

Memphis International Airport

Part 150 Study Update Noise Exposure Maps (NEMs) and Supporting Documentation

Prepared for:



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**Accepted by FAA
on September 1, 2015**

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EXECUTIVE SUMMARY

ES.1 Aircraft Noise and the Part 150 Process

Aircraft noise and the subsequent impact on people has been an issue of concern in the United States for some time. Congress has incrementally addressed this concern over the years by enacting the *Noise Control Act of 1972*, the *Aviation Safety and Noise Abatement Act of 1979 (ASNA)*, and the *Airport Noise and Capacity Act of 1990 (ANCA)*. These public laws have primarily been codified in United States Code, Title 49 (Transportation), Subtitle VII (Aviation Programs):

- Part A (Air Commerce and Safety), Subpart III (Safety), Chapter 447 (Safety Regulation), Section 44715 (Controlling aircraft noise and sonic boom), and
- Part B (Airport Development and Noise), Chapter 475 (Noise), Subchapter I (Noise Abatement) and Subchapter II (National Aviation Noise Policy).

The Federal Aviation Administration (FAA) is the primary agency responsible for providing direction and guidance nationwide in the assessment of noise impacts associated with civilian airports. As directed by Congress, through the Secretary of Transportation, FAA establishes and amends their regulations to implement public laws and statutes.

The FAA regulations that govern today's aircraft are found in Title 14 of the Code of Federal Regulations (14 CFR). There are 68 regulations organized into three volumes under Title 14, Aeronautics and Space. A fourth volume deals with the Department of Transportation, and the fifth volume is focused on NASA.

Since 1958, these rules have typically been referred to as "FARs," short for Federal Aviation Regulations. However, another set of regulations (Title 48) is titled "Federal Acquisitions Regulations," and this has led to confusion with the use of the acronym "FAR." Therefore, the FAA began to refer to specific regulations by the term "14 CFR part XX."

The airport noise compatibility planning process was established by the FAA on February 28, 1981, as a new part to the Federal Aviation Regulations and is listed under 14 CFR as part 150, commonly referred to as "Part 150." The most recent revision of Part 150 was accomplished by Amendment 150-4 and it became effective on September 24, 2004. Part 150 specifies the methodology and procedures governing the development and implementation of Noise Exposure Maps (NEMs) and Noise Compatibility Programs (NCPs).

Through the airport noise and land use compatibility planning process, airport operators voluntarily prepare airport NEMs and NCPs and submit these materials to the FAA for acceptance and/or approval. The NEM is a graphic depiction of the noise exposure around an airport in existing and future operational conditions. NEMs also depict the noncompatible land uses within the noise contours. Details of the data and analysis used to develop the NEMs at Memphis International Airport (MEM) are included in the text of this document. This report contains the NEMs for MEM only. If the NEMs indicate the factors leading to the update of the NEMs result in a "substantial new noncompatible use as defined in §150.21" a revised NCP will be submitted separately, at a later date.

Under the Part 150 process, FAA will indicate, upon receipt, whether the NEMs are in compliance with the requirements of the program. A notice of compliance is published in the Federal Register if they are found to be in compliance.

Title 14 CFR part 150, §150.21(d) requires airport operators to update their NEMs when a change in Day Night Level (DNL) of 1.5 decibels (dB) has occurred over any noise-sensitive land use. A change may consist of:

1. increases in non-compatible land uses inside the noise contours and/or an increase of DNL 1.5 dB or greater over land which was formerly compatible (e.g., one that was outside the DNL 65 dB contour), but is now non-compatible (e.g., now inside the DNL 65 contour), or
2. increases over previously determined non-compatible land uses, or
3. (decreases of non-compatible land uses and/or a decrease of DNL 1.5 dB or greater over a former noncompatible land use (e.g., one that was inside the DNL 65 dB contour) that becomes compatible (e.g., now outside the DNL 65 dB contour) as a result of the noise reduction.

ES.2 Noise Prediction Methodology

The evaluation of the MEM noise environment was conducted using the methodologies developed by the FAA and published in Title 14 CFR part 150 and Advisory Circular (AC) 150/5020-1. Both publications require that aircraft noise levels in the vicinity of airports be determined on an annual average-daily basis utilizing the DNL metric.

The FAA developed the computer-based program called the Integrated Noise Model (INM) as the primary tool for analyzing and evaluating noise impacts from aircraft operations at airports. Its use is prescribed for many FAA-sponsored airport projects requiring environmental evaluation. Version 7.0d was the version used for this document.

Information required to run the model includes:

- Airport Layout,
- The number of average daytime operations (7 a.m. to 9:59 p.m.),
- The number of average nighttime operations (10 p.m. to 6:59 a.m.),
- Aircraft fleet mix,
- Runway configuration and utilization,
- Primary departure and arrival flight tracks, and
- Aircraft flight profiles.

The INM incorporates this information along with its extensive internal database of aircraft noise and performance information, to calculate the DNL at many points on the ground around an airport. From a grid of points, the INM contouring program draws contours of equal DNL to be superimposed onto land use maps. For this document, DNL contours of 65, 70, and 75 dB were developed. The INM can calculate sound levels at any specified point so that noise exposure at representative locations around an airport can be obtained.

To identify and quantify noise-sensitive land uses and population located within the DNL 65+ dB noise contours for the 2013 Existing Condition and 2020 Future Condition, a Geographical Information System (GIS) was developed for this study. The GIS allows the user to identify various polygons and retrieve their descriptive information, which is contained in the database. The data are retrieved in the form of a map, and various data reports can be specified and retrieved. Land use and zoning data as well as individual parcel identification data were obtained for the area surrounding MEM.

The Enterprise GIS Group for the City of Memphis provided data for Memphis and Shelby County. DeSoto County Geographic Information Systems Department provided data for Desoto County, Mississippi. Additional information was obtained through study research and field investigation. Information within the database includes items such as type of land use and zoning, number of housing units, and location of historical and noise-sensitive facilities.

ES.3 Memphis International Airport Part 150 Study

The last complete title 14 CFR part 150 NEM and NCP for MEM was approved by the FAA on February 20, 1988. Updated NEMs were accepted by the FAA on December 4, 1997 (representing a 1997 existing condition and a 2002 future condition), and July 29, 2005 (representing a 2004 existing condition and 2009 future condition). Several changes in the aircraft operations at MEM have occurred since the NEMs were accepted in 2005, including the introduction of numerous NextGen (Next Generation Air Transportation System) operational procedures.

Title 14 CFR part 150 §150.21 requires the submission of two maps, an existing condition map and a future condition map. In accordance with §150.21, the existing condition map must be based on current data as of the year of submission to the FAA, or must be representative of existing conditions. The Existing Condition NEM for this study is based on data for the average-annual day during the 12-month period July 1, 2012 through June 30, 2013, and is identified as the 2013 Existing Condition NEM.

In accordance with title 14 CFR part 150 §150.21, the future condition map must be based on forecast operations at the airport for a forecast period that is at least five years in the future, beginning after the year of submission. The Future Condition NEM for this study is based on forecast operations at the airport for calendar year 2020, and is identified as the 2020 Future Condition NEM.

The information presented is a result of coordination with Memphis-Shelby County Airport Authority Staff, the FAA Memphis Airports District Office (ADO), Airport Traffic Control Tower (ATCT), FedEx, Tennessee Air National Guard (TN ANG) 164th Airlift Wing, and Tennessee Tech Center at Memphis. Also, previous studies conducted at MEM were consulted and incorporated into the NEM update as appropriate.

This NEM Update for MEM serves to assess the current and future aircraft noise environments and identify compatible and noncompatible land uses within the noise contours. This report contains the NEMs and supporting documentation for MEM. The NEMs contained in this report represents a revision to the MEM NEMs that were determined by the FAA to be in compliance with title 14 CFR part 150 on July 29, 2005.

These **Noise Exposure Maps and Supporting Documentation** will be submitted to FAA for formal review and compliance determination. Under the title 14 CFR part 150 NEM update process the FAA will indicate, upon receipt of the **Noise Exposure Maps and Supporting Documentation**, whether the NEMs are in compliance with the requirements of the program. If they are in compliance, a notice will be published in the Federal Register by the FAA.

The **Noise Exposure Maps and Supporting Documentation** will be presented in six sections and eight appendices.

- Section 1.0 Introduction
- Section 2.0 Surrounding Jurisdictions and Land Use
- Section 3.0 Airport and Aircraft Activity
- Section 4.0 2013 Existing Condition
- Section 5.0 2020 Future Condition
- Section 6.0 Consultation and Public Participation
- Appendix A Documents Relating to Alvarado v. MSCAA
- Appendix B Aircraft Operational Data for the INM Input
- Appendix C Noise Measurement Technical Memorandum
- Appendix D Documentation of Consultation
- Appendix E Documentation of Public Participation
- Appendix F NEM Submittal and Acceptance Documentation
- Appendix G Newspaper Advertisement - Public Notice of NEMs
- Appendix H Noise Exposure Maps and Flight Track Maps at a scale of 1"=2000'

ES.4 Land Use Compatibility Guidelines

This NEM update will use the FAA land use compatibility guidelines to address the various determinations regarding land use compatibility in the vicinity of the airport.

A basic tenet of land use compatibility planning is that no residential development should occur in areas (cities, townships, etc.) exposed to aircraft noise levels that exceed 65 DNL. Also, it is typically recommended that airport expansion should not occur in areas where existing residential land use is exposed to aircraft noise. As discussed previously, individual jurisdictions have control over the types and amount of residential development allowed to occur by utilizing zoning and comprehensive plans. This type of land use independence can sometimes make it difficult for an airport to establish and/or maintain a compatible land use scenario with nearby communities.

Land use compatibility, which the FAA addresses through Part 150, is primarily the responsibility of local jurisdictions. The guidelines developed by FAA, and presented in **Table ES.1** contain all the various land use categories and the associated uses that are acceptable at various DNL levels.

ES.5 Noise-Sensitive Sites

The Part 150 definition of noise-sensitive public buildings includes schools, hospitals, and health care facilities. Also identified are properties on or eligible to be included in the National Register of Historic Places (NRHP). The purpose of identifying these sites is to assist in the assessment of which properties are impacted by incompatible noise levels, and adopt policies with regard to the location of future noise-sensitive land uses. In addition to residential areas, a number of land use types are considered to be noise-sensitive according to FAR Part 150 Land Use Compatibility Guidelines (see Table ES.1).

Several additional sensitive sites were identified, consisting of public and private educational facilities, as well as numerous religious facilities. This could be accounted for in part by the modified area of inclusion, which was expanded somewhat to include additional areas of concern.

The locations of various noise-sensitive sites can be identified in **Table ES.2** and located on **Figure ES.1**

ES.6 Mitigated Properties

The MSCAA's efforts to reduce noise exposure resulted in the 1987 Noise Compatibility / Property Acquisition Program. This FAA approved program was comprised of the acquisition of approximately 1,400 single-family residences located within the DNL 75 dBA noise contour. This program took over a decade to complete.

On November 13, 1989, a lawsuit was filed against the MSCAA by twenty-seven residential property owners seeking monetary damages and injunctive relief. On May 5, 1993, the Court certified the case as a class action for litigation purposes. Plaintiffs on behalf of themselves and representatives of a class of other owners with vested interests in real property in the vicinity of MEM sued the MSCAA for damages to the value of their real property interests caused by noise and other forms of pollution. A Stipulation of Settlement was entered into on July 9, 1998, by the attorneys for Alvarado vs. MSCAA, providing for final

settlement of the Class Action Lawsuit. On September 8, 1998, the Court redefined the class to include owners of improved real estates upon which there is a single-family residence, a duplex, or a condominium, within the areas identified on the Notice Map. Collectively, such owners are referred to as the Settlement Class, and their property is referred to as Eligible Property. A Fairness Hearing was held November 12-17, 1998. The court determined that a full, fair, and reasonable hearing on all matters was heard. The notice requirements were adequate, sufficient and legal. The class was competently represented and approved the class settlement.

The U.S. District Court for the Western District of Tennessee entered a final judgment on December 22, 1998, approving the settlement of the class action. Such judgment was appealed to the U.S. Court of Appeals for the Sixth Circuit. The appeals court affirmed the district court's judgment by order entered on August 15, 2000. The court issued its mandate on September 7, 2000. Subsequent to the issuance of the mandate, MSCAA administered the settlement. There were 15,149 eligible properties, of which MSCAA received 12,608 claims and made 12,441 payments to settlement class members covering 12,403 single and multi-family properties. On March 1, 2004, the court found that the MSCAA had complied with the stipulation of settlement and had discharged all obligations imposed upon it by the settlement agreement, and the case was closed. The total potential monetary benefit to the Settlement Class was estimated to be \$22 million. **Table ES.3** describes the allocation of the Settlement Funds.

The Stipulation of Settlement, Article III, Terms and Conditions of Settlement, Section 3.6, Avigation Easements, describes the manner in which Avigation Easements were obtained on Eligible Properties. An Avigation Easement was imposed on each Eligible Property in the State of Tennessee, regardless of whether the Settlement Class Member filed a settlement claim or received payment from the Settlement Funds. Settlement Class Members owning Eligible Property in the State of Mississippi were required to grant an Avigation Easement to the Airport Authority before they qualified to receive payment from the Settlement Funds. Copies of documents related to the case, including the Settlement Agreement, Avigation Easement for Tennessee and Mississippi, and the Order closing the case, are provided in **Appendix A**. The geographic area to which the Settlement applied is illustrated in **Figure ES.2**.

ES.7 2013 Existing Condition

To estimate noise levels at Memphis International Airport (MEM), computer modeling techniques were used which generated DNL (Day Night Average Sound Level) contours in increments of 65, 70, and 75 A-weighted decibels (dBA) (see Section 1.3, Methodology). The noise modeling was accomplished for the existing average daily condition for July 1, 2012 through June 30, 2013, and the resulting contours are identified as the 2013 Existing Condition. The following sections describe the methods and considerations used in compiling input data for the Integrated Noise Model's (INM's) calculation of the 2013 Existing Condition noise contours, and the analysis of these contours.

The largest single user of MEM is Federal Express Corporation (FedEx). Their operations accounted for approximately 49 percent of the total operations at MEM during the study period. The majority of the FedEx operations use the A306/A310, DC10/MD11, and B722/B752/B77L aircraft.

TABLE ES.1
TITLE 14 CFR PART 150 LAND USE COMPATIBILITY GUIDELINES

Yearly Day-Night Average Sound Level (DNL) in decibels						
	Below 65	65-70	70-75	75-80	85-90	Over 85
<u>Residential</u>						
Residential (Other than mobile homes & transient lodges)	Y	N ¹	N ¹	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient Lodging	Y	N ¹	N ¹	N ¹	N	N
<u>Public Use</u>						
Schools	Y	N ¹	N ¹	N	N	N
Hospitals, Nursing Homes	Y	25	30	N	N	N
Churches, Auditoriums, 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
<u>Commercial Use</u>						
Offices, Business & Professional	Y	Y	25	30	N	N
Wholesale & Retail Building Mtls, Hardware & 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
Communications	Y	Y	25	30	N	N
<u>Manufacturing & Production</u>						
Manufacturing, General	Y	Y	Y ²	Y ³	Y ⁴	N
Photographic and Optical	Y	Y	25	30	N	N
Agriculture (Except Livestock) & Forestry	Y	Y ⁶	Y ⁷	Y ⁸	Y ⁸	Y ⁸
Livestock Farming & Breeding	Y	Y ⁶	Y ⁷	N	N	N
Mining & Fishing, Resource Production & Extraction	Y	Y	Y	Y	Y	Y
<u>Recreational</u>						
Outdoor Sports Arenas, Spectator Sports	Y	Y ⁵	Y ⁵	N	N	N
Outdoor Music Shells, Amphitheaters	Y	N	N	N	N	N
Nature Exhibits & Zoos	Y	Y	N	N	N	N
Amusement, Parks, Resorts, Camps	Y	Y	Y	N	N	N
Golf Courses, Riding Stables, Water Recreation	Y	Y	25	30	N	N

Source: Title 14 CFR part 150 (October 25, 2004).

NOTE: The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or Local law. The responsibility for determining the acceptable and permissible land use remains with the local authorities. FAA determinations under Part 150 are not intended to substitute Federally-determined land use for those determined to be appropriate by local authorities in response to locally-determined needs and values in achieving noise-compatible land uses.

TABLE ES.1 (CONTINUED)
TITLE 14 CFR PART 150 LAND USE COMPATIBILITY GUIDELINES

KEY TO TABLE:


- 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 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 must be incorporated in design and construction of structure.
- ¹ Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assumes mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
- ² Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of the 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 must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.
- ⁴ Measures to achieve NLR of 35 must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.
- ⁵ Land use compatible provided special sound reinforcement systems are installed.
- ⁶ Residential buildings require a NLR of 25.
- ⁷ Residential buildings require a NLR of 30.
- ⁸ Residential buildings not permitted.
-  Incompatible land uses

TABLE ES.2
NOISE-SENSITIVE SITES

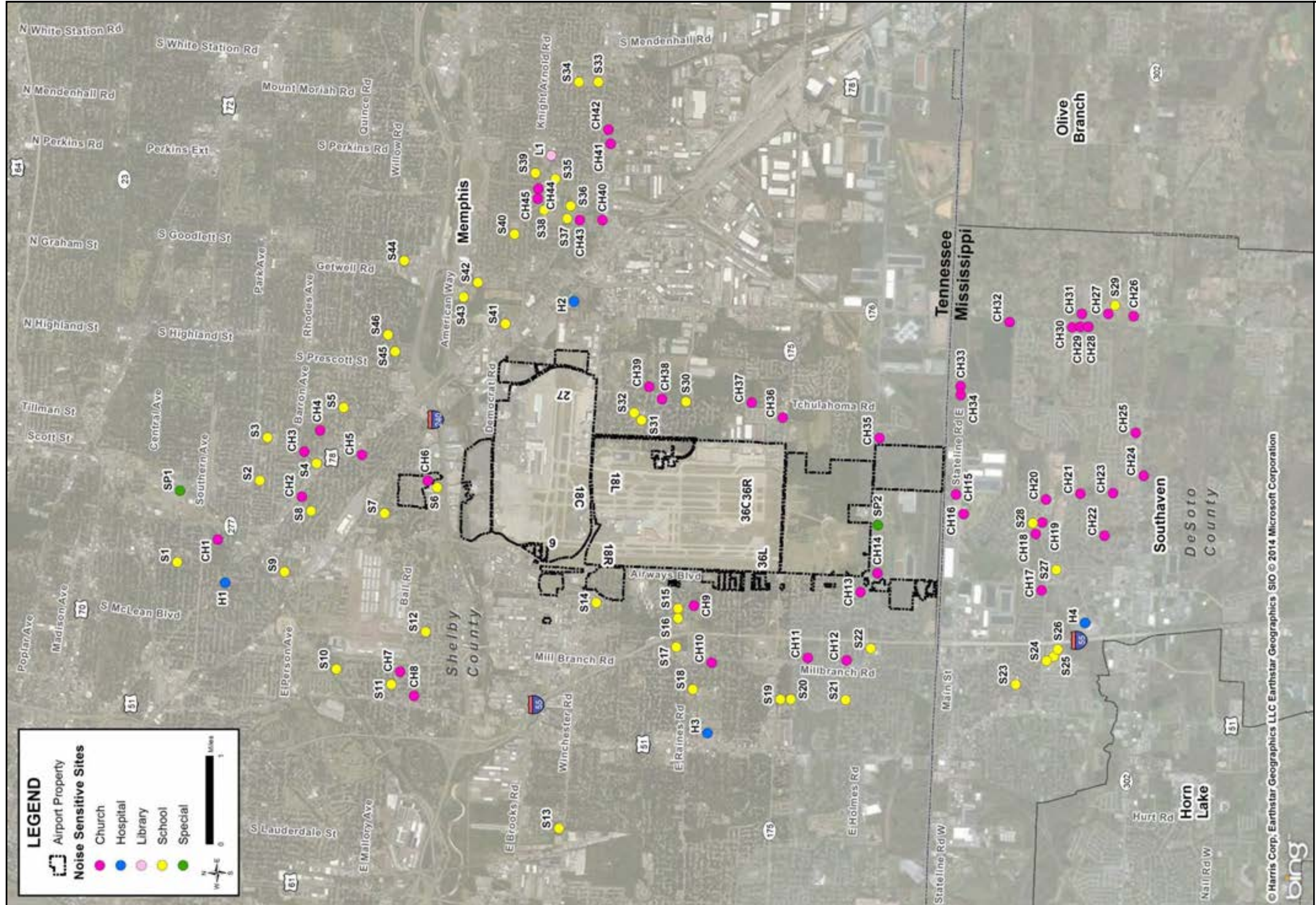
ID	Description
CH1	New Salem Missionary Baptist Church
CH2	Monument of Love Baptist Church
CH3	St. John's Baptist Church
CH4	Mt. Moriah East Baptist Church
CH5	St. Matthew Missionary Baptist Church
CH6	New Jerusalem Church of God in Christ
CH7	New Little Rock Baptist Church
CH8	New Hope Baptist Church
CH9	Westhaven Community Church
CH10	Koinonia Baptist Church
CH11	St. John AME Church
CH12	Deliverance Temple Ministries
CH13	St. Paul Baptist Church
CH14	Longstreet Methodist Church
CH15	Brown Missionary Baptist Church
CH16	Life Spring United Methodist Church
CH17	Southcrest Baptist Church
CH18	Greenbrook Baptist Church
CH19	First Christian Church

**TABLE ES.2 (CONTINUED)
NOISE-SENSITIVE SITES**

ID	Description
CH20	Faith Community Church
CH21	Graceview Presbyterian Church
CH22	Faith Community Church
CH23	Trinity Baptist Church
CH24	Church of Jesus Christ of Latter Day Saints
CH25	Goodman Oaks Church of Christ
CH26	New Covenant Fellowship Church
CH27	Broadway Baptist Church
CH28	Presbytery of St. Andrew Church
CH29	Jeremiah AME Church
CH30	Getwell Road United Methodist Church
CH31	Oak Forest Church of God
CH32	Summerwood Baptist Church
CH33	Graceland Christian Church
CH34	Stateline Road Church of Christ
CH35	Grace Christian Fellowship Church
CH36	Tchulahoma Baptist Church
CH37	Mount Olive Church
CH38	Greater Fellowship Ministries
CH39	New Mount Olive Church of God in Christ
CH40	Buddhist Community of Memphis
CH41	Greater Middle Baptist Church
CH42	Greater Harvest Church of God in Christ
CH43	Fireside Temple Church of God in Christ
CH44	Olivette Baptist Church
CH45	Parkway Village Church of Christ
H1	Methodist Outreach Hospital
H2	Oakville Memorial Hospital
H3	Methodist South Hospital
H4	Baptist South Hospital
L1	Parkway Village Branch Library
S1	Peabody Elementary School
S2	Dunbar Elementary School
S3	Melrose High School
S4	St. John's School
S5	Cherokee Elementary School
S6	Airways Middle School
S7	Charjean Elementary School
S8	Bethel Grove Elementary School
S9	Magnolia Elementary School
S10	City University Boy's Prep and City University School of Liberal Arts
S11	Corry Middle School

**TABLE ES.2 (CONTINUED)
NOISE-SENSITIVE SITES**

ID	Description
S12	Alcy Elementary School
S13	Graves Elementary School
S14	Winchester Elementary School
S15	Gardenview Elementary School
S16	A Maceo Walker Middle School
S17	Robert R Church Elementary School
S18	Hillcrest High School
S19	St. Paul School
S20	Byrne High School
S21	Havenview Middle School
S22	Oakshire Elementary School
S23	Southaven Elementary School
S24	Southaven Middle School
S25	DCS Career Tech Center - West
S26	Southaven High School
S27	Southaven Intermediate School
S28	Geeenbrook Elementary School
S29	Southern Baptist Education Center
S30	Oakshire Elementary School
S31	Oakhaven Middle School
S32	Oakhaven High School
S33	Wooddale Middle School
S34	Wooddale High School
S35	Knight Road Elementary School
S36	Sheffield Vocational/Technical School
S37	Sheffield Elementary School
S38	Sheffield Middle School
S39	Midsouth Christian College
S40	Goodlett Elementary School
S41	Oakville Elementary School
S42	Getwell Elementary School
S43	American Way Middle School
S44	South Park Elementary School
S45	Sharpe Elementary School
S46	Word of Faith Christ Academy
SP1	Liberty Bowl Memorial Stadium
SP2	Lakewood / Hamilton Cemetery and Forest Hill Funeral Home



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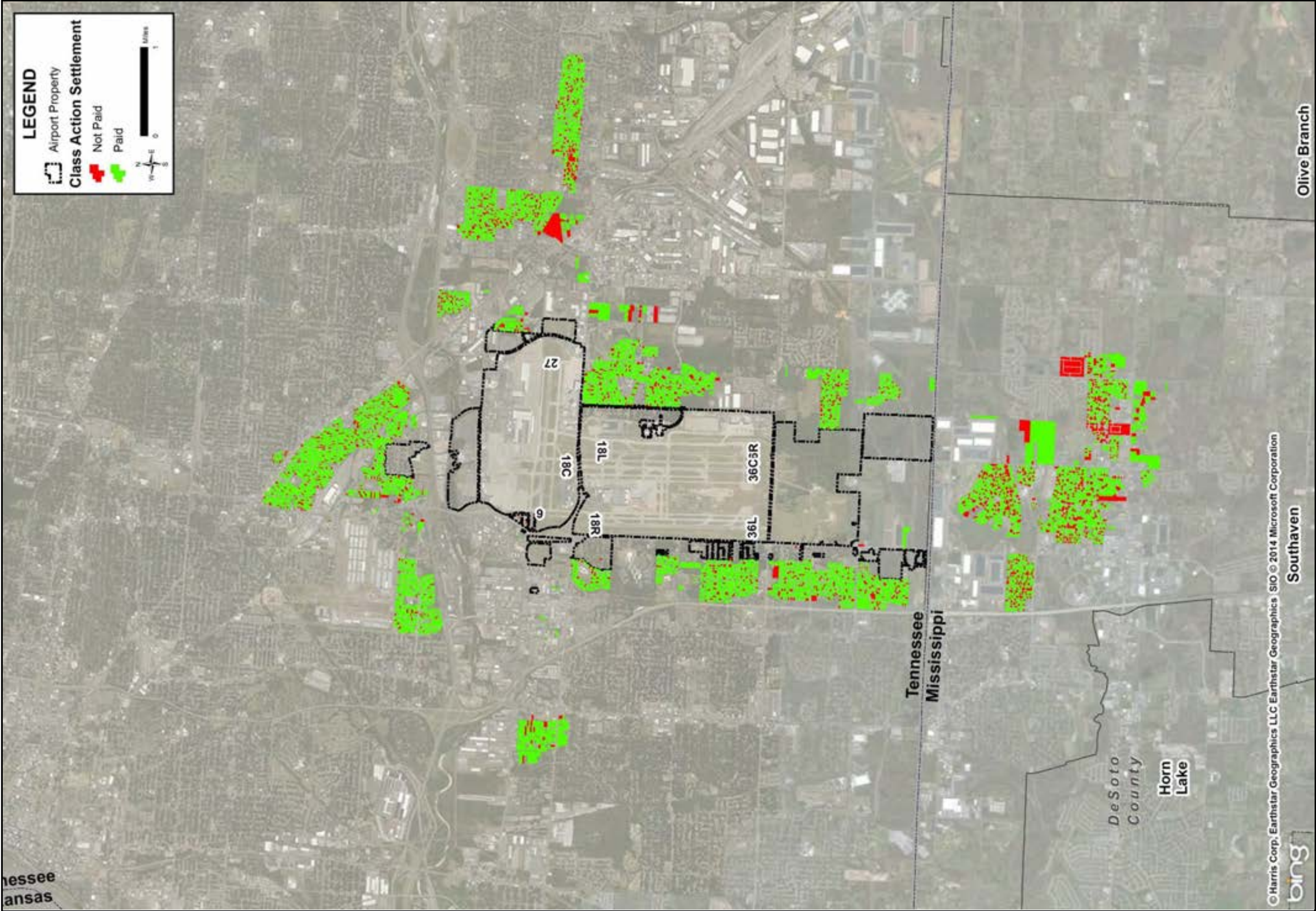


FIGURE ES.2

MITIGATED PROPERTIES

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**TABLE ES.3
ALLOCATION OF SETTLEMENT FUNDS**

Amount		Acquisition Date	Number of Eligible Properties	Total Payment Amount
An owner of Eligible Property utilized as a primary residence received the following gross amount:				
\$4,200	to a Settlement Class Member acquiring ownership	On or before December 31, 1973	1,546	\$6,493,200
\$2,600	to a Settlement Class Member acquiring ownership	January 1, 1974 thru September 30, 1987	3,218	\$8,366,800
\$1,600	to a Settlement Class Member acquiring ownership	October 1, 1987 thru May 4, 1993	2,890	\$4,624,000
\$525	to a Settlement Class Member acquiring ownership	On or after May 5, 1993 up to and including the Approval Date of the Settlement Agreement	3,133	\$1,644,825
Total Owner Occupied Properties			10,787	\$21,128,825
An owner of Eligible Property not utilized as a primary residence received the following gross amount:				
\$800	to a Settlement Class Member acquiring ownership	On or before December 31, 1973	257	\$205,600
\$600	to a Settlement Class Member acquiring ownership	January 1, 1974 thru September 30, 1987	488	\$292,800
\$500	to a Settlement Class Member acquiring ownership	October 1, 1987 thru May 4, 1993	424	\$212,000
\$325	to a Settlement Class Member acquiring ownership	On or after May 5, 1993 up to and including the Approval Date of the Settlement Agreement	485	\$157,625
Total Other Properties			1,654	\$868,025
GRAND TOTALS			12,441	\$21,996,850

Source: Alvarado vs. MSCAA, Stipulation of Settlement, July 9, 1998.

According to MEM's Monthly Activity Reports, major airlines that served MEM during the study period included: AirTran, American, Delta, and US Airways. Commuter airlines that served MEM during the study period were: Air Wisconsin (dba US Airways Express), American Eagle, Chautauqua (dba Delta Connection), ComAir (dba Delta Connection), Compass Airlines (dba Delta Connection), ExpressJet (dba Delta Connection and United Express), Jazz Air LP, Mesa Airlines (dba US Airways Express), Pinnacle Airlines (dba Delta Connection), PSA Airlines (dba United Express), Republic Airlines (dba US Airways Express), Skywest (dba Delta Connection and United Express), and Trans States Airlines (dba US Airways Express). Non-scheduled airlines that served MEM during the study period included: Miami Air International, Mid-South Jets, and SeaPort Airlines. All-cargo airlines that served MEM included Airborne Express, Baron Aviation, Capital Cargo International Airlines, FedEx, Mountain Air Cargo, United Parcel Service (UPS), and U.S. Check.

ES.8 2013 Aircraft Operations

The Federal Aviation Administration's (FAA's) Operations and Performance Data system contains multiple performance and operations data sources for use in airport planning. Historical airport activity was determined by analyzing data for MEM from FAA's Air Traffic Activity Data System (ATADS) and Traffic Flow Management Systems Counts (TFMSC).

Table ES.4 provides the operations data from the FAA's ATADS for the period January 1, 2006 through December 31, 2013, by category and type of operation. No local operations were reported for this period. ATADS data can be accessed without a FAA-issued username and password on the FAA's Operations & Performance Data website: <https://aspm.faa.gov/Default.asp>.

Table ES.5 provides the operations data from MEM's Monthly Activity Reports for the period July 1, 2012 through June 30, 2013, by category. **Table ES.6** provides the number of operations by category, which was modeled in INM to represent the period July 1, 2012 through June 30, 2013. The slight difference (less than 1%) between the operational levels in Tables 4.2 and 4.3 results from utilization of the Performance Data Analysis and Reporting System (PDARS) data, which was described in Section 3.3.4, to determine the number of operations. PDARS data included IFR and VFR aircraft arrivals to and departures from MEM for the six-month period August 31, 2012 through February 28, 2013. These operations were adjusted to represent the annual condition. The difference between FAA's ATADS, MEM's Activity Reports, and PDARS was less than one percent. However, due to missing data, such as unidentified aircraft types and incomplete flight tracks, the PDARS operational levels were scaled to match the ATADS operational levels for the same time period (August 31, 2012 to February 28, 2013). Table 4.3 shows the summary of the PDARS operational levels. In addition to operational levels, PDARS data also provides flight track, fleet mix, and flight stage length (derived from the distance between origin/destination) information, as well as the time at which each operation occurs. This is primary reason for using PDARS data over other operational data systems.

**TABLE ES.4
HISTORICAL ANNUAL OPERATIONS FROM ATADS**

Category & Type of Operation	Calendar Year							
	2013	2012	2011	2010	2009	2008	2007	2006
IFR Itinerant Operations¹								
Air Carrier	163,710	172,729	185,041	191,317	200,550	208,156	212,338	212,564
Air Taxi	48,658	77,114	106,005	124,500	118,046	130,161	132,073	140,242
General Aviation	16,687	16,653	16,753	16,600	16,779	18,896	25,018	27,627
Military	1,133	1,250	1,319	1,230	1,227	1,239	1,352	1,354
Subtotal	230,188	267,746	309,118	333,647	336,602	358,452	370,781	381,787
VFR Itinerant Operations²								
Air Carrier	9	0	2	3	4	32	9	7
Air Taxi	701	863	652	337	329	528	656	595
General Aviation	2,740	2,498	1,793	1,815	1,927	3,723	4,852	5,262
Military	216	214	226	215	145	243	230	242
Subtotal	3,666	3,575	2,673	2,370	2,405	4,526	5,747	6,106
Total Itinerant Operations								
Air Carrier	163,719	172,729	185,043	191,320	200,554	208,188	212,347	212,571
Air Taxi	49,359	77,977	106,657	124,837	118,375	130,689	132,729	140,837
General Aviation	19,427	19,151	18,546	18,415	18,706	22,619	29,870	32,889
Military	1,349	1,464	1,545	1,445	1,372	1,482	1,582	1,596
Total Ops	233,854	271,321	311,791	336,017	339,007	362,978	376,528	387,893

Notes: ¹ IFR Itinerant operations are operations performed by an aircraft, conducting flight in accordance with instrument flight rules, which lands at an airport, arriving from outside the airport area, or departs an airport and leaves the airport area.

² VFR Itinerant operations are operations performed by an aircraft, conducting flight in accordance with visual flight rules, which lands at an airport, arriving from outside the airport area, or departs an airport and leaves the airport area.

Sources: FAA Operations & Performance Data, ATADS, January 1, 2006 through December 31, 2013. ASPM Glossary found at <http://aspmhelp.faa.gov/index.php/Glossary>

**TABLE ES.5
AIRCRAFT OPERATIONS REPORTED DURING THE STUDY PERIOD**

Category of Operations	Number of Operations	Percent of Operations
Passenger Air Carrier Airlines	25,340	10.2%
All Cargo Airlines	125,364	50.4%
Commuter Airlines	70,396	28.3%
General Aviation	26,236	10.6%
Military	1,292	0.5%
Total Operations	248,628	100.0%

Source: MEM Activity Reports, July 2012 through June 2013

TABLE ES.6
AIRCRAFT OPERATIONS MODELED FOR THE STUDY PERIOD

Category of Operations	Number of Operations	Percent of Operations
Passenger Air Carrier Airlines	25,510	10.2%
All Cargo Airlines	126,051	50.4%
Commuter Airlines	70,779	28.3%
General Aviation	26,511	10.6%
Military	1,251	0.5%
Total Operations	250,102	100.0%

Source: URS Corporation, 2013

ES.9 2013 Aircraft Engine Ground Run-Ups

Ground run-ups are routine aircraft engine maintenance tests which require the operation of an engine at various power levels from idle to full for extended periods of time generating continuous elevated noise levels. Ground run-ups are done on a remote taxiway on the airport with the aircraft pointed into the wind or in a ground run-up enclosure (GRE). A GRE uses acoustical dampening principles to reduce the noise impact of aircraft engine ground run-ups. The aircraft is surrounded on three sides with walls and positioned in the GRE such that the exhaust ends of the engines face the closed end of the barrier.

Aircraft engine ground run-up operations are currently conducted at the following three locations, which are shown on Figure 3.10: FedEx GRE, TN ANG GRE, Taxiway Juliet, and Taxiway November. The Technical School is not currently performing engine run-ups in the B727 aircraft parked at their facility.

There are two (2) Ground Run-up Enclosures (GREs) at MEM, one is owned and operated by FedEx, and the other is owned and operated by the TN ANG. For the purposed of this analysis, the amount of noise reduction provided by each GRE is assumed to be at least 15 dB. Results of acceptance testing for both facilities demonstrated higher noise reduction (>19 dB). However, it is anticipated that actual noise reductions for different aircraft may vary during regular use, so a more conservative number was utilized for the analysis.

In order to model this noise reduction in INM, equivalent changes were computed in the number of aircraft operations, in accordance with standard modeling procedures, using the following formula:

$$N = 10^{(\Delta L / 10)}$$

In this formula, “N” is the equivalent number of aircraft operations and “ΔL” is the noise reduction in decibels. Since the noise reduction was assumed to be at least 15 dB, “N” was calculated to be $10^{(-15/10)}$, which equals 0.031623. Only ground run-up operations performed inside the GREs were multiplied by the calculated correction factor “N” as shown in **Appendix B**. The resulting reduced equivalent numbers of operations were modeled in INM.

ES.10 2013 Noise Measurements

Title 14 CFR part 150 §A150.5 stipulates that noise measurements and documentation be in accordance with accepted acoustical measurement methodology. The monitoring locations and a summary of the results will be included herein, following completion of this task. **Figure ES.3** will indicate the monitoring locations superimposed over the land use base map. A copy of the *Noise Measurement Technical Memorandum* will be included in **Appendix C**.

ES.11 2013 Noise Contours

Noise contours resulting from 2013 aircraft operations are shown superimposed over the existing land use base map on **Figure ES.4**. The base map graphically depicts the airport boundaries, runway configurations, and runway end numbers. It also clearly depicts streets and other identifiable geographic features. The total area within the DNL 65+ dBA noise contour for the 2013 Existing Condition is estimated to be 13.63 square miles. Title 14 CFR part 150, Airport Noise Compatibility Planning, Amendment No. 150-4, Section A150.103(b)(1), requires “A map of the airport and its environs at an adequately detailed scale (not less than 1 inch to 2,000 feet) indicating runway length, alignments, landing thresholds, takeoff start-of-roll points, airport boundary, and flight tracks out to at least 30,000 feet from the end of each runway.” Therefore, flight track maps at a scale of 1 inch to 2,000 feet are provided in **Appendix H**.

ES.12 2013 Impact Analysis

Figure ES.4 illustrates the 2013 Noise Exposure Map superimposed over the current land uses surrounding MEM. Table ES.6 provides detailed information on impacted land use acreage, population and the number of houses within the DNL 65 dBA contour.

The number of housing units was estimated by utilizing the GIS data obtained for DeSoto County, Mississippi and Shelby County, Tennessee. Population was then estimated by multiplying the number of housing units by the average household size. For Shelby County, the average household size is 2.59 persons per household, while for DeSoto County, the average household size is 2.78 persons per household (Source U.S. Census Bureau: American Fact Finder).

ES.13 2013 Noise-Sensitive Sites

Various noise-sensitive sites were analyzed within the study area. The locations of noise-sensitive sites are depicted on **Figure ES.5** with 2013 Existing Condition noise contours. **Table ES.7** provides estimated noise exposure levels at each noise-sensitive site within the 2013 Existing Condition noise contours.

As shown in Figure ES.5 and Table ES.7 ten (10) churches and four (4) schools are located between the DNL 65 and 70 dBA contours. Two (2) churches, one (1) hospital, and one (1) cemetery/funeral home are located between the DNL 70 and 75 dBA contours. No noise-sensitive sites are located within DNL 75 dBA contour.

ES.14 2013 Mitigated Properties

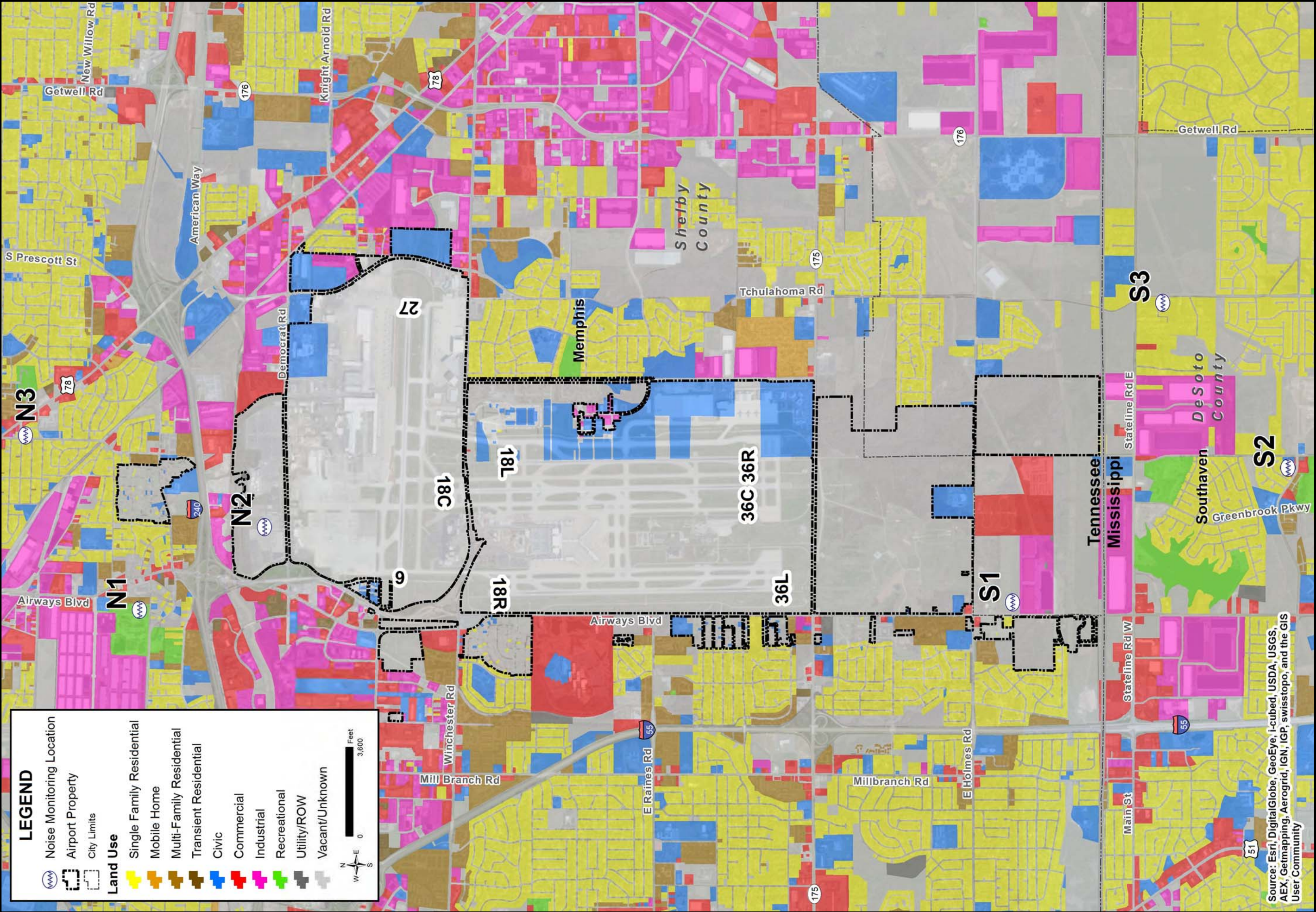
The Memphis-Shelby County Airport Authority's (MSCAA's) efforts to reduce noise exposure resulted in the 1987 Noise Compatibility / Property Acquisition Program. This FAA approved program was comprised of the acquisition of approximately 1,400 single-family residences located within the DNL 75 dBA noise contour. This program took over a decade to complete.

On November 13, 1989, a lawsuit was filed against the MSCAA by twenty-seven residential property owners seeking monetary damages and injunctive relief. On May 5, 1993, the Court certified the case as a class action for litigation purposes. Plaintiffs on behalf of themselves and representatives of a class of other owners with vested interests in real property in the vicinity of MEM sued the MSCAA for damages to the value of their real property interests caused by noise and other forms of pollution. A Stipulation of Settlement was entered into on July 9, 1998, by the attorneys for Alvarado vs. MSCAA, providing for final settlement of the Class Action Lawsuit. On September 8, 1998, the Court redefined the class to include owners of improved real estates upon which there is a single-family residence, a duplex, or a condominium, within the areas identified on the Notice Map. Collectively, such owners are referred to as the Settlement Class, and their property is referred to as Eligible Property. A Fairness Hearing was held November 12-17, 1998. The court determined that a full, fair, and reasonable hearing on all matters was heard; the notice requirements were adequate, sufficient and legal; and the class was competently represented. The U.S. District Court for the Western District of Tennessee entered a final judgment on December 22, 1998, approving the settlement of the class action.

Such judgment was appealed to the U.S. Court of Appeals for the Sixth Circuit. The appeals court affirmed the district court's judgment by order entered on August 15, 2000. The court issued its mandate on September 7, 2000. Subsequent to the issuance of the mandate, MSCAA administered the settlement. There were 15,149 eligible properties, of which MSCAA received 12,608 claims and made 12,441 payments to settlement class members covering 12,403 single and multi-family properties. On March 1, 2004, the court found that the MSCAA had complied with the stipulation of settlement and had discharged all obligations imposed upon it by the settlement agreement, and the case was closed. The total potential monetary benefit to the Settlement Class was estimated to be \$22 million.

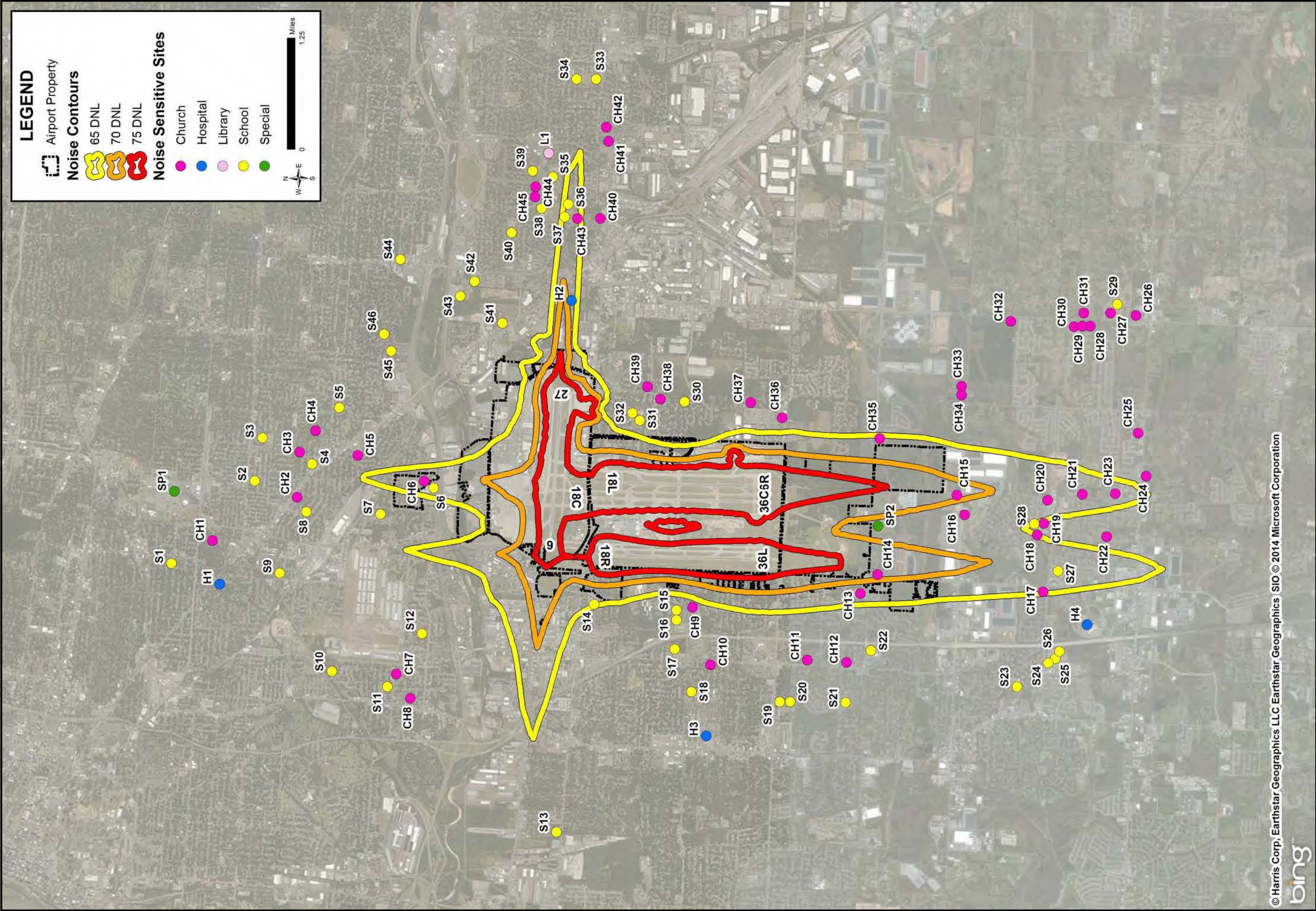
The Stipulation of Settlement, Article III, Terms and Conditions of Settlement, Section 3.6, Avigation Easements, describes the manner in which Avigation Easements were obtained on Eligible Properties. An Avigation Easement was imposed on each Eligible Property in the State of Tennessee, regardless of whether the Settlement Class Member filed a settlement claim or received payment from the Settlement Funds. Settlement Class Members owning Eligible Property in the State of Mississippi were required to grant an Avigation Easement to the Airport Authority before they qualified to receive payment from the Settlement Funds. Copies of documents related to the case, including the Settlement Agreement, the Avigation Easement for Tennessee and Mississippi, and the Order closing the case, are provided in **Appendix A**.

Figure ES.6 illustrates the DNL 65, 70, and 75 dBA contours superimposed over the base map showing eligible properties, which include both those that were paid for their easement and those that were eligible but chose not to participate or missed the deadline to participate, and were not paid. **Table ES.8** provides detailed number of eligible houses and population by use codes. The mitigation area was based, in part, on noise contours developed in a previous Part 150 Study.



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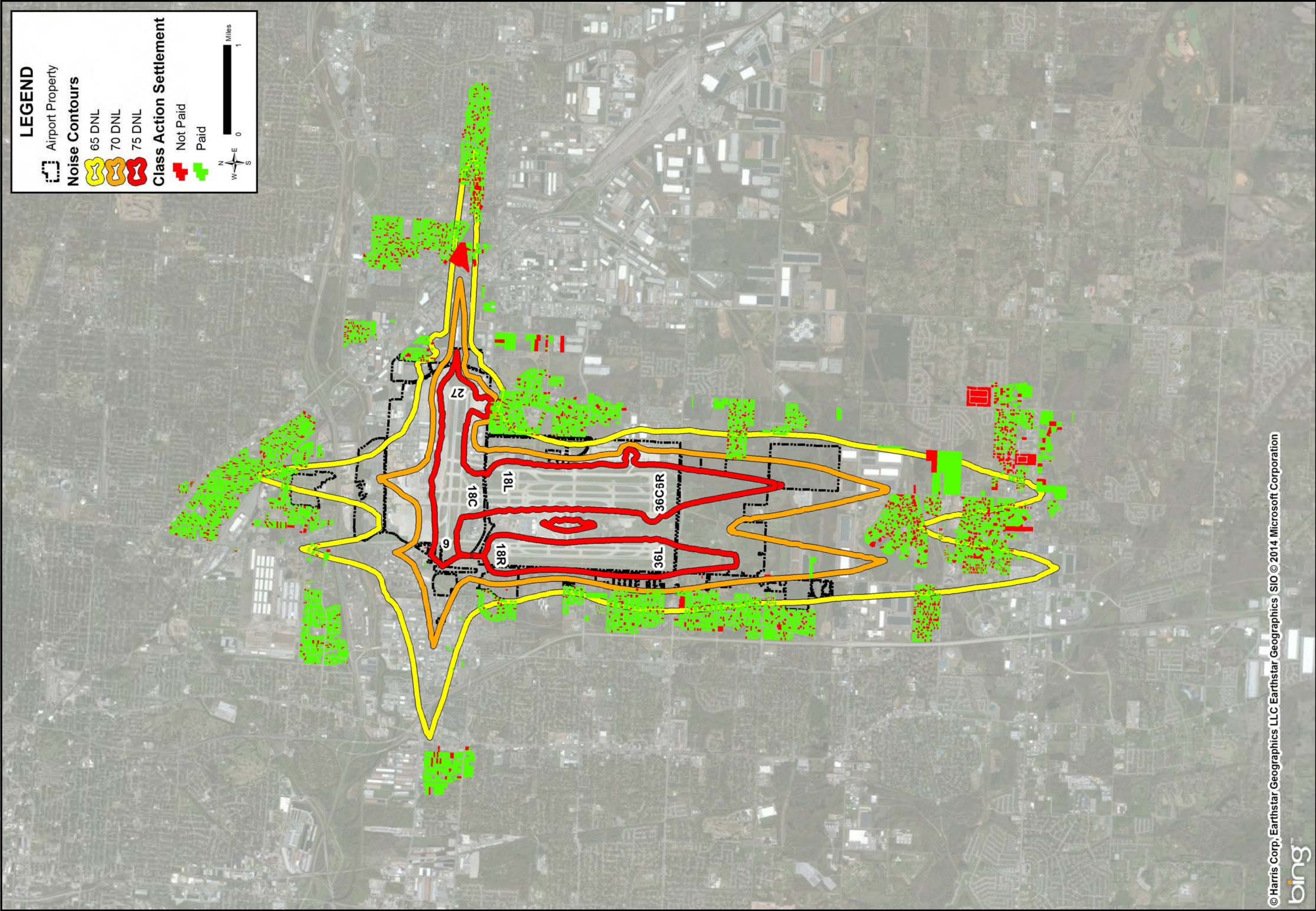
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2013 EXISTING CONDITION NEM
WITH NOISE-SENSITIVE SITES

FIGURE
ES.5

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2013 EXISTING CONDITION NEM
WITH MITIGATED PROPERTIES

FIGURE
ES.6

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TABLE ES.7
2013 EXISTING CONDITION NOISE EXPOSURE ESTIMATES

LAND USE (Acres)	Shelby County				DeSoto County				Grand
	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	Total
Civic	280.1	199.3	161.1	640.5	85.7	13.1	0.0	98.8	739.3
Commercial	359.7	140.5	6.1	506.3	129.0	7.4	0.0	136.4	642.7
Industrial	313.7	112.4	0.8	426.9	297.7	47.2	0.0	344.9	771.8
Mobile Home	16.7	0.0	0.0	16.7	0.0	0.0	0.0	0.0	16.7
Multi-Family Residential	154.2	26.2	1.0	181.4	15.2	0.0	0.0	15.2	196.6
Recreational	0.0	0.0	0.0	0.0	184.3	6.9	0.0	191.2	191.2
Single Family Residential	307.2	19.7	2.8	329.7	454.4	3.8	0.0	458.2	787.9
Transient Residential	35.3	5.5	0.0	40.8	0.0	0.0	0.0	0.0	40.8
Utility / ROW	385.4	177.0	61.6	624.0	194.4	10.9	0.0	205.3	829.3
Vacant / Unknown	1,422.1	1,906.9	1,832.7	5,161.7	356.1	24.2	0.0	380.3	5,542.0
Land Use Total	3,274.4	2,587.5	2,066.1	7,928.0	1716.8	113.5	0.0	1830.3	9,758.3

Sources: Fisher & Arnold, 2013. URS Corporation, 2014

TABLE ES.7 (CONTINUED)
2013 EXISTING CONDITION NOISE EXPOSURE ESTIMATES

HOUSING UNITS		Shelby County				DeSoto County				Grand Total
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	
Eligible for Settlement (Paid)		1,299	9	0	1,308	1,258	0	0	1,258	2,566
Eligible for Settlement (Unpaid)		545	2	0	547	433	0	0	433	980
Mitigated Total		1,844	11	0	1,855	1,691	0	0	1,691	3,545
Unmitigated	Single Family	52	5	1	58	185	1	0	186	244
	Mobile Home	128	0	0	128	0	0	0	0	128
	Multi-Family	1,610	485	18	2,113	115	0	0	115	2,228
	Transient	743	0	0	743	0	0	0	0	743
Unmitigated Total		2,533	490	19	3,042	300	1	0	301	3,343
Housing Units Total		4,377	501	19	4,897	1,991	1	0	1,992	6,889
POPULATION		Shelby County				DeSoto County				Grand Total
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	
Eligible for Settlement (Paid)		3,364	23	0	3,387	3,497	0	0	3,497	6,885
Eligible for Settlement (Unpaid)		1,412	5	0	1,417	1,204	0	0	1,204	2,620
Mitigated Total		4,776	28	0	4,804	4,701	0	0	4,701	9,505
Unmitigated	Single Family	134	13	3	150	514	3	0	517	667
	Mobile Home	332	0	0	332	0	0	0	0	332
	Multi-Family	4,170	1,256	47	5,473	320	0	0	320	5,792
	Transient	1,924	0	0	1,924	0	0	0	0	1,927
Unmitigated Total		6,560	1,269	50	7,879	834	3	0	837	8,715
Population Total		11,336	1,297	50	12,683	5,535	3	0	5,538	18,221

Note: Apartments were not eligible for payment under the Settlement Agreement. The distribution of the lawsuit settlement funds has been completed. Numbers may not add due to rounding.

TABLE ES.8
2013 EXISTING CONDITION DAY-NIGHT LEVEL (DNL) AT SELECTED SITES

ID	Description	DNL (dBA)
CH6	New Jerusalem Church of God in Christ	>65
CH13	St. Paul Baptist Church	>65
CH15	Brown Missionary Baptist Church	>70
CH16	Life Spring United Methodist Church	>70
CH17	Southcrest Baptist Church	>65
CH18	Greenbrook Baptist Church	>65
CH19	First Christian Church	>65
CH20	Faith Community Church	>65
CH21	Graceview Presbyterian Church	>65
CH23	Trinity Baptist Church	>65
CH35	Grace Christian Fellowship Church	>65
CH43	Fireside Temple Church of God in Christ	>65
H2	Oakville Memorial Hospital	>70
S6	Airways Middle School	>65
S14	Winchester Elementary School	>65
S27	Southaven Intermediate School	>65
S28	Geenenbrook Elementary School	>65
SP2	Lakewood / Hamilton Cemetery and Forest Hill Funeral Home	>70

Sources: Fisher & Arnold, 2013. URS Corporation, 2014.

ES.15 2013 Noncompatible Land Use

Noncompatible land uses within the 2013 Existing Condition Noise Exposure Map include residential and public land uses. **Figure ES.7** illustrates the compatible and noncompatible land uses within the DNL 65, 70, and 75 dBA contours. Properties for which an Avigation Easement was imposed or granted are considered compatible land uses. Residential properties within the DNL 65, 70, and 75 dBA contours without an Avigation Easement are not compatible. In addition, schools located within the DNL 65 and 70 dBA contours are not compatible. Although considered noise-sensitive, churches and hospitals within the DNL 65 and 70 dBA contours are generally compatible.

ES.16 2020 Forecast of Aircraft Operations

Table ES.9 along with the TAF forecast through the year 2020. The forecast of aircraft operations in 2020 is used in the next section to convert the estimated fleet mix into specific aircraft operations.

**TABLE ES.9
FLEET MIX FORECAST AND COMPARISON**

Year	Itinerant Air Carrier	Itinerant Air Taxi	Itinerant GA	Itinerant Mil	Local Civil	Local Military	Total Airport Operations
2013 (A)	163,719	49,359	19,427	1,349	250	174	234,278
2014	143,735	39,932	18,972	1,364	142	158	204,303
2015	147,125	40,791	18,972	1,364	142	158	208,552
2016	150,550	41,572	18,972	1,364	142	158	212,758
2017	154,093	42,387	18,972	1,364	142	158	217,116
2018	158,035	43,155	18,972	1,364	142	158	221,826
2019	162,385	43,761	18,972	1,364	142	158	226,782
2020	167,038	44,131	18,972	1,364	142	158	231,805

Source: URS Corporation, 2014. Note: (A) = Actual Operations

Although flights were reduced by Delta Airlines, new service and flights were initiated by Southwest Airlines in November 2013. The entry of Southwest Airlines into the MEM market may stimulate demand through the introduction of low airfares. The introduction of Southwest Airlines into other markets throughout the United States has typically resulted in decreases in average ticket fares and has stimulated latent demand for air travel from passenger leading to higher levels of passengers. A similar effect is anticipated at MEM, although the resulting increases of passengers may not fully offset the loss of the former hub operations by Delta Airlines. Other potential sources of growth at MEM include American/US Airways, as well as Frontier and other low-cost carriers.

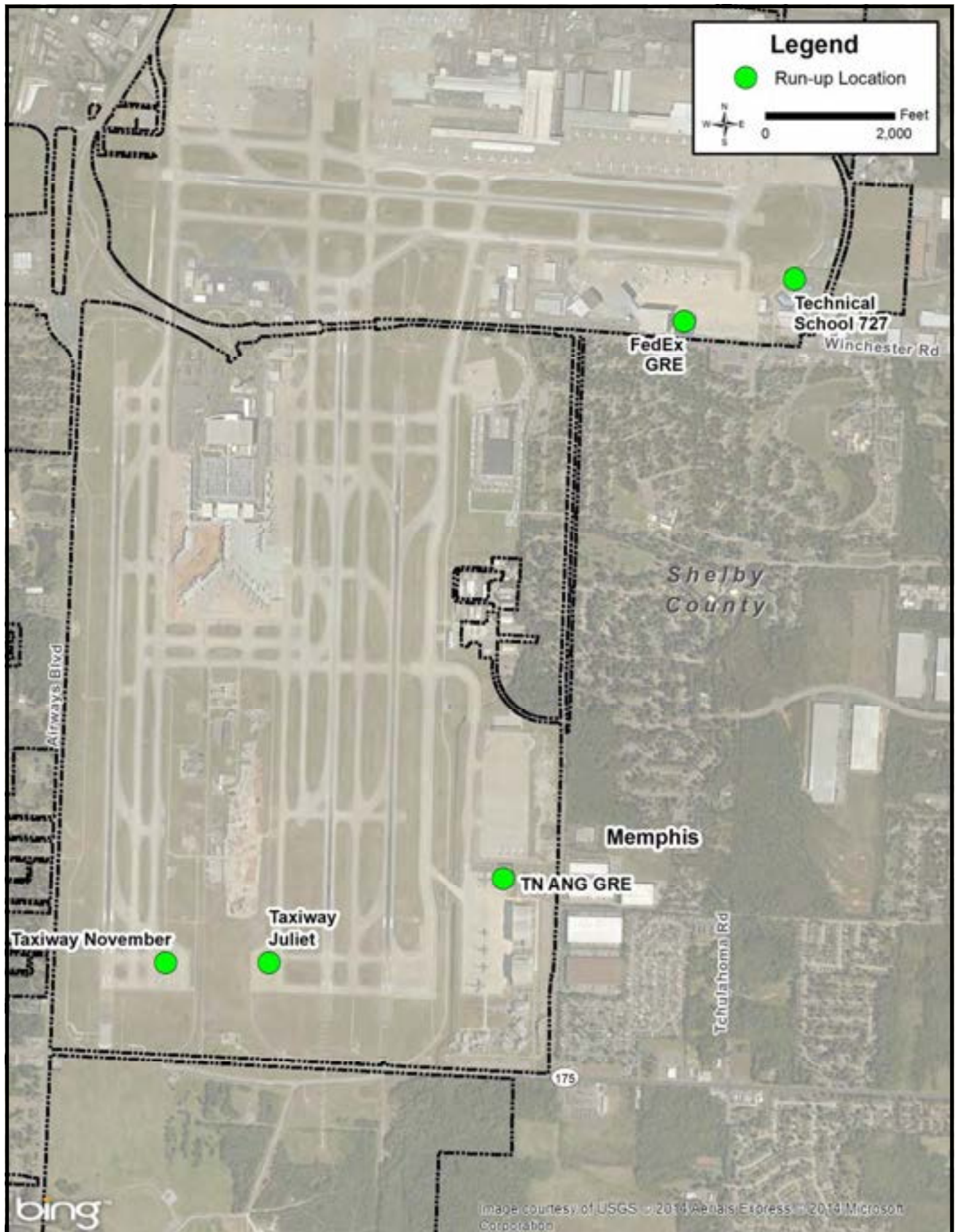
The average annual growth rate forecast by the TAF for passenger enplanements at MEM from 2014 to 2020 is 2.1 percent. This rate is nearly the same as the 2.2 percent growth rate forecast by the FAA for national passenger enplanements.

ES.17 2020 Aircraft Engine Ground Run-Ups

Aircraft engine ground run-up operations for the future condition will be conducted at five locations, which are shown on **Figure ES.8**. The additional location is at the Tennessee Colleges of Applied Technology (TCAT), Aviation Maintenance Center, 3435 Tchulahoma Road. Students in the Avionics Maintenance Program and Aircraft Mechanics Program will perform single-engine run-ups (with APU) on a Boeing 727 aircraft that is parked on their ramp (positioned at a heading of 135°). These TCAT run-ups will occur between the hours of 7:00 AM and 7:00 PM, will utilize idle power (maximum of 60%), and will last a maximum of 45 minutes. A total of twelve engine run-up operations will be performed per year.

FedEx has shown interest in building an additional GRE just to the northeast of the Signature Flight Support facility centrally located within the airport property. This GRE, if approved, would provide a location to perform night-time aircraft engine maintenance run-ups. As this GRE is currently just a point of discussion and would be many years before construction, it is not included in the 2020 Future Condition NEM. A more detailed discussion of this GRE is contained in Section 5.6.

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Based on the available information, the aircraft engine ground run-up operations discussed in Section 4.4 are not expected to change, with the exception of the phase out of the FedEx Boeing 727 engine run-up operations resulting from the phase out of that aircraft by FedEx. All other operational characteristics of the aircraft engine ground run-up operations discussed in Section 4.4 will remain constant from 2013 through 2020.

Detailed information regarding these run-ups is provided in **Appendix B**.

ES.18 2020 Noise Contours

Noise contours resulting from 2020 aircraft operations are shown superimposed over the existing land use base map on **Figure ES.9**. Title 14 CFR part 150, Airport Noise Compatibility Planning, Amendment No. 150-4, Section A150.101(e)(9), requires “Depiction of the required noise contours over a land use map of a sufficient scale and quality to discern streets and other identifiable geographic features.” Therefore, the 2020 Future Condition NEM, at a scale of 1 inch to 2,000 feet, is provided in **Appendix H**.

The base map graphically depicts the airport boundaries, runway configurations, and runway end numbers. It also clearly depicts streets and other identifiable geographic features. The total area within the DNL 65+ dBA noise contour for the 2020 Future Condition is estimated to be 11.85 square miles.

The northeastern lobe of the DNL 65 dBA contour comes to a point just north of I-240 at Durby Street near Airways Middle School. The northwestern lobe of the DNL 65 dBA contour straddles Plough Blvd., and comes to a point near the intersection of Plough Blvd and Airways Blvd, south of I-240. The western lobe of the DNL 65 dBA contour straddles East Brooks Road and comes to a point east of the intersection of East Brooks Rd and I-55. The southwestern lobe of the DNL 65 dBA contour straddles Airways Blvd. and comes to a point at Clarington Drive. The southeastern lobe of the DNL 65 dBA contour straddles Swinnea Road and comes to a point just north of Greenciff Drive. The eastern lobe of the DNL 65 dBA contour extends along the Runway 9/27 extended centerline and comes to a point just east of Sheffield Elementary School.

ES.19 2020 Impact Analysis

Figure ES.9 and the 2020 Future Condition NEM provided in **Appendix H** illustrate the 2020 future condition noise contours superimposed over the current land uses surrounding MEM. **Table ES.10** provides detailed information on impacted land use acreage, population and the number of houses within the DNL 65 dBA contour.

ES.20 2020 Noise-Sensitive Sites

Various noise-sensitive sites were analyzed within the study area. The locations of noise-sensitive sites are depicted on **Figure ES.10** and on the 2020 Future Condition NEM provided in **Appendix H**. **Table ES.11** provides estimated noise exposure levels at each noise-sensitive site within the 2020 Future Condition noise contours.

As shown in Figure ES.10 and Table ES.11, seven (7) churches, six (6) schools, one (1) hospital, and one (1) cemetery/funeral home are located within the DNL 65 dBA contours. No noise-sensitive sites are located within the DNL 70 or 75 dBA contours.

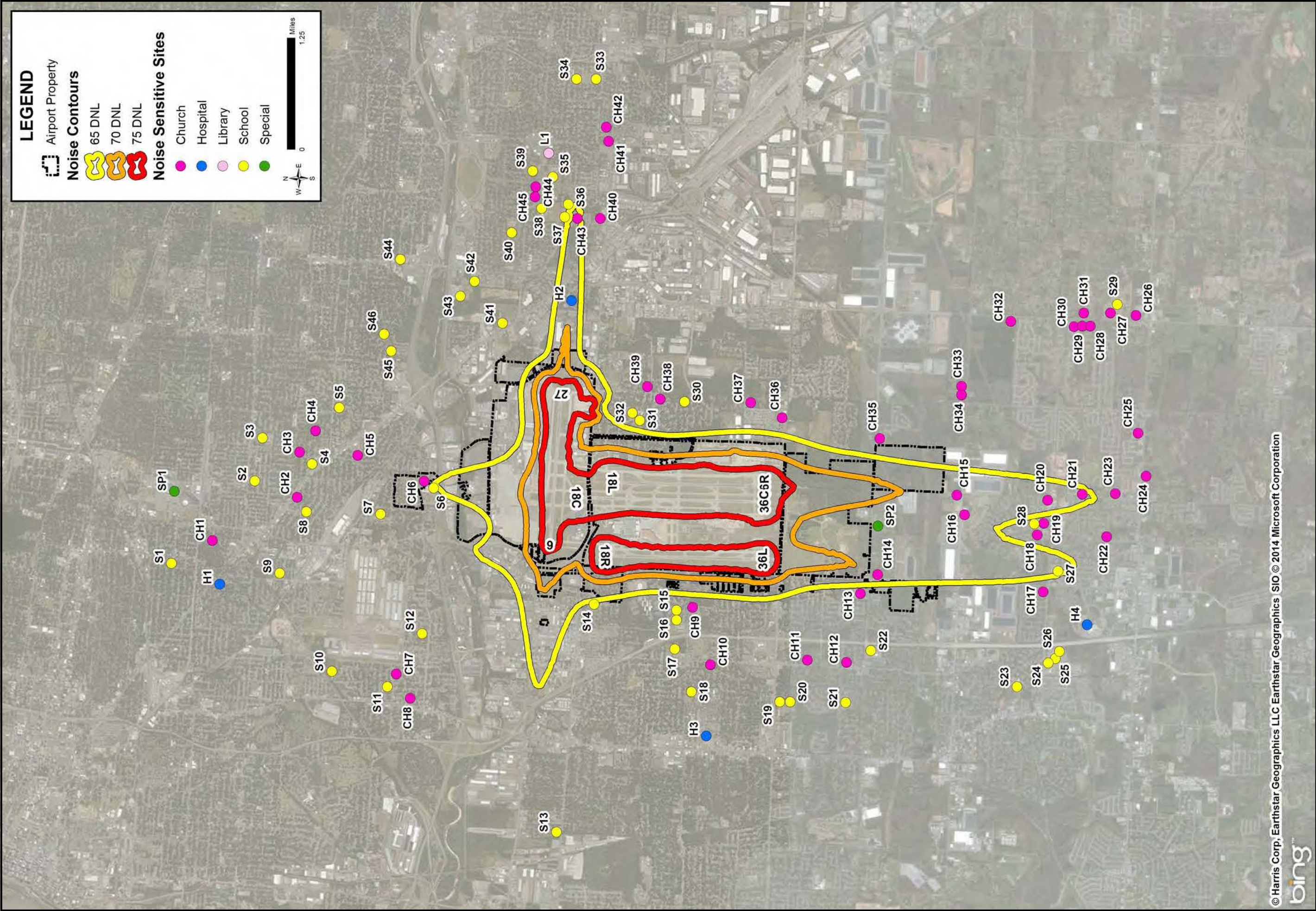
ES.21 2020 Mitigated Properties

Figure ES.11 illustrates the DNL 65, 70, and 75 dBA contours superimposed over the base map showing properties eligible for mitigation under the class action lawsuit filed against MSCAA, as discussed in Section 4.9 and documented in **Appendix A**. Figure ES.11 includes both properties that were paid for their easement and those that were eligible, but not paid. This is also shown on the 2020 Future Condition NEM provided in **Appendix H**. **Table ES.10** provides detailed number of eligible houses and population by use codes. The mitigation area was based, in part, on noise contours developed in a previous Part 150 Study.

ES.22 2020 Noncompatible Land Use

Noncompatible land uses within the 2020 Future Condition Noise Exposure Map include residential and public land uses. **Figure ES.12** and the 2020 Future Condition NEM provided in **Appendix H** illustrate the compatible and noncompatible land uses within the DNL 65, 70, and 75 dBA contours. Properties for which an Avigation Easement was imposed or granted are considered compatible land uses. Residential properties within the DNL 65, 70, and 75 dBA contours without an Avigation Easement are not compatible. In addition, schools located within the DNL 65 and 70 dBA contours are not compatible. Although considered noise-sensitive, churches and hospitals within the DNL 65 and 70 dBA contours are generally compatible.

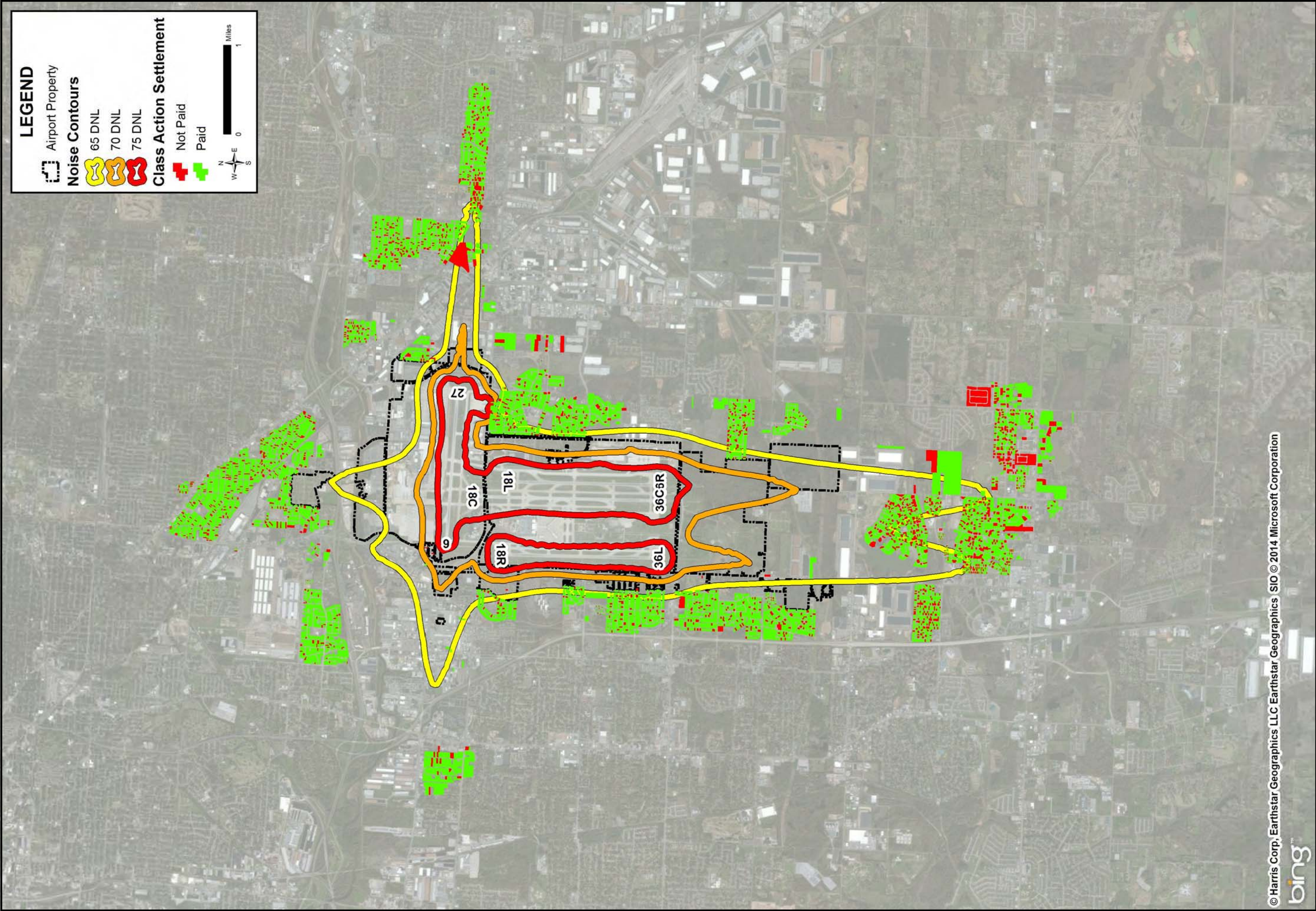
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2020 FUTURE CONDITION NEM
WITH NOISE-SENSITIVE SITES

FIGURE
ES.10

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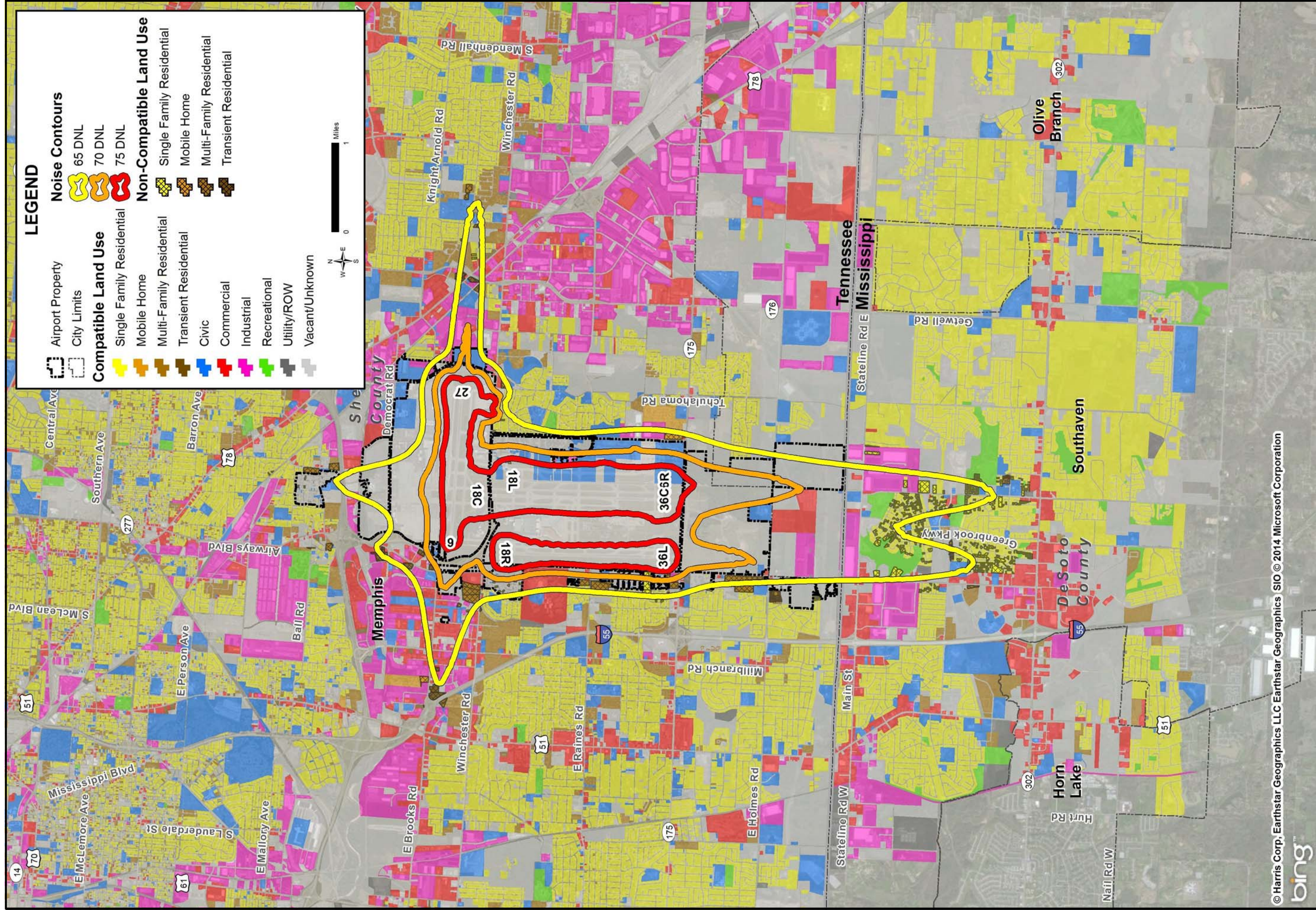
2020 **FUTURE** CONDITION NEM
WITH MITIGATED PROPERTIES

FIGURE
ES.11

Memphis
INTERNATIONAL AIRPORT

Part 150 NEM Update

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2020 **FUTURE** CONDITION NEM
WITH NONCOMPATIBLE LAND USES

FIGURE
ES.12

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TABLE ES.10
2020 FUTURE CONDITION NOISE EXPOSURE ESTIMATES

Land Use (Acres)	Shelby County				DeSoto County				Grand Total
	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	
Civic	270.4	144.9	140.0	555.3	45.2	0.0	0.0	45.2	600.5
Commercial	360.3	27.7	0.3	388.3	33.1	0.0	0.0	33.1	421.4
Industrial	278.5	13.2	0.3	292.0	190.2	0.0	0.0	190.2	482.2
Mobile Home	10.8	0.0	0.0	10.8	0.0	0.0	0.0	0.0	10.8
Multi-Family Residential	114.9	3.2	0.0	118.1	4.7	0.0	0.0	4.7	122.8
Recreational	3.9	0.0	0.0	3.9	149.4	0.0	0.0	149.4	153.3
Single Family Residential	141.5	9.6	0.3	151.4	247.7	0.0	0.0	247.7	399.1
Transient Residential	23.4	0.3	0.0	23.7	0.0	0.0	0.0	0.0	23.7
Utility / ROW	271.4	140.2	25.5	437.1	102.2	0.0	0.0	102.2	539.3
Vacant / Unknown	1,744.7	1,454.6	1,446.6	4,645.9	192.6	0.0	0.0	192.6	4,838.5
Land Use Total	3,219.8	1,793.7	1,613.0	6,626.5	965.1	0.0	0.0	965.1	7,591.6

Sources: Fisher & Arnold, 2013. URS Corporation, 2014

TABLE ES.10 (CONTINUED)
2020 FUTURE CONDITION NOISE EXPOSURE ESTIMATES

Housing Units		Shelby County				DeSoto County				Grand Total
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	
Eligible for Settlement (Paid)		456	5	0	461	596	0	0	596	1,057
Eligible for Settlement (Unpaid)		301	0	0	301	202	0	0	202	503
Mitigated Total		757	5	0	762	798	0	0	798	1,560
Unmitigated	Single Family	24	1	1	26	84	0	0	84	110
	Mobile Home	77	0	0	77	0	0	0	0	77
	Multi-Family	1,422	53	0	1,475	67	0	0	67	1,542
	Transient	191	0	0	191	0	0	0	0	191
Unmitigated Total		1,714	54	1	1,769	151	0	0	151	1,920
Housing Units Total		2,471	59	1	2,531	949	0	0	949	3,480
Population		Shelby County				DeSoto County				Grand Total
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	
Eligible for Settlement (Paid)		1,181	13	0	1,194	1,657	0	0	1,657	2,851
Eligible for Settlement (Unpaid)		780	0	0	780.0	562	0	0	562	1,341
Mitigated Total		1,961	13	0	1,974	2,218	0	0	2,218	4,192
Unmitigated	Single Family	62	3	3	71	234	0	0	234	300
	Mobile Home	199	0	0	199	0	0	0	0	199
	Multi-Family	3,683	137	0	3,820	186	0	0	186	4,007
	Transient	495	0	0	495	0	0	0	0	495
Unmitigated Total		4,439	140	3	4,582	420	0	0	420	5,002
Population Total		6,399	153	3	6,555	2,638	0	0	2,638	9,193

Note: Apartments were not eligible for payment under the Settlement Agreement. The distribution of the lawsuit settlement funds has been completed.
Numbers may not add due to rounding.

TABLE ES.11
2020 FUTURE CONDITION DAY-NIGHT LEVEL (DNL) AT SELECTED SITES

ID	Description	DNL (dBA)
CH14	Longstreet Methodist Church	>65
CH15	Brown Missionary Baptist Church	>65
CH16	Life Spring United Methodist Church	>65
CH17	Southcrest Baptist Church	>65
CH20	Faith Community Church	>65
CH21	Graceview Presbyterian Church	>65
CH43	Fireside Temple Church of God in Christ	>65
H2	Oakville Memorial Hospital	>65
S6	Airways Middle School	>65
S14	Winchester Elementary School	>65
S27	Southaven Intermediate School	>65
S28	Geeenbrook Elementary School	>65
S36	Sheffield Vocational/Technical School	>65
S37	Sheffield Elementary School	>65
SP2	Lakewood / Hamilton Cemetery and Forest Hill Funeral Home	>65

Sources: Fisher & Arnold, 2013. URS Corporation, 2014

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SECTION 1.0 **INTRODUCTION**

1.1 *Aircraft Noise and the Part 150 Process*

Aircraft noise and the subsequent impact on people has been an issue of concern in the United States for some time. Congress has incrementally addressed this concern over the years by enacting the *Noise Control Act of 1972*, the *Aviation Safety and Noise Abatement Act of 1979 (ASNA)*, and the *Airport Noise and Capacity Act of 1990 (ANCA)*. These public laws have primarily been codified in United States Code, Title 49 (Transportation), Subtitle VII (Aviation Programs):

- Part A (Air Commerce and Safety), Subpart III (Safety), Chapter 447 (Safety Regulation), Section 44715 (Controlling aircraft noise and sonic boom), and
- Part B (Airport Development and Noise), Chapter 475 (Noise), Subchapter I (Noise Abatement) and Subchapter II (National Aviation Noise Policy).

The Federal Aviation Administration (FAA) is the primary agency responsible for providing direction and guidance nationwide in the assessment of noise impacts associated with civilian airports. As directed by Congress, through the Secretary of Transportation, FAA establishes and amends their regulations to implement public laws and statutes.

The FAA regulations that govern today's aircraft are found in Title 14 of the Code of Federal Regulations (14 CFR). There are 68 regulations organized into three volumes under Title 14, Aeronautics and Space. A fourth volume deals with the Department of Transportation, and the fifth volume is focused on NASA.

Since 1958, these rules have typically been referred to as "FARs," short for Federal Aviation Regulations. However, another set of regulations (Title 48) is titled "Federal Acquisitions Regulations," and this has led to confusion with the use of the acronym "FAR." Therefore, the FAA began to refer to specific regulations by the term "14 CFR part XX."

The airport noise compatibility planning process was established by the FAA on February 28, 1981, as a new part to the Federal Aviation Regulations and is listed under 14 CFR as part 150, commonly referred to as "Part 150." The most recent revision of Part 150 was accomplished by Amendment 150-4 and it became effective on September 24, 2004. Part 150 specifies the methodology and procedures governing the development and implementation of Noise Exposure Maps (NEMs) and Noise Compatibility Programs (NCPs).

Through the airport noise and land use compatibility planning process, airport operators voluntarily prepare airport NEMs and NCPs and submit these materials to the FAA for acceptance and/or approval. The NEM is a graphic depiction of the noise exposure around an airport in existing and future operational conditions. NEMs also depict the noncompatible land uses within the noise contours. Details of the data and analysis used to develop the NEMs at Memphis International Airport (MEM) are included in the text of this document. This report contains the NEMs for MEM only. If the NEMs indicate the factors leading to the update of the NEMs result in a "substantial new noncompatible use as defined in §150.21" a revised NCP will be submitted separately, at a later date.

Under the Part 150 process, FAA will indicate, upon receipt, whether the NEMs are in compliance with the requirements of the program. A notice of compliance is published in the Federal Register if they are found to be in compliance.

Title 14 CFR part 150, §150.21(d) requires airport operators to update their NEMs when a change in Day Night Level (DNL) of 1.5 decibels (dB) has occurred over any noise-sensitive land use. A change may consist of:

4. increases in non-compatible land uses inside the noise contours and/or an increase of DNL 1.5 dB or greater over land which was formerly compatible (e.g., one that was outside the DNL 65 dB contour), but is now non-compatible (e.g., now inside the DNL 65 contour), or
5. increases over previously determined non-compatible land uses, or
6. (decreases of non-compatible land uses and/or a decrease of DNL 1.5 dB or greater over a former noncompatible land use (e.g., one that was inside the DNL 65 dB contour) that becomes compatible (e.g., now outside the DNL 65 dB contour) as a result of the noise reduction.

1.2 Aircraft Noise Descriptors

A variety of noise metrics are used to assess airport noise impacts in different ways. Noise metrics are used to describe individual noise events (such as a single operation of an aircraft taking off overhead) or groups of events (such as the cumulative effect of numerous aircraft operations, the collection of which creates a general noise environment, or overall exposure level). Both types of descriptors are helpful in explaining how people tend to respond to a given noise condition. Descriptions of these metrics are provided below.

Figure 1.1 shows an example of the maximum noise level, or L_{max}, experienced at an observer's location to be 84.2 dBA with a Boeing 737-300 aircraft approaching Runway 23 at an example airport. In **Figure 1.2, Exhibit A**, the noise level of 84.2 dBA for the arriving 737-300 is compared to other common noise sources. Outdoor noise sources that may be comparable to the aircraft (at a distance of 561 feet) are a busy downtown area and a motorcycle at 25 feet. Each of the noise levels presented in this comparison is dependent on the associated distances from the observer's location. L_{max} is used to calculate the Sound Exposure Level (SEL), which is used to calculate DNL.

The SEL describes with a single number the sound energy during an aircraft noise event. SEL takes into account both the magnitude and duration of the aircraft noise event. The duration of an aircraft noise event is defined as the number of seconds between the first and last values of the instantaneous noise level, which are a minimum of 10 dBA below the maximum aircraft noise level, or L_{max}. **Figure 1.2, Exhibit B**, shows an example of the 737-300 noise event duration (8.8 seconds). In the case of the 737-300 arrival, the L_{max} of 84.2 dBA and event duration of 8.8 seconds produces a SEL value of 90 dBA. Because the duration of aircraft noise events are greater than one second, the numerical value of the SEL for an aircraft noise event is always greater than the numerical value of the maximum level, L_{max}.

AIRCRAFT NOISE: HOW WE MEASURE IT AND ASSESS ITS IMPACT

STEP 1: WHAT DID YOU HEAR?

