must indicate noncompatible land uses with the Ldn 65**  
<Part 150 Reference - A150.101 (e)(5) and Table 1>  
<Technical Report Reference - 1987 Noise Exposure Map; Chapter 4, page 4-7 to 4-13, Exhibits 4B(East), 4B(West), 4C(East) and 4C(West)>

**Checklist Item 3.b.(6) - Maps must indicate the location of noise sensitive public buildings and properties on or eligible for inclusion in the National Register of Historic Places**  
<Part 150 Reference - A150.101 (e)(6)>  
<Technical Report Reference - 1987 Noise Exposure Map; Chapter 4, page 4-10 to 4-13, Exhibits 4C(East) and 4C(West)>

**Checklist Item 3.b.(7) - Maps must indicate the location of noise monitoring sites if used in the construction of the contours**  
<Part 150 Reference - A150.101 (e)(7)>  
<Technical Report Reference - 1987 Noise Exposure Map; Chapter 2, pages 2-6 to 2-9, Exhibit 2D>

**Checklist Item 3.b.(8) - Maps must indicate the estimated population inside the Ldn contours 65, 70, and 75 dB (YDNL)**  
<Part 150 Reference - A150.101 (e)(8)>  
<Technical Report Reference - 1987 Noise Exposure Map; Chapter 4, page 4-6 to 4-10, Exhibits 4B(East) and 4B(West)>

**Checklist Item 3.b.(9) - Maps must indicate contours on land use map (scale not less than 1 inch equals 8,000 feet)**

<Part 150 Reference - A150.103 (b)(1) and A150.101(e)(9)>

<Technical Report Reference - 1987 Noise Exposure Map; Chapter 4, page 4-7 to 4-13, Exhibits 4B(East), 4B(West), 4C(East) and 4C(West)>

The scale of the Noise Exposure Map is 1"=4,000', Exhibit maps are 1"=4,000' or 1"=6,000'.

**Checklist Item 4 - Future Conditions**

**Checklist Item 4.a. - Future map for fifth calendar year after current map (1992)**

<Part 150 Reference - 150.21(a)(1)>

1992 Noise Exposure Map follows the 1987 map at the end of this checklist section.

**Checklist Item 4.b.(1) - Future map based upon reasonable assumptions for future type and frequency of aircraft operations**

<Part 150 Reference - 150.21(a)(1)>

<Technical Report Reference - Chapter 2, pages 2-13 to 2-25; Appendix A, INM Noise Contour Data>

**Checklist Item 4.b.(2) - Future map based upon reasonable assumptions for future nighttime operations**

<Part 150 Reference - 150.21(a)(1)>

<Technical Report Reference - Chapter 1, page 1-9 to 1-12; Chapter 2, page 2-27 to 2-27>

**Checklist Item 4.b.(3) - Future map based upon reasonable assumptions of aircraft flight patterns**

<Part 150 Reference - 150.21(a)(1)>

<Technical Report Reference - Chapter 2, page 2-27 to 2-28, Exhibits 4E and 4F>

**Checklist Item 4.b.(4) - Future map based upon reasonable assumptions of future airport development**

<Part 150 Reference - 150.21(a)(1)>

<Technical Report Reference - Chapter 1, page 1-2 to 1-7, Exhibit 1B>

Although a parallel basic transport runway is proposed for development at Phoenix Sky Harbor International Airport south of existing Runway 8R-26L, construction will not take place until after 1992. The 1992 Noise Exposure Map does not incorporate this proposed facility.

**Checklist Item 4.b.(5) - Future map based upon reasonable assumptions of future land use development or changes**

<Part 150 Reference - 150.21(a)(1)>

<Technical Report Reference - Chapter 4, page 4-14 to 4-19, Exhibits 4D(East) and 4D(West)>

**Checklist Item 4.b.(6) - Future map based upon forecast demographic changes**

<Part 150 Reference - 150.21(a)(1)>

<Technical Report Reference - Chapter 4, page 4-14 to 4-19, Exhibits 4D(East and 4D(West)>

The methodology applied to determine the number of people residing within the 65, 70, and 75 Ldn contours under existing conditions was the same methodology used to determine the population impacts which occur from future noise (Chapter 4, pages 4-14 to 4-19).