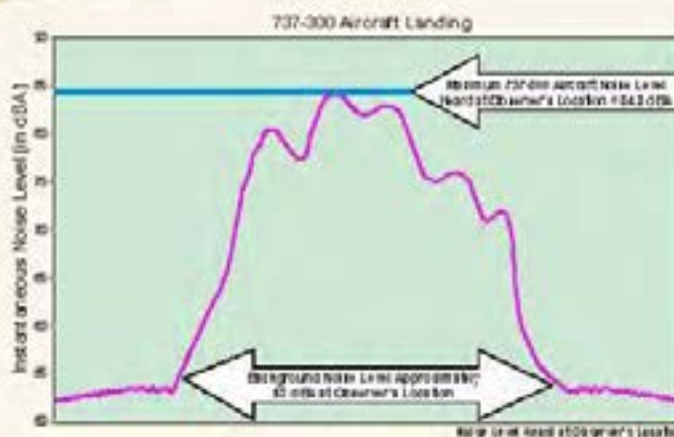


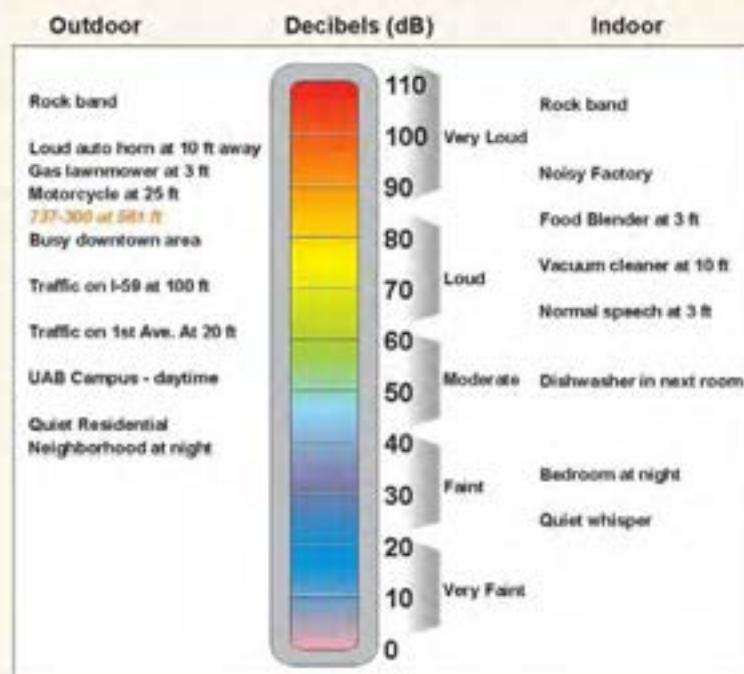
FIGURE
1.1

BOEING 737 L_{MAX} SAMPLE MEASUREMENT ON APPROACH

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AIRCRAFT NOISE: HOW WE MEASURE IT AND ASSESS ITS IMPACT

STEP 2: HOW LOUD IS THAT?



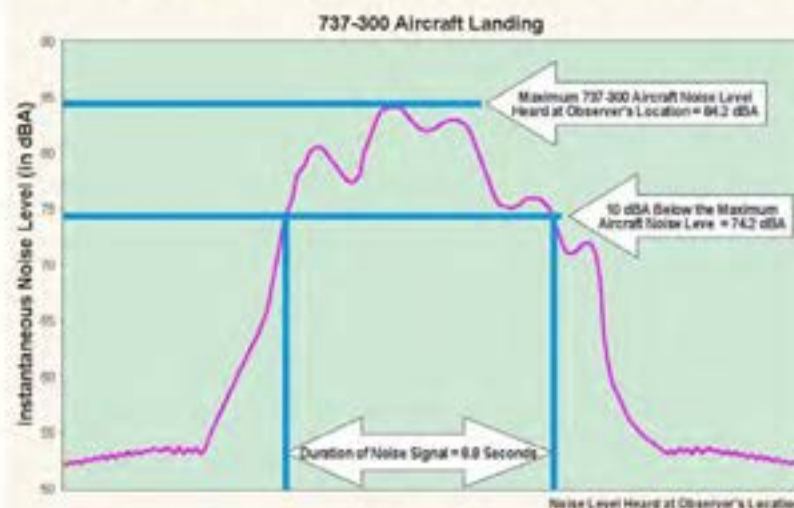
STEP 3: HOW LONG DID IT LAST?

The duration of an aircraft noise event is defined as the number of seconds between the first and last values of the instantaneous noise level which are a minimum of 10 dBA below the maximum aircraft noise level (Lmax).

The Sound Exposure Level (SEL) describes with a single number the sound energy during an aircraft noise event. SEL takes into account both the duration and the magnitude of the aircraft noise event. The duration correction increases the magnitude in an attempt to account for the increased noisiness of sounds of long duration versus sounds of short duration. Because the duration of aircraft noise events are greater than one second, the numerical value of the SEL for an aircraft noise event is always greater than the numerical value of the maximum level, Lmax.

For Example:

Lmax = 84.2 dBA Duration = 8.8 seconds SEL = 90 dBA



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Since the DNL metric is an average, all aircraft operations are added together in a 24-hour period. However, aircraft operations that occur during the hours of 10 p.m. and 7 a.m. are multiplied by a factor of 10. This nighttime correction factor takes into account the fact that most people are sleeping between these hours and aircraft noise events may be more annoying to the observer. **Figure 1.3** shows the equation to determine DNL from SEL. The number of aircraft operations by time of day is divided by 86,400 - the number of seconds per day. This averages the periods of aircraft noise and no aircraft noise.

In the example of the 737-300 arrivals to Runway 23 at an example airport, **Figure 1.4** shows the DNL if the daily operations at the airport totaled 95 arrivals, consisting of 75 during the daytime and 20 during the nighttime. Notice that the 20 nighttime operations are multiplied by a factor of 10. The DNL at the observer's position in Figure 1.1 is 65 dBA.

1.3 Noise Prediction Methodology

The evaluation of the MEM noise environment was conducted using the methodologies developed by the FAA and published in Title 14 CFR part 150 and Advisory Circular (AC) 150/5020-1. Both publications require that aircraft noise levels in the vicinity of airports be determined on an annual average-daily basis utilizing the DNL metric.

The FAA developed the computer-based program called the Integrated Noise Model (INM) as the primary tool for analyzing and evaluating noise impacts from aircraft operations at airports. Its use is prescribed for many FAA-sponsored airport projects requiring environmental evaluation. Version 7.0d was the version used for this document.

Information required to run the model includes:

- Airport Layout,
- The number of average daytime operations (7 a.m. to 9:59 p.m.),
- The number of average nighttime operations (10 p.m. to 6:59 a.m.),
- Aircraft fleet mix,
- Runway configuration and utilization,
- Primary departure and arrival flight tracks, and
- Aircraft flight profiles.

The INM incorporates this information along with its extensive internal database of aircraft noise and performance information, to calculate the DNL at many points on the ground around an airport. From a grid of points, the INM contouring program draws contours of equal DNL to be superimposed onto land use maps. For this document, DNL contours of 65, 70, and 75 dB were developed. The INM can calculate sound levels at any specified point so that noise exposure at representative locations around an airport can be obtained.

To identify and quantify noise-sensitive land uses and population located within the DNL 65+ dB noise contours for the 2013 Existing Condition and 2020 Future Condition, a Geographical Information System (GIS) was developed for this study. The GIS allows the user to identify various polygons and retrieve their descriptive information, which is contained in the database. The data are retrieved in the form of a map, and various data reports can be specified and retrieved. Land use and zoning data as well as individual parcel identification data were obtained for the area surrounding MEM.

The Enterprise GIS Group for the City of Memphis provided data for Memphis and Shelby County. DeSoto County Geographic Information Systems Department provided data for DeSoto County, Mississippi. Additional information was obtained through study research and field investigation. Information within the database includes items such as type of land use and zoning, number of housing units, and location of historical and noise-sensitive facilities.

1.4 *Memphis International Airport Part 150 Study*

The last complete title 14 CFR part 150 NEM and NCP for MEM was approved by the FAA on February 20, 1988. Updated NEMs were accepted by the FAA on December 4, 1997 (representing a 1997 existing condition and a 2002 future condition), and July 29, 2005 (representing a 2004 existing condition and 2009 future condition). Several changes in the aircraft operations at MEM have occurred since the NEMs were accepted in 2005, including the introduction of numerous NextGen (Next Generation Air Transportation System) operational procedures.

Title 14 CFR part 150 §150.21 requires the submission of two maps, an existing condition map and a future condition map. In accordance with §150.21, the existing condition map must be based on current data as of the year of submission to the FAA, or must be representative of existing conditions. The Existing Condition NEM for this study is based on data for the average-annual day during the 12-month period July 1, 2012 through June 30, 2013, and is identified as the 2013 Existing Condition NEM.

In accordance with title 14 CFR part 150 §150.21, the future condition map must be based on forecast operations at the airport for a forecast period that is at least five years in the future, beginning after the year of submission. The Future Condition NEM for this study is based on forecast operations at the airport for calendar year 2020, and is identified as the 2020 Future Condition NEM.

The information presented is a result of coordination with Memphis-Shelby County Airport Authority Staff, the FAA Memphis Airports District Office (ADO), Airport Traffic Control Tower (ATCT), FedEx, Tennessee Air National Guard (TN ANG) 164th Airlift Wing, and Tennessee Tech Center at Memphis. Also, previous studies conducted at MEM were consulted and incorporated into the NEM update as appropriate.

This NEM Update for MEM serves to assess the current and future aircraft noise environments and identify compatible and noncompatible land uses within the noise contours. This report contains the NEMs and supporting documentation for MEM. The NEMs contained in this report represents a revision to the MEM NEMs that were determined by the FAA to be in compliance with title 14 CFR part 150 on July 29, 2005.

DNL NOISE EXPOSURE = LEVEL OF NOISE + NUMBER OF OPERATIONS AND TIME OF DAY

$$\text{DNL} = \text{SEL} + 10 \times \text{the logarithm of } \left[\frac{D + (10 \times N)}{86,400} \right]$$

DNL = Day-Night Average Sound Level (in decibels)

Represents an average 24-hour noise level, with a nighttime penalty to represent the added intrusiveness of noises at night. The DNL represents the long-term impact by averaging the periods of aircraft noise and no aircraft noise.

SEL = Sound Exposure Level (in decibels) for one aircraft flight

D = Number of daytime flights (between 7:00 a.m. and 10:00 p.m.)

N = Number of nighttime flights (between 10:00 p.m. and 7:00 a.m.)

Each nighttime flight is counted ten times (10 x N) to account for the added intrusiveness of noise occurring during nighttime hours (between 10:00 p.m. and 7:00 a.m.).

86,400 = Number of seconds in one day (24 hours x 60 minutes/hour x 60 seconds/minute = 86,400 seconds)

Dividing the number of flights by 86,400 seconds per day, averages the periods of aircraft noise and no aircraft noise.

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AIRCRAFT NOISE: HOW WE MEASURE IT AND ASSESS ITS IMPACT

STEP 4: HOW OFTEN DID YOU HEAR IT?

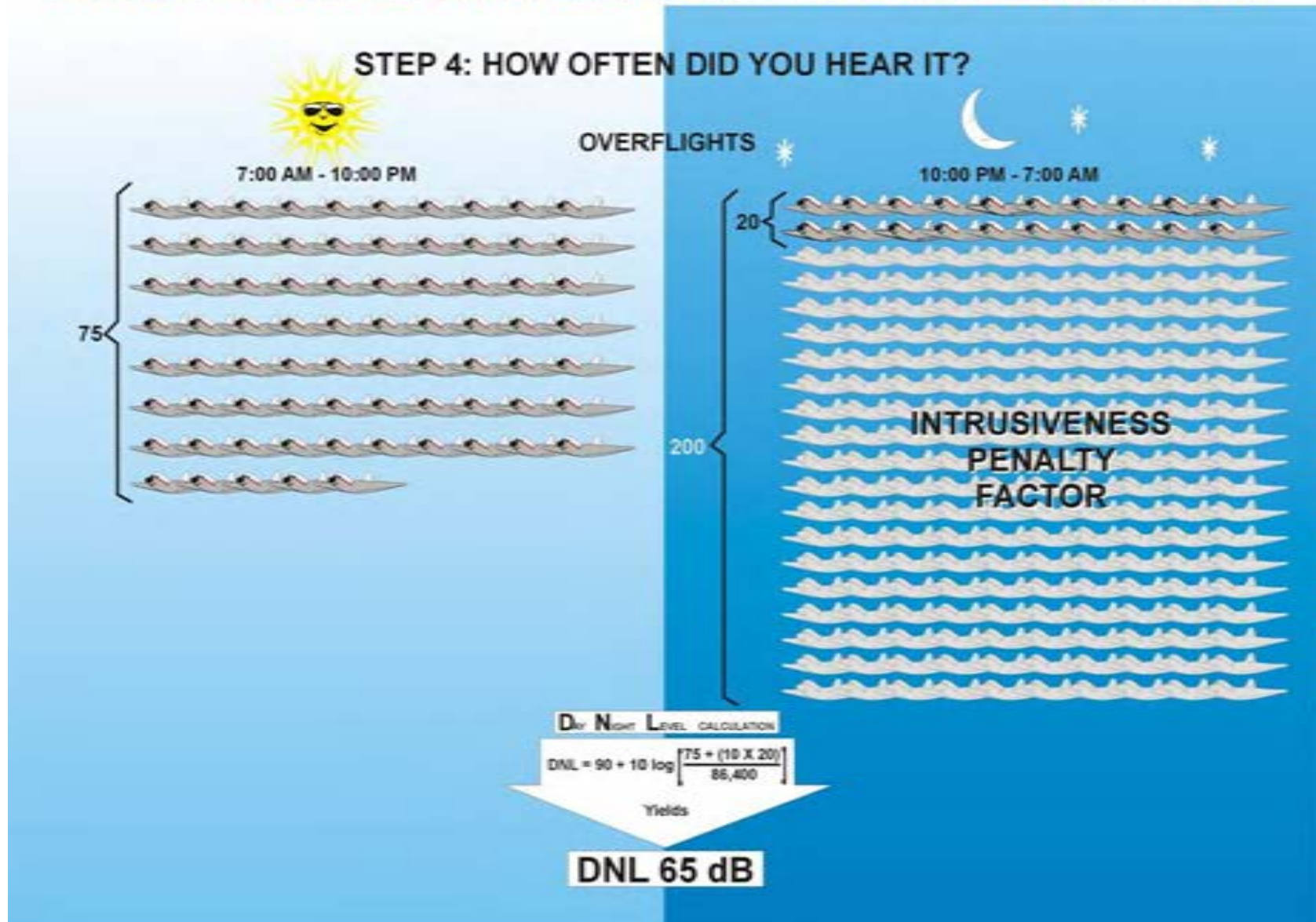


FIGURE
1.4

**DAY-NIGHT AVERAGE SOUND LEVEL
SAMPLE CALCULATION**

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These **Noise Exposure Maps and Supporting Documentation** will be submitted to FAA for formal review and compliance determination. Under the title 14 CFR part 150 NEM update process the FAA will indicate, upon receipt of the **Noise Exposure Maps and Supporting Documentation**, whether the NEMs are in compliance with the requirements of the program. If they are in compliance, a notice will be published in the Federal Register by the FAA.

The **Noise Exposure Maps and Supporting Documentation** will be presented in six sections and eight appendices.

- Section 1.0 Introduction
- Section 2.0 Surrounding Jurisdictions and Land Use
- Section 3.0 Airport and Aircraft Activity
- Section 4.0 2013 Existing Condition
- Section 5.0 2020 Future Condition
- Section 6.0 Consultation and Public Participation
- Appendix A Documents Relating to Alvarado v. MSCAA
- Appendix B Aircraft Operational Data for the INM Input
- Appendix C Noise Measurement Technical Memorandum
- Appendix D Documentation of Consultation
- Appendix E Documentation of Public Participation
- Appendix F NEM Submittal and Acceptance Documentation
- Appendix G Newspaper Advertisement - Public Notice of NEMs
- Appendix H Noise Exposure Maps and Flight Track Maps at a scale of 1"=2000'

1.5 Noise Exposure Map Checklist

To aid the review process, the FAA has prepared a checklist that details the items to be included in the NEM. This checklist is provided immediately following this page and indicates the pages throughout this document on which the checklist items are discussed.

TABLE 1.1
14 CFR PART 150
NOISE EXPOSURE MAP CHECKLIST

AIRPORT NAME: <u>Memphis International Airport</u>		
REVIEWER: _____		
Item	Yes/No/NA	Page No./Other Reference
I. Identification and Submission of Map Document:		
A. Is this submittal appropriately identified as one of the following, submitted under FAR Part 150:		
1. An NEM only?	Yes	Section 1.1
2. An NEM and NCP?	No	Section 1.1
3. A revision to NEMs which have previously been determined by FAA to be in compliance with Part 150?	Yes	Section 1.4
B. Is the airport name and the qualified airport operator identified?	Yes	Transmittal Letter and Section 3.0
C. Is there a dated cover letter from the airport operator which indicates the documents are submitted under Part 150 for appropriate FAA determinations?	Yes	Transmittal Letter
II. Consultation: [150.21(b), A150.105(a)]:		
A. Is there a narrative description of the consultation accomplished, including opportunities for public review and comment during map development?	Yes	Section 6 and Appendices E & F
B. Identification:		
1. Are the consulted parties identified?	Yes	Section 6.2 and Appendix D
2. Do they include all those required by 150.21(b) and A150.105(a)?	Yes	Section 6.2 and Appendix D
C. Does the documentation include the airport operator's certification, and evidence to support it, that interested persons have been afforded adequate opportunity to submit their views, data, and comments during map development and in accordance with 150.21(b)?	Yes	Sponsor's Certification, Section 6, and Appendices E & F
D. Does the document indicate whether written comments were received during consultation and, if there were comments that they are on file with the FAA region, or were all comments included in the documentation?	Yes	Section 6.3 and Appendices E & F
III. General Requirements: [150.21]		
A. Are there two maps, each clearly labeled on the face with year (existing condition year and future forecast)?	Yes	Figures 4.2 and 5.4
B. Map currency:		
1. Does the existing condition map year match the year on the airport operator's submittal letter?	No	Submittal Letter is dated August 2015, Existing Condition is dated 2013. See Sponsor's Certification
2. Is the future map based on reasonable forecasts and other planning assumptions?	Yes	Section 5
a. Forecast aircraft operations?	Yes	Section 5.2 and Appendix B

TABLE 1.1 (CONTINUED)
14 CFR PART 150
NOISE EXPOSURE MAP CHECKLIST

AIRPORT NAME: <u>Memphis International Airport</u>		
REVIEWER: _____		
Item	Yes/No/NA	Page No./Other Reference
b. Forecast fleet mix?	Yes	Section 5.3 and Appendix B
c. Forecast number of night operations?	Yes	Section 3.5 and Appendix B
d. Forecast flight tracks?	Yes	Section 5.5 and Figures 5.1 & 5.2
3. If the answer to 1 and 2 above is no, has the airport operator verified in writing that data in the documentation are representative of existing condition and future forecast conditions as of the date of submission?	Yes	Sponsor's Certification
C. If the NEM and NCP are submitted together:	N/A	
1. Has the airport operator indicated whether the future map is based on future contours without the program vs. contours if the program is implemented?	N/A	
2. If the future map is based on program implementation:	N/A	
a. Are the specific program measures which are reflected on the map identified?	N/A	
b. Does the documentation specifically describe how these measures affect land use compatibilities depicted on the map?	N/A	
c. If the future NEM does not incorporate program implementation, has the airport operator included an additional NEM for FAA determination after the program is approved which shows program implementation conditions and which is intended to replace the future NEM as the new official future map?	N/A	
IV. Map Scale Graphics, and Data Requirements: [A150.101, A150.103, A150.105, 150.21(a)]		
A. Are the maps of sufficient scale to be clear and readable (they must not be less than 1" to 2,000'), and is the scale indicated on the maps?	Yes	Appendix H
B. Is the quality of the graphics such that required information is clear and readable?	Yes	Figures 3.6-3.11, 4.2-4.5, & 5.2-5.7
C. Depiction of the airport and its environs:		
1. Is the following graphically depicted to scale on both the existing conditions and future maps?: [A150.101e2,4]		
a. Airport boundaries?	Yes	Figures 4.2 & 5.4, and Appendix H

TABLE 1.1 (CONTINUED)
14 CFR PART 150
NOISE EXPOSURE MAP CHECKLIST

AIRPORT NAME: <u>Memphis International Airport</u>		
REVIEWER: _____		
Item	Yes/No/NA	Page No./Other Reference
b. Runway configurations with runway end numbers?	Yes	Figures 4.2 & 5.4, and Appendix H
2. Does the depiction of the off-airport data include:		
a. A land use base map depicting streets and other identifiable geographic features?	Yes	Figures 4.2 & 5.4, and Appendix H
b. The area within the 65 Ldn (or beyond, at local discretion)?	Yes	Figures 4.2 & 5.4, and Appendix H
c. Clear delineation of geographic boundaries and the names of all jurisdictions with planning and land use control authority within the 65 Ldn (or beyond, at local discretion)? [A150.105(a),(b)]	Yes	Figure 2.1
D. Noise Contours		
1. Continuous contours for at least the Ldn 65, 70, 75?	Yes	Figures 4.2 & 5.4, and Appendix H
2. Based on current airport and operational data for the existing condition year NEM, and forecast data for the future NEM? [A150.101(a),(e) (3)]	Yes	Figures 4.2 & 5.4, and Appendix H
E. Flight tracks for the existing condition and future forecast timeframes (these may be on supplemental graphics which must use the same land use base map as the existing condition and future NEM), which are numbered to correspond to accompanying narrative? [A150.101(e) (2)]	Yes	Figures 3.6-3.11, 5.2 and 5.3
F. Locations of any noise monitoring sites (these may be on supplemental graphics that must use the same land use base map as the official NEMs). [A150.101(e) (7)]	Yes	Figure 4.1
G. Noncompatible land use identification:		
1. Are noncompatible land uses within at least the 65 Ldn depicted on the maps? [150.21(a), A150.101(a),(b),(c),(d),(e) (5)]	Yes	Figures 4.2 & 5.4
2. Are noise-sensitive public buildings identified? [150.21(a)] National Register Properties? [150.101(e) (6), (9)]	Yes	Figures 2.10, 2.11, 4.3 & 5.5
3. Are the noncompatible uses and noise-sensitive public buildings readily identifiable and explained on the map legend?	Yes	Figures 2.10, 4.5 & 5.7
4. Are compatible land uses, which would normally be considered noncompatible, explained in the accompanying narrative?	Yes	Figures 2.11, 4.4 & 5.6
V. Narrative Support of Map Data: [(150.21(a), A150.1, A150.101, A150.103)]		
A. Technical Data:		
1. Are the technical data, including data sources, on which the NEMs are based adequately described in the narrative?	Yes	Sections 3.3-3.9, 4.2-4.5, and 5.2-5.5

TABLE 1.1 (CONTINUED)
14 CFR PART 150
NOISE EXPOSURE MAP CHECKLIST

AIRPORT NAME: <u>Memphis International Airport</u>		
REVIEWER: _____		
Item	Yes/No/NA	Page No./Other Reference
2. Are the underlying technical data and planning assumptions reasonable? [150.21(a) (1), A150.103(b)]	Yes	Sections 3.3-3.9, 4.2-4.5, and 5.2-5.5
B. Calculation of noise contours:		
1. Is the methodology indicated?		
a. Is it FAA approved? [A150.103(a)]	Yes	Section 1.3
b. Was the same model used for both maps?	Yes	Section 1.3
c. Has AEE approval been obtained for use of a model other than those that have previous blanket FAA approval?	N/A	
2. Correct use of noise models:		
a. Does the documentation indicate the airport operator has adjusted or calibrated FAA-approved noise models or substituted one aircraft type for another?	Yes	Section 4.3
b. If so, does this have written approval from AEE?	N/A	
3. If noise monitoring was used, does the narrative indicate that Part 150 guidelines were followed?	Yes	Section 4.5 and Appendix C
4. For noise contours below 65 Ldn, does the supporting documentation include explanation of local reasons? (Narrative explanation is highly desirable but not required by the Rule.)	N/A	
C. Noncompatible Land Use Information: [150.21(a), A150.101(a),(b),(c),(d),(e) (5)]		
1. Does the narrative give estimates of the number of people residing in each of the contours (LDN 65, 70, and 75, at a minimum) for both the existing condition and future maps?	Yes	Sections 4.10 & 5.10, and Tables 4.4 and 5.10
2. Does the documentation indicate whether Table 1 of Part 150 was used by the airport operator?	Yes	Section 2.4 and Table 2.1
a. If a variation to Table 1 was used:	N/A	
(1) Does the narrative clearly indicate which adjustments were made and the local reasons for doing so?	N/A	
(2) Does the narrative include the airport operator's complete substitution for Table 1?	N/A	
3. Does the narrative include information on self-generated or ambient noise where noncompatible land use identifications consider non-airport/aircraft sound sources?	N/A	
4. Where normally noncompatible land uses are not depicted as such on the NEMs, does the narrative satisfactorily explain why, with reference to the specific geographic areas?	Yes	Sections 4.9 and 5.9

TABLE 1.1 (CONTINUED)
14 CFR PART 150
NOISE EXPOSURE MAP CHECKLIST

AIRPORT NAME: <u>Memphis International Airport</u>		
REVIEWER: _____		
Item	Yes/No/NA	Page No./Other Reference
5. Does the narrative describe how forecasts will affect land use compatibility?	Yes	Section 5.10
VI. Map Certification: [150.21(b), 150.21.(e)]		
A. Has the operator certified in writing that interested persons have been afforded adequate opportunity to submit views, data, and comments concerning the correctness and adequacy of the draft maps and forecasts?	Yes	Sponsor's Certification
B. Has the operator certified in writing that each map and description of consultation and opportunity for public comment are true and complete?	Yes	Sponsor's Certification and Section 6
C. If NEM dates are older than DOS, has airport operator certified in writing that aircraft operations, fleet mix, number of operations, and airport operating procedures are representative of existing conditions, and that forecasts for future NEM remain valid as of the DOS??	Yes	Sponsor's Certification

SECTION 2.0

SURROUNDING LAND USE AND JURISDICTIONS

2.1 *Introduction*

Understanding the jurisdictional requirements, zoning ordinances, and land use patterns is an important component of the Noise Exposure Map (NEM) updating process. This section provides an overview of jurisdictional responsibilities, zoning, and land use in the vicinity of MEM.

An inventory and analysis of the existing zoning and land use patterns and characteristics is strategic in determining the compatibility of an airport with the surrounding environment. Identifying residential and other noise-sensitive land uses is instrumental in this process. Electronic Geographic Information System (GIS) data were obtained from Shelby County Division of Planning and Development, Department of Regional Services; Memphis Light, Gas and Water Division; and DeSoto County Geographic Information Systems Department. Additional data were obtained from the websites of DeSoto County, the City of Southaven, and the City of Horn Lake.

2.2 *Memphis Airport Area Land Use Study*

In the early 1990s, the Memphis-Shelby County Airport Authority (MSCAA) invited five local governments – the City of Memphis, Shelby County, the City of Southaven, the City of Horn Lake, and DeSoto County – to participate in a joint land use planning program funded by the Authority. The planning program focused on two major objectives in pursuit of the goal of enhanced noise compatibility between the airport and its neighbors.

A primary objective of the program was to avoid future growth of noise-sensitive land uses in the vicinity of the Memphis International Airport (MEM). Another equally important objective was to assist in implementing the Memphis International Airport Noise Compatibility Program, which contained recommended noise mitigation actions that focused on the elimination and prevention of incompatible uses of property in noise-impacted areas surrounding the airport. The goal of this study was to carry out or facilitate the recommended noise mitigation actions that required the adoption of plans, policies, and ordinances by units of local government.

The study area encompassed nearly 90 square miles. A portion of the study area was in Mississippi and included the fastest-growing municipalities of Horn Lake and Southaven, as well as an area of unincorporated DeSoto County. The remainder of the study area was in Tennessee and included older, established neighborhoods in Memphis, as well as more sparsely developed portions of unincorporated Shelby County. The study area covered an expansive geographic area with many unrelated and diverse uses that have little in common other than aircraft noise. It is this common denominator of aircraft noise that led to the Memphis Airport Area Land Use Study.

During the years since publication of the latest Part 150 Study Update, some study areas formerly included in unincorporated DeSoto County and Shelby County have been annexed into the cities of Southaven and Memphis, removing the involvement of county-level jurisdictions. The jurisdictions currently affected by the Part 150 Update include Memphis and Shelby County, Tennessee and Southaven, Horn Lake, and Olive Branch, Mississippi.

2.2.1 Tennessee Land Use

The Land Use Plan recommended a balanced approach of maintaining the established neighborhoods and providing opportunities for employment in Tennessee. Neighborhoods surrounding the buyout redevelopment areas are generally proposed to be maintained in their current use patterns. Community stabilization activities recommended in the plan are offered as a device to return the high quality of life to the Whitehaven, Northern Charjean, and Oakhaven Neighborhoods.

The large employment area located generally between Winchester and Interstate 240 is being reinforced as a future office/business park complex to the south, southeast, and east of the airport and remains in the process of development. Through exercise of the buyout program by the Airport Authority, cleared residential areas are being replaced by a variety of new employment land uses.

The Airways Boulevard corridor is recommended to be developed as a high-quality office park area along the western edge of the airport, extending the land development theme initiated by the Nonconnah Corporate Center and the Federal Express office complex.

The Charjean buyout area is recommended to be used for similar office/business activities, with additional redevelopment activity proposed to connect the core buyout area with Airways Boulevard and Interstate 240. The Oakhaven area is recommended to remain as a residential neighborhood. Houses were purchased between Hurricane Creek and Nancy Road to accommodate airport expansion. Houses on both sides of Nancy Road were purchased to allow for relocation of Swinnea Road. A buffer strip and berm was constructed to shield the neighborhood from the airport uses and new road. No additional buyouts are planned or anticipated east of New Swinnea Road.

2.2.2 Mississippi Land Use

The balancing of major land development activities anticipated over the next 20 years with the current pattern established in the Horn Lake and Southaven communities is indicated by the following land use relationships:

- Coordination of aircraft flight paths, where feasible, over commercial and industrial areas that are less sensitive to noise.
- Continued residential development is proposed east of Tchulahoma Road.
- Growth of commercial development around the hospital and mall site, as well as along Interstate 55.
- Utilization of the Greenbrook buyout area for public use development as part of the strategy to stabilize this established, single-family neighborhood.

2.2.3 Aircraft Noise

The analysis of aircraft noise indicated the need for guidelines aimed at coordinating land use and noise patterns. The following items summarize recommended noise control measures:

- Construction of new buildings: Use buildings code provisions to specify adequate sound insulation for different types of buildings, with the requirements based on DNL contour.
- Location of new residential buildings: restricted, based upon noise contours. The recommended method is to prohibit new residential development within the 65 DNL contour.
- Development along Airways Boulevard or New Swinnea Road: Noise barriers can help reduce noise levels in the areas immediately east of the airport. The barriers could be on airport property, in the road rights-of-way, or on private property. Examine any potential development for possible noise barrier effects (consider elevated roadways, buffer zones between airport and road or between road and houses, buildings that could serve as noise barriers, and requirements for developers to build noise barriers).

2.2.4 Zoning Amendments

A significant element in the zoning strategy included the definition and adoption of new zoning districts in the City of Southaven. The “residential office” and “planned business park” districts are intended to allow a range of office and business park uses and will require buffers, landscaping, and other design requirements. Procedures proposed for the application of the two districts require property owners to receive approval of specific development plans prior to the approval of uses. The development plan approval process was intended to insure long-term compatibility of office and business park activities with neighboring properties.

A second zoning action was the comprehensive rezoning of property to districts that permit uses more compatible with the land use plan. Comprehensive rezoning was provided for property in the buyout areas, as well as the emerging office/business park area proposed for land south and east of the airport. However, many large parcels retained zoning designations permitting the introduction of single-family residences within noise conflict areas.

2.2.5 Building Code

Amendments to the building codes in the five remaining governmental jurisdictions were recommended in order to increase the protection of future users of buildings from disruptive noise levels. The building code amendments were to have been structured to match the level of noise mitigation construction requirements to the level of aircraft noise. However, none of the new building code requirements for municipalities included in the study area were found to have incorporated the proposed amendments.

2.2.6 Buyout Redevelopment Program

Guidelines have been defined for the buyout areas to guide their successful redevelopment. The package of guidelines and redevelopment plans prepared for each buyout area considers ways to redevelop the property for productive long-term land uses. The type of land uses must be consistent with the quantity of land, its proximity to potential long-term markets, and its level of accessibility and visibility.

The objective of this program is to accomplish redevelopment of the buyout areas while buffering and stabilizing the adjacent residential neighborhoods from the new uses. The program outlines a means of addressing in a comprehensive manner the redevelopment of the buyout areas. Included in the process is

the creation of a redevelopment agency in the Tennessee jurisdictions that will oversee redevelopment of the buyout area. Tools available to the redevelopment process may include the following:

- The acquisition of additional property that hinders high-quality development
- The sale of cleared land to private developers
- The monitoring and enforcement of explicit development plans for the protection of adjoining residential areas.
- Investigation of ways to apply noise insulation and noise barrier construction improvements in existing residential neighborhoods.

2.2.7 Status of Recommended Implementation Strategies

The Memphis Airport Area Land Use Study was adopted by the City of Horn Lake in June 1991, by DeSoto County in December 1991, by Shelby County, Tennessee in June 1992, and by the City of Memphis in August 1992. It was not adopted by the City of Southaven, Mississippi. In May 2004, the Memphis and Shelby County Office of Planning and Development and DeSoto County Planning Department were queried regarding specific implementation actions recommended in the Memphis Airport Land Use Study.

The DeSoto County Planning Department indicated that the study was no longer applicable to DeSoto County, because the noise-impacted areas previously located in unincorporated DeSoto County had been annexed by the City of Southaven.

With regard to specific implementation actions recommended in the Memphis Airport Land Use Study, the Memphis and Shelby County Office of Planning and Development adopted a new Unified Development Code (UDC) on August 10, 2010, which took effect on January 1, 2011. An updated version was approved on August 27, 2012 and modifications are being made on a regular basis.

The UDC is a form-based code, with some of the former zoning district designations being replaced with comparable ones, and new districts identified. Residential district uses within the study area are similar to the former zoning district designations, and vacant properties resulting from the buyout process remain as single- or multi-family residential zones. Rezoning of the vacant residential land resulting from the buyout process was not part of the UDC approval process.

Of note is the permitted residential use of space above or combined with commercial activities in all of the mixed-use (commercial) zones. This more flexible aspect of the new UDC represents the potential for additional conflict regarding residential land use compatibility within the 65 dBA contour.

With regard to land uses addressed in the Land Use Compatibility Guidelines, the following are permitted by right:

- residential uses are permitted in all the new districts except the public / open space / floodway districts and industrial districts

- public and private schools are permitted in all the new districts except the public / open space / floodway districts and would require special use approval in industrial districts
- libraries and hospitals are permitted in the commercial districts, and
- places of worship are permitted in all but the public / open space / floodway districts.

The new UDC includes a special Airport Overlay District designation, consisting simply of building height restrictions. Noise mitigation/abatement requirements/standards are not currently included in the new building codes.

The Whitehaven-Levi Planning District Plan recommended the following: 1) rezoning the area bounded by I-240 on the north, I-55 on the west, Airways Boulevard on the east and Brooks Road on the south from Heavy Industrial (I-H) District to the planned business park 2) conduct more detailed studies for mitigation of special conditions that exist on the west side of the Airways Corridor to include the buy-out area and 3) pursue rezoning of the buyout area to office uses, as recommended in the Whitehaven-Levi Planning District Plan. Much of the buyout area is still zoned residential.

Work is underway to update the 1983 Depot District Plan, but as yet has not been completed. The Depot Planning District contains the Charjean buyout area.

Another comprehensive planning strategy which addresses the southern portion the planning area is being developed. The Memphis Aerotropolis Airport City Master Plan + Real Estate Analysis is currently in the analysis phase, and is incorporating input from community leaders and business owners in the study area bounded by Stateline Road on the south, Interstate 240 and the Burlington Northern and Canadian National Railroads on the north, the Canadian National Railroad on the west, and Hickory Hill and Kirby Parkway on the east. The US Department of Housing and Urban Development (HUD) and the City of Memphis Division of Planning and Development have partnered through the FY 2010 HUD Community Challenge Grants Program to fund the Master Plan. Planning aspects include the following:

- economic development
- infrastructure (building, transportation, stormwater, utilities, and land)
- retail and commercial amenities
- housing
- greenspace
- crime
- workforce education

Preliminary strategies identified in the planning document are intended to facilitate redevelopment and economic viability of the study area while improving livability aspects of the community. The MSCAA has been a participating member of this planning effort, and will presumably adopt the recommendations of the resulting plan.

2.3 Jurisdictions

Five political jurisdictions are located in the study area in the vicinity of MEM. Understanding the functions and regulatory powers of each jurisdiction is critical in the development of a land use compatibility plan for MEM and its environs. This section identifies the governmental entities surrounding MEM and provides an overview of the regulatory structure and land use planning authority for each entity. **Figure 2.1** illustrates the boundaries of the study area and the jurisdictions involved in this study.

The five political jurisdictions within the vicinity of MEM responsible for development control are as follows: City of Memphis, Tennessee; Shelby County, Tennessee; Southaven, Mississippi; Olive Branch, Mississippi; and Horn Lake, Mississippi. Transportation planning assistance is also provided by the Metropolitan Planning Organization (MPO). The MPO plays a key role in determining the placement of roads in the vicinity of the airport, thereby greatly influencing the amount of property available for development and subject to impact by operations at MEM.

2.3.1 City of Memphis

The City of Memphis, with a 2010 population of 646,899 people and area of 324 square miles, is located in western Shelby County in southwestern Tennessee. The airport is located in south-central Memphis. In 1956, the City of Memphis and Shelby County Governments adopted a joint ordinance creating the Memphis-Shelby County Planning Commission. In November 1976, by joint resolution, the ordinance was amended to create the Office of Planning and Development and the Land Use Control Board (LUCB). The LUCB and committees regulate the development of land and consider the impact of various proposed uses / activities on adjacent properties.

The area north of the airport (north of Interstate 240) contains predominately residential land use. There are some commercial land uses along U.S. Highway 78. In addition, industrial land use is located northeast of Memphis Depot Business Park (located just northwest of the intersection of Airways Boulevard and Interstate 240).

The area east of the airport, between Interstate 240 and East Shelby Drive, contains residential, vacant, commercial, industrial, and institutional land uses. Residential land use is located between the airport and Getwell Road. In addition, there is residential land use along the extended runway centerline of Runway 9/27 and south of Interstate 240. Commercial and industrial land uses are located along Getwell Road, US Highway 78, and Interstate 240.

The area west of the airport, between Interstate 240 and East Shelby Drive, contains residential, vacant, commercial, industrial, and institutional land uses. Residential land use is located between the airport and Interstate 55. Commercial land use is located adjacent to the airport, north of East Raines Road, and along US Highway 51. The area near the extended runway centerline of Runway 9/27 contains predominately industrial and commercial land uses.

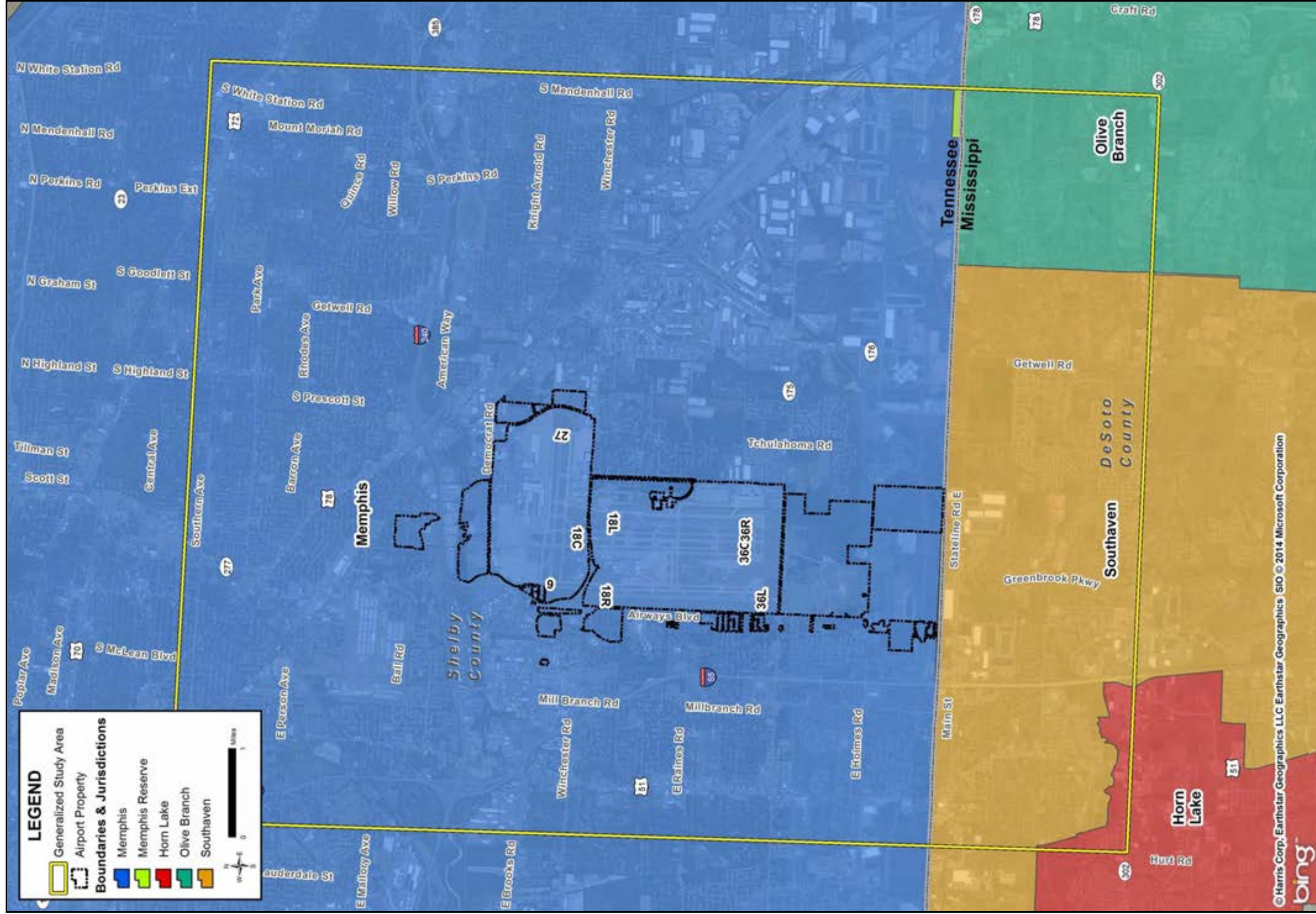


FIGURE
2.1

STUDY AREA BOUNDARIES AND JURISDICTIONS

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2.3.2 Shelby County

Shelby County contains approximately 783 square miles with a 2010 population of 927,644 people. It is a political jurisdiction located in southwestern Tennessee, which consists of incorporated municipalities including the City of Memphis, City of Germantown, City of Bartlett, City of Millington, Town of Collierville, Town of Arlington, and City of Lakeland. The Land Use Control Section (LUCS) processes and analyzes applications for zoning changes, subdivision of property and land development actions. LUCS serves as the staff to the Memphis and Shelby County Land Use Control Board and Board of Adjustment.

Figure 2.2 illustrates the existing land use within the City of Memphis portion of the study area.

2.3.3 City of Southaven

The City of Southaven is located in northern DeSoto County in northwestern Mississippi and immediately south of the Tennessee state line. Southaven is responsible for the interpretation and enforcement of its zoning laws. Southaven is the nearest political jurisdiction in Mississippi to the airport. The Department of Planning and Development is responsible for overall community planning and development activities within the city. The Southaven Planning Commission is responsible for the review of rezoning requests, comprehensive plan formulation, and subdivision review, and for making zoning and land use recommendations to the Board.

The City of Southaven contains approximately 41 square miles and according to Census 2010, has a population of 48,982 people. Utilizing the number of housing permits issued during 2010 through July of 2013 (603) and the average household size for occupied units (2.64), the current population is estimated to be 50,574 persons. The existing land use, as identified in the ***Southaven Comprehensive Plan 2000 –2020*** and updated by observation of current conditions, is shown in **Figure 2.3**.

The availability of residential units is the most influential determinant of population, as the population is represented by the number of residents. Southaven has experienced a ten percent (10%) average annual growth rate in new home starts during the period 1985 through December 2001. Other factors which influence the pattern of potential population growth is the availability of vacant or under-utilized land, and the density at which it is developed. The City of Southaven currently contains 11, 378 acres of vacant land. The amount of land currently utilized for residential development totals 7,133 acres, or 71.5 percent of the developed land within the City's boundaries. The average density is 2.46 units per acre. According to the ***Southaven Comprehensive Plan 2000 – 2020***, reasonable expectations would project potential development of 70 percent of the existing vacant land and under-utilized larger tracts as new residential housing units. The anticipated land area to be developed as single-family housing units totals 8,238 acres.

The City of Southaven identifies 20 base zoning districts, one mixed-use district, and three overlay districts. The Airport Height Use Regulation District (AHR) provides restrictions regarding the height of structures and plant materials in order to provide safe navigation for aircraft departing and arriving at Memphis International Airport. Certain areas in the city lie in the direct path of aircraft taking off from and landing at the MEM. Certain areas within Southaven have been identified with a supplementary use

restriction in the form of the Airport Noise Abatement Zone. **Figure 2.4** illustrates the Airport Noise Abatement Zone, as identified in the ***Southaven Comprehensive Plan 2000 – 2020***. Note that the airport noise contours shown on this map are not the result of this current Part 150 Study, but are from a previous Part 150 Study, accepted by the Federal Aviation Administration (FAA) on December 4, 1997.

The recommendations of the ***Southaven Comprehensive Plan 2000 – 2020*** regarding the Airport Noise Abatement Zone are consistent with the land use and transportation recommendations of the ***Memphis Airport Area Land Use Plan***. Specifically, the areas along State Line Road are proposed to be developed in either Planned Office or Planned Business Park designations, expressly for the purpose of avoiding the conflict of residential occupancy in high noise exposure areas. The emphasis in these recommendations is to take every precaution to avoid re-introducing residential development within the areas affected by aircraft operations. Nonresidential uses are designed for use and re-use of these properties and specific design measures are recommended to promote and provide appropriate transitions and buffering at the edges of the aircraft noise abatement zone and between the different land uses. Recent land development has followed these recommendations, with new industrial land use constructed north of the Greenbrook Subdivision, and additional commercial and industrial uses introduced along Goodman Road and Airways Boulevard.

Several steps have been undertaken to ensure compatibility of long-term land use in this area consistent with the objectives of the Land Use Plan and Southaven's long-range goals. The fan-shaped parcel at State Line Road and Swinnea Road has been developed as a public golf course and the smaller parcel to the west has been developed as a passive use park and picnic area. In addition, the Future Land Use Plan identifies the land uses in the abatement area as either public, planned business park or planned office. **Figure 2.5** illustrates the Future Land Use Plan for Southaven, and **Figure 2.6** illustrates the Proposed Land Use for Area 2, which includes the Airport Noise Abatement Zone, as identified in the ***Southaven Comprehensive Plan 2000 – 2020***.

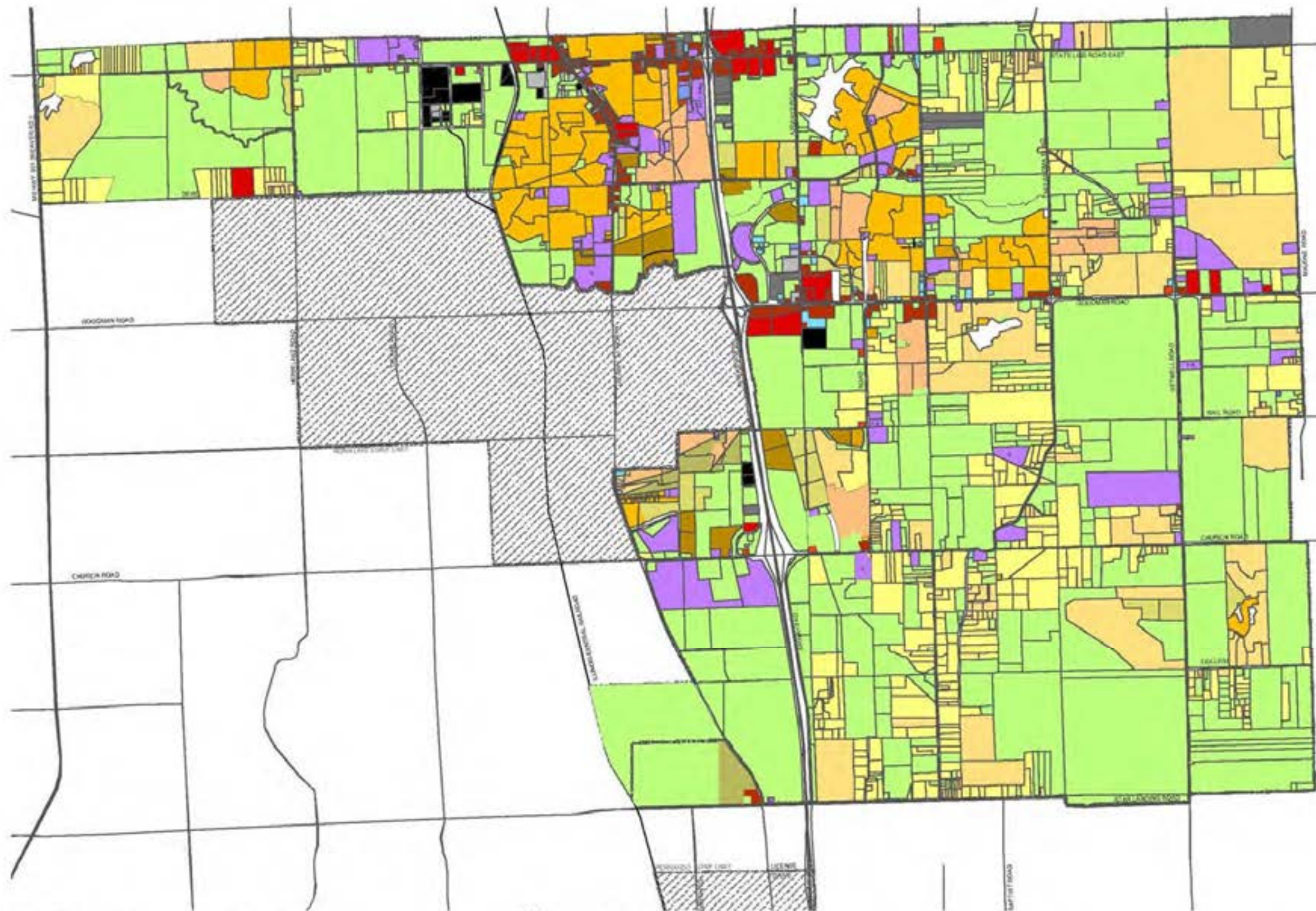
2.3.4 City of Horn Lake

The City of Horn Lake, with a year 2010 population of 26,066 people and area of 16.2 square miles, is located in northwest Mississippi west of Interstate 55, along both sides of State Highway 302 (Goodman Road in DeSoto County). Horn Lake is southwest of the City of Southaven and the two share a common boundary line located slightly north of Goodman Road and along Interstate 55 to the west. The office of Planning and Development provides planning and policy development assistance to developers, citizens, Planning and Design Review Commissioners and the Mayor and Board of Aldermen. In addition, the office develops programs in response to emerging issues and manages the revision and implementation of the City of Horn Lake's Comprehensive Plan. The office also coordinates the city's strategic planning efforts and oversees planning and zoning for the growth, development, improvement, restoration and beautification of the community.

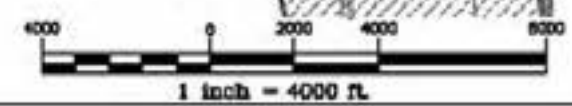
With regard to air travel, the city's close proximity to MEM makes this transportation mode accessible and convenient. Although there have been concerns with regard to the city's exposure to air traffic noise, noise levels within Horn Lake generated by air traffic are within generally acceptable standards and pose no substantive impact on any area within the city's corporate boundaries (***Imagine Horn Lake 2020***).

The proposed land use for the City of Horn Lake is shown in **Figure 2.7**.

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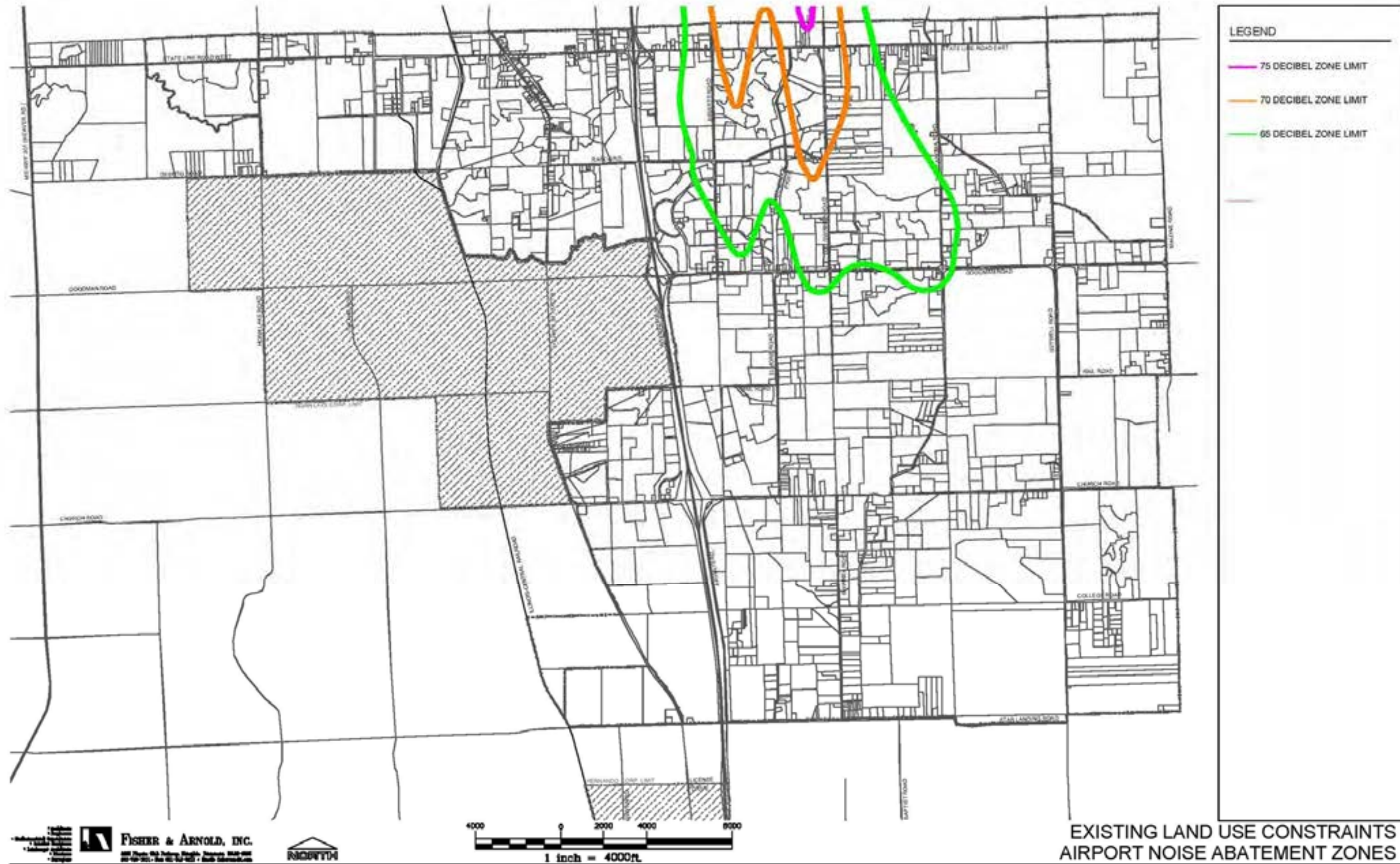
EXISTING LAND USE



CITY OF SOUTHAVEN
EXISTING LAND USE

FIGURE
2.3

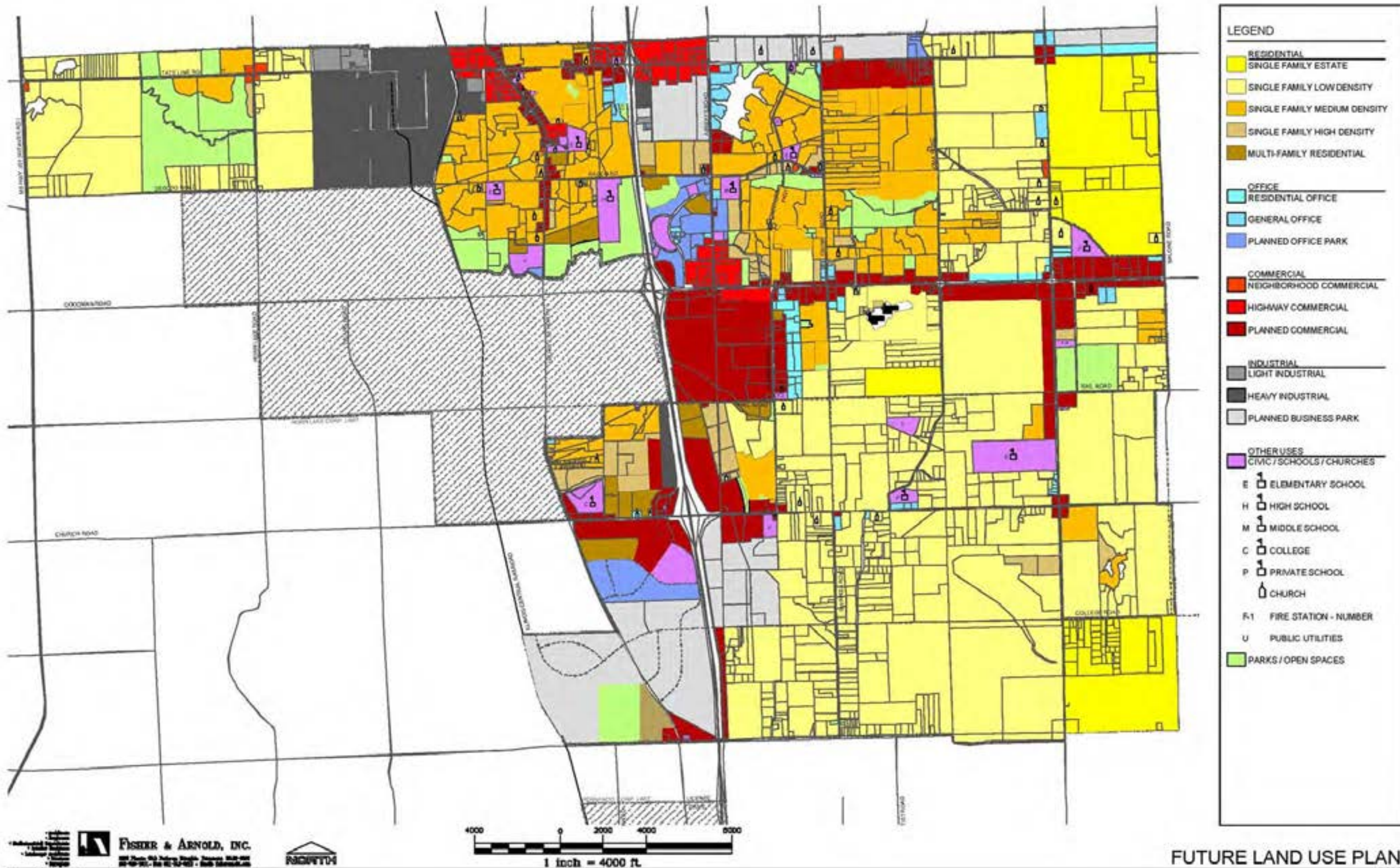
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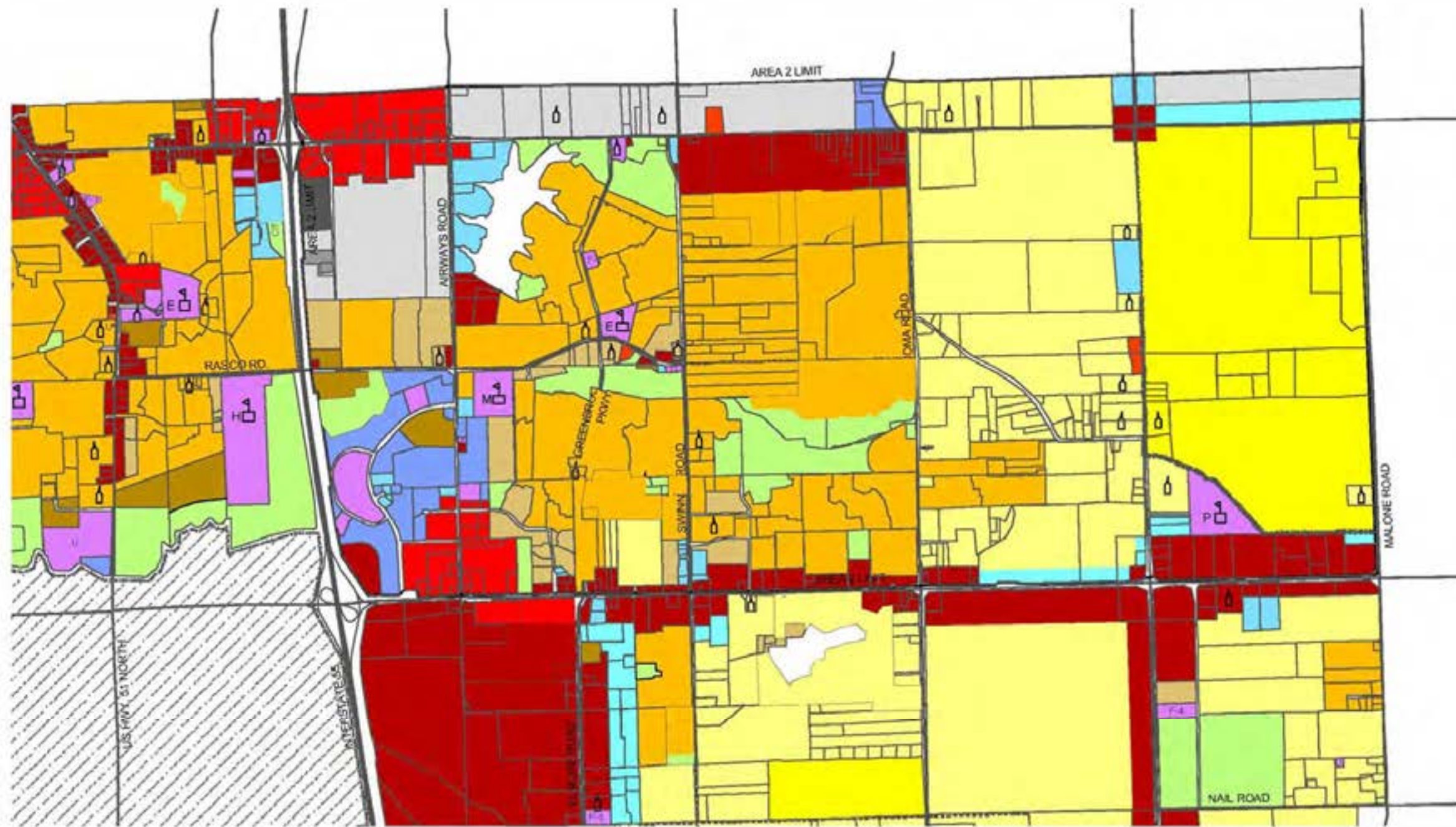
CITY OF SOUTHAVEN
NOISE ABATEMENT ZONE

FIGURE
2.4

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LEGEND

RESIDENTIAL

- SINGLE FAMILY ESTATE
- SINGLE FAMILY LOW DENSITY
- SINGLE FAMILY MEDIUM DENSITY
- SINGLE FAMILY HIGH DENSITY
- MULTI-FAMILY RESIDENTIAL

OFFICE

- RESIDENTIAL OFFICE
- GENERAL OFFICE
- PLANNED OFFICE PARK

COMMERCIAL

- NEIGHBORHOOD COMMERCIAL
- HIGHWAY COMMERCIAL
- PLANNED COMMERCIAL

INDUSTRIAL

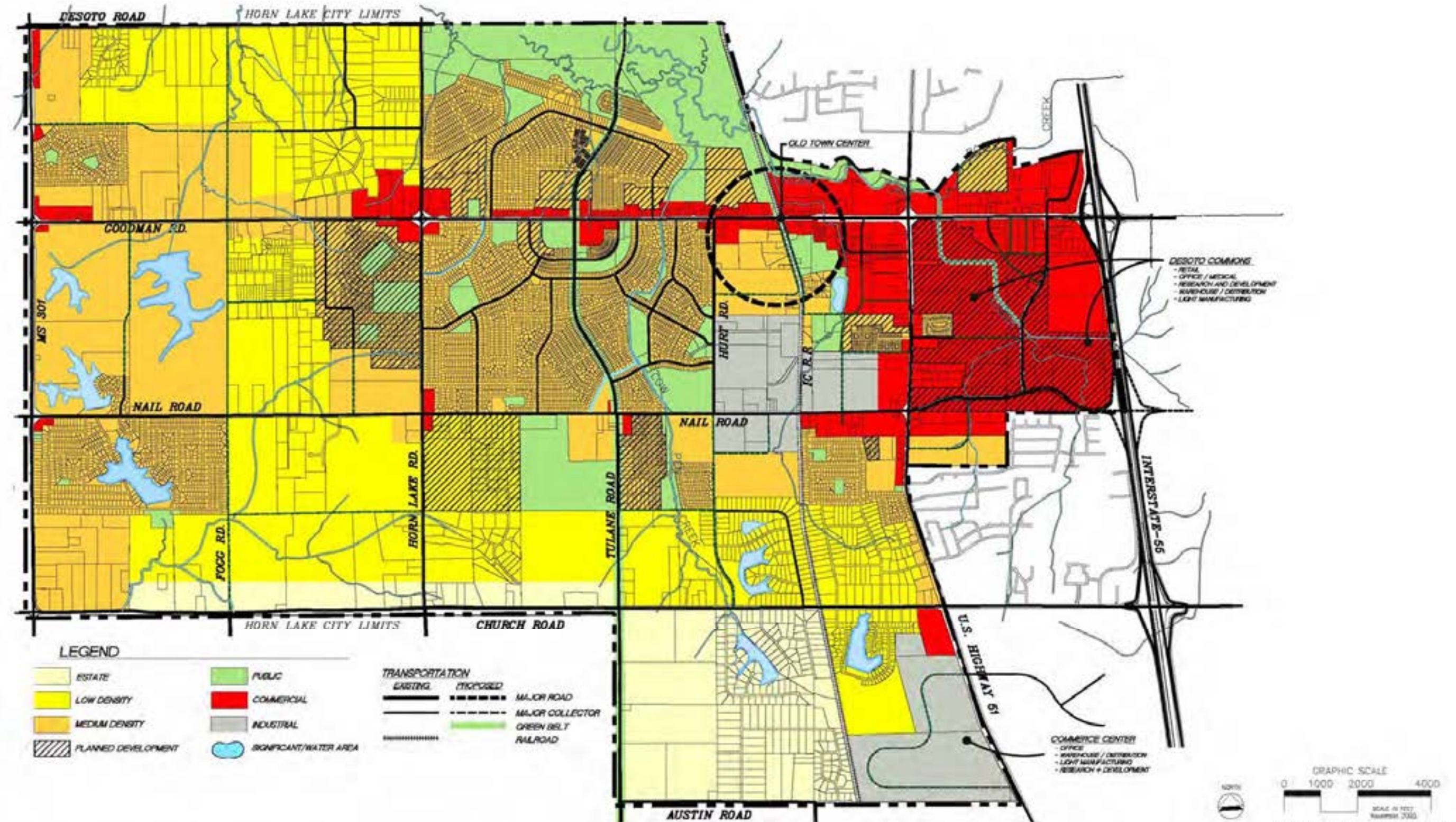
- LIGHT INDUSTRIAL
- HEAVY INDUSTRIAL
- PLANNED BUSINESS PARK

OTHER USES

- CIVIC / SCHOOLS / CHURCHES
 - E ELEMENTARY SCHOOL
 - H HIGH SCHOOL
 - M MIDDLE SCHOOL
 - C COLLEGE
 - P PRIVATE SCHOOL
 - CHURCH
- F-1 FIRE STATION - NUMBER
- U PUBLIC UTILITIES
- PARKS / OPEN SPACES



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**PROPOSED LANDUSE MAP
COMPREHENSIVE PLAN
HORN LAKE , MISSISSIPPI**

PREPARED FOR
CITY OF HORN LAKE
DESOTO COUNTY , MISSISSIPPI

LD LAND DEVELOPMENT SOLUTIONS, L.L.C.
CONSULTING PLANNERS AND ENGINEERS
1005 Lymfield Rd., Ste. 240
Memphis, TN 38107-5801
Phone 901-891-5388
Fax 901-891-5439

DALHOFF **THOMAS** **DAWS**
PLANNING LANDSCAPE ARCHITECTURE
2001 BUCKLEY STREET, SUITE 100, MEMPHIS, TN 38103

CITY OF HORN LAKE
PROPOSED LAND USE MAP

FIGURE
2.7

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2.3.5 DeSoto County

DeSoto County is located in northwestern Mississippi and includes four major municipalities: Hernando, Horn Lake, Olive Branch, and Southaven. The land area of DeSoto County is approximately 483 square miles. The Planning division maintains, interprets and updates the long-range plan for county development. They are involved in transportation planning for the county, rezoning case evaluation and subdivision and site plan review.

The ***Proposed DeSoto County 2030 Comprehensive Plan*** supports the previous planning effort of the ***Memphis Airport Area Land Use Study*** concerning performance criteria for building codes in airport noise-impacted areas.

The Land Use Plan serves as a guide for the Planning Commission and the Board of Supervisors when they review private development proposals and for making decisions on the location of public facilities.

The existing land use for DeSoto County is shown in **Figure 2.8**.

DeSoto County has a population of 161,252 people according to the Census 2010. The current (September 2013) population of DeSoto County may be derived by taking the number of occupied housing units for 2010 (59,172), adding the number of residential building permits since the census was taken (2,119), and multiplying the sum (61,291 units) by the average household size (2.79), which results in a 2013 population estimate for the county of 171,002. This figure is roughly 1.3% above the US Census Bureau's projected population for DeSoto County (166,234 for 2012, extrapolated to 168,780 in 2013).

Utilizing the rate of population increase identified by the Census Bureau for the county, there would be a population of 218,553 by the year 2030. This represents an increase in population of 57,297 persons. Applying an average occupied household size of 2.76 persons as an unincorporated county average, there will be a need for 20,760 housing units in addition to the 2010 inventory. Applying a density ratio of 0.31 dwelling units per acre (average for the county) yields a requirement for 66,968 residential acres in addition to the inventory of 2010.

However, applying a population estimate based upon issued building permits and average household size for unincorporated DeSoto County, the estimated 2030 population could be as high as 240,304 persons (an increase of 79,048), yielding the need for 28,333 additional housing units or 91,394 additional acres of residential development (based upon similar household size and density of development). Either method used for estimating future population in DeSoto County identifies a strong and continued need for new housing units and additional development of housing units within the conflict zones.

The Future Land Use Map, as identified in the ***Proposed DeSoto County 2030 Comprehensive Plan***, is shown in **Figure 2.9**.

2.3.6 City of Olive Branch

The City of Olive Branch is located in the northeastern portion of DeSoto County. Through annexation in 1996, the City of Olive Branch has become a part of the defined FAR Part 150 noise study area. The 2010 population of Olive Branch was listed at 33,484 persons and it contains approximately 36 square miles. The Planning Division is responsible for comprehensive development review including zoning, platting, variances, and other permits. Also managing land within the City per the General Development Plan, which includes long-range, and strategic planning. Other duties include planning related data management and research, coordination with Building Inspections, and professional and administrative support for public boards and commissions.

The existing land use for the City of Olive Branch is shown on **Figure 2.8**.

2.4 Land Use Compatibility Guidelines

This NEM update will use the FAA land use compatibility guidelines to address the various determinations regarding land use compatibility in the vicinity of the airport.

A basic tenet of land use compatibility planning is that no residential development should occur in areas (cities, townships, etc.) exposed to aircraft noise levels that exceed 65 DNL. Also, it is typically recommended that airport expansion should not occur in areas where existing residential land use is exposed to aircraft noise. As discussed previously, individual jurisdictions have control over the types and amount of residential development allowed to occur by utilizing zoning and comprehensive plans. This type of land use independence can sometimes make it difficult for an airport to establish and/or maintain a compatible land use scenario with nearby communities.

Land use compatibility, which the FAA addresses through Part 150, is primarily the responsibility of local jurisdictions. The guidelines developed by FAA, and presented in **Table 2.1** contain all the various land use categories and the associated uses that are acceptable at various DNL levels.

2.5 Noise-Sensitive Sites

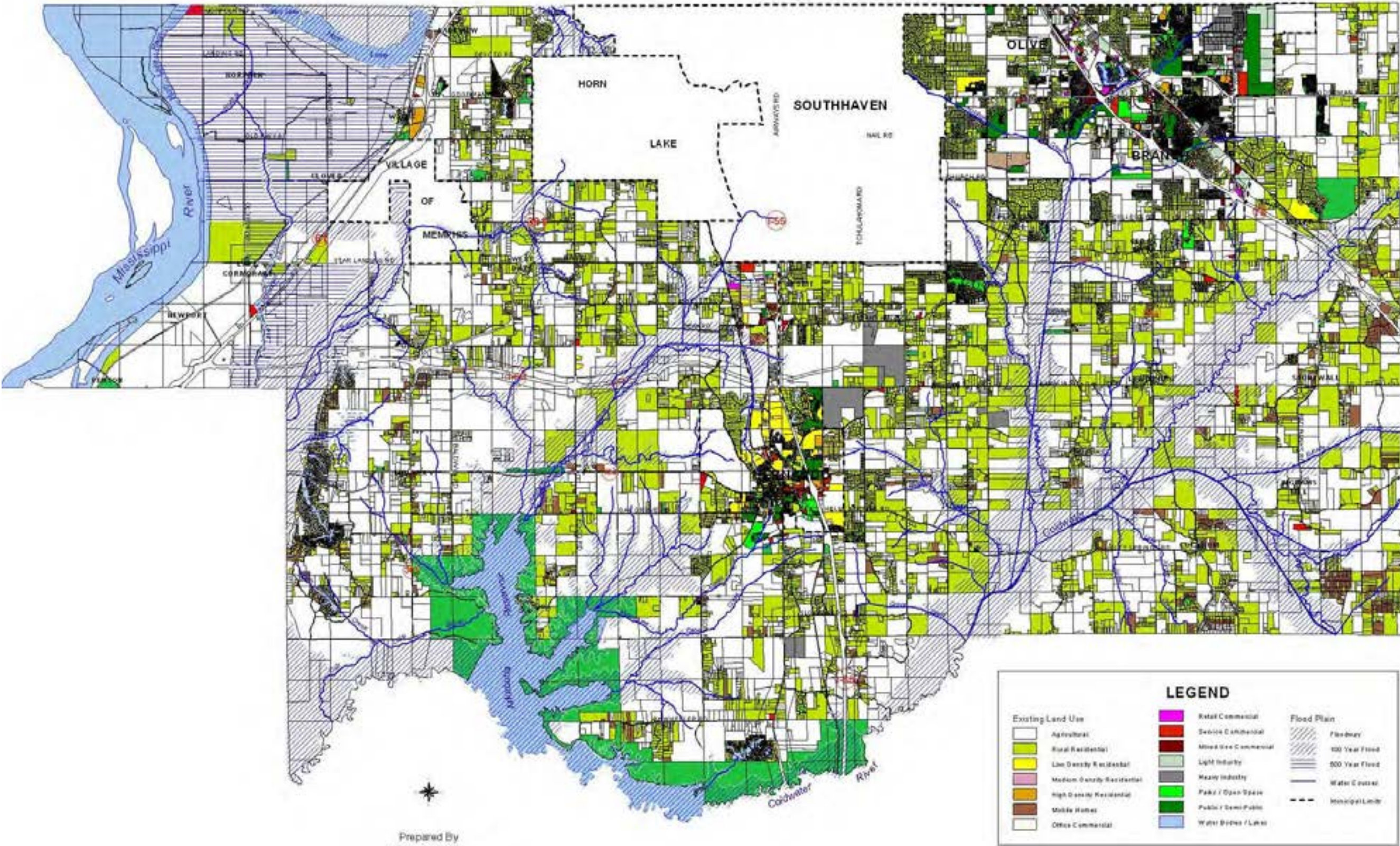
The Part 150 definition of noise-sensitive public buildings includes schools, hospitals, and health care facilities. Also identified are properties on or eligible to be included in the National Register of Historic Places (NRHP). The purpose of identifying these sites is to assist in the assessment of which properties are impacted by incompatible noise levels, and adopt policies with regard to the location of future noise-sensitive land uses. In addition to residential areas, a number of land use types are considered to be noise-sensitive according to FAR Part 150 Land Use Compatibility Guidelines (see **Table 2.1**).

Several additional sensitive sites were identified, consisting of public and private educational facilities, as well as numerous religious facilities. This could be accounted for in part by the modified area of inclusion, which was expanded somewhat to include additional areas of concern.

The locations of various noise-sensitive sites can be identified in **Table 2.2** and located on **Figure 2.10**

DeSoto County, MS

Existing Land Use

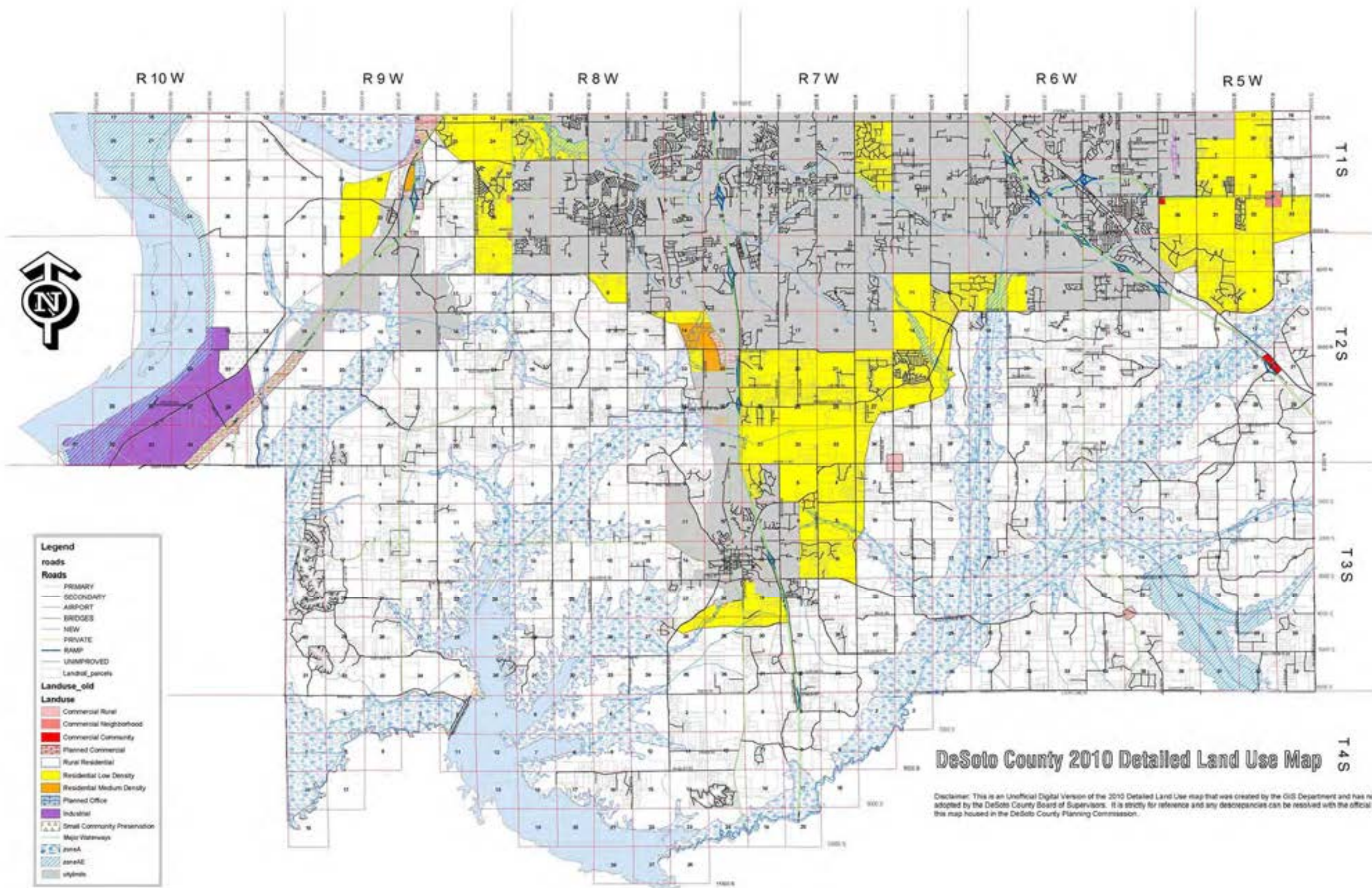


Prepared By
CMPDD
 Central Mississippi
 Planning and Development District

DESOTO COUNTY
 EXISTING LAND USE MAP

FIGURE
 2.8

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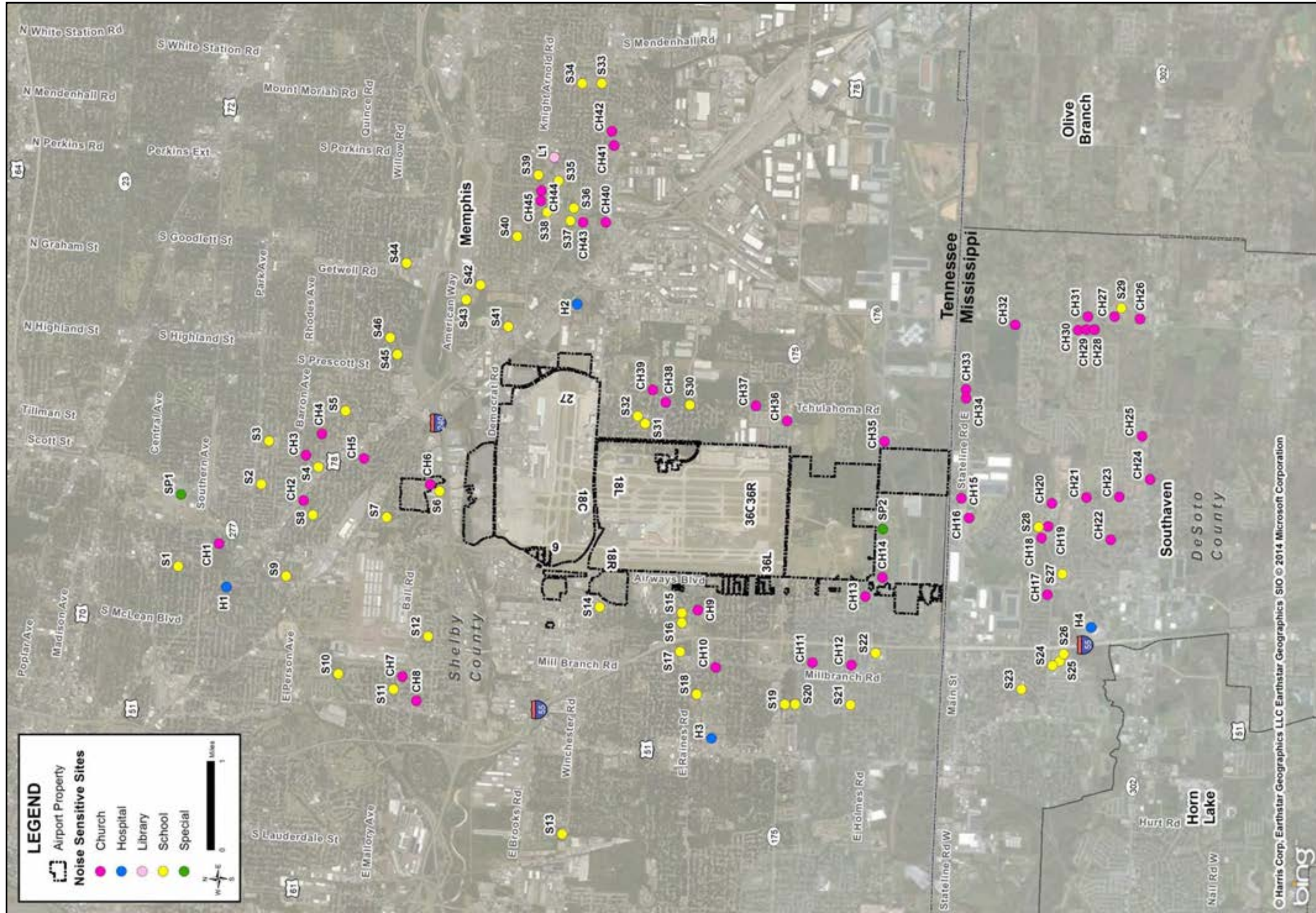


FIGURE 2.10

NOISE SENSITIVE SITES

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TABLE 2.1
TITLE 14 CFR PART 150 LAND USE COMPATIBILITY GUIDELINES


Yearly Day-Night Average Sound Level (DNL) in decibels						
	Below 65	65-70	70-75	75-80	85-90	Over 85
<u>Residential</u>						
Residential (Other than mobile homes & transient lodges)	Y	N ¹	N ¹	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient Lodging	Y	N ¹	N ¹	N ¹	N	N
<u>Public Use</u>						
Schools	Y	N ¹	N ¹	N	N	N
Hospitals, Nursing Homes	Y	25	30	N	N	N
Churches, Auditoriums, 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
<u>Commercial Use</u>						
Offices, Business & Professional	Y	Y	25	30	N	N
Wholesale & Retail Building Mtls, Hardware & 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
Communications	Y	Y	25	30	N	N
<u>Manufacturing & Production</u>						
Manufacturing, General	Y	Y	Y ²	Y ³	Y ⁴	N
Photographic and Optical	Y	Y	25	30	N	N
Agriculture (Except Livestock) & Forestry	Y	Y ⁶	Y ⁷	Y ⁸	Y ⁸	Y ⁸
Livestock Farming & Breeding	Y	Y ⁶	Y ⁷	N	N	N
Mining & Fishing, Resource Production & Extraction	Y	Y	Y	Y	Y	Y
<u>Recreational</u>						
Outdoor Sports Arenas, Spectator Sports	Y	Y ⁵	Y ⁵	N	N	N
Outdoor Music Shells, Amphitheaters	Y	N	N	N	N	N
Nature Exhibits & Zoos	Y	Y	N	N	N	N
Amusement, Parks, Resorts, Camps	Y	Y	Y	N	N	N
Golf Courses, Riding Stables, Water Recreation	Y	Y	25	30	N	N

Source: Title 14 CFR part 150 (October 25, 2004).

NOTE: The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or Local law. The responsibility for determining the acceptable and permissible land use remains with the local authorities. FAA determinations under Part 150 are not intended to substitute Federally-determined land use for those determined to be appropriate by local authorities in response to locally-determined needs and values in achieving noise-compatible land uses.

TABLE 2.1 (CONTINUED)
TITLE 14 CFR PART 150 LAND USE COMPATIBILITY GUIDELINES

KEY TO TABLE:

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 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 must be incorporated in design and construction of structure.
¹	Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assumes mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
²	Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of the 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 must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.
⁴	Measures to achieve NLR of 35 must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.
⁵	Land use compatible provided special sound reinforcement systems are installed.
⁶	Residential buildings require a NLR of 25.
⁷	Residential buildings require a NLR of 30.
⁸	Residential buildings not permitted.
	Incompatible land uses

**TABLE 2.2
NOISE-SENSITIVE SITES**

ID	Description
CH1	New Salem Missionary Baptist Church
CH2	Monument of Love Baptist Church
CH3	St. John's Baptist Church
CH4	Mt. Moriah East Baptist Church
CH5	St. Matthew Missionary Baptist Church
CH6	New Jerusalem Church of God in Christ
CH7	New Little Rock Baptist Church
CH8	New Hope Baptist Church
CH9	Westhaven Community Church
CH10	Koinonia Baptist Church
CH11	St. John AME Church
CH12	Deliverance Temple Ministries
CH13	St. Paul Baptist Church
CH14	Longstreet Methodist Church
CH15	Brown Missionary Baptist Church
CH16	Life Spring United Methodist Church
CH17	Southcrest Baptist Church
CH18	Greenbrook Baptist Church
CH19	First Christian Church
CH20	Faith Community Church
CH21	Graceview Presbyterian Church
CH22	Faith Community Church
CH23	Trinity Baptist Church
CH24	Church of Jesus Christ of Latter Day Saints
CH25	Goodman Oaks Church of Christ
CH26	New Covenant Fellowship Church
CH27	Broadway Baptist Church
CH28	Presbytery of St. Andrew Church
CH29	Jeremiah AME Church
CH30	Getwell Road United Methodist Church
CH31	Oak Forest Church of God
CH32	Summerwood Baptist Church
CH33	Graceland Christian Church
CH34	Stateline Road Church of Christ
CH35	Grace Christian Fellowship Church
CH36	Tchulahoma Baptist Church
CH37	Mount Olive Church
CH38	Greater Fellowship Ministries
CH39	New Mount Olive Church of God in Christ

**TABLE 2.2 (CONTINUED)
NOISE-SENSITIVE SITES**

ID	Description
CH40	Buddhist Community of Memphis
CH41	Greater Middle Baptist Church
CH42	Greater Harvest Church of God in Christ
CH43	Fireside Temple Church of God in Christ
CH44	Olivette Baptist Church
CH45	Parkway Village Church of Christ
H1	Methodist Outreach Hospital
H2	Oakville Memorial Hospital
H3	Methodist South Hospital
H4	Baptist South Hospital
L1	Parkway Village Branch Library
S1	Peabody Elementary School
S2	Dunbar Elementary School
S3	Melrose High School
S4	St. John's School
S5	Cherokee Elementary School
S6	Airways Middle School
S7	Charjean Elementary School
S8	Bethel Grove Elementary School
S9	Magnolia Elementary School
S10	City University Boy's Prep and City University School of Liberal Arts
S11	Corry Middle School
S12	Alcy Elementary School
S13	Graves Elementary School
S14	Winchester Elementary School
S15	Gardenview Elementary School
S16	A Maceo Walker Middle School
S17	Robert R Church Elementary School
S18	Hillcrest High School
S19	St. Paul School
S20	Byrne High School
S21	Havenview Middle School
S22	Oakshire Elementary School
S23	Southaven Elementary School
S24	Southaven Middle School
S25	DCS Career Tech Center - West
S26	Southaven High School
S27	Southaven Intermediate School

**TABLE 2.2 (CONTINUED)
NOISE-SENSITIVE SITES**

ID	Description
S28	Geeenbrook Elementary School
S29	Southern Baptist Education Center
S30	Oakshire Elementary School
S31	Oakhaven Middle School
S32	Oakhaven High School
S33	Wooddale Middle School
S34	Wooddale High School
S35	Knight Road Elementary School
S36	Sheffield Vocational/Technical School
S37	Sheffield Elementary School
S38	Sheffield Middle School
S39	Midsouth Christian College
S40	Goodlett Elementary School
S41	Oakville Elementary School
S42	Getwell Elementary School
S43	American Way Middle School
S44	South Park Elementary School
S45	Sharpe Elementary School
S46	Word of Faith Christ Academy
SP1	Liberty Bowl Memorial Stadium
SP2	Lakewood / Hamilton Cemetery and Forest Hill Funeral Home

2.6 Mitigated Properties

The MSCAA's efforts to reduce noise exposure resulted in the 1987 Noise Compatibility / Property Acquisition Program. This FAA approved program was comprised of the acquisition of approximately 1,400 single-family residences located within the DNL 75 dBA noise contour. This program took over a decade to complete.

On November 13, 1989, a lawsuit was filed against the MSCAA by twenty-seven residential property owners seeking monetary damages and injunctive relief. On May 5, 1993, the Court certified the case as a class action for litigation purposes. Plaintiffs on behalf of themselves and representatives of a class of other owners with vested interests in real property in the vicinity of MEM sued the MSCAA for damages to the value of their real property interests caused by noise and other forms of pollution. A Stipulation of Settlement was entered into on July 9, 1998, by the attorneys for Alvarado vs. MSCAA, providing for final settlement of the Class Action Lawsuit. On September 8, 1998, the Court redefined the class to include owners of improved real estates upon which there is a single-family residence, a duplex, or a

condominium, within the areas identified on the Notice Map. Collectively, such owners are referred to as the Settlement Class, and their property is referred to as Eligible Property. A Fairness Hearing was held November 12-17, 1998. The court determined that a full, fair, and reasonable hearing on all matters was heard. The notice requirements were adequate, sufficient and legal. The class was competently represented and approved the class settlement.

The U.S. District Court for the Western District of Tennessee entered a final judgment on December 22, 1998, approving the settlement of the class action. Such judgment was appealed to the U.S. Court of Appeals for the Sixth Circuit. The appeals court affirmed the district court's judgment by order entered on August 15, 2000. The court issued its mandate on September 7, 2000. Subsequent to the issuance of the mandate, MSCAA administered the settlement. The MSCAA received 12,608 claims from settlement class members and made payment to 12,430 claimants. On March 1, 2004, the court found that the MSCAA had complied with the stipulation of settlement and had discharged all obligations imposed upon it by the settlement agreement, and the case was closed. The total potential monetary benefit to the Settlement Class was estimated to be \$22 million. **Table 2.3** describes the allocation of the Settlement Funds.

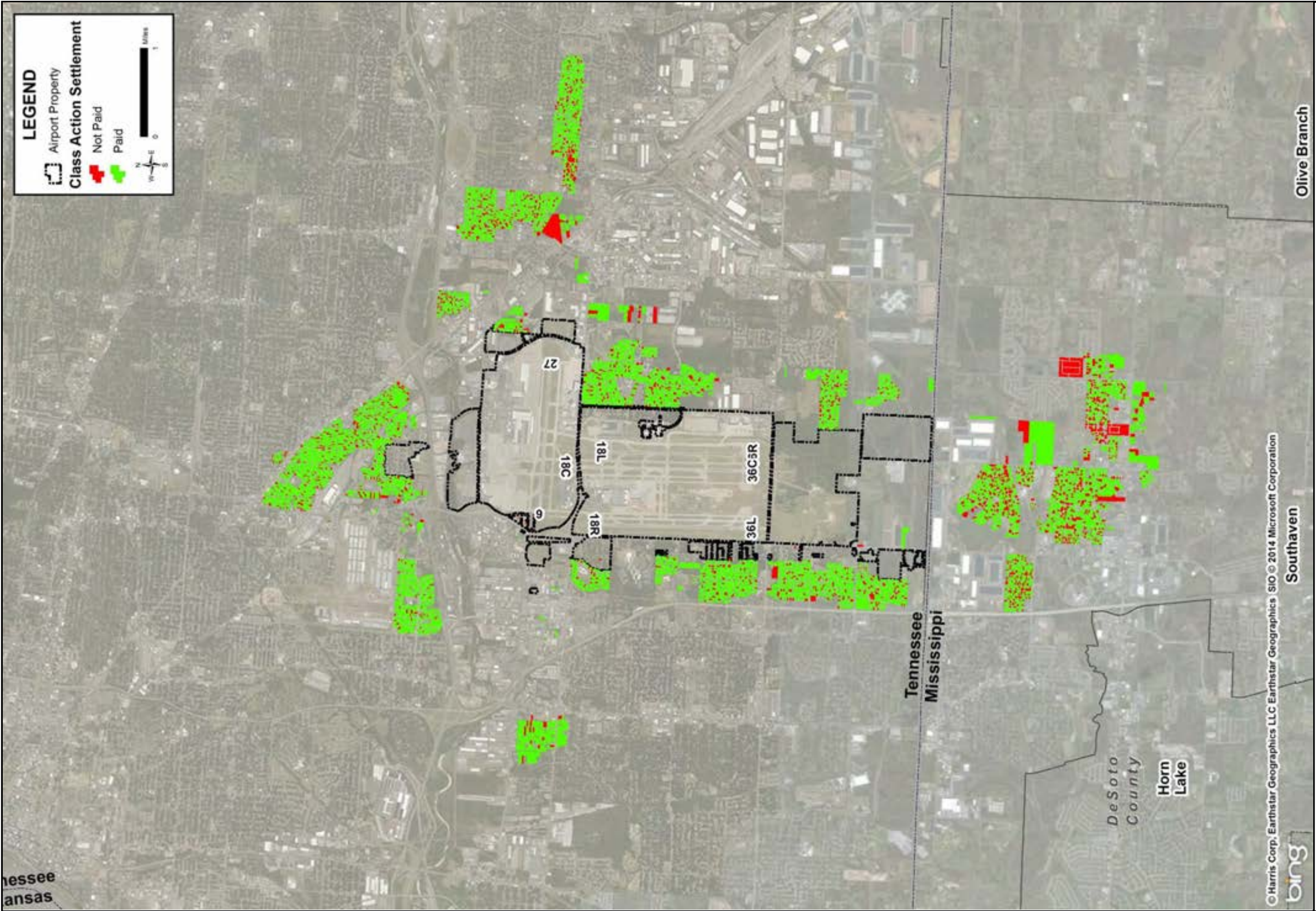
The Stipulation of Settlement, Article III, Terms and Conditions of Settlement, Section 3.6, Avigation Easements, describes the manner in which Avigation Easements were obtained on Eligible Properties. An Avigation Easement was imposed on each Eligible Property in the State of Tennessee, regardless of whether the Settlement Class Member filed a settlement claim or received payment from the Settlement Funds. Settlement Class Members owning Eligible Property in the State of Mississippi were required to grant an Avigation Easement to the Airport Authority before they qualified to receive payment from the Settlement Funds. Copies of documents related to the case, including the Settlement Agreement, Avigation Easement for Tennessee and Mississippi, and the Order closing the case, are provided in **Appendix A**. The geographic area to which the Settlement applied is illustrated in **Figure 2.11**.

**TABLE 2.3
ALLOCATION OF SETTLEMENT FUNDS**

Amount		Acquisition Date	Number of Eligible Properties	Total Payment Amount
An owner of Eligible Property utilized as a primary residence received the following gross amount:				
\$4,200	to a Settlement Class Member acquiring ownership	On or before December 31, 1973	1,546	\$6,493,200
\$2,600	to a Settlement Class Member acquiring ownership	January 1, 1974 thru September 30, 1987	3,218	\$8,366,800
\$1,600	to a Settlement Class Member acquiring ownership	October 1, 1987 thru May 4, 1993	2,890	\$4,624,000
\$525	to a Settlement Class Member acquiring ownership	On or after May 5, 1993 up to and including the Approval Date of the Settlement Agreement	3,133	\$1,644,825
Total Owner Occupied Properties			10,787	\$21,128,825
An owner of Eligible Property not utilized as a primary residence received the following gross amount:				
\$800	to a Settlement Class Member acquiring ownership	On or before December 31, 1973	257	\$205,600
\$600	to a Settlement Class Member acquiring ownership	January 1, 1974 thru September 30, 1987	488	\$292,800
\$500	to a Settlement Class Member acquiring ownership	October 1, 1987 thru May 4, 1993	424	\$212,000
\$325	to a Settlement Class Member acquiring ownership	On or after May 5, 1993 up to and including the Approval Date of the Settlement Agreement	485	\$157,625
Total Other Properties			1,654	\$868,025
GRAND TOTALS			12,441	\$21,996,850

Source: Alvarado vs. MSCAA, Stipulation of Settlement, July 9, 1998.

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SECTION 3.0

MEMPHIS INTERNATIONAL AIRPORT

The Memphis International Airport (MEM) is owned and operated by the Memphis-Shelby County Airport Authority (MSCAA). MEM is located on an approximately 5,100-acre site, including noncontiguous airport property, in southwestern Tennessee, approximately 7 miles southeast of the Memphis central business district and 3.5 miles north of the Mississippi - Tennessee state line. Its location relative to county and state boundaries as well as other major airports in the area and the vicinity surrounding MEM is depicted in **Figure 3.1**.

MEM is classified in the National Plan of Integrated Airport Systems (NPIAS) as a Commercial Service-Primary Airport. Commercial service airports receive scheduled passenger service by air carriers certified by the Federal Aviation Administration (FAA). The airport serves most of the nation's major airlines as well as several commuter operators. In addition, MEM is also used as the main sorting hub for Federal Express Corporation (FedEx) which has made MEM the second busiest air cargo airport in the world and the busiest in the U.S. The Tennessee Air National Guard (TN ANG) also uses the airport as a base for the 164th Tactical Airlift Group. FedEx occupies the majority of the developed area north of Runway 9/27 and two large hangars south of Runway 9/27 that are used for aircraft maintenance and training. FedEx also owns and operates its own fuel farm.

MEM also has two Fixed Base Operators (FBOs) that provide aircraft fueling, storage and maintenance service to general aviation aircraft. One FBO, Signature Flight Support, is located directly north of the terminal building, between Winchester Road and Runway 9/27. The other FBO, Wilson Air Center, is located north of Winchester Road and south of Runway 9/27, immediately west of Hurricane Creek.

3.1 *Airport Layout*

The airport elevation is 341 feet above Mean Sea Level (MSL). The magnetic declination (the difference between magnetic north and true geographic north) is 0.6-degrees west as of January 2010, with an estimated annual rate of change of 0.1-degree west. Air Traffic Control (ATC) and pilots use magnetic headings to direct and fly aircraft. The terrain in the vicinity of MEM is generally flat and does not affect flight operations.

The MEM airfield currently has four concrete, grooved runways that are all in good condition. MEM has three parallel, north-south runways (Runways 18L/36R, 18C/36C, and 18R/36L) and one east-west runway (Runway 9/27). The runway configuration is shown in **Figure 3.2**. Other runway information is listed in **Table 3.1**.

**TABLE 3.1
RUNWAY DEFINITIONS**

Runway	Latitude	Longitude	Length	Elevation	Airport Reference Code	Pavement Strength	Navigational Aids
18L	35° 02' 55.75" N	89° 58' 22.62" W	9,000 feet	277.6 feet	D – V	125,000 lb - SW 210,000 lb - DW 458,000 lb - DT 621,000 lb - DTCG 873,000 lb - DDT	MALSR, RVR, ILS CAT I, TDZ
36R	35° 01' 26.75" N	89° 58' 20.75" W	9,000 feet	334.9 feet			ALSF-2, RVR, ILS CAT III, TDZ
18C	35° 03' 16.55" N	89° 58' 34.21" W	11,120 feet	270.7 feet	D – V	125,000 lb - SW 210,000 lb - DW 458,000 lb - DT 621,000 lb - DTCG 873,000 lb - DDT	MALSR, RVR, ILS CAT I, TDZ
36C	35° 01' 26.59" N	89° 58' 31.89" W	11,120 feet	340.9 feet			ALSF-2, RVR, ILS CAT II, TDZ
18R	35° 02' 58.16" N	89° 59' 14.79" W	9,320 feet	288.4 feet	D – V	125,000 lb - SW 210,000 lb - DW 458,000 lb - DT 621,000 lb - DTCG 873,000 lb - DDT	MALSR, RVR, ILS CAT I, TDZ
36L	35° 01' 26.00" N	89° 59' 12.81" W	9,320 feet	320.8 feet			ALSF-2, RVR, ILS CAT III, TDZ, PAPI
9	35° 03' 31.05" N	89° 59' 08.63" W	8,936 feet	252.9 feet	D – V	125,000 lb - SW 210,000 lb - DW 458,000 lb - DT 607,000 lb - DTCG	MALSR, RVR, ILS CAT I
27	35° 03' 28.02" N	89° 57' 21.08" W	8,936 feet	292.0 feet			MALSR, RVR, ILS CAT I, VASI-L

Sources: National Oceanic Atmospheric Administration, National Geodetic Survey, NGS Aeronautical Survey Program. Station No. 23097.A Memphis International Airport. www.mscaa.com/airfieldinfo.htm



Part 150 NEM Update

VICINITY MAP

FIGURE
3.1

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3.2 Weather and Climate

Weather has a significant impact on noise exposure and propagation. Runway use and the operational characteristics of aircraft are heavily influenced by weather. The following four subsections detail modeled weather conditions and their impacts on aircraft operations.

3.2.1 Temperature

Temperature is an important factor in aircraft performance. High temperatures increase takeoff distance and reduce climb performance, and generally result in increased noise exposure. The National Oceanographic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC) computes thirty-year climate normals for selected temperature and precipitation elements at the completion of each decade. The average value of a meteorological element over 30 years is defined as a climatological normal. The most current climate normals are for the 1981 to 2010 period. As computed from National Oceanographic and Atmospheric Administration (NOAA) climatological data from its Memphis International Airport Weather Station, the annual mean temperature for the 1981 to 2010 period was 63.1°F. International Standard Atmosphere (ISA) temperature is 59°F at mean sea level, and it gets progressively colder at higher airport elevations. Standard atmospheric temperature, adjusted for MEM's elevation is 57.8°F. This is the default airport temperature used in the Integrated Noise Model (INM), and this value was used in the calculation of noise levels for this document.

3.2.2 Pressure

Atmospheric pressure at sea level is 29.92 inches of Mercury (Hg). This is the default airport pressure in INM for all airport elevations, because atmospheric pressure is referred to sea level. This value was used in the calculation of noise levels for this document.

3.2.3 Relative Humidity

Relative humidity measures the actual amount of moisture in the air as a percentage of the maximum amount of moisture the air can hold. Humidity does not have a significant impact on aircraft performance. In conjunction with temperature, however, it does impact the propagation of noise through the air. In general, sound travels farther in more humid conditions.

Humidity is highest early in the morning, and gradually drops during the day. It is generally at its lowest point in the afternoon. Morning values are recorded between 4 and 6 am local standard time, when usually temperatures are coolest and humidity highest. Afternoon humidity percentages are readings taken between 3 and 5 pm local standard time, when normally the day's temperature peaks and relative humidity reaches its lowest point. The daily number gives the average of humidity readings taken every three hours throughout the day.

As computed from NOAA data, the annual average daily humidity for the 1961 to 1990 period was 80% in the morning and 53% in the afternoon, and the daily average was 67%. In the INM, humidity is only used in calculating atmospheric absorption. The default relative humidity in INM is 70 percent. This value was used in the calculation of noise levels for this document.

3.2.4 Wind

Wind speed and direction primarily determine runway selection and operational flow. Aircraft generally takeoff and land into the wind (known as a headwind) when possible. Headwinds reduce an aircraft's takeoff and landing distance, and increase climb rate. Aircraft can operate with considerable crosswinds (a wind blowing at the side of the aircraft) of up to about 20 knots for a typical air carrier aircraft. Aircraft can operate with limited tailwinds (a wind blowing on the rear of the aircraft) up to 10 knots for a typical air carrier aircraft. Tailwinds increase takeoff and landing distance. Winds in excess of crosswind and tailwind limits generally force aircraft to use a different runway. The winds at MEM are generally out of the north or south, and favor operations on the existing runways, which are aligned accordingly. The default average headwind in INM is 8 knots, which is the value used in the SAE-AIR-1845 equations. INM uses temperature, pressure, and headwind when computing procedural profiles.

3.3 Air Traffic Control

Air traffic control in the United States is managed by three primary types of facilities: Air Route Traffic Control Centers (ARTCC), Terminal Radar Approach Control (TRACON), and Airport Traffic Control Tower (ATCT). A brief overview of these facilities and how they control flight to and from MEM is provided in the following sections.

3.3.1 Memphis ARTCC

Enroute airspace in the United States is managed by a series of ARTCC located in major cities across the United States. The Memphis ARTCC covers 17 ATCT within 120,000 square miles. This facility is located on the northern portion of the airport along Democrat Road. Commercial airlines and other aircraft flying under instrument flight rules in the controlled area of MEM ARTCC, that are not under the control of military or terminal facilities, are monitored by the Memphis ARTCC. This center controls an aircraft's route of flight between terminal areas and provides separation services, traffic advisories, and weather advisories.

3.3.2 Memphis TRACON

The Memphis TRACON controls aircraft arriving to or departing from MEM and other airports surrounding MEM. The purpose of the TRACON is to separate and sequence arriving and departing flights. The Memphis TRACON controls airspace within a 30-mile radius of MEM up to an altitude of 16,000 feet. It is located at the base of the Memphis Airport Traffic Control Tower.

3.3.3 ATCT

The ATCT at MEM is located along the airport's primary entrance road, north of the passenger terminal. Controllers in the ATCT are responsible for separating aircraft, sequencing aircraft in the traffic pattern, expediting arrivals and departures, separating aircraft on the ground, and providing clearance and weather information to pilots.

The area controlled by the ATCT usually encompasses the air traffic area. The airport traffic area extends outward to 5 statute miles of the airport and extends upward to an altitude of 3,000 feet.

3.3.4 PDARS

In 1997, the FAA partnered with the National Aeronautics and Space Administration (NASA) to launch the Performance Data Analysis and Reporting System (PDARS) project. PDARS has continuously collected flight plan and radar track data since the initial prototype was deployed in 1999. This information comes from systems at ARTCCs, which track and provide service to an aircraft for the duration of its journey, and at the TRACON facilities, which track and provide service to aircraft approaching and departing between 5 and 50 miles of an airport and most recently from ATCT facilities, which track and provide service to aircraft on the airport surface and immediate vicinity.

ATAC is the primary contractor supporting the PDARS program. ATAC provided URS with the IFR and VFR aircraft arrivals to and departures from MEM for the period August 31, 2012 through February 28, 2013, including military/law enforcement/special operations flights whenever possible.

The dataset included, but was not limited to, the following fields:

1. Flight ID,
2. Aircraft ID,
3. Time of day,
4. Aircraft type,
5. Origin/Destination,
6. Track ID,
7. Flight Plan,
8. Airspeed or Groundspeed
9. Latitude,
10. Longitude,
11. Altitude,

The data were used for developed of aircraft operational input for the INM.

3.4 Local Airspace

Aircraft landing at, departing from, or flying over MEM must receive clearance from air traffic control to operate within the Class B airspace surrounding MEM. Once inside the airspace, pilots receive sequencing and separation services from air traffic control. Class B airspace extends approximately 30 nautical miles from the airport and includes the majority of the airspace below 10,000 feet. The core of this airspace has a radius of 5 to 7 miles and extends from the surface to an altitude of 10,000 feet. At distances further from the airport, the “floor” of the airspace shifts upward in steps that are 5 to 10 nautical miles wide. This makes the Memphis Class B airspace resemble an upside-down wedding cake.

There are six public use airports, and numerous private airports and heliports in the vicinity of MEM. Public use airports are described in **Table 3.2**.

TABLE 3.2
PUBLIC USE AIRPORTS IN THE VICINITY OF MEM

Airport Name	Ownership	Owner	Distance from MEM in NM
General DeWitt Spain Airport	Public	MSCAA	10
Charles W. Baker Airport	Public	MSCAA	14
Millington Municipal Airport	Public	Millington Municipal Airport Authority	20
West Memphis Municipal Airport	Public	City of West Memphis, AR	14
Olive Branch Airport	Private	Metro Industrial Park Ltd	10
Hernando Village Airpark, Inc.	Private	Hernando Village Airpark, Inc.	15

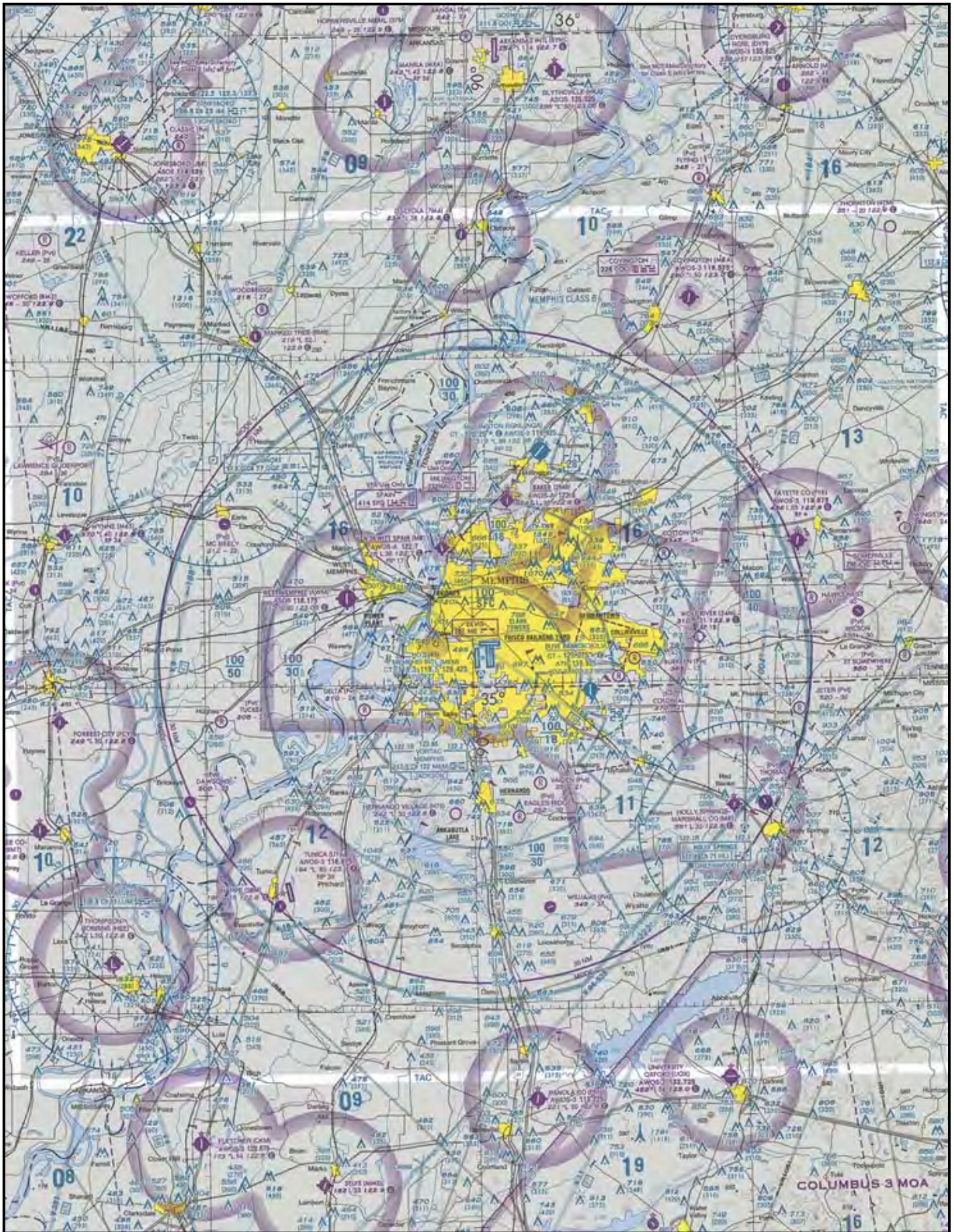
Source: URS Corporation, 2013

General DeWitt Spain and Charles W. Baker Airports are general aviation airports that are owned by the Memphis-Shelby County Airport Authority and provided as reliever airports for Memphis International Airport. The General DeWitt Spain Airport is located just north of the Downtown Business District. The Charles W. Baker Airport in Millington, Tennessee is located approximately 14 nautical miles northeast of MEM. There are also several private airstrips in the vicinity of MEM.

Private heliports in Memphis include those owned and operated by Baptist Memorial HealthCare, Baptist Hospital, Memphis Medical Center Air Ambulance, Le Bonheur Children's Medical Center, Methodist Hospital of Memphis, Memphis Police Department, and WREG-TV News Channel 3. **Figure 3.3** depicts the airspace surrounding Memphis International Airport.

3.5 Daytime/Nighttime Operations

The percentage of operations, by aircraft category, which occurred during daytime (7 a.m. to 9:59 p.m.) and nighttime (10 p.m. to 6:59 a.m.) hours was calculated from the PDARS data. The results indicate that overall 65 percent of all operations occurred during the daytime period and 35% occurred during the nighttime period. Departure and arrival operations each accounted for approximately 50 percent of the total operations during both the daytime and nighttime periods. **Figure 3.4** illustrates the daytime and nighttime distribution of operations by aircraft type. Detailed information regarding daytime / nighttime distribution by aircraft type is tabulated in **Appendix B**.



Part 150 NEM Update

MEMPHIS AIRSPACE

FIGURE
3.3

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Source: PDARS, August 31, 2012 through February 28, 2013

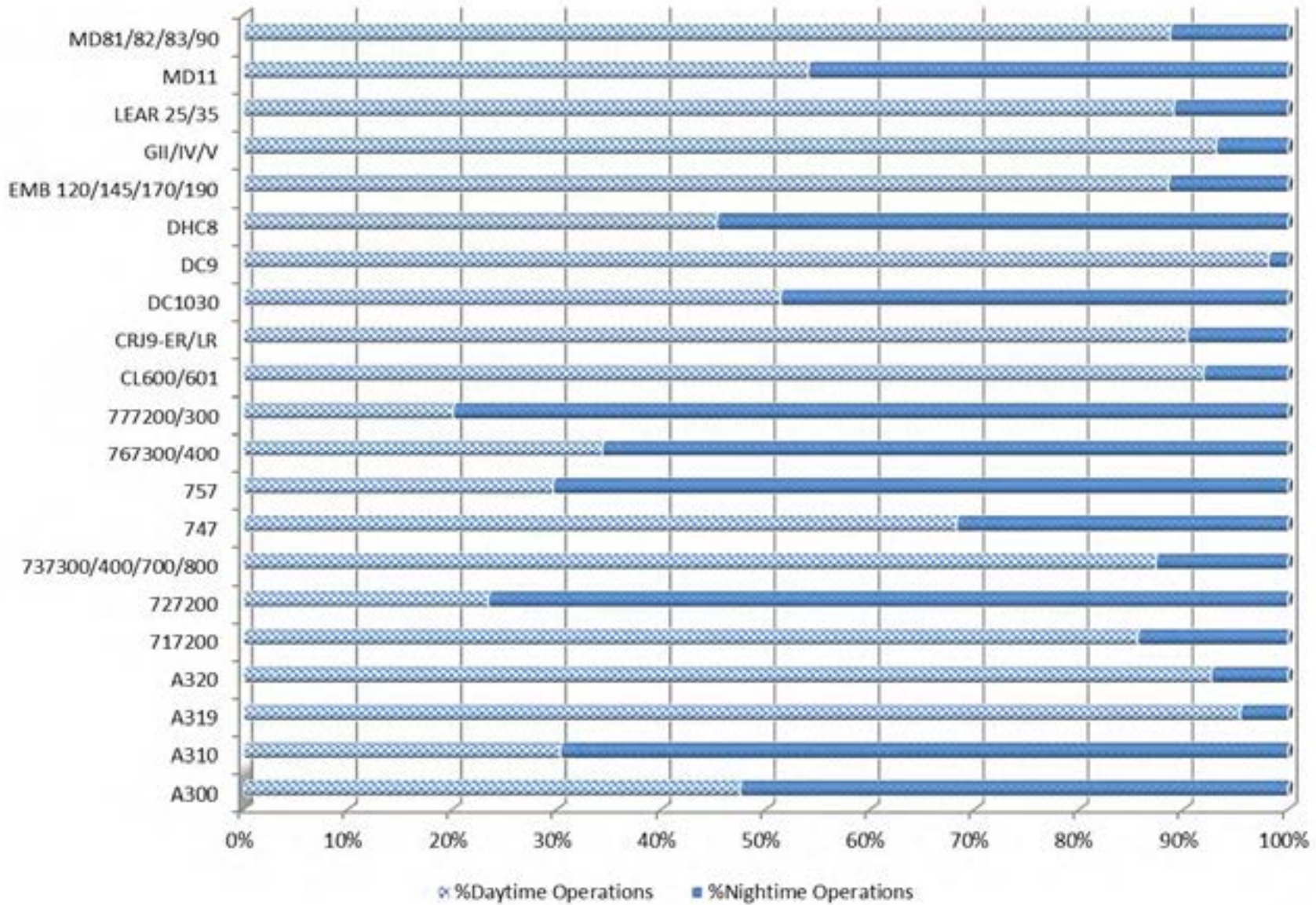


FIGURE
3.4

DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE

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3.6 Runway Utilization

Runway utilization rates are the average percentages that each runway is used for departures and arrivals. Existing runway utilization rates were determined through analysis of PDARS data, consultation with the ATCT staff at MEM, information provided by FedEx, and analysis of airspace procedures. The overall runway utilization is approximately equal for north flow (Runways 36L/C/R) versus south flow (Runway 18L/C/R). **Table 3.3** identifies the utilization by runway during the daytime, nighttime, and overall. **Figure 3.5** illustrates overall directional runway utilization rates. Detailed information regarding runway utilization by aircraft type is tabulated in **Appendix B**.

TABLE 3.3
OVERALL RUNWAY UTILIZATION

Runway	Daytime Use	Nighttime Use	Overall Use	Flow
18C	14%	6%	11%	43%
18L	12%	16%	13%	
18R	20%	17%	19%	
27	9%	17%	12%	12%
36C	13%	3%	9%	42%
36L	20%	18%	20%	
36R	11%	18%	13%	
09	2%	4%	2%	2%

Sources: PDARS August 31, 2012 through February 28, 2013

3.7 Departure Stage Length

Departure stage length is the distance between the departure airport and the destination airport. Departure stage lengths are divided into nine stages. The departure stages are defined in **Table 3.4**.

TABLE 3.4
DEPARTURE STAGE LENGTH DEFINITIONS

Stage Length	Distance (Nautical Miles)
1	0 to 500
2	501 – 1,000
3	1,001 – 1,500
4	1,501 – 2,500
5	2,501 – 3,500
6	3,501 – 4,500
7	4,501 – 5,500
8	5,501 – 6,500
9	Greater than 6,500

Source: FAA Office of Environment and Energy, INM 7.0 User's Guide, April 2007, page 153

The departure stage length is an important component of calculating realistic noise contours. As the departure stage length increases, the aircraft's required fuel load also increases, which increases the aircraft's takeoff weight. The increase in takeoff weight equates to a decrease in aircraft takeoff and climb performance. A decrease in aircraft performance means the aircraft is on the ground longer and climbs slower. This decrease in performance creates greater impacts on the noise environment. The aircraft's noise impacts are greater because the aircraft is producing noise closer to the ground longer. The greater the distance between the noise source and people, the less impact noise has on people. The smaller the distance between the noise source and people, the more impact noise has on people.

Departure stage lengths were determined by reviewing the PDARS data, which contains destination airport, departure time, and aircraft type. Detailed information regarding stage length distribution by aircraft type is tabulated in **Appendix B**.

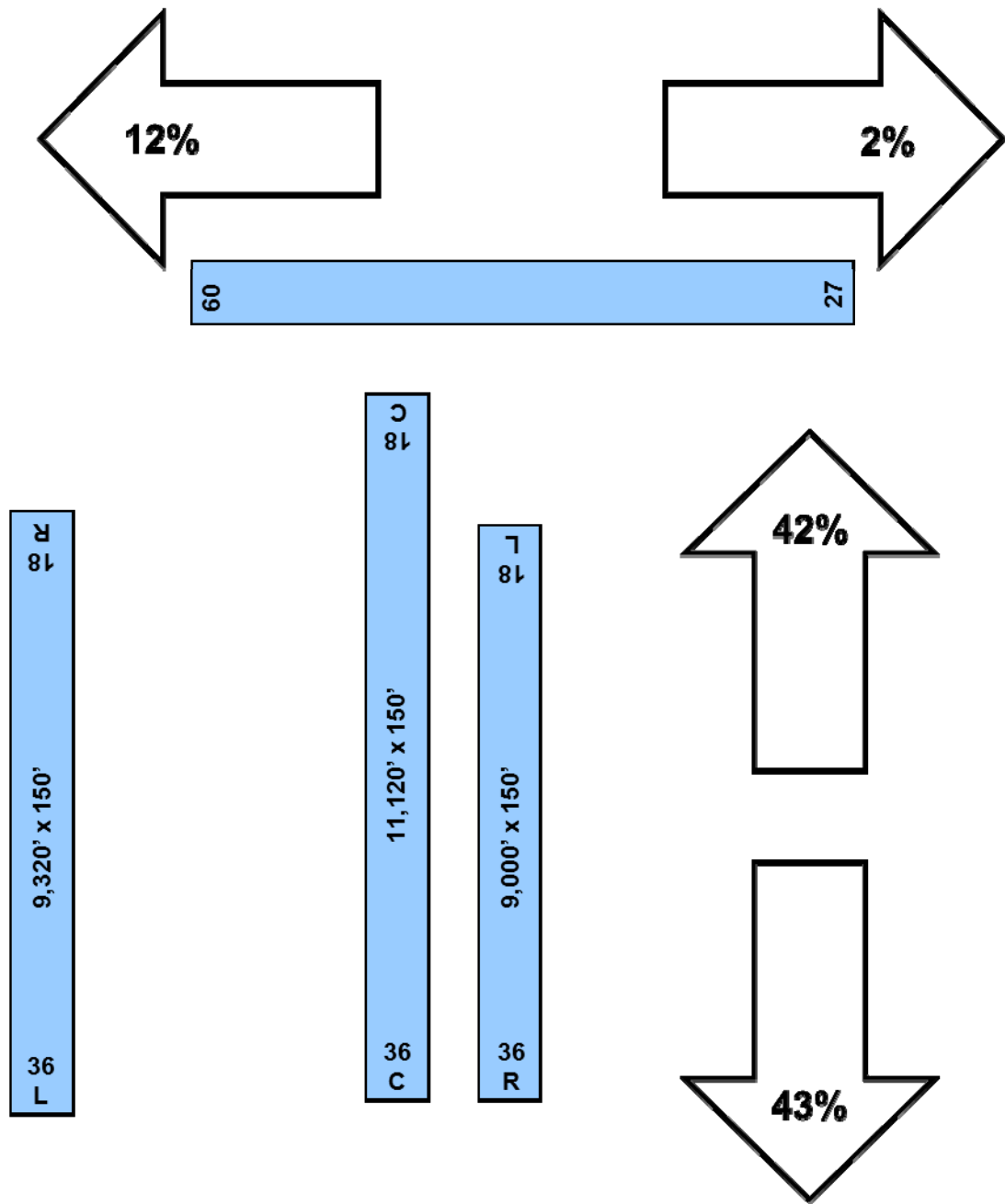
3.8 *Flight Track Configuration and Utilization*

Flight tracks are graphic depictions of the paths that aircraft fly in relation to the ground or, as defined by the FAA in the Airmen's Information Manual, "the actual flight path of an aircraft over the surface of the earth." Aircraft are free to travel many paths, unlike other forms of transportation, which are normally limited to the confines of a roadway or railway. To land and take off from an airport, pilots align their aircraft with runways.

In INM, departure tracks start at the takeoff threshold on the runway and end in terminal airspace, while approach tracks start in terminal airspace and end at the approach threshold on the runway. Each track is represented by an ordered list of X,Y points. As described above in **Section 3.3.4**, the PDARS includes very detailed information about each aircraft operation that occurred, including the time of day, origin/destination, and specific aircraft type that flew on each radar flight track. For this study, the PDARS data was processed to create one INM flight track for each radar flight track, and to assign the INM aircraft type and stage length (in the case of departure operations) that corresponded to the actual aircraft type and its destination to that specific track. INM was then utilized to simulate the operation of the airport by "flying" each aircraft along its own flight track. By utilizing the PDARS data and INM in this manner, the noise modeling is as close to reality as possible, because fewer assumptions and generalizations are made.

Figures 3.6 through **3.11** illustrate examples of the radar flight tracks obtained from the PDARS data. These examples include all PDARS radar tracks from November and December of 2012.

Title 14 CFR part 150, Airport Noise Compatibility Planning, Amendment No. 150-4, Section A150.103(b)(1), requires "A map of the airport and its environs at an adequately detailed scale (not less than 1 inch to 2,000 feet) indicating runway length, alignments, landing thresholds, takeoff start-of-roll points, airport boundary, and flight tracks out to at least 30,000 feet from the end of each runway." Therefore, flight track maps at a scale of 1 inch to 2,000 feet are provided in **Appendix H**.



Sources: PDARS Data (August 31, 2012 through February 28, 2013);
URS Corporation, 2013.

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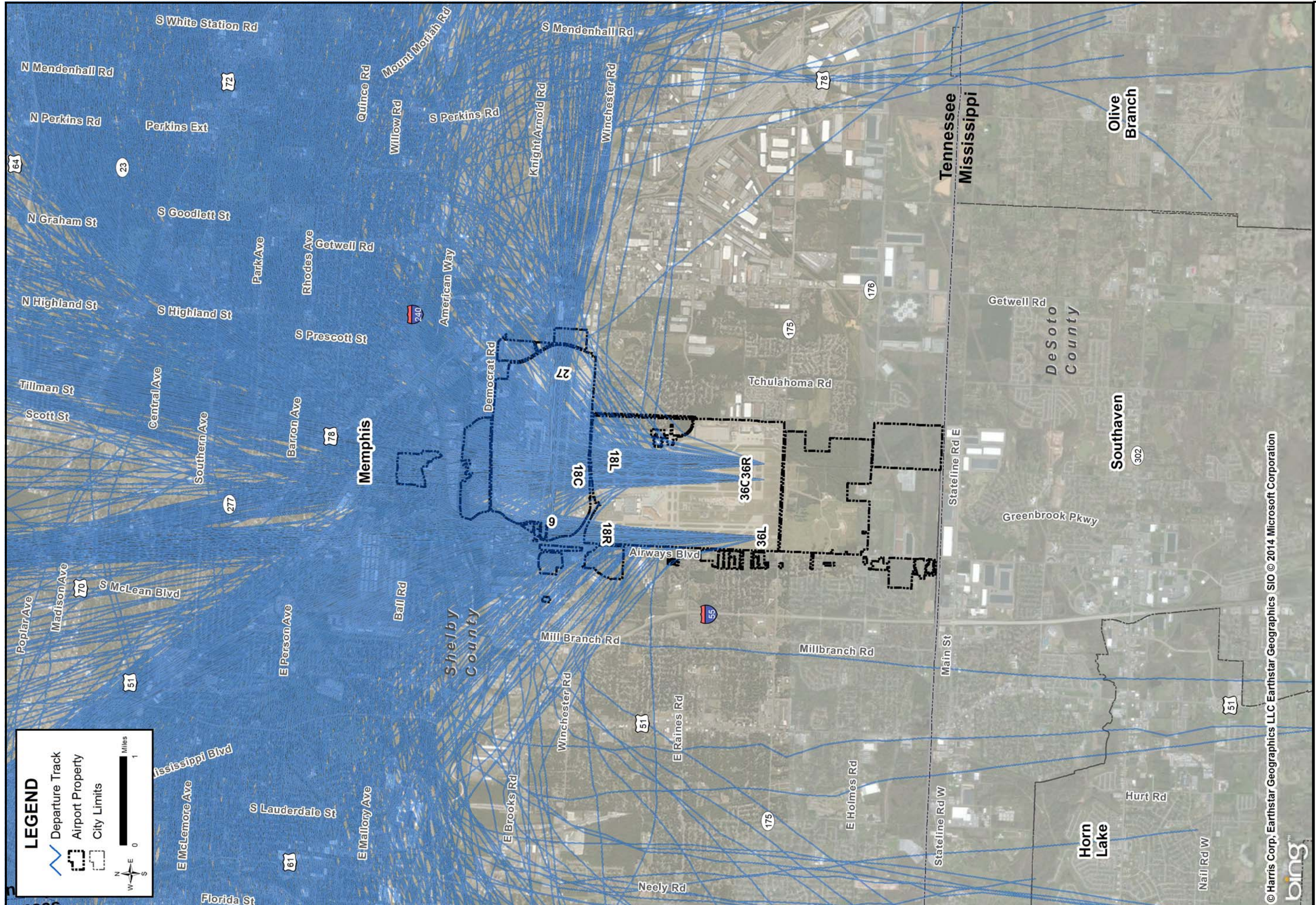
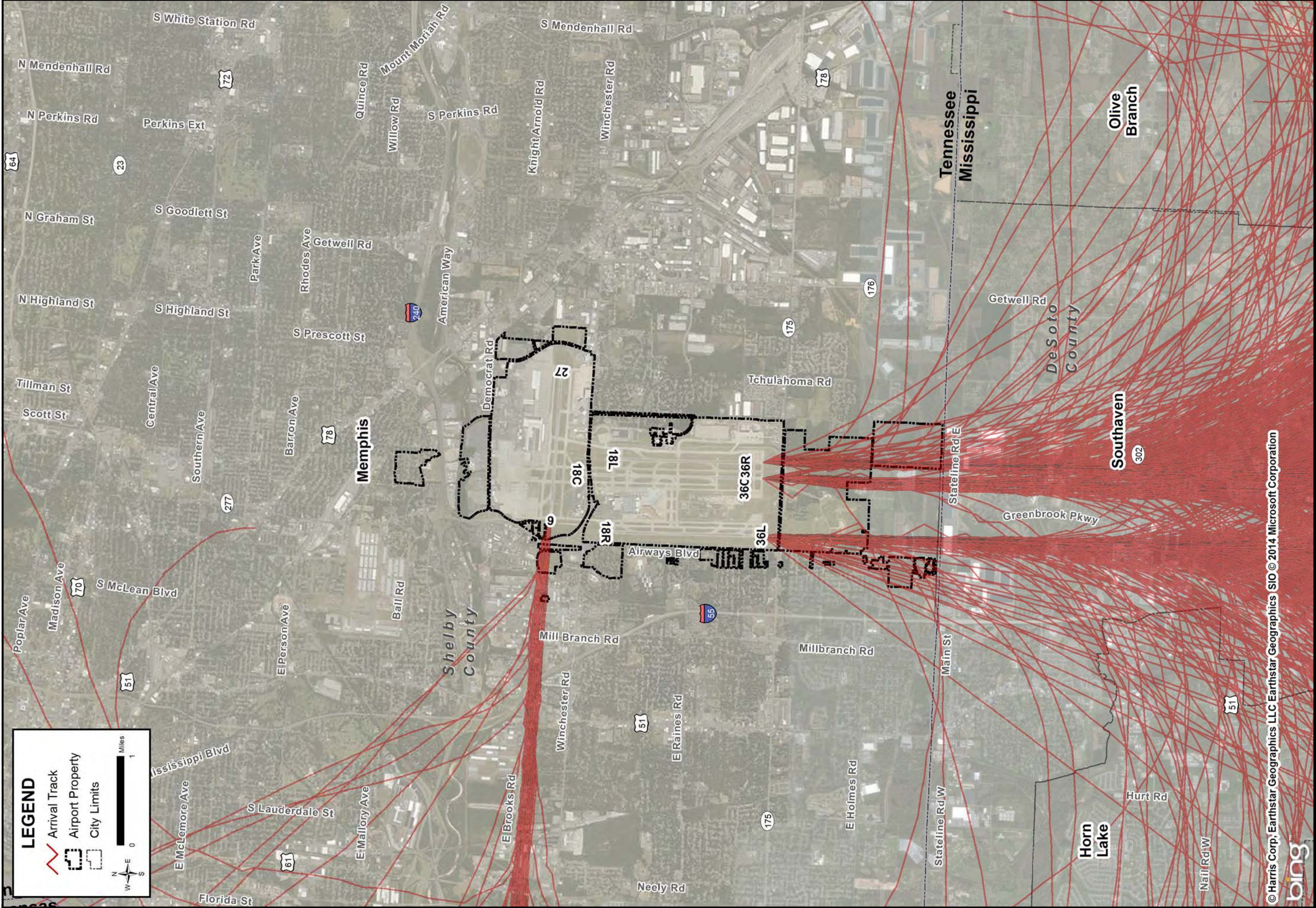


FIGURE 3.6

NORTH / EAST FLOW DEPARTURES

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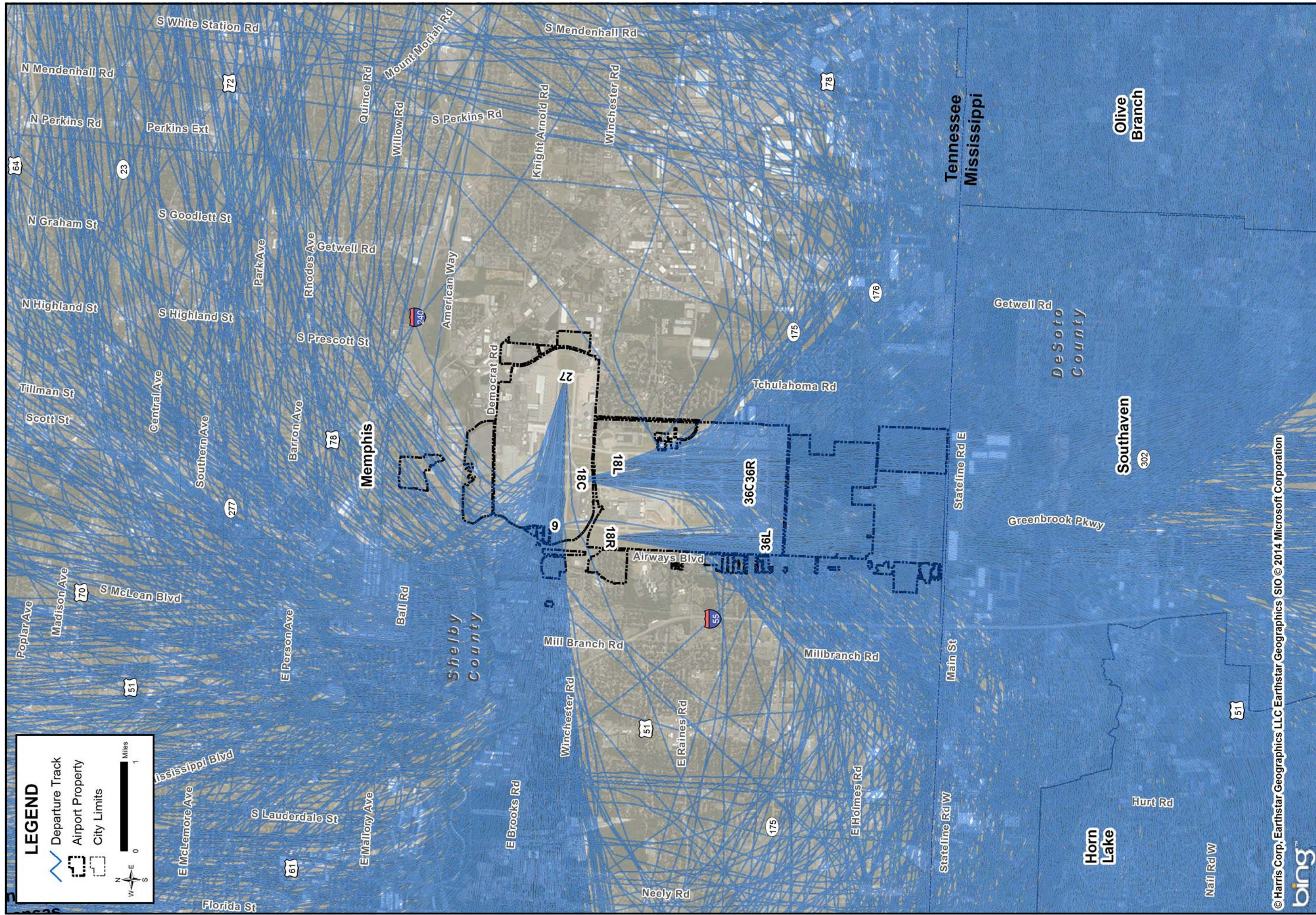
NORTH / EAST FLOW ARRIVALS

FIGURE
3.7

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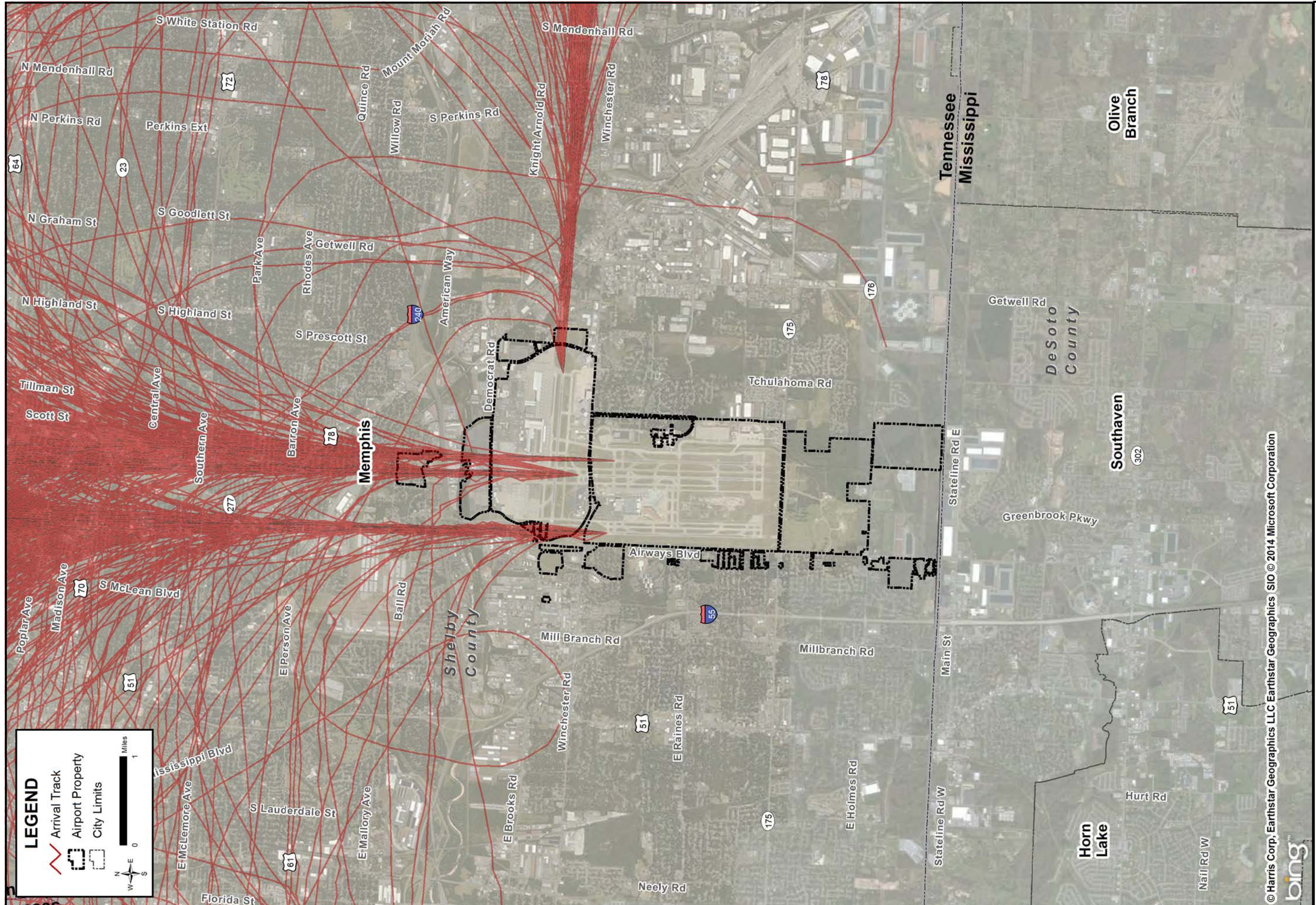
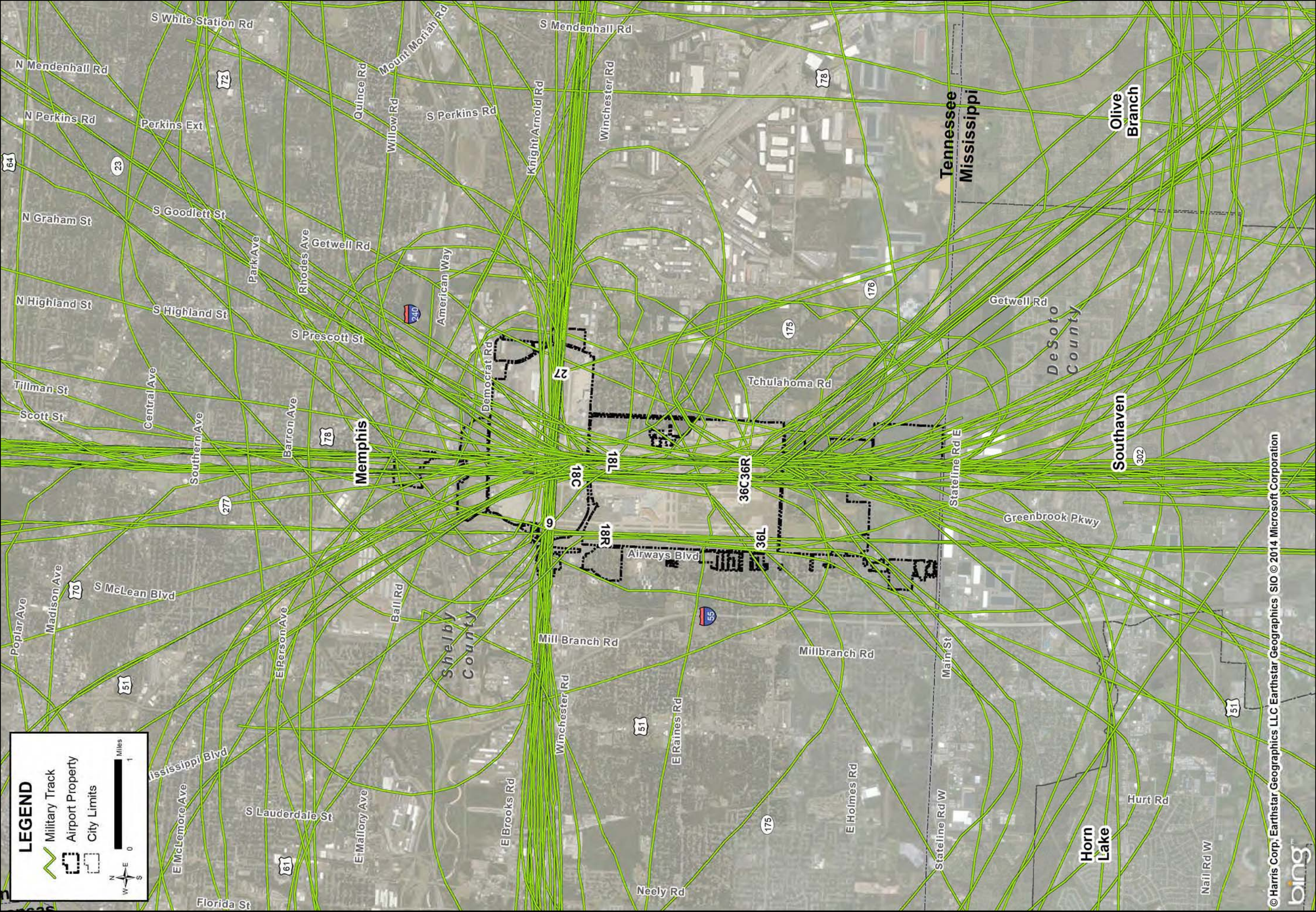


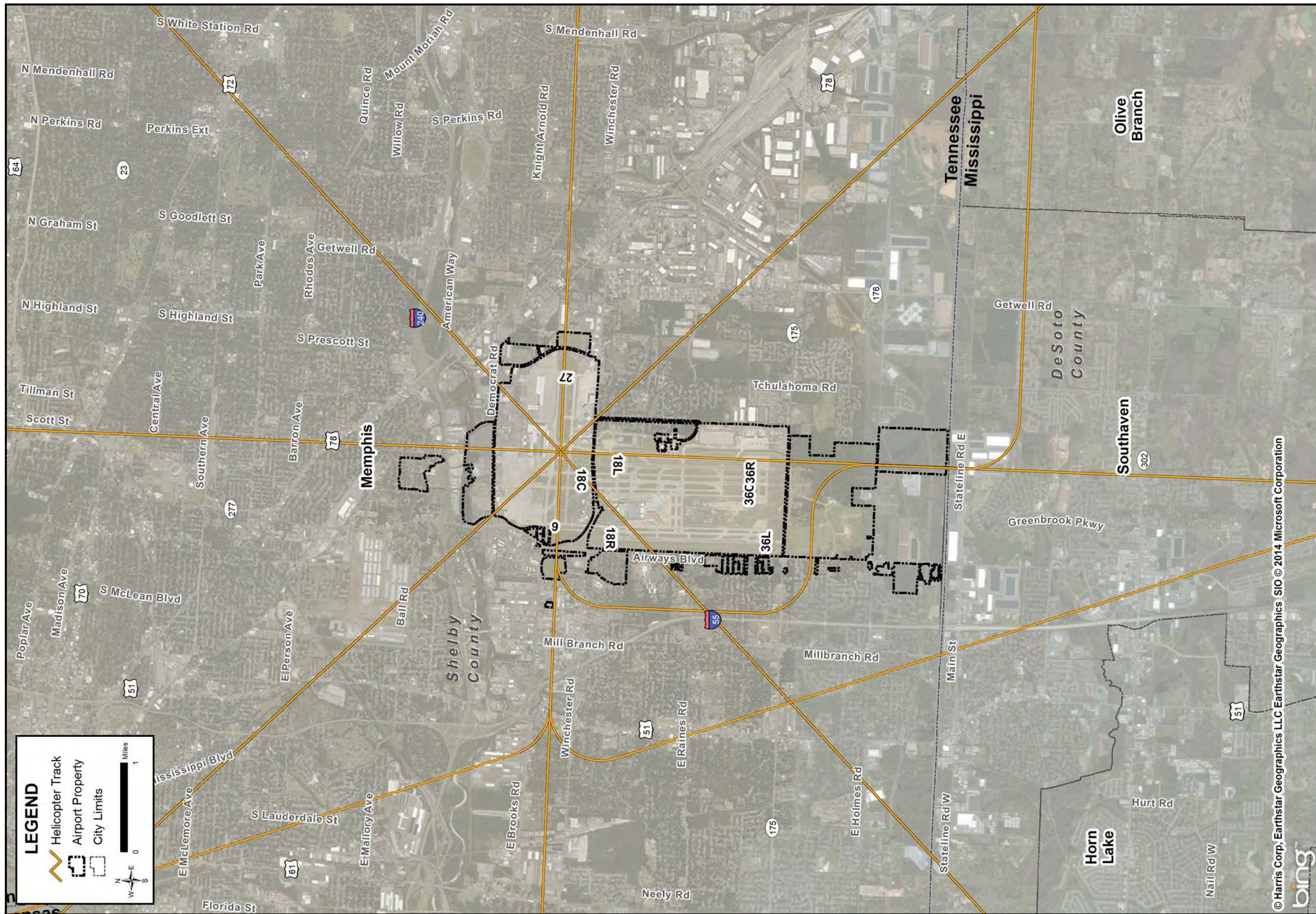
FIGURE 3.9

SOUTH / WEST FLOW ARRIVALS

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3.9 Aircraft Flight Profiles

The INM Version 7.0d contains a database of takeoff and approach profiles for a variety of aircraft, including the aircraft operating at MEM. These profiles contain information on an aircraft's altitude, distances from the runway threshold, airspeed, flap settings, climb rates, engine power settings, etc. Each of the elements in a profile affects the level of noise generated along an aircraft's flight path.

Departure profiles describe the characteristics of an aircraft while it is climbing, while arrival profiles indicate the characteristics of an aircraft during descent. It should be noted that departure profiles can vary significantly from one aircraft type to another, e.g., a Boeing 757 flies a much different profile than a Regional Jet. These differences are due to several factors including airframe design, engine types, and takeoff weights. Conversely, approach profiles are normally very similar. For example, the standard glide path for many runways is established at 3 degrees. Therefore, a standard 3-degree approach profile could be used for most aircraft utilizing that runway.

3.10 Noise Abatement Procedures

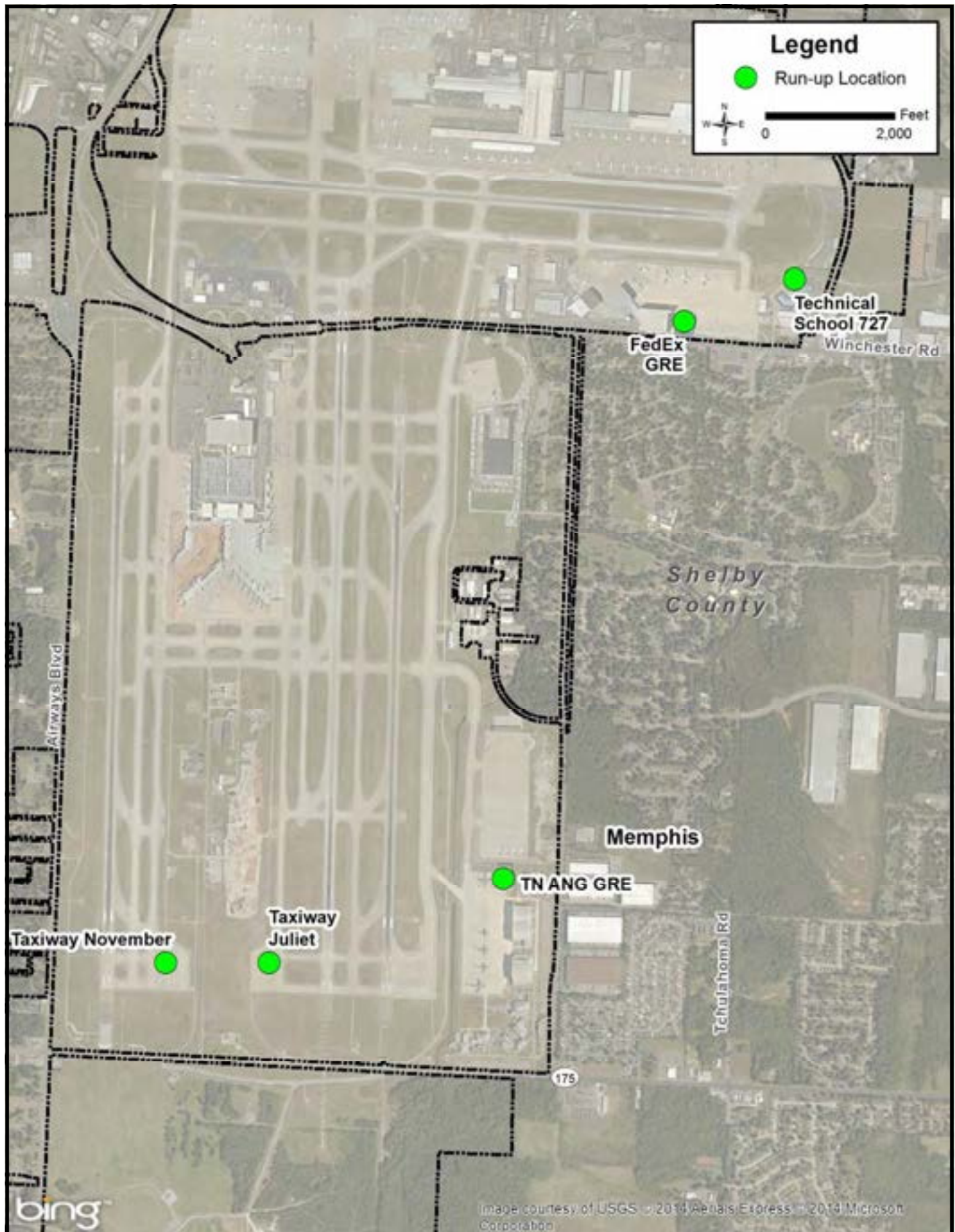
MEM's current noise abatement procedures were reviewed. There are no formal noise abatement procedures; however, the following are locally adopted procedures:

1. Engine run-ups may only be conducted from 6:00 a.m. to 10:00 p.m., in the designated run-up areas shown in **Figure 3.12**, except in emergency situations, and only after notification to the Airport Authority.
2. Turbojet aircraft shall not be authorized to turn nor assigned a heading which will result in an aircraft below altitude 3,000 feet traversing the residential areas north of Holmes Rd. E and east and west of the extended centerline of Runways 18L/R, as shown in **Figure 3.13**.
3. Turbojet aircraft departing Runway 27 shall not be authorized to turn south until leaving 3,000 feet or two miles from the departure end of the runway to protect the area shown in Figure 3.13.

Figure 3.12 illustrates the designated engine run-up locations at MEM. There are two permanent Ground Run-up Enclosures (GREs) at the airport, one constructed, owned and used exclusively by FedEx and one constructed, owned and used exclusively by TN ANG. There are two non-enclosed sites, located at the hold pad at the south end of Taxiway Juliet and Taxiway November. These sites are the designated engine run-up locations and all aircraft that are not utilizing a GRE are required to be positioned at one of these locations prior to conducting run-up operations. The Tennessee Tech Center at Memphis Aviation Campus would like to conduct engine run-ups using a static B727 located on the ramp adjacent to their facility.

Figure 3.13 illustrates an eight-day sample of turbojet aircraft radar departure tracks from Runways 18L/C/R and Runway 27 superimposed over the base map showing the protected areas south and west of the airport. This sample of PDARS data indicates that turbojet aircraft are complying with the noise abatement procedures described above.

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FIGURE
3.13

PROTECTED AREAS AND DEPARTURE TRACKS

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SECTION 4.0

2013 EXISTING CONDITION

4.1 *Introduction*

To estimate noise levels at Memphis International Airport (MEM), computer modeling techniques were used which generated DNL (Day Night Average Sound Level) contours in increments of 65, 70, and 75 A-weighted decibels (dBA) (see Section 1.3, Methodology). The noise modeling was accomplished for the existing average daily condition for July 1, 2012 through June 30, 2013, and the resulting contours are identified as the 2013 Existing Condition. The following sections describe the methods and considerations used in compiling input data for the Integrated Noise Model's (INM's) calculation of the 2013 Existing Condition noise contours, and the analysis of these contours.

The largest single user of MEM is Federal Express Corporation (FedEx). Their operations accounted for approximately 49 percent of the total operations at MEM during the study period. The majority of the FedEx operations use the A306/A310, DC10/MD11, and B722/B752/B77L aircraft.

According to MEM's Monthly Activity Reports, major airlines that served MEM during the study period included: AirTran, American, Delta, and US Airways. Commuter airlines that served MEM during the study period were: Air Wisconsin (dba US Airways Express), American Eagle, Chautauqua (dba Delta Connection), ComAir (dba Delta Connection), Compass Airlines (dba Delta Connection), ExpressJet (dba Delta Connection and United Express), Jazz Air LP, Mesa Airlines (dba US Airways Express), Pinnacle Airlines (dba Delta Connection), PSA Airlines (dba United Express), Republic Airlines (dba US Airways Express), Skywest (dba Delta Connection and United Express), and Trans States Airlines (dba US Airways Express). Non-scheduled airlines that served MEM during the study period included: Miami Air International, Mid-South Jets, and SeaPort Airlines. All-cargo airlines that served MEM included Airborne Express, Baron Aviation, Capital Cargo International Airlines, FedEx, Mountain Air Cargo, United Parcel Service (UPS), and U.S. Check.

4.2 *Aircraft Operations*

The Federal Aviation Administration's (FAA's) Operations and Performance Data system contains multiple performance and operations data sources for use in airport planning. Historical airport activity was determined by analyzing data for MEM from FAA's Air Traffic Activity Data System (ATADS) and Traffic Flow Management Systems Counts (TFMSC).

The historical data provided by FAA's ATADS represents the official National Air Space (NAS) air traffic operations data at MEM available for public release. ATADS reports IFR itinerant and VFR itinerant operations (arrivals and departures), and local operations at the airport as reported by Air Traffic Control Tower (ATCT). IFR itinerant operations are operations performed by an aircraft, conducting flight in accordance with Instrument Flight Rules, which lands at an airport, arriving from outside the airport area, or departs an airport and leaves the airport area. VFR itinerant operations are operations performed by an aircraft, conducting flight in accordance with Visual Flight Rules, which lands at an airport, arriving from outside the airport area, or departs an airport and leaves the airport area. Local operations are those operations performed by aircraft that remain in the local traffic pattern, execute simulated instrument

approached or low passes at the airport, and the operations to or from the airport and a designated practice area within a 20-mile radius of the towers. ATADS does not include overflights. ATADS groups flights into four user groups: Air Carrier, Air Taxi, General Aviation, and Military, but does not include information about the type of aircraft or the time of day of each operation. **Table 4.1** provides the operations data from the FAA's ATADS for the period January 1, 2006 through December 31, 2013, by category and type of operation. No local operations were reported for this period. ATADS data can be accessed without a FAA-issued username and password on the FAA's Operations & Performance Data website: <https://aspm.faa.gov/Default.asp>.

**TABLE 4.1
HISTORICAL ANNUAL OPERATIONS FROM ATADS**

Category & Type of Operation	Calendar Year							
	2013	2012	2011	2010	2009	2008	2007	2006
IFR Itinerant Operations¹								
Air Carrier	163,710	172,729	185,041	191,317	200,550	208,156	212,338	212,564
Air Taxi	48,658	77,114	106,005	124,500	118,046	130,161	132,073	140,242
General Aviation	16,687	16,653	16,753	16,600	16,779	18,896	25,018	27,627
Military	1,133	1,250	1,319	1,230	1,227	1,239	1,352	1,354
Subtotal	230,188	267,746	309,118	333,647	336,602	358,452	370,781	381,787
VFR Itinerant Operations²								
Air Carrier	9	0	2	3	4	32	9	7
Air Taxi	701	863	652	337	329	528	656	595
General Aviation	2,740	2,498	1,793	1,815	1,927	3,723	4,852	5,262
Military	216	214	226	215	145	243	230	242
Subtotal	3,666	3,575	2,673	2,370	2,405	4,526	5,747	6,106
Total Itinerant Operations								
Air Carrier	163,719	172,729	185,043	191,320	200,554	208,188	212,347	212,571
Air Taxi	49,359	77,977	106,657	124,837	118,375	130,689	132,729	140,837
General Aviation	19,427	19,151	18,546	18,415	18,706	22,619	29,870	32,889
Military	1,349	1,464	1,545	1,445	1,372	1,482	1,582	1,596
Total Ops	233,854	271,321	311,791	336,017	339,007	362,978	376,528	387,893

Notes: ¹ IFR Itinerant operations are operations performed by an aircraft, conducting flight in accordance with instrument flight rules, which lands at an airport, arriving from outside the airport area, or departs an airport and leaves the airport area.

² VFR Itinerant operations are operations performed by an aircraft, conducting flight in accordance with visual flight rules, which lands at an airport, arriving from outside the airport area, or departs an airport and leaves the airport area.

Sources: FAA Operations & Performance Data, ATADS, January 1, 2006 through December 31, 2013. ASPM Glossary found at <http://aspmhelp.faa.gov/index.php/Glossary>

TFMSC source data are created when pilots file flight plans and/or when flights are detected by the NAS, usually via RADAR. TFMSC groups flights into three user groups: Commercial, General Aviation, and Military, and then further categorizes them into Air Carrier, Freight, General Aviation, Military, Air Taxi, and Other (i.e., Unknown). TFMSC data only accounts for aircraft that file a flight plan or are flying IFR,

and includes information about the type of aircraft but not the time of day of each operation. TFMSC does not include VFR or local operations. TFMSC data can also be accessed on the FAA's Operations & Performance Data website, but requires an FAA-issued username and password.

Average daily operations for MEM from July 1, 2012 through June 30, 2013, were the basis for developing noise contours for the 2013 Existing Condition. There were a total of 249,408 airport operations during this period according to FAA ATADS records, which equates to approximately 684 average daily operations. ATADS "Airport Operations" reports IFR itinerant and VFR itinerant operations (arrivals and departures), and local operations at the airport as reported by the ATCT. It does not include aircraft overflights. **Table 4.2** provides the operations data from MEM's Monthly Activity Reports for the period July 1, 2012 through June 30, 2013, by category. **Table 4.3** provides the number of operations by category, which was modeled in INM to represent the period July 1, 2012 through June 30, 2013. The slight difference (less than 1%) between the operational levels in Tables 4.2 and 4.3 results from utilization of the Performance Data Analysis and Reporting System (PDARS) data, which was described in Section 3.3.4, to determine the number of operations. PDARS data included IFR and VFR aircraft arrivals to and departures from MEM for the six-month period August 31, 2012 through February 28, 2013. These operations were adjusted to represent the annual condition. The difference between FAA's ATADS, MEM's Activity Reports, and PDARS was less than one percent. However, due to missing data, such as unidentified aircraft types and incomplete flight tracks, the PDARS operational levels were scaled to match the ATADS operational levels for the same time period (August 31, 2012 to February 28, 2013). Table 4.3 shows the summary of the PDARS operational levels. In addition to operational levels, PDARS data also provides flight track, fleet mix, and flight stage length (derived from the distance between origin/destination) information, as well as the time at which each operation occurs. This is primary reason for using PDARS data over other operational data systems.

TABLE 4.2
AIRCRAFT OPERATIONS REPORTED DURING THE STUDY PERIOD

Category of Operations	Number of Operations	Percent of Operations
Passenger Air Carrier Airlines	25,340	10.2%
All Cargo Airlines	125,364	50.4%
Commuter Airlines	70,396	28.3%
General Aviation	26,236	10.6%
Military	1,292	0.5%
Total Operations	248,628	100.0%

Source: MEM Activity Reports, July 2012 through June 2013

TABLE 4.3
AIRCRAFT OPERATIONS MODELED FOR THE STUDY PERIOD

Category of Operations	Number of Operations	Percent of Operations
Passenger Air Carrier Airlines	25,510	10.2%
All Cargo Airlines	126,051	50.4%
Commuter Airlines	70,779	28.3%
General Aviation	26,511	10.6%
Military	1,251	0.5%
Total Operations	250,102	100.0%

Source: URS Corporation, 2013

4.3 Aircraft Fleet Mix

While researching the number of aircraft operations by category, the make and model of aircraft used in the operations were also identified for the development of a fleet mix. Fleet mix refers to the various types of aircraft that operated at MEM and include very specific information such as engine type, title 14 CFR part 36 Noise Stage Certification, and departure stage length. The fleet mix is one of the most important factors in terms of the aircraft noise environment. Fleet mix was determined through analysis of the PDARS data.

Certain aircraft operating in the United States are subject to Federal requirements regarding noise emission levels. Title 14 CFR part 36, Noise Standards: Aircraft Type and Airworthiness Certification, prescribes the noise standards for aircraft certification in the United States. An aircraft is categorized under this regulation by one of four noise standards called stages. Noise Stage 1 is the loudest category and Stage 4 is the quietest category. Title 14 CFR part 91, subpart I, Operating Noise Limits, in conjunction with part 36, apply to civil subsonic aircraft and mandates operating limits and compliance times for each noise stage. Under part 91, noise Stage 1 aircraft, with maximum weights of more than 75,000 pounds, cannot be operated in the United States. Specifically, § 91.805 states, "...on and after January 1, 1985, no person may operate to or from an airport in the United States any subsonic airplane covered by this subpart unless that airplane has been shown to comply with Stage 2 or Stage 3 noise levels." As well, the operation of Stage 2 aircraft, with maximum weights of more than 75,000 pounds, is regulated under § 91.853 which reads in part as follows: "...Except as provided in § 91.873, after December 31, 1999, no person shall operate to or from any airport in the contiguous United States any airplane subject to § 91.801(c) of this subpart, unless that airplane has been shown to comply with Stage 3 or Stage 4 noise levels." In 2013, §91.881, Final compliance: Civil subsonic jet airplanes weighing 75,000 pounds or less, was added to part 91. It says, "Except as provided in §91.883, after December 31, 2015, a person may not operate to or from an airport in the contiguous United States a civil subsonic jet airplane subject to §91.801(e) of this subpart unless that airplane has been shown to comply with Stage 3 noise levels."

It should be noted that title 14 CFR part 91 applies to civilian aircraft operations. Thus, military aircraft operations are exempt from the aforementioned regulations.

During the 1990s, most airlines diligently worked on compliance with § 91.853 by installing hush-kits or replacing engines on some of their newer Stage 2 aircraft. These modifications convert Stage 2 aircraft to Stage 3 compliant aircraft by installing new engines and airframe components that are certificated to Part 36 Stage 3 standards. Presently, all civilian aircraft (with maximum weights of more than 75,000 pounds) operating at MEM meet Stage 3 or Stage 4 requirements.

Occasionally, aircraft operating at an airport may not be included in the INM database. Although the INM database provides a large selection of aircraft to model, it does not contain every aircraft in the commercial, general aviation, and military aircraft fleet. For this reason, the FAA developed an official aircraft substitution list that allows the user to substitute similar aircraft when necessary for modeling purposes. These substitutions represent a very close estimate of the noise produced by the actual aircraft. Despite the large number of aircraft types and approved substitutions, occasionally an aircraft cannot be modeled realistically by using an aircraft from the approved substitution list. When this occurs, a user-defined aircraft may be used in INM, with prior FAA, Office of Environment and Energy (AEE-120) approval. For the calculation of the 2013 Existing Condition contours, all aircraft modeled are either a true representative of an aircraft type or an acceptable FAA-approved substitution.

Application of the fleet mix to the average daily operations provided the average daily operations by aircraft type. For more detailed information, see **Appendix B**. The daily operational information shown on these tables was used as input to the INM. Civilian fixed wing aircraft comprised 98.9 percent of the fleet. Rotary-wing aircraft comprised 0.6 percent, and the remaining 0.5 percent was military fixed-wing aircraft.

4.4 Aircraft Engine Ground Run-Ups

Ground run-ups are routine aircraft engine maintenance tests which require the operation of an engine at various power levels from idle to full for extended periods of time generating continuous elevated noise levels. Ground run-ups are done on a remote taxiway on the airport with the aircraft pointed into the wind or in a ground run-up enclosure (GRE). A GRE uses acoustical dampening principles to reduce the noise impact of aircraft engine ground run-ups. The aircraft is surrounded on three sides with walls and positioned in the GRE such that the exhaust ends of the engines face the closed end of the barrier.

Aircraft engine ground run-up operations are currently conducted at the following three locations, which are shown on Figure 3.10: FedEx GRE, TN ANG GRE, Taxiway Juliet, and Taxiway November. The Technical School is not currently performing engine run-ups in the B727 aircraft parked at their facility.

There are two (2) Ground Run-up Enclosures (GREs) at MEM, one is owned and operated by FedEx, and the other is owned and operated by the TN ANG. For the purposed of this analysis, the amount of noise reduction provided by each GRE is assumed to be at least 15 dB. Results of acceptance testing for both facilities demonstrated higher noise reduction (>19 dB). However, it is anticipated that actual noise reductions for different aircraft may vary during regular use, so a more conservative number was utilized for the analysis.

In order to model this noise reduction in INM, equivalent changes were computed in the number of aircraft operations, in accordance with standard modeling procedures, using the following formula:

$$N = 10^{(\Delta L / 10)}$$

In this formula, “N” is the equivalent number of aircraft operations and “ΔL” is the noise reduction in decibels. Since the noise reduction was assumed to be at least 15 dB, “N” was calculated to be $10^{(-15/10)}$, which equals 0.031623. Only ground run-up operations performed inside the GREs were multiplied by the calculated correction factor “N” as shown in **Appendix B**. The resulting reduced equivalent numbers of operations were modeled in INM.

4.5 Noise Measurements

Title 14 CFR part 150 §A150.5 stipulates that noise measurements and documentation be in accordance with accepted acoustical measurement methodology. The monitoring locations and a summary of the results will be included herein, following completion of this task. **Figure 4.1** will indicate the monitoring locations superimposed over the land use base map.

A copy of the *Noise Measurement Technical Memorandum* will be included in **Appendix C**.

4.6 Noise Contours

Noise contours are lines showing areas having equal sound levels and are used to assess the effects of aircraft noise around MEM. The contours calculated for this study include the DNL 65, 70, and 75 dBA. DNL contours represent the average cumulative noise produced by an annual average 24-hour day of aircraft operations for the 2013 Existing Conditions at MEM. The size and shape of the contours depend primarily upon the numbers and types of aircraft that operate to and from the airport, and upon the direction of flight tracks flown by those aircraft.

Noise contours resulting from 2013 aircraft operations are shown superimposed over the existing land use base map on **Figure 4.2**. The base map graphically depicts the airport boundaries, runway configurations, and runway end numbers. It also clearly depicts streets and other identifiable geographic features. The total area within the DNL 65+ dBA noise contour for the 2013 Existing Condition is estimated to be 13.63 square miles. Title 14 CFR part 150, Airport Noise Compatibility Planning, Amendment No. 150-4, Section A150.103(b)(1), requires “A map of the airport and its environs at an adequately detailed scale (not less than 1 inch to 2,000 feet) indicating runway length, alignments, landing thresholds, takeoff start-of-roll points, airport boundary, and flight tracks out to at least 30,000 feet from the end of each runway.” Therefore, flight track maps at a scale of 1 inch to 2,000 feet are provided in **Appendix H**.

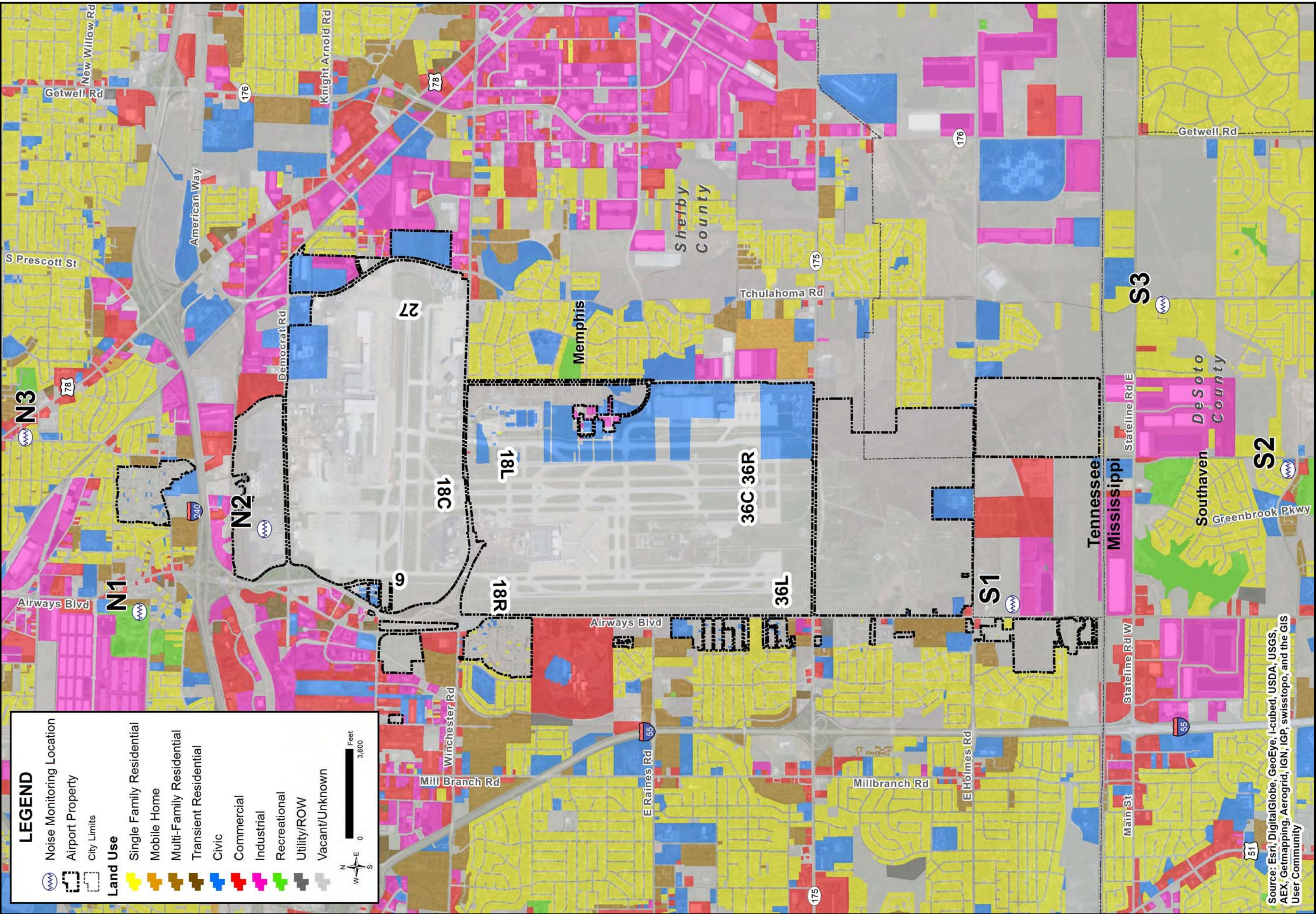


FIGURE 4.1

NOISE MONITORING LOCATIONS

Part 150 NEM Update

Memphis

INTERNATIONAL AIRPORT

TRIS

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The northeastern lobe of the DNL 65 dBA contour straddles Pendleton Street and comes to a point near the intersection of Pendleton Street and the BNSF Railway line. The northwestern lobe of the DNL 65 dBA contour straddles Plough Blvd., extends just north of I-240, and comes to a point near the intersection of Ketchum Road and Airways Blvd. The western lobe of the DNL 65 dBA contour straddles East Brooks Road and comes to a point at the intersection of E. Brooks Rd and I-55. The southwestern lobe of the DNL 65 dBA contour straddles Airways Blvd. and comes to a point just north of Goodman Road. The southeastern lobe of the DNL 65 dBA contour straddles Swinnea Road and comes to a point just north of Goodman Road. The eastern lobe of the DNL 65 dBA contour extends along the Runway 9/27 extended centerline and comes to a point just east of South Goodlett Road.

4.7 *Impact Analysis*

Figure 4.2 illustrates the 2013 Noise Exposure Map superimposed over the current land uses surrounding MEM. Table 4.3 provides detailed information on impacted land use acreage, population and the number of houses within the DNL 65 dBA contour.

The number of housing units was estimated by utilizing the GIS data obtained for DeSoto County, Mississippi and Shelby County, Tennessee. Population was then estimated by multiplying the number of housing units by the average household size. For Shelby County, the average household size is 2.59 persons per household, while for DeSoto County, the average household size is 2.78 persons per household (Source U.S. Census Bureau: American Fact Finder).

4.8 *Noise-Sensitive Sites*

Various noise-sensitive sites were analyzed within the study area. The locations of noise-sensitive sites are depicted on **Figure 4.3** with 2013 Existing Condition noise contours. **Table 4.4** provides estimated noise exposure levels at each noise-sensitive site within the 2013 Existing Condition noise contours.

As shown in Figure 4.3 and Table 4.4, ten (10) churches and four (4) schools are located between the DNL 65 and 70 dBA contours. Two (2) churches, one (1) hospital, and one (1) cemetery/funeral home are located between the DNL 70 and 75 dBA contours. No noise-sensitive sites are located within DNL 75 dBA contour.

4.9 *Mitigated Properties*

The Memphis-Shelby County Airport Authority's (MSCAA's) efforts to reduce noise exposure resulted in the 1987 Noise Compatibility / Property Acquisition Program. This FAA approved program was comprised of the acquisition of approximately 1,400 single-family residences located within the DNL 75 dBA noise contour. This program took over a decade to complete.

On November 13, 1989, a lawsuit was filed against the MSCAA by twenty-seven residential property owners seeking monetary damages and injunctive relief. On May 5, 1993, the Court certified the case as a class action for litigation purposes. Plaintiffs on behalf of themselves and representatives of a class of other owners with vested interests in real property in the vicinity of MEM sued the MSCAA for damages to the value of their real property interests caused by noise and other forms of pollution. A Stipulation of Settlement was entered into on July 9, 1998, by the attorneys for Alvarado vs. MSCAA, providing for final

settlement of the Class Action Lawsuit. On September 8, 1998, the Court redefined the class to include owners of improved real estates upon which there is a single-family residence, a duplex, or a condominium, within the areas identified on the Notice Map. Collectively, such owners are referred to as the Settlement Class, and their property is referred to as Eligible Property. A Fairness Hearing was held November 12-17, 1998. The court determined that a full, fair, and reasonable hearing on all matters was heard; the notice requirements were adequate, sufficient and legal; and the class was competently represented. The U.S. District Court for the Western District of Tennessee entered a final judgment on December 22, 1998, approving the settlement of the class action.

Such judgment was appealed to the U.S. Court of Appeals for the Sixth Circuit. The appeals court affirmed the district court's judgment by order entered on August 15, 2000. The court issued its mandate on September 7, 2000. Subsequent to the issuance of the mandate, MSCAA administered the settlement. There were 15,149 eligible properties, of which MSCAA received 12,608 claims and made 12,441 payments to settlement class members covering 12,403 single and multi-family properties. On March 1, 2004, the court found that the MSCAA had complied with the stipulation of settlement and had discharged all obligations imposed upon it by the settlement agreement, and the case was closed. The total potential monetary benefit to the Settlement Class was estimated to be \$22 million.

The Stipulation of Settlement, Article III, Terms and Conditions of Settlement, Section 3.6, Avigation Easements, describes the manner in which Avigation Easements were obtained on Eligible Properties. An Avigation Easement was imposed on each Eligible Property in the State of Tennessee, regardless of whether the Settlement Class Member filed a settlement claim or received payment from the Settlement Funds. Settlement Class Members owning Eligible Property in the State of Mississippi were required to grant an Avigation Easement to the Airport Authority before they qualified to receive payment from the Settlement Funds. Copies of documents related to the case, including the Settlement Agreement, the Avigation Easement for Tennessee and Mississippi, and the Order closing the case, are provided in **Appendix A**.

Figure 4.4 illustrates the DNL 65, 70, and 75 dBA contours superimposed over the base map showing eligible properties, which include both those that were paid for their easement and those that were eligible but chose not to participate or missed the deadline to participate, and were not paid. **Table 4.5** provides detailed number of eligible houses and population by use codes.

The mitigation area was based, in part, on noise contours developed in a previous Part 150 Study.

4.10 Noncompatible Land Use

Noncompatible land uses within the 2013 Existing Condition Noise Exposure Map include residential and public land uses. **Figure 4.5** illustrates the compatible and noncompatible land uses within the DNL 65, 70, and 75 dBA contours. Properties for which an Avigation Easement was imposed or granted are considered compatible land uses. Residential properties within the DNL 65, 70, and 75 dBA contours without an Avigation Easement are not compatible. In addition, schools located within the DNL 65 and 70 dBA contours are not compatible. Although considered noise-sensitive, churches and hospitals within the DNL 65 and 70 dBA contours are generally compatible.