**Checklist Item 4.c. - Nature and extent forecast operations will affect land use compatibility**

<Part 150 Reference - 150.21(a)(2)>

<Technical Report Reference - Chapter 4, page 4-16 to 4-19, Exhibits 4D(East) and 4D(West)>

**Checklist Item 5. - Public Involvement**

**Checklist Item 5.a. - Identify each public agency and planning agency wholly or partially within the Ldn 65 contour**

<Part 150 Reference - A150-105, 150.21b and A150.105(a)>

<Technical Report Reference - Chapter 1, page 1-17 to 1-22, Exhibit 1G>

**Checklist Item 5.b. - Document geographic area of jurisdiction for those agencies in checklist item 5a**

<Part 150 Reference - A150.105(b)>

<Technical Report Reference - Chapter 1, page 1-17 to 1-22, Exhibit 1G>

**Checklist Item 5.c. - Description of the consultation process**

<Part 150 Reference - A150.21(b)>

<Technical Report Reference - Appendix B, Coordination, Consultations and Public Involvement>

**Checklist Item 5.d. - Description of results of consultation**

<Part 150 Reference - A150.21(b)>

<Technical Report Reference - Appendix B, Coordination, Consultations and Public Involvement>

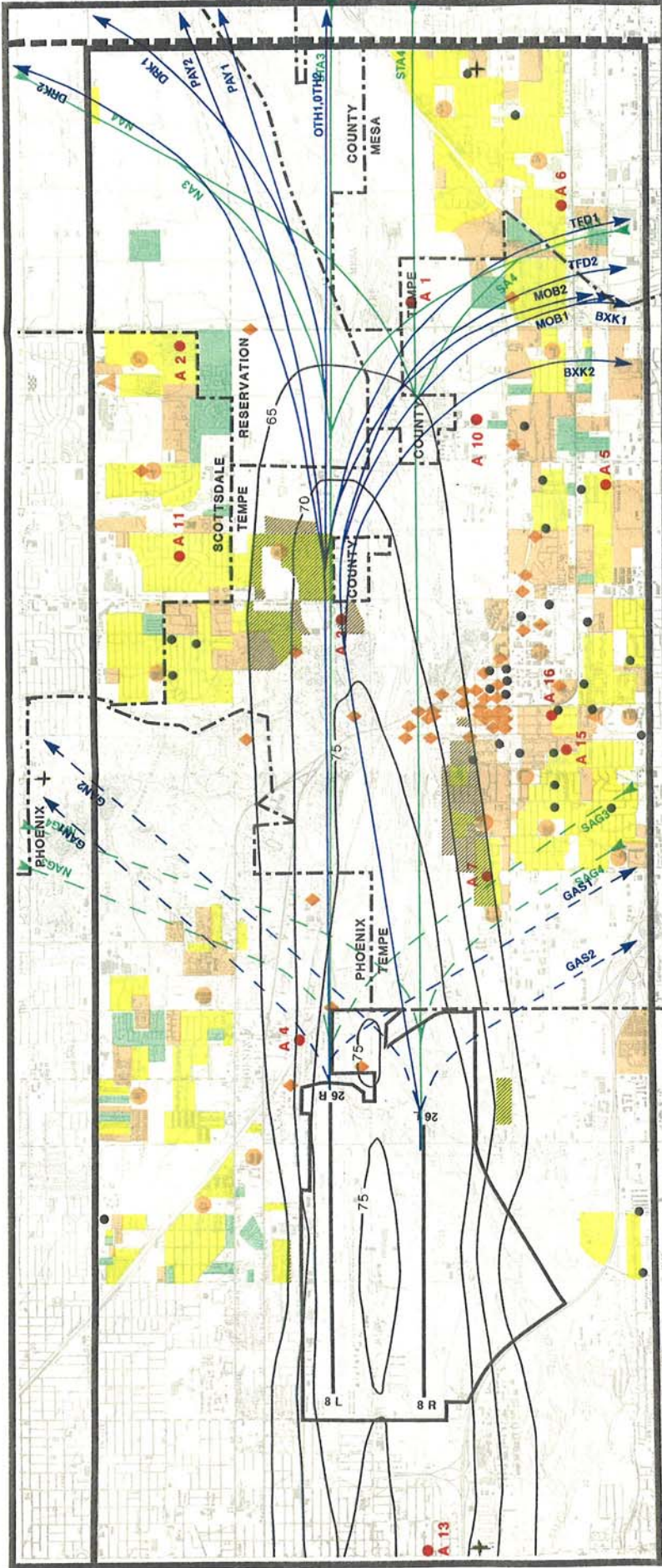
**Checklist Item 5.e. - Copy of all written comments**

<Part 150 Reference - A150.21(b)>

A copy of all written comments and letters received relative to the Noise Exposure Maps is on file with the Regional Director of the Western Region of the Federal Aviation Administration.