TABLE 4.4
2013 EXISTING CONDITION NOISE EXPOSURE ESTIMATES

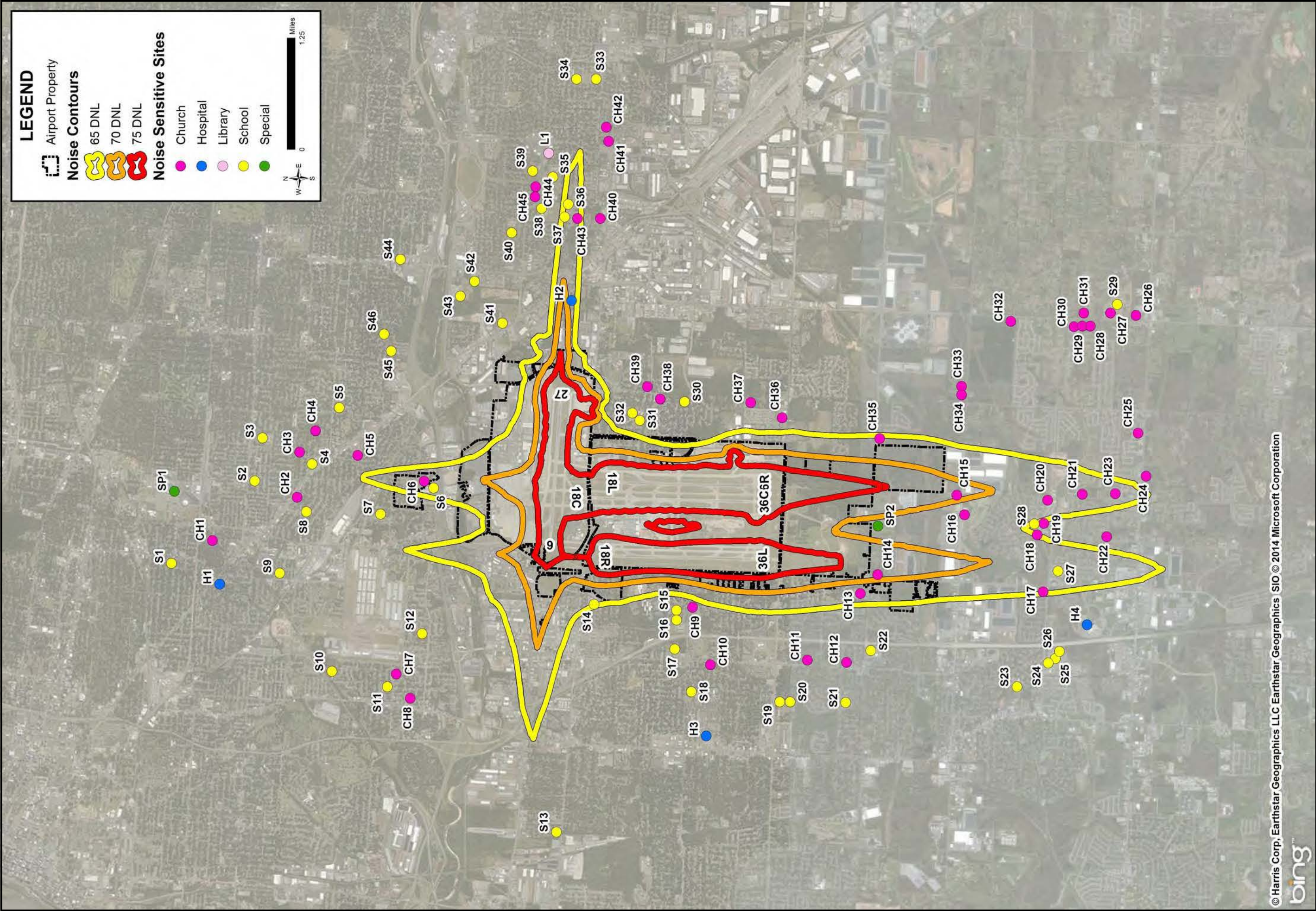
LAND USE (Acres)	Shelby County				DeSoto County				Grand
	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	Total
Civic	280.1	199.3	161.1	640.5	85.7	13.1	0.0	98.8	739.3
Commercial	359.7	140.5	6.1	506.3	129.0	7.4	0.0	136.4	642.7
Industrial	313.7	112.4	0.8	426.9	297.7	47.2	0.0	344.9	771.8
Mobile Home	16.7	0.0	0.0	16.7	0.0	0.0	0.0	0.0	16.7
Multi-Family Residential	154.2	26.2	1.0	181.4	15.2	0.0	0.0	15.2	196.6
Recreational	0.0	0.0	0.0	0.0	184.3	6.9	0.0	191.2	191.2
Single Family Residential	307.2	19.7	2.8	329.7	454.4	3.8	0.0	458.2	787.9
Transient Residential	35.3	5.5	0.0	40.8	0.0	0.0	0.0	0.0	40.8
Utility / ROW	385.4	177.0	61.6	624.0	194.4	10.9	0.0	205.3	829.3
Vacant / Unknown	1,422.1	1,906.9	1,832.7	5,161.7	356.1	24.2	0.0	380.3	5,542.0
Land Use Total	3,274.4	2,587.5	2,066.1	7,928.0	1716.8	113.5	0.0	1830.3	9,758.3

Sources: Fisher & Arnold, 2013. URS Corporation, 2014

TABLE 4.4 (CONTINUED)
2013 EXISTING CONDITION NOISE EXPOSURE ESTIMATES

HOUSING UNITS		Shelby County				DeSoto County				Grand Total
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	
Eligible for Settlement (Paid)		1,299	9	0	1,308	1,258	0	0	1,258	2,566
Eligible for Settlement (Unpaid)		545	2	0	547	433	0	0	433	980
Mitigated Total		1,844	11	0	1,855	1,691	0	0	1,691	3,545
Unmitigated	Single Family	52	5	1	58	185	1	0	186	244
	Mobile Home	128	0	0	128	0	0	0	0	128
	Multi-Family	1,610	485	18	2,113	115	0	0	115	2,228
	Transient	743	0	0	743	0	0	0	0	743
Unmitigated Total		2,533	490	19	3,042	300	1	0	301	3,343
Housing Units Total		4,377	501	19	4,897	1,991	1	0	1,992	6,889
POPULATION		Shelby County				DeSoto County				Grand Total
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	
Eligible for Settlement (Paid)		3,364	23	0	3,387	3,497	0	0	3,497	6,885
Eligible for Settlement (Unpaid)		1,412	5	0	1,417	1,204	0	0	1,204	2,620
Mitigated Total		4,776	28	0	4,804	4,701	0	0	4,701	9,505
Unmitigated	Single Family	134	13	3	150	514	3	0	517	667
	Mobile Home	332	0	0	332	0	0	0	0	332
	Multi-Family	4,170	1,256	47	5,473	320	0	0	320	5,792
	Transient	1,924	0	0	1,924	0	0	0	0	1,927
Unmitigated Total		6,560	1,269	50	7,882	834	3	0	837	8,715
Population Total		11,336	1,297	50	12,683	5,535	3	0	5,538	18,221

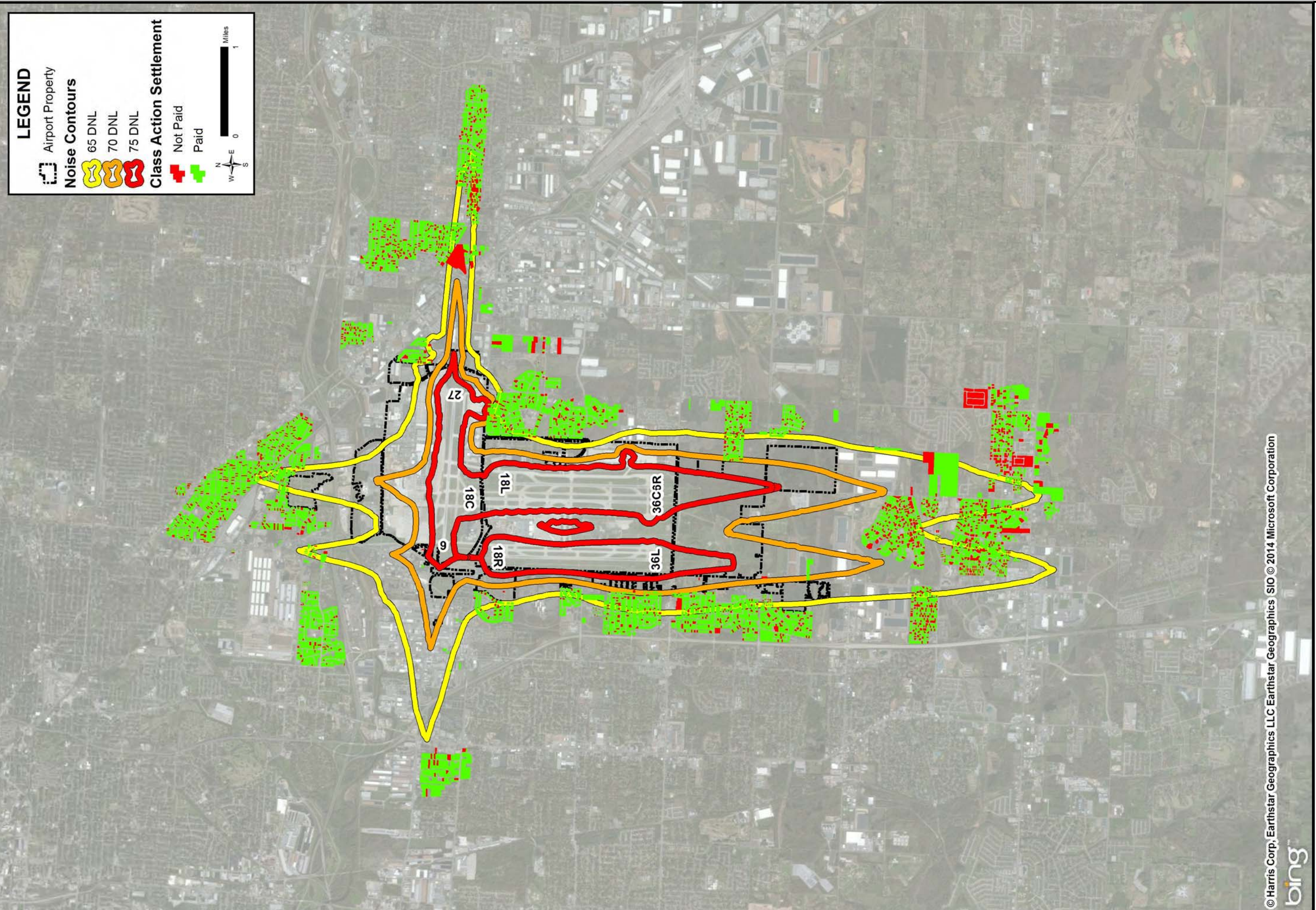
Note: Apartments were not eligible for payment under the Settlement Agreement. The distribution of the lawsuit settlement funds has been completed. Numbers may not add due to rounding.



2013 EXISTING CONDITION NEM
WITH NOISE-SENSITIVE SITES

FIGURE
4.3

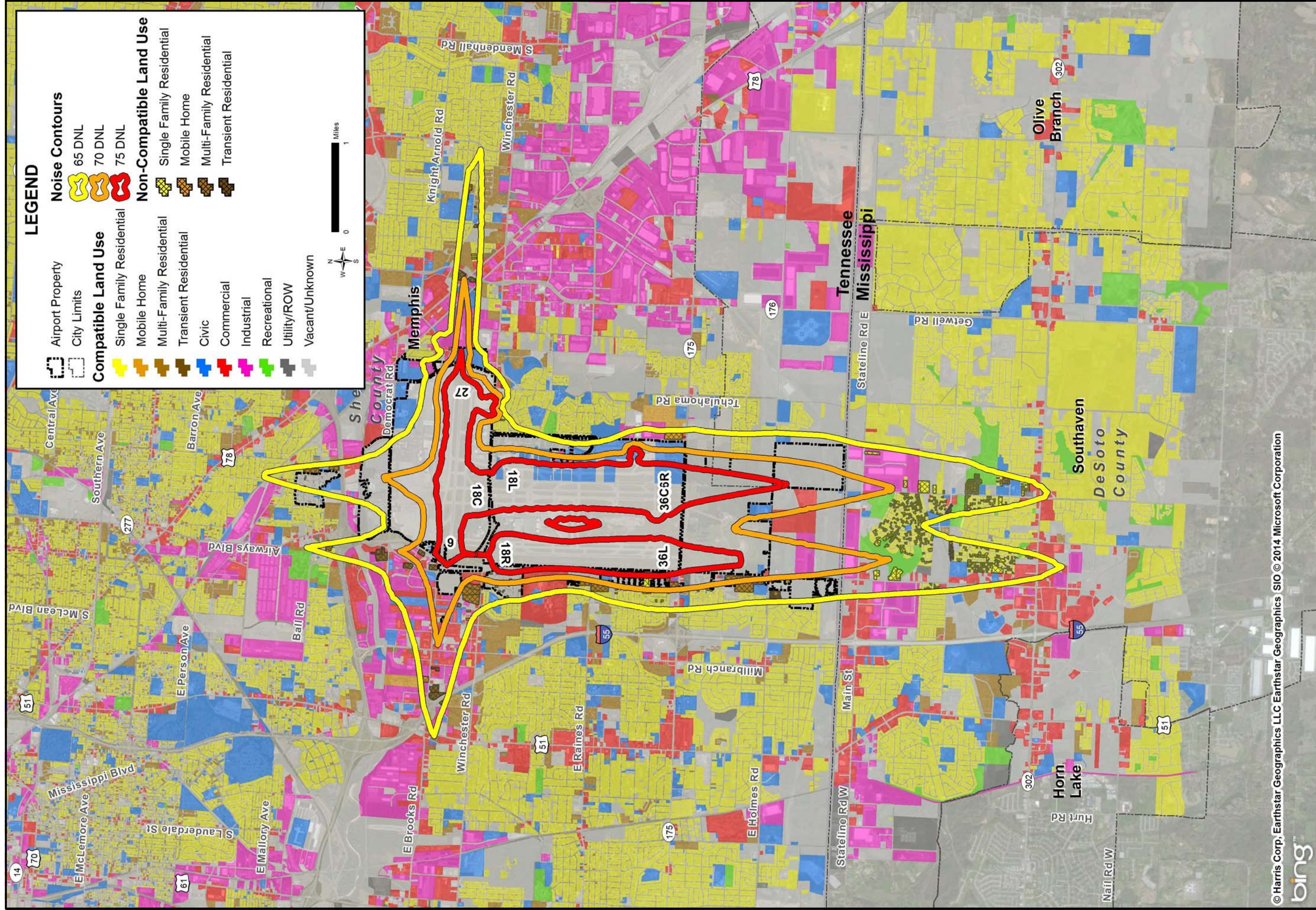
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2013 EXISTING CONDITION NEM
WITH MITIGATED PROPERTIES

FIGURE
4.4

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2013 EXISTING CONDITION NEM
WITH NONCOMPATIBLE LAND USES

FIGURE
4.5



Part 150 NEM Update

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TABLE 4.5
2013 EXISTING CONDITION DAY-NIGHT LEVEL (DNL) AT SELECTED SITES

ID	Description	DNL (dBA)
CH6	New Jerusalem Church of God in Christ	>65
CH13	St. Paul Baptist Church	>65
CH15	Brown Missionary Baptist Church	>70
CH16	Life Spring United Methodist Church	>70
CH17	Southcrest Baptist Church	>65
CH18	Greenbrook Baptist Church	>65
CH19	First Christian Church	>65
CH20	Faith Community Church	>65
CH21	Graceview Presbyterian Church	>65
CH23	Trinity Baptist Church	>65
CH35	Grace Christian Fellowship Church	>65
CH43	Fireside Temple Church of God in Christ	>65
H2	Oakville Memorial Hospital	>70
S6	Airways Middle School	>65
S14	Winchester Elementary School	>65
S27	Southaven Intermediate School	>65
S28	Geenenbrook Elementary School	>65
SP2	Lakewood / Hamilton Cemetery and Forest Hill Funeral Home	>70

Sources: Fisher & Arnold, 2013. URS Corporation, 2014.

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SECTION 5.0 2020 FUTURE CONDITION

5.1 Introduction

To estimate noise levels at Memphis International Airport (MEM), computer modeling techniques were used which produce DNL (Day Night Average Sound Level) contours in increments of 65, 70, and 75 A-weighted decibels (dBA) (see Section 1.3 Methodology). The noise modeling was accomplished for the forecast future average-daily condition (January 1, 2020 through December 31, 2020) and the resulting contours are identified as the 2020 Future Condition. The following sections describe the methods and considerations used in compiling input data for the Integrated Noise Model's (INM) calculation of the 2020 Future Condition noise contours. An analysis of the estimated number of land use and population impacts for the 2020 Future Condition is also presented.

5.2 Forecast of Aircraft Operations

The forecasted number of aircraft operations for 2020 Future Conditions was obtained from the FAA's 2013 Terminal Area Forecast (TAF) which was published in February 2014. The TAF forecasts that total aircraft operations at MEM will be 231,805 in 2020. This level of aircraft operations represents a recovery from the lower levels of aircraft experienced at the Airport following the decision by Delta Airlines to discontinue hub operations at the Airport during September 2013. The actual number of aircraft operations that occurred in 2013 is presented in **Table 5.1** along with the TAF forecast through the year 2020. The forecast of aircraft operations in 2020 is used in the next section to convert the estimated fleet mix into specific aircraft operations.

**TABLE 5.1
FLEET MIX FORECAST AND COMPARISON**

Year	Itinerant Air Carrier	Itinerant Air Taxi	Itinerant GA	Itinerant Mil	Local Civil	Local Military	Total Airport Operations
2013 (A)	163,719	49,359	19,427	1,349	250	174	234,278
2014	143,735	39,932	18,972	1,364	142	158	204,303
2015	147,125	40,791	18,972	1,364	142	158	208,552
2016	150,550	41,572	18,972	1,364	142	158	212,758
2017	154,093	42,387	18,972	1,364	142	158	217,116
2018	158,035	43,155	18,972	1,364	142	158	221,826
2019	162,385	43,761	18,972	1,364	142	158	226,782
2020	167,038	44,131	18,972	1,364	142	158	231,805

Source: URS Corporation, 2014. Note: (A) = Actual Operations

Although flights were reduced by Delta Airlines, new service and flights were initiated by Southwest Airlines in November 2013. The entry of Southwest Airlines into the MEM market may stimulate demand through the introduction of low fares. The introduction of Southwest Airlines into other markets throughout the United States has typically resulted in decreases in average ticket fares and has

stimulated latent demand for air travel from passenger leading to higher levels of passengers. A similar effect is anticipated at MEM, although the resulting increases of passengers may not fully offset the loss of the former hub operations by Delta Airlines. Other potential sources of growth at MEM include American/US Airways, as well as Frontier and other low-cost carriers.

The average annual growth rate forecast by the TAF for passenger enplanements at MEM from 2014 to 2020 is 2.1 percent. This rate is nearly the same as the 2.2 percent growth rate forecast by the FAA for national passenger enplanements.

5.3 Forecast of Aircraft Fleet Mix

The fleet mix for 2020 conditions at MEM was estimated through a number of tasks including the following:

- A review of the fleet mix forecast provided in the Master Plan Update.
- A review of annual reports for major passenger and cargo air carriers at the airport. The annual reports provide detailed data regarding each airline's commitments for aircraft purchases as well as information regarding planned aircraft retirements.
- A review of general industry trends regarding aircraft sales and aircraft retirements.
- A review of Table 28 from the FAA's 2013 Aerospace Forecast to assess projected trends for general aviation aircraft.

Professional judgment was used to apply the data from the above sources to the 2013 fleet mix and derive an estimated fleet mix for the year 2020. A comparison of the overall distribution of aircraft operations between 2013 Existing Conditions and 2020 Future Conditions is shown in **Table 5.2**. As the table indicates, cargo air carriers will continue to account for the largest percentage of aircraft operations, followed by commuters and then passenger air carriers. The percentage of operations by general aviation will decrease while military activity will remain essentially the same.

**TABLE 5.2
FLEET MIX FORECAST AND COMPARISON**

Category	2013 Existing Conditions	2020 Future Conditions
Passenger Air Carriers	10.2%	13.7%
Cargo Air Carriers	50.4%	58.4%
Commuters	28.3%	19.0%
General Aviation	10.5%	8.2%
Military	0.6%	0.7%
Total	100.0%	100.0%

Source: URS Corporation, 2014.

5.3.1 Air Carrier

The fleet mix for passenger air carrier aircraft was estimated by first deciding which aircraft are unlikely to still be operating in 2020. Aircraft in that category included the MD-80 and DC-9 series as well as the MD-90. Older versions of the 737, such as the 737-300 are also likely to be retired in favor of newer, more fuel efficient aircraft. Likewise, no operations are anticipated by larger passenger aircraft such as the 757, 767 or 777.

In terms of aircraft entering the fleet, the primary factor to consider is the likely composition of air service at the Airport. Since Delta ended its hub operation at the airport, it is focusing on the operation of regional jets and narrow-body aircraft. Therefore, the operation of larger narrow bodies such as the 757 is unlikely in the future without the connecting passenger feed from a hub operation.

Southwest Airlines which began operating at the Airport in November 2013 will have an all 737 fleet following its sale of AirTran's 717 aircraft to Delta. Furthermore, Southwest is likely to add additional flights to other destinations in its network over time. Therefore, it is likely that the proportion of 737 operations at the airport will continue to increase. It is anticipated that American and United will continue to operate at MEM with a combination of narrow-body and regional jet aircraft. Likely aircraft in the air carrier category include the 737, A319 and A320.

Table 5.3 presents the estimated 2020 fleet mix for passenger air carrier aircraft at MEM.

TABLE 5.3
PASSENGER AIR CARRIER 2020 FLEET MIX FORECAST

Aircraft Type	Percent of Category	Aircraft Operations
717	15.8%	5,011
737	50.0%	15,869
A319	10.5%	3,341
A320	21.1%	6,681
EMB-190	2.6%	835
Total	100%	31,737

Source: URS Corporation, 2014.

The fleet mix forecast for cargo air carriers is dominated by the fleet plans of FedEx because the company's aircraft account for over 95 percent of all air cargo operations at the Airport. A review of FedEx's 2013 annual report revealed that the company has commitments for the acquisition of 13 757s, 50 767s and 20 777s. The company has also been retiring A310 and MD10 aircraft in response to capacity requirements and a desire to replace older aircraft types with newer and more fuel efficient aircraft. The company completed its retirement of 727 aircraft during 2013.

It is anticipated that FedEx will continue to retire older and less fuel efficient aircraft in future years as new aircraft enter its fleet. Specifically, it is anticipated that the MD10 will exit the fleet. Conversely, the 757, 767 and 777 are anticipated to account for a greater percentage of the airline's operations. Operations by

other air cargo carriers, such as, UPS are anticipated to continue with the same type of aircraft it presently operates. According to its 2013 annual report, UPS has no new aircraft on order.

The projected fleet mix for cargo air carrier is presented in **Table 5.4**.

TABLE 5.4
CARGO AIR CARRIER 2020 FLEET MIX FORECAST

Aircraft Type	Percent of Category	Aircraft Operations
747	0.1%	167
757	25.9%	35,078
767	13.5%	18,207
777	7.4%	10,022
A300	25.9%	35,078
A310	6.2%	8,352
MD-11	21.0%	28,397
Total	100%	135,301

Source: URS Corporation, 2014.

5.3.2 Commuter

The fleet mix for commuter aircraft includes a range of regional jets and turboprop aircraft. Commuter operations are conducted by numerous airlines at MEM under contract to, or as a subsidiary of, mainline carriers. The primary trend in the commuter segment is the retirement of older regional jets especially those with 50 or fewer seats. Those aircraft are marginally profitable at current fuel prices and have been removed from service on many routes by several airlines.

Airlines have replaced flights of 50-seat regional jets with larger 70-seat regional jets in markets that can support the operation of larger aircraft. Some airlines have reverted to the use of turboprop aircraft such as the Saab 340 in markets that cannot support the operation of larger aircraft.

The 2020 fleet mix forecast projects a lower percentage of operations in the 50-seat regional jet category and a higher percentage of operations in the 70- to 90-seat regional jet categories. Additional operations have been placed in a future turboprop category. It is anticipated that a newer aircraft such as the Bombardier Q400 and the ATR-600 may fill this niche in the market.

Table 5.5 presents the estimated 2020 fleet mix for commuter aircraft at MEM.

TABLE 5.5
COMMUTER 2020 FLEET MIX FORECAST

Aircraft Type	Percent of Category	Aircraft Operations
EMB-145	8%	3,530
EMB-170	25%	11,033
CRJ-900	13%	5,737
CRJ-200	25%	11,033
SAAB-340	1%	441
CRJ-700	14%	6,178
Q400	7%	3,089
ATR-600	7%	3,089
Total	100%	44,131

Source: URS Corporation, 2014.

5.3.3 General Aviation

The distribution of general aviation operations between the categories of single-engine, multi-engine, jet and rotorcraft for existing 2013 and future 2020 conditions is shown in **Table 5.6**. The predominant trend is the continued reduction of single-engine aircraft as a percentage of the total general aviation fleet. This trend is consistent with FAA projections in the 2013 Aerospace Forecast. Operations by jet aircraft, specifically midsize to large cabin business jets, are expected to increase.

TABLE 5.6
2020 GENERAL AVIATION FLEET MIX FORECAST

Category	2020 Future Conditions
Single-Engine	34%
Multi-Engine	9%
Jet	51%
Rotor	6%
Total	100.0%

Source: URS Corporation, 2014.

The distribution of aircraft operations within each of the general aviation categories is presented in **Table 5.7**. The distribution of rotorcraft operations is shown in **Table 5.8**. Notable trends in these tables include the continued decrease of single-engine aircraft types other than the Cessna Caravans associated with FedEx operations and the shift of jet operations to large, heavy business jets such as the Gulfstream 550/650 and Global Express 7,000 / 8,000 series.

The 2020 fleet mix for rotorcraft was held constant from the fleet mix used for the 2013 Existing Condition NEM.

**TABLE 5.7
GENERAL AVIATION 2020 FLEET MIX FORECAST**

Category	Aircraft Type	Percent of Category	Aircraft Operations
Single-Engine	GASEPF	11%	685
	GASEPV	16%	997
	CNA206	7%	436
	CNA208	66%	4,111
	Subtotal	100%	6,229
Multi-Engine	BEC58P	47%	836
	CNA441	53%	943
	Subtotal	100%	1,780
Jet	CNA500	10%	979
	CNA55B	15%	1,468
	CNA680	1%	98
	CNA750	2%	196
	CIT3	1%	98
	ECLIPSE500	3%	294
	G-IV	1%	98
	G-V	2%	196
	MU3001	5%	489
	LR 45/60	20%	1,958
	Latitude / Sovereign	15%	1,468
	CL-605	17%	1,664
	GLF-650	4%	392
	Global Express	4%	392
	Subtotal	100%	9,788
Total		100%	17,797

Source: URS Corporation, 2014.

Note: Does not include 142 Local Civil Operations

**TABLE 5.8
ROTORCRAFT 2020 FLEET MIX FORECAST**

Aircraft Type	Percent of Category	Aircraft Operations
AH1, A119	1.2%	15
OH58, H58	0.4%	4
B206L, HELO	46.5%	547
UH1, UH-1H, UHY	1.7%	20
B429, EC45	0.7%	9
EC30, EC35	0.9%	10
H47	0.2%	3
R44	5.3%	63
H53	0.2%	3
AH64, H60, H64, UH60	6.2%	73
AS50	35.4%	416
AS65, H65, MH65	1.2%	15
Total	100%	1,176

Source: URS Corporation, 2014.

5.3.4 Military Operations

Military flights at MEM are primarily associated with operations conducted by the 164th Airlift Wing of the Tennessee Air National Guard (TN ANG). The airlift wing operates C-17 cargo aircraft that facilitate the Air Force's airlift requirements. According to wing personnel, the transition from operating C-5 aircraft to C-17 aircraft is now completed. The airlift wing operates a total of eight (8) C-17 aircraft.

In addition to operations associated with the 164th Airlift Wing, a wide variety of other military aircraft use MEM on an itinerant basis. **Table 5.9** presents the forecasted fleet mix for 2020 and the resulting number of aircraft operations. Operations by military aircraft are forecast (by the TAF) to remain constant at 1,364 throughout the forecast period.

**TABLE 5.9
MILITARY 2020 FLEET MIX FORECAST**

Aircraft Type	2020 Percent of Category	Aircraft Operations
C-130	6%	82
C-17	36%	491
C-20	1%	14
F-18	19%	259
KC-135	6%	82
T-34	32%	436
Total	100%	1,364

Source: URS Corporation, 2014.

Note: Does not include 158 Local Military Operations

5.3.5 Local Operations

In addition to itinerant aircraft operations, the FAA's TAF predicts that a small number of local (i.e., touch and go) operations will occur at MEM by civil and military aircraft. The TAF forecasts a total of 142 civil and 158 military local aircraft operations in 2020. The civil aircraft operations will be accounted for in the category of single-engine aircraft operations within the general aviation category. The military operations will be accounted for in the T-34 category.

5.4 Aircraft Engine Ground Run-Ups

Aircraft engine ground run-up operations for the future condition will be conducted at five locations, which are shown on **Figure 5.1**. The additional location is at the Tennessee Colleges of Applied Technology (TCAT), Aviation Maintenance Center, 3435 Tchulahoma Road. Students in the Avionics Maintenance Program and Aircraft Mechanics Program will perform single-engine run-ups (with APU) on a Boeing 727 aircraft that is parked on their ramp (positioned at a heading of 135°). These TCAT run-ups will occur between the hours of 7:00 AM and 7:00 PM, will utilize idle power (maximum of 60%), and will last a maximum of 45 minutes. A total of twelve engine run-up operations will be performed per year.

Based on the available information, the aircraft engine ground run-up operations discussed in **Section 4.4** are not expected to change, with the exception of the phase out of the FedEx Boeing 727 engine run-up operations resulting from the phase out of that aircraft by FedEx. All other operational characteristics of the aircraft engine ground run-up operations discussed in **Section 4.4** will remain constant from 2013 through 2020.

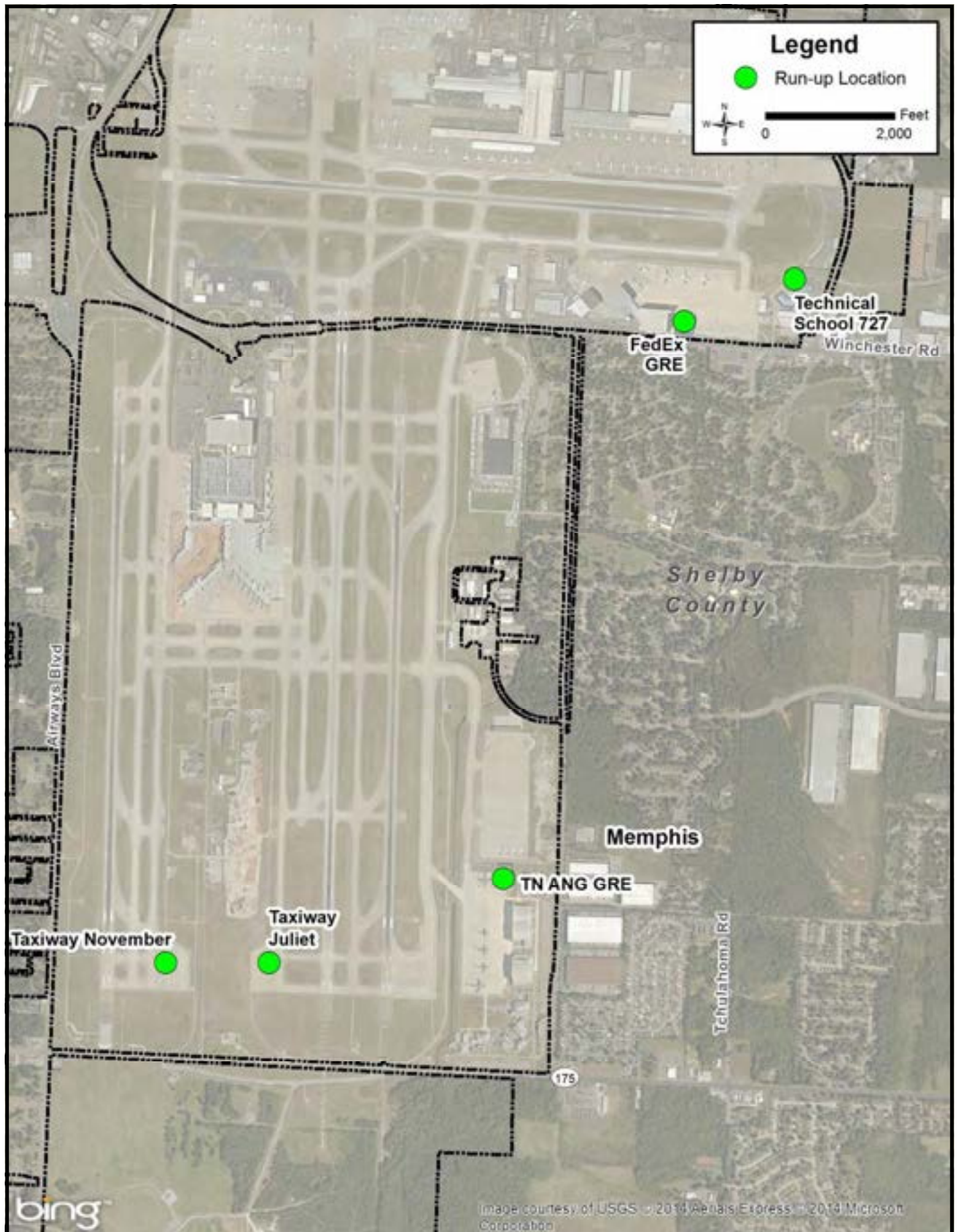
Detailed information regarding these run-ups is provided in **Appendix B**.

5.5 Flight Track Configuration and Utilization

Flight tracks are graphic depictions of the paths that aircraft fly in relation to the ground or, as defined by the FAA in the Airmen's Information Manual, "the actual flight path of an aircraft over the surface of the earth." Aircraft are free to travel many paths, unlike other forms of transportation, which are normally limited to the confines of a roadway or railway. To land and take off from an airport, pilots align their aircraft with runways.

In the context of noise modeling, a flight track describes the position of an aircraft in space and time. The vertical projection of the flight path onto the ground is combined with the flight track profile to construct a three-dimensional flight track or flight path.

The vertical projection of the departure flight tracks (i.e., ground tracks) was developed based on a detailed analysis of the published instrument departure procedures (DPs). It was assumed that aircraft operators with Performance Based Navigation (PBN) capabilities would fly the DPs as published, with little intervention from Air Traffic Control (ATC). The use of PBN may result in a greater concentration of flight tracks over a smaller area, as modeled in the 2020 Future Condition. On the other hand, it was assumed that aircraft operators without PBN capabilities would follow similar conventional departures procedures, with the assistance of ATC.



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The analysis of the PDARS data and discussions with ATC indicated that arriving aircraft are generally routed in a “race track” pattern and are then stabilized on a 10 nautical mile straight-in approach. It was determined that the aircraft’s position prior to the straight-in approach is not relevant from a noise modeling perspective because the routing of aircraft to the final approach course occurs mostly outside of the DNL 65 dB contour. Therefore, the arrival flight tracks were modeled as straight-in flight tracks.

Flight track utilization was based on data provided by MEM Air Traffic Control and the analysis of PDARS data as discussed in Section 3.

Figures 5.2 and 5.3 illustrate the modeled future flight tracks. Helicopter and military aircraft flight tracks and track utilization remains unchanged from the existing condition, and are shown in Figures 3.10 and 3.11.

Title 14 CFR part 150, Airport Noise Compatibility Planning, Amendment No. 150-4, Section A150.103(b)(1), requires “A map of the airport and its environs at an adequately detailed scale (not less than 1 inch to 2,000 feet) indicating runway length, alignments, landing thresholds, takeoff start-of-roll points, airport boundary, and flight tracks out to at least 30,000 feet from the end of each runway.” Therefore, flight track maps at a scale of 1 inch to 2,000 feet are provided in **Appendix H**.

5.6 Noise Contours

Noise contours are lines showing areas having equal sound levels and are used to assess the effects of aircraft noise around MEM. The contours calculated for this study include the DNL 65, 70, and 75 dBA. DNL contours represent the average cumulative noise produced by an annual average 24-hour day of aircraft operations for the 2020 Future Condition at MEM. The size and shape of the contours depend primarily upon the numbers and types of aircraft that operate to and from the airport, and upon the direction of flight tracks flown by those aircraft.

Noise contours resulting from 2020 aircraft operations are shown superimposed over the existing land use base map on **Figure 5.4**. The base map graphically depicts the airport boundaries, runway configurations, and runway end numbers. It also clearly depicts streets and other identifiable geographic features. The total area within the DNL 65+ dBA noise contour for the 2020 Future Condition is estimated to be 11.85 square miles.

Title 14 CFR part 150, Airport Noise Compatibility Planning, Amendment No. 150-4, Section A150.101(e)(9), requires “Depiction of the required noise contours over a land use map of a sufficient scale and quality to discern streets and other identifiable geographic features.” Therefore, the 2020 Future Condition NEM, at a scale of 1 inch to 2,000 feet, is provided in **Appendix H**.

The northeastern lobe of the DNL 65 dBA contour comes to a point just north of I-240 at Durby Street near Airways Middle School. The northwestern lobe of the DNL 65 dBA contour straddles Plough Blvd., and comes to a point near the intersection of Plough Blvd and Airways Blvd, south of I-240. The western lobe of the DNL 65 dBA contour straddles East Brooks Road and comes to a point east of the intersection of East Brooks Rd and I-55. The southwestern lobe of the DNL 65 dBA contour straddles Airways Blvd. and comes to a point at Clarington Drive. The southeastern lobe of the DNL 65 dBA contour straddles Swinnea Road and comes to a point just north of Greycliff Drive. The eastern lobe of the DNL 65 dBA

contour extends along the Runway 9/27 extended centerline and comes to a point just east of Sheffield Elementary School.

Of note, FedEx, MSCAA and the FAA have recently reached an accord that would allow FedEx to commence nighttime (10:00 p.m. to 6:59 a.m.) aircraft maintenance engine run-ups in the near future, provided that nighttime run-ups result in no off-airport change to the 2020 NEMs depicted on **Figure 5.4**. The FAA determined that the inclusion of these proposed additional nighttime run-ups did not need to be included in the 2020 Future Condition NEM on the condition that INM modeling indicates there will be no off-airport change in the NEM.

Specifically, FedEx plans to add two (2) 30-minute long nightly run-ups using the four (4) primary FedEx aircraft based at MEM. The 30 minutes would consist of approximately seven minutes of departure rated thrust settings at 85 percent power, with the remaining 23 minutes at idle (or 20 percent power).

To avoid conducting the additional run-ups in a manner that alters the 2020 NEM off-airport, FedEx proposes to build a new GRE located just off the northeast apron of Signature Flight Support, as shown in **Figure 5.5**. This GRE would only host the proposed additional nighttime run-ups. All the existing and previously forecast FedEx aircraft run-ups would be conducted as discussed in Section 5.4.

Figure 5.5 shows the minimal change, only evidenced in the DNL 75 dB contour, resulting from the proposed FedEx nighttime run-ups. This change in noise exposure estimates resides entirely within the airport boundary and is therefore not included in the official 2020 Future Condition NEM. Although the actual timetable for planning, construction and use of this proposed GRE is uncertain, the lack of off-airport change in noise impacts indicates that the 2020 Future Condition NEM accurately represents the 2020 forecast of aircraft operations at MEM.

5.7 Impact Analysis

Figure 5.4 and the 2020 Future Condition NEM provided in **Appendix H** illustrate the 2020 future condition noise contours superimposed over the current land uses surrounding MEM. **Table 5.10** provides detailed information on impacted land use acreage, population and the number of houses within the DNL 65 dBA contour.

The number of housing units was estimated by utilizing the GIS data obtained for DeSoto County, Mississippi and Shelby County, Tennessee. Population was then estimated by multiplying the number of housing units by the average household size. For Shelby County, the average household size is 2.59 persons per household, while for DeSoto County, the average household size is 2.78 persons per household (Source U.S. Census Bureau: American Fact Finder).

5.8 Noise-Sensitive Sites

Various noise-sensitive sites were analyzed within the study area. The locations of noise-sensitive sites are depicted on **Figure 5.6** and on the 2020 Future Condition NEM provided in **Appendix H**. **Table 5.11** provides estimated noise exposure levels at each noise-sensitive site within the 2020 Future Condition noise contours.

As shown in Figure 5.5 and Table 5.11, seven (7) churches, six (6) schools, one (1) hospital, and one (1) cemetery/funeral home are located within the DNL 65 dBA contours. No noise-sensitive sites are located within the DNL 70 or 75 dBA contours.

5.9 Mitigated Properties

Figure 5.7 illustrates the DNL 65, 70, and 75 dBA contours superimposed over the base map showing properties eligible for mitigation under the class action lawsuit filed against MSCAA, as discussed in Section 4.9 and documented in **Appendix A**. Figure 5.6 includes both properties that were paid for their easement and those that were eligible, but not paid. This is also shown on the 2020 Future Condition NEM provided in **Appendix H**. Table 5.10 provides detailed number of eligible houses and population by use codes. The mitigation area was based, in part, on noise contours developed in a previous Part 150 Study.

5.10 Noncompatible Land Use

Noncompatible land uses within the 2020 Future Condition Noise Exposure Map include residential and public land uses. **Figure 5.8** and the 2020 Future Condition NEM provided in **Appendix H** illustrate the compatible and noncompatible land uses within the DNL 65, 70, and 75 dBA contours. Properties for which an Avigation Easement was imposed or granted are considered compatible land uses. Residential properties within the DNL 65, 70, and 75 dBA contours without an Avigation Easement are not compatible. In addition, schools located within the DNL 65 and 70 dBA contours are not compatible. Although considered noise-sensitive, churches and hospitals within the DNL 65 and 70 dBA contours are generally compatible.

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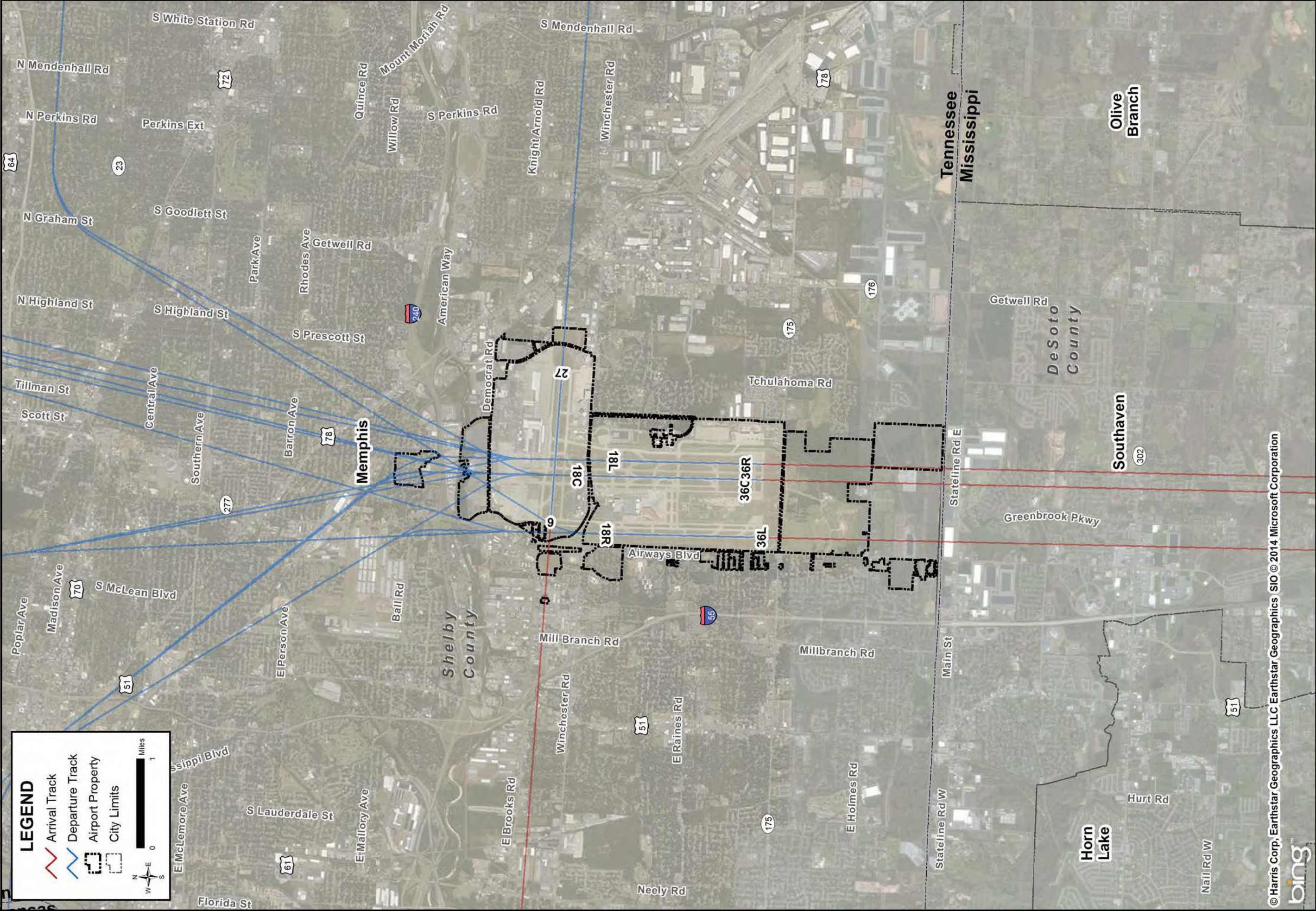
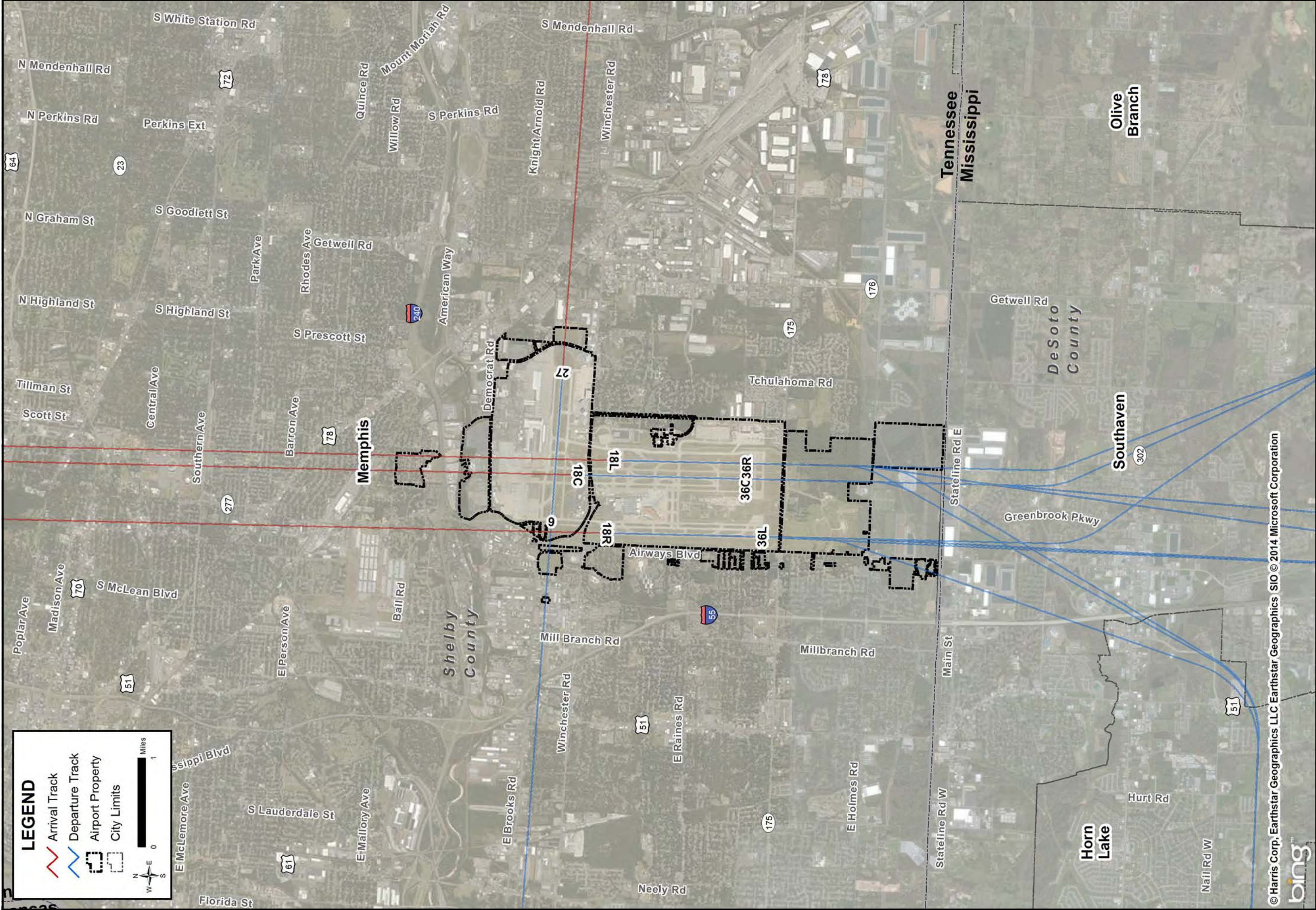


FIGURE 5.2

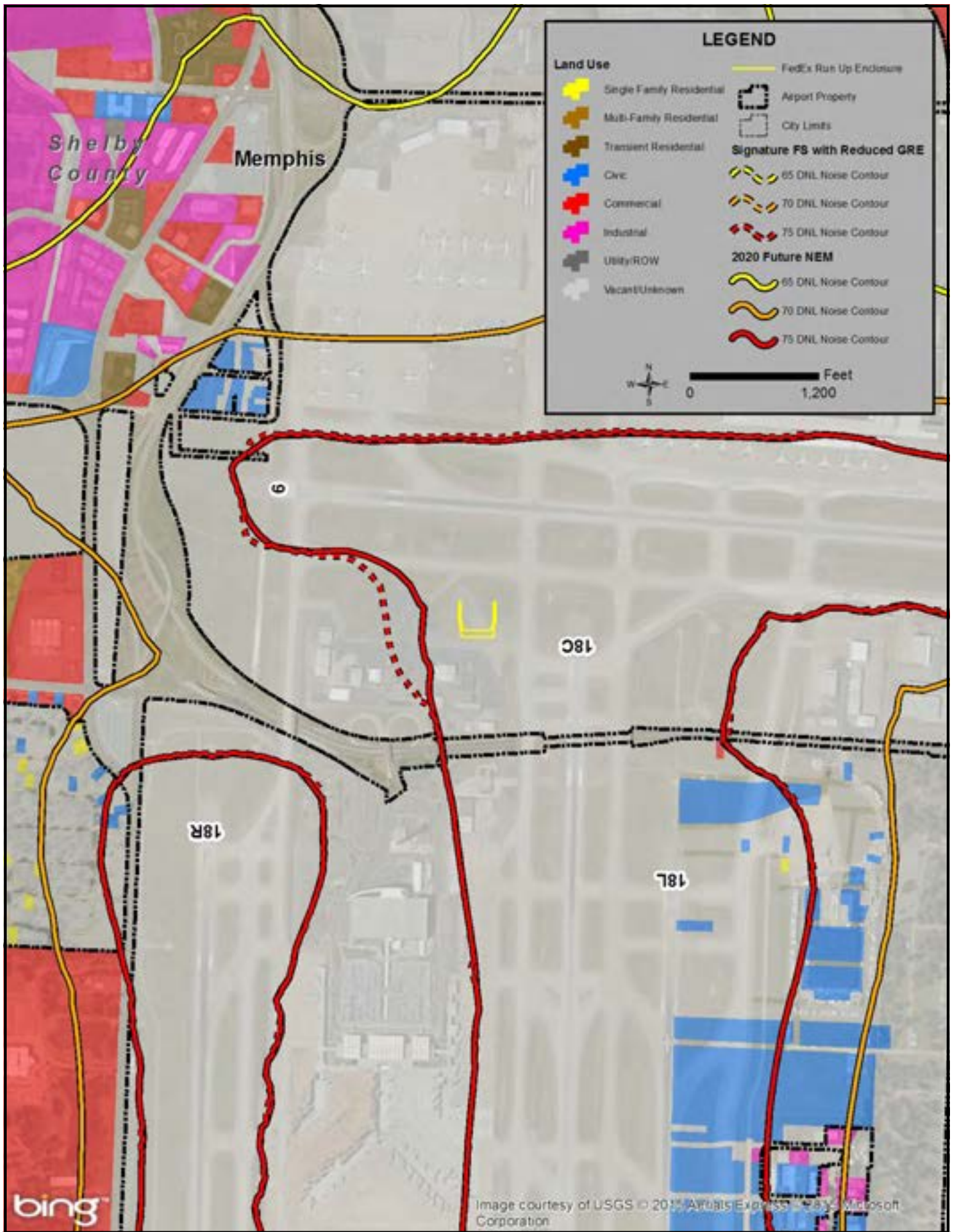
NORTH / EAST FLOW FLIGHT TRACKS

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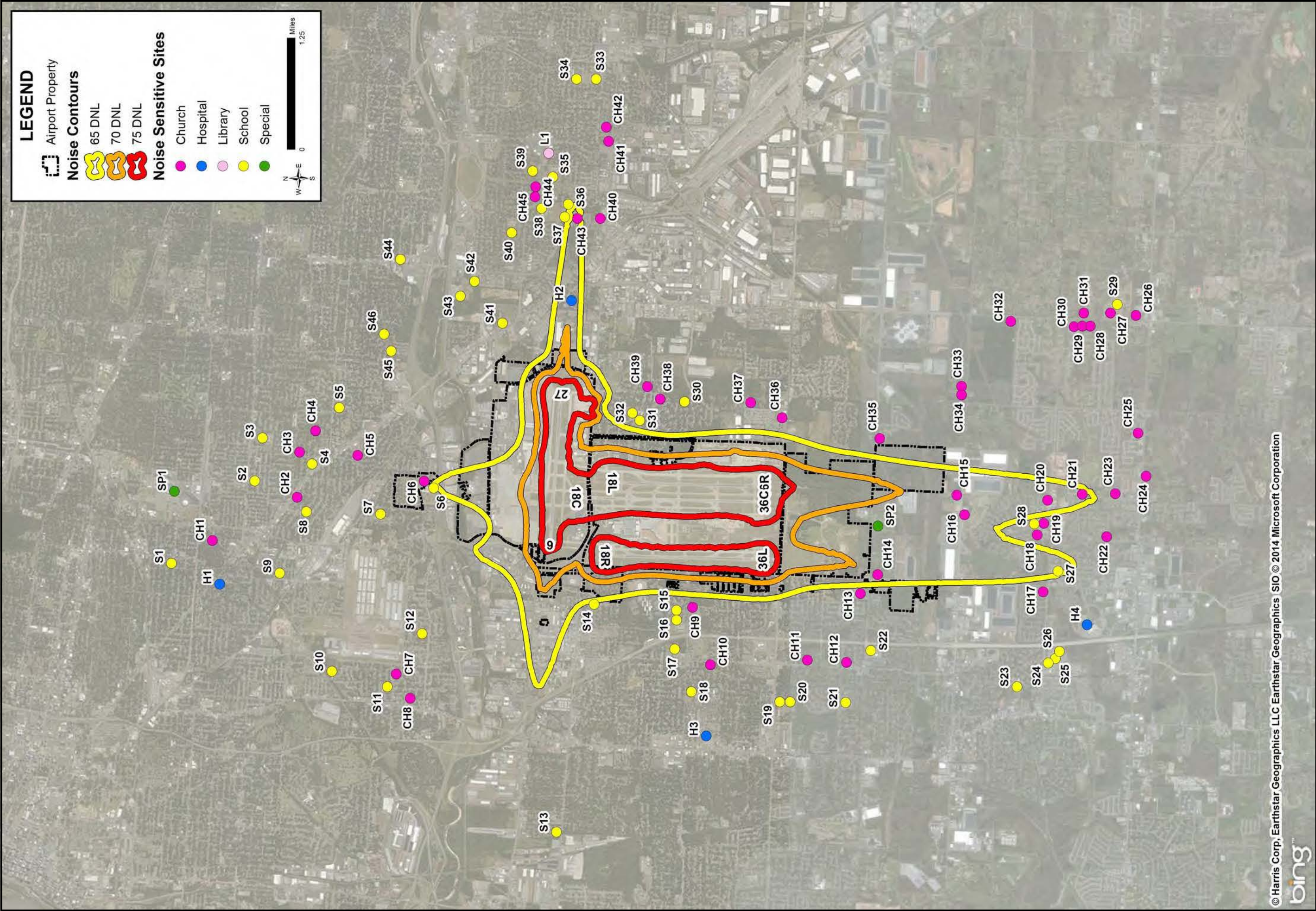


Part 150 NEM Update

PROPOSED FEDEX RUN-UP
LOCATION NOISE IMPACTS

FIGURE
5.5

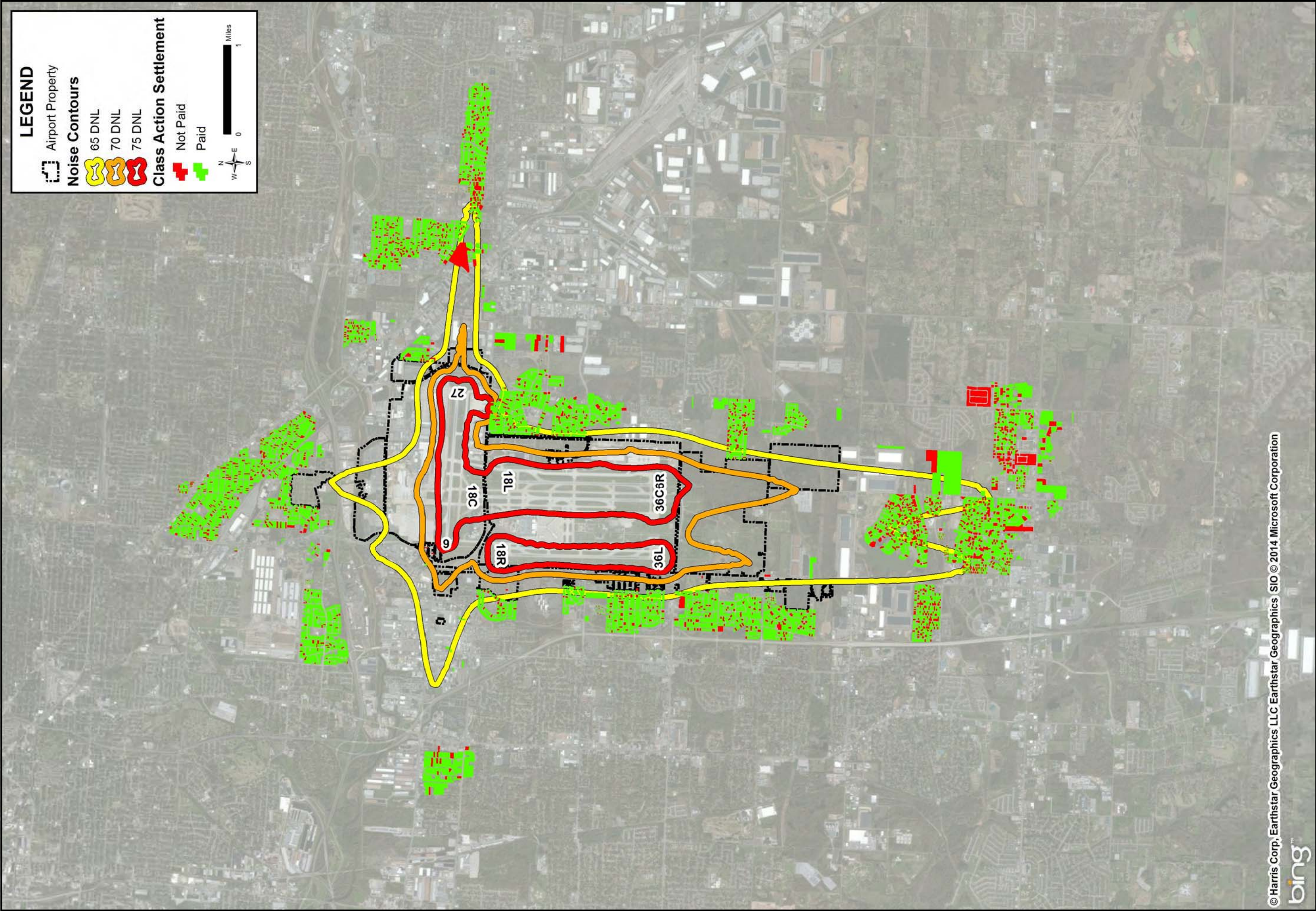
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2020 FUTURE CONDITION NEM
WITH NOISE-SENSITIVE SITES

FIGURE
5.6

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2020 **FUTURE** CONDITION NEM
WITH MITIGATED PROPERTIES

FIGURE 5.7

Part 150 NEM Update

Memphis INTERNATIONAL AIRPORT

LRAS

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**TABLE 5.10
2020 FUTURE CONDITION NOISE EXPOSURE ESTIMATES**

Land Use (Acres)	Shelby County				DeSoto County				Grand Total
	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	
Civic	270.4	144.9	140.0	555.3	45.2	0.0	0.0	45.2	600.5
Commercial	360.3	27.7	0.3	388.3	33.1	0.0	0.0	33.1	421.4
Industrial	278.5	13.2	0.3	292.0	190.2	0.0	0.0	190.2	482.2
Mobile Home	10.8	0.0	0.0	10.8	0.0	0.0	0.0	0.0	10.8
Multi-Family Residential	114.9	3.2	0.0	118.1	4.7	0.0	0.0	4.7	122.8
Recreational	3.9	0.0	0.0	3.9	149.4	0.0	0.0	149.4	153.3
Single Family Residential	141.5	9.6	0.3	151.4	247.7	0.0	0.0	247.7	399.1
Transient Residential	23.4	0.3	0.0	23.7	0.0	0.0	0.0	0.0	23.7
Utility / ROW	271.4	140.2	25.5	437.1	102.2	0.0	0.0	102.2	539.3
Vacant / Unknown	1,744.7	1,454.6	1,446.6	4,645.9	192.6	0.0	0.0	192.6	4,835.5
Land Use Total	3,219.8	1,793.7	1,613.0	6,626.5	965.1	0.0	0.0	965.1	7,588.6

Sources: Fisher & Arnold, 2013. URS Corporation, 2014

TABLE 5.10 (CONTINUED)
2020 FUTURE CONDITION NOISE EXPOSURE ESTIMATES

Housing Units		Shelby County				DeSoto County				Grand Total
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	
Eligible for Settlement (Paid)		456	5	0	461	596	0	0	596	1,057
Eligible for Settlement (Unpaid)		301	0	0	301	202	0	0	202	503
Mitigated Total		757	5	0	762	798	0	0	798	1,560
Unmitigated	Single Family	24	1	1	26	84	0	0	84	110
	Mobile Home	77	0	0	77	0	0	0	0	77
	Multi-Family	1,422	53	0	1,475	67	0	0	67	1,542
	Transient	191	0	0	191	0	0	0	0	191
Unmitigated Total		1,714	54	1	1,769	151	0	0	151	1,920
Housing Units Total		2,471	59	1	2,531	949	0	0	949	3,480
Population		Shelby County				DeSoto County				Grand Total
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	
Eligible for Settlement (Paid)		1,181	13	0	1,194	1,657	0	0	1,657	2,851
Eligible for Settlement (Unpaid)		780	0	0	780.0	562	0	0	562	1,341
Mitigated Total		1,961	13	0	1,974	2,218	0	0	2,218	4,192
Unmitigated	Single Family	62	3	3	68	234	0	0	234	300
	Mobile Home	199	0	0	199	0	0	0	0	199
	Multi-Family	3,683	137	0	3,820	186	0	0	186	4,007
	Transient	495	0	0	495	0	0	0	0	495
Unmitigated Total		4,4392	140	3	4582	420	0	0	420	5,002
Population Total		6,399	153	3	6,555	2,638	0	0	2,638	9,193

Note: Apartments were not eligible for payment under the Settlement Agreement. The distribution of the lawsuit settlement funds has been completed.
Totals may not add due to rounding.

TABLE 5.11
2020 FUTURE CONDITION DAY-NIGHT LEVEL (DNL) AT SELECTED SITES

ID	Description	DNL (dBA)
CH14	Longstreet Methodist Church	>65
CH15	Brown Missionary Baptist Church	>65
CH16	Life Spring United Methodist Church	>65
CH17	Southcrest Baptist Church	>65
CH20	Faith Community Church	>65
CH21	Graceview Presbyterian Church	>65
CH43	Fireside Temple Church of God in Christ	>65
H2	Oakville Memorial Hospital	>65
S6	Airways Middle School	>65
S14	Winchester Elementary School	>65
S27	Southaven Intermediate School	>65
S28	Geeenbrook Elementary School	>65
S36	Sheffield Vocational/Technical School	>65
S37	Sheffield Elementary School	>65
SP2	Lakewood / Hamilton Cemetery and Forest Hill Funeral Home	>65

Sources: Fisher & Arnold, 2013. URS Corporation, 2014

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SECTION 6.0 **CONSULTATION**

6.1 *Introduction*

Title 14 CFR part 150, *Airport Noise Compatibility Planning*, requires that each noise exposure map must be developed and prepared in consultation with FAA regional officials, the officials of the state and of any public agencies and planning agencies whose area, or any portion of whose area, of jurisdiction is within the DNL 65 dB contour depicted on the noise exposure map, and other Federal officials having local responsibility for land uses depicted on the map. This consultation must include regular aeronautical users of the airport, including air carriers and other aircraft operators.

The Memphis-Shelby County Airport Authority (MSCAA), owner and operator of Memphis International Airport, certifies that it has afforded interested persons adequate opportunity to submit their views, data, and comments concerning the correctness and adequacy of the draft noise exposure maps and descriptions of forecast aircraft operations. Documentation describing the consultation accomplished during the development of the noise exposure maps and the opportunities afforded the public to review and comment are included in this section and associated appendices.

6.2 *Identification of Consulted Parties*

As specified in title 14 CFR part 150, the preparation of a Part 150 Study requires that certain parties must be identified and consulted during development of the associated noise exposure maps and the overall noise compatibility program. Based on this requirement, written and verbal correspondence was initiated and continued throughout the study with the following parties to provide input and assistance:

- Federal Aviation Administration
- Federal Express
- Tennessee Air National Guard
- City of Memphis / Shelby County
- DeSoto County
- City of Southaven, Mississippi
- City of Horn Lake, Mississippi
- City of Olive Branch, Mississippi

Copies of correspondence with these parties are included in **Appendix D**.

6.3 *Public Review*

Title 14 CFR Part 150 §150.21(b) states that “The airport operator shall certify that it has afforded interested persons adequate opportunity to submit their views, data, and comments concerning the correctness and adequacy of the draft noise exposure map and description of forecast aircraft operations.

The draft NEM documents were distributed to five (5) libraries in the vicinity of the airport. Following is the list of libraries.

- Central Library – 3030 Poplar Avenue
- Whitehaven Branch Library – 4120 Mill Branch Road
- Parkway Village Branch Library – 4655 Knight Arnold Road
- Cherokee Branch Library – 3300 Sharpe Avenue
- M.R. Davis Public Library – 8889 Northwest Drive, Southaven, MS

The notice of availability was advertised in local newspapers for 5 to 7 days. Following is the list of local newspapers and advertisement dates:

- Memphis Commercial Appeal – *September 16, 26, 30, and October 2, 2014*
- DeSoto Times – *September 16, 30, and October 2, 2014*

Copies of each advertisement are included in **Appendix E**.

A public workshop was conducted during the course of preparing the NEM document. The workshop focuses on the development and refinement of the existing and future NEMs. This workshop was held on October 18, 2014, from 6:00 p.m. to 8:00 p.m. at the MEM Airports Project Center.

The workshop was structured as an open house, with display boards and information posted throughout the meeting room. This format is used to encourage one-on-one discussions between the study team and members of the general public. There were six (6) attendees from the general public, with two (2) providing comment. No other public comments were received.

A copy of the public Meeting Handout, the Sign-In Sheet, and the two public comments are included in Appendix E.

As shown on the advertisement, public comments were accepted until October 23, 2014.

6.4 FAA Review and Acceptance

The NEMs and supporting documentation were submitted to the FAA on August 12, 2015 for final review. On September 1, 2015, the FAA announced their determination that the noise exposure maps submitted by Memphis-Shelby County Airport Authority for Memphis International Airport under the provisions of 49 U.S.C. 47501 *et seq* (Aviation Safety and Noise Abatement Act) and title 14 CFR part 150 were in compliance with applicable requirements. The transmittal letter and sponsor's certification to the FAA and this acceptance letter from the FAA are included in **Figures 6-1, 6-2, and 6-3**, respectively and in **Appendix F**. In addition, the FAA published the **Noise Exposure Map Notice, Memphis International Airport** in the Federal Register, Vol. 80, No. 175, on September 10, 2015. The Federal Register Notice is also included in **Appendix F**.

As described in Section 47506(b)(1) of the Aviation Safety and Noise Abatement Act of 1979, a legal notice was advertised in several local newspapers. Following is the list of local newspapers and advertisement dates:

- Memphis Commercial Appeal – October 6, 13 and 20, 2015
- DeSoto Times – October 6, 13 and 20, 2015
- Desoto Appeal – October 13, 2015

Copies of each advertisement are included in **Appendix G**.

The legal notice read as follows:

LEGAL NOTICE

This serves to provide public notice that, September 10, 2015, the Federal Aviation Administration (FAA) announced their determination that the “2013 Existing Condition Noise Exposure Map” and the “2020 Future Condition Noise Exposure Map” submitted by the Memphis – Shelby County Airport Authority under the provisions of 49 U.S.C. 47503 and 14 CFR part 150 was in compliance with applicable requirements. The Noise Exposure Maps and supporting documentation are available for public inspection during normal business hours (8:00 am to 4:30 pm, Monday through Friday) at the Memphis International Airport Administrative Office at 2491 Winchester Road, Suite 113, Memphis, TN 38116.

As indicated in 49 U.S.C. 47506, as of the date of this notice, no person who acquires property or an interest in property in an area surrounding Memphis International Airport, having actual or constructive knowledge of the existence of the Noise Exposure Maps, shall be entitled to recover damages with respect to the noise attributed to the airport unless such person can show that: (1) after acquiring the interest in such property, there was a significant (a) change in the type or frequency of aircraft operations at the airport, (b) change in the airport layout, (c) change in flight patterns, or (d) increase in nighttime operations; and (2) that damages have resulted from any such change or increase.

This notice of the existence of the Noise Exposure Maps is being published at least three times in newspapers of general circulation in the counties in which the airport and surrounding properties are located. This notices serves as constructive knowledge of the existence of the Noise Exposure Maps for Memphis International Airport.

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August 12, 2015

Mr. Stephen Wilson
Community Planner
Federal Aviation Administration
Memphis Airports District Office
2862 Business Park Drive, Building G
Memphis, Tennessee 38118

**RE: 14 CFR PART 150 NOISE EXPOSURE MAPS
SUBMITTAL FOR FAA COMPLIANCE DETERMINATION**

Dear Mr. Wilson:

Enclosed are five (5) hard copies and five (5) CDs of Memphis International Airport's 14 CFR Part 150 Noise Exposure Maps (NEMs) and supporting documentation, and five (5) copies of the Executive Summary. These NEMs and supporting documentation are submitted under the provisions of Title 49 United States Code, Chapter 475 and 14 CFR Part 150. Memphis – Shelby County Airport Authority, as owner and operator of Memphis International Airport, is submitting these NEMs and supporting documentation for appropriate Federal Aviation Administration (FAA) determination.

Should you have any questions regarding the enclosed document, please do not hesitate to contact me at 901-922-8075. We appreciate your assistance in this matter.

Sincerely,

Scott A. Brockman, A.A.E.
President and CEO

Enclosures

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SPONSOR'S CERTIFICATION

The Noise Exposure Maps (NEMs) for Memphis International Airport, hereby submitted in accordance with title 14 CFR part 150, were prepared with the best available information and are certified as true and complete to the best of my knowledge and belief.

The Existing Condition NEM is based on data generated for a timeframe other than the current year of submission. The assumptions and activity levels used to develop the Existing Condition Noise Exposure Map are based on data from July 1, 2012 through June 30, 2013. The most recent 12-month period of available data, June 2014 through May 2015, represents a decrease in operations for the average-annual day of approximately 14.37 percent over the data period used for the 2013 Existing Condition NEM. Thus, the data for the Existing Condition NEM are representative of existing condition, as of the date of this submission. The noise contours representing the existing condition are identified as the 2013 Noise Exposure Map.

The assumptions and activity levels used to develop the Future Condition NEM are based on reasonable forecasts and other planning assumptions. The Future Condition NEM is based on data generated for a timeframe of five years in the future following the year of submission. The Future Condition NEM developed for 2020 accurately represents the five-year forecast from the date of this submission. The noise contours representing the future condition are identified as the 2020 Noise Exposure Map.

The NEMs were prepared in consultation with state, and public agencies and planning agencies whose area, or any portion of whose area, of jurisdiction is within the DNL 65 dB contour depicted on the NEMs. The consultation also included federal officials having local responsibility and regular aeronautical users of the airport. It is further certified that adequate opportunity has been afforded interested persons to submit their views, data, and comments concerning the correctness and adequacy of the Noise Exposure Maps and the supporting documentation and forecasts.

8/12/15
Date of Signature


Scott Brockman
President & CEO
Memphis-Shelby County Airport Authority

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U.S. Department
of Transportation
**Federal Aviation
Administration**

Memphis Airports District Office
2600 Thousand Oaks Blvd., Suite 2250
Memphis, Tennessee 38118
Phone: 901-322-8181

September 1, 2015

Mr. Scott A. Brockman, A.A.E.
President and CEO, Memphis-Shelby County
Airport Authority
2491 Winchester Road
Suite 113
Memphis, TN 38116-3856

**Noise Exposure Map Compliance Determination
2013 Noise Exposure Map Update (NEM)
Memphis International Airport (MEM)**

Dear Mr. Brockman:

This is to notify you that the Federal Aviation Administration (FAA) has evaluated and accepted the Noise Exposure Maps and supporting documentation transmitted by a letter from your office dated August 12, 2015 for the Memphis International Airport in accordance with Section 103(a) (1) of the Aviation Safety and Noise Abatement Act of 1979 (ASNA), and has determined that they are in compliance with applicable requirements of 14 CFR Part 150. Further, we have determined that the "Existing Conditions (2013) Noise Exposure Map" and "Forecast Condition (2020) Noise Exposure Map" fulfill the requirements for the current and the future year noise exposure maps.

FAA's determination that your Noise Exposure Maps are in compliance is limited to a finding that the maps were developed in accordance with the procedures contained in Appendix A of 14 CFR Part 150. Such determination does not constitute approval of your data, information or plans.

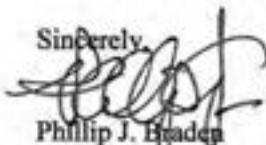
Should questions arise concerning the precise relationship of specific properties to noise exposure contours depicted on the Noise Exposure Maps, you should note that the FAA will not be involved in any way in the determination of relative locations of specific properties with regard to the depicted noise contours, or in interpreting the maps to resolve questions concerning, for example, which properties should be covered by the provisions of Section 107 of the Act. These functions are inseparable from the ultimate land use control and planning responsibilities of local government. These local responsibilities are not changed in any way under Part 150 or through FAA's determination relative to your Noise Exposure Maps. Therefore, the responsibility for the detailed overlaying of noise contours onto the maps depicting properties on the surface rests exclusively with you the airport operator, or those public agencies and planning agencies with which consultation is required under Section 103 of the Act. The FAA relies on the certification by you under 150.21 of 14 CFR Part 150, that the statutorily required consultation has been accomplished.

The FAA will publish a notice in the Federal Register announcing the acceptance of the Noise Exposure Maps for Memphis International Airport. Your notice of this determination and the availability of the Noise Exposure Maps, when published at least three times in a newspaper of general circulation in the county or counties where the affected properties are located, will satisfy the requirements of Section 107 of the ASNA Act.

Your attention is called to the requirements of Section 150.21(d) of 14 CFR Part 150, involving the prompt preparation and submission of revisions to these maps of any actual or proposed change in the operation of Memphis International Airport might create any substantial, new, noncompatible land use in any areas depicted on the Noise Exposure Maps, or significant reduction in noise over existing noncompatible land uses that is not reflected in either map now on file with the FAA.

Should you have any questions, please feel free to contact me at (901) 322-8181.

Sincerely,



Phillip J. Braden
Manager, Memphis Airports District Office

cc: APP-400
ASO-610
ASO-7

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IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TENNESSEE
WESTERN DIVISION

MARTHA ALVARADO, LALLON BOYCE,
GEORGE & GLORIA EDMUNDS, ELBERT &
LOIS EDWARDS, C.R. FIELDING, NITA
GOSS, EVELYN HAZZARD, JIMMY R. HUNT,
DEWITT INGRAM, EDNA IVIE, HAROLD F. &
LOIS KING, EDMOND L. LINDSEY, BUDDY
McLEMORE, DAVID ODLE, ANTEL & ANGELA
PAYNE, WILLIE RICHMOND, JAMES & JO ANN
SAMUELS, PHILLIP SANDERS, EDGAR F.
SCHULKER, WILLIE STONE, FRED H. WALTON
and CHARLES & MARY WILSON, individually
and as representatives of a class,

NO. 89-3001-HBRO

Plaintiffs,

VS.

MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY,

Defendant.

STIPULATION OF SETTLEMENT

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STIPULATION OF SETTLEMENT

This STIPULATION OF SETTLEMENT ("Stipulation") is made and entered into on the 9th day of July, 1998 by and between the undersigned attorneys of record for the PLAINTIFF CLASS REPRESENTATIVES and the MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY, providing for final settlement of the Class Action Lawsuit upon the following terms and conditions, all of which are subject to the approval of the Court.

ARTICLE I. DEFINITIONS

For purposes of this Stipulation, the following terms shall have the meanings set forth below.

Section 1.1 **"Added Class Member"** shall mean any person or entity who is added to the class pursuant to an order entered granting the joint motion to redefine class submitted by the parties to this Stipulation.

Section 1.2 **"Additional Releasee(s)"** shall mean such individuals and entities in addition to the Defendant that are to be released pursuant to this Stipulation. Such Additional Releasees are (1) "Related Parties" and (2) "Airlines."

Section 1.3 **"Airlines"** shall mean all commercial air carriers who utilize Memphis International Airport at any time.

Section 1.4 **"Approval Date"** shall mean the date subsequent to the fairness hearing on which the Court's order of final judgment becomes final. For purposes of this Stipulation, the order of final judgment shall be deemed to be final on the later of (i) ten (10) days after the expiration of the time to appeal, if no appeal is filed; or (ii) if an appeal

is filed, on the date on which the order of final judgment is not subject to further judicial review or appeal, either by reason of affirmance by a court of last resort, or by reason of lapse of time or otherwise.

Section 1.5 **"Avigation Easement"** shall mean an avigation easement in substantially the form as set forth in Sections 3.6.A.(ii) and 3.6.B.(ii) herein.

Section 1.6 **"Claimant"** shall mean each Settlement Class Member (or legal representative of a Settlement Class Member) who submits a Settlement Claim form.

Section 1.7 **"Claimant's Counsel"** shall mean any attorney separately retained by any named plaintiff or Settlement Class Member for any purpose but shall not mean Class Counsel.

Section 1.8 **"Claims Administrator"** shall mean the person retained by the Defendant pursuant to Article IV. to help implement the claims procedure of the Proposed Settlement and any person acting on his behalf.

Section 1.9 **"Class Action Lawsuit"** shall mean the civil action filed against Defendant in the United States District Court for the Western District of Tennessee entitled *Alvarado, et al. v. Memphis-Shelby County Airport Authority*, Civil Action No. 89-3001-HBRO.

Section 1.10 **"Class Counsel"** shall mean the law firms of Goodman Glazer Greener & Kremer and Evans & Petree.

Section 1.11 **"Counsel for the Defendant" or "Defendant's Counsel"** shall mean Glankler Brown PLLC, as well as any other attorneys employed by the Defendant as counsel.

Section 1.12 **"Court"** shall mean the United States District Court for the Western District of Tennessee, Western Division.

Section 1.13 **"Defendant"** shall mean the Memphis-Shelby County Airport Authority.

Section 1.14 **"Eligible Property"** shall mean improved residential real estate within the Geographic Area upon which there is either a single family residence, a duplex, or a condominium.

Section 1.15 **"Geographic Area"** shall mean collectively the original class areas and added areas identified on Exhibit 1 to this Stipulation.

Section 1.16 **"Original Class"** shall mean the class initially certified by the Court under Order Certifying and Defining Class Action entered May 5, 1993.

Section 1.17 **"Original Class Member"** shall mean any person or entity who allegedly suffered injury and damage to a proprietary interest in commercial or residential real property within the time period and the geographic area designated in the Order Certifying and Defining Class Action entered on May 5, 1993.

Section 1.18 **"Owner"** shall include owners of a fee simple estate, life tenants, owners of a remainder interest and owners of a reversion interest.

Section 1.19 **"Persons Not To Be Bound By The Proposed Settlement"** shall mean (1) those persons or entities who elected to exclude themselves from either the Original Class or (2) who elect to exclude themselves from the Settlement Class by filing written notice of their intent not to participate within the times provided by order of this Court, (3) those named plaintiffs and Settlement Class Members who are given

permission by the Court pursuant to Section 3.7 to voluntarily dismiss without prejudice their claims against the Defendant, and (4) all Original Class Members who are removed from the class pursuant to the order granting the joint motion to redefine class.

Section 1.20 "Plaintiff Class Representatives" shall mean the named plaintiffs in the Class Action Lawsuit, with the exception of (1) Edmond L. Lindsey who is represented by counsel of his own choice, (2) deceased named plaintiffs and (3) any named plaintiff who is a Person Not To Be Bound By The Proposed Settlement.

Section 1.21 "Proposed Settlement" shall mean this Stipulation and the plan of settlement of the Class Action Lawsuit set forth herein.

Section 1.22 "Qualifying Claim" shall mean a Settlement Claim meeting all of the conditions for payment set forth in Sections 3.1 and 4.3.

Section 1.23 "Related Parties" shall mean (1) the City of Memphis and Shelby County, Tennessee, (2) Defendant's successors, assigns and insurers, (3) all past, present, and future employees and officers of the Defendant, and (4) all past, present and future Commissioners of Defendant.

Section 1.24 "Settlement Claim" shall mean any claim submitted by a Settlement Class Member for processing pursuant to this Stipulation to obtain payment from Settlement Funds.

Section 1.25 "Settlement Class Member" shall mean an Original Class Member who is an Owner, individually or jointly with another Settlement Class Member, of one or more Eligible Properties as of either February 10, 1997, or as of the Approval Date, or an Added Class Member who is an Owner, individually or jointly with another Settlement

Class Member, of one or more Eligible Properties as of either the date an order conditionally redefining the class is entered, or as of the Approval Date, regardless of whether the Settlement Class Member continues to own such Eligible Property as of the date a Settlement Claim is made, other than Persons Not To Be Bound By The Proposed Settlement. Settlement Class Member shall not mean owners of Eligible Property in the Geographic Area on dates other than those specified in this Section 1.25.

Section 1.26 **"Settlement Funds"** shall mean the amount of money the Defendant is obligated to make available to Settlement Class Members to satisfy all Qualifying Claims and other obligations under the Proposed Settlement, with the exception of the obligations set forth in Sections 3.3 and 3.4. The Defendant estimates that it will be required to expend \$22,000,000 to satisfy all claims if Qualifying Claims are submitted for all Eligible Properties.

Section 1.27 **"Stipulation" or "Stipulation of Settlement"** shall mean the entirety of this agreement, including all exhibits annexed hereto, which are incorporated herein in their entirety by reference.

ARTICLE II.

GENERAL PROCEDURAL STEPS CONTEMPLATED

The parties shall take all steps that are appropriate to obtain approval of this Stipulation of Settlement. Counsel for the parties contemplate that the following actions need to be undertaken:

Section 2.1 Joint Motion Seeking Approval of Stipulation of Settlement.

The parties' counsel shall prepare and file a joint motion seeking approval of this Stipulation and the Proposed Settlement.

Section 2.2 Joint Motion to Redefine Class.

As a condition of settlement and for settlement purposes only, the parties' counsel shall submit, contemporaneously with the motion referred to in Section 2.1, a joint motion to redefine class seeking to redefine the class, the geographic area and the time period to which the Class Action Lawsuit applies. The redefinition of the class shall be conditional upon the Court's approval of this Stipulation and entry of final judgment dismissing with prejudice the Class Action Lawsuit. Pursuant to the joint motion to redefine the class, the class for purposes of the Proposed Settlement will consist of (1) those Original Class Members who own Eligible Property as of either February 10, 1997, or as of the Approval Date, and (2) those Added Class Members who are owners of Eligible Property located in the Geographic Area as of either the date an order conditionally redefining the class is entered, or as of the Approval Date. All other Original Class Members, including, but not limited to, (1) owners of improved residential real estate whose property was taken by eminent domain proceedings, (2) owners who transferred their residential property in the original geographic area prior to February 10, 1997, (3) owners who acquired their interest in residential property after February 10, 1997 and transferred same prior to the Approval Date, (4) owners of commercial properties, and (5) tenants will be removed from the class.

Section 2.3 Preliminary Evaluation of the Settlement.

The Court shall make a preliminary determination as to whether the Proposed Settlement appears to be fair, reasonable and adequate. If the Proposed Settlement appears to be within the range of reasonableness after preliminary review, the parties anticipate that the Court will enter an order conditionally redefining the class, setting a hearing on the proposed settlement and directing notice. Notice of the opportunity to be excluded from the Class Action Lawsuit will be given to those persons and entities who pursuant to the joint motion to redefine class will be Added Class Members. This notice will also inform those Original Class Members who pursuant to the joint motion to redefine class will not be included in the Settlement Class of the impact on their rights and their options.

Section 2.4 Notice Procedures.

The parties believe that the best notice practicable under the circumstances is (1) mailed notice in substantially the form annexed as Exhibit 2 and sent by first class U.S. mail to all Settlement Class Members who can be reasonably identified; and (2) summary notice to all other Settlement Class Members and Original Class Members by publication in substantially the form annexed as Exhibit 3 and published on two consecutive weeks in *The Commercial Appeal*, once in *The DeSoto Times* and once in *The Southaven Press*. In addition, this Stipulation contemplates that the mailed notice and detailed maps of the Geographic Area will be posted at six locations identified in said notice.

Section 2.5 Class Counsel's Fee Application.

No later than fifteen (15) days prior to the date the Court specifies for a fairness hearing, Class Counsel will file an application for (1) an award of attorneys' fees, (2) reimbursement of litigation expenses, and (3) special awards, all of which are to be paid from Settlement Funds.

Section 2.6 Fairness Hearing.

A fairness hearing on the Proposed Settlement and Class Counsel's fee application will be held on the date specified by the Court to consider whether the Proposed Settlement should be given final approval. This Stipulation contemplates that Original Class Members who will be removed from the Class Action Lawsuit if the joint motion to redefine class is granted will be given an opportunity to be heard at the fairness hearing.

Section 2.7 Voluntary Dismissal Following Fairness Hearing.

Following the fairness hearing, the parties' counsel will consent to the dismissal without prejudice of the claims of any Original Class Member who is a Settlement Class Member and who requests dismissal from the Class Action Lawsuit in accordance with the procedures set forth in Section 3.7, subject, however, to Defendant's right to terminate this Stipulation, pursuant to Section 3.8.

Section 2.8 Order Approving Proposed Settlement.

The Court will enter an order approving the Proposed Settlement if the Court finds the Proposed Settlement to be fair, reasonable, adequate and in the best interests of the Settlement Class.

Section 2.9 Final Judgment Dismissing Action.

Following entry of the order approving the Proposed Settlement, the Court will enter an order of final judgment which, among other things, will dismiss all claims with prejudice against the Defendant in this action and will set forth the Avigation Easements as provided herein.

**ARTICLE III.
TERMS AND CONDITIONS OF SETTLEMENT**

Section 3.1 Payments to Settlement Class Members Who File Qualifying Claims.

Under the Proposed Settlement, Defendant will make payment to a Settlement Class Member in consideration for the Release set forth in Section 3.5 and for the Avigation Easement set forth in Section 3.6.

A. Eligibility for Compensation.

Every Settlement Class Member is eligible to receive a payment from Settlement Funds for each Eligible Property owned by the Settlement Class Member individually or jointly with another Settlement Class Member. However, as a condition of obtaining any payment, a Settlement Class Member must submit a Qualifying Claim in accordance with the claims procedure(s) set forth in Article IV.

B. Payment Amounts.

A Settlement Class Member making a Qualifying Claim will receive a payment based upon the length of ownership of the Eligible Property upon which a Qualifying Claim is based and the use or non-use of the Eligible Property as a

primary residence by a Settlement Class Member making the Qualifying Claim. The gross amount of such payment will be subject to deductions on a pro rata basis for such amounts as are awarded by the Court pursuant to Class Counsel's application for attorneys' fees, reimbursement of litigation expenses and special awards.

(i) A Settlement Class Member making a Qualifying Claim based on Eligible Property utilized as a primary residence by at least one Settlement Class Member making the Qualifying Claim will receive the following gross amount:

<u>Amount</u>		<u>Acquisition Date</u>
\$4,200	to a Settlement Class Member acquiring ownership	On or before December 31, 1973
\$2,600	to a Settlement Class Member acquiring ownership	January 1, 1974 thru September 30, 1987
\$1,600	to a Settlement Class Member acquiring ownership	October 1, 1987 thru May 4, 1993
\$525	to a Settlement Class Member acquiring ownership	On or after May 5, 1993 up to and including the Approval Date

(ii) A Settlement Class Member making a Qualifying Claim based on Eligible Property not utilized as a primary residence by at least one Settlement Class Member making the Qualifying Claim will receive the following gross amount:

<u>Amount</u>		<u>Acquisition Date</u>
\$800	to a Settlement Class Member acquiring ownership	On or before December 31, 1973
\$600	to a Settlement Class Member acquiring ownership	January 1, 1974 thru September 30, 1987

\$500	to a Settlement Class Member acquiring ownership	October 1, 1987 thru May 4, 1993
\$325	to a Settlement Class Member acquiring ownership	On or after May 5, 1993 up to and including the Approval Date

(iii) Notwithstanding anything above to the contrary, if Eligible Property upon which a Qualifying Claim is based was sold on or after February 10, 1997, or in the case of Added Class Members, after the date on which the order conditionally redefining the class is entered, and up to but not including the Approval Date, the gross amounts set forth in Sections 3.1.B.(i) and 3.1.B.(ii) shall be allocated between the Owner as of the earlier relevant date and the Owner as of the Approval Date in the following manner:

(a) If the Eligible Property upon which a Qualifying Claim is based was utilized as a primary residence prior to transfer of ownership, the Owner as of February 10, 1997, or as of the date the order conditionally redefining the class is entered in the case of added class members; shall receive the same gross amount stated in Section 3.1.B.(i), above that he would have received had ownership not been transferred, less a deduction of \$525, but, in no event, will the gross amount of such a payment to such Owner be less than \$212. The Owner of such Eligible Property as of the Approval Date shall receive a gross amount of \$525 unless such property was transferred on or after May 5, 1993, in which case the gross payment amount to the owner as of the Approval Date shall be \$213.

(b) If the Eligible Property upon which the Qualifying Claim is based was not utilized as a primary residence prior to transfer of ownership, the Owner as of February 10, 1997, or as of the date the order conditionally redefining the class is entered in the case of added class members, shall receive the same gross amount stated in Section 3.1.B.(ii) above that he would have received had ownership not been transferred, less a deduction of \$200, but in no event, will the gross amount of such a payment to such Owner be less than \$160. The Owner of such Eligible Property as of the Approval Date shall receive a gross amount of \$200 unless such property was transferred on or after May 5, 1993, in which case the maximum payment to the owner as of the Approval Date will be \$165.

(iv) For purposes of determining length of ownership:

(a) The earliest date any Settlement Class Member making the Qualifying Claim acquired an interest in the Eligible Property will be the applicable date.

(b) In the case of Eligible Property which was unimproved as of the date the property was acquired, length of ownership will date from the acquisition date.

(c) In the case of Eligible Property owned by a trustee, length of ownership shall include the period of time the Eligible Property was owned

by the grantor as well as the period of time the property was held by the trustee.

(d) In the case of Eligible Property owned by a Settlement Class Member who acquired the property by will or by inheritance from a deceased lineal ancestor, length of ownership shall include the period of time the Eligible Property was held by said ancestor as well as the period of time the property was held by the Settlement Class Member.

(e) In the case of Eligible Property owned by a Settlement Class Member who acquired the property in a divorce proceeding, length of ownership shall include the period of time the Eligible Property was held by the grantor spouse as well as the period of time the property was held by the Settlement Class Member.

(v) For purposes of determining primary residence, a Settlement Class Member who utilized Eligible Property as a primary residence as of February 10, 1997 but who resides elsewhere due to infirmities of age or health as of the time a Qualifying Claim is paid shall be deemed for purposes of the Proposed Settlement to utilize the Eligible Property as a primary residence provided any such Settlement Class Member submits a physician's statement that age or a physical or mental condition caused the Settlement Class Member to primarily reside elsewhere. Any other questions which may arise concerning a determination of primary residence shall be resolved in accordance with Section 4.6.

Section 3.2 Total Monetary Obligation of Defendant.

Based on information received from an independent consultant (the "consultant"), Defendant estimates that there are 12,441 Eligible Properties in the Geographic Area. The consultant has also provided information as to the dates said properties were acquired by Settlement Class Members and the use or the non-use of Eligible Property as a primary residence. Based on the information provided by the consultant, the Defendant has agreed to make available and to timely pay up to \$22,000,000 to satisfy all Qualifying Claims and other obligations created by this Stipulation, with the exception of the additional obligations set forth in Sections 3.3 and 3.4. An "Allocation of Settlement Funds" prior to reduction for Court awarded fees, expenses and special awards is attached hereto as Exhibit 4. If the consultant has understated the number of Eligible Properties or has incorrectly identified the acquisition dates and/or the use or non-use of an Eligible Property as a primary residence and \$22,000,000 is insufficient to pay all Qualifying Claims, the Defendant has agreed and is obligated to pay in full all Qualifying Claims according to said formulae. If the consultant has overstated the number of Eligible Properties, or has incorrectly identified the acquisition dates and/or the use or non-use of Eligible Property as a primary residence, or not all Settlement Class Members submit Settlement Claims, and \$22,000,000 is in excess of the amount needed to pay all Qualifying Claims and the other obligations created by this Stipulation, nothing in this Stipulation shall be construed as requiring the Defendant to expend \$22,000,000.

Section 3.3 Continuation of and Funding of Defendant's Property Acquisition Program.

Certain Eligible Property identified on Exhibit 5 qualifies for acquisition under Defendant's current noise compatibility program. In lieu of submitting a Qualifying Claim, a Settlement Class Member owning such Eligible Property may elect to participate in the Defendant's existing property acquisition program by timely filing an application with the airport acquisition office. The last date for filing an application by such Settlement Class Members will be ninety (90) days after the Approval Date. Defendant agrees to close the purchase of each such Eligible Property, including making all payments, as soon as reasonably possible. Defendant expressly acknowledges that funding of the acquisitions is not dependent upon availability to Defendant of federal funding but is an independent obligation of this Stipulation. When all timely applications are fully processed and all payments are made, the property acquisition phase of Defendant's noise compatibility program will be terminated.

In addition, certain Eligible Properties listed on Exhibit 6 which did not previously qualify for acquisition under Defendant's property acquisition program will now qualify due to changes in the noise exposure map contours approved by the Federal Aviation Administration between the 1987 noise exposure map and the 1997 noise exposure map as those contours are reflected on the contour map attached hereto as Exhibit 7. Within fifteen (15) days of the Approval Date the Defendant shall give written notice by U.S. mail, postage prepaid, to each Settlement Class Member owning the Eligible Property listed on Exhibit 6 of his eligibility to participate and that the last date for filing an application with the airport acquisition office will be ninety (90) days after the date of

such notice. The Defendant shall utilize the same procedures and limitations for the acquisition of these properties as it has previously used for acquisition of properties in its noise compatibility program.

Notwithstanding any other provision of this Stipulation to the contrary, a Settlement Class Member who is eligible to sell Eligible Property to the Defendant under this Section 3.3 and who does so is not entitled to file a Settlement Claim or to receive payment pursuant to Section 3.1 for the same Eligible Property.

Section 3.4 Payment of Costs Relating to Approval and Administration of Settlement.

Defendant will pay all costs relating to and reasonably necessary to obtain Court approval of the Proposed Settlement, including, but not limited to the costs of all notices to class members. Defendant will also pay all costs of administration of the Proposed Settlement.

Section 3.5 Release and Dismissal of Claims.

Upon the Approval Date each Settlement Class Member shall be deemed to have agreed to the following:

A. **"Released Claims"** shall mean (1) all claims set forth in any complaint filed in the Class Action Lawsuit, and (2) any and all past, present or future claims by any Settlement Class Member against the Defendant or the Additional Releasee(s) that are based on, arise out of, or relate to aircraft noise or emission of air pollutants resulting from aircraft approaching, landing upon, taking off from, maneuvering about or operating on the Memphis International Airport. Such Released Claims shall include, without limitation, any and all past,

present and future claims whether arising under local, state or federal statutory or common law, including, without limitation, any and all civil actions, claims, expenses, damages, controversies, agreements, promises, court costs, judgments, attorneys' fees, claims for equitable relief, and all claims and demands of whatever type in law or equity for: (a) damages to Eligible Property owned by any Settlement Class Member including, but not limited to, (i) diminution in value, (ii) loss of use and enjoyment, or (iii) decreased appreciation; and (b) personal injury or harm including all forms of annoyance, inconvenience, mental anguish, or emotional distress.

B. **"Reserved Claims."** This Stipulation releases only those claims that are described above and no others. Thus, for example, the Released Claims do not include: any claims asserted against Defendant or any Additional Releasee alleging wrongful death or damage to persons or property as a result of (a) injury or damages incurred as a passenger on any aircraft flying on, into or out of Memphis International Airport, (b) the crash, falling or forced landing of any such aircraft, and/or (c) the dropping or falling of any objects from aircraft flying on, into or out of Memphis International Airport. Furthermore, the Settlement Class Members do not release any claim arising after the Approval Date which relates to an alleged violation by Defendant or any Additional Releasee of an Avigation Easement imposed or conveyed as a result of the Proposed Settlement.

C. **'Release.'**

(i) The Class Action Lawsuit shall be dismissed with prejudice on the merits.

(ii) Upon approval of the settlement by the Court and such approval becoming final, each Settlement Class Member shall be deemed to have completely released all Released Claims against the Defendant and the Additional Releasees. This release is expressly intended to bar and discharge prospective Released Claims that have not yet matured or accrued. By operation of the Release, each Settlement Class Member releases all Released Claims against the Defendant and the Additional Releasees in each and every capacity that such Released Claims may be asserted.

(iii) Failure of any Settlement Class Member to claim any of the Settlement Funds to which he or she may be entitled shall not in any manner invalidate or otherwise affect the Release provided herein.

Section 3.6 **Avigation Easements.**

A. Tennessee Eligible Property.

(i) The Class Action Lawsuit alleges that the Defendant has proximately caused injuries to Eligible Property which under Tennessee law constitute acts of inverse condemnation. The Defendant has denied that such acts or any injuries have occurred. Without admitting any liability to the Settlement Class Members and for the limited purpose of compromising and settling this action, the Defendant hereby stipulates that it has taken an Avigation

Easement in the Tennessee Eligible Property on the condition that the Avigation Easement be defined in the order of final judgment in the manner set forth below in Section 3.6.A. (ii) and that compensation for the Avigation Easement and for the Release of all Released Claims be fixed in the amount set forth in this Stipulation.

(ii) Settlement Class Members owning Tennessee Eligible Property and the Defendant hereby agree that the Avigation Easement shall be defined as follows:

The Memphis-Shelby County Airport Authority (the "Authority") has obtained and holds for itself, its successors and assigns, for the use and benefit of the Authority, the Memphis International Airport ("Airport"), the operators, owners and users of Aircraft of all types and for the public in general, an avigation easement and right-of-way for the free, unobstructed and unrestricted flight and passage of Aircraft lawfully operated in and through the Airspace above, over, and across the surface of Eligible Property, together with the right to cause in said Airspace such noise, vibration, odors, vapors, particulates, smoke, dust, or other effects as may be inherent in the lawful Operation of Aircraft for navigation of or flight or passage in and through said Airspace, and for the use of said Airspace by Aircraft for approaching, landing upon, taking off from, maneuvering about or operating on the Airport.

For the purpose of this Avigation Easement:

(a) "Aircraft" is defined as any contrivance now known or hereafter invented, used, or designed for navigation of, or flight in, through and across the air.

(b) "Airspace" is defined as air above the minimum safe altitude of flight prescribed in the regulations of the Federal Aviation Administration as they now exist, and as they may hereafter be amended.

(c) "Operation of Aircraft" is defined as operations of Aircraft in accord with the acts of the federal, state and

local laws and regulations issued thereunder, as they now exist, and as they may hereafter be amended.

It is not the intent of this Avigation Easement to authorize any Aircraft operating on, into or out of Memphis International Airport to crash, fall or make a forced landing upon Eligible Property or to drop or allow any objects to fall onto Eligible Property from such Aircraft.

The easement and right-of-way described herein, and all the terms, conditions and provisions contained herein are intended to and shall run with the land and shall be binding upon owners, their heirs, administrators, successors and assigns.

The said Avigation Easement and right-of-way and all of the rights appertaining thereto shall be held by the Authority, its successors and assigns, in perpetuity or until the said Airport shall be abandoned and shall cease to be used for public airport purposes.

(iii) This Stipulation contemplates that the Agreement for Avigation Easement set forth above shall be effective as of the Approval Date, shall apply to all Eligible Property located within the State of Tennessee, shall be set forth in the notice of the Proposed Settlement and in the order of final judgment and that Defendant may, at its election, place the order of final judgment of record in the land records in the Register's Office of Shelby County, Tennessee.

B. Mississippi Eligible Property.

(i) Settlement Class Members owning Mississippi Eligible Property assert that the acts or omissions of the Defendant occurring in Tennessee have caused injury and damage to the Settlement Class Members' property located in Mississippi and have elected to seek remedies made available by Tennessee law including a claim for inverse condemnation or a taking of an

avigation easement by the Defendant. Because a legal question exists as to whether a United States District Court sitting in Tennessee may enter a judgment in a civil action that will vest an interest in Mississippi real property in the Defendant, this Stipulation contemplates that each Claimant owning Eligible Property within the State of Mississippi as of the date a Qualifying Claim is paid, shall, in connection with the payment of a Qualifying Claim, grant an Avigation Easement, as set forth in Section 3.6.B.(ii), which the Defendant may, at its election, place of record in the Chancery Court Clerk's Office in DeSoto County, Mississippi.

(ii) Each Settlement Class Member owning Mississippi Eligible Property as of the date a Qualifying Claim is paid shall grant to the Defendant an Avigation Easement in substantially the form set forth in Exhibit 10.

Section 3.7 Voluntary Participation.

This Stipulation contemplates that any named plaintiff or Original Class Member who is precluded from excluding himself from the Settlement Class due to a failure to request exclusion from the Class Action Lawsuit on or before January 5, 1994 (the original opt out period), and who is dissatisfied with the Proposed Settlement, may voluntarily request dismissal, without prejudice, effective as of the Approval Date, of his claims against Defendant pursuant to Federal Rule of Civil Procedure 41, provided any such person or entity both files a written objection to the Proposed Settlement in accord with the procedures set forth in the mailed notice proposed in Exhibit 2, and within five (5) days following the fairness hearing makes known to the Court his desire to be

dismissed in writing in accord with the procedures set forth in the mailed notice proposed in Exhibit 2. Attorneys for the parties will cooperate in requesting an order of dismissal of all Settlement Class Members who request such a dismissal, upon such terms and conditions as the Court deems proper, including formal intervention by a Settlement Class Member if deemed necessary by the Court.

Section 3.8 Termination by the Defendant.

Notwithstanding anything else in this Stipulation to the contrary, Defendant may, but is not required to, unilaterally withdraw from and terminate this Stipulation if those persons who request dismissal pursuant to Section 3.7 and those persons and entities who are added to the class pursuant to the joint motion to redefine class and who thereafter timely elect to exclude themselves from the redefined class together own a number of Eligible Properties that is more than a number which shall be communicated to the Court under seal. Multiple properties owned by the same person shall be deemed to be one Eligible Property for purposes of this Section 3.8. Notification of such withdrawal and termination by Defendant must be made in writing to the Court and to Class Counsel no later than ten (10) days after the expiration of the time period within which persons may request dismissal pursuant to Section 3.7 or this Stipulation shall remain in full force and effect. If Defendant elects to withdraw from and terminate this Stipulation in accordance with this Section 3.8, the provisions of Section 6.8 will apply.

**ARTICLE IV.
ADMINISTRATION AND DISTRIBUTION
OF SETTLEMENT FUNDS**

This Stipulation contemplates that the Defendant will administer and distribute Settlement Funds in accord with the provisions of this Article IV or as these provisions are modified by the Court.

Section 4.1 Establishment of Claims Administration Office.

No less than thirty (30) days after the Approval Date, Defendant shall open a claims administration office in the vicinity of Memphis International Airport staffed by one full time employee designated by the Defendant as the Claims Administrator and a minimum of four (4) additional full time employees who will work under the supervision of the Claims Administrator, and shall establish a telephone number with suitable extensions including a facsimile extension, and a post office box for use by the Claims Administrator and Settlement Class Members communicating with the Claims Administrator, and such office, telephone extensions and post office box shall be maintained until the expiration of the claim period established by this Stipulation for submitting Settlement Claim forms and, also, the time necessary to process all of such forms.

Section 4.2 Settlement Claim Package.

A. Within thirty (30) days of the opening of the Claims Administration Office, the Claims Administrator shall mail directly to the addresses of Settlement Class Members known to Defendant a settlement claim package.

B. The settlement claim package shall consist of (i) a letter informing the Settlement Class Member of the data upon which his payment will be based, including (a) the address of the Eligible Property, whether or not the Eligible Property is utilized as a primary residence and the names of all individuals entitled to the payment, (b) the amount of the payment, (c) his right to dispute the information if he disagrees with the information upon which the payment is based, and (d) information concerning the dispute process; (ii) a Settlement Claim form substantially in the form of Exhibit 8 to be executed and returned by Owners of Tennessee Eligible Property or Settlement Claim form substantially in the form of Exhibit 9 and Exhibit 10 to be executed and returned by Owners of Mississippi Eligible Property, and (iii) a self-addressed stamped envelope for return of the form(s) to the Claims Administrator.

C. A Settlement Class Member who does not receive a settlement claim package by mail or who needs a replacement settlement claim package may request in writing, or Class Counsel may request on his behalf, that the Claims Administrator provide such Settlement Class Member with a settlement claim package and the Claims Administrator shall do so as soon as reasonably practical.

Section 4.3 Conditions for Payment to Settlement Class Members of Settlement Funds.

A. All of the following conditions shall be met by a Settlement Class Member before he or she qualifies for a payment from Settlement Funds:

(i) Within one (1) year from the date the Claims Administration Office opens, the "claims period," the Claimant shall have returned to the Claims Administrator an executed Settlement Claim form(s); and

(ii) As provided in more detail in Section 4.4, the Claims Administrator shall have determined that the Claimant is entitled to a payment from Settlement Funds.

B. If any Settlement Claim form is not submitted within the claims period or within an extended time period, if any, it may be rejected by the Claims Administrator as being untimely.

C. If a Settlement Class Member claims multiple payments based on ownership of more than one (1) Eligible Property, a Settlement Claim form(s) must be submitted as to each Eligible Property.

D. The Settlement Claim form(s) must be executed by each Owner of the Eligible Property upon which a Settlement Claim is based or by a legally authorized guardian, conservator, executor, trustee or attorney in fact of such Owner.

Section 4.4 Procedure for Determination and Payment of Qualifying Claims.

A. The following procedures shall be implemented in all respects as quickly as reasonably possible.

B. This Stipulation contemplates that, insofar as practicable, executed returned Settlement Claim forms will be processed by the Claims Administrator in the order in which they are returned to the Claims Administrator and that a check

in the proper amount will be issued by the Defendant and mailed by the Claims Administrator to the Claimant as soon as reasonably practical. Notwithstanding anything to the contrary above, this Stipulation contemplates that Settlement Claim forms submitted by Settlement Class Members who have been recommended for special awards pursuant to Class Counsel's Fee Application, and Settlement Class Members who at any time during the claims period are identified by Class Counsel in writing to the Claims Administrator as hardship cases will be given priority in processing.

C. The Claims Administrator shall notify the Claimant if a submitted Settlement Claim form is invalid or not properly completed or executed and specify any additional information that is needed for processing the Settlement Claim.

D. A Settlement Class Member who disputes a determination by the Claims Administrator that a Settlement Claim does not qualify for payment or who disputes the amount of the payment or any other matter related to payment of a Settlement Claim may within the claims period established by this Stipulation (1) seek reconsideration of the Claims Administrator's decision by submitting a written statement to the Claims Administrator giving grounds for reconsideration; (2) submit additional information concerning the Settlement Claim; or (3) notify the Claims Administrator in writing that he or she is invoking dispute resolution as set forth in Section 4.6.

E. A single payment will be made by Defendant by check payable jointly to all Claimants, which check may be delivered to any one of the payees, without any obligation on the part of Defendant or the Claims Administrator to notify each Claimant of the payment.

Section 4.5 Additional Duties of the Claims Administrator.

A. The Claims Administrator shall provide reasonable access to Settlement Claim forms and communications with Settlement Class Members and other information to Class Counsel and employees of Class Counsel. Any request for access to documents or information shall be made to Defendant's Counsel.

B. During the claims period at three (3) month intervals, the Claims Administrator shall report to the Court and to Class Counsel advising as to the status of the claims processing and such other information as may be reasonably requested.

C. The Claims Administrator shall answer telephone, facsimile or mail inquiries the Claims Administration Office receives during the claims period regarding the Proposed Settlement, the procedure for submitting Settlement Claim forms and/or the status of Settlement Claims being processed for payment.

Section 4.6 Dispute Resolution.

Any controversy relating to the validity or payment of a Settlement Claim, including, but not limited to (a) whether a Settlement Claim qualifies for payment, (b) whether a Settlement Claim is time barred, or (c) the appropriate amount due a

Settlement Class Member will be resolved in accord with the provisions of this Section 4.6 or as this section may be modified by the Court.

A. The Claims Administrator shall in the first instance determine the validity of a Settlement Claim and will attempt to resolve any dispute related thereto by seeking additional information from the Claimant or through such other methods as the Claims Administrator deems necessary.

B. Upon rejection of a Settlement Claim as unqualifying, the Claims Administrator shall immediately provide a Claimant of a rejected Settlement Claim with a written explanation of the reason the Settlement Claim does not qualify for payment and a form for use by the Claimant to invoke dispute resolution should the Claimant so desire. The Claims Administrator shall send a copy of all such rejection letters to Class Counsel.

C. Any Claimant whose Settlement Claim has been rejected and who desires to invoke dispute resolution shall forward the dispute resolution form provided by the Claims Administrator to Class Counsel requesting that Class Counsel review the determination of the Claims Administrator.

D. Within thirty (30) business days thereafter, Class Counsel shall review the Settlement Claim and the disputed decision of the Claims Administrator and will attempt to contact the Claimant and resolve the matter. If following review, Class Counsel agrees with the determination of the Claims Administrator and has been unable to resolve the matter with the Claimant, Class Counsel will refer the

dispute for resolution in accord with Section 4.6.F. below and, thereafter, Class Counsel will have no responsibility to the Claimant in resolving the dispute..

E. If, following review, Class Counsel disagrees with the determination of the Claims Administrator, Class Counsel and Defendant's Counsel shall, within an additional thirty (30) business days, review the determination of the Claims Administrator and attempt to resolve the dispute. If Class Counsel and Defendant's Counsel are unable to resolve the dispute, Class Counsel and Defendant's Counsel shall refer the dispute for resolution in accord with Section 4.6.F. below and, thereafter, Class Counsel will have no responsibility to the Claimant in resolving the dispute.

F. Pursuant to 28 USC § 636(b)(2) and/or Rule 53 (FRCP), the parties consent to the appointment of a United States magistrate judge as a special master to make a final and non-appealable determination of any dispute referred by Class Counsel or Defendant's Counsel. If the Court declines to appoint a United States magistrate judge as master, the parties consent to the Court's appointment of a special master who is not a magistrate judge to make a final and non-appealable determination of such dispute. Referral to the special master by Class Counsel or Defendant's Counsel shall be in accordance with such terms and conditions deemed appropriate by the Court as set forth in the Court's order of reference to the special master. In the event the Court makes no appointment of a special master the parties consent to binding resolution of disputes pursuant to the Federal Arbitration Act with all rights reserved to the Arbitrator.

Compensation of the special master or the arbitrator will be paid by the unsuccessful party.

G. In the event any dispute arises between or among two or more Settlement Class Members or between a Settlement Class Member and a third party as to the entitlement to all or a portion of a Qualifying Claim payment, the Defendant may, but is not required to, deposit said amount with the Clerk of the Court. Upon deposit of such funds, Defendant shall have no liability whatsoever to any party involved in such dispute regarding the application of such funds. Determination of how the funds shall be distributed shall be in accord with Section 4.6.F. above.

Section 4.7 Other Payments From Settlement Funds.

The Defendant shall pay from Settlement Funds all amounts ordered by the Court pursuant to Class Counsel's Fee Application in accord with Article V. herein or as otherwise ordered by the Court.

**ARTICLE V.
CLASS COUNSEL ATTORNEYS' FEES, CLASS LITIGATION EXPENSES
AND SPECIAL AWARDS TO CERTAIN MEMBERS OF THE PLAINTIFF CLASS**

Section 5.1 Fee Application.

The Stipulation contemplates that no less than fifteen (15) days prior to the hearing set by the Court to consider the Proposed Settlement the law firm of Goodman Glazer Greener & Kremer, on behalf of Class Counsel, will file with the Court, a fee application for (1) an award of attorney's fees for work performed on behalf of, and benefits conferred upon the Settlement Class Members in an amount of not more than

18% of the total estimated amount of Settlement Funds, (2) reimbursement of litigation expenses not to exceed \$75,000.00 and (3) an award of not more than \$10,000.00 per person in an aggregate amount of not more than 2% of the Settlement Funds to be paid to class representatives and certain other class members who have actively aided in the prosecution of the Class Action Lawsuit and have devoted substantial time and/or expense on behalf of the Settlement Class and have been recommended for such an award by Class Counsel, and that the application will be considered at the hearing set by the Court to consider the Proposed Settlement.

All amounts awarded by the Court as attorneys fees and expenses, and special awards to those recommended by Class Counsel, will be paid exclusively from Settlement Funds established by the Proposed Settlement. Defendant, will, within twenty (20) days of the Approval Date or on such other later date as the Court may designate, forward from Settlement Funds the total amount of the attorneys' fees awarded by the Court to Goodman Glazer Greener & Kremer as well as all amounts awarded for reimbursement of litigation expenses and for special awards. After the award by the Court of such attorneys' fees, expenses and special awards, they will not be subject to rebate, refund or change due to the number of Settlement Claims filed or Qualifying Claims paid. Likewise, Class Counsel shall make no further application and shall not be entitled to any payment of additional fees or expenses after payment in full has been made by the Defendant of the fees, expenses and special awards approved by the Court on the application filed pursuant to this Section 5.1, except as set forth in Section 6.11. Goodman Glazer Greener & Kremer will distribute the amounts awarded as attorneys

fees in accord with an allocation agreement agreed to by Class Counsel; Goodman Glazer Greener & Kremer and Evans & Petree will distribute the litigation expenses as set forth in Section 5.2 below and Goodman Glazer Greener & Kremer will distribute all special awards to the individuals entitled to special awards pursuant to the Court's order.

This Stipulation contemplates that Defendant, in administering Settlement Funds under the Proposed Settlement, will deduct from each payment made to a Settlement Class Member making a Qualifying Claim an amount equal to his or her pro rata share of all ordered awards. Thus, for example, if the Court awards attorneys fees of 18%, \$75,000 (.341%) in litigation expenses and \$350,000 (1.591%) in special awards, a total amount equal to 19.931% of \$22,000,000 will be awarded as fees from Settlement Funds and a deduction equal to 19.932% will be made from the amount of the payment that a Settlement Class Member would otherwise be entitled to under this Stipulation.

Section 5.2 Reimbursement of Litigation Expenses by Class Counsel.

To the extent litigation expenses are awarded by the Court pursuant to Class Counsel's fee application, all amounts heretofore paid to either Evans & Petree or to Goodman Glazer Greener & Kremer to prosecute the Class Action Lawsuit will be reimbursed respectively by those firms to the entity or individual paying the amounts.

**ARTICLE VI.
MISCELLANEOUS PROVISIONS**

Section 6.1 Pronouns.

Feminine or neuter pronouns shall be substituted for those of masculine form or vice versa, and the plural shall be substituted for the singular number or vice versa in any place in which the context may require such substitution.

Section 6.2 No Effect on Prior Settlements, Releases or Adjudications.

This Stipulation is not intended to, and shall have no effect on the terms of any settlement or release heretofore entered into by a Settlement Class Member and Defendant or Additional Releasee(s).

Section 6.3 No Admission of Liability.

Neither this Stipulation, nor any of its provisions, nor evidence of any negotiations or proceedings related to this Stipulation, nor any proceedings under this Stipulation, shall be offered or received in evidence in the Class Action Lawsuit or any other action or proceeding as an admission or concession of liability or wrongdoing of any nature on the part of Defendant, Additional Releasee(s), or anyone acting on their behalf, and Defendant specifically denies any such liability or wrongdoing.

Section 6.4 Dismissal of Other Actions.

After the Approval Date, Class Counsel shall cooperate with Defendant to dismiss with prejudice any other action of any Settlement Class Member against the Defendant relating to aircraft noise.

Section 6.5 Best Efforts.

All parties to this Stipulation shall exercise their best efforts to take all steps and expend all efforts which may become necessary to consummate the intent and purpose of this Stipulation.

Section 6.6 Entire Agreement.

This Stipulation constitutes the entire agreement between the parties concerning the matters covered by the Stipulation. All antecedent or contemporaneous representations, warranties, or collateral provisions concerning the negotiation and preparation of this Stipulation are incorporated herein or are, otherwise, discharged and nullified. In any dispute involving the Stipulation no party to this Stipulation shall introduce evidence of or seek to compel testimony concerning any oral or written communication with respect to the negotiation or preparation of this Stipulation.

Section 6.7 Modification.

No modification of this Stipulation may be made except by written agreement of Class Counsel and Defendant with the approval of the Court.

Section 6.8 Submissions.

Except as otherwise specified, all submissions required under this Stipulation may be sent by first-class U.S. Mail, certified or registered U.S. Mail, facsimile or by hand delivery to the recipient designated in this Stipulation. Unless otherwise specified, the timeliness of all submissions and notices shall be measured by the date of postmark (if sent by first class U.S. Mail), or by the date of receipt (if sent by certified or registered U.S. Mail, facsimile or if hand-delivered).

Section 6.9 Operational Date.

This Stipulation shall have perpetual existence as of the Approval Date. This Stipulation shall be null and void for all purposes, and no party shall be bound by any of its terms or conditions if:

- A. The Court declines to enter an order of final judgment.
- B. The Court's order of final judgment approving the Stipulation is overturned on appeal.
- C. The Stipulation is terminated pursuant to Section 3.8.

Section 6.10 Headings.

The headings in this Stipulation are for convenience only and shall not be used in the interpretation of this Stipulation.

Section 6.11 Enforcement Fees.

In the event it is necessary for either Class Counsel, a Settlement Class Member or Defendant to enforce their rights hereunder, the Court may award the prevailing party reasonable attorney's fees and costs for bringing the enforcement action, in addition to any other attorneys' fees awarded Class Counsel by the Court pursuant to Section 5.1.

Section 6.12 Governing Law.

This Stipulation shall be construed under and governed by the substantive laws of the State of Tennessee, without regard to its choice of law or conflict of laws principles.

Section 6.13 Effect of Dismissal.

Any Persons Not To Be Bound By The Proposed Settlement as a result of a voluntary dismissal pursuant to Section 3.7 or as a result of being removed from the class pursuant to approval of the joint motion to redefine class will have the right to institute or continue an action based on any and all claims asserted in the Class Action Lawsuit or addressed in this Stipulation, but such claims are subject to any applicable defenses. The suspensions of any statutes of limitation or repose by virtue of the Class Action Lawsuit as to such persons or entities will continue for ninety (90) days after the Approval Date, after which period of time any applicable statutes of limitation or repose will begin to run again.

Section 6.14 Individual Claimant's Attorney's Fees.

Each Settlement Class Member, including each Claimant who submits a Settlement Claim for processing under this Stipulation may be represented by Claimant's Counsel of Claimant's choice. All fees for Claimant's Counsel shall be paid by the Claimant. Nothing in this Stipulation shall create any obligation on the part of Class Counsel, Defendant, or any Additional Releasees to pay any fees or expenses whatsoever for individual Claimant's Counsel.

Section 6.15 Rezoning and/or Subdivision of Property Subjected to Avigation Easement.

Defendant will not object to the rezoning or subdividing of Eligible Property if at any time in the future any Settlement Class Member or a successor in interest to a Settlement Class Member's interest in Eligible Property that is subjected to an Avigation

Easement as a result of the Proposed Settlement applies to the proper authority to have his property rezoned or subdivided for non-residential purposes.

Section 6.16 Third Party Rights and Claims.

In the event that any Settlement Class Member has transferred in whole or in part any claim against the Defendant or any interest in Eligible Property to a third party (a non Settlement Class Member), such Settlement Class Member shall be responsible for the satisfaction of such claim or the payment of any amount to which the third party may be entitled by virtue of its interest in the Eligible Property. Defendant shall have no liability to make any payment whatsoever to any third party.

Section 6.17 Retention of Jurisdiction.

The Court shall retain jurisdiction over all matters relating to administration, consummation, enforcement and implementation of this Stipulation of Settlement and the order of final judgment and may enter additional orders to effectuate the fair and orderly administration of the Proposed Settlement and for any other necessary purpose as may from time to time be appropriate.

Section 6.18 Edmond L. Lindsey.

By Order of March 18, 1992, Edmond L. Lindsey, one of the named plaintiffs in the Class Action Lawsuit, was granted pro se status. On November 18, 1997, a Notice of Appearance was filed by Wanda Abioto, Attorney-at-Law, on behalf of Mr. Lindsey and Mattie Lindsey, Class Counsel, by entering into this Stipulation on behalf of the Plaintiff Class Representatives, do not purport to represent Mr. Lindsey.

Section 6.19 Tax and Due on Sale Consequences.

The tax consequences that may result to Settlement Class Members as a result of receipt of payment under the Proposed Settlement may vary depending upon individual circumstances of Settlement Class Members. Further, the effect that the Proposed Settlement may have under a due on sale clause in a deed of trust or mortgage on the property of a Settlement Class Member may vary depending on the due on sale provision and the mortgagee. Accordingly, neither Class Counsel nor Defendant nor Defendant's Counsel gives advice as to such consequences. Settlement Class Members must consult their own tax advisors to determine any federal, state, local or foreign tax consequences of receipt of payment in their particular circumstances and consult with their mortgagee or other advisors if there is a due on sale clause in their deed of trust or mortgage.

Section 6.20 Computation of Time.

All time periods set forth herein shall be computed in accordance with Rule 6 of the Federal Rules of Civil Procedure.

Section 6.21 Extension of Time.

The parties reserve the right, subject to the Court's approval, to agree upon and implement any reasonable extensions of time that might be necessary to carry out any of the provisions of this Stipulation.

Section 6.22 Joint Drafting.

This Stipulation shall be deemed to have been jointly drafted by Class Counsel and by Defendant's Counsel.

This Stipulation of Settlement is entered into by the attorneys for the parties in their representative capacities as stated below.

GLANKLER BROWN, PLLC

By: R. Grattan Brown, Jr.
R. Grattan Brown, Jr. (9441), as Attorney for
Memphis-Shelby County Airport Authority

By: W.R. Bradley, Jr.
William R. Bradley, Jr. (10911), as Attorney for
Memphis-Shelby County Airport Authority

GOODMAN GLAZER GREENER & KREMER

By: Eugene Greener, Jr.
Eugene Greener, Jr. (7901), as Attorney for the
Plaintiff Class Representatives and the
Settlement Class

By: Harriette R. Coleman
Harriette R. Coleman (9448), as Attorney for the
Plaintiff Class Representatives and the
Settlement Class

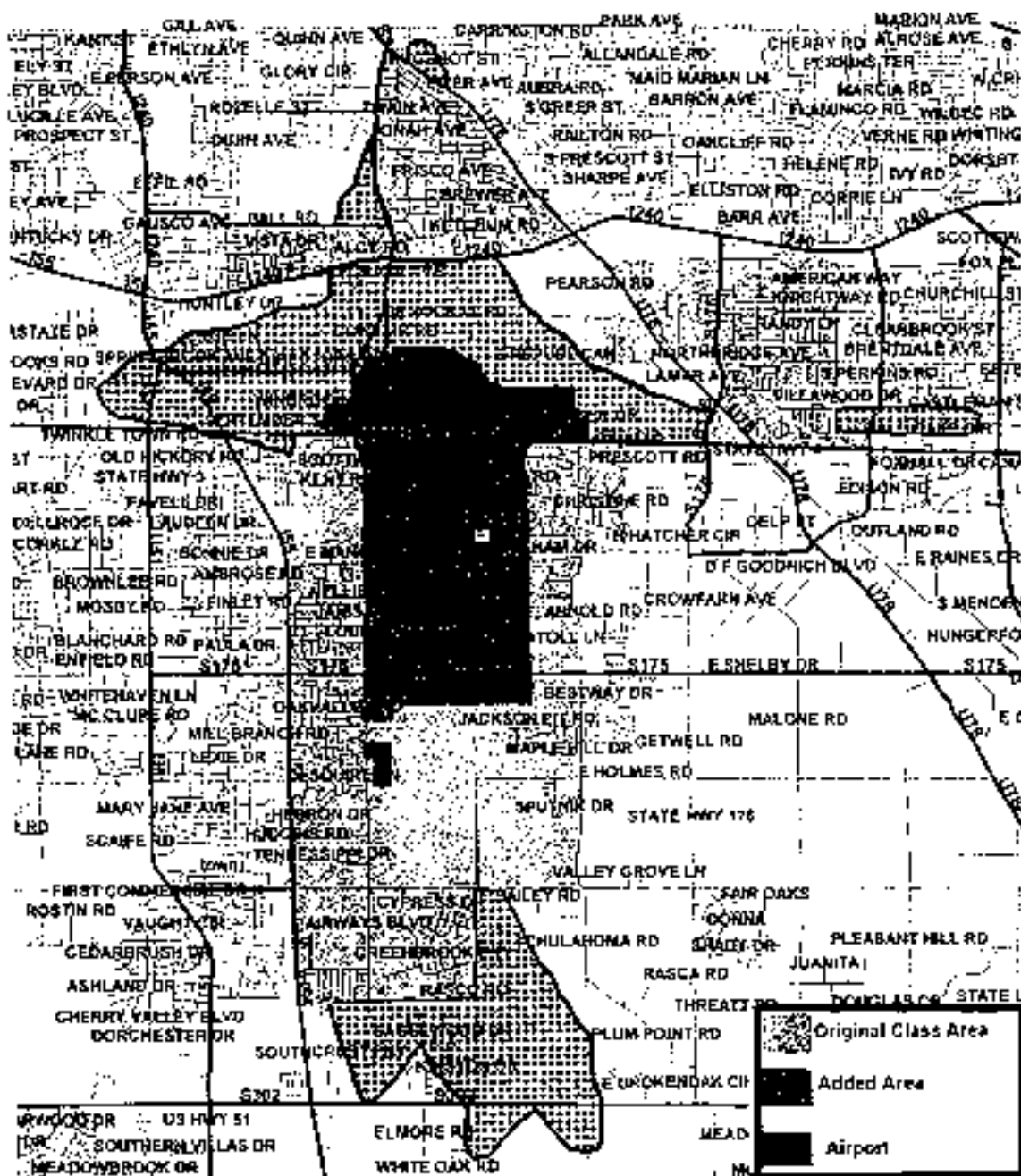
EVANS & PETREE

By: Joseph W. Barnwell, Jr.
Joseph W. Barnwell, Jr. (7792), as Attorney for the
Plaintiff Class Representatives and the
Settlement Class

EXHIBIT 1

TO STIPULATION OF SETTLEMENT

THE GEOGRAPHIC AREA



**EXHIBIT 2
TO THE STIPULATION OF SETTLEMENT**

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TENNESSEE
WESTERN DIVISION**

MARTHA ALVARADO, ET AL,)	Civil Action No.
)	B9-3001-HBRO
Plaintiffs,)	
)	<u>CLASS ACTION</u>
VS.)	
)	
MEMPHIS-SHELBY COUNTY AIRPORT)	
AUTHORITY,)	
)	
Defendant.)	
_____)	

**[PROPOSED]
NOTICE OF CONDITIONAL REDEFINITION OF THE CLASS,
PROPOSED SETTLEMENT, FAIRNESS HEARING, RIGHT TO APPEAR
AND RIGHT TO REQUEST EXCLUSION FROM THE CLASS ACTION**

After More than Eight Years of Litigation, an Agreement Providing
For Settlement of the Above Titled Litigation Has Been Reached.
Please Read this Notice Carefully.
It May Affect Your Rights.

I. PURPOSE OF THIS NOTICE

This notice is provided to you pursuant to Rule 23 of the Federal Rules of Civil Procedure and pursuant to an Order of the United States District Court for the Western District of Tennessee (the "Court") to inform you of:

A. The conditional redefinition of the class by the Court and a detailed description of:

1. Who will be removed from the class if the Proposed Settlement is approved by the Court (Section III.A.);
2. Who will be added to the class if the Proposed Settlement is approved by the Court (Section III.B.); and
3. Who will be included in the class for settlement purposes if the Proposed Settlement is approved by the Court (Section III.C.);

B. The benefits offered to members of the redefined class under the Proposed Settlement (Section IV.);

- C. The alternative courses of action that you may take (Section V.);
- D. The terms of the release that will apply to all members of the redefined class who remain in the class action (Section VI.);
- E. The terms of an avigation easement (Section VII.) that, if you remain in the class:
 - 1. Will be imposed on all of your Eligible Property located in Tennessee regardless of whether or not you participate in the benefits of the Proposed Settlement; or
 - 2. If you own Eligible Property in Mississippi, you must grant to the Defendant in order to qualify for a payment under the Proposed Settlement; and
- F. The scheduling of a Fairness Hearing (Section VIII.).

II. BACKGROUND

This action was filed November 13, 1989, in federal court in Memphis, Tennessee, by Martha Alvarado and the other named plaintiffs. On May 5, 1993, the Court certified the case as a class action for litigation purposes.

Plaintiffs for themselves and as representatives of a class of other owners of vested interests in real property in the vicinity of the Memphis International Airport sued the Memphis-Shelby County Airport Authority (the "Defendant") for damage to the value of their real property interests caused by noise and other forms of pollution.

The alleged bases for liability are (1) whether there has been a taking of all or part of a proprietary interest in real property of class members, (2) if not, whether the Defendant has created a nuisance which has damaged a proprietary interest in real property of class members, (3) violation of some class members' substantive due process rights by misrepresentations by the Defendant of the comprehensive nature of its noise compatibility program, and (4) whether the Defendant has violated the Noise Control Act of 1972, thereby imposing affirmative obligations on the Defendant as a result of receiving federal funds.

The Defendant asserts that the plaintiffs should not be allowed to represent other property owners in a class action and that the Defendant is not liable to any plaintiff or any members of a class.

Plaintiffs have the burden of establishing the liability of the Defendant and if liability is established must prove the damages based upon the nature and extent of damage to the property of each owner and the appropriate means of compensating each owner for damage that has been suffered.

For more than eight years the action has been litigated aggressively. The Defendant vigorously opposed class certification from April 1990 to October 1993. During the course of the litigation, plaintiffs and the Defendant, through their counsel, have conducted an extensive examination of the facts and law relating to the matters at issue in the lawsuit. Their investigation included the review of thousands of pages of documents, sworn depositions from numerous

witnesses and consultation with various experts and/or other persons. Plaintiffs and the Defendant both have filed numerous motions, including cross motions for summary judgment on the substantive due process claim, both of which have been denied by the Court. The plaintiffs filed a motion for a separate trial on the substantive due process claim which motion was denied. There has not been a trial on the merits in the litigation and the Court has not determined whether any of the plaintiffs' allegations are correct and will not do so if the Proposed Settlement is approved.

If the action is not settled now, it will require further extensive and expensive court proceedings involving complicated and unsettled legal issues. If a decision on the merits is reached the action may be appealed. No one can confidently predict how the various legal questions at issue, including the amount of damages, would ultimately be resolved.

In order to avoid the continued uncertainty, delay and expense of litigation, counsel for the Plaintiff Class Representatives and counsel for the Defendant have agreed to a settlement on terms which to them are considered to be a fair compromise of the risks of litigation and to be reasonable and adequate (the "Proposed Settlement").

The terms of the Proposed Settlement were submitted to the Court. After a preliminary review of the written agreement reached by counsel for the parties, the Court has directed that members of the original and redefined class be given notice to inform them of the Proposed Settlement and of the procedures the Court will follow to determine whether the settlement is fair, reasonable and adequate.

III. CLASS REDEFINITION

As originally certified and defined in May, 1993, the named plaintiffs represent themselves and a class consisting of all persons or firms who own, did own, or will own, within the original class areas identified on the map found at the end of this notice (the "Notice Map"), a vested interest in a parcel of commercial or residential real estate during a time period encompassing the time period prior to filing of the lawsuit during which a claim could have been brought based upon the applicable statute of limitations up to the date of trial or other means of disposition of the claims included in the lawsuit.

As a condition of settlement, the parties submitted to the Court a joint motion to redefine class. The Court considered the reasons set forth by the parties in support of redefinition of the class and on _____, 1998 amended the order entered on May 5, 1993, certifying and defining the class in this action. As redefined, the class action is maintained on behalf of owners of improved residential real estate upon which there is a single family residence, a duplex or a condominium, (1) as of February 10, 1997, or as of the date the Proposed Settlement is finally approved (the "Approval Date"), within the original class areas identified on the Notice Map, and owners (2) as of _____, or as of the Approval Date, within the added areas identified on the Notice Map. Collectively, such owners are referred to in this Notice as the Settlement Class or redefined class and their property is referred to as Eligible Property. As a result of the Court's action, some persons and entities have been removed from the class action and others have been added to the class action. The Court's order redefining the class will be null and void and the class action will continue to be maintained on behalf of the persons and entities specified in the May 5, 1993 order certifying and defining class

action if the Proposed Settlement does not become final in accordance with the Stipulation of Settlement.

A. Who will be removed from the class if the Proposed Settlement is approved by the Court and the class action is dismissed with prejudice?

The original class areas identified on the Notice Map were the original geographic area designated by the Court in 1993. Some owners of property in the original areas have been removed from the class.

The Settlement Class will not include the following persons or entities in the original class areas (unless such persons or entities are members of the Settlement Class by virtue of their ownership in other property which is Eligible Property).

1. Owners of unimproved residential real estate;
2. Owners of commercial property;
3. Owners of improved residential real estate transferred, voluntarily or involuntarily before February 10, 1997, or between February 11, 1997, and the Approval Date;
4. Owners who sold their property to the Defendant;
5. Owners of property condemned by the City of Memphis or Shelby County on behalf of the Defendant; or
6. Tenants.

If you are such an owner or tenant of property, even though you may have been included in the original class definition, you have been conditionally removed from the class and will permanently be removed if the Proposed Settlement is finally approved, unless you also own other property which is Eligible Property. The rights and options of those removed from the class are discussed below in Section V.A.

B. Who will be added to the class if the Proposed Settlement is approved by the Court and the class action is dismissed with prejudice?

The added areas identified on the Notice Map were not included in the original geographic area designated by the Court in 1993, but are included in the Proposed Settlement. If you are the owner as of _____ or as of the Approval Date, of at least one parcel of improved residential real estate upon which there is either a single family residence, a duplex or a condominium within an added area you will become a Settlement Class Member; you will be entitled to share in the proceeds of the Proposed Settlement; and you will be bound by the order of final judgment unless you exclude yourself from the Settlement Class. The alternative courses you may take are set forth below in Section V.B.

C. In summary, who will be included in the Settlement Class if the Proposed Settlement is approved by the Court and the class action is dismissed with prejudice?

The original class areas and added areas identified on the Notice Map together comprise the Geographic Area applicable to the Proposed Settlement. If you owned at least one parcel of improved residential real estate upon which there is a single family residence, a duplex or condominium on February 10, 1997, or, if you became an owner of such Eligible Property after February 10, 1997, and continue to own such property as of the Approval Date within an original class area on the Notice Map, you are a Settlement Class Member, unless you ask the Court to dismiss you from the class in accordance with Section V.C. below and/or if you owned at least one parcel of improved residential real estate upon which there is a single family residence, a duplex or a condominium on _____, or if you became an owner of such Eligible Property after _____, and continue to own such property as of the Approval Date, within an added area on the Notice Map, you are a Settlement Class Member, unless you exclude yourself from the class in accordance with Section V.B. below. If you are uncertain as to whether you will be included in the Settlement Class you may contact Class Counsel. If you are uncertain as to whether your property is Eligible Property, you may examine the Notice Map in more detail at a location indicated below the Notice Map.

IV. TERMS OF THE PROPOSED SETTLEMENT

The complete terms of the Proposed Settlement are set forth in the Stipulation of Settlement signed by Counsel for the Plaintiff Class Representatives and Counsel for the Defendant, a copy of which is on file with the District Court Clerk, United States District Court for the Western District of Tennessee, Room 242, 167 Mid-America Mall, Memphis, Tennessee 38103, and is available for review and copying during regular business hours. The following is a summary of certain terms of the Proposed Settlement:

Subject to approval by the Court, under the Proposed Settlement, Defendant has agreed to make cash payment to a Settlement Class Member, provided a qualifying claim is made in accord with the claims procedure set forth in the Stipulation. The amount of the payment you are eligible to receive will depend on the length of time you have owned a particular Eligible Property and whether or not you use the Eligible Property as your primary residence. You are eligible to receive a payment for each Eligible Property you own. The total potential monetary benefit to the Settlement Class is estimated to be \$22,000,000 (the "Settlement Funds").

An owner of Eligible Property utilized as a primary residence is eligible to receive the following gross amount:

<u>Amount</u>		<u>Acquisition Date</u>
\$4,200	to a Settlement Class Member acquiring ownership	On or before December 31, 1973
\$2,600	to a Settlement Class Member acquiring ownership	January 1, 1974 thru September 30, 1987

\$1,600	to a Settlement Class Member acquiring ownership	October 1, 1987 thru May 4, 1993
\$525	to a Settlement Class Member acquiring ownership	On or after May 5, 1993 up to and including the Approval Date

An owner of Eligible Property not utilized as a primary residence is eligible to receive the following gross amount:

<u>Amount</u>		<u>Acquisition Date</u>
\$800	to a Settlement Class Member acquiring ownership	On or before December 31, 1973
\$600	to a Settlement Class Member acquiring ownership	January 1, 1974 thru September 30, 1987
\$500	to a Settlement Class Member acquiring ownership	October 1, 1987 thru May 4, 1993
\$325	to a Settlement Class Member acquiring ownership	On or after May 5, 1993 up to and including the Approval Date

A payment to an owner of Eligible Property within an original class area which sold after February 10, 1998, or to an owner of Eligible Property in an added area which sold after _____, will be allocated between the owner as of February 10, 1997, or _____ as the case may be and the Owner as of the Approval Date. The net amount a Settlement Class Member will receive will be the applicable gross amount less such Settlement Class Member's proportionate share of Court awarded attorneys' fees, expenses and special awards.

Under the Proposed Settlement the Defendant will, in addition, keep its property acquisition program in force for a limited period after final approval of the settlement. The properties eligible for acquisition are identified in Exhibits to the Stipulation of Settlement. Owners of these properties may file an application within the time limit permitted by the terms of the Stipulation to sell their Eligible Property to the Defendant in lieu of making a settlement claim. If you are uncertain as to whether your property is eligible for acquisition you may review the Stipulation or contact Class Counsel.

The Defendant will in addition pay all costs of gaining approval of the Proposed Settlement including costs of notice to the class and all costs associated with the claims administration.

Claims Administration. If the Proposed Settlement is approved, the Defendant within thirty (30) days of the Approval Date will open a claims administration office in the vicinity of Memphis International Airport to process settlement claims. At that time Settlement Class Members will be provided settlement claim forms and given additional notice regarding the claims procedure.

settlement claim forms will generally be processed in the order in which they are returned to the Claims Administration Office. Any claims not submitted within one (1) year of the date the Claims Administration Office is opened will not qualify for payment.

V. RIGHTS AND OPTIONS

A. If you are a person or entity who will be permanently removed from the class if the Proposed Settlement is approved and the order dismissing the class action with prejudice becomes final, you have the following rights and options:

1. You may object to the approval of the Proposed Settlement and appear at the Fairness Hearing by complying with the procedures set forth in Section VIII. below.

2. If the Proposed Settlement is approved you will not be bound by the settlement or able to participate in it. You will have the right to commence or continue an action against the Defendant based on any claims asserted in the class action subject to any applicable defenses of the Defendant at your own expense. Any statutes of limitation which have been suspended due to the filing of this case will begin to run again ninety (90) days after the Approval Date.

3. If the Proposed Settlement is not approved you will be restored to the position you occupied before the parties entered into the Proposed Settlement.

B. If you are a person or entity who has been added to the Settlement Class, you have a choice whether or not to remain a member of the redefined class. If you share your ownership interest in Eligible Property with one or more persons or entities, you and any co-owner(s) must agree on whether or not to remain a member of the class. Either choice will have its consequence, which you should understand before making your decision.

1. If you agree with the Proposed Settlement and want to be eligible to receive a payment from Settlement Funds you may do nothing. You do not need to attend the Fairness Hearing unless you want to. If the Proposed Settlement is approved you will be given additional notice regarding the claims procedure. If you do not exclude yourself from the class, in the manner described below, judgments issued by the Court, whether favorable or not and any release given in connection with the Proposed Settlement will be binding upon you. In addition, any Avigation Easement effective as to your real property as a result of the Proposed Settlement will be binding upon you and future owners of the property. If you remain a member of the redefined class you will be represented by the law firms of Goodman Glazer Greener & Kremer, 165 Madison Avenue, Suite 1500, Memphis, Tennessee 38103 and Evans & Petree, 81 Monroe Avenue, Memphis, Tennessee 38103 ("Class Counsel"). If you so desire you may enter an appearance in this litigation through counsel of your own choosing, at your own expense. If the Proposed Settlement is not finally approved you will no longer be a member of the class in this class action.

2. If you have been conditionally added to the Settlement Class and if you want to be excluded from the redefined class and the Proposed Settlement, the Court will exclude you only if you complete and mail, by first class mail, postage prepaid, a written request for exclusion postmarked by _____, 1998. The written request for exclusion must include

your name and address, the case number of this action, 89-3001, and, if the request for exclusion is provided by a representative of a class member, the capacity in which such person is acting. The written request for exclusion must be sent by first class mail to:

District Court Clerk
United States District Court
Room 242
167 Mid-America Mall
Memphis, Tennessee 38103

If you timely exclude yourself from the class, you will not be bound by any orders or judgments entered in this case and you will not share in the benefits of the Proposed Settlement. If you wish to be eligible to receive a payment from Settlement Funds, do not file a request for exclusion.

C. If you are an Original Class Member who is also a Settlement Class Member, your right to exclude yourself from the class under Rule 23 of the Federal Rules of Civil Procedure expired on January 5, 1994. You do not have the right to exclude yourself in the same manner as those who are added to the class for settlement purposes. However, as a term of settlement you may request that the Court dismiss your claims, in which case you will not remain a member of the Settlement Class. If you share your ownership interest in Eligible Property with one or more persons or entities, you and any co-owner(s) must agree on whether or not to remain a member of the redefined class. Your alternatives are as follows:

1. If you agree with the Proposed Settlement and want to be eligible to receive a payment from Settlement Funds you may do nothing. You do not need to attend the Fairness Hearing unless you want to. If the Proposed Settlement is approved by the Court you will receive additional notice regarding the claims procedure. Unless you request a dismissal of your claims as set forth below, judgments issued by the Court, whether favorable or not and any release given in connection with the Proposed Settlement will be binding upon you. In addition, any Avigation Easement effective as to your real property as a result of the Proposed Settlement will be binding upon you and future owners of the property. You continue to have the right to enter an appearance in this litigation through counsel of your own choosing, at your own expense.

2. You may object to the approval of the Proposed Settlement and appear at the Fairness Hearing by complying with the procedures set forth in Section VIII. below. If you object to the Proposed Settlement and desire to be dismissed from the Settlement Class in the event the Proposed Settlement is finally approved you must do both of the following:

(a) File a written statement of objection to the Proposed Settlement with the Court in accordance with the procedure set forth below in Section VIII.; and

(b) Following the Fairness Hearing, if you continue to object to the Proposed Settlement, complete and mail, by first class mail, postage prepaid, a written request for dismissal postmarked by _____, 1998. The request for dismissal must include your name and address, the case number of this action, 89-3001, and phone number, and state that you desire to have your claims dismissed and that you understand that as a result of a dismissal

of your claims without prejudice you will neither be bound by the Proposed Settlement nor entitled to receive any benefits in accordance with the Proposed Settlement. The written request for dismissal must be sent by first class mail to:

The Honorable Odell Horton
c/o District Court Clerk
United States District Court
Room 242
167 Mid-America Mall
Memphis, Tennessee 38103

If you timely request a dismissal, and the Court grants your request, you will not be bound by any orders or judgments entered in this case and you will not share in the benefits of the Proposed Settlement. You will have the right to commence or continue an action against the Defendant based on any claims asserted in the class action subject to any applicable defenses of the Defendant at your own expense. Any statutes of limitations which have been suspended due to the filing of this case will begin to run again ninety (90) days after the Approval Date. If you wish to be eligible to receive a payment from Settlement Funds, do not file a request for dismissal.

VI. SCOPE OF RELEASE AND DISMISSAL

If the Proposed Settlement is approved by the Court and becomes final, then this litigation will be dismissed with prejudice.

The release of claims to be given to the Defendant in the Proposed Settlement is broad and will with certain exceptions release all claims which you may have against the Defendant concerning activities related to the operation of aircraft on, into or out of Memphis International Airport resulting in noise or vibration or resulting in emissions of air pollutants from such aircraft. Additional Releasees are all commercial air carriers who utilize the Memphis International Airport; the City of Memphis and Shelby County, Tennessee; the Defendant's successors, assigns, and insurers; all past, present and future employees of the Defendant; and all past, present and future Commissioners of Defendant. The full text of the release is set forth below. You should read it very carefully because it will affect your rights if you remain in the Settlement Class.

Release and Dismissal of Claims. Upon the Approval Date each Settlement Class Member shall be deemed to have agreed to the following:

A. "Released Claims" shall mean (1) all claims set forth in any complaint filed in the Class Action Lawsuit, and (2) any and all past, present or future claims by any Settlement Class Member against the Defendant or the Additional Releasee(s) that are based on, arise out of, or relate to aircraft noise or emission of air pollutants resulting from aircraft approaching, landing upon, taking off from, maneuvering about or operating on the Memphis International Airport. Such Released Claims shall include, without limitation, any and all past, present and future claims whether arising under local, state or federal statutory or common law, including, without limitation, any and all civil actions, claims, expenses, damages, controversies, agreements, promises, court costs, judgments, attorneys' fees, claims for equitable relief, and all claims and demands of

whatever type in law or equity for: (a) damages to Eligible Property owned by any Settlement Class Member including, but not limited to, (i) diminution in value, (ii) loss of use and enjoyment, or (iii) decreased appreciation; (b) personal injury or harm including all forms of annoyance, inconvenience, mental anguish, or emotional distress.

B. **"Reserved Claims."** This Stipulation releases only those claims that are described above and no others. Thus, for example, the Released Claims do not include: any claims asserted against Defendant or any Additional Releasee alleging wrongful death or damage to persons or property as a result of (a) injury or damages incurred as a passenger on any aircraft flying on, into or out of Memphis International Airport, (b) the crash, falling or forced landing of any such aircraft, and/or (c) the dropping or falling of any objects from aircraft flying on, into or out of Memphis International Airport. Furthermore, the Settlement Class Members do not release any claim arising after the Approval Date which relates to an alleged violation by Defendant or any Additional Releasee of an Avigation Easement imposed or conveyed as a result of the Proposed Settlement.

C. **"Release."**

(i) The Class Action Lawsuit shall be dismissed with prejudice on the merits.

(ii) Upon approval of the Proposed Settlement by the Court and such approval becoming final, each Settlement Class Member shall be deemed to have completely released all Released Claims against the Defendant and the Additional Releasees. This release is expressly intended to bar and discharge prospective Released Claims that have not yet matured or accrued. By operation of the Release, each Settlement Class Member releases all Released Claims against the Defendant and the Additional Releasees in each and every capacity that such Released Claims may be asserted.

(iii) Failure of any Settlement Class Member to claim any of the Settlement Funds to which he or she may be entitled shall not in any manner invalidate or otherwise affect the Release provided herein.

VII. SCOPE OF AVIGATION EASEMENT

If you remain in the Settlement Class and the Proposed Settlement is approved by the Court and the class action is dismissed with prejudice the Court's final judgment will impose an Avigation Easement on each Eligible Property you own in the State of Tennessee regardless of whether you choose to file a settlement claim or receive a payment from Settlement Funds. If you own Eligible Property in the State of Mississippi you will be required to grant the Avigation Easement to the Defendant before you qualify to receive a payment from Settlement Funds. The Avigation Easement that the Defendant will obtain is a critical element of the Proposed Settlement. You should read the Avigation Easement set forth in full below very carefully because it will affect your rights and may affect the value of your Eligible Property if you remain in the Settlement Class.

A. Settlement Class Members owning Tennessee Eligible Property and the Defendant hereby agree that the Avigation Easement shall be defined as follows:

The Memphis-Shelby County Airport Authority (the "Authority") has obtained and holds for itself, its successors and assigns, for the use and benefit of the Authority, the Memphis International Airport ("Airport"), the operators, owners and users of Aircraft of all types and for the public in general, an aviation easement and right-of-way for the free, unobstructed and unrestricted flight and passage of Aircraft lawfully operated in and through the Airspace above, over, and across the surface of Eligible Property, together with the right to cause in said Airspace such noise, vibration, odors, vapors, particulates, smoke, dust, or other effects as may be inherent in the lawful Operation of Aircraft for navigation of or flight or passage in and through said Airspace, and for the use of said Airspace by Aircraft for approaching, landing upon, taking off from, maneuvering about or operating on the Airport.

For the purpose of this Aviation Easement:

(a) "Aircraft" is defined as any contrivance now known or hereafter invented, used, or designed for navigation of, or flight in, through and across the air.

(b) "Airspace" is defined as air above the minimum safe altitude of flight prescribed in the regulations of the Federal Aviation Administration as they now exist, and as they may hereafter be amended.

(c) "Operation of Aircraft" is defined as operations of Aircraft in accord with the acts of the federal, state and local laws and regulations issued thereunder, as they now exist, and as they may hereafter be amended.

It is not the intent of this Aviation Easement to authorize any Aircraft operating on, into or out of Memphis International Airport to crash, fail or make a forced landing upon Eligible Property or to drop or allow any objects to fall onto Eligible Property from such Aircraft.

The easement and right-of-way described herein, and all the terms, conditions and provisions contained herein are intended to and shall run with the land and shall be binding upon owners, their heirs, administrators, successors and assigns.

The said Aviation Easement and right-of-way and all of the rights appertaining thereto shall be held by the Authority, its successors and assigns, in perpetuity or until the said Airport shall be abandoned and shall cease to be used for public airport purposes.

B. Each Settlement Class Member owning Mississippi Eligible Property as of the date a Qualifying Claim is paid shall grant to the Defendant an Avigation Easement in substantially the form set forth as follows:

WHEREAS, _____ (hereinafter the "Grantor") is the owner of a certain tract or parcel of land located in DeSoto County, Mississippi as more particularly described on Exhibit A (the "Property"); and,

WHEREAS, the Memphis-Shelby County Airport Authority (hereinafter the "Authority") is the owner and operator of the Memphis International Airport (hereinafter the "Airport") situated in Memphis, Shelby County, Tennessee, which is located in the vicinity of the Property; and

WHEREAS, the United States District Court for the Western District of Tennessee, Western Division, on the _____ day of _____, _____, entered a judgment in the class action styled Martha Alvarado, et al. v. Memphis-Shelby County Airport Authority, No. 89-3001-HBRD, approving a stipulation of settlement which provides that the Grantor shall execute this Avigation Easement in consideration of the right to receive payment in accordance with such stipulation of settlement.

IN CONSIDERATION of the premises and other good and valuable consideration, the Grantor hereby grants, bargains and conveys to the Authority, its successors and assigns, for the use and benefit of the Authority, the Airport, the operators, owners and users of Aircraft of all types and for the public in general, an avigation easement and right-of-way for the free, unobstructed and unrestricted flight and passage of Aircraft lawfully operated in and through the Airspace above, over, and across the surface of the Property, together with the right to cause in said Airspace such noise, vibration, odors, vapors, particulates, smoke, dust, or other effects as may be inherent in the lawful Operation of Aircraft for navigation of or flight or passage in and through said Airspace, and for the use of said Airspace by aircraft for approaching, landing upon, taking off from, maneuvering about or operating on the Airport.

For the purpose of this Avigation Easement:

(a) "Aircraft" is defined as any contrivance now known or hereafter invented, used, or designed for navigation of, or flight in, through and across the air.

(b) "Airspace" is defined as air above the minimum safe altitude of flight prescribed in the regulations of the Federal Aviation

Administration as they now exist, and as they may hereafter be amended.

(c) "Operation of Aircraft" is defined as operations of Aircraft in accord with the acts of the federal, state and local laws and regulations issued thereunder, as they now exist, and as they may hereafter be amended.

It is not the intent of this Avigation Easement to authorize any Aircraft operating on, into or out of Memphis International Airport to crash, fall or make a forced landing upon the Property or to drop or allow any objects to fall onto the Property from such Aircraft.

The easement and right-of-way described herein, and all the terms, conditions and provisions contained herein are intended to and shall run with the land and shall be binding upon the Grantor, his heirs, administrators, successors and assigns. In the event one or more of the provisions contained in this Avigation Easement or any part thereof or any application thereof shall be held invalid, illegal, or unenforceable in any respect by a court of competent jurisdiction, the validity, legality, and enforceability of the remaining provisions or parts thereof contained herein and any application thereof shall not in any way be affected or impaired thereby.

The said Avigation Easement and right-of-way and all of the rights appertaining thereto shall be held by the Authority, its successors and assigns, in perpetuity or until the said Airport shall be abandoned and shall cease to be used for public airport purposes.

VIII. FAIRNESS HEARING

The Court will hold a hearing in Courtroom ____, United States District Court, 167 Mid-America Mall, Memphis, Tennessee, at ____m. on ____, 1998 (or such adjourned dates as the Court may direct without further notice to the class):

A. To determine whether the Proposed Settlement is fair, reasonable and adequate and in the best interests of the class, as redefined, and should be approved by the Court, and whether judgment should be ordered thereon;

B. To determine whether the class has been fairly and adequately represented by the plaintiffs and by attorneys for plaintiffs and the class;

C. To consider the application of Class Counsel for an award of attorneys' fees and reimbursement of expenses;

D. To consider the application for special awards to such persons in the plaintiff class as are recommended by Class Counsel; and

E. To consider such other matters as the Court may deem proper and necessary.

If you are a member of the redefined class, as set forth in this notice, and you have not timely requested exclusion from the redefined class as set forth in this Notice, or if you will be permanently removed from the class if the Proposed Settlement is finally approved, you may object to the fairness, reasonableness or adequacy of the Proposed Settlement, the fairness or adequacy of representation, or the application for attorneys' fees and expenses or for special awards by filing a written objection or by filing a notice to appear.

Written Objections. Any person who wishes to object to the Proposed Settlement, the fairness or adequacy of representation, or the application for attorneys' fees and expenses or for special awards by written objection, must on or before _____, 1998, file with the District Court Clerk, United States District Court, Room 242, 167 Mid-America Mall, Memphis, Tennessee 38103, a written statement of objection, along with any other supporting materials, papers or briefs that he or she wishes the Court to consider, and must on that same date serve such papers by delivery to:

R. Grattan Brown, Jr., Esq.
William R. Bradley, Jr., Esq.

and

Eugene Greener, Jr., Esq.
Harriette R. Coleman, Esq.

GLANKLER BROWN, PLLC
1600 One Commerce Square
Memphis TN 38103

GOODMAN GLAZER GREENER & KREMER
165 Madison Avenue, Suite 1500
Memphis TN 38103

Attorneys for Defendant

Attorneys for Plaintiff Class
Representatives

Objections must be filed with the Court and received by the above counsel no later than _____, 1998. Any objection that is not timely made shall be forever barred. Any attorney representing a class member, at that class member's expense, for the purpose of making objections must file with the District Court Clerk, and serve a notice of appearance, not later than _____, 1998.

Appearance at Fairness Hearing. Any member of the original or redefined class may appear at the Fairness Hearing either in person or through personal counsel hired at such person's expense, to support or object to the fairness, reasonableness or adequacy of the Proposed Settlement, the fairness or adequacy of representation, or the application for attorneys' fees and expenses or for special awards. Those persons or their attorneys intending to appear at the Fairness Hearing must deliver to the above named attorneys and file with the Court, no later than _____, 1998, a notice of intention to appear, setting forth (i) the name, address and telephone number of the class member (and, if applicable, the name, address and telephone number of the class member's attorney), (ii) the objection, if any, including any papers in support thereof, and (iii) the name and address of any witnesses to be presented at the Fairness Hearing, together with a brief statement as to the matters on which they wish to testify and a summary of

the proposed testimony. Anyone who does not follow this procedure, shall not be permitted to appear at the Fairness Hearing, except for good cause shown.

IX. ATTORNEYS' FEES, OTHER COSTS AND SPECIAL AWARDS

At the Fairness Hearing, Class Counsel will apply to the Court for an award of attorneys' fees of eighteen (18%) percent of the Settlement Funds and reimbursement of litigation expenses not to exceed \$75,000. In addition, an application will be made for special awards of not more than \$10,000 per person in an aggregate amount of not more than two (2%) percent of the Settlement Funds to be paid to certain persons who have aided the prosecution of the class action and have been recommended for such an award by Class Counsel. If the Court approves the Proposed Settlement, the Court will determine all awards of attorneys' fees and expenses, and special awards, which shall be paid exclusively out of Settlement Funds. Pursuant to the Proposed Settlement, litigation expenses awarded by the Court will be reimbursed by Class Counsel to the entity or individual who paid the amounts to Class Counsel to prosecute this action.

X. FURTHER INFORMATION

This Notice contains only a summary of the Proposed Settlement. The terms of the Proposed Settlement are set forth in detail in the Stipulation of Settlement, which is available to the public to review and copy at the office of the District Court Clerk, United States District Court for the Western District of Tennessee, Room 242, 167 Mid-America Mall, Memphis, Tennessee 38103.

You may obtain further information about the Proposed Settlement by contacting:

Eugene Greener, Jr., Esq.
Harriette R. Coleman, Esq.

or

Joseph W. Barnwell, Jr., Esq.

GOODMAN GLAZER GREENER & KREMER
165 Madison Avenue, Suite 1500
Memphis TN 38103
(901) 526-5279

EVANS & PETREE
81 Monroe Avenue
Memphis TN 38103
(901) 525-6781

Attorneys for Plaintiff Class
Representatives

Attorneys for Plaintiff Class
Representatives

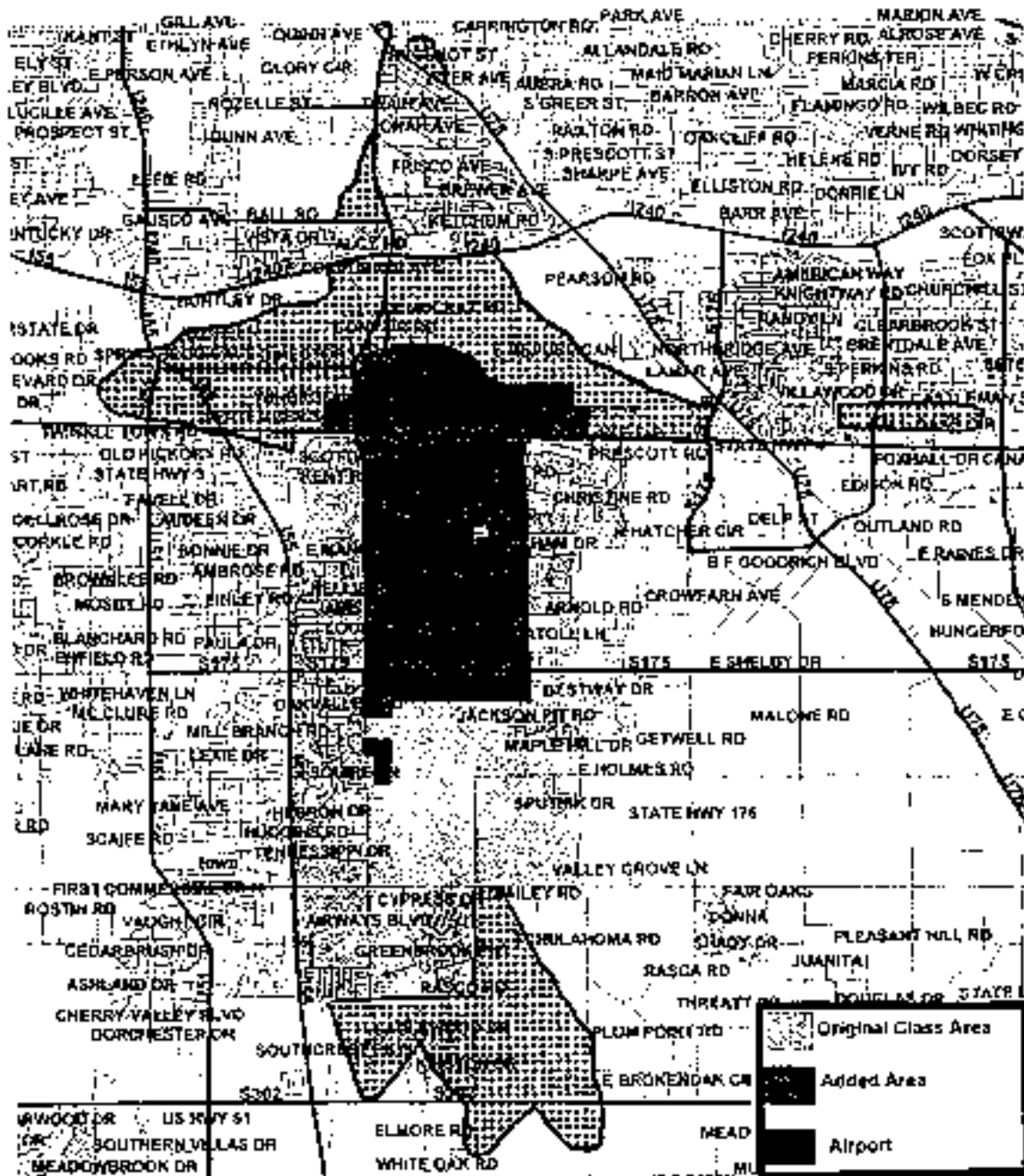
Please do not contact the Court, the Clerk's Office or the Judge.

Dated: _____, 1998

By Order of the Honorable Odell Horton,
Judge of the United State District Court
for the Western District of Tennessee

NOTICE MAP

Geographic Area To Which The Proposed Settlement Applies



If you wish to examine in more detail the geographic areas referred to for purposes of this Notice, you may review more detailed maps during normal business hours posted at any of the following locations:

Whitehaven Branch Public Library
4122 Martin Drive
Memphis, Tennessee

Parkway Village Branch Public Library
4655 Knight-Arnold Road
Memphis, Tennessee 38116

Goodman Glazer Greener & Kramer
165 Madison Avenue, Suite 1500
Memphis, Tennessee 38103

Cherokee Branch Public Library
3300 Sharps
Memphis, Tennessee 38111

Southern Public Library
8609 Northwest Drive
Southern, Mississippi 38671

Evans & Poirer
81 Monroe Avenue
Memphis, Tennessee 38103

**EXHIBIT 3
TO THE STIPULATION OF SETTLEMENT**

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TENNESSEE
WESTERN DIVISION**

MARTHA ALVARADO, ET AL.,)	Civil Action No.
)	89-3001-HBRD
Plaintiffs,)	
)	<u>CLASS ACTION</u>
VS.)	
)	
MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY,)	
)	
Defendant.)	
_____)	

**[PROPOSED]
SUMMARY NOTICE OF CONDITIONAL REDEFINITION OF THE CLASS,
PROPOSED SETTLEMENT, FAIRNESS HEARING, RIGHT TO APPEAR
AND RIGHT TO REQUEST EXCLUSION FROM THE CLASS ACTION**

**After More than Eight Years of Litigation, an Agreement Providing
For Settlement of the Above Titled Litigation Has Been Reached.
Please Read this Notice Carefully.
It May Affect Your Rights.**

PURPOSE OF THIS SUMMARY NOTICE

This notice is provided to you pursuant to Rule 23 of the Federal Rules of Civil Procedure and pursuant to an Order of the United States District Court for the Western District of Tennessee (the "Court") to inform you of:

- A. The conditional redefinition of the class by the Court;
- B. The benefits offered to members of the redefined class under the Proposed Settlement;
- C. The alternative courses of action that you may take;
- D. The terms of the release that will apply to all members of the redefined class who remain in the class action;
- E. The terms of an avigation easement that, if you remain in the class:
 - 1. Will be imposed on all of your Eligible Property located in Tennessee regardless of whether or not you participate in the benefits of the Proposed Settlement; or

2. If you own Eligible Property in Mississippi, you must grant to the Defendant in order to qualify for a payment under the Proposed Settlement; and

F. The scheduling of a Fairness Hearing.

This notice is a summary of a notice which was mailed to all Settlement Class Members who could be reasonably identified (the Mailed Notice). If you did not receive a copy of the Mailed Notice, you may request that a copy be mailed to you by calling Class Counsel at (901) 526-5279 or (901) 525-6781 during regular business hours. You will then be mailed a copy of the Mailed Notice at no cost to you.

BACKGROUND

A more detailed description of the background of this case is contained in the Mailed Notice. As set forth above, you may request that a copy of the Mailed Notice be mailed to you at no cost to you.

For more than eight years this class action has been litigated aggressively. During the course of the litigation, plaintiffs and the Defendant, through their counsel, have conducted an extensive examination of the facts and law relating to the matters at issue in the lawsuit. There has not been a trial on the merits in the litigation and the Court has not determined whether any of the plaintiffs' allegations are correct and will not do so if the Proposed Settlement is approved.

If the action is not settled now, it will require further extensive and expensive court proceedings involving complicated and unsettled legal issues. If a decision on the merits is reached the action may be appealed. No one can confidently predict how the various legal questions at issue, including the amount of damages, would ultimately be resolved.

In order to avoid the continued uncertainty, delay and expense of litigation, counsel for the Plaintiff Class Representatives and counsel for the Defendant have agreed to a settlement on terms which to them are considered to be a fair compromise of the risks of litigation and to be reasonable and adequate (the "Proposed Settlement").

CLASS REDEFINITION

In connection with the Proposed Settlement the Court on _____, 1998 amended the order entered on May 5, 1993, certifying and defining the class in this action. As redefined, the class action is maintained on behalf of owners of improved residential real estate upon which there is a single family residence, a duplex or a condominium, (1) as of February 10, 1997, or as of the date the Proposed Settlement is finally approved (the "Approval Date"), within the original class areas identified on the Notice Map and owners (2) as of _____, or as of the Approval Date, within the added areas identified on the Notice Map. Collectively, such owners are referred to in this Notice as the Settlement Class or redefined class and their property is referred to as Eligible Property. As a result of the Court's action, some persons and entities have been removed from the class action and others have been added to the class action. The Court's order redefining the class will be null and void and the class action will continue to be maintained on behalf of the persons and entities specified in the May 5, 1993 order certifying and defining the class action if the Proposed Settlement is not finally approved.

A. Who will be removed from the class if the Proposed Settlement is finally approved?

The original class areas identified on the Notice Map were the original geographic area designated by the Court in 1993. Some owners of property in the original class areas have been removed from the class.

The Settlement Class will not include owners of unimproved residential real estate; owners of commercial property; owners of improved residential real estate transferred, voluntarily or involuntarily before February 10, 1997, or between February 11, 1997, and the Approval Date; owners who sold their property to the Defendant; owners of property condemned by the City of Memphis or Shelby County on behalf of the Defendant; or tenants.

If you are such an owner or tenant, even though you may have been included in the original class definition, you have been conditionally removed from the class and will be permanently removed if the Proposed Settlement is finally approved unless you own other property which is Eligible Property.

B. Who will be added to the class if the Proposed Settlement is finally approved?

The added areas identified on the Notice Map were not included in the original geographic area. If you are the owner as of _____ or as of the Approval Date, of at least one parcel of improved residential real estate upon which there is either a single family residence, a duplex or a condominium within an added area you will become a Settlement Class Member; you will be entitled to share in the proceeds of the Proposed Settlement; and you will be bound by the order of Final judgment unless you exclude yourself from the class action as set forth below.

C. In summary, who will be included in the Settlement Class if the Proposed Settlement is finally approved?

The original class areas and the added areas identified on the Notice Map together comprise the Geographic Area applicable to the Proposed Settlement. If you owned at least one parcel of improved residential real estate upon which there is a single family residence, a duplex or condominium (1) on February 10, 1997, or, you became an owner after February 10, 1997, and continue to own such Eligible Property as of the Approval Date within an original class area, or (2) if you owned Eligible Property on _____, or, if you become an owner after _____, and continue to own such Eligible Property as of the Approval Date within an added area, you are a Settlement Class Member, unless you exclude yourself or the Court dismisses you from the class as set forth below. If you are uncertain as to whether your property is Eligible Property, you may examine the Notice Map in more detail at a location indicated below the Notice Map.

TERMS OF THE PROPOSED SETTLEMENT

The complete terms of the Proposed Settlement are set forth in the Stipulation of Settlement signed by Counsel for the Plaintiff Class Representatives and Counsel for the Defendant, a copy of which is on file with the District Court Clerk, United States District Court for the Western District of Tennessee, Room 242, 167 Mid-America Mall, Memphis, Tennessee 38103, and is available for review and copying during regular business hours. The following is a summary of certain terms of the Proposed Settlement:

Subject to approval by the Court, under the Proposed Settlement, Defendant has agreed to make cash payments to Settlement Class Members who file a qualifying claim in accord with the claims procedure set forth in the Stipulation. The amount of the payment you are eligible to receive will depend on the length of time you have owned a particular Eligible Property and whether or not you use the Eligible Property as your primary residence. You are eligible to receive a payment for each Eligible Property you own. The total potential monetary benefit to the Settlement Class is estimated to be \$22,000,000 (the "Settlement Funds").

An owner of Eligible Property utilized as a primary residence is eligible to receive the following gross amount:

<u>Amount</u>		<u>Acquisition Date</u>
\$4,200	to a Settlement Class Member acquiring ownership	On or before December 31, 1973
\$2,600	to a Settlement Class Member acquiring ownership	January 1, 1974 thru September 30, 1987
\$1,600	to a Settlement Class Member acquiring ownership	October 1, 1987 thru May 4, 1993
\$525	to a Settlement Class Member acquiring ownership	On or after May 5, 1993 up to and including the Approval Date

An owner of Eligible Property not utilized as a primary residence is eligible to receive the following gross amount:

<u>Amount</u>		<u>Acquisition Date</u>
\$800	to a Settlement Class Member acquiring ownership	On or before December 31, 1973
\$600	to a Settlement Class Member acquiring ownership	January 1, 1974 thru September 30, 1987
\$500	to a Settlement Class Member acquiring ownership	October 1, 1987 thru May 4, 1993
\$325	to a Settlement Class Member acquiring ownership	On or after May 5, 1993 up to and including the Approval Date

A payment to an owner of Eligible Property within an original class area which sold after February 10, 1998, or to an owner of Eligible Property in an added area which sold after _____, will be allocated between such Owner as of February 10, 1997, or _____ as the case may be and the Owner as of the Approval Date. The net amount a Settlement Class Member will receive will be the applicable gross amount less such Settlement Class Member's proportionate share of Court awarded attorneys' fees, expenses and special awards.

Under the Proposed Settlement the Defendant will, in addition, keep its property acquisition program in force for a limited period after final approval of the settlement. The properties eligible for acquisition are identified in Exhibits to the Stipulation of Settlement. Owners of these properties may file an application within the time limit permitted by the terms of the Stipulation of Settlement to sell their Eligible Property to the Defendant in lieu of making a settlement claim. If you are uncertain as to whether your property is eligible for acquisition you may review the Stipulation or contact Class Counsel.

The Defendant will in addition pay all costs of gaining approval of the Proposed Settlement including costs of notice to the class and all costs associated with the claims administration.

Claims Administration. If the Proposed Settlement is approved, the Defendant within thirty (30) days of the Approval Date will open a claims administration office in the vicinity of Memphis International Airport to process settlement claims. At that time Settlement Class Members will be provided settlement claim forms and given additional notice regarding the claims procedure. Settlement claim forms will generally be processed in the order in which they are returned to the Claims Administration Office. Any claims not submitted within one (1) year of the date the Claims Administration Office is opened will not qualify for payment.

RIGHTS AND OPTIONS

A. If you are a person or entity who will be permanently removed from the class if the Proposed Settlement is finally approved, you have the following rights and options:

1. You may object to the approval of the Proposed Settlement and appear at the Fairness Hearing by complying with the procedures set forth below.

2. If the Proposed Settlement is approved you will not be bound by the settlement or able to participate in it. You will have the right to commence or continue an action against the Defendant based on any claims asserted in the class action subject to any applicable defenses of the Defendant at your own expense. Any statutes of limitation which have been suspended due to the filing of this case will begin to run again ninety (90) days after the Approval Date.

3. If the Proposed Settlement is not approved you will be restored to the position you occupied before the parties entered into the Proposed Settlement.

B. If you are a person or entity who has been added to the Settlement Class, you have a choice whether or not to remain a member of the redefined class. If you share your ownership interest in Eligible Property with one or more persons or entities, you and any co-owner(s) must agree on whether or not to remain a member of the class. Either choice will have its consequence, which you should understand before making your decision.

1. If you agree with the Proposed Settlement and want to be eligible to receive a payment from Settlement Funds you may do nothing. You do not need to attend the Fairness Hearing unless you want to. If the Proposed Settlement is approved you will be given additional notice regarding the claims procedure. If you do not exclude yourself from the class, in the manner described below, judgments issued by the Court, whether favorable or not and any release given in connection with the Proposed Settlement will be binding upon you. In

addition, any avigation easement effective as to your real property as a result of the Proposed Settlement will be binding upon you and future owners of the property. If you remain a member of the redefined class you will be represented by the law firms of Goodman Glazer Greener & Kromer, 165 Madison Avenue, Suite 1500, Memphis, Tennessee 38103, and Evans & Petree, 81 Monroe Avenue, Memphis, Tennessee 38103 ("Class Counsel"). If you so desire you may enter an appearance in this litigation through counsel of your own choosing, at your own expense. If the Proposed Settlement is not finally approved you will no longer be a member of the class in this class action.

2. If you have been conditionally added to the Settlement Class and if you want to be excluded from the redefined class and the Proposed Settlement, the Court will exclude you only if you complete and mail, by first class mail, postage prepaid, a written request for exclusion postmarked by _____, 1988. The written request for exclusion must include your name and address, the case number of this action, 89-3001, and, if the request for exclusion is provided by a representative of a class member, the capacity in which such person is acting. The written request for exclusion must be sent by first class mail to:

District Court Clerk
United States District Court
Room 242
167 Mid-America Mall
Memphis, Tennessee 38103

If you timely exclude yourself from the class, you will not be bound by any orders or judgments entered in this case and you will not share in the benefits of the Proposed Settlement. If you wish to be eligible to receive a payment from Settlement Funds, do not file a request for exclusion.

C. If you are an Original Class Member who is also a Settlement Class Member, you do not have the right to exclude yourself from the class. However, you may request that the Court dismiss your claims, in which case you will not remain a member of the Settlement Class. If you share your ownership interest in Eligible Property with one or more persons or entities, you and any co-owner(s) must agree on whether or not to remain a member of the redefined class. Your alternatives are as follows:

1. If you agree with the Proposed Settlement and want to be eligible to receive a payment from Settlement Funds you may do nothing. You do not need to attend the Fairness Hearing unless you want to. If the Proposed Settlement is approved by the Court you will receive additional notice regarding the claims procedure. Unless you request a dismissal of your claims as set forth below, judgments issued by the Court, whether favorable or not and any release given in connection with the Proposed Settlement will be binding upon you. In addition, any Avigation Easement effective as to your real property as a result of the Proposed Settlement will be binding upon you and future owners of the property. You continue to have the right to enter an appearance in this litigation through counsel of your own choosing, at your own expense.

2. You may object to the approval of the Proposed Settlement and appear at the Fairness Hearing by complying with the procedures set forth below. If you object to the Proposed Settlement and desire to be dismissed from the Settlement Class in the event the Proposed Settlement is finally approved you must do both of the following:

(a) File a written statement of objection to the Proposed Settlement with the Court in accordance with the procedure set forth below; and

(b) Following the Fairness Hearing, if you continue to object to the Proposed Settlement, complete and mail, by first class mail, postage prepaid, a written request for dismissal postmarked by _____, 1998. The request for dismissal must include your name and address, the case number of this action, 89-3001, and phone number, and state that you desire to have your claims dismissed and that you understand that as a result of a dismissal of your claims without prejudice you will neither be bound by the Proposed Settlement nor entitled to receive any benefits in accordance with the Proposed Settlement. The written request for dismissal must be sent by first class mail to:

The Honorable Odell Horton
c/o District Court Clerk
United States District Court
Room 242
167 Mid-America Mall
Memphis, Tennessee 38103

If you timely request a dismissal, and the Court grants your request, you will not be bound by any orders or judgments entered in this case and you will not share in the benefits of the Proposed Settlement. You will have the right to commence or continue an action against the Defendant based on any claims asserted in the class action subject to any applicable defenses of the Defendant at your own expense. Any statutes of limitations which have been suspended due to the filing of this case will begin to run again ninety (90) days after the Approval Date. If you wish to be eligible to receive a payment from Settlement Funds, do not file a request for dismissal.

RELEASE AND DISMISSAL

If the Proposed Settlement is approved by the Court and becomes final, then this litigation will be dismissed with prejudice.

The release of claims to be given to the Defendant in the Proposed Settlement is broad and will with certain exceptions release all claims which you may have against the Defendant, commercial air carriers, the City of Memphis, Shelby County, Tennessee, and others concerning activities related to the operation of aircraft on, into or out of Memphis International Airport resulting in noise or vibration or resulting in emissions of air pollutants from such aircraft. The full text of the release is set forth in the Mailed Notice and in the Stipulation of Settlement. You should read it very carefully because it will affect your rights if you remain in the Settlement Class. You may request that a copy of the Mailed Notice be mailed to you by calling Class Counsel at (901) 526-5279 or (901) 525-8781 during regular business hours. You will then be mailed a copy of the Mailed Notice at no cost to you.

AVIGATION EASEMENT

If you remain in the Settlement Class and the Proposed Settlement is approved by the Court and the class action is dismissed with prejudice the Court's final judgment will impose an Avigation Easement on each Eligible Property you own in the State of Tennessee

regardless of whether you choose to file a Settlement Claim or receive a payment from Settlement Funds. If you own Eligible Property in the State of Mississippi you will be required to grant the Avigation Easement to the Defendant before you qualify to receive a payment from Settlement Funds. The Avigation Easement that the Defendant will obtain is a critical element of the Proposed Settlement. You should read the description of the Avigation Easement set forth in full in the Mailed Notice and in the Stipulation of Settlement very carefully because it will affect your rights and may affect the value of your Eligible Property if you remain in the Settlement Class. You may request that a copy of the Mailed Notice be mailed to you by calling Class Counsel at (901) 526-5279 or (901) 525-6781 during regular business hours. You will then be mailed a copy of the Mailed Notice at no cost to you.

FAIRNESS HEARING

The Court will hold a hearing in Courtroom _____, United States District Court, 167 Mid-America Mall, Memphis, Tennessee, at _____m. on _____, 1998 (or such adjourned dates as the Court may direct without further notice to the class):

A. To determine whether the Proposed Settlement is fair, reasonable and adequate and in the best interests of the class, as redefined, and should be approved by the Court, and whether judgment should be entered thereon;

B. To determine whether the class has been fairly and adequately represented by the plaintiffs and by attorneys for plaintiffs and the class;

C. To consider the application of Class Counsel for an award of attorneys' fees and reimbursement of expenses;

D. To consider the application for special awards to such persons in the plaintiff class as are recommended by Class Counsel; and

E. To consider such other matters as the Court may deem proper and necessary.

If you are a member of the redefined class, as set forth in this notice, and you have not timely requested exclusion from the redefined class, or if you will be permanently removed from the class if the Proposed Settlement is finally approved, you may object to the fairness, reasonableness or adequacy of the Proposed Settlement, the fairness or adequacy of representation, or the application for attorneys' fees and expenses or for special awards by filing a written objection or by filing a notice to appear.

Written Objections. Any person who wishes to object to the Proposed Settlement, the fairness or adequacy of representation, or the application for attorneys' fees and expenses or for special awards by written objection, must on or before _____, 1998, file with the District Court Clerk, United States District Court, Room 242, 167 Mid-America Mall, Memphis, Tennessee 38103, a written statement of objection, along with any other supporting materials, papers or briefs that he or she wishes the Court to consider, and must on that same date serve such papers by delivery to:

R. Gratian Brown, Jr., Esq. and
William R. Bradley, Jr., Esq.

Eugene Greener, Jr., Esq.
Harriette R. Coleman, Esq.

GLANKLER BROWN, PLLC
1600 One Commerce Square
Memphis TN 38103

GOODMAN GLAZER GREENER & KREMER
165 Madison Avenue, Suite 1500
Memphis TN 38103

Attorneys for Defendant

Attorneys for Plaintiff Class
Representatives

Objections must be filed with the Court and received by the above counsel no later than _____, 1998. Any objection that is not timely made shall be forever barred. Any attorney representing a class member, at that class member's expense, for the purpose of making objections must file with the District Court Clerk, and serve a notice of appearance, not later than _____, 1998.

Appearance at Fairness Hearing. Any member of the original or redefined class may appear at the Fairness Hearing either in person or through personal counsel hired at such person's expense, to support or object to the fairness, reasonableness or adequacy of the Proposed Settlement, the fairness or adequacy of representation, or the application for attorneys' fees and expenses or for special awards. Those persons or their attorneys intending to appear at the Fairness Hearing must deliver to the above named attorneys and file with the Court, no later than _____, 1998, a notice of intention to appear, setting forth (i) the name, address and telephone number of the class member (and, if applicable, the name, address and telephone number of the class member's attorney), (ii) the objection, if any, including any papers in support thereof, and (iii) the name and address of any witnesses to be presented at the Fairness Hearing, together with a brief statement as to the matters on which they wish to testify and a summary of the proposed testimony. Anyone who does not follow this procedure, shall not be permitted to appear at the Fairness Hearing, except for good cause shown.

ATTORNEYS' FEES, OTHER COSTS AND SPECIAL AWARDS

At the Fairness Hearing, Class Counsel will apply to the Court for an award of attorneys' fees of eighteen (18%) percent of the Settlement Funds and reimbursement of litigation expenses not to exceed \$75,000. In addition, an application will be made for special awards of not more than \$10,000 per person in an aggregate amount of not more than two (2%) percent of the Settlement Funds to be paid to certain persons who have aided the prosecution of the class action and have been recommended for such an award by Class Counsel. If the Court approves the Proposed Settlement, the Court will determine all awards of attorneys' fees and expenses, and special awards, which shall be paid exclusively out of Settlement Funds. Pursuant to the Proposed Settlement, litigation expenses awarded by the Court will be reimbursed by Class Counsel to the entity or individual who paid the amounts to Class Counsel to prosecute this action.

FURTHER INFORMATION

This Summary Notice and the Mailed Notice contain only a summary of the Proposed Settlement. The terms of the Proposed Settlement are set forth in detail in the Stipulation of Settlement, which is available to the public to review and copy at the office of the District Court Clerk, United States District Court for the Western District of Tennessee, Room 242, 167 Mid-

America Mall, Memphis, Tennessee 38103.

You may obtain further information about the Proposed Settlement and request a copy of the Mailed Notice by contacting:

Eugene Greener, Jr., Esq.
Harriette R. Coleman, Esq.

or

Joseph W. Barnwell, Jr., Esq.