NOTE: The noise contours on the 1987 Noise Exposure Map were calculated on the forecast of 1987 total annual operations. Based on 1987 actual operational levels to date, the contours are believed to be highly representative of actual 1987 unabated noise conditions.





**LEGEND**

- Generalized Study Area
- Detailed Study Area
- 65 — 1987 Unabated Aircraft Noise Contours (Ldn)
- 70 — Existing Single-Family Residences
- 75 — Existing Mobile Homes
- 80 — Existing Multiple-Family Residences
- Noise Measurement Sites
- Non Compatible Land Use
- ▲ Consolidated Jet Arrival Tracks
- ▲ Consolidated Prop G.A. Arrival Tracks
- ▲ Consolidated Jet Departure Tracks
- ▲ Consolidated Prop G.A. Departure Tracks
- Church
- Historic Structure
- School
- Hospital

**SPONSOR'S CERTIFICATION**

The Noise Exposure Maps and accompanying documentation for the noise exposure maps for Phoenix Sky Harbor International Airport, submitted in accordance with F.A.R. 150 with the best available information, are hereby certified as true and complete to the best of my knowledge and belief.

By: \_\_\_\_\_ Date of Signature: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 CITY OF PHOENIX, AZ.

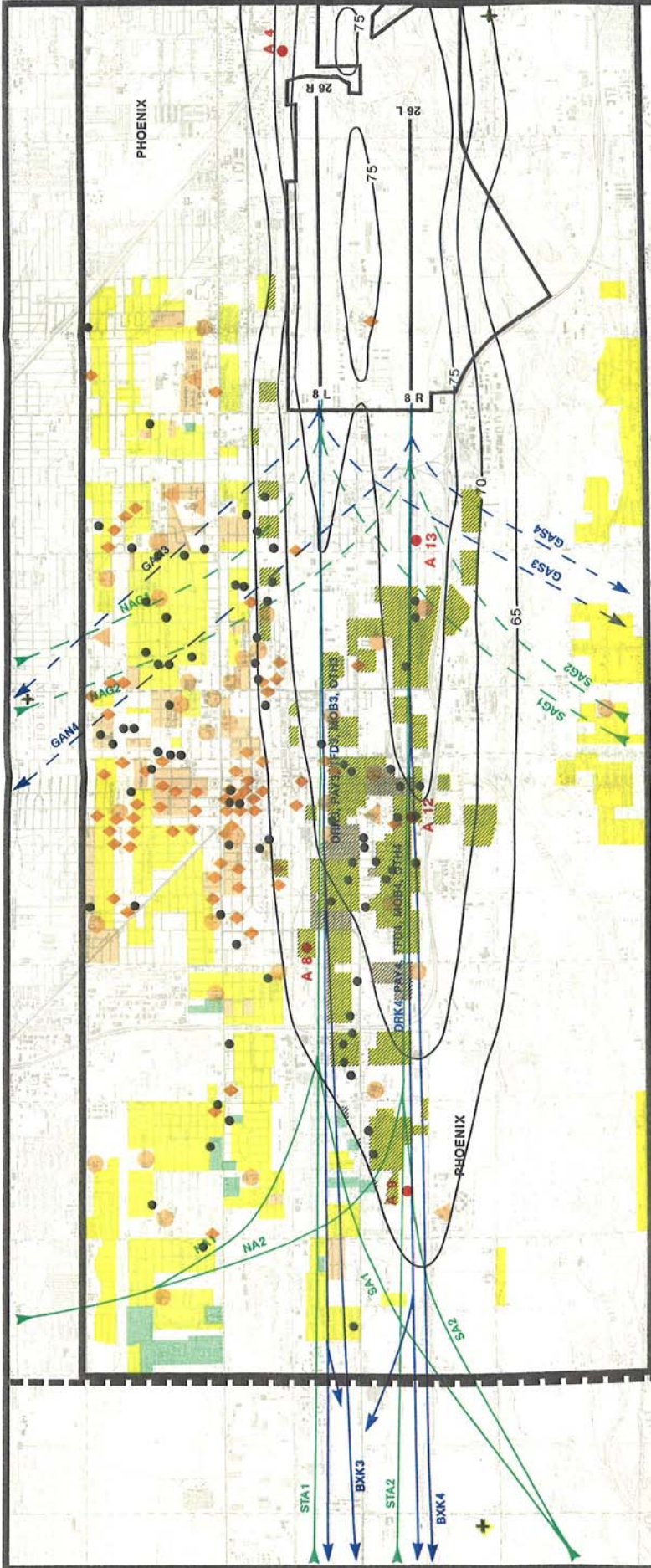


**Estimated 1987 Population Within:**

East	Total
6,550	15,116
65-70 Ldn	2,230
70-75 Ldn	0
75+ Ldn	4,232
Total	8,780
	30,993



Noise Exposure Map  
 1987 UNABATED CONDITIONS  
 (EAST)



- LEGEND**
- Generalized Study Area
  - ▬ Detailed Study Area
  - 65— 1987 Unabated Aircraft Noise Contours (Ldn)
  - Existing Single-Family Residences
  - Existing Mobile Homes
  - Existing Multiple-Family Residences
  - Noise Measurement Sites
  - ▨ Non Compatible Land Use
  - Consolidated Jet Arrival Tracks
  - Consolidated Prop G.A. Arrival Tracks
  - Consolidated Jet Departure Tracks
  - Consolidated Prop G.A. Departure Tracks
  - Church
  - Historic Structure
  - School
  - Hospital

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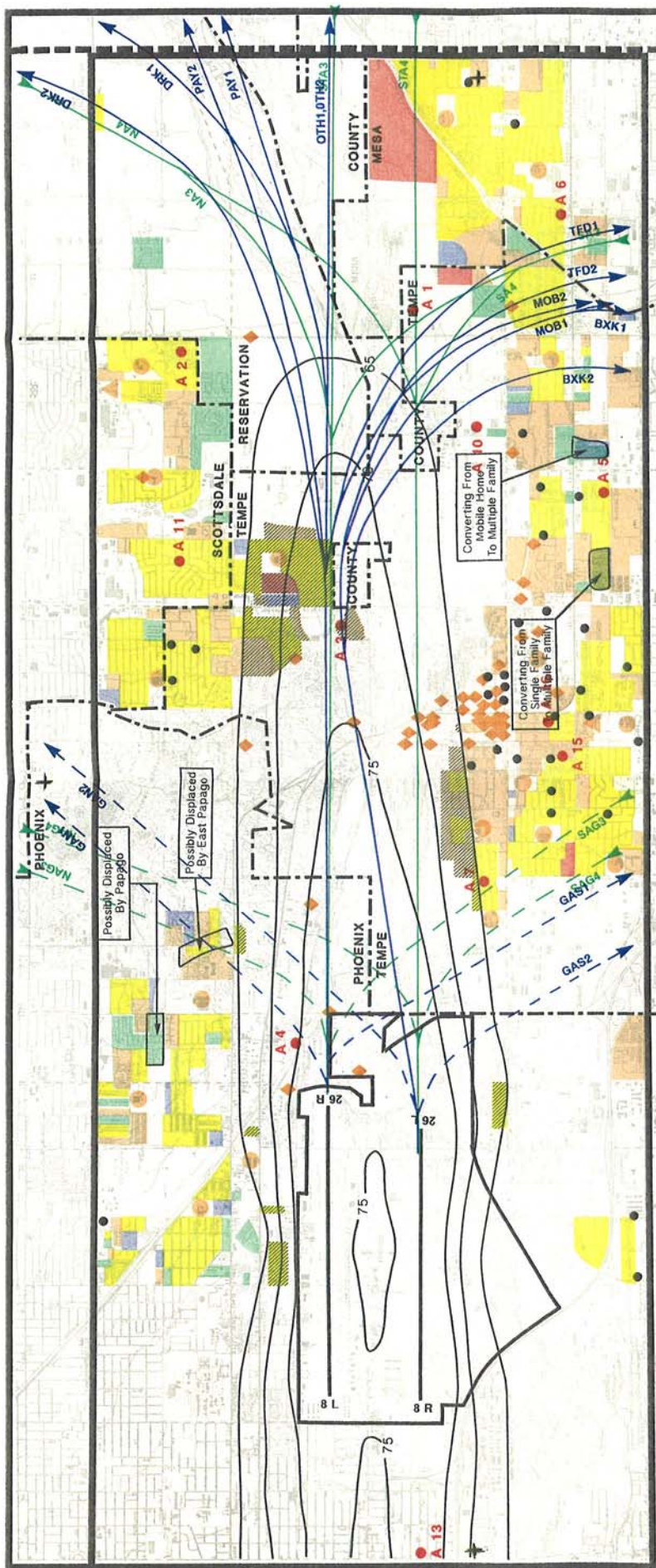
Date of Signature \_\_\_\_\_  
 By: \_\_\_\_\_  
 Title: CITY OF PHOENIX, AZ.