GOODMAN GLAZER GREENER & KREMER
165 Madison Avenue, Suite 1500
Memphis TN 38103
(901) 526-5279

EVANS & PETREE
81 Monroe Avenue
Memphis TN 38103
(901) 525-6781

Attorneys for Plaintiff Class
Representatives

Attorneys for Plaintiff Class
Representatives

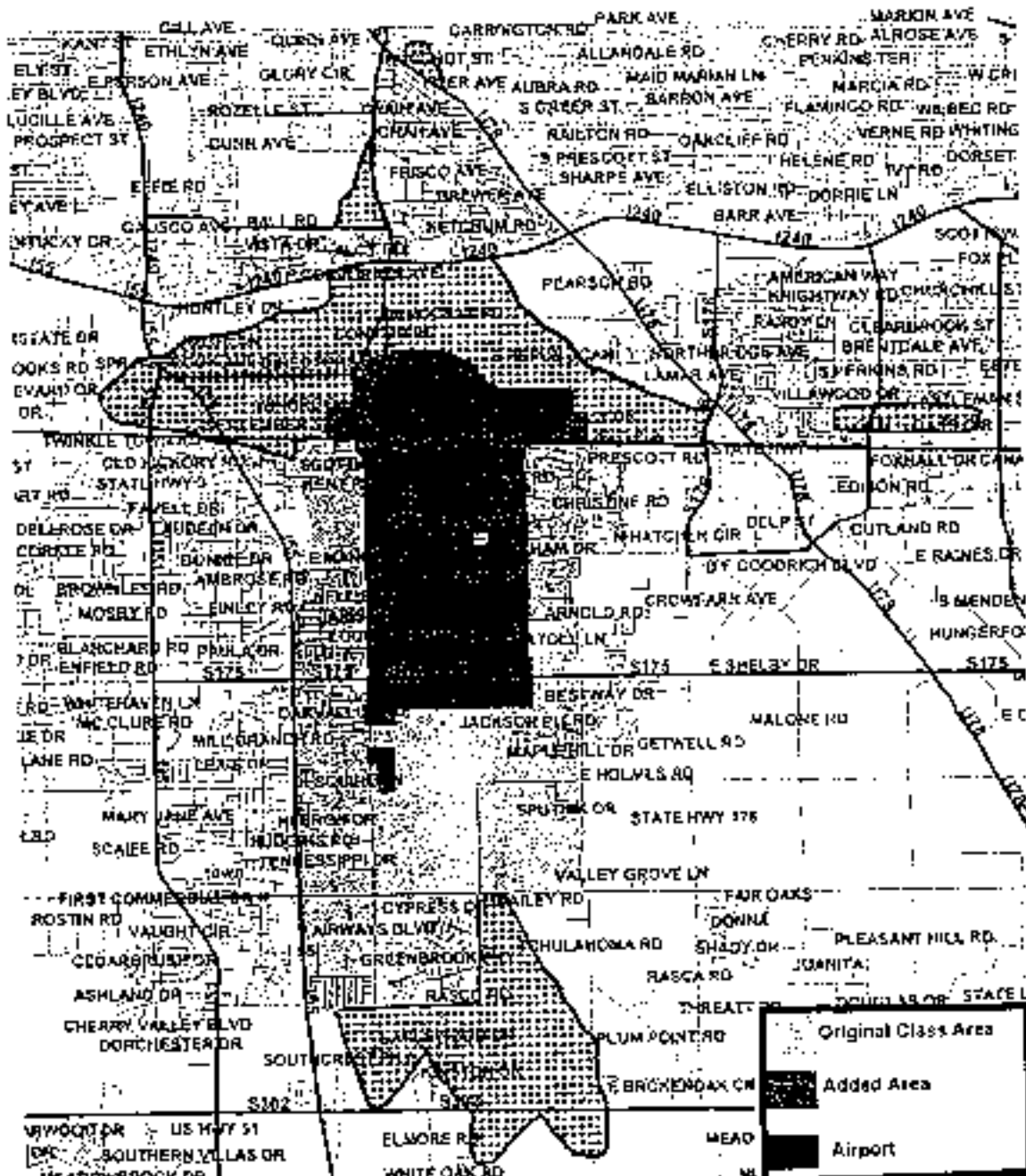
Please do not contact the Court, the Clerk's Office or the Judge.

Dated: _____, 1998

By Order of the Honorable Odell Horton,
Judge of the United State District Court
for the Western District of Tennessee

NOTICE MAP

Geographic Area To Which The Proposed Settlement Applies



If you wish to examine in more detail the geographic area referred to for purposes of this Summary Notice, you may review more detailed maps during normal business hours posted at any of the following locations:

Whitehaven Branch Public Library
4122 Martin Drive
Memphis, Tennessee

Parkway Village Branch Public Library
4656 Knight-Arnold Road
Memphis, Tennessee 38118

Goodman Glazer Greener & Krumer
165 Madison Avenue, Suite 1600
Memphis, Tennessee 38103

Cherokee Branch Public Library
3300 Sharps
Memphis, Tennessee 38111

Southern Public Library
8889 Northwest Drive
Southaven, Mississippi 38671

Evans & Petree
81 Morrow Avenue
Memphis, Tennessee 38103

**EXHIBIT 4
TO STIPULATION OF SETTLEMENT**

ALLOCATION OF SETTLEMENT FUNDS

<u>Property Acquired</u>			<u>No. of Eligible Properties</u>		<u>Payment Amounts</u>	
(1)	On or Before 12/31/73:	Owner Occupied:	1,546	x	\$4,200	= \$6,493,200
		Other:	<u>257</u>	x	\$800	= <u>205,600</u>
		Total:	1,803			\$6,698,800
(2)	1/1/74 through 9/30/87:	Owner Occupied:	3,218	x	\$2,600	= \$8,366,800
		Other:	<u>488</u>	x	\$600	= <u>292,800</u>
		Total:	3,706			\$8,659,600
(3)	10/1/87 through 5/4/93:	Owner Occupied:	2,890	x	\$1,600	= \$4,624,000
		Other:	<u>424</u>	x	\$500	= <u>212,000</u>
		Total:	3,314			\$4,836,000
(4)	On or After 5/5/93:	Owner Occupied:	3,133	x	\$525	= \$1,644,825
		Other:	<u>485</u>	x	\$325	= <u>157,625</u>
		Total:	3,618			\$1,802,450
		Grand Totals:	12,441			\$21,996,850

Total Owner
Occupied Properties

10,787

Total Other
Properties

1,654

Total Owner
Occupied Payout

\$21,128,825

Total Other Payout

\$868,025

Grand Total Properties

12,441

Grand Total Payout

\$21,996,850

EXHIBIT 5
TO STIPULATION OF SETTLEMENT

**PROPERTIES CURRENTLY ELIGIBLE FOR
ACQUISITION UNDER DEFENDANT'S
PROPERTY ACQUISITION PROGRAM**

4473 Airways
4497 Airways
4835 Airways
5307 Airways
5333 Airways
5496 Airways
5568 Airways
8920 Airways
2266 Byrn Road
2113 Goodhaven
2121 Goodhaven
2066 Florette
2705 Ketchum Road
1263 Stateline Road
1285 Stateline Road
1293 Stateline Road
1421 Stateline Road
1451 Stateline Road

EXHIBIT 6
TO STIPULATION OF SETTLEMENT

**ADDITIONAL PROPERTIES ELIGIBLE FOR
ACQUISITION UNDER DEFENDANT'S
PROPERTY ACQUISITION PROGRAM
PURSUANT TO THIS STIPULATION**

1885 E. Brooks Road
3252 Cazassa Road
3256 Cazassa Road
3262 Cazassa Road

EXHIBIT 7
TO STIPULATION OF SETTLEMENT

CONTOUR MAP

1987 NCP Future NEM
vs. 1997 Existing NEM

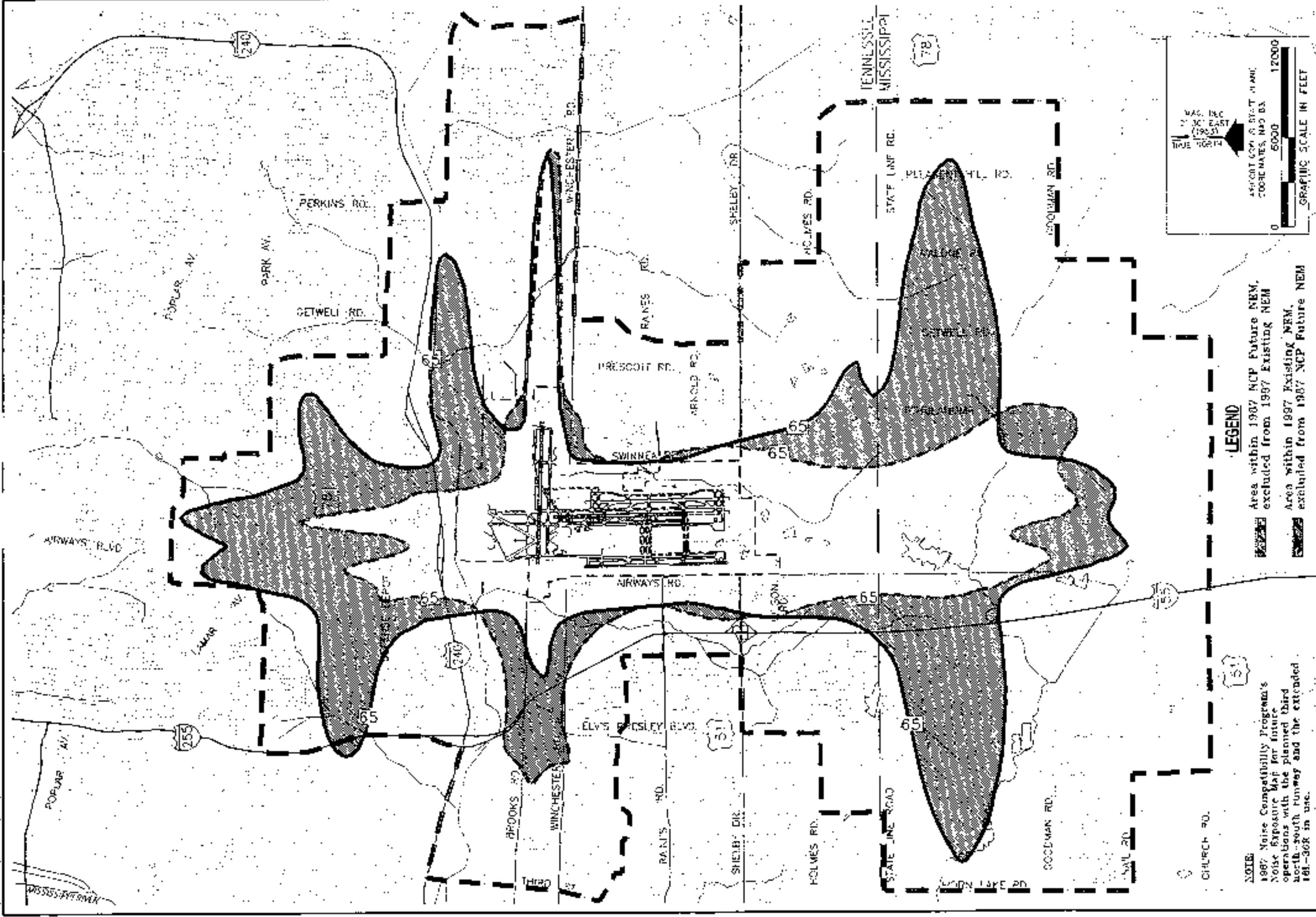

1987 NCP FUTURE NEM
VS. 1997 EXISTING NEM

FIGURE 9.5
DATE: 05-20-97



Memphis International Airport
FAR PART 150 UPDATE

MAN 2861 -
MAN 4861 -
DN59371

EXHIBIT 8 TO STIPULATION OF SETTLEMENT (PROPOSED) - CLAIM FORM - TENNESSEE

MARTHA ALVARADO, ET AL
Plaintiffs,

VS

MEMPHIS-SHELBY COUNTY AIRPORT
AUTHORITY,
Defendant.

Civil Action No.
19-00014-HRC

CLAIM FORM

IMPORTANT NOTICE: Please fill out this form (type or print all information except signature) and return it postmarked no later than fourteen (14) days to Claims Administration Office, _____, Memphis, Tennessee 38____.

IF YOUR COMPLETED, SIGNED CLAIM FORM IS NOT MAILED BY FIRST-CLASS MAIL, POSTAGE PREPAID, AND POSTMARKED BY THE ABOVE DATE, YOUR CLAIM WILL NOT QUALIFY FOR PAYMENT. COMPLETE A SEPARATE CLAIM FORM FOR EACH PROPERTY FOR WHICH YOU SEEK A PAYMENT.

I acknowledge that I have reviewed the Notice of Conditions/Redefinition of the Class, Proposed Settlement, Fairness Hearing, Right to Appeal and Right to Request Exclusion from the Class Action dated _____ and that I have elected to be bound by the terms of the Stipulation of Settlement by remaining a Settlement Class Member after being given either the opportunity to exclude myself or to be removed by the Court from the Class Action lawsuit. I expressly consent to all terms of the Stipulation of Settlement and accept the benefits provided therein.

1. Name(s) _____ SS# _____
Name(s) _____ SS# _____
2. Mailing Address Street _____
City _____ State _____ Zip Code _____ Daytime Phone Number: _____
3. I am a Settlement Class Member due to my ownership of the following improved residential real estate located within the Geographic Area defined by the Court in its order of _____
 - a. Street _____ City _____ State _____ Zip Code _____
 - b. Single Family Residence _____ Duplex _____ Condominium _____ (mark as appropriate)
 - c. I (we) use _____ / do not use _____ this property as my primary residence
 - d. I acquired ownership of this property on ____/____/____ (month/year).
 - e. I continue to own this property. Yes No (If no, give date you transferred your ownership ____/____/____)
 - f. The name and address of all other owners of this property are (provide if applicable and attach separate sheet if space is required)
Name(s) _____ Address _____

BY SUBMISSION OF THIS PROOF OF CLAIM I HEREBY CERTIFY UNDER PENALTY OF PERJURY THAT I AM THE OWNER OF THE PROPERTY IDENTIFIED IN PARAGRAPH 3 ABOVE THAT THE ABOVE STATEMENTS ARE CORRECT AND THAT TO MY KNOWLEDGE NO OTHER PERSON OWNS ANY INTEREST IN THE PROPERTY. I FURTHERMORE SUBMIT MYSELF TO THE PERSONAL JURISDICTION OF THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TENNESSEE AND HEREBY GRANT TO MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY, ITS SUCCESSORS, ASSIGNS AND INSURERS, ALL OF ITS PAST, PRESENT AND FUTURE EMPLOYEES, ALL OF ITS PAST, PRESENT AND FUTURE COMMISSIONERS, THE CITY OF MEMPHIS AND SHELBY COUNTY, TENNESSEE, AND ALL COMMERCIAL AIR CARRIERS WHO HAVE UTILIZED MEMPHIS INTERNATIONAL AIRPORT AT ANY TIME FROM ITS OPENING UNTIL THE APPROVAL DATE OF THE SETTLEMENT, A RELEASE OF ALL CLAIMS AS SET FORTH IN THE STIPULATION OF SETTLEMENT AND THE ORDER OF FINAL JUDGMENT IN MARTHA ALVARADO, ET AL V. MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY, NO. 89-00014-HRC AND ACKNOWLEDGE THAT PURSUANT TO SAID ORDER OF FINAL JUDGMENT THE PROPERTY REFERRED TO IN PARAGRAPH 3 ABOVE IS SUBJECT TO AN AVIGATION EASEMENT IN THE MANNER DEFINED BY THE COURT AS SET FORTH IN THE STIPULATION OF SETTLEMENT AND THE ORDER OF FINAL JUDGMENT.

Signature _____

Date _____

Signature _____

Date _____

THE WILLFUL SUBMISSION OF A FALSE CLAIM CONSTITUTES THE CRIME OF PERJURY,
PUNISHABLE UNDER 18 U.S.C. § 1621

EXHIBIT 9
TO STIPULATION OF SETTLEMENT
[PROPOSED] - CLAIM FORM - MISSISSIPPI

MARTHA ALVARADO, ET. AL.
Plaintiffs,

VS

MEMPHIS-SHELBY COUNTY AIRPORT
AUTHORITY,
Defendant

Civil Action No.
09-30014-DRO

CLAIM FORM

IMPORTANT NOTICE: Please fill out this form (type or print all information except signature) and return it postmarked no later than 1000 year claim period to Clerk's Administration Office, _____, Memphis, Tennessee 38 _____.

IF YOUR COMPLETED, SIGNED CLAIM FORM IS NOT MAILED BY FIRST CLASS MAIL, PCS (AGE PREPAID), AND POSTMARKED BY THE ABOVE DATE, YOUR CLAIM WILL NOT QUALIFY FOR PAYMENT. COMPLETE A SEPARATE CLAIM FORM FOR EACH PROPERTY FOR WHICH YOU SEEK A PAYMENT.

I acknowledge that I have reviewed the Notice of Conditional Redefinition of the Class, Proposed Settlement, Fairness Hearing, Right to Appear and Right to Request Exclusion from the Class Action dated _____ and that I have elected to be bound by the terms of the Stipulation of Settlement by remaining a Settlement Class Member after being given either the opportunity to exclude myself or to be removed by the Court from the Class Action lawsuit. I expressly consent to all terms of the Stipulation of Settlement and accept the benefit provided therein.

1. Name(s) _____ SSN# _____

Name(s) _____ SSN# _____

2. Mailing Address: Street _____

City _____ State _____ Zip Code _____ Daytime Phone Number: _____

3. I am a Settlement Class Member due to my ownership of the following improved residential real estate located within the Geographic Area defined by the Court in its order of _____:

a. Street _____ City _____ State _____ Zip Code _____

b. Single Family Residence _____ Duplex _____ Condominium _____ (check as appropriate)

c. I (we) use _____ / do not use _____ the property as my primary residence

d. I acquired ownership of this property on ____/____/____ (month/year).

e. I continue to own this property: Yes _____ No _____ If no, (give date you transferred your ownership: ____/____/____)

f. The name and address of all other owners of this property are: (include if applicable)

Name(s) _____ Address _____

BY SUBMISSION OF THIS PROOF OF CLAIM, I HEREBY CERTIFY UNDER PENALTY OF PERJURY THAT I AM THE OWNER OF THE PROPERTY IDENTIFIED IN PARAGRAPH 3 ABOVE, THAT THE ABOVE STATEMENTS ARE CORRECT, AND THAT TO MY KNOWLEDGE NO OTHER PERSON OWNS ANY INTEREST IN THE PROPERTY. I FURTHERMORE SUBMIT MYSELF TO THE PERSONAL JURISDICTION OF THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TENNESSEE AND HEREBY GRANT TO MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY, ITS SUCCESSORS, ASSIGNS AND INSURERS, ALL OF ITS PAST, PRESENT AND FUTURE EMPLOYEES, ALL OF ITS PAST, PRESENT AND FUTURE COMMISSIONERS, THE CITY OF MEMPHIS AND SHELBY COUNTY, TENNESSEE, AND ALL COMMERCIAL AIR CARRIERS WHO HAVE UTILIZED MEMPHIS INTERNATIONAL AIRPORT AT ANY TIME FROM ITS OPENING UNTIL THE APPROVAL DATE OF THE SETTLEMENT, A RELEASE OF ALL CLAIMS AS SET FORTH IN THE STIPULATION OF SETTLEMENT AND THE ORDER OF FINAL JUDGMENT IN MARTHA ALVARADO, ET AL. V. MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY, NO. 09-30014-DRO, AND HEREBY GRANT UNTO THE MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY, ITS SUCCESSORS AND ASSIGNS, AN AVIATION EASEMENT AS TO THE PROPERTY IDENTIFIED IN PARAGRAPH 3 ABOVE, THE TERMS OF WHICH ARE SET FORTH IN THE STIPULATION OF SETTLEMENT, IN THE ORDER OF FINAL JUDGMENT AND IN THE FORM ATTACHED HERETO WHICH I HAVE EXECUTED AND DELIVERED TO THE MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY.

Signature _____

Date _____

Signature _____

Date _____

THE WILLFUL SUBMISSION OF A FALSE CLAIM CONSTITUTES THE CRIME OF PERJURY,
PUNISHABLE UNDER 18 U.S.C. § 1621.

**EXHIBIT 10
TO STIPULATION OF SETTLEMENT**

AVIGATION EASEMENT

WHEREAS, _____ (hereinafter the "Grantor") is the owner of a certain tract or parcel of land located in DeSoto County, Mississippi as more particularly described on Exhibit A (the "Property"); and,

WHEREAS, the Memphis-Shelby County Airport Authority (hereinafter the "Authority") is the owner and operator of the Memphis International Airport (hereinafter the "Airport") situated in Memphis, Shelby County, Tennessee, which is located in the vicinity of the Property; and

WHEREAS, the United States District Court for the Western District of Tennessee, Western Division, on the ____ day of _____, entered a judgment in the class action styled Martha Alvarado, et al. v. Memphis-Shelby County Airport Authority, No. 89-3001-HHRO, approving a stipulation of settlement which provides that the Grantor shall execute this Avigation Easement in consideration of the right to receive payment in accordance with such stipulation of settlement.

IN CONSIDERATION of the premises and other good and valuable consideration, the Grantor hereby grants, bargains and conveys to the Authority, its successors and assigns, for the use and benefit of the Authority, the Airport, the operators, owners and users of Aircraft of all types and for the public in general, an avigation easement and right-of-way for the free, unobstructed and unrestricted flight and passage of Aircraft lawfully operated in and through the Airspace above, over, and across the surface of the Property, together with the right to cause in said Airspace such noise, vibration, eddies, vapors, particulates, smoke, dust or other effects as may be inherent in the lawful operation of Aircraft for navigation of or flight or passage in and through said Airspace, and for the use of said Airspace by aircraft for approaching, landing upon, taking off from, maneuvering about or operating on the Airport.

For the purpose of this Avigation Easement:

(a) "Aircraft" is defined as any contrivance now known or hereafter invented, used, or designed for navigation of, or flight in, through and across the air.

(b) "Airspace" is defined as air above the minimum safe altitude of flight prescribed in the regulations of the Federal Aviation Administration as they now exist, and as they may hereafter be amended.

(c) "Operation of Aircraft" is defined as operations of Aircraft in accord with the acts of the federal, state and local laws and regulations issued thereunder, as they now exist, and as they may hereafter be amended.

It is not the intent of this Avigation Easement to authorize any Aircraft operating on, into or out of Memphis International Airport to crash, fall or make a forced landing upon the Property or to drop or allow any objects to fall onto the Property from such Aircraft.

The easement and right-of-way described herein, and all the terms, conditions and provisions contained herein are intended to and shall run with the land and shall be binding upon the Grantor, his heirs, administrators, successors and assigns. In the event one or more of the provisions contained in this Avigation Easement or any part thereof or any application thereof shall be held invalid, illegal, or unenforceable in any respect by a court of competent jurisdiction, the validity, legality, and enforceability of the remaining provisions or parts thereof contained herein and any application thereof shall not in any way be affected or impaired thereby.

The said Avigation Easement and right-of-way and all of the rights appertaining thereto shall be held by the Authority, its successors and assigns, in perpetuity or until the said Airport shall be abandoned and shall cease to be used for public airport purposes.

IN WITNESS WHEREOF, I have hereunto set my hand this ____ day of _____, ____ A.D.

GRANTOR:

Acknowledgement

State of Mississippi; County of DeSoto

Personally appeared before me, the undersigned authority in and for the said county and state, on the ____ day of _____, 199__, within my jurisdiction, the within named _____, who acknowledged that (he)(she)(they) executed the above and foregoing instrument.

My Commission Expires

Notary Public

**EXHIBIT A
LEGAL DESCRIPTION**

OB

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TENNESSEE.
WESTERN DIVISION

98-03022 PM 3-2
CLEAN
W.D. TENN.

MARTHA ALVARADO, et al.,

Plaintiffs,

vs.

No. 89-3001-H BRO

MEMPHIS-SHELBY COUNTY AIRPORT
AUTHORITY,

Defendant.

TRUE COPY
J. HORTON
FR

FINAL JUDGMENT

CL
11

This action came to hearing before the Court with Odell Horton, United States District Court Judge presiding. The issues have been heard and the decision has been rendered. This judgment is entered in accordance with the findings and conclusions set forth in the Court's Memorandum Opinion and Order entered December 11, 1998.

IT IS THEREFORE ORDERED AND ADJUDGED:

1. Approval of Settlement. The Stipulation of Settlement is, after hearing, determined to be fair, adequate, reasonable and in the best interest of the class; therefore, it is approved. The Stipulation of Settlement, as amended by order amending the Stipulation of Settlement entered December 11, 1998, is incorporated herein by

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AGREED AND APPROVED FOR ENTRY:

GOODMAN, GLAZER, GREENER & KREMER, P.C.

165 Madison Avenue, Suite 1500
Memphis, Tennessee 38103-2743
(901) 525-4466

By: Eugene Greener, Jr. & Harriette R. Coleman
Eugene Greener, Jr. (7901)
Harriette R. Coleman (9441)
Counsel for Plaintiff Class Representatives

EVANS & PETREE

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(901) 525-6781

By: Joseph W. Barnwell, Jr. & C. H. ...
Joseph W. Barnwell, Jr. (7792)
Counsel for Plaintiff Class Representatives

GLANKLER BROWN, PLLC

1700 One Commerce Square
Memphis, Tennessee 38103
(901) 525-1322

By: R. Grattan Brown, Jr. & William R. Bradley, Jr.
R. Grattan Brown, Jr. (8441)
William R. Bradley, Jr. (10911)
Attorneys for Defendant

EXHIBIT 3 TO FINAL JUDGMENT

AVIGATION EASEMENT

WHEREAS, _____ (hereinafter the "Grantor") is the owner of a certain tract or parcel of land located in DeSoto County, Mississippi as more particularly described on Exhibit A (the "Property"), and,

WHEREAS, the Memphis-Shelby County Airport Authority (hereinafter the "Authority") is the owner and operator of the Memphis International Airport (hereinafter the "Airport") situated in Memphis, Shelby County, Tennessee, which is located in the vicinity of the Property, and

WHEREAS, the United States District Court for the Western District of Tennessee, Western Division, on the _____ day of _____, entered a judgment in the class action styled Martha Alvarado, et al v. Memphis-Shelby County Airport Authority, No. 89-3001-HBRD, approving a stipulation of settlement which provides that the Grantor shall execute this Aviation Easement in consideration of the right to receive payment in accordance with such stipulation of settlement

IN CONSIDERATION of the premises and other good and valuable consideration, the Grantor hereby grants, bargains and conveys to the Authority, its successors and assigns, for the use and benefit of the Authority, the Airport, the operators, owners and users of Aircraft of all types and for the public in general, an aviation easement and right-of-way for the free, unobstructed and unrestricted flight and passage of Aircraft lawfully operated in and through the Airspace above, over, and across the surface of the Property, together with the right to cause in said Airspace such noise, vibration, odors, vapors, particulates, smoke, dust, or other effects as may be inherent in the lawful Operation of Aircraft for navigation of or flight or passage in and through said Airspace, and for the use of said Airspace by aircraft for approaching, landing upon, taking off from, maneuvering about or operating on the Airport.

For the purpose of this Aviation Easement,

(a) "Aircraft" is defined as any contrivance now known or hereafter invented, used, or designed for navigation of, or flight in, through and across the air.

(b) "Airspace" is defined as air above the minimum safe altitude of flight prescribed in the regulations of the Federal Aviation Administration as they now exist, and as they may hereafter be amended.

(c) "Operation of Aircraft" is defined as operations of Aircraft in accord with the acts of the federal, state and local laws and regulations issued thereunder, as they now exist, and as they may hereafter be amended.

It is not the intent of this Aviation Easement to authorize any Aircraft operating on, into or out of Memphis International Airport to crash, fall or make a forced landing upon the Property or to drop or allow any objects to fall onto the Property from such Aircraft.

The easement and right-of-way described herein, and all the terms, conditions and provisions contained herein are intended to and shall run with the land and shall be binding upon the Grantor, his heirs, administrators, successors and assigns. In the event one or more of the provisions contained in this Aviation Easement or any part thereof or any application thereof shall be held invalid, illegal, or unenforceable in any respect by a court of competent jurisdiction, the validity, legality and enforceability of the remaining provisions or parts thereof contained herein and any application thereof shall not in any way be affected or impaired thereby.

The said Aviation Easement and right-of-way and all of the rights appertaining thereto shall be held by the Authority, its successors and assigns, in perpetuity or until the said Airport shall be abandoned and shall cease to be used for public airport purposes.

IN WITNESS WHEREOF, I have hereunto set my hand this _____ day of _____, A.D.

GRANTOR

Acknowledgement

State of Mississippi, County of DeSoto

Personally appeared before me, the undersigned authority in and for the said county and state, on this _____ day of _____, '99, within my jurisdiction, the within named _____, who acknowledged that (he)(she)(they) executed the above and foregoing instrument.

My Commission Expires _____

Notary Public

EXHIBIT A LEGAL DESCRIPTION

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TENNESSEE
WESTERN DIVISION

FILED BY g D.C.
04 MAR 10 PM 5:03
RECEIVED
U.S. DISTRICT COURT
WESTERN DIVISION

MARTHA ALVARADO, et al.,

Plaintiff,

vs.

No. 89-3001-HBRO

MEMPHIS-SHELBY COUNTY AIRPORT
AUTHORITY,

Defendant

ORDER CLOSING CASE

This Court entered a final judgment on December 22, 1998 pursuant to Rule 54(b) of the Federal Rules of Civil Procedure approving the settlement of this class action. Such judgment was appealed to the United States Court of Appeals for the Sixth Circuit. The appeals court affirmed this Court's judgment by order entered on August 15, 2000. This Court has retained jurisdiction over this action since the issuance of the mandate on September 7, 2000.

Subsequent to the issuance of the mandate, Defendant, Memphis Shelby County Airport Authority ("Airport Authority"), administered the settlement. Based upon the reports filed with the Court, the Airport Authority received 12,608 claims from settlement class members and made payment to 12,430 claimants.

Only 178 claims remain unpaid. Such claims remain unpaid because those claimants failed to provide, after their initial submission of their claim forms, the information or documentation necessary to establish the validity of the claims. The Airport Authority represented to the Court that it has made diligent efforts without success to get the information or documentation necessary to complete the processing of such claims. Each claimant was sent at least three requests or notices requesting a response be submitted to the Airport Authority. The Court finds that the Airport Authority has no obligation to take further action in connection with such claims.

The final judgment entered pursuant to Rule 54(b) of the Federal Rules of Civil Procedure adjudicated all claims except Mr. Edmond Lindsey's claim arising out of Mr. Lindsey's participation in the Airport Authority's property acquisition program. By remaining a class member, Mr. Lindsey is bound by this Court's judgment and the terms of the stipulation of settlement including the release and the avigation easement. Although such final judgment constitutes an adjudication of all Mr. Lindsey's claims not expressly reserved in the judgment, Mr. Lindsey's separate non-class claims have not been settled or adjudicated.

Since the Court has already severed such claims for purposes of discovery and trial, the Court directs the Clerk of the Court to open a new case file and assign

such file a new docket number. Such pleadings shall be confined to only those relating to Mr. Lindsey's claim that Memphis Shelby County Airport Authority did not fairly administer Mr. Lindsey's application when he sought to participate in the Airport Authority's voluntary property acquisition program. Attached to this order is a list of pleadings and orders that the Clerk shall use to create the new file. All future pleadings, orders and other papers filed in such action shall be captioned *Edmond Lindsey v. Memphis Shelby County Airport Authority*.

Based upon counsels' representation, it would appear this case should be closed. The Court finds that class counsel should be discharged from all further responsibility as counsel for the settlement class and the class representatives. The Court finds that Memphis Shelby County Airport Authority has complied with the stipulation of settlement and it has discharged all obligations imposed upon it by the settlement agreement. The Court directs the Clerk to administratively close this case after the creation of a file for the separate claims of Edmond L. Lindsey.

IT IS SO ORDERED.

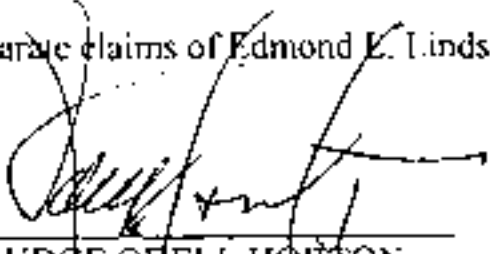

 JUDGE ODELL HORTON
 Date: 3-1-2004

EXHIBIT 1
List Of Pleadings

<u>Date</u>	<u>No.</u>	<u>Docket Entry</u>
1/26/93	156	AMENDED COMPLAINT [27-1] by plaintiff Edmond Lindsey; jury demand (wmw) [Entry date 01/28/93]
2/16/93	157	ANSWE by defendant Memphis-Shelby Cty. to [156-1] (wmw) [Entry date 02/17/93]
2/18/93	158	MOTION by defendant Memphis-Shelby Cty. to strike the pleading filed as amended complaint by Edmond L. Lindsey on Jan. 26, 1993 (wmw) [Entry date 2/19/93]
2/18/93	159	MEMORANDUM by defendant in support of motion to strike the pleading filed as amended complaint by Edmond L. Lindsey on Jan 26, 1993 [158-1] (wmw) [Entry date 2/19/93]
10/31/94	224	ORDER by Senior Judge Robert M. McRae granting in part motion for joinder of claims and remedies pursuant to Fed. R. Civ. P. 18(A) [208-1], denying motions for relief [183-1] and [176-1] as moot, granting in part motion to strike the second amended complaint by Edmond L. Lindsey [158-1] [165-1] severing plaintiff's separate, non-class claims for purpose of pretrial phase, including discovery, and trial (cc: all counsel) (jl) [Entry date 10/31/94]
9/28/98	330	MOTION by defendant Memphis-Shelby Cty. to assign separate, non-claims claims of Edmond L. Lindsey to a different docket number (ehg) [Entry date 9/30/98]
9/28/98	331	MEMORANDUM by defendant Memphis-Shelby Cty. in support of motion to assign separate, non-class claims of Edmond L. Lindsey to a different docket number [330-1] (ehg) [Entry date of 9/30/98]

12/10/98 425 MEMORANDUM AND ORDER: by Judge Odell Horton granting motion for attorney fees, reimbursement of litigation expenses and special awards from settlement funds [358-1], granting motion for attorney fees [355-1] ...conclusion...it is hereby ordered that class members, excluding all persons who have been properly excluded from the class pursuant to Rule 23(c)(2) of the Federal Rules of Civil Procedure or dismissed by the Court pursuant to Rule 42 of the Federal Rules of Civil Procedure and Section 3.7 of the Stipulation of Settlement...the Court finds that there is no reason for delay in the entry of judgment pursuant to Rule 54(b) of the Federal Rules of Civil Procedure, and the Clerk of the District Court is directed to enter judgment in the form approved by the Court. Certification under Rule 54(b) will not result in any unnecessary appellate review nor will review of the adjudicated claims moot any further developments in this case. Even if subsequent appeals are filed, the nature of these claims are such that the appellate court would not have to decide the same issues more than once. (cc: all counsel) (wmw) [Entry date 12/11/98]

12/22/98 427 FINAL JUDGMENT: by Judge Odell Horton...It Is Therefore Ordered and Adjudged: (1) Approval of Settlement. The Stipulation of Settlement is, after hearing, determined to be fair, adequate, reasonable in the be interest of the class; therefore, it is approved. The Stipulation of Settlement, as amended by order amending the Stipulation of Settlement entered 12/11/98, is incorporated herein by reference, and all Settlement Class Members and the Defendant are bound by its terms. ...(5) Eligible Property. "Eligible Property" shall mean the improved residential real estate in the State of Tennessee described in Exh 1 and in the State of Mississippi described in Exh 2 attached hereto upon which there is either a single family residence, a duplex or a condominium. ..(7) Award of Fees and Expenses.

Class counsel is awarded \$3,960,000.00 as compensation and \$79,149.50 as reimbursement for expenses, to be paid from the Settlement Funds made available by the Defendant. Payment shall be made w/in 20 days of the Approval Date. Class Counsel shall pay \$12,000.00 to Wanda Abioto, Esq. w/in 10 days of receipt of payment from the Defendant. (8) Special Awards. Those individuals identified on Exh A to the Court's Memorandum Opinion and Order entered 12/11/98 are awarded the total sum of \$485,000.00 to be paid from the Settlement Funds. Payment shall be made by the Defendant w/in 20 days of the Approval Date to Class Counsel who are directed to make payment to such individuals in the amount set forth in Exh A w/in 10 days of receipt of payment from the defendant. ..12.

Dismissal of Claims. All claims of Settlement Class Members that were asserted against the Defendant in the Class Action Lawsuit, are dismissed with prejudice. This judgment is entered pursuant to Rule 54(b) of the FRCP and adjudicates all claims of all parties (who did not seek voluntary dismissal) except the non-class claims of Edmond L. Lindsey. Nothing in this judgment shall be construed as a determination of Mr. Lindsey's non-class claims that are described in the Court's order entered 10/31/94. (13) Applicability of Judgment. This judgment shall be binding only on Settlement Class Members and expressly shall not be binding upon the following persons: (1) the Original Class Members who were removed from the class pursuant to order granting the joint motion to redefine the class; (2) those persons identified on Exh 4 to this judgment. ..(15) Jurisdiction of the Court. Without affecting the finality of this judgment in any way, the Court retains jurisdiction over the settlement of this case and may enter additional orders to effectuate the fair and orderly administration of the settlement as may be appropriate, including the determination of persons and properties that are subject to the provisions of this judgment. termination case (cc: all counsel) (ehg) [Entry date 12/22/98]

8/21/00 485 ORDER Entered: 8/15/00 from 6th Circuit affirming
the decision of the District Court [445-1], affirming the
decision of the District Court 9437-1 | (ssh) [Entry date
8/22/00]



Notice of Distribution

This notice confirms a copy of the document docketed as number 507 in case 2:89-CV-03001 was distributed by fax, mail, or direct printing on March 4, 2004 to the parties listed.

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Honorable Odell Horton
US DISTRICT COURT

Appendix B

Detailed Aircraft Operational Data

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**CIVILIAN, FIXED-WING AIRCRAFT FLEET MIX
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	% of Civilian, Fixed-Wing Fleet
B190, SW2	1900D	0.012%
B712	717200	1.252%
B722	727200	2.765%
B733	737300	0.012%
B734	737400	0.029%
B737, B739	737700	0.036%
B738	737800	0.817%
B732	737N17	0.002%
B744	747400	0.070%
B752, B757	757PW	7.820%
B763	767300	0.037%
B767	767400	0.002%
B762	767CF6	0.072%
B77L, B772	777300	2.005%
A306	A300-622R	11.005%
A300, A30B, A301	A300B4-203	0.004%
A310	A310-304	4.185%
A319	A319-131	1.403%
A320	A320-211	1.871%
AC50, BE58, C414, DA42, PA34, et.al.	BEC58P	0.584%
C25, C650	CIT3	0.048%
CL60, CRJ1, E55P, F2TH, FA20, GALX, J328	CL600	0.969%
CL30, CRJ2	CL601	15.038%
C150, C172, C177, C77R	CNA172	0.126%
C182	CNA182	0.069%
C206, C210, P210	CNA206	0.288%
C208, EPIC, PC12, TBM7, TBM8	CNA208	2.849%
AC90, BE20, BE9L, C441, GA7, MU2, et.al.	CNA441	0.651%
C25A, C25B, C500, C501, C525, C550, C551	CNA500	0.530%
C560, C56X, LJ60	CNA55B	0.934%
C680	CNA680	0.085%
C750	CNA750	0.101%
CRJ7	CRJ9-ER	0.893%
CRJ9	CRJ9-LR	5.311%
CVLT, E2C	CVR580	0.007%
DC10	DC1030	12.573%
MD10	DC1040	0.003%
DC91	DC910	0.013%

CIVILIAN, FIXED-WING AIRCRAFT FLEET MIX (CONTINUED)

2013 EXISTING CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	% of Civilian, Fixed-Wing Fleet
DC9, DC93, DC94	DC93LW	0.012%
DC95	DC95HW	0.236%
B350, BE9, E110, SW3, SW4	DHC6	0.313%
AT43, DH8A, DH8C, DH8D	DHC8	0.158%
BE30, JS32	DO228	0.060%
AT72, D328	DO328	0.413%
C510, E50P, EA50	ECLIPSE500	0.150%
E120	EMB120	0.009%
E135, E145	EMB145	4.610%
E45X	EMB14L	0.666%
E170	EMB170	0.226%
E190	EMB190	0.003%
F900, FA50, FA90	F10062	0.213%
AA5, COL3, DA40, LNC4, PA22, RV8, et.al.	GASEPF	0.285%
BE35, BE36, M20P, PA32, PA46, SR22, et.al.	GASEPV	0.513%
GLF2	GII	0.008%
GLF3	GIIB	0.009%
GLF4	GIV	0.065%
GL5T, GLEX, GLFS	GV	0.109%
SB20	HS748A	0.002%
ASTR, G150, WW24	IA1125	0.082%
LJ24, LJ25, LR25	LEAR25	0.041%
FA10, H25B, LJ35, LJ45, LJ55, PRM1, et.al.	LEAR35	1.917%
MD11	MD11PW	10.128%
MD80, MD87	MD81	0.008%
MD82	MD82	0.808%
MD83, MD88	MD83	3.560%
MD90	MD9028	0.251%
BE40, MU30	MU3001	0.382%
P28A, P28B, P28R, PA28	PA28	0.033%
PA30	PA30	0.003%
BE60, PA31, PAY1, PAY2, PAY3	PA31	0.133%
P180, SH33, SH36	SD330	0.113%
CN35, JS41	SF340	0.007%
Total		100%

**MILITARY FIXED-WING AIRCRAFT FLEET MIX
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	% of Military Fleet Mix
A10	A10	0.87%
C130, C30J	C130HP	5.63%
C17	C17	3.90%
C20	C-20	0.43%
C5	C5A	26.41%
FA18	F18	0.43%
F18	F18EF	24.24%
AT6, PC7, T6, TEX2	JPATS	25.54%
K35R	KC-135	5.19%
T34, T34T	T34	3.46%
T45	T45	3.90%
Total		100.00%

**ROTARY-WING AIRCRAFT FLEET MIX
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	% of Rotary-Wing Fleet Mix
AH1, A119	A109	1.24%
OH58, H58	B206B3	0.37%
B206L, HELO	B206L	46.48%
UH1, UH-1H, UHY	B212	1.73%
B429, EC45	B429	0.74%
EC30, EC35	EC130	0.87%
H47	CH47D	0.25%
R44	R44	5.32%
H53	S65	0.25%
AH64, H60, H64, UH60	S70	6.18%
AS50	SA355F	35.35%
AS65, H65, MH65	SA356N	1.24%
Total		100%

CIVILIAN, FIXED-WING AIRCRAFT STAGE LENGTH DISTRIBUTION BY AIRCRAFT TYPE
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Stage Length							
		1	2	3	4	5	6	7	Total
B190, SW2	1900D	43%	57%						100%
B712	717200	100%							100%
B722, B727	727200	70%	22%	8%	1%				100%
B733	737300	75%	25%						100%
B734	737400	47%	53%						100%
B737, B739	737700	65%	22%	9%	4%				100%
B738	737800	22%	8%	70%					100%
B732	737N17	100%							100%
B744	747400	36%	20%	2%	13%	11%	18%		100%
B752, B757	757PW	39%	50%	10%					100%
B763	767300	96%					4%		100%
B767	767400	100%							100%
B762	767CF6	100%							100%
B77L, B772	777300	4%	4%		6%	27%	28%	32%	100%
A306	A300-622R	32%	42%	23%	3%				100%
A300, A30B, A301	A300B4-203	0%	100%						100%
A310	A310-304	43%	46%	6%	5%				100%
A319	A319-131	20%	60%	20%					100%
A320	A320-211	13%	54%	33%					100%
AC50, BE58, C414, DA42, PA34, et.al.	BEC58P	100%							100%
C25, C650	CIT3	100%							100%
CL60, CRJ1, E55P, F2TH, FA20, GALX, J328	CL600	100%							100%
CL30, CRJ2	CL601	100%							100%
C150, C172, C177, C77R	CNA172	100%							100%
C182	CNA182	100%							100%
C206, C210, P210	CNA206	100%							100%
C208, EPIC, PC12, TBM7, TBM8	CNA208	100%							100%
AC90, BE20, BE9L, C441, GA7, MU2, et.al.	CNA441	100%							100%
C25A, C25B, C500, C501, C525, C550, C551	CNA500	100%							100%
C560, C56X, LJ60	CNA55B	100%							100%
C680	CNA680	100%							100%
C750	CNA750	100%							100%
CRJ7	CRJ9-ER	78%	21%	1%					100%
CRJ9	CRJ9-LR	52%	36%	12%					100%
CVLT, E2C	CVR580	0%	100%						100%
DC10	DC1030	31%	46%	13%	10%				100%
MD10	DC1040	67%	33%						100%
DC91	DC910	25%	75%						100%
DC9, DC93, DC94	DC93LW		86%	14%					100%
DC95	DC95HW	51%	49%						100%
B350, BE9, E110, SW3, SW4	DHC6	100%							100%
AT43, DH8A, DH8C, DH8D	DHC8	100%							100%
BE30, JS32	DO228	100%							100%
AT72, D328	DO328	100%							100%
C510, E50P, EA50	ECLIPSE500	77%	23%						100%

CIVILIAN, FIXED-WING AIRCRAFT STAGE LENGTH DISTRIBUTION BY AIRCRAFT TYPE (CONTINUED)
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Stage Length							Total
		1	2	3	4	5	6	7	
E120	EMB120	100%							100%
E135, E145	EMB145	79%	21%						100%
E45X	EMB14L	28%	72%						100%
E170	EMB170	63%	36%	1%					100%
E190	EMB190	50%		50%					100%
F900, FA50, FA90	F10062	55%	34%	12%					100%
AA5, COL3, DA40, LNC4, PA22, RV8, et.al.	GASEPF	100%							100%
BE35, BE36, M20P, PA32, PA46, SR22, et.al.	GASEPV	100%							100%
GLF2	GII	100%							100%
GLF3	GIIB	100%							100%
GLF4	GIV	100%							100%
GL5T, GLEX, GLFS	GV	100%							100%
SB20	HS748A	100%							100%
ASTR, G150, WW24	IA1125	100%							100%
LJ24, LJ25, LR25	LEAR25	100%							100%
FA10, H25B, LJ35, LJ45, LJ55, PRM1, et.al.	LEAR35	100%							100%
MD11	MD11PW	9%	38%	18%	22%	2%	11%		100%
MD80, MD87	MD81	100%							100%
MD82	MD82	99%	1%						100%
MD83, MD88	MD83	52%	48%						100%
MD90	MD9028	79%	21%						100%
BE40, MU30	MU3001	100%							100%
P28A, P28B, P28R, PA28	PA28	100%							100%
PA30	PA30	100%							100%
BE60, PA31, PAY1, PAY2, PAY3	PA31	100%							100%
P180, SH33, SH36	SD330	100%							100%
CN35, JS41	SF340	100%							100%
Total		55%	28%	10%	4%	1%	2%	1%	100%

**CIVILIAN, FIXED-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	Op Type	Day	Night
B190, SW2	1900D	A	86%	14%
		D	86%	14%
B712	717200	A	95%	5%
		D	77%	23%
B722	727200	A	26%	74%
		D	21%	79%
B733	737300	A	86%	14%
		D	75%	25%
B734	737400	A	72%	28%
		D	88%	12%
B737, B739	737700	A	95%	5%
		D	65%	35%
B738	737800	A	79%	21%
		D	97%	3%
B732	737N17	A	100%	0%
		D	100%	0%
B744	747400	A	83%	18%
		D	56%	44%
B752, B757	757PW	A	32%	68%
		D	27%	73%
B763	767300	A	38%	62%
		D	13%	88%
B767	767400	A	0%	100%
		D	0%	100%
B762	767CF6	A	85%	15%
		D	2%	98%
B77L, B772	777300	A	24%	76%
		D	16%	84%
A306	A300-622R	A	47%	53%
		D	48%	52%
A300, A30B, A301	A300B4-203	A	0%	100%
		D	0%	100%
A310	A310-304	A	32%	68%
		D	29%	71%
A319	A319-131	A	97%	3%
		D	94%	6%
A320	A320-211	A	86%	14%
		D	99%	1%

CIVILIAN, FIXED-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE (CONTINUED)
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Op Type	Day	Night
AC50, BE58, C414, DA42, PA34, et.al.	BEC58P	A	79%	21%
		D	74%	26%
C25, C650	CIT3	A	100%	0%
		D	93%	7%
CL60, CRJ1, E55P, F2TH, FA20, GALX, J328	CL600	A	73%	27%
		D	71%	29%
CL30, CRJ2	CL601	A	89%	11%
		D	98%	2%
C150, C172, C177, C77R	CNA172	A	97%	3%
		D	96%	4%
C182	CNA182	A	97%	3%
		D	92%	8%
C206, C210, P210	CNA206	A	44%	56%
		D	50%	50%
C208, EPIC, PC12, TBM7, TBM8	CNA208	A	67%	33%
		D	55%	45%
AC90, BE20, BE9L, C441, GA7, MU2, et.al.	CNA441	A	93%	7%
		D	88%	12%
C25A, C25B, C500, C501, C525, C550, C551	CNA500	A	94%	6%
		D	94%	6%
C560, C56X, LJ60	CNA55B	A	97%	3%
		D	88%	12%
C680	CNA680	A	92%	8%
		D	98%	2%
C750	CNA750	A	100%	0%
		D	92%	8%
CRJ7	CRJ9-ER	A	95%	5%
		D	93%	7%
CRJ9	CRJ9-LR	A	87%	13%
		D	92%	8%
CVLT, E2C	CVR580	A	100%	0%
		D	75%	25%
DC10	DC1030	A	51%	49%
		D	51%	49%
MD10	DC1040	A	100%	0%
		D	33%	67%
DC91	DC910	A	75%	25%
		D	75%	25%
DC9, DC93, DC94	DC93LW	A	86%	14%
		D	86%	14%

CIVILIAN, FIXED-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE (CONTINUED)
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Op Type	Day	Night
DC95	DC95HW	A	100%	0%
		D	100%	0%
B350, BE9, E110, SW3, SW4	DHC6	A	80%	20%
		D	78%	22%
AT43, DH8A, DH8C, DH8D	DHC8	A	58%	42%
		D	33%	67%
BE30, JS32	DO228	A	92%	8%
		D	91%	9%
AT72, D328	DO328	A	28%	72%
		D	57%	43%
C510, E50P, EA50	ECLIPSE500	A	98%	2%
		D	90%	10%
E120	EMB120	A	75%	25%
		D	29%	71%
E135, E145	EMB145	A	89%	11%
		D	88%	12%
E45X	EMB14L	A	80%	20%
		D	93%	7%
E170	EMB170	A	99%	1%
		D	99%	1%
E190	EMB190	A	100%	0%
		D	100%	0%
F900, FA50, FA90	F10062	A	96%	4%
		D	80%	20%
AA5, COL3, DA40, LNC4, PA22, RV8, et.al.	GASEPF	A	94%	6%
		D	92%	8%
BE35, BE36, M20P, PA32, PA46, SR22, et.al.	GASEPV	A	98%	2%
		D	90%	10%
GLF2	GII	A	100%	0%
		D	100%	0%
GLF3	GIIB	A	83%	17%
		D	100%	0%
GLF4	GIV	A	92%	8%
		D	97%	3%
GL5T, GLEX, GLFS	GV	A	91%	9%
		D	93%	7%
SB20	HS748A	A	100%	0%
		D	0%	100%
ASTR, G150, WW24	IA1125	A	94%	6%
		D	94%	6%

CIVILIAN, FIXED-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE (CONTINUED)
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Op Type	Day	Night
LJ24, LJ25, LR25	LEAR25	A	70%	30%
		D	73%	27%
FA10, H25B, LJ35, LJ45, LJ55, PRM1, et.al.	LEAR35	A	91%	9%
		D	87%	13%
MD11	MD11PW	A	55%	45%
		D	53%	47%
MD80, MD87	MD81	A	100%	0%
		D	43%	57%
MD82	MD82	A	89%	11%
		D	80%	20%
MD83, MD88	MD83	A	87%	13%
		D	91%	9%
MD90	MD9028	A	97%	3%
		D	97%	3%
BE40, MU30	MU3001	A	96%	4%
		D	85%	15%
P28A, P28B, P28R, PA28	PA28	A	100%	0%
		D	86%	14%
PA30	PA30	A	100%	0%
		D	100%	0%
BE60, PA31, PAY1, PAY2, PAY3	PA31	A	93%	7%
		D	91%	9%
P180, SH33, SH36	SD330	A	91%	9%
		D	90%	10%
CN35, JS41	SF340	A	100%	0%
		D	100%	0%
Total			65%	35%

ROTARY-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Day	Night
AH1, A119	A109	100%	0%
OH58, H58	B206B3	100%	0%
B206L, HELO	B206L	87%	13%
UH1, UH-1H, UHY	B212	100%	0%
B429, EC45	B429	100%	0%
EC30, EC35	EC130	100%	0%
H47	CH47D	100%	0%
R44	R44	100%	0%
H53	S65	100%	0%
AH64, H60, H64, UH60	S70	100%	0%
AS50	SA355F	73%	27%
AS65, H65, MH65	SA356N	100%	0%
Total		85%	15%

MILITARY, FIXED-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Day	Night
A10	A10	100%	0%
C130, C30J	C130HP	100%	0%
C17	C17	100%	0%
C20	C-20	100%	0%
C5	C5A	95%	5%
FA18	F18	100%	0%
F18	F18EF	98%	2%
AT6, PC7, T6, TEX2	JPATS	100%	0%
K35R	KC-135	100%	0%
T34, T34T	T34	100%	0%
T45	T45	100%	0%
Total		98%	2%

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE

2013 EXISTING CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
B190, SW2	1900D	Day	A	0%	0%	0%	50%	0%	0%	50%	0%	100%
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
		Day	D	33%	0%	0%	50%	17%	0%	0%	0%	100%
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
B712	717200	Day	A	3%	4%	28%	14%	2%	43%	5%	0%	100%
		Night		0%	0%	17%	2%	0%	59%	22%	0%	100%
		Day	D	18%	1%	24%	0%	26%	25%	0%	5%	100%
		Night		6%	1%	60%	0%	11%	21%	0%	1%	100%
B722, B727	727200	Day	A	4%	10%	20%	21%	3%	20%	21%	1%	100%
		Night		1%	4%	3%	30%	0%	24%	32%	5%	100%
		Day	D	15%	9%	22%	17%	13%	12%	9%	3%	100%
		Night		13%	40%	19%	8%	4%	4%	11%	0%	100%
B733	737300	Day	A	17%	0%	17%	0%	50%	17%	0%	0%	100%
		Night		0%	0%	0%	0%	0%	0%	0%	100%	100%
		Day	D	33%	0%	0%	0%	17%	33%	17%	0%	100%
		Night		0%	50%	0%	0%	0%	50%	0%	0%	100%
B734	737400	Day	A	15%	8%	8%	15%	31%	15%	8%	0%	100%
		Night		0%	0%	20%	20%	20%	0%	40%	0%	100%
		Day	D	20%	20%	7%	7%	33%	0%	7%	7%	100%
		Night		50%	0%	0%	0%	50%	0%	0%	0%	100%
B737, B739	737700	Day	A	21%	16%	11%	5%	11%	32%	5%	0%	100%
		Night		0%	0%	0%	0%	0%	100%	0%	0%	100%
		Day	D	13%	13%	13%	7%	13%	20%	13%	7%	100%
		Night		25%	0%	38%	25%	13%	0%	0%	0%	100%
B738	737800	Day	A	4%	5%	35%	3%	4%	43%	5%	1%	100%
		Night		5%	6%	38%	3%	1%	44%	3%	0%	100%
		Day	D	8%	1%	39%	2%	11%	38%	1%	1%	100%
		Night		7%	0%	43%	14%	21%	7%	7%	0%	100%
B732	737N17	Day	A	100%	0%	0%	0%	0%	0%	0%	0%	100%
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
		Day	D	24%	18%	6%	6%	15%	0%	30%	0%	100%
		Night		43%	0%	0%	29%	14%	0%	14%	0%	100%
B744	747400	Day	A	4%	60%	0%	4%	0%	0%	28%	4%	100%
		Night		5%	15%	0%	55%	5%	0%	20%	0%	100%
		Day	D	3%	8%	20%	14%	4%	32%	17%	3%	100%
		Night		0%	4%	4%	31%	1%	22%	31%	7%	100%
B752, B757	757PW	Day	A	6%	12%	45%	6%	2%	21%	8%	0%	100%
		Night		3%	38%	19%	21%	1%	6%	12%	0%	100%
		Day	D	0%	38%	0%	0%	0%	13%	50%	0%	100%
		Night		23%	0%	0%	46%	15%	0%	15%	0%	100%

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE (CONTINUED)

2013 EXISTING CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
B763	767300	Day	A	33%	0%	0%	33%	33%	0%	0%	0%	100%
		Night		0%	14%	0%	43%	29%	0%	14%	0%	100%
		Day	D	-	-	-	-	-	-	-	-	-
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
B767	767400	Day	A	-	-	-	-	-	-	-	-	-
		Night		0%	100%	0%	0%	0%	0%	0%	0%	100%
		Day	D	0%	32%	0%	0%	6%	0%	62%	0%	100%
		Night		17%	33%	0%	0%	17%	0%	33%	0%	100%
B762	767CF6	Day	A	0%	0%	0%	0%	100%	0%	0%	0%	100%
		Night		11%	4%	0%	13%	67%	0%	4%	0%	100%
		Day	D	3%	18%	8%	2%	2%	27%	28%	12%	100%
		Night		1%	7%	5%	6%	1%	21%	50%	8%	100%
B77L, B772	777300	Day	A	20%	11%	27%	14%	9%	13%	6%	0%	100%
		Night		28%	16%	5%	34%	7%	5%	4%	0%	100%
		Day	D	5%	15%	16%	13%	9%	18%	23%	2%	100%
		Night		1%	5%	6%	18%	1%	40%	22%	7%	100%
A306	A300-622R	Day	A	5%	28%	33%	3%	3%	15%	12%	0%	100%
		Night		2%	35%	33%	12%	1%	8%	9%	0%	100%
		Day	D	-	-	-	-	-	-	-	-	-
		Night		0%	0%	0%	0%	0%	50%	50%	0%	100%
A300, A30B, A301	A300B4-203	Day	A	-	-	-	-	-	-	-	-	-
		Night		0%	33%	0%	0%	33%	0%	33%	0%	100%
		Day	D	4%	12%	15%	21%	7%	20%	19%	2%	100%
		Night		1%	4%	5%	22%	0%	39%	22%	7%	100%
A310	A310-304	Day	A	4%	24%	37%	3%	3%	19%	9%	1%	100%
		Night		2%	35%	36%	10%	0%	9%	7%	0%	100%
		Day	D	9%	16%	16%	8%	9%	23%	19%	1%	100%
		Night		4%	11%	0%	14%	18%	18%	36%	0%	100%
A319	A319-131	Day	A	28%	1%	18%	1%	32%	17%	1%	2%	100%
		Night		6%	14%	6%	22%	32%	12%	8%	0%	100%
		Day	D	4%	11%	26%	5%	3%	35%	15%	0%	100%
		Night		3%	27%	12%	9%	7%	14%	27%	0%	100%
A320	A320-211	Day	A	23%	1%	20%	1%	26%	28%	1%	1%	100%
		Night		20%	7%	27%	0%	33%	13%	0%	0%	100%
		Day	D	15%	10%	8%	32%	10%	8%	11%	6%	100%
		Night		6%	17%	2%	36%	6%	0%	12%	21%	100%
AC50, BE58, C414, DA42, PA34, et.al.	BEC58P	Day	A	22%	12%	10%	32%	4%	6%	6%	8%	100%
		Night		8%	10%	0%	56%	8%	0%	6%	13%	100%
		Day	D	7%	28%	7%	14%	10%	3%	28%	3%	100%
		Night		-	-	-	-	-	-	-	-	-

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE (CONTINUED)

2013 EXISTING CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
C25, C650	CIT3	Day	A	33%	7%	15%	15%	11%	15%	4%	0%	100%
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
		Day	D	17%	13%	9%	23%	10%	12%	16%	1%	100%
		Night		2%	3%	7%	18%	1%	32%	11%	24%	100%
CL60, CRJ1, E55P, F2TH, FA20, GALX, J328	CL600	Day	A	34%	7%	7%	22%	13%	7%	4%	6%	100%
		Night		25%	5%	15%	42%	6%	5%	0%	4%	100%
		Day	D	5%	13%	24%	7%	5%	31%	15%	0%	100%
		Night		1%	17%	26%	6%	1%	29%	19%	0%	100%
CL30, CRJ2	CL601	Day	A	21%	2%	24%	1%	24%	26%	1%	1%	100%
		Night		52%	1%	3%	6%	28%	9%	0%	0%	100%
		Day	D	5%	11%	7%	41%	2%	0%	29%	5%	100%
		Night		0%	0%	50%	50%	0%	0%	0%	0%	100%
C150, C172, C177, C77R	CNA172	Day	A	13%	16%	10%	37%	3%	3%	12%	6%	100%
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
		Day	D	7%	14%	14%	43%	0%	11%	7%	4%	100%
		Night		0%	0%	0%	0%	0%	0%	100%	0%	100%
C182	CNA182	Day	A	24%	14%	4%	37%	6%	4%	6%	4%	100%
		Night		50%	50%	0%	0%	0%	0%	0%	0%	100%
		Day	D	5%	18%	3%	42%	5%	4%	15%	8%	100%
		Night		10%	19%	0%	22%	4%	0%	7%	37%	100%
C206, C210, P210	CNA206	Day	A	32%	14%	10%	21%	7%	4%	9%	2%	100%
		Night		9%	1%	0%	73%	7%	0%	4%	6%	100%
		Day	D	9%	5%	15%	33%	6%	20%	6%	5%	100%
		Night		1%	3%	8%	19%	2%	10%	53%	3%	100%
C208, EPIC, PC12, TBM7, TBM8	CNA208	Day	A	29%	5%	8%	33%	10%	7%	1%	7%	100%
		Night		38%	15%	10%	10%	5%	2%	3%	17%	100%
		Day	D	10%	17%	5%	33%	9%	2%	23%	3%	100%
		Night		0%	15%	7%	41%	4%	0%	33%	0%	100%
AC90, BE20, BE9L, C441, GA7, MU2, et.al.	CNA441	Day	A	27%	12%	5%	32%	7%	4%	8%	5%	100%
		Night		20%	22%	0%	39%	2%	0%	2%	15%	100%
		Day	D	17%	21%	4%	19%	11%	3%	23%	2%	100%
		Night		0%	16%	5%	26%	0%	5%	37%	11%	100%
C25A, C25B, C500, C501, C525, C550, C551	CNA500	Day	A	24%	15%	6%	27%	10%	5%	8%	5%	100%
		Night		30%	15%	0%	35%	15%	0%	5%	0%	100%
		Day	D	16%	20%	6%	17%	11%	5%	24%	2%	100%
		Night		0%	0%	0%	47%	7%	7%	33%	7%	100%
C560, C56X, LJ60	CNA55B	Day	A	31%	10%	8%	26%	9%	4%	5%	6%	100%
		Night		40%	13%	0%	35%	1%	0%	7%	3%	100%
		Day	D	17%	19%	13%	11%	13%	9%	19%	0%	100%
		Night		0%	0%	25%	25%	0%	25%	25%	0%	100%

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE (CONTINUED)

2013 EXISTING CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
C680	CNA680	Day	A	39%	2%	10%	22%	4%	10%	4%	10%	100%
		Night		0%	0%	0%	0%	100%	0%	0%	0%	100%
		Day	D	14%	15%	12%	19%	14%	14%	10%	3%	100%
		Night		-	-	-	-	-	-	-	-	-
C750	CNA750	Day	A	28%	10%	9%	24%	14%	5%	7%	3%	100%
		Night		20%	0%	0%	80%	0%	0%	0%	0%	100%
		Day	D	11%	25%	6%	10%	11%	8%	29%	1%	100%
		Night		8%	16%	0%	8%	16%	20%	32%	0%	100%
CRJ7	CRJ9-ER	Day	A	31%	3%	12%	0%	37%	15%	1%	1%	100%
		Night		40%	0%	0%	8%	48%	0%	5%	0%	100%
		Day	D	6%	13%	22%	10%	5%	29%	14%	1%	100%
		Night		2%	5%	29%	7%	5%	31%	20%	1%	100%
CRJ9	CRJ9-LR	Day	A	19%	1%	25%	0%	24%	29%	1%	1%	100%
		Night		55%	1%	3%	2%	33%	5%	1%	0%	100%
		Day	D	0%	50%	25%	0%	0%	0%	25%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
CVLT, E2C	CVR580	Day	A	0%	100%	0%	0%	0%	0%	0%	0%	100%
		Night		100%	0%	0%	0%	0%	0%	0%	0%	100%
		Day	D	5%	14%	17%	11%	8%	21%	22%	2%	100%
		Night		1%	5%	6%	16%	1%	33%	30%	9%	100%
DC10	DC1030	Day	A	9%	27%	30%	3%	4%	14%	13%	0%	100%
		Night		3%	22%	41%	16%	0%	9%	8%	0%	100%
		Day	D	0%	0%	0%	0%	0%	100%	0%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
MD10	DC1040	Day	A	0%	0%	100%	0%	0%	0%	0%	0%	100%
		Night		0%	50%	0%	0%	50%	0%	0%	0%	100%
		Day	D	0%	0%	0%	33%	33%	0%	33%	0%	100%
		Night		0%	50%	0%	0%	0%	0%	50%	0%	100%
DC91	DC910	Day	A	0%	33%	0%	0%	33%	0%	33%	0%	100%
		Night		0%	100%	0%	0%	0%	0%	0%	0%	100%
		Day	D	17%	50%	17%	0%	0%	17%	0%	0%	100%
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
DC9, DC93, DC94	DC93LW	Day	A	50%	17%	0%	0%	17%	0%	17%	0%	100%
		Night		0%	100%	0%	0%	0%	0%	0%	0%	100%
		Day	D	14%	15%	11%	12%	10%	24%	14%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
DC95	DC95HW	Day	A	25%	1%	17%	1%	28%	25%	1%	3%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	11%	15%	6%	29%	13%	5%	20%	1%	100%
		Night		0%	3%	3%	38%	3%	27%	11%	16%	100%

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE (CONTINUED)

2013 EXISTING CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
B350, BE9, E110, SW3, SW4	DHC6	Day	A	24%	7%	4%	34%	7%	6%	11%	7%	100%
		Night		10%	5%	5%	48%	5%	0%	2%	26%	100%
		Day	D	9%	15%	9%	38%	2%	19%	8%	0%	100%
		Night		0%	0%	3%	18%	0%	8%	68%	3%	100%
AT43, DH8A, DH8C, DH8D	DHC8	Day	A	21%	6%	21%	15%	15%	3%	3%	15%	100%
		Night		59%	6%	8%	3%	8%	5%	3%	9%	100%
		Day	D	17%	11%	3%	31%	11%	8%	17%	3%	100%
		Night		0%	0%	0%	67%	0%	0%	33%	0%	100%
BE30, JS32	DO228	Day	A	33%	13%	0%	23%	20%	0%	7%	3%	100%
		Night		33%	33%	0%	0%	0%	0%	0%	33%	100%
		Day	D	1%	3%	6%	69%	1%	15%	3%	1%	100%
		Night		2%	3%	2%	79%	1%	3%	8%	2%	100%
AT72, D328	DO328	Day	A	14%	46%	2%	5%	11%	0%	22%	0%	100%
		Night		61%	21%	4%	3%	3%	1%	7%	1%	100%
		Day	D	17%	14%	10%	14%	10%	12%	17%	5%	100%
		Night		50%	0%	0%	0%	0%	0%	50%	0%	100%
C510, E50P, EA50	ECLIPSE500	Day	A	30%	13%	7%	25%	11%	6%	2%	6%	100%
		Night		44%	0%	0%	44%	11%	0%	0%	0%	100%
		Day	D	0%	0%	0%	67%	33%	0%	0%	0%	100%
		Night		0%	0%	0%	0%	0%	100%	0%	0%	100%
E120	EMB120	Day	A	0%	0%	0%	50%	50%	0%	0%	0%	100%
		Night		0%	0%	0%	80%	0%	0%	20%	0%	100%
		Day	D	13%	16%	15%	5%	16%	16%	19%	1%	100%
		Night		9%	8%	6%	5%	18%	31%	23%	0%	100%
E135, E145	EMB145	Day	A	38%	1%	8%	0%	39%	11%	1%	1%	100%
		Night		54%	0%	6%	0%	35%	3%	1%	0%	100%
		Day	D	7%	8%	19%	4%	16%	37%	9%	1%	100%
		Night		12%	0%	11%	1%	19%	49%	5%	2%	100%
E45X	EMB14L	Day	A	30%	1%	10%	1%	41%	16%	1%	1%	100%
		Night		74%	0%	0%	0%	26%	0%	0%	0%	100%
		Day	D	4%	10%	19%	0%	3%	46%	16%	1%	100%
		Night		0%	0%	0%	0%	0%	0%	100%	0%	100%
E170	EMB170	Day	A	15%	1%	23%	0%	28%	33%	0%	1%	100%
		Night		0%	0%	0%	0%	100%	0%	0%	0%	100%
		Day	D	0%	50%	50%	0%	0%	0%	0%	0%	100%
		Night										
E190	EMB190	Day	A	100%	0%	0%	0%	0%	0%	0%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	16%	12%	11%	17%	12%	13%	17%	2%	100%
		Night		0%	20%	0%	20%	20%	20%	20%	0%	100%

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE (CONTINUED)

**2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
F900, FA50, FA90	F10062	Day	A	27%	8%	6%	29%	13%	7%	7%	4%	100%
		Night		35%	8%	0%	38%	8%	4%	4%	4%	100%
		Day	D	5%	13%	5%	43%	13%	10%	13%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
AA5, COL3, DA40, LNC4, PA22, RV8, et.al.	GASEPF	Day	A	19%	17%	1%	39%	6%	2%	9%	7%	100%
		Night		0%	30%	0%	50%	0%	0%	10%	10%	100%
		Day	D	8%	12%	7%	39%	9%	6%	15%	4%	100%
		Night		0%	0%	0%	43%	0%	29%	14%	14%	100%
BE35, BE36, M20P, PA32, PA46, SR22, et.al.	GASEPV	Day	A	27%	14%	5%	27%	10%	5%	6%	6%	100%
		Night		31%	9%	0%	38%	6%	3%	3%	9%	100%
		Day	D	20%	40%	0%	0%	0%	0%	40%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
GLF2	GII	Day	A	0%	60%	0%	20%	20%	0%	0%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	20%	40%	0%	0%	0%	20%	20%	0%	100%
		Night		0%	0%	0%	0%	0%	0%	100%	0%	100%
GLF3	GIIB	Day	A	0%	40%	0%	20%	40%	0%	0%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	6%	19%	11%	14%	14%	17%	19%	0%	100%
		Night		0%	33%	0%	0%	33%	0%	33%	0%	100%
GLF4	GIV	Day	A	37%	8%	8%	24%	11%	0%	5%	8%	100%
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
		Day	D	7%	10%	10%	19%	14%	24%	15%	2%	100%
		Night		17%	17%	0%	33%	0%	33%	0%	0%	100%
GL5T, GLEX, GLFS	GV	Day	A	37%	2%	5%	23%	11%	10%	5%	8%	100%
		Night		20%	0%	20%	40%	20%	0%	0%	0%	100%
		Day	D	0%	0%	0%	0%	100%	0%	0%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
SB20	HS748A	Day	A	-	-	-	-	-	-	-	-	-
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
		Day	D	13%	15%	7%	26%	11%	4%	24%	0%	100%
		Night		0%	33%	0%	67%	0%	0%	0%	0%	100%
ASTR, G150, WW24	IA1125	Day	A	36%	11%	9%	17%	13%	2%	4%	9%	100%
		Night		100%	0%	0%	0%	0%	0%	0%	0%	100%
		Day	D	0%	50%	0%	13%	13%	6%	19%	0%	100%
		Night		0%	0%	0%	29%	0%	0%	43%	29%	100%
LJ24, LJ25, LR25	LEAR25	Day	A	32%	21%	11%	26%	0%	0%	0%	11%	100%
		Night		14%	43%	0%	29%	0%	0%	14%	0%	100%
		Day	D	13%	16%	8%	23%	10%	10%	17%	2%	100%
		Night		5%	11%	3%	37%	5%	13%	23%	4%	100%

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE (CONTINUED)

2013 EXISTING CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
FA10, H25B, LJ35, LJ45, LJ55, PRM1, et.al.	LEAR35	Day	A	30%	9%	7%	26%	12%	6%	4%	7%	100%
		Night		29%	15%	1%	42%	6%	1%	2%	4%	100%
		Day	D	5%	13%	19%	7%	9%	22%	22%	4%	100%
		Night		1%	5%	6%	12%	1%	32%	31%	12%	100%
MD11	MD11PW	Day	A	13%	24%	29%	4%	5%	14%	10%	0%	100%
		Night		14%	12%	41%	13%	3%	10%	5%	0%	100%
		Day	D	0%	0%	67%	0%	0%	33%	0%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
MD80, MD87	MD81	Day	A	33%	0%	0%	0%	33%	33%	0%	0%	100%
		Night		0%	0%	0%	0%	50%	25%	25%	0%	100%
		Day	D	19%	7%	18%	1%	22%	24%	8%	1%	100%
		Night		13%	4%	10%	2%	46%	25%	0%	0%	100%
MD82	MD82	Day	A	34%	1%	12%	1%	39%	12%	2%	0%	100%
		Night		58%	0%	0%	1%	41%	0%	0%	0%	100%
		Day	D	10%	18%	12%	8%	11%	20%	21%	0%	100%
		Night		2%	29%	7%	9%	7%	20%	27%	0%	100%
MD83, MD88	MD83	Day	A	29%	2%	15%	1%	35%	15%	1%	1%	100%
		Night		18%	1%	42%	1%	20%	18%	1%	0%	100%
		Day	D	19%	12%	15%	1%	12%	24%	17%	0%	100%
		Night		0%	0%	25%	25%	0%	0%	50%	0%	100%
MD90	MD9028	Day	A	34%	2%	16%	0%	33%	13%	1%	1%	100%
		Night		0%	0%	60%	0%	0%	20%	20%	0%	100%
		Day	D	14%	20%	6%	22%	8%	3%	25%	1%	100%
		Night		0%	11%	0%	22%	0%	11%	56%	0%	100%
BE40, MU30	MU3001	Day	A	30%	11%	6%	25%	11%	3%	7%	7%	100%
		Night		53%	6%	0%	31%	8%	0%	0%	3%	100%
		Day	D	16%	16%	0%	32%	11%	5%	21%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
P28A, P28B, P28R, PA28	PA28	Day	A	22%	17%	0%	44%	6%	6%	0%	6%	100%
		Night		67%	0%	0%	33%	0%	0%	0%	0%	100%
		Day	D	0%	0%	0%	50%	0%	0%	50%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
PA30	PA30	Day	A	0%	50%	0%	50%	0%	0%	0%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	13%	16%	4%	29%	5%	11%	21%	1%	100%
		Night		0%	0%	0%	83%	0%	0%	17%	0%	100%
BE60, PA31, PAY1, PAY2, PAY3	PA31	Day	A	22%	21%	6%	32%	1%	4%	10%	4%	100%
		Night		0%	14%	0%	43%	0%	0%	14%	29%	100%
		Day	D	17%	10%	12%	24%	19%	12%	7%	0%	100%
		Night		17%	0%	0%	17%	0%	33%	33%	0%	100%

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE (CONTINUED)

2013 EXISTING CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
P180, SH33, SH36	SD330	Day	A	33%	13%	5%	22%	9%	5%	3%	11%	100%
		Night		43%	14%	0%	14%	0%	0%	0%	29%	100%
		Day	D	50%	25%	0%	0%	0%	0%	25%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
CN35, JS41	SF340	Day	A	25%	25%	0%	0%	25%	0%	25%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	11%	13%	19%	12%	9%	20%	13%	2%	100%
		Night		-	-	-	-	-	-	-	-	-
Total				11%	13%	19%	12%	9%	20%	13%	2%	100%

**AIRCRAFT ENGINE RUN-UP OPERATIONS
2013 EXISTING CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	Run-up Location	Max. Thrust Setting	Run-Up Thrust Setting	Run-Up Thrust Setting	Daytime Run-ups	Nighttime Run-Ups	Duration (Minutes)
A300	A300B4-203	FedEx GRE	52,500	20%	10,500	1	0.25	15
A306	A300-622R	FedEx GRE	58,000	20%	11,600	1	0.25	15
A310	A310-304	FedEx GRE	53,500	20%	10,700	1	0.25	15
B722	727EM2	FedEx GRE	11,895	20%	2,379	1	0.25	15
B752	757PW	FedEx GRE	38,300	20%	7,660	1	0.25	15
B772	777200	FedEx GRE	90,000	20%	18,000	1	0.25	15
B777	777300	FedEx GRE	77,000	20%	15,400	1	0.25	15
B77L	7773ER	FedEx GRE	77,000	20%	15,400	1	0.25	15
DC10	DC1030	FedEx GRE	53,200	20%	10,640	1	0.25	15
MD10	DC1040	FedEx GRE	49,400	20%	9,880	1	0.25	15
A300	A300B4-203	FedEx GRE	52,500	80%	42,000	1	0.25	15
A306	A300-622R	FedEx GRE	58,000	80%	46,400	1	0.25	15
A310	A310-304	FedEx GRE	53,500	80%	42,800	1	0.25	15
B722	727EM2	FedEx GRE	11,895	80%	9,516	1	0.25	15
B752	757PW	FedEx GRE	38,300	80%	30,640	1	0.25	15
B772	777200	FedEx GRE	90,000	80%	72,000	1	0.25	15
B777	777300	FedEx GRE	77,000	80%	61,600	1	0.25	15
B77L	7773ER	FedEx GRE	77,000	80%	61,600	1	0.25	15
DC10	DC1030	FedEx GRE	53,200	80%	42,560	1	0.25	15
MD10	DC1040	FedEx GRE	49,400	80%	39,520	1	0.25	15
MD11	MD11PW	FedEx GRE	60,000	80%	48,000	1	0.25	15
A300	A300B4-203	Taxiway Juliet	52,500	20%	10,500	1	1	1
A306	A300-622R	Taxiway Juliet	58,000	20%	11,600	1	1	1
A310	A310-304	Taxiway Juliet	53,500	20%	10,700	1	1	1
B722	727EM2	Taxiway Juliet	11,895	20%	2,379	1	1	1
B752	757PW	Taxiway Juliet	38,300	20%	7,660	1	1	1
B772	777200	Taxiway Juliet	90,000	20%	18,000	1	1	1
B777	777300	Taxiway Juliet	77,000	20%	15,400	1	1	1
B77L	7773ER	Taxiway Juliet	77,000	20%	15,400	1	1	1
DC10	DC1030	Taxiway Juliet	53,200	20%	10,640	1	1	1
MD10	DC1040	Taxiway Juliet	49,400	20%	9,880	1	1	1
MD11	MD11PW	Taxiway Juliet	60,000	20%	12,000	1	1	1
C5A	C5A	TN ANG GRE	NA	NA	3.4 EPR	1.5	0	4

**CIVILIAN, FIXED-WING AIRCRAFT FLEET MIX
2020 FUTURE CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	% of Civilian, Fixed-Wing Fleet
B712	717200	2.189%
B733	737300	1.386%
B734	737400	1.386%
B737, B739	737700	1.386%
B738	737800	1.386%
B732	737N17	1.386%
B744	747400	0.073%
B752, B757	757PW	15.320%
B763	767300	2.651%
B767	767400	2.651%
B762	767CF6	2.651%
B77L, B772	7773ER	4.377%
A306	A300-622R	15.320%
A310	A310-304	3.648%
A319	A319-131	1.459%
A320	A320-211	2.918%
AC50, BE58, C414, DA42, PA34, et.al.	BEC58P	0.365%
C25, C650	CIT3	0.043%
CL60, CRJ1, E55P, F2TH, FA20, GALX, J328	CL601	0.727%
CL30, CRJ2	CL601	4.819%
C206, C210, P210	CNA206	0.190%
C208, EPIC, PC12, TBM7, TBM8	CNA208	1.795%
AC90, BE20, BE9L, C441, GA7, MU2, et.al.	CNA441	0.412%
C25A, C25B, C500, C501, C525, C550, C551	CNA500	0.428%
C560, C56X, LJ60	CNA55B	0.641%
LR60/LR45	CCNA55B	0.855%
C680	CNA680	0.684%
C750	CNA750	0.086%
CRJ7	CRJ9-ER	2.698%
CRJ9	CRJ9-ER	2.506%
Q400	DHC830	1.349%
AT72, D328	DO328	1.349%
C510, E50P, EA50	ECLIPSE500	0.128%
E135, E145	EMB145	1.542%
E170	EMB170	4.819%
E190	EMB190	0.365%
AA5, COL3, DA40, LNC4, PA22, RV8, et.al.	GASEPF	0.299%
BE35, BE36, M20P, PA32, PA46, SR22, et.al.	GASEPV	0.435%

CIVILIAN, FIXED-WING AIRCRAFT FLEET MIX (CONTINUED)**2020 FUTURE CONDITION****MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	% of Civilian, Fixed-Wing Fleet
GLF4	GIV	0.043%
GL5T, GLEX, GLFS	GV	0.428%
MD11	MD11PW	12.402%
BE40, MU30	MU3001	0.214%
CN35, JS41	SF340	0.193%
Total		100%

**MILITARY FIXED-WING AIRCRAFT FLEET MIX
2020 FUTURE CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	% of Military Fleet Mix
A10	A10	0.87%
C130, C30J	C130HP	5.63%
C17	C17	3.90%
C20	C-20	0.43%
C5	C5A	26.41%
FA18	F18	0.43%
F18	F18EF	24.24%
AT6, PC7, T6, TEX2	JPATS	25.54%
K35R	KC-135	5.19%
T34, T34T	T34	3.46%
T45	T45	3.90%
Total		100.00%

**ROTARY-WING AIRCRAFT FLEET MIX
2020 FUTURE CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	% of Rotary-Wing Fleet Mix
AH1, A119	A109	1.24%
OH58, H58	B206B3	0.37%
B206L, HELO	B206L	46.48%
UH1, UH-1H, UHY	B212	1.73%
B429, EC45	B429	0.74%
EC30, EC35	EC130	0.87%
H47	CH47D	0.25%
R44	R44	5.32%
H53	S65	0.25%
AH64, H60, H64, UH60	S70	6.18%
AS50	SA355F	35.35%
AS65, H65, MH65	SA356N	1.24%
Total		100%

CIVILIAN, FIXED-WING AIRCRAFT STAGE LENGTH DISTRIBUTION BY AIRCRAFT TYPE
2020 FUTURE CONDITION
MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Stage Length									Total
		1	2	3	4	5	6	7	8	9	
B712	717200	100%									100%
B733	737300	77%	23%								100%
B734	737400	48%	52%								100%
B737, B739	737700	64%	23%	9%	4%						100%
B738	737800	28%	8%	65%							100%
B732	737N17	100%									100%
B744	747400	33%	20%	2%	14%	12%	19%				100%
B752, B757	757PW	40%	49%	10%							100%
B763	767300	97%					3%				100%
B767	767400	100%									100%
B762	767CF6	100%									100%
B77L, B772	7773ER	4%	5%		6%	28%	27%		22%	8%	100%
A306	A300-622R	32%	42%	24%	3%						100%
A310	A310-304	43%	46%	6%	5%						100%
A319	A319-131	22%	59%	19%	1%						100%
A320	A320-211	19%	51%	30%							100%
AC50, BE58, C414, DA42, PA34, et.al.	BEC58P	100%									100%
C25, C650	CIT3	100%									100%
CL60, CRJ1, E55P, F2TH, FA20, GALX, J328	CL601	100%									100%
CL30, CRJ2	CL601	100%									100%
C206, C210, P210	CNA206	100%									100%
C208, EPIC, PC12, TBM7, TBM8	CNA208	100%									100%
AC90, BE20, BE9L, C441, GA7, MU2, et.al.	CNA441	100%									100%
C25A, C25B, C500, C501, C525, C550, C551	CNA500	100%									100%
C560, C56X, LJ60	CNA55B	100%									100%
LR60/LR45	CNA55B	100%									100%
C680	CNA680	100%									100%
C750	CNA750	100%									100%
CRJ7	CRJ9-ER	79%	21%	1%							100%
CRJ9	CRJ9-LR	79%	21%	1%							100%
Q400	DHC830	100%									100%
AT72, D328	DO328	100%									100%
C510, E50P, EA50	ECLIPSE500	77%	23%								100%
E135, E145	EMB145	78%	22%								100%
E170	EMB170	66%	33%	1%							100%
E190	EMB190	50%		50%							100%
AA5, COL3, DA40, LNC4, PA22, RV8, et.al.	GASEPF	100%									100%
BE35, BE36, M20P, PA32, PA46, SR22, et.al.	GASEPV	100%									100%
GLF4	GIV	100%									100%
GLST, GLEX, GLFS	GV	100%									100%
MD11	MD11PW	10%	38%	18%	22%	2%	11%	0%	0%	0%	100%
BE40, MU30	MU3001	100%									100%
CN35, JS41	SF340	100%									100%
Total		48%	28%	14%	4%	2%	3%			0%	1%

**CIVILIAN, FIXED-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE
2020 FUTURE CONDITION**

Aircraft ID	INM Aircraft ID	Op Type	Day	Night
B712	717200	A	95%	5%
		D	77%	23%
B733	737300	A	86%	14%
		D	75%	25%
B734	737400	A	72%	28%
		D	88%	12%
B737, B739	737700	A	95%	5%
		D	65%	35%
B738	737800	A	79%	21%
		D	97%	3%
B732	737N17	A	100%	0%
		D	100%	0%
B744	747400	A	83%	18%
		D	56%	44%
B752, B757	757PW	A	32%	68%
		D	27%	73%
B763	767300	A	38%	62%
		D	13%	88%
B767	767400	A	0%	100%
		D	0%	100%
B762	767CF6	A	85%	15%
		D	2%	98%
B77L, B772	7773ER	A	24%	76%
		D	16%	84%
A306	A300-622R	A	47%	53%
		D	48%	52%
A310	A310-304	A	32%	68%
		D	29%	71%
A319	A319-131	A	97%	3%
		D	94%	6%
A320	A320-211	A	86%	14%
		D	99%	1%
AC50, BE58, C414, DA42, PA34, et.al.	BEC58P	A	79%	21%
		D	74%	26%
C25, C650	CIT3	A	100%	0%
		D	93%	7%
CL60, CRJ1, E55P, F2TH, FA20, GALX, J328	CL601	A	89%	11%
		D	98%	2%
CL30, CRJ2	CL601	A	89%	11%
		D	98%	2%
C206, C210, P210	CNA206	A	44%	56%
		D	50%	50%

CIVILIAN, FIXED-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE (CONTINUED)
2020 FUTURE CONDITION

Aircraft ID	INM Aircraft ID	Op Type	Day	Night
C208, EPIC, PC12, TBM7, TBM8	CNA208	A	67%	33%
		D	55%	45%
AC90, BE20, BE9L, C441, GA7, MU2, et.al.	CNA441	A	93%	7%
		D	88%	12%
C25A, C25B, C500, C501, C525, C550, C551	CNA500	A	94%	6%
		D	94%	6%
C560, C56X, LJ60	CNA55B	A	97%	3%
		D	88%	12%
LR60/LR45	CNA55B	A	97%	3%
		D	88%	12%
C680	CNA680	A	92%	8%
		D	98%	2%
C750	CNA750	A	100%	0%
		D	92%	8%
CRJ7	CRJ9-ER	A	95%	5%
		D	93%	7%
CRJ9	CRJ9-ER	A	95%	5%
		D	93%	7%
Q-400	DHC830	A	58%	42%
		D	33%	67%
AT72, D328	DO328	A	28%	72%
		D	57%	43%
C510, E50P, EA50	ECLIPSE500	A	98%	2%
		D	90%	10%
E135, E145	EMB145	A	89%	11%
		D	88%	12%
E170	EMB170	A	99%	1%
		D	99%	1%
E190	EMB190	A	100%	0%
		D	100%	0%
AA5, COL3, DA40, LNC4, PA22, RV8, et.al.	GASEPF	A	100%	0%
		D	92%	8%
BE35, BE36, M20P, PA32, PA46, SR22, et.al.	GASEPV	A	98%	2%
		D	90%	10%
GLF4	GIV	A	92%	8%
		D	97%	3%
GL5T, GLEX, GLFS	GV	A	91%	9%
		D	93%	7%
MD11	MD11PW	A	55%	45%
		D	53%	47%
BE40, MU30	MU3001	A	96%	4%
		D	85%	15%

CIVILIAN, FIXED-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE (CONTINUED)
2020 FUTURE CONDITION

Aircraft ID	INM Aircraft ID	Op Type	Day	Night
CN35, JS41, SAAB-340	SF340	A	100%	0%
		D	100%	0%
Total			70%	30%

**ROTARY-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE
2020 FUTURE CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	Day	Night
AH1, A119	A109	100%	0%
OH58, H58	B206B3	100%	0%
B206L, HELO	B206L	87%	13%
UH1, UH-1H, UHY	B212	100%	0%
B429, EC45	B429	100%	0%
EC30, EC35	EC130	100%	0%
H47	CH47D	100%	0%
R44	R44	100%	0%
H53	S65	100%	0%
AH64, H60, H64, UH60	S70	100%	0%
AS50	SA355F	73%	27%
AS65, H65, MH65	SA356N	100%	0%
Total		85%	15%

**MILITARY, FIXED-WING DAYTIME / NIGHTTIME DISTRIBUTION BY AIRCRAFT TYPE
2020 FUTURE CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	Day	Night
A10	A10	100%	0%
C130, C30J	C130HP	100%	0%
C17	C17	100%	0%
C20	C-20	100%	0%
C5	C5A	95%	5%
FA18	F18	100%	0%
F18	F18EF	98%	2%
AT6, PC7, T6, TEX2	JPATS	100%	0%
K35R	KC-135	100%	0%
T34, T34T	T34	100%	0%
T45	T45	100%	0%
Total		98%	2%

**CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE
2020 FUTURE CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
B712	717200	Day	A	3%	4%	28%	14%	2%	43%	5%	0%	100%
		Night		0%	0%	17%	2%	0%	59%	22%	0%	100%
		Day	D	18%	1%	24%	0%	26%	25%	0%	5%	100%
		Night		6%	1%	60%	0%	11%	21%	0%	1%	100%
B733	737300	Day	A	17%	0%	17%	0%	50%	17%	0%	0%	100%
		Night		0%	0%	0%	0%	0%	0%	0%	100%	100%
		Day	D	33%	0%	0%	0%	17%	33%	17%	0%	100%
		Night		0%	50%	0%	0%	0%	50%	0%	0%	100%
B734	737400	Day	A	15%	8%	8%	15%	31%	15%	8%	0%	100%
		Night		0%	0%	20%	20%	20%	0%	40%	0%	100%
		Day	D	20%	20%	7%	7%	33%	0%	7%	7%	100%
		Night		50%	0%	0%	0%	50%	0%	0%	0%	100%
B737, B739	737700	Day	A	21%	16%	11%	5%	11%	32%	5%	0%	100%
		Night		0%	0%	0%	0%	0%	100%	0%	0%	100%
		Day	D	13%	13%	13%	7%	13%	20%	13%	7%	100%
		Night		25%	0%	38%	25%	13%	0%	0%	0%	100%
B738	737800	Day	A	4%	5%	35%	3%	4%	43%	5%	1%	100%
		Night		5%	6%	38%	3%	1%	44%	3%	0%	100%
		Day	D	8%	1%	39%	2%	11%	38%	1%	1%	100%
		Night		7%	0%	43%	14%	21%	7%	7%	0%	100%
B732	747400	Day	A	24%	18%	6%	6%	15%	0%	30%	0%	100%
		Night		43%	0%	0%	29%	14%	0%	14%	0%	100%
		Day	D	4%	60%	0%	4%	0%	0%	28%	4%	100%
		Night		5%	15%	0%	55%	5%	0%	20%	0%	100%
B744	767300	Day	A	0%	38%	0%	0%	0%	13%	50%	0%	100%
		Night		23%	0%	0%	46%	15%	0%	15%	0%	100%
		Day	D	33%	0%	0%	33%	33%	0%	0%	0%	100%
		Night		0%	14%	0%	43%	29%	0%	14%	0%	100%
B752, B757	767400	Day	A	-	-	-	-	-	-	-	-	-
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
		Day	D	-	-	-	-	-	-	-	-	-
		Night		0%	100%	0%	0%	0%	0%	0%	0%	100%
B763	737N17	Day	A	100%	0%	0%	0%	0%	0%	0%	0%	100%
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
		Day	D	-	-	-	-	-	-	-	-	-
		Night		-	-	-	-	-	-	-	-	-
B767	757PW	Day	A	3%	8%	20%	14%	4%	32%	17%	3%	100%
		Night		0%	4%	4%	31%	1%	22%	31%	7%	100%
		Day	D	6%	12%	45%	6%	2%	21%	8%	0%	100%
		Night		3%	38%	19%	21%	1%	6%	12%	0%	100%
B762	767CF6	Day	A	0%	32%	0%	0%	6%	0%	62%	0%	100%
		Night		17%	33%	0%	0%	17%	0%	33%	0%	100%
		Day	D	0%	0%	0%	0%	100%	0%	0%	0%	100%
		Night		11%	4%	0%	13%	67%	0%	4%	0%	100%

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE (CONTINUED)

2020 FUTURE CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
B77L, B772	7773ER	Day	A	3%	18%	8%	2%	2%	27%	28%	12%	100%
		Night		1%	7%	6%	6%	1%	21%	50%	8%	100%
		Day	D	20%	11%	27%	14%	9%	13%	6%	0%	100%
		Night		28%	16%	5%	34%	7%	5%	4%	0%	100%
A306	A300-622R	Day	A	5%	15%	16%	13%	9%	18%	23%	2%	100%
		Night		1%	5%	6%	18%	1%	40%	22%	7%	100%
		Day	D	5%	28%	33%	3%	3%	15%	12%	0%	100%
		Night		2%	35%	33%	12%	1%	8%	9%	0%	100%
A310	A310-304	Day	A	4%	12%	15%	21%	7%	20%	19%	2%	100%
		Night		1%	4%	5%	22%	0%	39%	22%	7%	100%
		Day	D	4%	24%	37%	3%	3%	19%	9%	1%	100%
		Night		2%	35%	36%	10%	0%	9%	7%	0%	100%
A319	A319-131	Day	A	9%	16%	16%	8%	9%	23%	19%	1%	100%
		Night		4%	11%	0%	14%	18%	18%	36%	0%	100%
		Day	D	28%	1%	18%	1%	32%	17%	1%	2%	100%
		Night		6%	14%	6%	22%	32%	12%	8%	0%	100%
A320	A320-211	Day	A	4%	11%	26%	5%	3%	35%	15%	0%	100%
		Night		3%	27%	12%	9%	7%	14%	27%	0%	100%
		Day	D	23%	1%	20%	1%	26%	28%	1%	1%	100%
		Night		20%	7%	27%	0%	33%	13%	0%	0%	100%
AC50, BE58, C414, DA42, PA34, et.al.	BEC58P	Day	A	15%	10%	8%	32%	10%	8%	11%	6%	100%
		Night		6%	17%	2%	36%	6%	0%	12%	21%	100%
		Day	D	22%	12%	10%	32%	4%	6%	6%	8%	100%
		Night		8%	10%	0%	56%	8%	0%	6%	13%	100%
C25, C650	CIT3	Day	A	7%	28%	7%	14%	10%	3%	28%	3%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	33%	7%	15%	15%	11%	15%	4%	0%	100%
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
CL60, CRJ1, E55P, F2TH, FA20, GALX, J328	CL601	Day	A	5%	13%	24%	7%	5%	31%	15%	0%	100%
		Night		1%	17%	26%	6%	1%	29%	19%	0%	100%
		Day	D	21%	2%	24%	1%	24%	26%	1%	1%	100%
		Night		52%	1%	3%	6%	28%	9%	0%	0%	100%
CL30, CRJ2	CL601	Day	A	5%	13%	24%	7%	5%	31%	15%	0%	100%
		Night		1%	17%	26%	6%	1%	29%	19%	0%	100%
		Day	D	21%	2%	24%	1%	24%	26%	1%	1%	100%
		Night		52%	1%	3%	6%	28%	9%	0%	0%	100%
C206, C210, P210	CNA206	Day	A	5%	18%	3%	42%	5%	4%	15%	8%	100%
		Night		10%	19%	0%	22%	4%	0%	7%	37%	100%
		Day	D	32%	14%	10%	21%	7%	4%	9%	2%	100%
		Night		9%	1%	0%	73%	7%	0%	4%	6%	100%
C208, EPIC, PC12, TBM7, TBM8	CNA208	Day	A	9%	5%	15%	33%	6%	20%	6%	5%	100%
		Night		1%	3%	8%	19%	2%	10%	53%	3%	100%
		Day	D	29%	5%	8%	33%	10%	7%	1%	7%	100%
		Night		38%	15%	10%	10%	5%	2%	3%	17%	100%

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE (CONTINUED)

2020 FUTURE CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
AC90, BE20, BE9L, C441, GA7, MU2, et.al.	CNA441	Day	A	10%	17%	5%	33%	9%	2%	23%	3%	100%
		Night		0%	14%	7%	39%	4%	0%	32%	4%	100%
		Day	D	27%	12%	5%	33%	7%	4%	8%	4%	100%
		Night		20%	22%	0%	39%	2%	0%	2%	15%	100%
C25A, C25B, C500, C501, C525, C550, C551	CNA500	Day	A	17%	21%	4%	19%	11%	3%	23%	2%	100%
		Night		0%	16%	5%	26%	0%	5%	37%	11%	100%
		Day	D	24%	15%	6%	27%	10%	5%	8%	5%	100%
		Night		30%	15%	0%	35%	15%	0%	5%	0%	100%
C560, C56X, LJ60	CNA55B	Day	A	16%	20%	6%	17%	11%	5%	24%	2%	100%
		Night		0%	0%	0%	47%	7%	7%	33%	7%	100%
		Day	D	31%	10%	8%	26%	9%	4%	5%	6%	100%
		Night		40%	13%	0%	35%	1%	0%	7%	3%	100%
LR60/LR45	CNA55B	Day	A	16%	20%	6%	17%	11%	5%	24%	2%	100%
		Night		0%	0%	0%	47%	7%	7%	33%	7%	100%
		Day	D	31%	10%	8%	26%	9%	4%	5%	6%	100%
		Night		40%	13%	0%	35%	1%	0%	7%	3%	100%
C680	CNA680	Day	A	17%	19%	13%	11%	13%	9%	19%	0%	100%
		Night		0%	0%	25%	25%	0%	25%	25%	0%	100%
		Day	D	39%	2%	10%	22%	4%	10%	4%	10%	100%
		Night		0%	0%	0%	0%	100%	0%	0%	0%	100%
C750	CNA750	Day	A	14%	15%	12%	19%	14%	14%	10%	3%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	28%	10%	9%	24%	14%	5%	7%	3%	100%
		Night		20%	0%	0%	80%	0%	0%	0%	0%	100%
CRJ7	CRJ9-ER	Day	A	11%	25%	6%	10%	11%	8%	29%	1%	100%
		Night		8%	16%	0%	8%	16%	20%	32%	0%	100%
		Day	D	31%	3%	12%	0%	37%	15%	1%	1%	100%
		Night		40%	0%	0%	7%	48%	0%	5%	0%	100%
CRJ9	CRJ9-ER	Day	A	11%	25%	6%	10%	11%	8%	29%	1%	100%
		Night		8%	16%	0%	8%	16%	20%	32%	0%	100%
		Day	D	31%	3%	12%	0%	37%	15%	1%	1%	100%
		Night		40%	0%	0%	7%	48%	0%	5%	0%	100%
Q400	DHC830	Day	A	1%	3%	6%	69%	1%	15%	3%	1%	100%
		Night		2%	3%	2%	79%	1%	3%	8%	2%	100%
		Day	D	14%	46%	2%	5%	11%	0%	22%	0%	100%
		Night		61%	21%	4%	3%	3%	1%	7%	1%	100%
AT72, D328	DO328	Day	A	1%	3%	6%	69%	1%	15%	3%	1%	100%
		Night		2%	3%	2%	79%	1%	3%	8%	2%	100%
		Day	D	14%	46%	2%	5%	11%	0%	22%	0%	100%
		Night		61%	21%	4%	3%	3%	1%	7%	1%	100%
C510, E50P, EA50	ECLIPSE500	Day	A	17%	14%	10%	14%	10%	12%	17%	5%	100%
		Night		50%	0%	0%	0%	0%	0%	50%	0%	100%
		Day	D	30%	13%	7%	25%	11%	6%	2%	6%	100%
		Night		44%	0%	0%	44%	11%	0%	0%	0%	100%

CIVILIAN, FIXED-WING RUNWAY UTILIZATION BY AIRCRAFT TYPE (CONTINUED)

2020 FUTURE CONDITION

MEMPHIS INTERNATIONAL AIRPORT

Aircraft ID	INM Aircraft ID	Time Period	Op Type	RUNWAY								Total
				18C	18L	18R	27	36C	36L	36R	9	
E135, E145	EMB145	Day	A	13%	16%	15%	5%	16%	16%	19%	1%	100%
		Night		9%	8%	6%	5%	18%	31%	23%	0%	100%
		Day	D	38%	1%	8%	0%	39%	11%	1%	1%	100%
		Night		54%	0%	6%	0%	35%	3%	1%	0%	100%
E170	EMB170	Day	A	4%	10%	19%	0%	3%	46%	16%	1%	100%
		Night		0%	0%	0%	0%	0%	0%	100%	0%	100%
		Day	D	15%	1%	23%	0%	28%	33%	0%	1%	100%
		Night		0%	0%	0%	0%	100%	0%	0%	0%	100%
E190	EMB190	Day	A	0%	50%	50%	0%	0%	0%	0%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	100%	0%	0%	0%	0%	0%	0%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
AA5, COL3, DA40, LNC4, PA22, RV8, et.al.	GASEPF	Day	A	5%	13%	5%	43%	13%	10%	13%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	19%	17%	1%	39%	6%	2%	9%	7%	100%
		Night		0%	30%	0%	50%	0%	0%	10%	10%	100%
BE35, BE36, M20P, PA32, PA46, SR22, et.al.	GASEPV	Day	A	8%	12%	7%	39%	9%	6%	15%	4%	100%
		Night		0%	0%	0%	43%	0%	29%	14%	14%	100%
		Day	D	27%	14%	5%	27%	10%	5%	6%	6%	100%
		Night		31%	9%	0%	38%	6%	3%	3%	9%	100%
GLF4	GIV	Day	A	6%	19%	11%	14%	14%	17%	19%	0%	100%
		Night		0%	33%	0%	0%	33%	0%	33%	0%	100%
		Day	D	37%	8%	8%	24%	11%	0%	5%	8%	100%
		Night		0%	0%	0%	100%	0%	0%	0%	0%	100%
GL5T, GLEX, GLFS	GV	Day	A	7%	10%	10%	19%	14%	24%	15%	2%	100%
		Night		17%	17%	0%	33%	0%	33%	0%	0%	100%
		Day	D	37%	2%	5%	23%	11%	10%	5%	8%	100%
		Night		20%	0%	20%	40%	20%	0%	0%	0%	100%
MD11	MD11PW	Day	A	5%	13%	19%	7%	9%	22%	22%	4%	100%
		Night		1%	5%	6%	12%	1%	32%	31%	12%	100%
		Day	D	13%	24%	29%	4%	5%	14%	10%	0%	100%
		Night		14%	12%	41%	13%	3%	10%	5%	0%	100%
BE40, MU30	MU3001	Day	A	14%	20%	6%	22%	8%	3%	25%	1%	100%
		Night		0%	11%	0%	22%	0%	11%	56%	0%	100%
		Day	D	30%	11%	6%	25%	11%	3%	7%	7%	100%
		Night		53%	6%	0%	31%	8%	0%	0%	3%	100%
CN35, JS41	SF340	Day	A	50%	25%	0%	0%	0%	0%	25%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
		Day	D	25%	25%	0%	0%	25%	0%	25%	0%	100%
		Night		-	-	-	-	-	-	-	-	-
Total				11%	13%	19%	12%	9%	20%	13%	2%	100%

**AIRCRAFT ENGINE RUN-UP OPERATIONS
2020 FUTURE CONDITION
MEMPHIS INTERNATIONAL AIRPORT**

Aircraft ID	INM Aircraft ID	Run-up Location	Max. Thrust Setting	Run-Up Thrust Setting	Run-Up Thrust Setting	Daytime Run-ups	Nighttime Run-Ups	Duration (Minutes)
A300	A300B4-203	FedEx GRE	52,500	20%	10,500	1	0.25	15
A306	A300-622R	FedEx GRE	58,000	20%	11,600	1	0.25	15
A310	A310-304	FedEx GRE	53,500	20%	10,700	1	0.25	15
B752	757PW	FedEx GRE	38,300	20%	7,660	1	0.25	15
B77L	7773ER	FedEx GRE	77,000	20%	15,400	1	0.25	15
A306	A300-622R	FedEx GRE	58,000	80%	46,400	1	0.25	15
A310	A310-304	FedEx GRE	53,500	80%	42,800	1	0.25	15
B752	757PW	FedEx GRE	38,300	80%	30,640	1	0.25	15
B77L	7773ER	FedEx GRE	77,000	80%	61,600	1	0.25	15
MD11	MD11PW	FedEx GRE	60,000	80%	48,000	1	0.25	15
B722	727EM2	TN Tech Center	15,500	55%	8,525	0.033	0	45
A306	A300-622R	Taxiway Juliet	58,000	20%	11,600	1	1	1
A310	A310-304	Taxiway Juliet	53,500	20%	10,700	1	1	1
B752	757PW	Taxiway Juliet	38,300	20%	7,660	1	1	1
B77L	7773ER	Taxiway Juliet	77,000	20%	15,400	1	1	1
MD11	MD11PW	Taxiway Juliet	60,000	20%	12,000	1	1	1
C17	C17	TN ANG GRE	NA	NA	3.4 EPR	1.5	0	4

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AIRPORT NOISE MONITORING STUDY

MEMPHIS INTERNATIONAL AIRPORT

PART 150 NOISE EXPOSURE MAP UPDATE

DRAFT Technical Memorandum

PREPARED BY:

KB Environmental Sciences, Inc.