Estimated 1987 Population Within:

	West	Total
65-70 Ldn	8,566	15,116
70-75 Ldn	9,415	11,645
75+ Ldn	4,232	4,232
Total	22,213	30,993



Noise Exposure Map  
 1987 UNABATED CONDITIONS  
 (WEST)



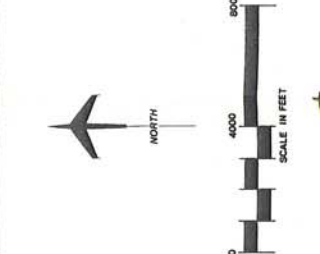
**SPONSOR'S CERTIFICATION**

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Date of Signature: \_\_\_\_\_  
 By: \_\_\_\_\_  
 Title: CITY OF PHOENIX, AZ.

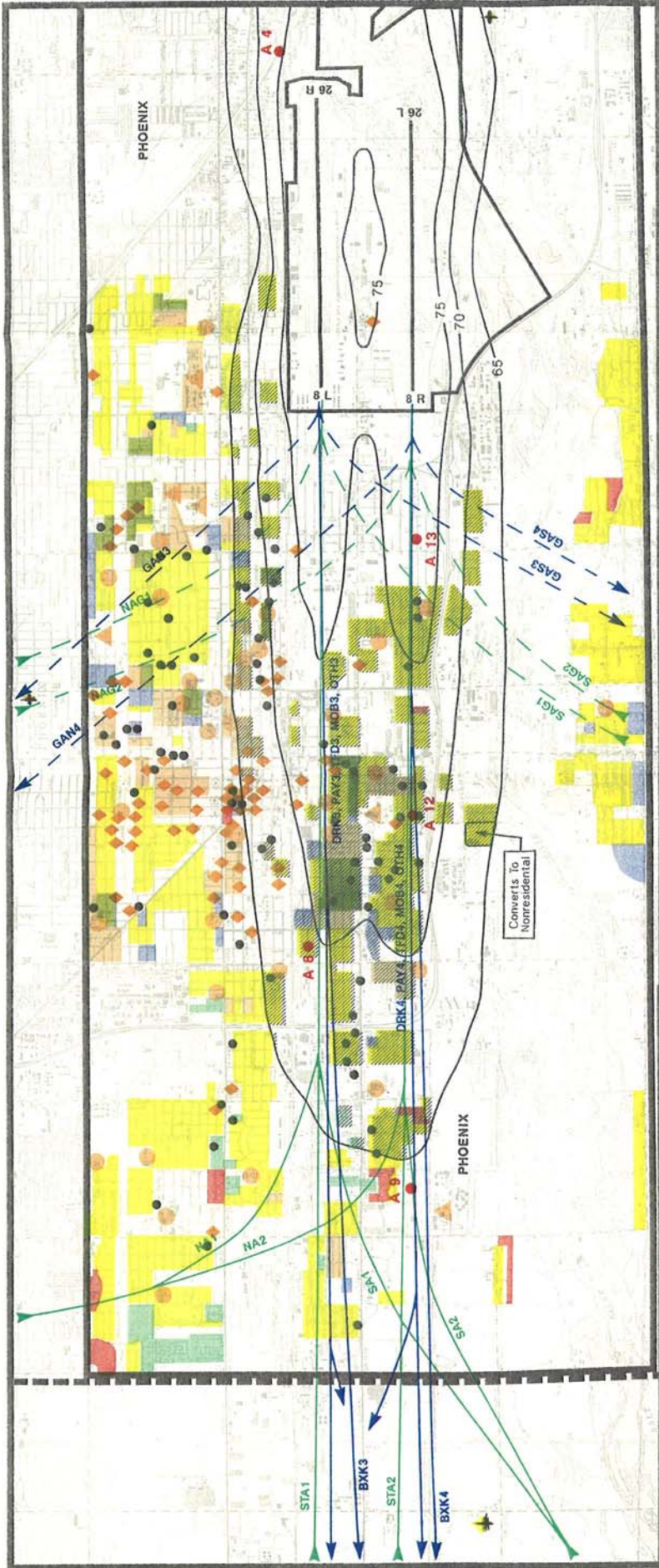
**LEGEND**

- Generalized Study Area
- Detailed Study Area
- Converts From Residential (Existing) to Nonresidential (Future)
- Existing Single-Family Residences
- Existing Mobile Homes
- Future Single-Family Residences
- Future Multiple-Family Residences
- 1992 Unabated Aircraft Noise Contours (Ldn)
- Noise Measurement Sites
- Non Compatible Land Use
- Consolidated Jet Arrival Tracks
- Consolidated Prop G.A. Arrival Tracks
- Consolidated Jet Departure Tracks
- Consolidated Prop G.A. Departure Tracks
- Church
- Historic Structure
- School
- Hospital



Estimated 1992 Population Within:

	East	Total
65-70 Ldn	6,083	16,902
70-75 Ldn	3,150	16,517
75+ Ldn	0	1,668
Total	9,233	34,087



**SPONSOR'S CERTIFICATION**

The Noise Exposure Maps and accompanying documentation for the noise exposure maps for Phoenix Sky Harbor International Airport, submitted in accordance with F.A.R. 150 with the best available information, are hereby certified as true and complete to the best of my knowledge and belief.