SUBMITTED TO:

URS Corporation

DATE:

May 28, 2014

1. Introduction and Purpose

The last Part 150 Noise Compatibility Program (NCP) for Memphis International Airport (MEM) was approved by the Federal Aviation Administration (FAA) on February 20, 1988. Updated Noise Exposure Maps (NEMs) were accepted by the FAA on December 4, 1997 (representing a 1997 existing condition and a 2002 future condition), and July 29, 2005 (representing a 2004 existing condition and 2009 future condition).

Several changes in the aircraft operations at MEM have occurred since the NEMs were accepted in 2005, including the introduction of numerous Next Generation (NextGen) operational procedures. The updated NEMs prepared for this NEM Update Study reflect the currently existing condition, as well as a future forecast condition. After the NEMs have been completed they will be submitted to FAA for review and acceptance.

In support of the NEM Update Study, an Airport Noise Monitoring Study was conducted during a 5-day period in late October through early November 2013. Noise monitoring activities in the field included: locating and deploying six portable noise monitors in the communities directly north and south of the airport; conducting observations of arrival and departure flights at the airport; and, conducting observations of other noise sources near the noise monitors.

The purpose of the noise monitoring study was twofold:

- (1) To characterize the overall ambient noise levels in communities surrounding the airport.
- (2) To assess the reasonableness of the Day-Night Average Sound Level (DNL) contours depicted in the existing conditions NEM.

As such, the noise monitoring results serve to inform the public by providing confirmation that the NEMs are a reasonable representation of actual conditions. However, it is important to note the limitations of a comparison of noise measurements and noise modeling results generated by FAA's Integrated Noise Model (INM):

INM is not designed for single-event noise prediction, but rather for estimating long-term average noise levels using average input data. Comparisons between measured data and INM calculations must be considered in this context.¹

In fact, the INM can be effectively used to generate noise contours without performing any noise measurements. Therefore, when developing NEMs, "noise monitoring is not required and should not be used to calibrate the noise model."²

Although noise monitoring is not required by FAA, the results can be compared with noise model outputs to confirm that the modeling results are reasonable. When such a comparison reveals an inconsistency, it is an indication that the data input to the INM must be reviewed and adjusted if necessary. Technical guidance for conducting such a comparison is provided by SAE International in *Monitoring Aircraft Noise and Operations in the Vicinity of Airports*.³ This guidance includes methods for computing statistics representing noise measurement data which are appropriate for comparison to INM results. The methods utilized in this study are detailed in Section 4 of this report.

¹ Federal Aviation Administration, INM 7.0 User's Guide. April 2007. Page 13.

² Federal Aviation Administration, Order 1050.1e, Environmental Impacts: Policies and Procedures. Appendix A, paragraph 14.4f.

³ SAE International, Aerospace Recommended Practice 4721, Monitoring Aircraft Noise and Operations in the Vicinity of Airports. July 2012.

This Technical Memorandum is organized into 5 sections. Following this introductory section, Section 2 presents an overview of the noise monitoring field activities. Section 3 discusses the measured noise levels at each monitoring site. Section 4 details the comparison of measured and modeled noise levels. Finally, Section 5 presents the conclusions and recommendations of the Airport Noise Monitoring Study.

2. Noise Monitoring Activities

2.1 Planning

Planning for the noise monitoring study began in the fall of 2013. At that time, the draft existing conditions NEM was under development and radar data from the FAA's Performance Data Analysis and Reporting System (PDARS) were available for review. Importantly, the location of the 65 DNL contour and arrival and departure flight tracks were among the key variables used to determine candidate locations for noise monitoring. The process for determining the final 6 noise monitoring sites is described below.

In order to properly compare measured and modeled noise levels, candidate locations were selected in the vicinity of the existing conditions NEM 65 DNL contour. The 65 DNL contour is used by FAA to designate areas of "significant noise impact." Therefore, the noise monitoring study was designed to verify the reasonableness of this contour. Furthermore, noise measurements conducted farther from an airport, at lower noise levels (i.e., lower than 65 DNL), would not compare well with INM results due to interference from other local noise sources such as highway traffic.

Candidate noise monitoring locations were identified in the vicinity of flight tracks arriving and departing from the 3 parallel north-south runways at the airport (i.e., Runway 18R/36L, Runway 18C/36C, and Runway 18L/36R). Although the airport also has a "cross-wind" runway (Runway 9/27), it is not frequently used and therefore the DNL contours extending from this runway were not a focus of the analysis. Airport and FAA staff were consulted in the location of sites.

A total of 17 candidate sites were identified with 8 north of the airport and 9 south of the airport. Each of the candidate sites was visited by a field engineer on Sunday, October 27. Each site was inspected to determine its suitability for noise monitoring, including: proximity to aircraft flight paths; low ambient noise levels; ease of accessibility; and security. From this assessment, 6 sites were selected: 3 north of the airport and 3 south of the airport. Each site was located in-line with each end of the 3 parallel runways – either in-line with arriving flights or located beneath the departure flight paths extending from each runway. The locations of the selected sites are shown below in **Figure 1** and **Table 1**.

FIGURE 1. NOISE MONITORING SITE LOCATIONS

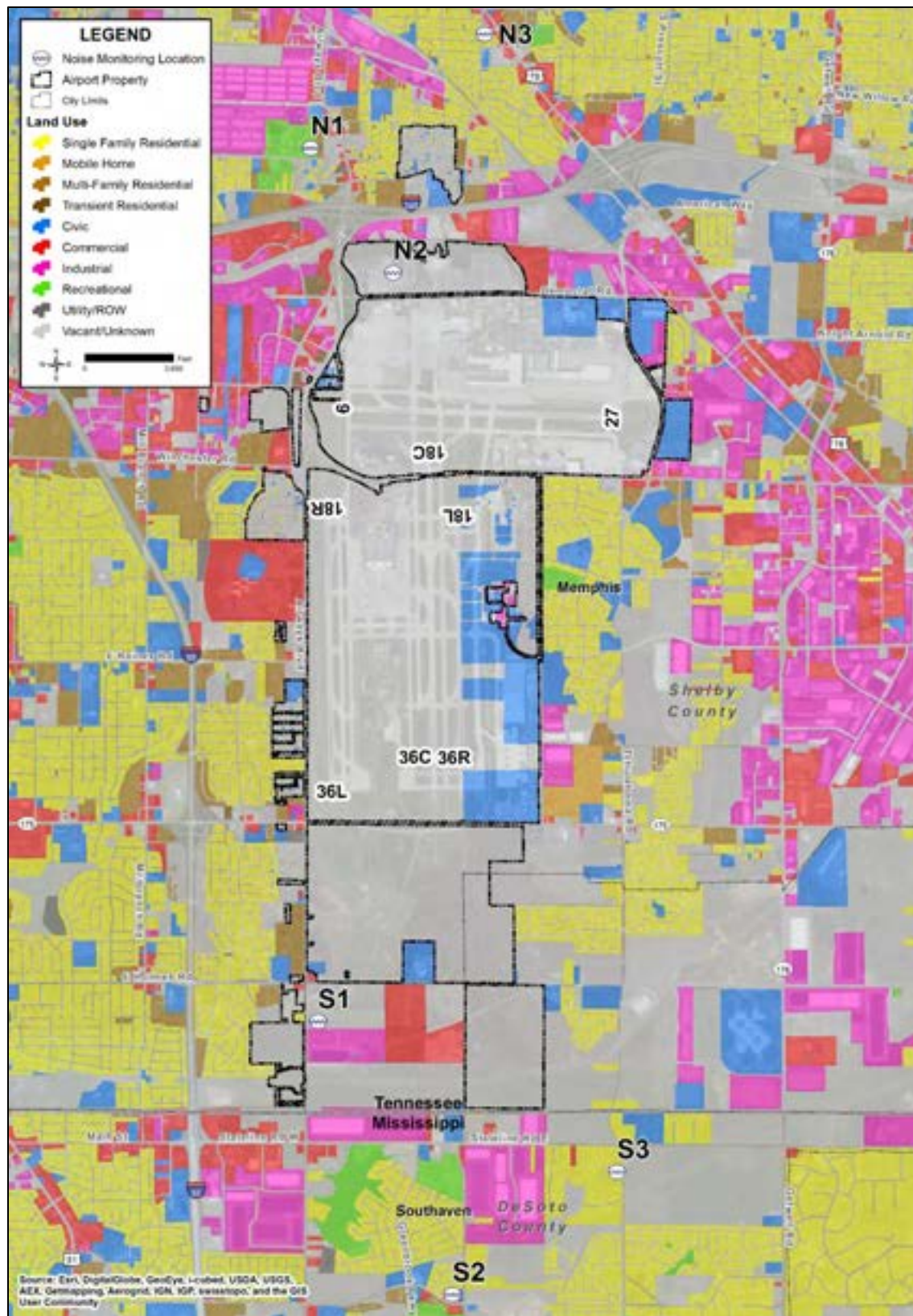


TABLE 1.
Noise Monitoring Site Locations

Site ID	Location	Description	Approximate Distance to Nearest Runway End
N1	2146 Ball Rd.	Memphis Athletics Ministries Golf Course	2.3 miles to 18R
N2	2520 Rental Rd.	Avis Rent-A-Car Vehicle Lot	1.2 miles to 18C
N3	1922 Pendleton St.	Sharkey Incorporated	3.0 miles to 18L
S1	5348 Airways Blvd.	Wilshire Manor	1.5 miles to 36L
S2	870 Rasco Rd.	Hamilton Self Storage	3.2 miles to 36C
S3	8845 Tchulahoma Rd.	Residence	2.6 miles to 36R

2.2 Equipment

A noise monitoring system was placed at each site which consisted of: a Larson Davis model 831 ANSI Class 1 integrating sound level meter; a ½-inch random incidence microphone; an environmental shroud containing a wind screen with bird spikes; and, a preamplifier tube filled with desiccant packets. The microphone was mounted on a tripod at a height of 7 feet 3 inches above the ground. The sound level meter was enclosed in a weather-resistant carrying case, along with a battery pack, and the case was locked securely. Calibration of each sound level meter was conducted daily using a Larson Davis model CAL200 calibrator.

Each noise monitor was set for “A-weighting” frequency weighting and “slow” time weighting. Measurement history was enabled to allow recording of hourly Equivalent Sound Level (Leq). Event history was also enabled to allow the measurement of Sound Exposure Level (SEL) and Maximum Sound Level (Lmax) of noise events including aircraft flyovers. Events were defined as exceeding the observed background noise level by at least 5 decibels for at least 5 continuous seconds.

2.3 Activities and Conditions

On Monday, October 28, two field engineers and the airport's Environmental Manager travelled to the 6 selected sites to deploy the noise monitors and conduct initial observations of aircraft flights and ambient noise levels. On the following days – October 29 through 31 – the field engineers visited each site daily to conduct observations, download and review measurement data, and calibrate the monitors. On these days, the engineers also conducted flight observations at locations north and south of the airport, noting: time of flight, operation type, runway, airline, and aircraft type. More than 300 flights were observed and logged during these 3 days; this information was used to conduct the analysis of measured and modeled noise levels described later in Section 4.

As noted in **Table 2**, inclement weather including rain and high winds occurred on October 31 from 2:00 AM to 3:00 PM. The noise levels measured during this period were elevated due to interference from wind and rain. Thus, this portion of the data was not used for the analysis of measured and modeled noise levels.

On Friday November 1, a field engineer visited each site to conduct a final calibration check and dismantle each noise monitor. Despite the inclement weather on the previous day, all 6 noise monitors ran continuously and met calibration standards throughout the noise monitoring study.

TABLE 2.
Daily Summary of Field Activities and Weather

Date	Activity	General Weather Conditions
Monday, October 28	Set up noise monitors and begin measurements	Partly Cloudy
Tuesday, October 29	Flight observations and calibration	Fog/Partly Cloudy
Wednesday, October 30	Flight observations and calibration	Cloudy
Thursday, October 31	Flight observations and calibration	Rain and high winds from 2:00 AM to 3:00 PM*
Friday, November 1	End measurements and break down noise monitors (morning)	Partly Sunny
* Noise levels measured during this time period cannot be used for the noise modeling analysis, due to interference from wind and rain.		

Table 3 presents a summary of the observed runway utilization at the airport during the noise monitoring period. Noise monitoring was planned for a period of 5 days with the goal of capturing flight operations in both “north flow” and “south flow” conditions. North flow refers to arrivals and departures from Runways 36L, 36C, and 36R, whereas south flow refers to arrivals and departures from Runways 18L, 18C, and 18R. Such conditions are directed by Air Traffic Control (ATC) and are influenced by wind direction, weather, and other airport and airspace conditions.

During the noise monitoring study, a mix of north and south flow was observed on October 28 and 29. South flow conditions prevailed from October 30 through November 1. Therefore, the majority of observed and measured aircraft flights consisted of south flow (i.e., arrivals and departures from Runways 18L, 18C, and 18R).

TABLE 3.
Daily Summary of Runway Utilization

Date	Observed Runway Use	Airport Flow Condition*
Monday, October 28	18L/36R and 18C/36C (18R/36L Closed)	Mix of North and South Flow
Tuesday, October 29	18L/36R, 18C/36C, and 18R/36L	Mix of North and South Flow
Wednesday, October 30	18L/36R, 18C/36C, and 18R/36L	South Flow
Thursday, October 31	18L/36R, 18C/36C, and 18R/36L	South Flow
Friday, November 1	18L/36R, 18C/36C, and 18R/36L	South Flow
* North flow refers to arrivals and departures from Runways 36L, 36C, and 36R. South flow refers to arrivals and departures from Runways 18L, 18C, and 18R. Note: For the purposes of this report, only the airport's north-south runways are included. Noise monitoring was not conducted for flights on the airport's east-west runway.		

3. Measured Noise Levels

One of the purposes of the noise monitoring study was to characterize the ambient noise levels in the communities surrounding the airport. In these areas, ambient noise levels were comprised of noise from aircraft overflights as well as other sources of environmental noise (such as roadway traffic, lawn mowers, dogs barking, etc.). This section summarizes the daily average measured noise levels at each site and provides estimates of the daily average noise levels due to aircraft overflights versus other local sources of noise.

3.1 Methodology

The DNL metric was used to represent daily average noise levels. As discussed earlier in Section 2, DNL is used by FAA to designate areas of significant aircraft noise impact. DNL was used in this analysis to provide context: it showed the relative contributions of aircraft noise and other local noise sources to overall measured noise levels by using the standard FAA noise metric.

First, the “measured overall DNL” was computed for each full day of noise measurements. This metric represents the total measured noise level at each site due to all sources of noise. By definition, DNL is computed from 24 hours of continuous noise level data. On October 28 and November 1, noise measurements were only conducted for a portion of the day, therefore DNL was not computed. In addition, at site N2 on October 29, a complete day of data was not available because the site was set up on this day. Furthermore, at Site N3 on October 31, a complete day of data was not available because the site was dismantled on this day.

Second, the “estimated aircraft DNL” was computed for October 29 through 31. This metric was computed from the measured SEL of each aircraft noise event. Aircraft noise events were identified from noise-level parameters typical of an aircraft overflight. Because observations were not conducted continuously, a set of parameters (SEL, Lmax, and duration of event) specific to each site was developed to identify all measured noise events *likely* to be due to aircraft overflights. Therefore, this metric was considered as only an *estimate* of the DNL due to aircraft overflights.

Third, the “estimated community DNL” was computed for each site. This metric was computed from the difference of the measured overall DNL and the estimated aircraft DNL. Because DNL is a level measured in decibels, the difference was calculated logarithmically, not arithmetically. The “estimated community DNL” represents the non-aviation sources of environmental noise (such as roadway traffic, lawn mowers, dogs barking, etc.)

3.2 Results

Table 4 presents the measured overall DNL, estimated aircraft DNL, and estimated community DNL at each site. The estimated aircraft DNL was higher than the estimated community DNL at all sites except for site N2. At site N2, there was substantial roadway traffic noise from nearby Democrat Road. At the other 5 sites, aircraft were the primary source of noise during the noise monitoring study. This met the intent of the selection of these sites: to be located near arrival and departure flight paths where ambient noise levels were sufficiently lower. Also of note, the measured and estimated DNL on October 31 were elevated due to interference from wind and rain from 2:00 AM to 3:00 PM.

Importantly, *the estimated aircraft DNL presented in Table 4 were not directly comparable with the DNL contours depicted in the existing conditions NEM.* The estimated aircraft DNL were based on 3 days of measured noise levels during which the airport was predominantly in south flow. In contrast, the existing conditions NEM depicts DNL contours based on a year of operations which includes a mix of north and

south flow. Therefore, the aircraft DNL values estimated during the noise monitoring study were not representative of annual airport operating conditions, and were not used to assess the reasonableness of the existing conditions NEM. Instead, the methodology presented below in Section 4 was used to assess the reasonableness of the NEM.

TABLE 4.				
Measured and Estimated Day-Night Average Sound Level (DNL) in decibels (dB)				
Site ID	Noise Metric	Tuesday Oct. 29	Wednesday Oct. 30	Thursday Oct. 31*
N1	Measured Overall DNL	71.4	72.8	71.0
	Estimated Aircraft DNL	70.6	72.5	69.5
	Estimated Community DNL	63.7	61.0	65.7
N2	Measured Overall DNL	N/A	70.5	69.8
	Estimated Aircraft DNL		62.7	61.2
	Estimated Community DNL		69.7	69.2
N3	Measured Overall DNL	66.7	69.0	N/A
	Estimated Aircraft DNL	65.3	68.2	
	Estimated Community DNL	61.1	61.3	
S1	Measured Overall DNL	72.5	70.9	72.5
	Estimated Aircraft DNL	72.1	70.3	72.1
	Estimated Community DNL	61.9	62.0	61.9
S2	Measured Overall DNL	68.5	66.0	69.7
	Estimated Aircraft DNL	68.1	65.3	68.6
	Estimated Community DNL	57.9	57.7	63.2
S3	Measured Overall DNL	62.3	63.8	64.5
	Estimated Aircraft DNL	61.0	62.3	61.6
	Estimated Community DNL	56.4	58.5	61.4
* DNL measured/estimated on October 31 are elevated due to interference from wind and rain.				
Note: DNL is computed from 24-hours of continuous noise level data. On October 28 and November 1, noise measurements were only conducted for a portion of the day, therefore DNL was not computed. At site N2 on October 29, a complete day of data was not available. At Site N3 on October 31, a complete day of data was not available.				

4. Comparison of Measured and Modeled Noise Levels

The other purpose of the noise monitoring study was to assess the reasonableness of the DNL contours depicted in the existing conditions NEM. As discussed in Section 3 above, the short-term noise monitoring study was not representative of annual airport operating conditions. Therefore, per SAE guidance⁴, statistical methods were used to compare single-event noise measurements and model results, accounting for the following:

- Annual runway utilization;
- Annual air traffic patterns;
- Flight path vertical and horizontal dispersion;
- Seasonal weather and wind effects; and,

⁴ SAE International, Aerospace Recommended Practice 4721, Monitoring Aircraft Noise and Operations in the Vicinity of Airports. July 2012.

- Ambient noise levels.

When the statistical comparisons indicated that the model results were not reasonably representative of the noise measurements, further investigation was performed to determine whether model inputs required adjustment, including:

- Location of the ground track;
- Selection of departure and arrival profiles;
- Selection of INM aircraft type to represent the operating aircraft; and,
- Additional INM input variables including weather, terrain, receiver height, and location.

4.1 Aircraft Noise Events

As noted in Section 2, noise monitors were located at 6 sites around the airport for a period of 5 days. Three sites were located north of the airport (N1, N2, and N3) and three were located south of the airport (S1, S2, and S3). Over 300 observations of aircraft type, operation type, runway, airline, and the time were collected during the noise monitoring study. The SEL values of observed aircraft events were calculated by the noise monitors.

The existing conditions NEM model was used to calculate individual aircraft event SEL values at each of the 6 measurement sites. The INM version 7.0d was used to generate SEL values for individual aircraft events for each observed aircraft type, operation type, and flight track. The SEL values generated by the INM were then compared with the measured SEL to determine if the modeled levels were reasonable, using the methodology described in Section 4.2.

4.2 Statistical Methodology

When comparing a limited sample of measured aircraft events to more numerous modeled aircraft operations, the SAE guidance states that “confidence intervals” are the appropriate statistical methodology. A confidence interval is a calculated range of values which is likely to occur for a larger sample size when being calculated from a smaller set of data. The “99% confidence interval” represents the upper and lower SEL values calculated from a small sample (i.e., short-term measured noise events) of which 99% would fall into a larger sample (i.e., modeled aircraft operations representing the existing conditions NEM). A confidence interval is calculated from the number of data values in the set, the average value of the set, and the standard deviation. A minimum of 3 identical observed aircraft events (i.e., the same aircraft type, operation type, and runway) at a given site was required for this analysis.

For the purposes of this analysis, a modeled confidence interval was considered “reasonable” when it fell completely within the larger measured confidence interval range or when there was sufficient overlap of the confidence intervals.

4.3 Results of Initial Comparison

The results of an initial comparison showed that the modeled and measured confidence intervals did not overlap, particularly for arrivals in proximity of sites N1, N2, and N3. A detailed review of the INM arrival flight tracks in proximity to the three northern sites was conducted (i.e., arrivals to Runways 18R, 18C,

and 18L). The review revealed a discrepancy between the geographic coordinate projection used by INM and that used by PDARS. The flight tracks in the INM model were refined to correct for the geographic coordinate system used by the INM. This resulted in an improvement of the modeled and measured noise comparison.

Meteorological data were also reviewed because temperature, barometric pressure, and humidity affect how noise travels through the atmosphere. Adjustments to these data in the INM were made in order to more closely match those conditions at the airport during the noise monitoring study. In particular, the use of humidity data invoked the “Modify Noise-Power-Distance Curves” feature of the INM which improved the results of the modeled and measured noise comparison.

4.4 Results of Final Comparison

After the existing conditions NEM model was adjusted to account for flight track alignment and weather input data, a final comparison of measured and modeled confidence intervals was conducted at each noise monitoring site as detailed in Sections 4.4.1 through 4.4.6 below.

4.4.1 Site N1

A total of 40 aircraft events were observed during the monitoring period for aircraft operating in proximity to Site N1. These events were all aircraft arriving to Runway 18R and included eight different aircraft types. Three aircraft, the MD11, 757, and A310, met the minimum requirements needed to conduct a confidence interval analysis (i.e., a minimum of 3 identical observed aircraft events at this site). A corresponding confidence interval analysis for these three aircraft within the INM was also prepared. **Table 5** includes the 99% confidence interval SEL ranges for the measured and modeled data.

As shown in **Table 5**, the measured confidence interval SEL values for the MD11 range from a low of 93.3 to a high of 97.9, the 757 from 88.0 to 91.9, and the A310 from 89.5 to 92.6. The modeled confidence interval SEL values for the MD11 range from 93.2 to 93.7, the 757 from 90.2 to 90.8, and the A310 from 91.2 to 91.8.

The confidence interval ranges for the INM data values overlap with the ranges for the measured data; therefore, the model data are a reasonable representation of the measured data.

TABLE 5.			
SITE N1 MEASURED VERSUS MODELED AIRCRAFT NOISE LEVELS			
<i>Observed Flights</i>			
INM Aircraft	MD11PW	757PW	A310-304
Runway	18R	18R	18R
Operation Type	Arrival	Arrival	Arrival
<i>Measured SEL (dB)</i>			
Average	95.6	90.0	91.1
Standard Deviation	1.7	0.3	0.5
99% Confidence – Lower	93.3	88.0	89.5
99% Confidence – Upper	97.9	91.9	92.6
<i>Modeled SEL (dB)</i>			
Average	93.5	90.5	91.5
Standard Deviation	0.3	0.3	0.3
99% Confidence – Lower	93.2	90.2	91.2
99% Confidence – Upper	93.7	90.8	91.8
<i>Measured versus Modeled</i>			
Meets Reasonableness Criteria?	Yes	Yes	Yes

4.4.2 Site N2

A total of 54 aircraft events were observed during the monitoring period for aircraft operating in proximity to Site N2. These events were aircraft arriving to Runways 18L and 18R and included 10 different aircraft types. Three aircraft, the MD11, A300, and DC10, met the minimum requirements needed to conduct a confidence interval analysis (i.e., a minimum of 3 identical observed aircraft events at this site). A corresponding confidence interval analysis for these three aircraft within the INM was also prepared. **Table 6** includes the 99% confidence interval SEL ranges for the measured and modeled data.

As shown in **Table 6**, the measured confidence interval SEL values for the MD11 on Runway 18L range from a low of 80.7 to a high of 90.8, the MD11 on 18R from 76.9 to 90.8, the A310 on 18L from 71.9 to 94.1, the A300 on 18R from 77.5 to 82.0 and the DC10 from 79.9 to 89.0. The modeled confidence interval SEL values for the MD11 on Runway 18L range from a low of 78.6 to a high of 81.1, the MD11 on 18R from 78.2 to 78.8, the A310 on 18L from 80.6 to 81.2, the A300 on 18R from 78.4 to 79.9 and the DC10 from 79.4 to 80.1.

The confidence interval ranges for the INM data values overlap with the ranges for the measured data; therefore, the model data are a reasonable representation of the measured data.

TABLE 6					
SITE N2 MEASURED VERSUS MODELED AIRCRAFT NOISE LEVELS					
<i>Observed Flights</i>					
INM Aircraft	MD11PW	MD11PW	A310-304	A300-622R	DC1030
Runway	18L	18R	18L	18R	18L
Operation Type	Arrival	Arrival	Arrival	Arrival	Arrival
<i>Measured SEL (dB)</i>					
Average	85.7	83.9	83.0	79.9	84.5
Standard Deviation	1.7	2.4	1.9	0.4	2.2
99% Confidence – Lower	80.7	76.9	71.9	77.5	79.9
99% Confidence – Upper	90.8	90.8	94.1	82.0	89.0
<i>Modeled SEL (dB)</i>					
Average	79.8	78.5	80.9	79.2	79.7
Standard Deviation	1.1	0.2	0.3	0.7	0.3
99% Confidence – Lower	78.6	78.2	80.6	78.4	79.4
99% Confidence – Upper	81.1	78.8	81.2	79.9	80.1
<i>Measured versus Modeled</i>					
Meets Reasonableness Criteria?	Yes	Yes	Yes	Yes	Yes

4.4.3 Site N3

A total of 51 aircraft events were observed during the monitoring period for aircraft operating in proximity to Site N3. These events were all aircraft arriving to Runway 18L and included five different aircraft types. Two aircraft, the MD11 and DC10, met the minimum requirements needed to conduct a confidence interval analysis (i.e., a minimum of 3 identical observed aircraft events at this site). A corresponding confidence interval analysis for these 2 aircraft within the INM was also prepared. **Table 7** includes the 99% confidence interval SEL ranges for the measured and modeled data.

As shown in **Table 7**, the measured confidence interval SEL values for the MD11 range from a low of 83.9 to a high of 97.1 and the DC10 from 85.2 to 91.9. The modeled confidence interval SEL values for the MD11 range from 87.0 to 87.7 and DC10 from 86.2 to 87.8.

The confidence interval ranges for the INM data values overlap with the ranges for the measured data; therefore, the model data are a reasonable representation of the measured data.

TABLE 7		
SITE N3 MEASURED VERSUS MODELED AIRCRAFT NOISE LEVELS		
<i>Observed Flights</i>		
INM Aircraft	MD11PW	DC1030
Runway	18L	18L
Operation Type	Arrival	Arrival
<i>Measured SEL (dB)</i>		
Average	90.5	88.5
Standard Deviation	1.1	2.0
99% Confidence – Lower	83.9	85.2
99% Confidence – Upper	97.1	91.9
<i>Modeled SEL (dB)</i>		
Average	87.3	87.0
Standard Deviation	0.3	0.7
99% Confidence – Lower	87.0	86.2
99% Confidence – Upper	87.7	87.8
<i>Measured versus Modeled</i>		
Meets Reasonableness Criteria?	Yes	Yes

4.4.4 Site S1

A total of 64 aircraft events were observed during the monitoring period for aircraft operating in proximity to Site S1. These events were aircraft departing from Runways 18R and 18C and included 10 different aircraft types. Three aircraft, the DC10, MD11, and 757, met the minimum requirements needed to conduct a confidence interval analysis (i.e., a minimum of 3 identical observed aircraft events at this site). A corresponding confidence interval analysis for these three aircraft within the INM was also prepared. **Table 8** includes the 99% confidence interval SEL ranges for the measured and modeled data.

As shown in **Table 8**, the measured confidence interval SEL values for the DC10 on Runway 18R range from a low of 93.1 to a high of 97.2, the DC10 on 18C from 74.3 to 97.4, the MD11 on 18R from 92.0 to 97.5, and the 757 on 18R from 83.8 to 94.4. The modeled confidence interval SEL values for the DC10 on Runway 18R range from a low of 88.5 to a high of 96.5, the DC10 on 18C from 81.9 to 85.9, the MD11 on 18R from 89.8 to 95.3, and the 757 on 18R from 83.1 to 85.9.

The confidence interval ranges for the INM data values overlap with the ranges for the measured data; therefore, the model data are a reasonable representation of the measured data.

TABLE 8				
SITE S1 MEASURED VERSUS MODELED AIRCRAFT NOISE LEVELS				
<i>Observed Flights</i>				
INM Aircraft	DC1030	DC1030	MD11PW	757PW
Runway	18R	18C	18R	18R
Operation Type	Departure	Departure	Departure	Departure
<i>Measured SEL (dB)</i>				
Average	95.2	85.8	94.8	89.1
Standard Deviation	1.2	5.6	1.7	1.8
99% Confidence – Lower	93.1	74.3	92.0	83.8
99% Confidence – Upper	97.2	97.4	97.5	94.4
<i>Modeled SEL (dB)</i>				
Average	92.5	83.9	92.6	84.5
Standard Deviation	3.6	1.8	2.5	1.3
99% Confidence – Lower	88.5	81.9	89.8	83.1
99% Confidence – Upper	96.5	85.9	95.3	85.9
<i>Measured versus Modeled</i>				
Meets Reasonableness Criteria?	Yes	Yes	Yes	Yes

4.4.5 Site S2

A total of 64 aircraft events were observed during the monitoring period for aircraft operating in proximity to Site S2. These events were aircraft departing from Runways 18R and 18C and included 10 different aircraft types. Three aircraft, the DC10, MD11, and A300 met the minimum requirements needed to conduct a confidence interval analysis (i.e., a minimum of 3 identical observed aircraft events at this site). A corresponding confidence interval analysis for these three aircraft within the INM was also prepared. **Table 9** includes the 99% confidence interval SEL ranges for the measured and modeled data.

As shown in **Table 9**, the measured confidence interval SEL values for the DC10 on Runway 18R range from a low of 63.1 to a high of 81.4, the DC10 on 18C from 86.3 to 92.2, the MD11 on 18R from 76.7 to 85.3, and the A300 on 18C from 78.9 to 89.7. The modeled confidence interval SEL values for the DC10 on Runway 18R range from a low of 67.2 to a high of 82.2, the DC10 on 18C from 84.2 to 87.8, the MD11 on 18R from 71.1 to 78.9, and the A300 on 18C from 72.9 to 85.0.

The confidence interval ranges for the INM data values overlap with the ranges for the measured data; therefore, the model data are a reasonable representation of the measured data.

TABLE 9				
SITE S2 MEASURED VERSUS MODELED AIRCRAFT NOISE LEVELS				
<i>Observed Flights</i>				
INM Aircraft	DC1030	DC1030	MD11PW	A300-622R
Runway	18R	18C	18R	18C
Operation Type	Departure	Departure	Departure	Departure
<i>Measured SEL (dB)</i>				
Average	72.3	89.2	81.0	84.3
Standard Deviation	3.1	1.4	2.1	1.9
99% Confidence – Lower	63.1	86.3	76.7	78.9
99% Confidence – Upper	81.4	92.2	85.3	89.7
<i>Modeled SEL (dB)</i>				
Average	74.7	86.0	75.0	82.1
Standard Deviation	6.7	1.6	3.5	2.6
99% Confidence – Lower	67.2	84.2	71.1	79.2
99% Confidence – Upper	82.2	87.8	78.9	85.0
<i>Measured versus Modeled</i>				
Meets Reasonableness Criteria?	Yes	Yes	Yes	Yes

4.4.6 Site S3

A total of 64 aircraft events were observed during the monitoring period for aircraft operating in proximity to Site S3. These events were aircraft departing from Runway 18C and included eight different aircraft types. Three aircraft, the DC10, MD11, and A300, met the minimum requirements needed to conduct a confidence interval analysis (i.e., a minimum of 3 identical observed aircraft events at this site). A corresponding confidence interval analysis for these three aircraft within the INM was also prepared. **Table 10** includes the 99% confidence interval SEL ranges for the measured and modeled data.

As shown in **Table 10**, the measured confidence interval SEL values for the DC10 range from a low of 75.6 to a high of 86.0, the MD11 from 69.4 to 89.2, and the A300 from 75.9 to 84.5. The modeled confidence interval SEL values for the DC10 range from 77.2 to 84.5, the MD11 from 72.1 to 79.9, and the A300 from 75.6 to 80.7.

The confidence interval ranges for the INM data values overlap with the ranges for the measured data; therefore, the model data are a reasonable representation of the measured data.

TABLE 10			
SITE S3 MEASURED VERSUS MODELED AIRCRAFT NOISE LEVELS			
<i>Observed Flights</i>			
INM Aircraft	DC1030	MD11PW	A300-622R
Runway	18C	18C	18C
Operation Type	Departure	Departure	Departure
<i>Measured SEL (dB)</i>			
Average	80.8	79.3	80.2
Standard Deviation	2.5	4.8	1.5
99% Confidence – Lower	75.6	69.4	75.9
99% Confidence – Upper	86.0	89.2	84.5
<i>Modeled SEL (dB)</i>			
Average	80.8	76.0	78.1
Standard Deviation	3.3	3.5	2.3
99% Confidence – Lower	77.2	72.1	75.6
99% Confidence – Upper	84.5	79.9	80.7
<i>Measured versus Modeled</i>			
Meets Reasonableness Criteria?	Yes	Yes	Yes

5. Conclusion and Recommendations

In support of the NEM Update Study, a short-term Airport Noise Monitoring Study was conducted during a 5-day period in late October through early November 2013. The purpose of the noise monitoring study was twofold:

- (1) To characterize the overall ambient noise levels in communities surrounding the airport.
- (2) To assess the reasonableness of the DNL contours depicted in the existing conditions NEM.

With respect to item (1) above, measured overall DNL, estimated aircraft DNL, and estimated community DNL were calculated. These levels varied from day-to-day during the noise monitoring study. At 5 of the 6 noise monitoring sites the estimated aircraft DNL was higher than the estimated community DNL.

With respect to item (2) above, two recommendations resulted from the comparison of measured and modeled noise levels:

- **Adjust flight tracks to match the coordinate system used by the INM.** There was an offset between the geographic coordinate projection of the FAA PDARS radar data and that used by the INM. An adjustment resulted in a better alignment of INM arrival flight tracks to Runways 18R, 18C, and 18L.
- **Input detailed weather data specific to the dates modeled.** The temperature, humidity, and barometric pressure specific to the dates of the noise monitoring study were input to INM. The use of humidity invoked the “Modify Noise-Power-Distance Curves” feature of the INM.

The implementation of these recommendations improved the comparisons between measured and modeled noise levels, therefore demonstrating that the revised existing conditions NEM model is a reasonable representation of actual conditions at MEM.

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MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY

OFFICE: MEMPHIS INTERNATIONAL AIRPORT
2491 WINCHESTER RD., SUITE 113
MEMPHIS, TENNESSEE 38116-3856
OFFICE: 901-922-8000 / FAX 901-922-8099
INTERNET WEB PAGE ADDRESS <http://www.mscaa.com>



November 19, 2012

Name _____
Organization _____
Street Address _____
City, State Zip Code _____

RE: Memphis International Airport Part 150 Noise Exposure Map Update

Dear _____

The Memphis Shelby County Airport Authority, as owner and operator of the Memphis International Airport, is beginning work on a *Title 14 Code of Federal Regulations (CFR) Part 150 Noise Exposure Map (NEM) Update*. The MSCAA has contracted the consulting firm URS Corporation to assist them in the preparation of the Part 150 NEM Update.


Title 14 CFR part 150 implements the provisions in the *Aviation Safety and Noise Abatement Act of 1979 (ASNA, recodified at 49 USC 47501 et seq.)* for airport noise compatibility planning. It prescribes the procedures, standards, and methodology governing the voluntary development, submission, and review of airport Noise Exposure Maps.

The NEM is a graphic depiction of noise exposure around an airport. The Part 150 process requires that airport operators prepare two NEMs. The first NEM shows existing noise exposure, while the second NEM shows estimated noise exposure at least 5 years in the future. The NEM also depicts the noncompatible land uses within the noise exposure contours. The preparation of the NEMs begins with three major tasks that set the stage for preparing the NEMs and completing the required consultations. The tasks include: collecting and analyzing aircraft and airport operational data, collecting and mapping land use data, and establishing a public participation program.

Part 150 §150.21(b) requires that NEMs be developed and prepared in consultation with the Federal Aviation Administration, as well as federal, state, and local public and planning agencies having jurisdiction and/or responsibility for land uses depicted on the NEM. This consultation must also include regular aeronautical users of the airport, including air carriers and other aircraft operators. You are receiving this letter in accordance with this requirement.

If you have any questions regarding Memphis International Airport's Part 150 NEM Update, please contact Lori Morris, P.E. CHMM, Manager of Environmental Services, at (901) 922-8754 or by e-mail at lorim@mscaa.com. If you would like to be included on the distribution list for progress reports and notification of future opportunities to participate, please provide an e-mail address to Lori Morris.

Sincerely,


Larry D. Cox, A.A.E.
President and CEO

CC: Federal Aviation Administration
URS Corporation
Project File 12-1344-00

Memphis International Airport
PART 150 NEM Update
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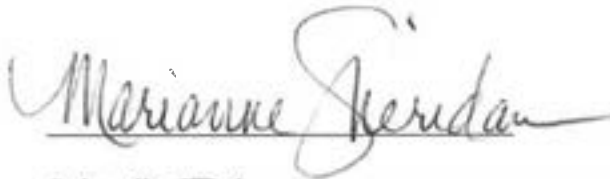
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**The Commercial Appeal
Affidavit of Publication**

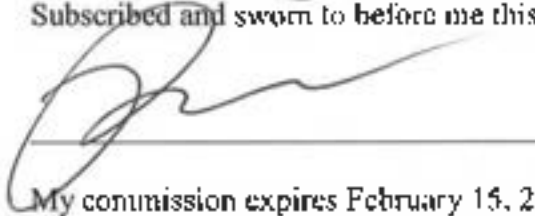
**STATE OF TENNESSEE
COUNTY OF SHELBY**

Personally appeared before me, Patrick Maddox, a Notary Public, Marianne Sheridan, of MEMPHIS PUBLISHING COMPANY, a corporation, publishers of The Commercial Appeal, morning and Sunday paper, published in Memphis, Tennessee, who makes oath in due form of law, that she is Legal Clerk of the said Memphis Publishing Company, and that the accompanying and hereto attached notice was published in the following editions of The Commercial Appeal to-wit:

September 16, 2014



Subscribed and sworn to before me this 16th day of September, 2014.

 Notary Public

My commission expires February 15, 2016.



My Commission expires 02/15/2016

**The Commercial Appeal
Affidavit of Publication**

STATE OF TENNESSEE

COUNTY OF SHELBY

Personally appeared before me, Patrick Maddox, a Notary Public, Helen Curl, of MEMPHIS PUBLISHING COMPANY, a corporation, publishers of The Commercial Appeal, morning and Sunday paper, published in Memphis, Tennessee, who makes oath in due form of law, that she is Legal Clerk of the said Memphis Publishing Company, and that the accompanying and hereto attached notice was published in the following editions of The Commercial Appeal to-wit:

September 26, 2014

September 30, 2014

October 2, 2014

Helen Curl

Subscribed and sworn to before me this 9th day of October, 2014.

Patrick Maddox Notary Public

My commission expires February 15, 2016.



My Commission Expires 02/15/2016

REAL ESTATE AREAS MAP

... and authority vested in it, with an October 22, 2014, at 10:00AM, at the Comfort Inn, Downtown, 100 N. Front Street, Memphis, TN 38102, proceed to sell at public outcry to the highest and best bidder for cash, the following described property situated in Shelby County, Tennessee, to wit:

Lot 22, Section A, Fox Ridge Park, as shown on plat of record in Plat Book 43, Page 13, in the Register's Office of Shelby County, Tennessee, to which plat reference is made for a more particular description of said property.

Parcel ID number: 02104 A0002

Address/Description: 888 Pebble Beach Avenue, Memphis, TN 38115

Current Owner(s): Edgar Bright, a married man.

Other interested Party(ies): Security Credit Services, LLC and Independence Receivables Corp.

The sale of the property described above shall be subject to all matters shown on any recorded plat; any and all liens against said property for unpaid property taxes; any restrictive covenants, easements or setback lines that may be applicable; any or all liens or encumbrances as well as any priority created by a fixture filing; a deed of trust; and any matter that an accurate survey of the premises might disclose; and

All right and equity of redemption, minority or otherwise, homestead, and dower are expressly waived in said Deed of Trust, and the title is believed to be good, but the undersigned will sell and convey only as Substituted Trustee. The right is reserved to adjourn the day of the sale to another day, time, and place certain without further publication, upon announcement at the time and place for the sale set forth above.

This office is endeavoring to collect a debt. Any information obtained will be used for that purpose. Brock & Scott, PLLC, Substituted Trustee c/o Tennessee Foreclosure Department 271 Madison Station Road Suite 117 Franklin, TN 37067 Ph: 615-550-7897 Ph: 615-550-4404 File No: 14-18993

Second Floor
Memphis, TN 38117
Phone (901) 742-5544
Fax (901) 742-5599
www.Airshuttleflights.com
File No. 14-050393

NOTICE OF TRUSTEE'S SALE

WHEREAS, default has occurred in the performance of the covenants, terms, and conditions of a Deed of Trust Note dated October 25, 2013, and the Deed of Trust of the date securing the same, recorded November 25, 2013, at Book 774, Page 392 in Office of the Register of Deeds of Over County, Tennessee, executed by Terry L. Sanders, conveying certain property therein described to Mark Koser, c/o First American Title Ins as Trustee for Mortgage Electronic Registration Systems, Inc., as nominee for Century Lending Company, its successors and assigns, and the undersigned, Wilson & Associates, P.L.L.C., having been appointed Successor Trustee;

NOW, THEREFORE, notice is hereby given that the entire indebtedness has been declared due and payable and that an agent of Wilson & Associates, P.L.L.C., as Successor Trustee, by virtue of the power, duty, and authority vested in and imposed upon said Successor Trustee will, on November 14, 2014, at or about 11:00 A.M., at the Over County Courthouse, Over County, Tennessee, offer for sale certain real property hereinafter described to the highest bidder, a P.G.R. certified bidder, for the sum of funds paid at the conclusion of the sale, or credit bid from a bank or other lending entity pre-approved by the Successor Trustee. The sale is free from all exemptions which are expressly waived in the Deed of Trust, said property being real estate situated in Shelby County, Tennessee, and being more particularly described as follows: Situate, lying and being in the Seventh (7th) Civil District of Over County, Tennessee, and being more particularly described as Lot Twenty-Six (26), Section 18, Ridge Subdivision, as shown of record in Plat Book 43, in Cabinet B, Sleeve 43A, in the Register's Office for the Register's Office for Over County, Tennessee, reference to which plat is hereby made for a more complete and accurate description of and to said realty.

ALSO KNOWN AS: 173 Cortez Cove, Overburg, Tennessee 38554

This sale is subject to all matters shown on any applicable recorded plat; any restrictive covenants, easements or setback lines that may be applicable; any statutory rights of redemption of any person or governmental agency, state or federal; any prior liens or encumbrances as well as any priority created by a fixture filing; and to any matter that an accurate survey of the premises might disclose. In addition, the following series may be in the instant in the chain of title: referenced to the above-referenced parcel ID: Vance C. Sanders. The sale held pursuant to this notice may be rescinded at the Successor Trustee's option at any time. The right is reserved to adjourn the day of the sale to another day, time, and place certain without further publication, upon announcement at the time

MANITOWOC Purchasing Director (901) 737-7381

MEMPHIS INTERNATIONAL AIRPORT PUBLIC INFORMATION MEETING

The Memphis-Shelby County Airport Authority will host a Public Information Workshop on Thursday, October 9th, 2014.

The Workshop will be held between the hours of 9 and 4 P.M. Airport Consultants and Airport staff will be available for Questions & Answers.

Come see displays about the updated Noise Exposure Maps. Visit with Consultants and Memphis Airport staff. Learn about the process and provide your Comments.

LOCATION: Airport Project Center 425 Airways Blvd. Memphis, Tennessee 38114

The Updated Noise Exposure Maps document will be available for review beginning September 17, 2014 at the following Public Libraries:

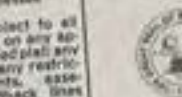
- Main Library, 3000 Poplar Avenue, Memphis, TN 38111
- Cherokee Library, 3306 Sharps, Memphis, TN 38111
- Whitman Library, 4120 Mill Branch Rd. Memphis, TN 38115
- Shelby Village Library, 4655 Knight Avenue, Memphis, TN 38118
- Poplar-White Station Library, 5014 Poplar Memphis, TN 38117
- Southern Public Library, 5809 Northwest Drive, Southaven, MS

and on the Airport's website at: <http://www.msacaa.com/node/29>

Comments will be accepted at the Public Information Workshop. OR Comments may be delivered, mailed, or e-mailed to:

Lori Morris, P.E., Manager of Environmental Services Memphis-Shelby County Airport Authority 2401 Winchester Road Suite 112 Memphis, TN 38114-3256 E-Mail: lorim@msacaa.com

Please Provide Comments by October 29, 2014



NOTICE TO BIDDERS

Bids are to be received no later than 1:00 P.M. on October 14, 2014. Sealed bids are to be marked Bartlett Fire Department Training Center and are to be addressed to the attention of Mayor A. Keith McDonald at the following address:

CITY OF BARTLETT
400 STAG ROAD
P.O. BOX 31148
BARTLETT, TENNESSEE 38134-1148

The City of Bartlett reserves the right to reject any and all bids and to waive any informality in the bidding process. The City of Bartlett is an equal opportunity employer.

1-511 Page 307-44
SNC/404

2-1871 Millington/Tombigbee

For Sale 374

BARNETT'S JEWELRY-61 yr. old fam. bus. Kellie owner. TURN KEY OPERATION. Lg. Inv. 25 lighted showcases, 3 floor locked repair dept. w/ vault. Trained bench jeweler & store mgr. in place if needed. 2 engraving mach. Sur award business, etc. Surv property or friendly lease. Sec. system/cameras 24 hr. police prot. Fully operating business 4 miles from TN River. Ref. req. 771-640-2812

DENTAL office-Southernville, TN. Commercial/TCare Ins. accepted. Reduced! Great investment opportunity. New dentist or investor. Call 901-460-9112/901-993-3489



- 601 - Church Property
- 602 - Cemetery Lots
- 605 - Farm Land, Sale, Rent or Wanted
- 607 - Lots & Acreage
- 609 - Recreation or Resort Property For Sale
- 611 - Condominiums, Townhouses
- 613 - Homes, Suburban Homes For Sale (Areas 1-30)
- 615 - Area 1-Frazier/Northeast/Shelby Forest
- 617 - Area 2-Millington/Rosemark/Woodstock
- 619 - Area 3-Brunswick/Bolton
- 621 - Area 4-Raleigh
- 623 - Area 5-Bartlett/Davies
- 625 - Area 6-Downtown
- 627 - Area 7-Midtown/Vallentine
- 629 - Area 8-Bartlett/Hillside Heights
- 631 - Area 9-East Memphis/River Oaks
- 633 - Area 10-Sycamore View/Whitten
- 635 - Area 11-Cordova/Countrywood
- 637 - Area 12-East/Fingh Fisherville
- 639 - Area 13-South Memphis
- 641 - Area 14-U of M/Colonial
- 643 - Area 15-Balmore/Kirby/Keneshaw/Brierley
- 645 - Area 16-Germantown
- 647 - Area 17-Coro Lake/Westwood/Racco Lake
- 649 - Area 18-Whitehaven
- 651 - Area 19-Oakhaven
- 653 - Area 20-Parkway Village
- 655 - Area 21-Fox Meadows/Hickory Ridge
- 657 - Area 22-Southeast
- 659 - Area 23-Collerville
- 661 - Area 24-West Memphis
- 663 - Area 25 (Mississippi)
- 665 - Mississippi Real Estate
- 667 - Southaven, MS
- 669 - Horn Lake, MS
- 671 - Olive Branch, MS
- 673 - Tipton County Real Estate
- 675 - Fayette County Real Estate
- 677 - Dyer, TN

Homes-Area 2
Millington/Rosemark/Woodstock

For Sale 710

Commercial Property For Sale

SOUTHAVEN CENTER FOR SALE
39,000 sq. ft. - 10% OCC
\$3.93 M - 50% DOWN
ASSUME \$1.1 MILL
RON SHAW - PLENTY OF CASH FLOW, 2 WEDGHT
877-337-6661
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Office or Cash Space For Rent 740

POPLAR AVENUE
Centrally Located
(901) 582-3235



- 605 - Renters Services & Management
- 610 - Residential Care & Nursing Homes
- 615 - Recreation/Resort Property For Rent
- 620 - Motels & Hotels
- 625 - Rooms For Rent
- 630 - Roommates
- 635 - Rentals to Share
- 645 - Duplexes, Townhouses & Condo (Furnished)
- 650 - Duplexes, Townhouses & Condo (Unfurnished)
- 655 - Homes (Unfurnished)
- 660 - Mobile Homes For Rent
- 665 - Wanted To Rent
- 670 - Apartments (Furnished)
- 675 - Location...
- 680 - Bartlett
- 685 - Collierville & Germantown
- 690 - Cordova & Lakeland
- 695 - Downtown
- 700 - East
- 705 - Frazier & NW Memphis
- 710 - Midtown
- 715 - North Mississippi
- 720 - Raleigh & NE Memphis
- 725 - Southeast
- 730 - Southwest
- 735 - Millington & Tipton
- 740 - W. Memphis & N. AR
- 745 - Out of Town

Rooms For Rent 8

AIRPORT AREA, side Dr., Highland, Peeler and Scott, B. Call: 901-291-1811

AIRWAYS/PAK BELLEVUE/MCLB 901-291-1811

BED/ROOMING RAILIGH - \$130-4 Disc. monthly rate Extra nice & peaceful, on-site house, mature atmosphere, pets only, 551 or trucker/serv. 901-575-1811/901-575-1811

BELLEVUE/MCLB 1800 - 1800, L/R/K cash, cable, furn. Or 515-550-990

CLAYBROOK/AR AC Cable, phone, 901-511-1111

MIPTOWN 901-511-1111

Weekend + marred by rash of

Mandann shot 'Tarkie
Rogers Brown, 43,
as he was
walking up the steps to his
home in the 1000 block of
Greenlaw near Downtown
around 8 p.m. Saturday.

According to the affidavit, Brown said Rogers approached him and fired about four shots that hit him in the right thigh and hip. He was taken to the Regional Medical Center.

Rogers fled on foot, but later called police and told officers he was in the 6500 block of Millcreek. Officers went to the location and arrested him.

Rogers' bond was set at \$60,000 and he is due to make his first appearance in court Monday.

Police continue to investigate three other shootings in the city Saturday and Sunday.

An off-duty police officer was shot shortly after 6 p.m. Saturday in the 3000 block of Mt. Olive in North Memphis.

Police said the officer, Elgin Lee, 47, was visiting friends at the home after the funeral of a man known as the "Mayor of Douglass." He was standing outside with several others when he saw two men in a green Toyota Tundra slowly drive past. He suffered a gunshot wound to the upper left leg.

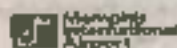
A 51-year-old man was also standing outside and was hit in the lower left leg. Both were taken to Regional Medical Center in noncritical condition. A 39-year-old man and a 21-year-old man were both grazed. A 6-month-old boy was not injured.

Before this shooting, police were called to an apartment complex on Alcy, where a 24-year-old man was shot in the back

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P.L.L.C., Subst
c/o Tennessee
Department
277 Mallory St,
Suite 113
Franklin, TN 37
PH: 615-550-7690
FX: 615-550-8484
File No. 14-0674

604, Page 572 in the Reg-
with the warranty reser-
vation that the sale is subject
to confirmation by the
sender or trustee. This sale
may be rescinded at any
time.
Shapiro & Kirsch,
LLP Substitute Trustee
Law Office of Shapiro &
Kirsch, LLP
555 Perkins Road Extended,
Second Floor
Memphis, TN 38117
Phone (901) 747-5566
Fax (901) 747-5490
www.kirschattorneys.com
File No. 14-060563



MEMPHIS INTERNATIONAL AIRPORT PUBLIC INFORMATION MEETING

The Memphis-Shelby
County Airport Authority
will host a Public
Information Workshop
on Thursday,
October 9th, 2014.

The Workshop will be held
between the hours of
6 and 8 PM. Airport
Consultants and Airport
Staff will be available for
Questions & Answers.

Come see displays about
the updated Noise
Exposure Maps.
Visit with Consultants and
Memphis Airport Staff.
Learn about the process
and provide your
Comments.

LOCATION:
Airport Project Center
4225 Airways Blvd,
Memphis, Tennessee 38118

**The Updated Noise
Exposure Maps** document
will be available for review
as any prior
beginning September 17,
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Public Libraries:
Main Library, 3030 Poplar
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c/o Tennessee
Department
277 Mallory St,
Suite 113
Franklin, TN 37
PH: 615-550-7690
FX: 615-550-8484
File No. 14-0674

OR Comments may be
delivered, mailed, or
e-mailed to:
Mr. Morris, P.E., Manager
of Environmental Services
Memphis-Shelby County
Airport Authority
2691 Winchester Road,
Suite 113
Memphis, TN 38118-3856
E-Mail: lorim@mscaa.com

**NOTICE
FOR CLOSURE**
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City to lower the boom on harbor trash woes

By Tom Charter
 charter@commercialappeal.com
 901-529-7572

Two record-setting downpours less than three months apart laid waste to Memphis' efforts to keep trash out of Wolf River Harbor.

The storms, the first one in late June and the second last week, blew apart the floating structure known as a trash rack at the Bayou Gayoso Pumping Station at Front and Saffarans. The city had installed it in 2012 at a cost of nearly \$903,000 to capture the large volume of litter that gets washed down storm drains and through the pumping station into the harbor and adjoining Mississippi River.

Memphis officials, however, say they've come up with a relatively low-cost fix for the facility. Within the next two months, they'll install floating booms, similar to those used in the logging industry, to capture trash at the site.

The work should be simple and cost no more than \$150,000, said Paul Patterson, administrator of environmental engineering for the city. "I hate that we have to spend anything," he said.

The original trash rack consisted of floating piers — much like those at marinas — mounted on pilings aligned in somewhat of a horseshoe pattern around the pumping station outfall. A baffle curtain extending from the piers a couple feet or so into the water corralled the trash.

The pilings, each about 60 to 80 feet long, allow the trash rack to rise and fall with the often-dramatic fluctuations of the Mississippi.

The storm in June sent such a powerful and large flow of water through the pumping station that it burst part of the rack. The even more intense rainfall last week caused further damage, Patterson said.

"You just can't underestimate the power of water,"

The renovation work will use the pilings and parts of the old rack. The advantage to the booms, which will be 12-16 inches in diameter and in 20-foot-long sections, is their flexibility.

They also will have an engineered break point, meaning that if flows become too extreme, the booms will give way instead of sustaining damage, Patterson said.

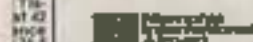
If the new design works, city officials might install a similar structure in McKellar Lake, where Nonconnah Creek washes in even greater volumes of litter, he said.

Shelly Hamm, financial manager for the group Living Lands & Waters, which conducts cleanup events along the Mississippi and has made several trips to Memphis, said the organization pulled 150,000 pounds of trash out of McKellar Lake this past spring.

The group has worked with city and state officials to find a long-term solution to the litter problem.

Notices

may be recorded at any time.
 Shapiro & Kirach,
 LLP Substitute Trustee
 Law Office of Shapiro &
 Kirach, LLP
 553 Perkins Road Extended,
 Second Floor
 Memphis, TN 38117
 Phone (901)767-3566
 Fax (901)761-5890
 www.shapiroandkirach.com
 File No. 14-058706



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4655 Knight Arnold,
Memphis TN 38118
Poplar-White Station
Library, 5094 Poplar
Memphis TN 38117
Southaven Public Library,
889 Northwest Drive,
Southaven, MS
and on the Airport's website
at
http://www.mscas.com/
noise/280

Comments will be accepted
at the Public Information
Workshop.
OR Comments may be
delivered, mailed, or
e-mailed to:

Lori Morris, P.E., Manager
of Environmental Services
Memphis-Shelby County
Airport Authority
2491 Winchester Road,
Suite 113
Memphis, TN 38114-3856
E-Mail: lori.m@mscaa.com

Please Provide Comments
by October 23, 2014

Police report

WHITEHAVEN

Woman charged with animal cruelty

A Whitehaven woman who was warned about her malnourished dogs last year is charged with five counts of animal cruelty, according to Memphis police.

Police responded to a fire call in the 1900 block of Victoria Sunday and found five dogs that ap-

robbery. No bond is set for Harth. He is due in court Tuesday morning.

Timberly Moore

SNAPSHOT

Memphian charged in cold case rape: A 57-year-old Memphis man has been charged in connection with the rape of a woman in western Michigan at knifepoint six years ago. Michigan Atty. Gen. Bill Schuette and Kalamazoo

**CORDOVA
CARPET CO.
CARPET
SALE**

17 Months
Same As Cash

TEXTURED CARPET
 \$1.66 sq. ft. installed 7'16" x 6'6" Pad
FRIEZE CARPET
 \$1.98 sq. ft. installed 7'16" x 6'6" Pad

Do you
know if
you have

AFPP

MIA

Affidavit of Publication

DESOTO TIMES-TRIBUNE

STATE OF MS) SS
COUNTY OF DESOTO)

DIANE SMITH, being duly sworn, says:

That she is a Clerk of the DESOTO TIMES-TRIBUNE, a newspaper of general circulation in said county, published in Hernando, DeSoto County, MS; that the publication, a copy of which is printed heron, was published in the said newspaper on the following dates:

September 30, 2014, October 02, 2014, September 18, 2014

That said newspaper was regularly issued and circulated on those dates.

SIGNED:



Clerk

Subscribed to and sworn to me this 2nd day of October 2014.



JUDY HAYES, Notary, DeSoto County, MS

My commission expires: October 01, 2017

0000406 / 00032164

Lori Morris
Memphis Shelby County Airport
2491 Winchester Road
Suite 113
Memphis, TN 38116



Memphis International Airport

PUBLIC INFORMATION MEETING

The Memphis-Shelby County Airport Authority
will host a Public Information Workshop
on Thursday, October 9th, 2014

The Workshop will be held between the hours of 6 and 8 PM
Airport Consultants and Airport staff will be available for Questions & Answers

Come see displays about the updated Noise Exposure Maps
Visit with Consultants and Memphis Airport staff
Learn about the process and provide your Comments.

LOCATION: Airport Project Center
4223 Airways Blvd.
Memphis, Tennessee 38116

The Updated Noise Exposure Maps document will be available for review

beginning September 17, 2014 at the following Public Libraries:
Main Library, 3030 Poplar Avenue, Memphis, TN 38111
Cherokee Library, 3300 Sharpe, Memphis, TN 38111
Whitehaven Library, 4120 Mill Branch Rd Memphis, TN 38116
Parkway Village Library, 4655 Knight Arnold, Memphis TN 38118
Poplar-White Station Library, 5094 Poplar Memphis TN 38117
Southaven Public Library, 8889 Northwest Drive, Southaven, MS
and on the Airport's website at

<http://www.mscaa.com/node/280>

Comments will be accepted at the Public Information Workshop
OR Comments may be delivered, mailed, or e-mailed to:

Lori Morris, P.E., Manager of Environmental Services
Memphis-Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, TN 38116-3856
E-Mail: lorim@mscaa.com

Please Provide Comments by October 23, 2014



SIGN-IN SHEET
PUBLIC INFORMATION MEETING
Memphis International Airport
Part 150 Noise Compatibility Study
Airport Project Center, Memphis International Airport
October 9, 2014 Between 6 and 8 P.M.
PLEASE PRINT YOUR NAME CLEARLY ON THE LINE BELOW

URS

NAME (Please Print)	Address (Street, City, State, Zip)	Phone	E-Mail Address
Edmund Cotton Bessie Cotton	1533 Augenot Street.	901-743-4543	Cotton569212@bellsouth.net
Andren Jeans	3684 Bedford Ln	901 619-5985	jeans.ar93@gmail.com
Floyd Hughey	3733 OAK LAKE LN.	901- 797-9930	fhug@bellsouth.net
Beverly Burroughs	3675 Oak Lake Ln. ^{Mohs,} TN 38118	901 794-5658	burro664@bellsouth.net
John Burroughs	3675 Oak Lake Ln. ^{Mohs,} TN 38118	11	

COMMENT SHEET

PUBLIC INFORMATION MEETING
October 9, 2014
Memphis International Airport
Part 150 Study



Please state your comments clearly and concisely regarding the Program:

PLEASE PRINT

Comments:

I am concerned about
publicity for this type of public
event - Perhaps getting info through
the Neighborhood Watch Associations or
through "Nextdoor" which caters
to individual neighborhoods throughout
the city may be a great vehicle for
publicity - Early morning ^{local} t.v. shows
would probably be helpful ~~also~~ also

Name:
Organization:
Address:

Beverly Burroughs
Oakhaven Neighborhood

Comments due at the Airport by October 23, 2014

MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY
PUBLIC INFORMATION MEETING

MEMPHIS INTERNATIONAL AIRPORT

4225 Airways

Memphis, Tennessee

October 9, 2014

H & N COURT REPORTING

P.O. Box 11613

Memphis, Tennessee 38111

APPEARANCES

MR. HANS BORRIES
Senior Airport Noise Specialist
URS Corporation
7650 W. Courtney Campbell Causeway
Tampa, Florida 33607-1462

MS. DEBORAH MURPHY
Lagos & Associates, LLC
4636 Alisa Circle NE
St. Petersburg, Florida 33703

MR. DANIEL T. BOTTG
URS CORPORATION
7650 W. Courtney Campbell Causeway
Tampa, Florida 33607-1462

MS. LORI MORRIS, P.E.
Manager of Environmental Services
Memphis-Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, Tennessee 38116

MR. SCOTT A. BROCKMAN, A.A.E.
President and Chief Executive Officer
Memphis-Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, Tennessee 38116

MR. JOHN GREARD
Vice President of Operations
Memphis-Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, Tennessee 38116

MR. RICHARD V. WHITE, A.A.E.
Vice President Properties & Business Development
Memphis-Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, Tennessee 38116

MR. JAMES A. HAY
Director of Development
Memphis-Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, Tennessee 38116

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MR. GLEN THOMAS
Senior Manager of Strategic Communications
& Community Outreach/FIC
Memphis-Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, Tennessee 38116

MR. CHARLES L. HARRIS, P.E.
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Department Head/Planning & Landscape Architecture
Fisher Arnold Engineering Integration
9180 Crestwyn Hills Drive
Memphis, Tennessee 38125

MR. CLINT MORROW
Senior Environmental Engineer
KB Environmental Sciences
1340 Smith Avenue, Suite 200
Baltimore, Maryland 21209

REPORTED BY:

MS. CARY E. MILLER
Court Reporter, CSR, LCR #168

P R O C E E D I N G S

6:48 p.m.

MS. ANDREA JEANS: I have a suggestion about the hangars that do the -- that service the airplanes -- they are located on Winchester. There are two hangars there -- and that somehow maybe the airport can use blockers to absorb sound, so it will not go out into the neighborhood.

My experience when that happens, the noise is loud and it shakes. It's like a -- like a -- you would think it was a little, soft earthquake, sitting on your sofa.

And that is my suggestion. My name is Andrea Jeans, and I am making this comment. I live in the Oakhaven Community. Thank you.

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C-E-R-T-I-F-I-C-A-T-E

STATE OF TENNESSEE
COUNTY OF SHELBY

I, **CARY E. MILLER**, certified and licensed
court reporter and Notary Public, Shelby County,
Tennessee, CERTIFY:

1. The foregoing comment was taken before
me at the time and place stated in the foregoing
styled cause with the appearances as noted;

2. Being a Court Reporter, I then reported
the proceedings in Stenotype to the best of my skill
and ability, and the foregoing pages contain a full,
true and correct transcript of my said stenotype notes
then and there taken;

3. I am not in the employ of and am not
related to any of the parties or their counsel, and I
have no interest in the matter involved;

4. I FURTHER CERTIFY that this transcript
is the work product of this Court Reporting Agency and
any unauthorized reproduction and/or transfer of it
will be in violation of Tennessee Code Annotated
39-14-149, Theft of Services.

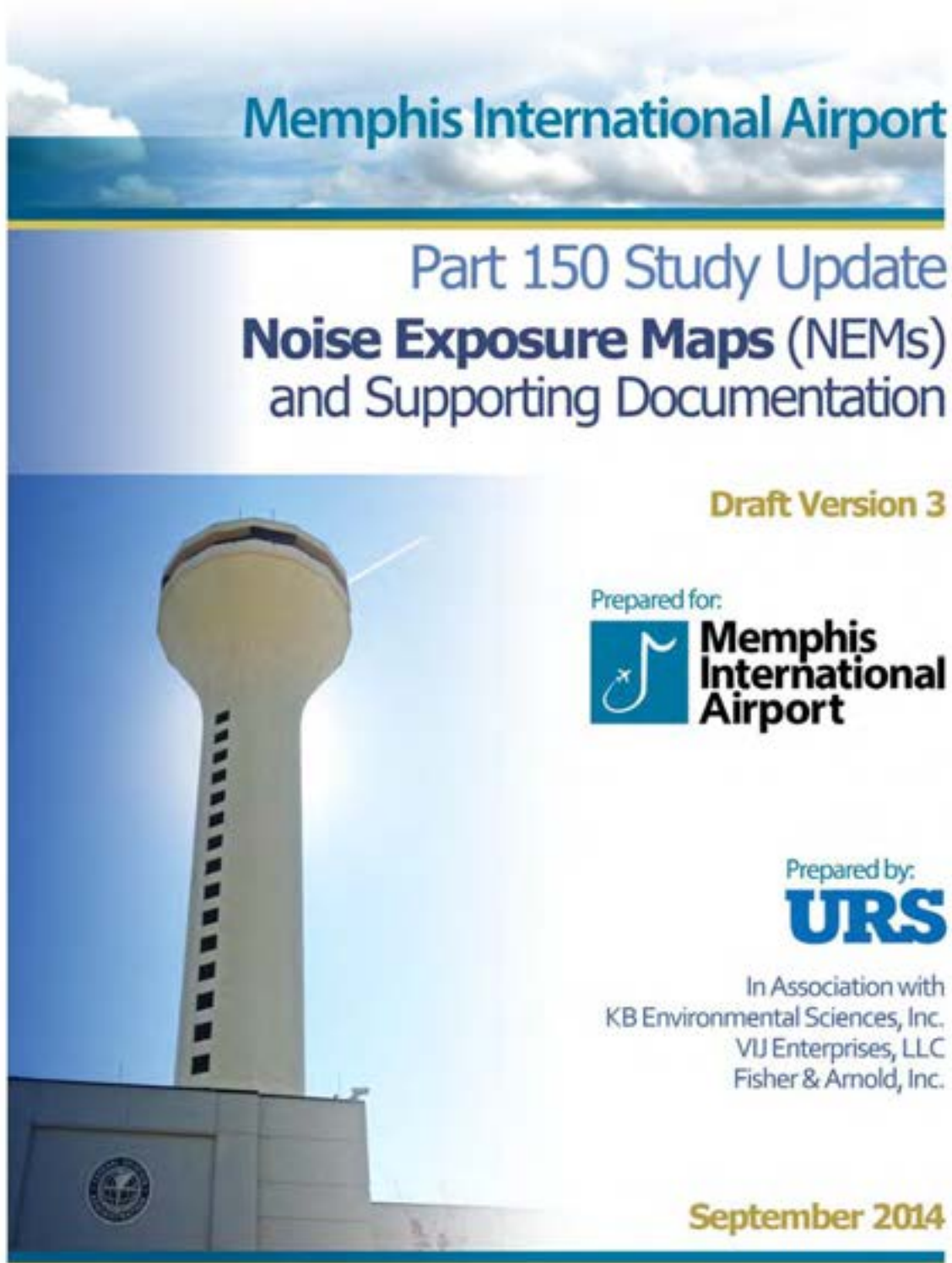
WITNESS MY SIGNATURE this, the 17th
day of October, 2014.



Cary E. Miller
Cary E. Miller
CSR, LCR #168
Court Reporter and Notary Public

My commission expires:
June 30, 2016

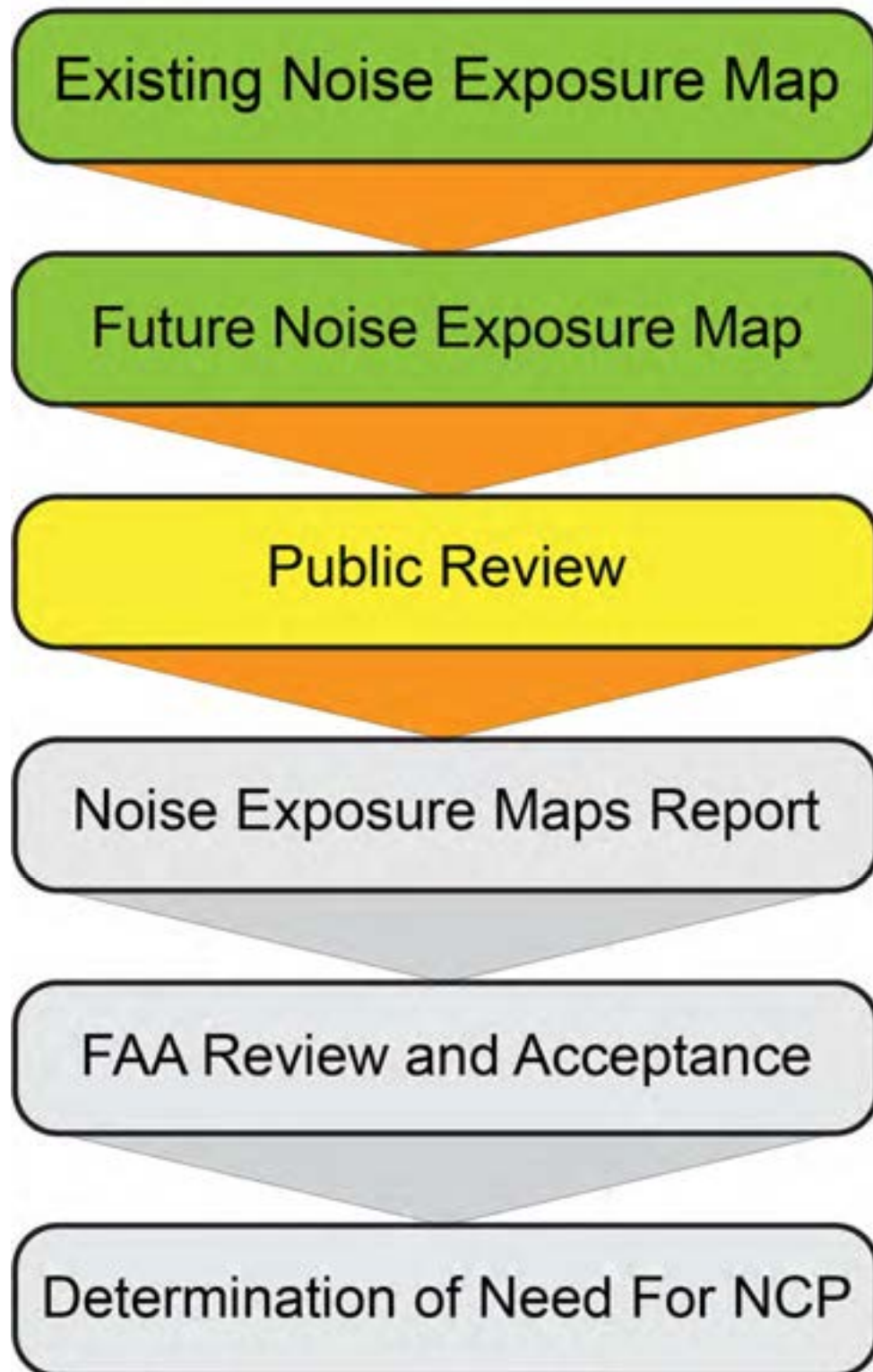
Welcome to the Public Meeting



October 9, 2014

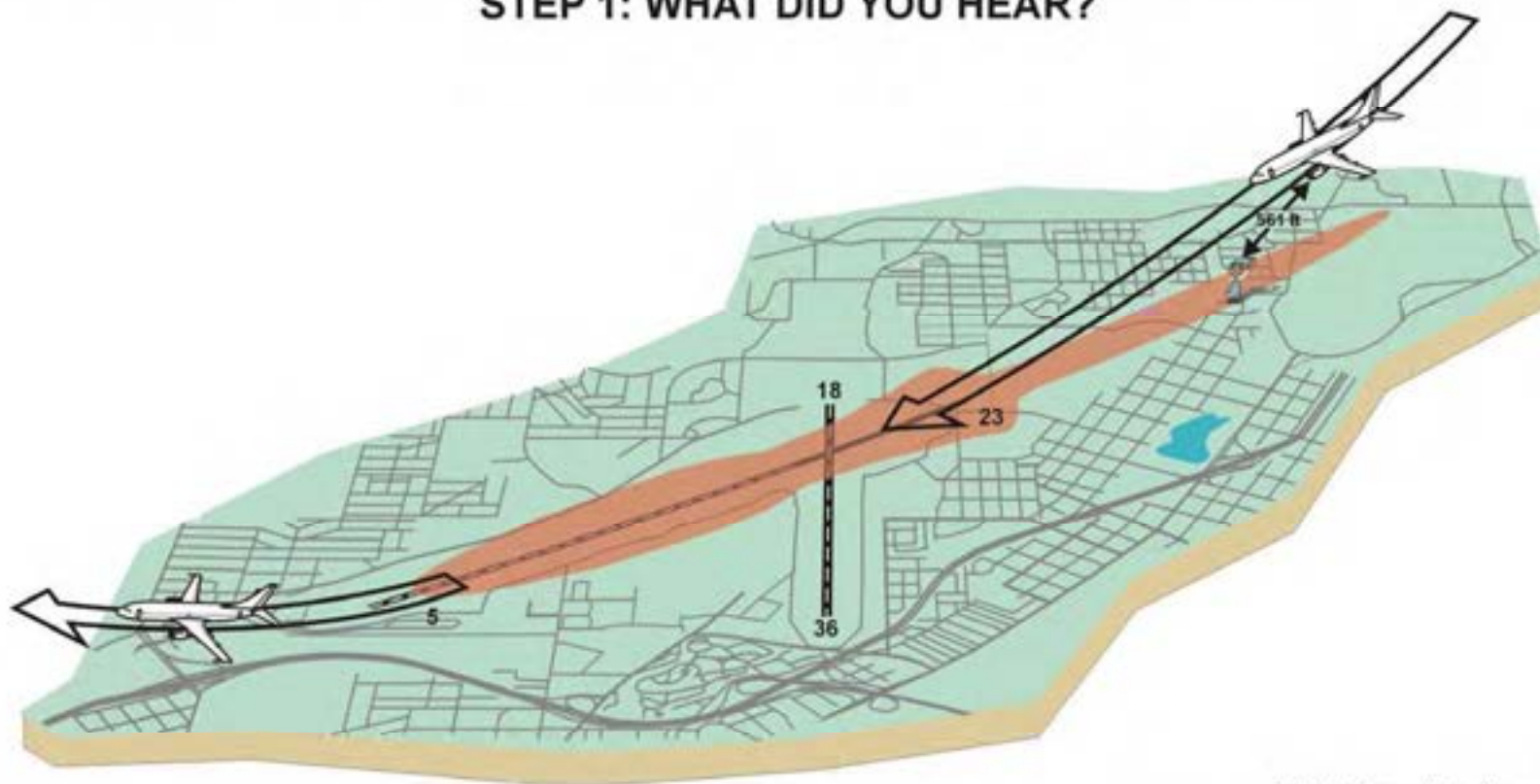
Part 150 Process

NOISE EXPOSURE MAPS



AIRCRAFT NOISE: HOW WE MEASURE IT AND ASSESS ITS IMPACT

STEP 1: WHAT DID YOU HEAR?



AIRCRAFT NOISE: HOW WE MEASURE IT AND ASSESS ITS IMPACT

STEP 2: HOW LOUD IS THAT?



Source: EPA Corporation, 2008



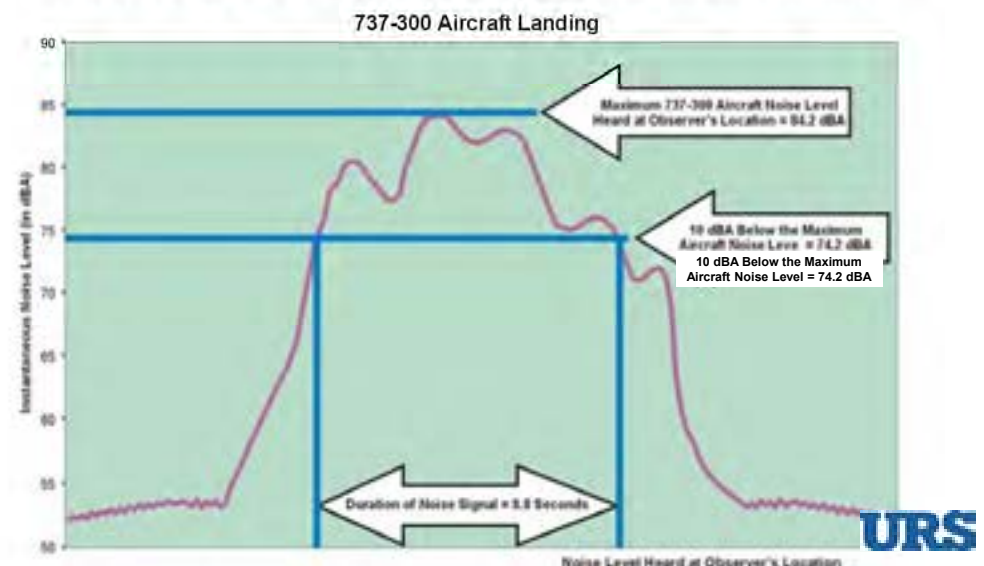
STEP 3: HOW LONG DID IT LAST?

The duration of an aircraft noise event is defined as the number of seconds between the first and last values of the instantaneous noise level which are a minimum of 10 dBA below the maximum aircraft noise level (L_{max}).

The Sound Exposure Level (SEL) describes with a single number the sound energy during an aircraft noise event. SEL takes into account both the duration and the magnitude of the aircraft noise event. The duration correction increases the magnitude in an attempt to account for the increased noisiness of sounds of long duration versus sounds of short duration. Because the duration of aircraft noise events are greater than one second, the numerical value of the SEL for an aircraft noise event is always greater than the numerical value of the maximum level, L_{max} .