Date of Signature \_\_\_\_\_ By: \_\_\_\_\_  
 Title: CITY OF PHOENIX, AZ.

**LEGEND**

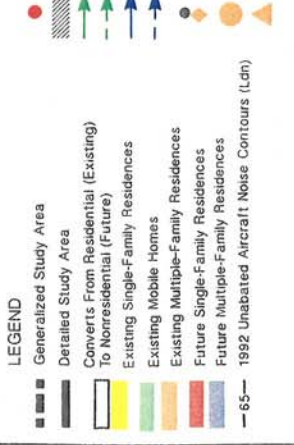
- Generalized Study Area
- Detailed Study Area
- Converts From Residential (Existing) To Nonresidential (Future)
- Existing Single-Family Residences
- Existing Mobile Homes
- Existing Multiple-Family Residences
- Future Single-Family Residences
- Future Multiple-Family Residences
- 1992 Unabated Aircraft Noise Contours (Ldn)

**LEGEND**

- Noise Measurement Sites
- Non Compatible Land Use
- Consolidated Jet Arrival Tracks
- Consolidated Prop G.A. Arrival Tracks
- Consolidated Jet Departure Tracks
- Consolidated Prop G.A. Departure Tracks
- Church
- Historic Structure
- School
- Hospital

**Estimated 1992 Population Within:**

	West	Total
65-70 Ldn	10,819	16,902
70-75 Ldn	13,367	16,517
75+ Ldn	1,668	1,668
<b>Total</b>	<b>24,854</b>	<b>24,854</b>



SPONSOR'S CERTIFICATION

The Noise Exposure Maps and accompanying documentation for the noise exposure maps for Phoenix Sky Harbor International Airport, submitted in accordance with F.A.R. 150 with the best available information, are hereby certified as true and complete to the best of my knowledge and belief.

Date of  
Signature \_\_\_\_\_

By: \_\_\_\_\_  
Title: \_\_\_\_\_  
CITY OF PHOENIX, AZ.