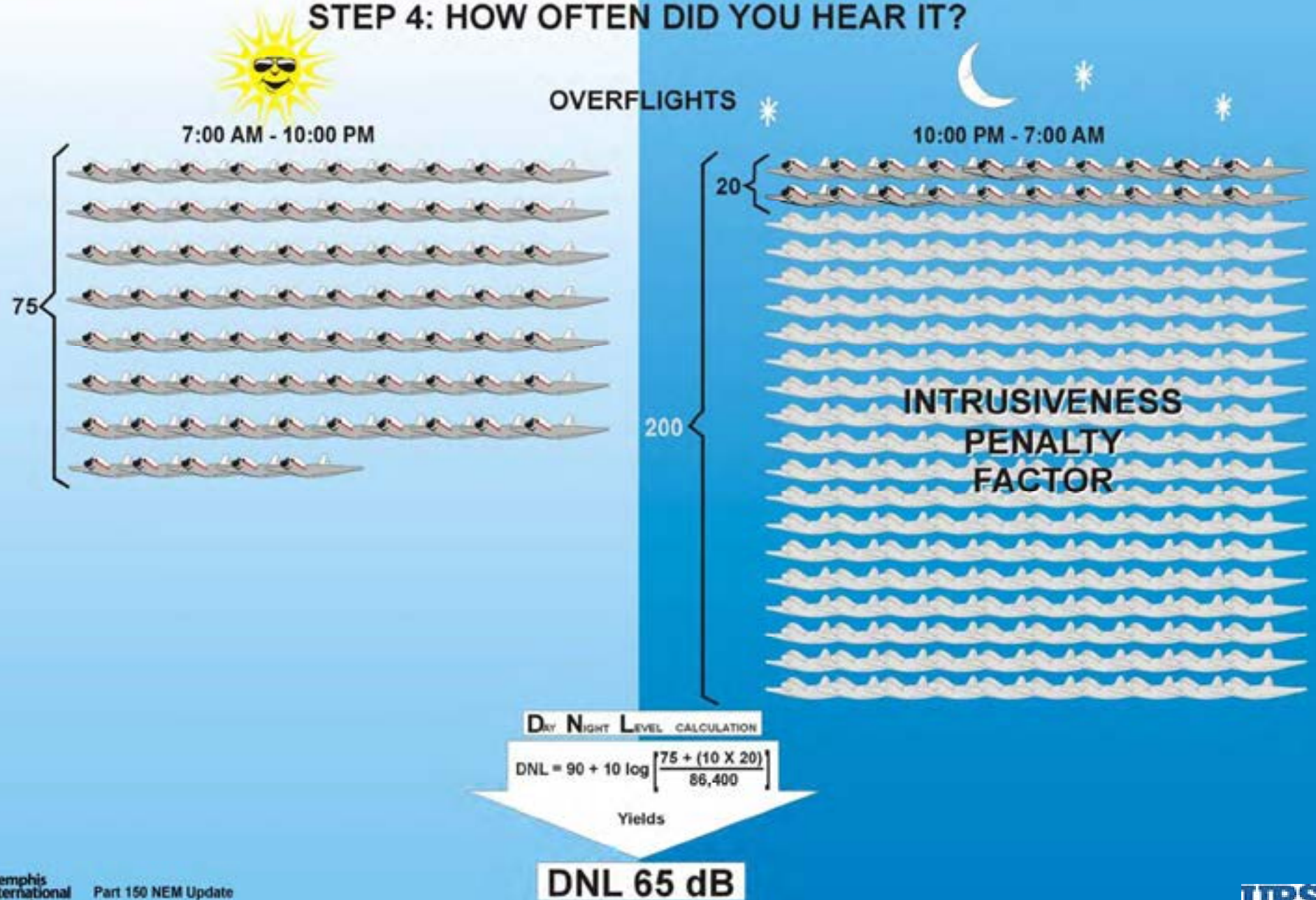
For Example:

$L_{max} = 84.2$ dBA Duration = 8.8 seconds SEL = 90 dBA



AIRCRAFT NOISE: HOW WE MEASURE IT AND ASSESS ITS IMPACT

STEP 4: HOW OFTEN DID YOU HEAR IT?



Land Use Compatibility* With Yearly Day-Night Average Sound Levels

FAA Land Use Compatibility Table

Yearly Day-Night Average Sound Level (DNL)

Below 65 Decibels 65-70 Decibels 70-75 Decibels 75-80 Decibels 80-85 Decibels Over 85 Decibels

Residential

Residential (Other than mobile homes & transient lodges)
Mobile Home Parks
Transient Lodging

Y	N ¹	N ¹	N	N	N
Y	N	N	N	N	N
Y	N ¹	N ¹	N ¹	N	N

Public Use

Schools
Hospitals, Nursing Homes
Churches, Auditoriums, Concert Halls
Governmental Services
Transportation
Parking

Y	N ¹	N ¹	N	N	N
Y	25	30	N	N	N
Y	25	30	N	N	N
Y	Y	25	30	N	N
Y	Y	Y ²	Y ³	Y ⁴	Y ⁴
Y	Y	Y ²	Y ³	Y ⁴	N

Commercial Use

Offices, Business & Professional
Wholesale & Retail Building Materials, Hardware & Farm Equipment
Retail Trade - General
Utilities
Communications

Y	Y	25	30	N	N
Y	Y	Y ²	Y ³	Y ⁴	N
Y	Y	25	30	N	N
Y	Y	Y ²	Y ³	Y ⁴	N
Y	Y	25	30	N	N

Manufacturing & Production

Manufacturing, General
Photographic and Optical
Agriculture (Except Livestock) & Forestry
Livestock Farming & Breeding
Mining & Fishing, Resource Production & Extraction

Y	Y	Y ²	Y ³	Y ⁴	N
Y	Y	25	30	N	N
Y	Y ⁶	Y ⁷	Y ⁸	Y ⁸	Y ⁸
Y	Y ⁶	Y ⁷	N	N	N
Y	Y	Y	Y	Y	Y

Recreational

Outdoor Sports Arenas, Spectator Sports
Outdoor Music Shells, Amphitheaters
Nature Exhibits & Zoos
Amusement, Parks, Resorts, Camps
Golf Courses, Riding Stables, Water Recreation

Y	Y ⁵	Y ⁵	N	N	N
Y	N	N	N	N	N
Y	Y	N	N	N	N
Y	Y	Y	N	N	N
Y	Y	25	30	N	N

Noncompatible Land Uses

*The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or Local law. The responsibility for determining the acceptable and permissible land use remains with the local authorities. FAA determinations under Part 150 are not intended to substitute Federally-determined land use for those determined to be appropriate by local authorities in response to locally-determined needs and values in achieving noise-compatible land uses.

KEY TO FAA LAND USE COMPATIBILITY TABLE:

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 design and construction of the structure.

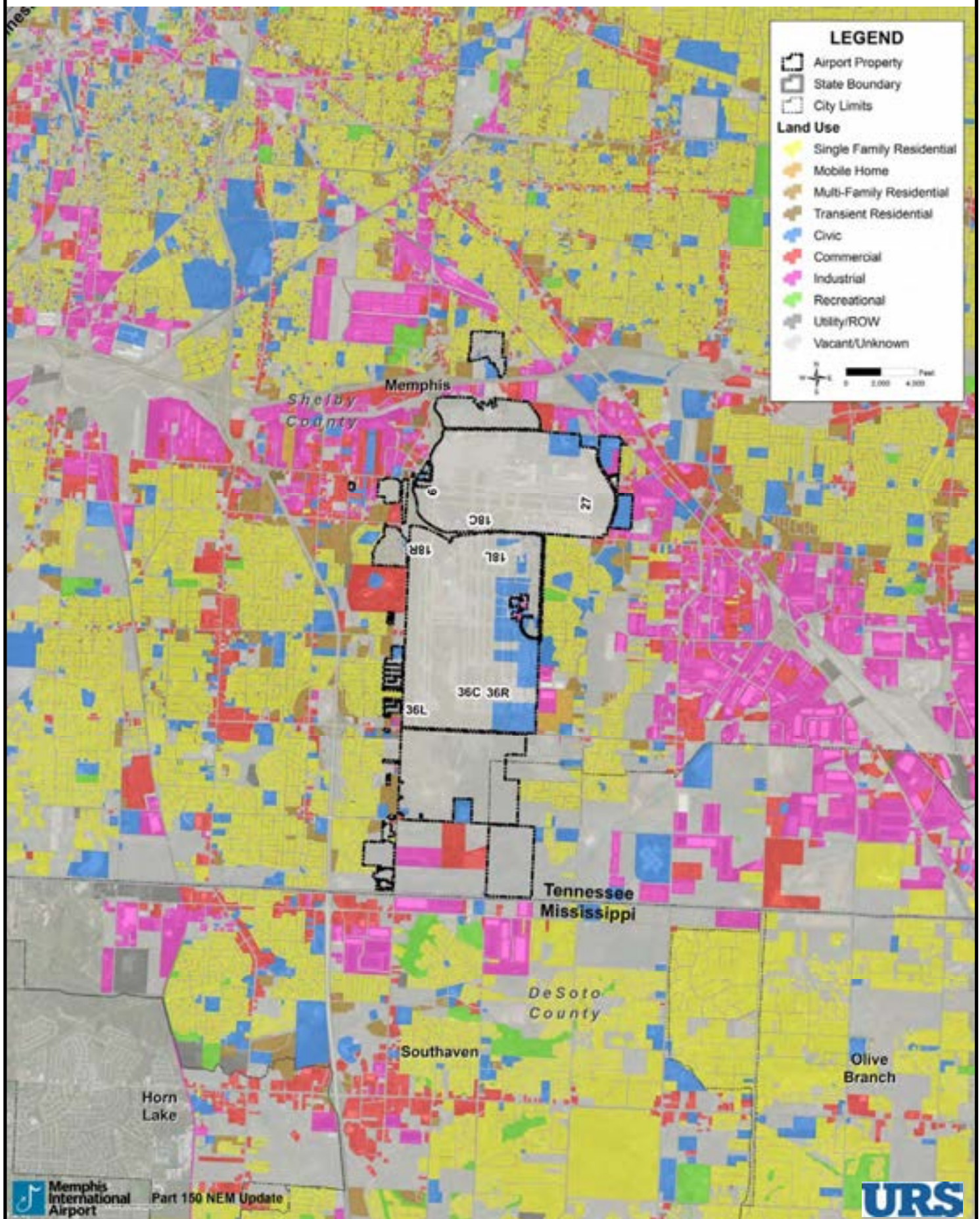
25, 30 or 35 Land use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 must be incorporated in design and construction of structure.

NOTE FOR FAA LAND USE COMPATIBILITY TABLE:

- Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assumes mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
- Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.
- Measures to achieve NLR of 30 must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.
- Measures to achieve NLR of 35 must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.
- Land use compatible provided special sound reinforcement systems are installed.
- Residential buildings require a NLR of 25.
- Residential buildings require a NLR of 30.
- Residential buildings not permitted.

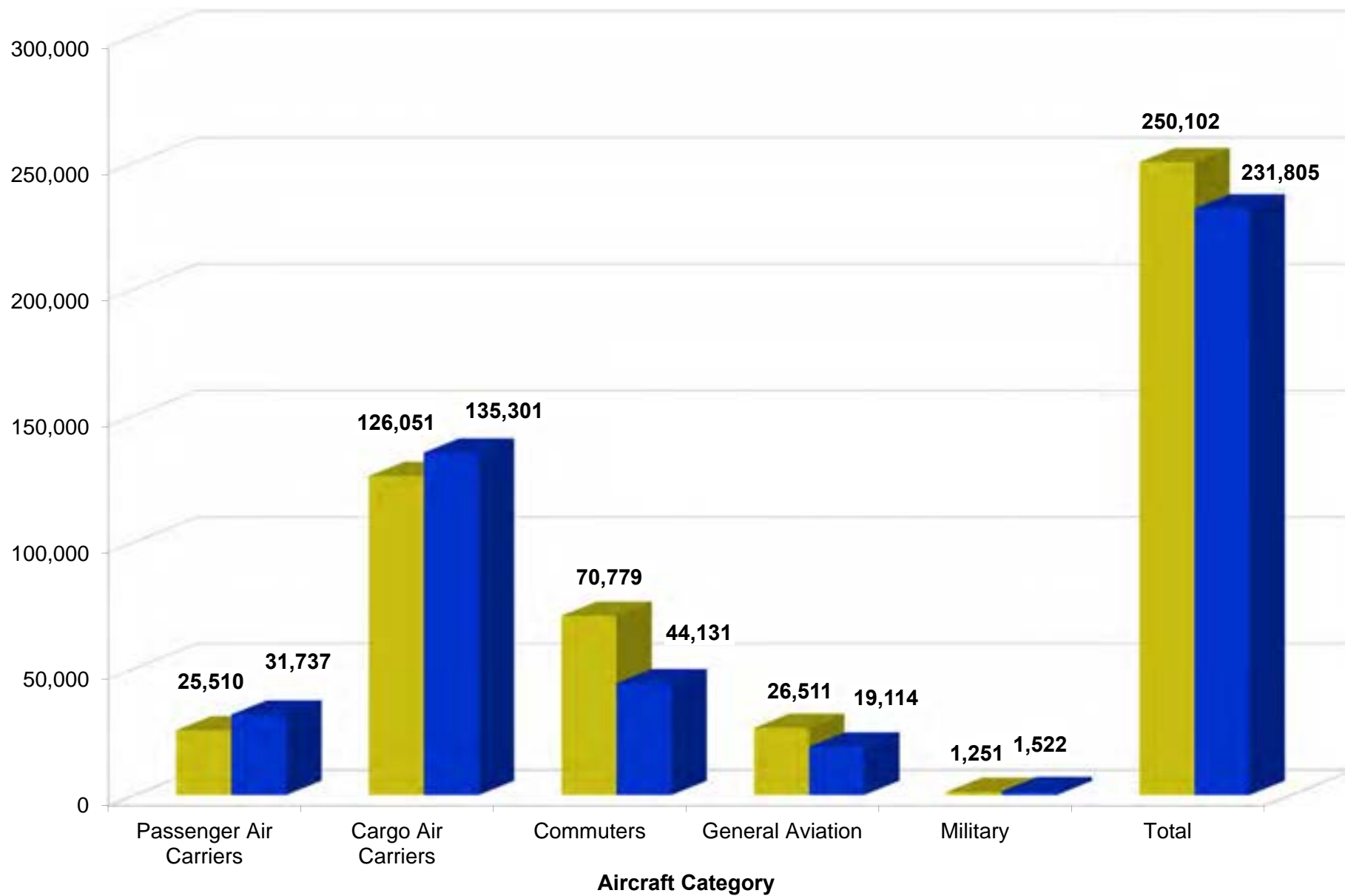
Source: Title 14 CFR Part 150

EXISTING LAND USE



[illegible]

Annual Aircraft Operations



Existing and Future Fleet Mix

Aircraft ID	INM Aircraft ID	2013	2020
A300, A30B, A301	A300B4-203	0.00%	
A306	A300-622R	11.01%	15.32%
A310	A310-304	4.19%	3.65%
A319	A319-131	1.40%	1.46%
A320	A320-211	1.87%	2.92%
AA5, COL3, DA40, LNC4, PA22, RV8, et.al.	GASEPF	0.29%	0.30%
AC50, BE58, C414, DA42, PA34, et.al.	BEC58P	0.58%	0.37%
AC90, BE20, BE9L, C441, GA7, MU2, et.al.	CNA441	0.65%	0.41%
ASTR, G150, WW24	IA1125	0.08%	
AT43, DH8A, DH8C, DH8D	DHC8	0.16%	
AT72, D328	DO328	0.41%	1.35%
B190, SW2	1900D	0.01%	0.00%
B350, BE9, E110, SW3, SW4	DHC6	0.31%	0.00%
B712	717200	1.25%	2.19%
B722	727200	2.77%	
B732	737N17	0.00%	1.39%
B733	737300	0.01%	1.39%
B734	737400	0.03%	1.39%
B737, B739	737700	0.04%	1.39%
B738	737800	0.82%	1.39%
B744	747400	0.07%	0.07%
B752, B757	757PW	7.82%	15.32%
B762	767CF6	0.07%	2.65%
B763	767300	0.04%	2.65%
B767	767400	0.00%	2.65%
B77L, B772	777300	2.01%	
B77L, B772	7773ER		4.38%
BE30, JS32	DO228	0.06%	0.00%
BE35, BE36, M20P, PA32, PA46, SR22, et.al.	GASEPV	0.51%	0.44%
BE40, MU30	MU3001	0.38%	0.21%
BE60, PA31, PAY1, PAY2, PAY3	PA31	0.13%	
C150, C172, C177, C77R	CNA172	0.13%	
C182	CNA182	0.07%	
C206, C210, P210	CNA206	0.29%	0.19%
C208, EPIC, PC12, TBM7, TBM8	CNA208	2.85%	1.80%
C25, C650	CIT3	0.05%	0.04%
C25A, C25B, C500, C501, C525, C550, C551	CNA500	0.53%	0.43%
C510, E50P, EA50	ECLIPSE500	0.15%	0.13%
C560, C56X, LJ60	CNA55B	0.93%	0.64%
C680	CNA680	0.09%	0.68%
C750	CNA750	0.10%	0.09%
CL30, CRJ2	CL601	15.04%	4.82%
CL60, CRJ1, E55P, F2TH, FA20, GALX, J328	CL600	0.97%	
CL60, CRJ1, E55P, F2TH, FA20, GALX, J328	CL601		0.73%
CN35, JS41	SF340	0.01%	0.19%
CRJ7	CRJ9-ER	0.89%	2.70%
CRJ9	CRJ9-LR	5.31%	2.51%
CVLT, E2C	CVR580	0.01%	
DC10	DC1030	12.57%	
DC9, DC93, DC94	DC93LW	0.01%	
DC91	DC910	0.01%	
DC95	DC95HW	0.24%	
E120	EMB120	0.01%	
E135, E145	EMB145	4.61%	1.54%
E170	EMB170	0.23%	4.82%
E190	EMB190	0.00%	0.36%
E45X	EMB14L	0.67%	
F900, FA50, FA90	F10062	0.21%	
FA10, H25B, LJ35, LJ45, LJ55, PRM1, et.al.	LEAR35	1.92%	
GL5T, GLEX, GLFS	GV	0.11%	0.43%
GLF2	GII	0.01%	
GLF3	GIIB	0.01%	
GLF4	GIV	0.06%	0.04%
LJ24, LJ25, LR25	LEAR25	0.04%	
LR60/LR45	CNA55B		0.86%
MD10	DC1040	0.00%	
MD11	MD11PW	10.13%	12.40%
MD80, MD87	MD81	0.01%	
MD82	MD82	0.81%	
MD83, MD88	MD83	3.56%	
MD90	MD9028	0.25%	
P180, SH33, SH36	SD330	0.11%	
P28A, P28B, P28R, PA28	PA28	0.03%	
PA30	PA30	0.00%	
Q400	DHC830		1.35%
SB20	HS748A	0.00%	
TOTAL		100.00%	100.00%

Representative Aircraft



Boeing 767



CNA 55B



Boeing 757



CRJ-700



CRJ-200



MD-11



Airbus A300-622



Gulfstream G-V



De Havilland DHC 8300



Beech 58 P

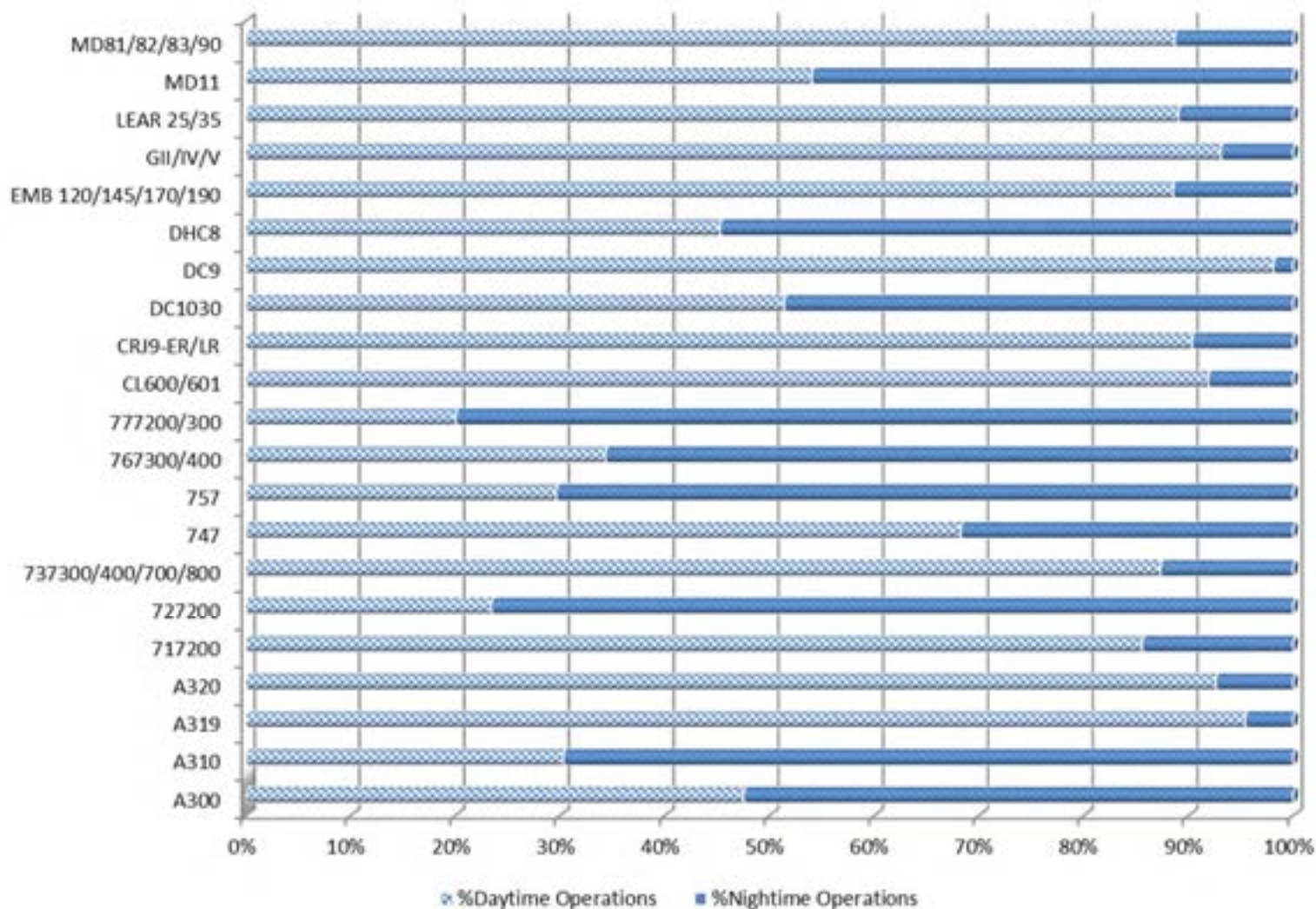


Bell 206 Long Ranger

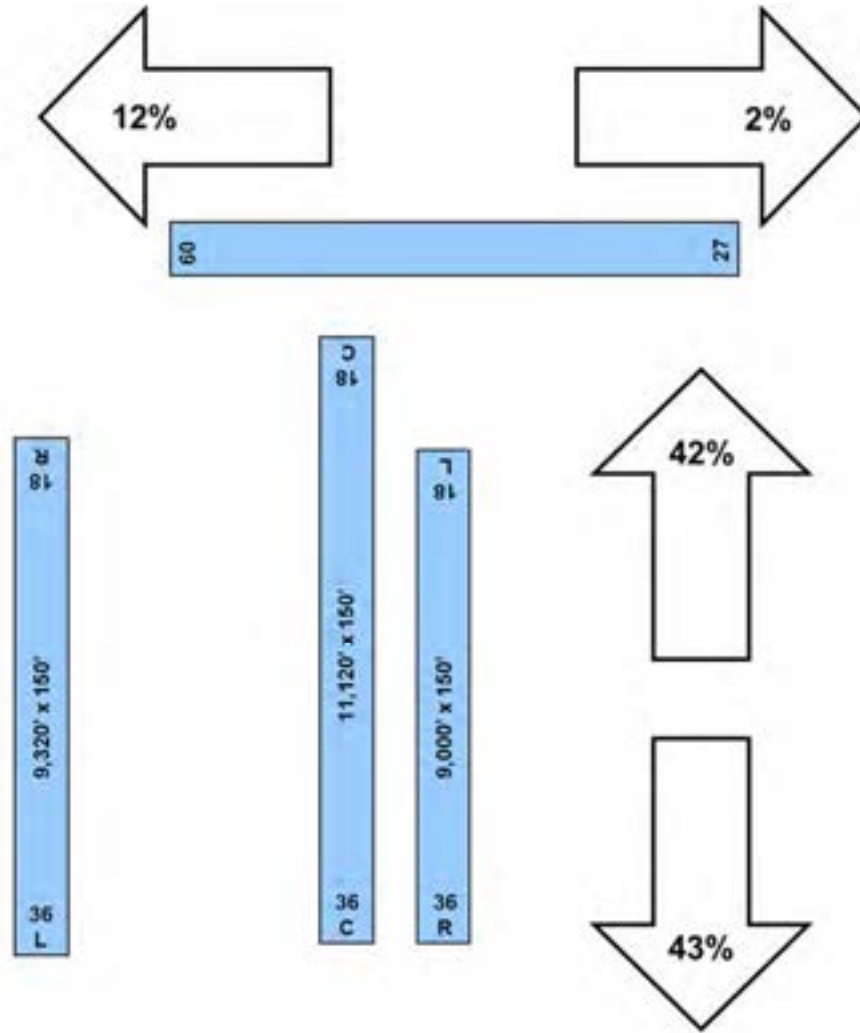


C-17

Day / Night Operational Split



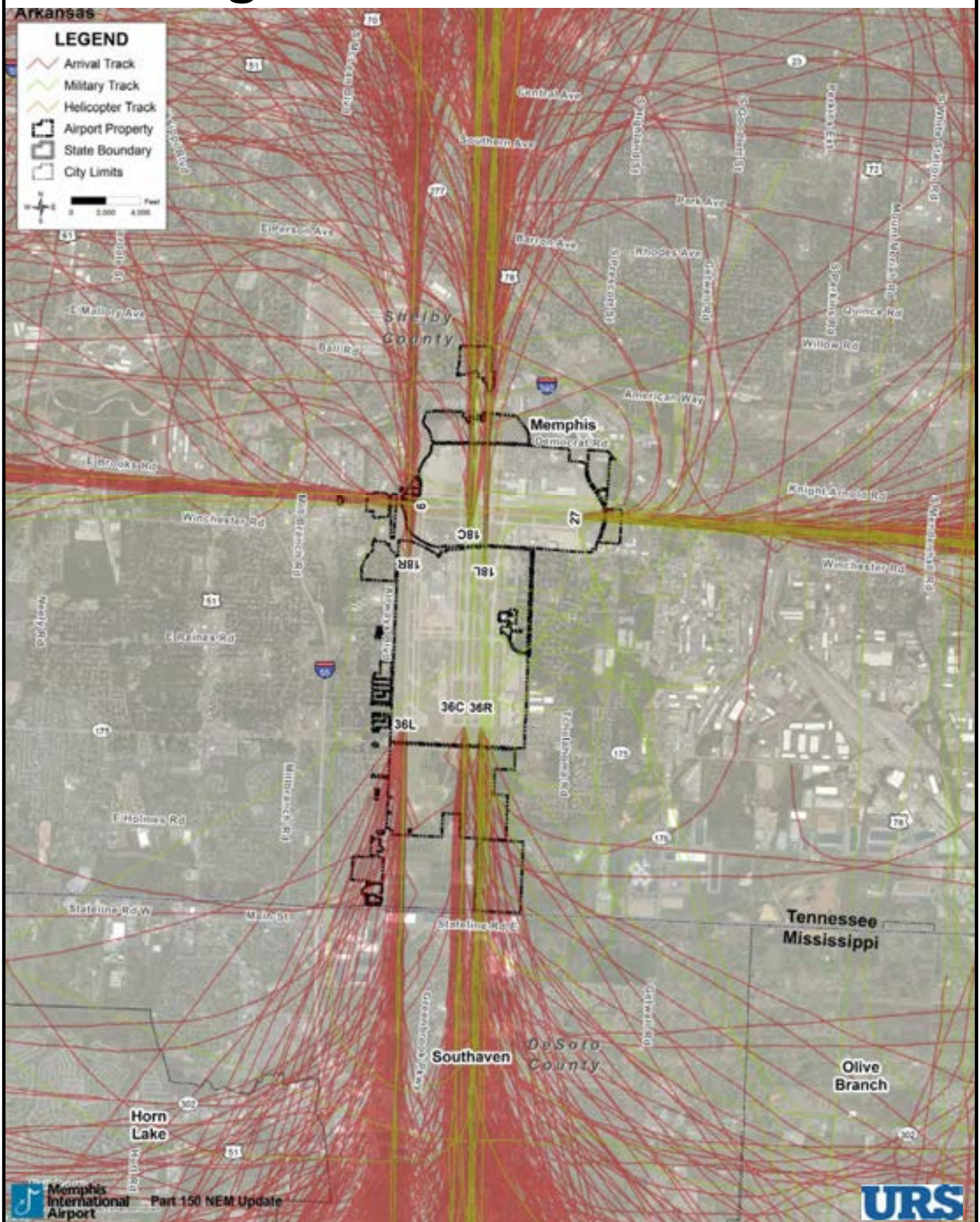
Runway Flow and Utilization



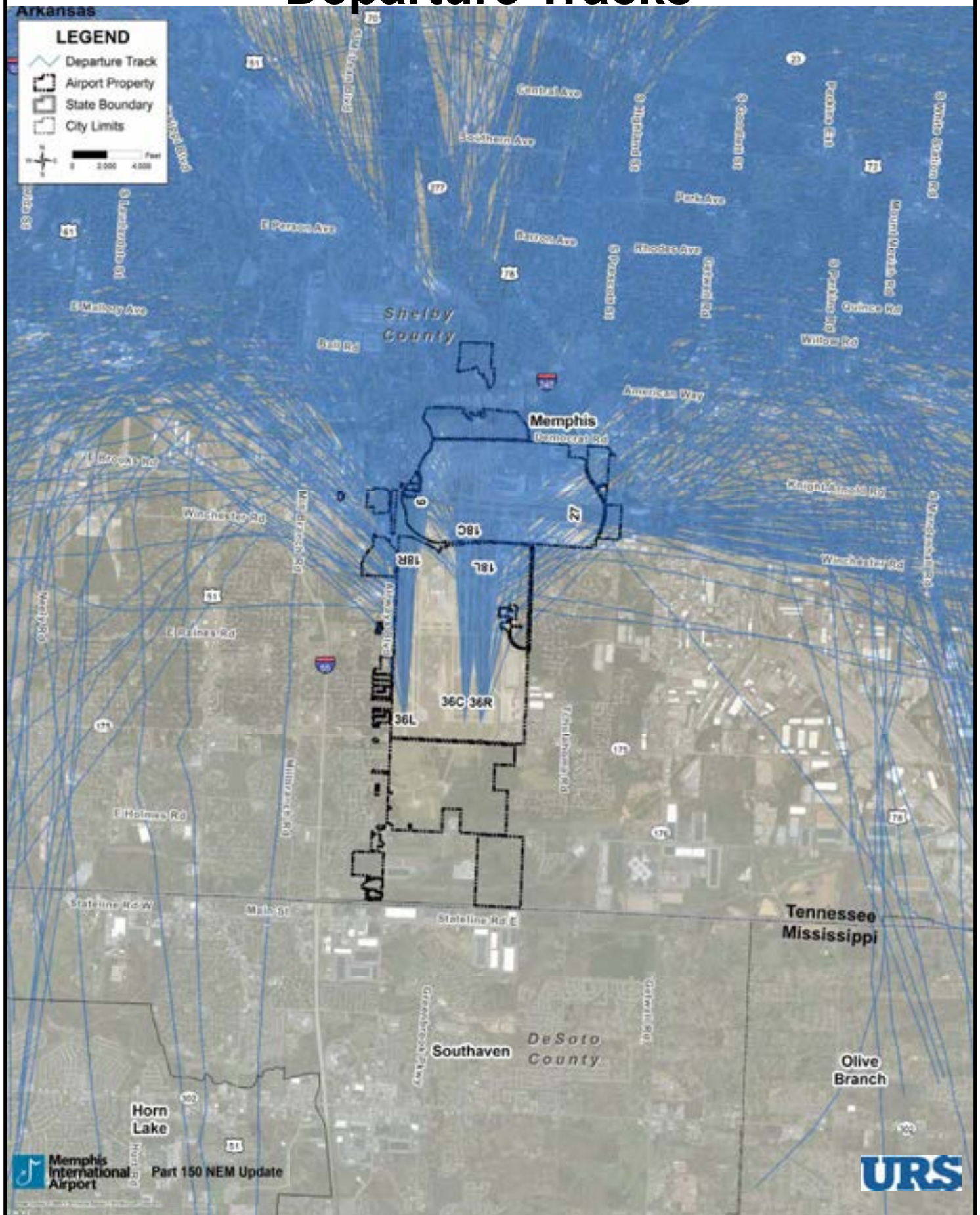
Sources: PDARS Data (August 31, 2012 through February 28, 2013); URS Corporation, 2013.

Operation Type	Time Period	Runway							
		18C	18L	18R	27	36C	36L	36R	9
Arrivals	Day	5%	14%	17%	9%	7%	24%	31%	2%
	Night	3%	6%	6%	21%	2%	26%	29%	7%
Departures	Day	16%	11%	26%	5%	15%	20%	5%	1%
	Night	10%	24%	21%	18%	13%	6%	8%	0%

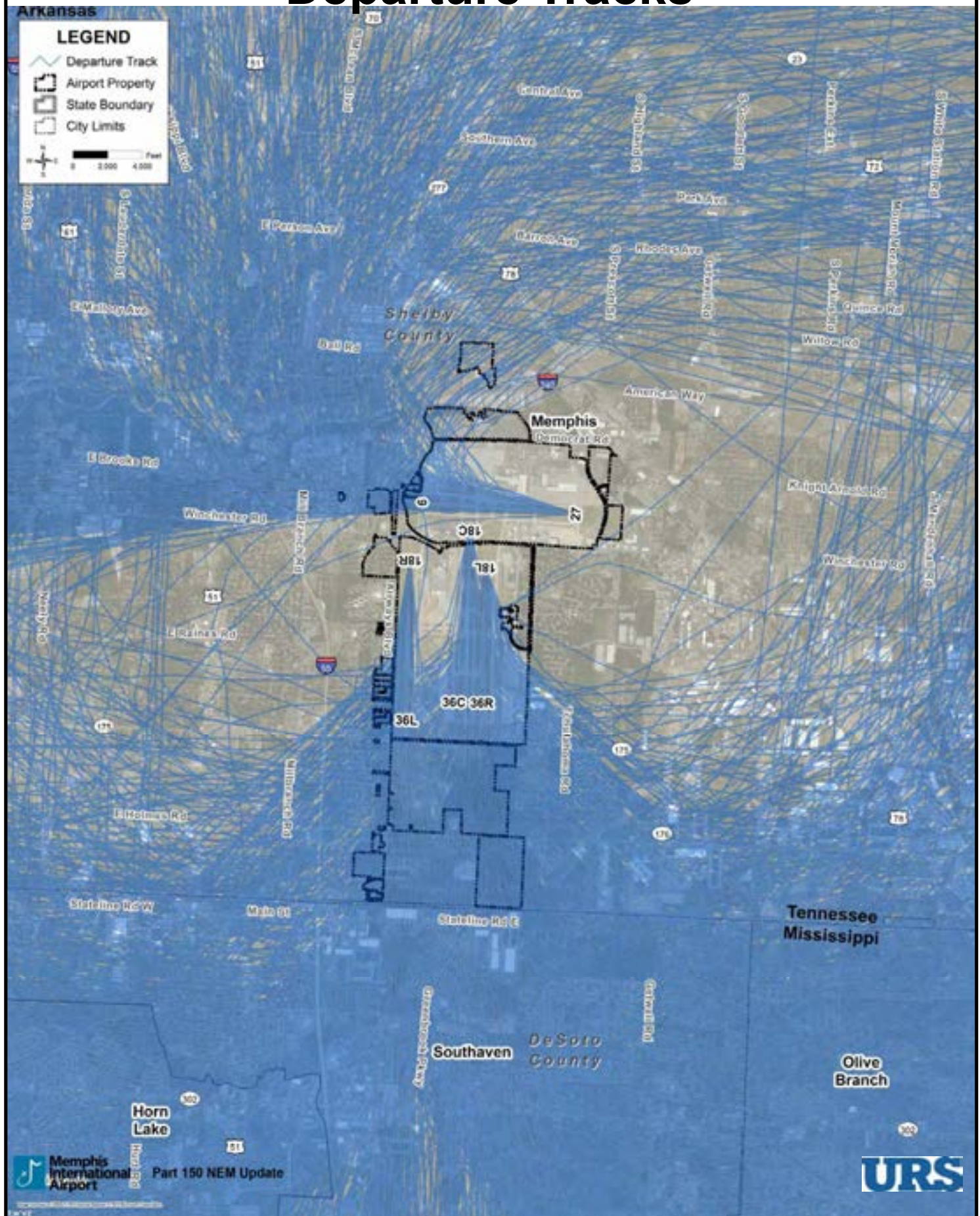
Existing Condition Arrival Tracks



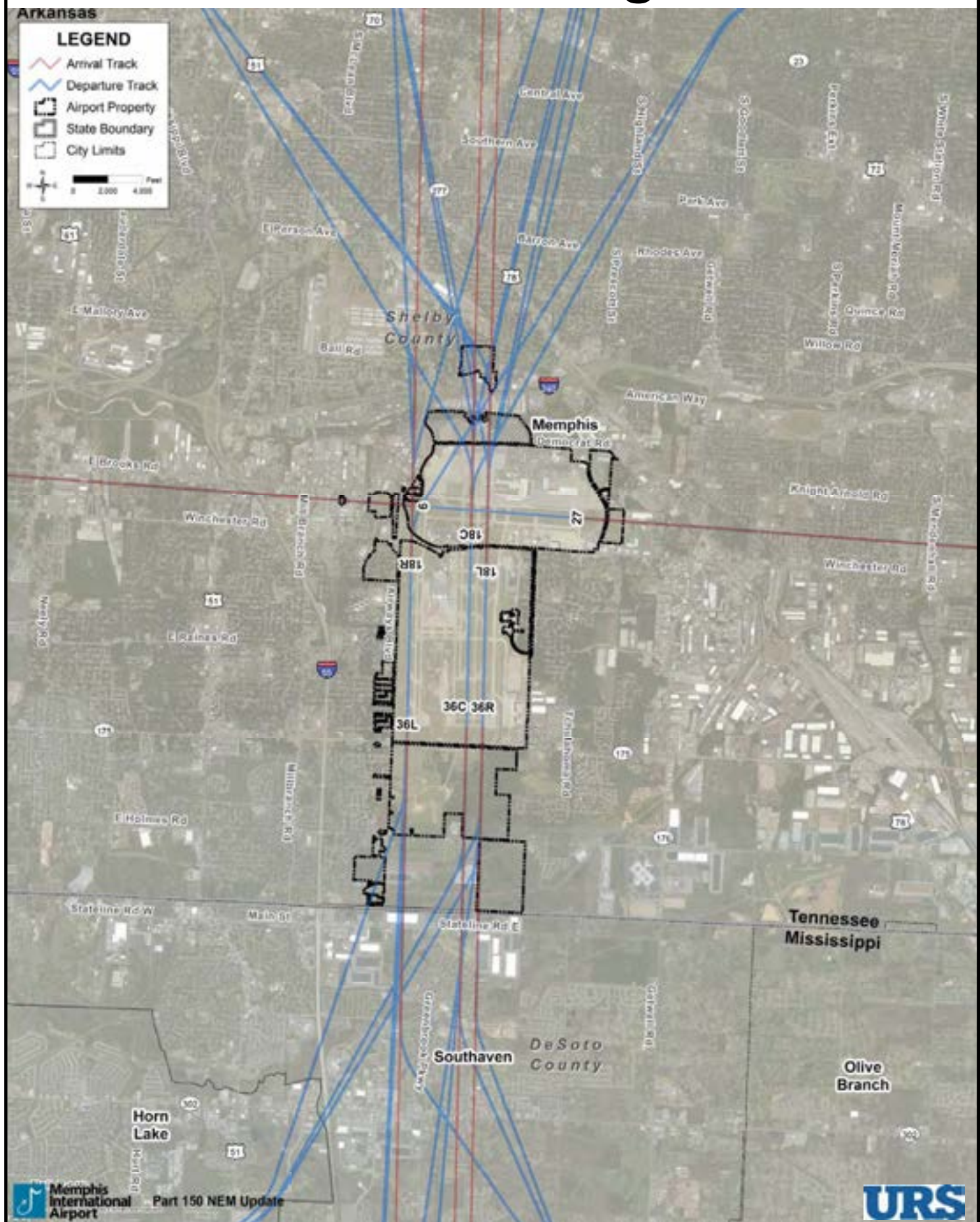
Existing Condition North/East Flow Departure Tracks



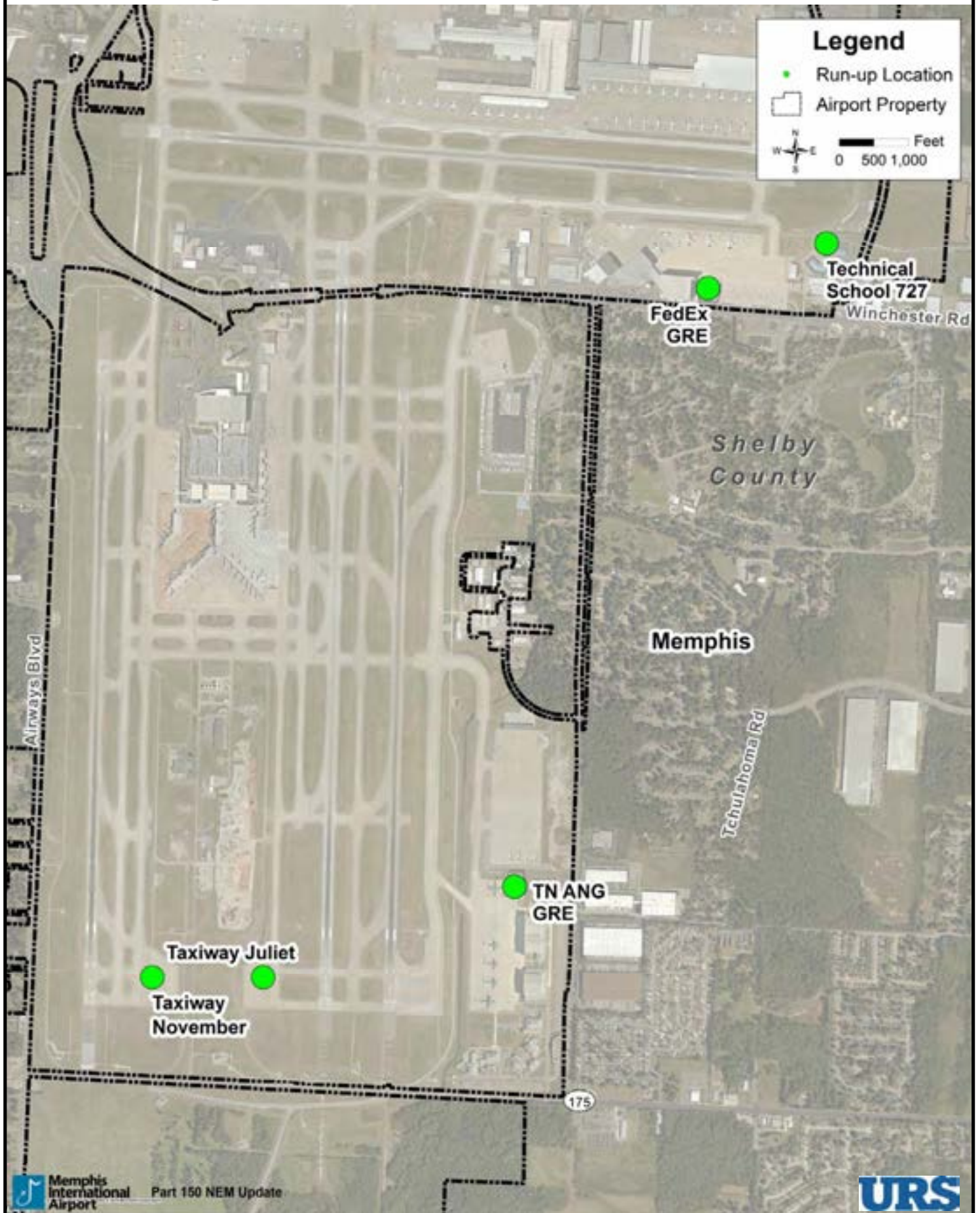
Existing Condition South/West Flow Departure Tracks



Future Condition Flight Tracks



Designated Run-Up Locations



Mitigated Properties

LEGEND

- Airport Property
- State Boundary
- City Limits
- Class Action Settlement**
 - Not Paid
 - Paid

Scale: 0 2,000 4,000 Feet

Memphis, Tennessee

Shelby County

DeSoto County, Mississippi

Southaven

Horn Lake

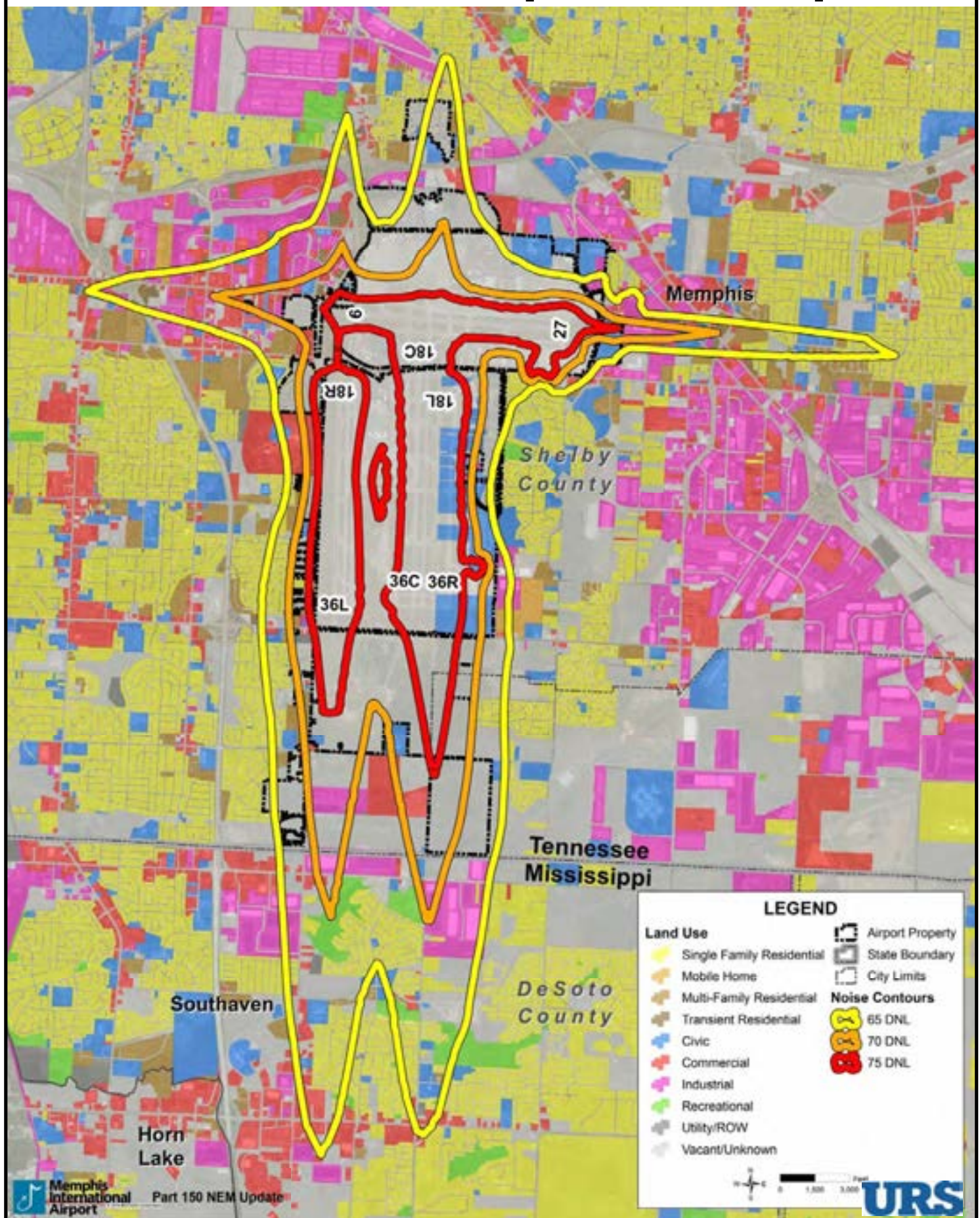
Olive Branch

Memphis International Airport

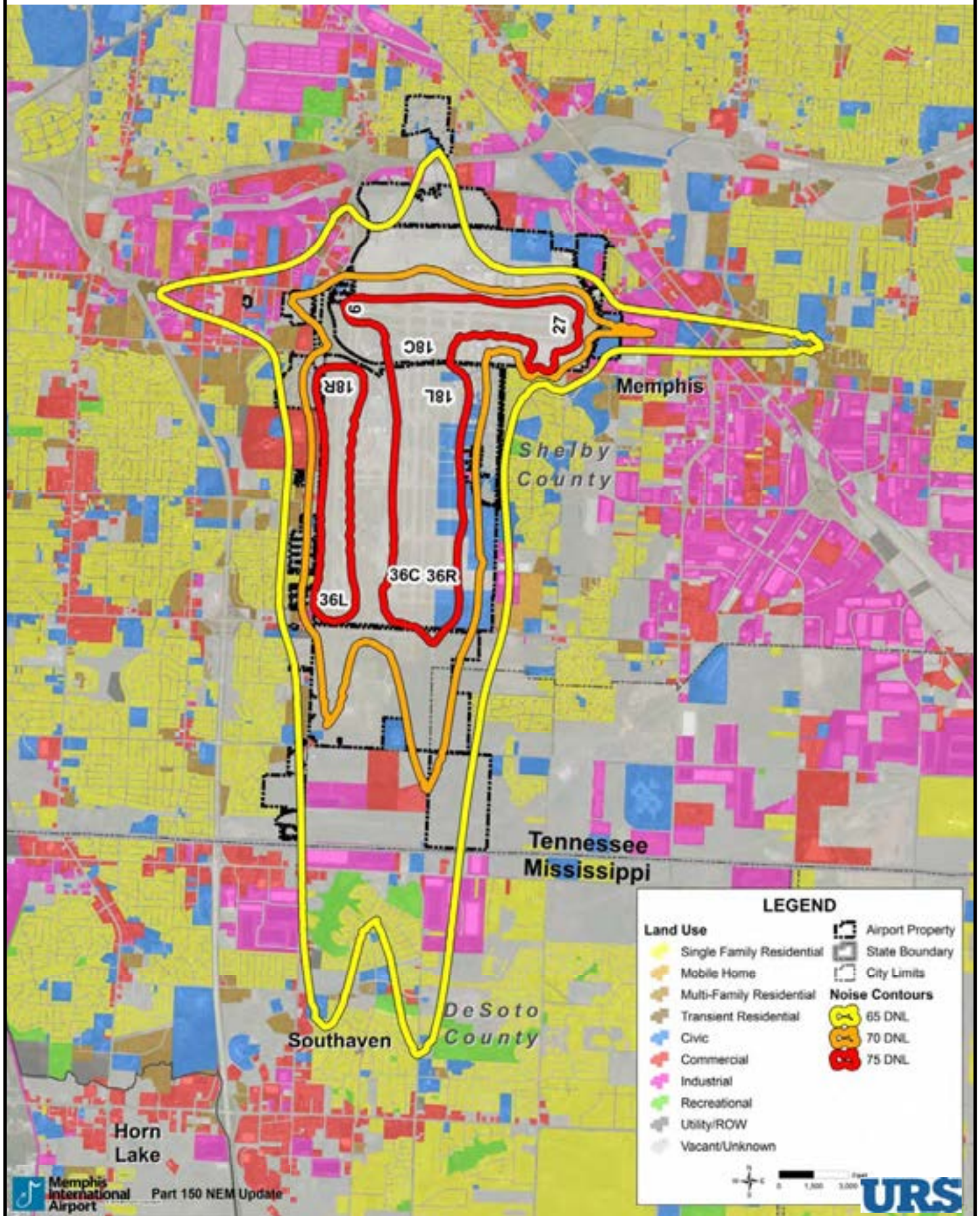
Part 150 NEM Update

URS

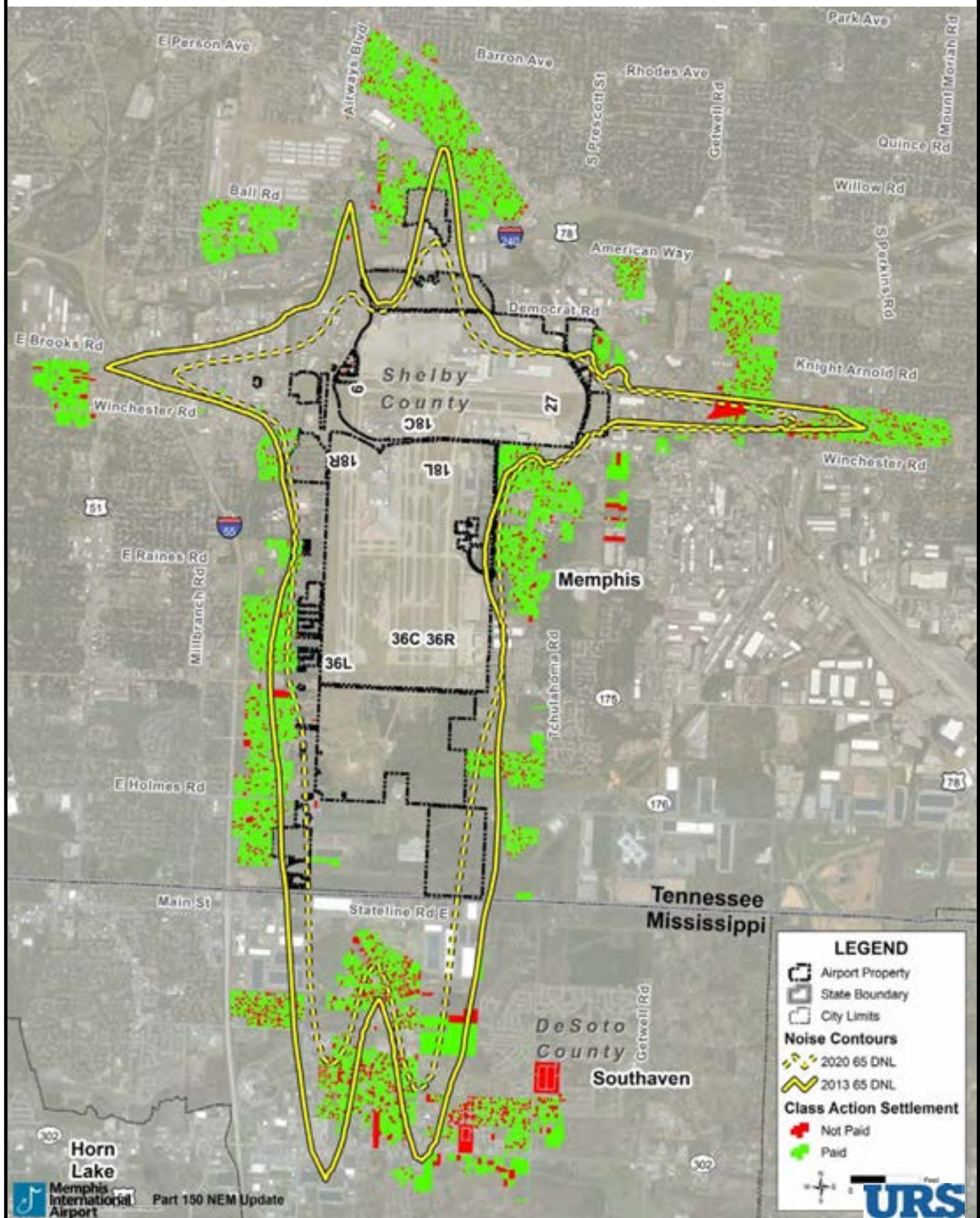
2013 Noise Exposure Map



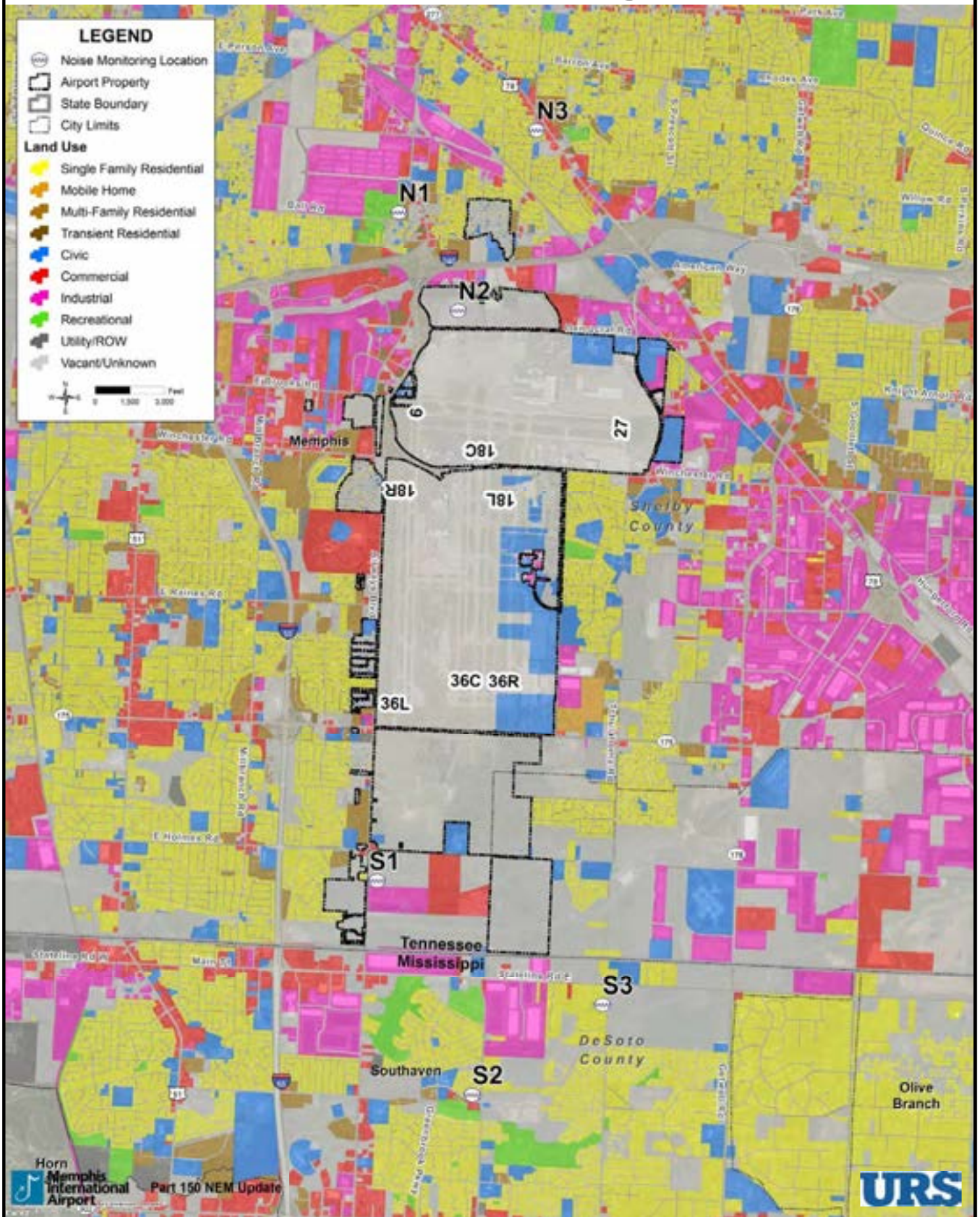
2020 Noise Exposure Map



NEM Comparison with Settlement Area



Noise Monitoring Sites



Noise Exposure Estimates (acres)

Land Use	Shelby County				DeSoto County				Grand Total
	65-70	70-75	75+	Total	65-70	70-75	75+	Total	
2013 Existing Condition									
Civic	280.1	199.3	161.1	640.5	85.7	13.1	0.0	98.8	739.3
Commercial	359.7	140.5	6.1	506.3	129.0	7.4	0.0	136.4	642.7
Industrial	313.7	112.4	0.8	426.9	297.7	47.2	0.0	344.9	771.8
Mobile Home	16.7	0.0	0.0	16.7	0.0	0.0	0.0	0.0	16.7
Multi-Family	154.2	26.2	1.0	181.4	15.2	0.0	0.0	15.2	196.6
Recreational	0.0	0.0	0.0	0.0	184.3	6.9	0.0	191.2	191.2
Single Family	307.2	20.0	2.8	330.0	454.4	3.8	0.0	458.2	788.2
Transient	35.3	5.5	0.0	40.8	0.0	0.0	0.0	0.0	40.8
Utility/ROW	385.4	177	61.6	624.0	194.4	10.9	0.0	205.3	829.3
Vacant/UNK	1,422.1	1,906.9	1,832.7	5,161.7	356.1	24.2	0.0	380.3	5,542.0
TOTAL	3,274.4	2,587.8	2,066.1	7,928.3	1,716.8	113.5	0.0	1,830.3	9,758.6
2020 Future Condition									
Civic	270.4	144.9	140.0	555.3	45.2	0.0	0.0	45.2	600.5
Commercial	360.3	27.7	0.3	388.3	33.1	0.0	0.0	33.1	421.4
Industrial	278.5	13.2	0.3	292.0	190.2	0.0	0.0	190.2	482.2
Mobile Home	10.8	0.0	0.0	10.8	0.0	0.0	0.0	0.0	10.8
Multi-Family	114.9	3.2	0.0	118.1	4.7	0.0	0.0	4.7	122.8
Recreational	3.9	0.0	0.0	3.9	149.4	0.0	0.0	149.4	153.3
Single Family	141.8	9.6	0.3	151.7	247.7	0.0	0.0	247.7	399.4
Transient	23.4	0.3	0.0	23.7	0.0	0.0	0.0	0.0	23.7
Utility/ROW	271.4	140.2	25.5	437.1	102.2	0.0	0.0	102.2	539.3
Vacant/UNK	1,744.7	1,454.6	1,446.6	4,645.9	192.6	0.0	0.0	192.6	4,835.5
TOTAL	3,220.1	1,793.7	1,613.0	6,626.8	965.1	0.0	0.0	965.1	7,588.9

Source: URS Corp, 2014

Noise Exposure Estimates -2013

HOUSING UNITS		Shelby County				DeSoto County				Grand
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	Total
Eligible for Settlement (Paid)		1,299	9	0	1,308	1,258	0	0	1,258	2,566
Eligible for Settlement (Unpaid)		545	2	0	547	433	0	0	433	980
Mitigated Total		1,844	11	0	1,855	1,691	0	0	1,691	3,545
Unmitigated	Single Family	52	6	1	59	185	1	0	186	245
	Mobile Home	128	0	0	128	0	0	0	0	128
	Multi-Family	1,610	485	18	2,113	115	0	0	115	2,228
	Transient	743	0	0	743	0	0	0	0	743
Unmitigated Total		2,533	491	19	3,043	300	1	0	301	3,344
Housing Units Total		4,377	502	19	4,898	1,991	1	0	1,992	6,890
POPULATION		Shelby County				DeSoto County				Grand
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	Total
Eligible for Settlement (Paid)		3,364	23	0	3,387	3,497	0	0	3,497	6,885
Eligible for Settlement (Unpaid)		1,412	5	0	1,417	1,204	0	0	1,204	2,620
Mitigated Total		4,776	28	0	4,804	4,701	0	0	4,701	9,505
Unmitigated	Single Family	134	16	3	153	514	3	0	517	670
	Mobile Home	332	0	0	332	0	0	0	0	332
	Multi-Family	4,170	1,256	47	5,473	320	0	0	320	5,792
	Transient	1,924	0	0	1,924	0	0	0	0	1,927
Unmitigated Total		6,560	1,272	50	7,882	834	3	0	837	8,718
Population Total		11,336	1,300	50	12,686	5,535	3	0	5,538	18,224

Source: URS Corp, 2014

Noise Exposure Estimates -2020

HOUSING UNITS		Shelby County				DeSoto County				Grand
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	Total
Eligible for Settlement (Paid)		456	5	0	461	596	0	0	596	1,057
Eligible for Settlement (Unpaid)		301	0	0	301	202	0	0	202	503
Mitigated Total		757	5	0	762	798	0	0	798	1,560
Unmitigated	Single Family	25	1	1	27	84	0	0	84	111
	Mobile Home	77	0	0	77	0	0	0	0	77
	Multi-Family	1,422	53	0	1,475	67	0	0	67	1,542
	Transient	191	0	0	191	0	0	0	0	191
Unmitigated Total		1,715	54	1	1,770	151	0	0	151	1,921
Housing Units Total		2,472	59	1	2,532	949	0	0	949	3,481
POPULATION		Shelby County				DeSoto County				Grand
Mitigated / Unmitigated	Land Use	DNL 65-70	DNL 70-75	DNL 75+	Total	DNL 65-70	DNL 70-75	DNL 75+	Total	Total
Eligible for Settlement (Paid)		1,181	13	0	1,194	1,657	0	0	1,657	2,851
Eligible for Settlement (Unpaid)		780	0	0	780.0	562	0	0	562	1,341
Mitigated Total		1,961	13	0	1,974	2,218	0	0	2,218	4,192
Unmitigated	Single Family	65	3	3	71	234	0	0	234	303
	Mobile Home	199	0	0	199	0	0	0	0	199
	Multi-Family	3,683	137	0	3,820	186	0	0	186	4,007
	Transient	495	0	0	495	0	0	0	0	495
Unmitigated Total		4,442	140	3	4,585	420	0	0	420	5,004
Population Total		6,402	153	3	6,558	2,638	0	0	2,638	9,196

Source: URS Corp, 2014

Please mail all comments to the address below by October 23, 2014. Comments are not limited to the space on this sheet. Please feel free to add additional sheets, if necessary.

**Or E-Mail to: Lori Morris
lorim@mscaa.com**

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Please Place
Stamp Here

**Lori Morris, P.E., Manager of Environmental Services
Memphis-Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, TN 38116-3856**

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SPONSOR'S CERTIFICATION

The Noise Exposure Maps (NEMs) for Memphis International Airport, hereby submitted in accordance with title 14 CFR part 150, were prepared with the best available information and are certified as true and complete to the best of my knowledge and belief.

The Existing Condition NEM is based on data generated for a timeframe other than the current year of submission. The assumptions and activity levels used to develop the Existing Condition Noise Exposure Map are based on data from July 1, 2012 through June 30, 2013. The most recent 12-month period of available data, June 2014 through May 2015, represents a decrease in operations for the average-annual day of approximately 14.37 percent over the data period used for the 2013 Existing Condition NEM. Thus, the data for the Existing Condition NEM are representative of existing condition, as of the date of this submission. The noise contours representing the existing condition are identified as the 2013 Noise Exposure Map.

The assumptions and activity levels used to develop the Future Condition NEM are based on reasonable forecasts and other planning assumptions. The Future Condition NEM is based on data generated for a timeframe of five years in the future following the year of submission. The Future Condition NEM developed for 2020 accurately represents the five-year forecast from the date of this submission. The noise contours representing the future condition are identified as the 2020 Noise Exposure Map.

The NEMs were prepared in consultation with state, and public agencies and planning agencies whose area, or any portion of whose area, of jurisdiction is within the DNL 65 dB contour depicted on the NEMs. The consultation also included federal officials having local responsibility and regular aeronautical users of the airport. It is further certified that adequate opportunity has been afforded interested persons to submit their views, data, and comments concerning the correctness and adequacy of the Noise Exposure Maps and the supporting documentation and forecasts.

8/12/15

Date of Signature

Scott Brockman
President & CEO
Memphis-Shelby County Airport Authority

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August 12, 2015

Mr. Stephen Wilson
Community Planner
Federal Aviation Administration
Memphis Airports District Office
2862 Business Park Drive, Building G
Memphis, Tennessee 38118

RE: 14 CFR PART 150 NOISE EXPOSURE MAPS
SUBMITTAL FOR FAA COMPLIANCE DETERMINATION

Dear Mr. Wilson:

Enclosed are five (5) hard copies and five (5) CDs of Memphis International Airport's 14 CFR Part 150 Noise Exposure Maps (NEMs) and supporting documentation and five (5) copies of the Executive Summary. These NEMs and supporting documentation are submitted under the provisions of Title 49 United States Code, Chapter 475 and 14 CFR Part 150. Memphis - Shelby County Airport Authority, as owner and operator of Memphis International Airport, is submitting these NEMs and supporting documentation for appropriate Federal Aviation Administration (FAA) determination.

Should you have any questions regarding the enclosed document, please do not hesitate to contact me at 901-322-8075. We appreciate your assistance in this matter.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Scott J. Brockman', with a long horizontal line extending to the right.

Scott J. Brockman, AIA
President and CEO

Enclosure

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U.S. Department
of Transportation
**Federal Aviation
Administration**

Memphis Airports District Office
2800 Thousand Oaks Blvd., Suite 2250
Memphis, Tennessee 38118
Phone: 901-322-8181

September 1, 2015

Mr. Scott A. Brockman, A.A.E.
President and CEO, Memphis-Shelby County
Airport Authority
2491 Winchester Road
Suite 113
Memphis, TN 38116-3856

**Noise Exposure Map Compliance Determination
2013 Noise Exposure Map Update (NEM)
Memphis International Airport (MEM)**

Dear Mr. Brockman:

This is to notify you that the Federal Aviation Administration (FAA) has evaluated and accepted the Noise Exposure Maps and supporting documentation transmitted by a letter from your office dated August 12, 2015 for the Memphis International Airport in accordance with Section 103(a) (1) of the Aviation Safety and Noise Abatement Act of 1979 (ASNA), and has determined that they are in compliance with applicable requirements of 14 CFR Part 150. Further, we have determined that the "Existing Conditions (2013) Noise Exposure Map" and "Forecast Condition (2020) Noise Exposure Map" fulfill the requirements for the current and the future year noise exposure maps.

FAA's determination that your Noise Exposure Maps are in compliance is limited to a finding that the maps were developed in accordance with the procedures contained in Appendix A of 14 CFR Part 150. Such determination does not constitute approval of your data, information or plans.

Should questions arise concerning the precise relationship of specific properties to noise exposure contours depicted on the Noise Exposure Maps, you should note that the FAA will not be involved in any way in the determination of relative locations of specific properties with regard to the depicted noise contours, or in interpreting the maps to resolve questions concerning, for example, which properties should be covered by the provisions of Section 107 of the Act. These functions are inseparable from the ultimate land use control and planning responsibilities of local government. These local responsibilities are not changed in any way under Part 150 or through FAA's determination relative to your Noise Exposure Maps. Therefore, the responsibility for the detailed overlaying of noise contours onto the maps depicting properties on the surface rests exclusively with you the airport operator, or those public agencies and planning agencies with which consultation is required under Section 103 of the Act. The FAA relies on the certification by you under 150.21 of 14 CFR Part 150, that the statutorily required consultation has been accomplished.

The FAA will publish a notice in the Federal Register announcing the acceptance of the Noise Exposure Maps for Memphis International Airport. Your notice of this determination and the availability of the Noise Exposure Maps, when published at least three times in a newspaper of general circulation in the county or counties where the affected properties are located, will satisfy the requirements of Section 107 of the ASNA Act.

Your attention is called to the requirements of Section 150.21(d) of 14 CFR Part 150, involving the prompt preparation and submission of revisions to these maps of any actual or proposed change in the operation of Memphis International Airport might create any substantial, new, noncompatible land use in any areas depicted on the Noise Exposure Maps, or significant reduction in noise over existing noncompatible land uses that is not reflected in either map now on file with the FAA.

Should you have any questions, please feel free to contact me at (901) 322-8181.

Sincerely,



Phillip J. Brader
Manager, Memphis Airports District Office

cc: APP-400
ASO-610
ASO-7

Commenters are strongly encouraged to include the following information, as applicable:

- If a physical market, the market's name and location, *e.g.*, common name, street address, neighborhood, shopping district, city, etc., and the identity of the principal owners/operators;
- if an online market, the domain name(s) past and present, available registration information, and name(s) and location(s) of the hosting provider(s);
- whether the physical or online market is owned, operated, or otherwise affiliated with a government entity;
- types of counterfeit or pirated products or services sold, traded, distributed, or otherwise made available in or at that market;
- volume of transactions in counterfeit or pirated goods or services or other indicia of a market's scope, scale, or reach or relative significance in a given geographic area or with respect to a category of goods or services; if an online market, information on the volume and type of Internet traffic associated with the Web site, including number of visitors, number of page views, average time spent on the site by visitors, estimate of the number of infringing items sold or traded and number of files streamed, shared, seeded, leached, downloaded, uploaded, or otherwise distributed or reproduced, and global or country popularity rating (*e.g.*, Alexa rank);
- if an online market, revenue sources such as sales, subscriptions, donations, upload incentives or advertising and the methods by which that revenue is collected;
- estimates of economic harm to the rights holder resulting from the piracy or counterfeiting and a description of the methodology used to calculate the harm;
- whether the goods or services sold, traded, distributed, or made available pose a risk to public health or safety;
- any known contractual, civil, administrative, or criminal enforcement activity against the market and the effectiveness of that enforcement activity;
- additional actions taken by the market owners or operators to remove, limit or discourage the availability of counterfeit or pirated goods or services, including removing or disabling access to such goods or services, issuing and enforcing guidelines prohibiting the posting of such goods or services, or cooperating in enforcement efforts; and
- any additional information relevant to the review.

c. Instructions for Submitting Comments

Comments must be in English. To ensure the timely receipt and consideration of comments, USTR strongly encourages commenters to submit comments electronically, using the www.regulations.gov Web site. To submit comments via www.regulations.gov, enter Docket Number USTR–2015–0016 on the home page and click “Search.” The site will provide a search-results page listing all documents associated with this docket. Find the reference to this notice and click on the link entitled “Comment Now!” For further information on using the www.regulations.gov Web site, please consult the resources provided on the site by clicking on “How to use Regulations.gov” at the bottom of the home page under “Help.”

The www.regulations.gov Web site allows users to provide comments by filling in a “Type Comment” field, or by attaching a document using an “Upload File” field. USTR prefers that comments be provided in an attached document. If a document is attached, please type “2015 Out-of-Cycle Review of Notorious Markets” in the “Type Comment” field. USTR prefers submissions in Microsoft Word (.doc) or Adobe Acrobat (.pdf) format. If the submission is in another file format, please indicate the name of the software application in the “Type Comment” field. File names should reflect the name of the person or entity submitting the comments. Please do not attach separate cover letters to electronic submissions; rather, include any information that might appear in a cover letter in the comments themselves. Similarly, to the extent possible, please include any exhibits, annexes, or other attachments in the same file as the comment itself, rather than submitting them as separate files.

A person requesting that information contained in a comment submitted by that person be treated as confidential business information must certify that such information is business confidential and would not customarily be released to the public by the submitter. In the document, confidential business information must clearly be designated as such; the submission must be marked “BUSINESS CONFIDENTIAL” on the cover page and each succeeding page, and the submission should clearly indicate, via brackets, highlighting, or other means, the specific information that is business confidential. Additionally, the submitter should type “Business Confidential 2015 Out-of-Cycle Review of Notorious Markets” in the “Type Comment” field. Anyone submitting a comment

containing business confidential information must also submit, as a separate submission, a non-business confidential version of the submission, indicating where the business confidential information has been redacted. The file names of both documents should reflect their status—“BC” for the business confidential version and “P” for the public version. The non-business confidential version will be placed in the docket at www.regulations.gov and be available for public inspection.

As noted, USTR strongly urges commenters to submit comments through www.regulations.gov. Any alternative arrangements must be made in advance of transmitting a comment and in advance of the relevant deadline by contacting USTR at Special301@ustr.eop.gov.

3. Inspection of Comments

Comments received will be placed in the docket and open to public inspection pursuant to 15 CFR 2006.13, except business confidential information exempt from public inspection in accordance with 15 CFR 2006.15. Comments may be viewed free of charge by visiting www.regulations.gov and entering Docket Number USTR–2015–0016 in the “Search” field on the home page.

Probir Mehta,

Acting Assistant United States Trade Representative (AUSTR) for Intellectual Property and Innovation, Office of the United States Trade Representative.

[FR Doc. 2015–22761 Filed 9–9–15; 8:45 am]

BILLING CODE 3290–F5–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Noise Exposure Map Notice, Memphis International Airport, Memphis, TN

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice.

SUMMARY: The Federal Aviation Administration (FAA) announces its determination that the Noise Exposure Maps submitted by Memphis-Shelby County Airport Authority for Memphis International Airport under the provisions of 49 U.S.C. 47501 *et seq.* (Aviation Safety and Noise Abatement Act) and 14 CFR part 150 are in compliance with applicable requirements.

DATES: The effective date of the FAA's determination on the noise exposure maps is September 1, 2015.

FOR FURTHER INFORMATION CONTACT:

Phillip J. Braden, Federal Aviation Administration, Memphis Airports District Office, 2600 Thousand Oaks Blvd., Suite 2250, Memphis, Tennessee 38118, 901-322-8181.

SUPPLEMENTARY INFORMATION: This notice announces that the FAA finds that the Noise Exposure Maps submitted for Memphis International Airport are in compliance with applicable requirements of Title 14 Code of Federal Regulations (CFR) Part 150, effective September 1, 2015. Under 49 U.S.C. 47503 of the Aviation Safety and Noise Abatement Act (the Act), an airport operator may submit to the FAA Noise Exposure Maps which meet applicable regulations and which depict noncompatible land uses as of the date of submission of such maps, a description of projected aircraft operations, and the ways in which such operations will affect such maps. The Act requires such maps to be developed in consultation with interested and affected parties in the local community, government agencies, and persons using the airport. An airport operator who has submitted Noise Exposure Maps that are found by FAA to be in compliance with the requirements of 14 CFR part 150, promulgated pursuant to the Act, may submit a Noise Compatibility Program for FAA approval which sets forth the measures the airport operator has taken or proposes to take to reduce existing noncompatible uses and prevent the introduction of additional noncompatible uses.

The FAA has completed its review of the Noise Exposure Maps and accompanying documentation submitted by Memphis-Shelby County Airport Authority. The documentation that constitutes the "Noise Exposure Maps" as defined in Section 150.7 of 14 CFR part 150 includes: "Figure 2.1, Study Area Boundaries And Jurisdictions; Figure 2.2, Land Use In Memphis And Shelby County; Figure 2.3, City of Southaven Existing Land Use; Figure 2.4, City of Southaven Noise Abatement Zone; Figure 2.5, City of Southaven Future Land Use Plan; Figure 2.6, City of Southaven Proposed Land Use For Area 2; Figure 2.7, City of Horn Lake Proposed Land Use Map; Figure 2.8, Desoto County Existing Land Use Map; Figure 2.9, Desoto County Future Land Use Map; Figure 2.10, Noise Sensitive Sites; Figure 2.11, Mitigated Properties; Figure 3.1, Vicinity Map; Figure 3.2, Airport Diagram; Figure 3.3, Memphis Airspace; Figure 3.4, Daytime/Nighttime Distribution By Aircraft Type; Figure 3.5, Overall Runway Utilization; Figure

3.6, North/East Flow Departures; Figure 3.7, North/East Arrivals; Figure 3.8, South/West Flow Departures; Figure 3.9, South/West Flow Arrivals; Figure 3.10, Military Flight Tracks; Figure 3.11, Helicopter Flight Tracks; Figure 3.12, Run-Up Locations; Figure 3.13 Protected Areas and Departure Tracks; Figure 4.1, Noise Monitoring Locations; Figure 4.2, 2013 Existing Contour Noise Exposure Map; Figure 4.3, Existing Condition NEM With Noise-Sensitive Sites; Figure 4.4, 2013 Existing Condition NEM With Mitigated Properties; Figure 4.5, 2013 Existing Condition NEM With Noncompatible Land Uses; Figure 5.1, Run-Up Locations; Figure 5.2, North/East Flow Flight Tracks; Figure 5.3, South/West Flow Flight Tracks; Figure 5.4, 2020 Future Condition Noise Exposure Map; Figure 5.5, Proposed FedEx Run-Up Location Noise Impacts; Figure 5.6, 2020 Future Condition NEM With Noise-Sensitive Sites; Figure 5.7, 2020 Future Condition NEM With Mitigated Properties; Figure 5.8, 2020 Future Condition NEM With Noncompatible Land Uses. The FAA has determined that these Noise Exposure Maps and accompanying documentation are in compliance with applicable requirements. This determination is effective on September 1, 2015.

FAA's determination on the airport operator's Noise Exposure Maps is limited to a finding that the maps were developed in accordance with the procedures contained in Appendix A of 14 CFR part 150. Such determination does not constitute approval of the airport operator's data, information or plans, or a commitment to approve a Noise Compatibility Program or to fund the implementation of that Program. If questions arise concerning the precise relationship of specific properties to noise exposure contours depicted on a Noise Exposure Map submitted under Section 47503 of the Act, it should be noted that the FAA is not involved in any way in determining the relative locations of specific properties with regard to the depicted noise exposure contours, or in interpreting the Noise Exposure Maps to resolve questions concerning, for example, which properties should be covered by the provisions of Section 47506 of the Act. These functions are inseparable from the ultimate land use control and planning responsibilities of local government. These local responsibilities are not changed in any way under 14 CFR part 150 or through FAA's review of Noise Exposure Maps. Therefore, the responsibility for the detailed overlaying of noise exposure contours

onto the map depicting properties on the surface rests exclusively with the airport operator that submitted those maps, or with those public agencies and planning agencies with which consultation is required under Section 47503 of the Act. The FAA has relied on the certification by the airport operator, under Section 150.21 of 14 CFR part 150, that the statutorily required consultation has been accomplished.

Copies of the full Noise Exposure Maps documentation and of the FAA's evaluation of the maps are available for examination at the following locations: Federal Aviation Administration, Memphis Airports District Office, 2600 Thousand Oaks Boulevard, Suite 2250, Memphis, Tennessee 38118.

Questions may be directed to the individual named above under the heading, **FOR FURTHER INFORMATION CONTACT**.

Issued in Memphis, Tennessee, on September 1, 2015.

Phillip J. Braden,

Manager, Memphis Airports District Office.

[FR Doc. 2015-22825 Filed 9-9-15; 8:45 am]

BILLING CODE 4910-13-P

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

MAP-21 Comprehensive Truck Size and Weight Limits Study Deadline for Submitting Comments for Consideration in the Report to Congress

AGENCY: Federal Highway Administration (FHWA); DOT.

ACTION: Notice of deadline for submitting comments.

SUMMARY: This notice announces a deadline for submitting comments to the U.S. Department of Transportation (DOT) for consideration as part of the Moving Ahead for Progress in the 21st Century Act (MAP-21) Comprehensive Truck Size and Weight Limits Study Report to Congress. On June 5, 2015, DOT released for public comment and peer review the technical results of a comprehensive study of certain safety, infrastructure, and efficiency issues surrounding the Federal truck size and weight limits and the potential impacts of changing those limits. The DOT is now preparing a Report to Congress to conclude this study.

DATES: Comments must be received on or before October 13, 2015 to receive full consideration by DOT with respect to the MAP-21 Comprehensive Truck Size and Weight Limits Study Report to Congress. The public docket will remain

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**The Commercial Appeal
Affidavit of Publication**

**STATE OF TENNESSEE
COUNTY OF SHELBY**

Personally appeared before me, Patrick Maddox, a Notary Public, Helen Curl, of MEMPHIS PUBLISHING COMPANY, a corporation, publishers of The Commercial Appeal, morning and Sunday paper, published in Memphis, Tennessee, who makes oath in due form of law, that she is Legal Clerk of the said Memphis Publishing Company, and that the accompanying and hereto attached advertisement was published in the following editions of The Commercial Appeal to-wit:

**October 6, 2015
October 13, 2015
October 20, 2015**

And in the following editions of The DeSoto Appeal to-wit:
October 13, 2015



Subscribed and sworn to before me this 29th day of October, 2015.

 Notary Public

My commission expires February 15, 2016.



My Commission Expires 02/15/2016



U.S. FISH AND WILDLIFE SERVICE

Some Mid-South wild hogs were the result of farmers turning out their animals. But others have been released for the purpose of being hunted with dogs.

Feral hogs roam wild, giving Arkansas farmers trouble

Associated Press

LITTLE ROCK — Federal and state officials say a large population of wild hogs in Arkansas is causing problems for farmers across the state.

State officials estimate there are roughly 200,000 fast-breeding feral hogs spread across the state's 75 counties.

The Arkansas Democrat-Gazette reports that the hogs' eating, digging and rolling habits often destroy plants, pasture and farm irrigation equipment. A report by the Arkansas Game and Fish Commission and the U.S. Department of Agriculture attributes "up to \$30 million in damages" of Arkansas agriculture, forestry and livestock to feral hog activity.

USDA district supervisor Mike Hoy says the wild pigs have lived in the area since Spanish explorer Hernando de Soto introduced them to

“They are as smart as you or I ... If they recognize a trap ... you'll never see them again. You've educated them, and they'll educate their piglets.”

Skip Armes, University of Arkansas Division of Agriculture extension agent

harvest the animals, said Becky McPeake, professor and extension wildlife specialist for the University of Arkansas System Division of Agriculture. She said the sharp increase in the wild pig population didn't occur until about 30 years ago.

Hoy said this was due to hunters releasing the animals for sport, although the legislature placed limitations on releasing hogs for hunting in 2013.

It is legal for unlicensed hunters to take wild hogs year-round on private property with the landowner's permission,

harvest the animals, said

But experts agree that hunting, as well as using small traps and snares, are not effective ways to control the feral pig population. Killing or hurting one or two members of a family group makes the survivors more wary.

“They are as smart as you or I. They're not just a smart animal,” says Skip Armes, the University of Arkansas Division of Agriculture extension agent in Searcy County. “If they recognize a trap ... you'll never see them again. You've educated them, and they'll educate their piglets.”

Classified Legal

Legals

Legal Notices



Memphis International Airport

LEGAL NOTICE

This serves to provide public notice that, September 10, 2015, the Federal Aviation Administration (FAA) announced their determination that the “2013 Existing Condition Noise Exposure Map” and the “2020 Future Condition Noise Exposure Map” submitted by the Memphis – Shelby County Airport Authority under the provisions of 49 U.S.C. 47503 and 14 CFR part 150 was in compliance with applicable requirements. The Noise Exposure Maps and supporting documentation are available for public inspection during normal business hours (8:00 am to 4:30 pm, Monday through Friday) at the Memphis International Airport Administrative Office at 2491 Winchester Road, Suite 113, Memphis, TN 38116.

As indicated in 49 U.S.C. 47506, as of the date of this notice, no person who acquires property or an interest in property in an area surrounding Memphis International Airport, having actual or constructive knowledge of the existence of the Noise Exposure Maps, shall be entitled to recover damages with respect to the noise attributed to the airport unless such person can show that: (1) after acquiring the interest in such property, there was a significant (a) change in the type or frequency of aircraft operations at the airport, (b) change in the airport layout, (c) change in flight patterns, or (d) increase in nighttime operations; and (2) that damages have resulted from any such change or increase.

This notice of the existence of the Noise Exposure Maps is being published at least three times in newspapers of general circulation in the counties in which the airport and surrounding properties are located. This notice serves as constructive knowledge of the existence of the Noise Exposure Maps for Memphis International Airport.

Dated at Memphis, Tennessee this 6th day of October 2015.
Scott Brockman, A.A.E.
President and CEO
Memphis – Shelby County Airport Authority

Legal Notices

NOTICE OF TRUSTEES
WHEREAS, default occurred in the payment of the covenants, conditions of a Deed of Trust dated May 22, 1980, the Deed of Trust securing the same, executed May 27, 2008, at Page 1279 of the Register of Weakley County, Tennessee, executed by Randy Wilson & Associates, P.L.L.C., as Trustee for C. Services, Inc.; and signed, Wilson & Associates, P.L.L.C., having been Successor Trust Financial Servicing NOW, THEREFORE hereby given that indebtedness is declared due and that an agent & Associates, P.L.L.C., as Successor Trustee, by the power, duty, and vested in and imp said Successor Trust Financial Servicing will, on November 1, 2015, at or about 3:00 p.m. standard time, at Weakley County Courthouse, Tennessee, of certain property described to the best of the conclusion of the credit bid from a bidding entity provided by the successor trustee, which are waived in the Deed of Trust, said property is estate situated in Weakley County, Tennessee, more particularly as follows:

A CERTAIN LOT OR LAND, CONTAINING 65-5/8 ACRES, IN TRACT NO. 7 OF COUNTY, STATE OF TENNESSEE, BOUNDED AS BEGINNING AT BLK. IN CARL MELTON'S MISS FRONNIE SOUTHERN CORNER SOUTH TWO DEGREES WITH CARL MELTON'S LINE 118 POLES TO IN DITCH, C. E. BYERS WEST CORNER, THENCE 90 POLES TO BYERS CORNER; THENCE DEGREES WEST WEST LINE 118 STAKE IN BYERS MISS FRONNIE SOUTHEAST CORNER WEST WITH JEFFERSON LINE 88 POLES TO NING, CONTAINING ACRES, POSSESSED BY CARL MELTON'S SOUTHERN CORNER

AFFP

Memphis Airport

Affidavit of Publication

DESOTO TIMES-TRIBUNE

STATE OF MS } SS
COUNTY OF DESOTO }

Diane Smith, being duly sworn, says:

That she is a Clerk of the DESOTO TIMES-TRIBUNE, a newspaper of general circulation in said county, published in Hernando, DeSoto County, MS; that the publication, a copy of which is printed hereon, was published in the said newspaper on the following dates:

October 06, 2015, October 13, 2015, October 20, 2015

That said newspaper was regularly issued and circulated on those dates.

SIGNED:


Clerk

Subscribed to and sworn to me this 20th day of October 2015.


JUDY HAYES, Notary, DeSoto County, MS

My commission expires: October 01, 2017

00004067 00039846

Gwen Pritchard
Memphis Shelby County Airport
2491 Winchester Road
Suite 113
Memphis, TN 38116



**Memphis
International
Airport**

LEGAL NOTICE

This serves to provide public notice that, September 10, 2015, the Federal Aviation Administration (FAA) announced their determination that the "2013 Existing Condition Noise Exposure Map" and the "2020 Future Condition Noise Exposure Map" submitted by the Memphis - Shelby County Airport Authority under the provisions of 49 U.S.C. 47503 and 14 CFR part 150 was in compliance with applicable requirements. The Noise Exposure Maps and supporting documentation are available for public inspection during normal business hours (8:00 am to 4:30 pm, Monday through Friday) at the Memphis International Airport Administrative Office at 2491 Winchester Road, Suite 113, Memphis, TN 38116.

As indicated in 49 U.S.C. 47506, as of the date of this notice, no person who acquires property or an interest in property in an area surrounding Memphis International Airport, having actual or constructive knowledge of the existence of the Noise Exposure Maps, shall be entitled to recover damages with respect to the noise attributed to the airport unless such person can show that: (1) after acquiring the interest in such property, there was a significant (a) change in the type or frequency of aircraft operations at the airport, (b) change in the airport layout, (c) change in flight patterns, or (d) increase in nighttime operations; and (2) that damages have resulted from any such change or increase.

This notice of the existence of the Noise Exposure Maps is being published at least three times in newspapers of general circulation in the counties in which the airport and surrounding properties are located. This notice serves as constructive knowledge of the existence of the Noise Exposure Maps for Memphis International Airport.

Dated at Memphis, Tennessee this 6th day of October 2015
Scott Brookman, A.A.E.
President and CEO
Memphis - Shelby County Airport Authority
2491 Winchester Road
Memphis, TN 38116

alerts in schools approved

ermen said they wanted
limit to schools to avoid
proliferation of large video

boards. Similar boards al-
ready exist in Southaven at
Landers Center. Snowden

Grove Park and the Tanger
outlet mall scheduled to
open next month.

DeSoto Weekly CLASSIFIED

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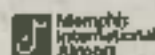
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Legal Notices



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Legal Notices

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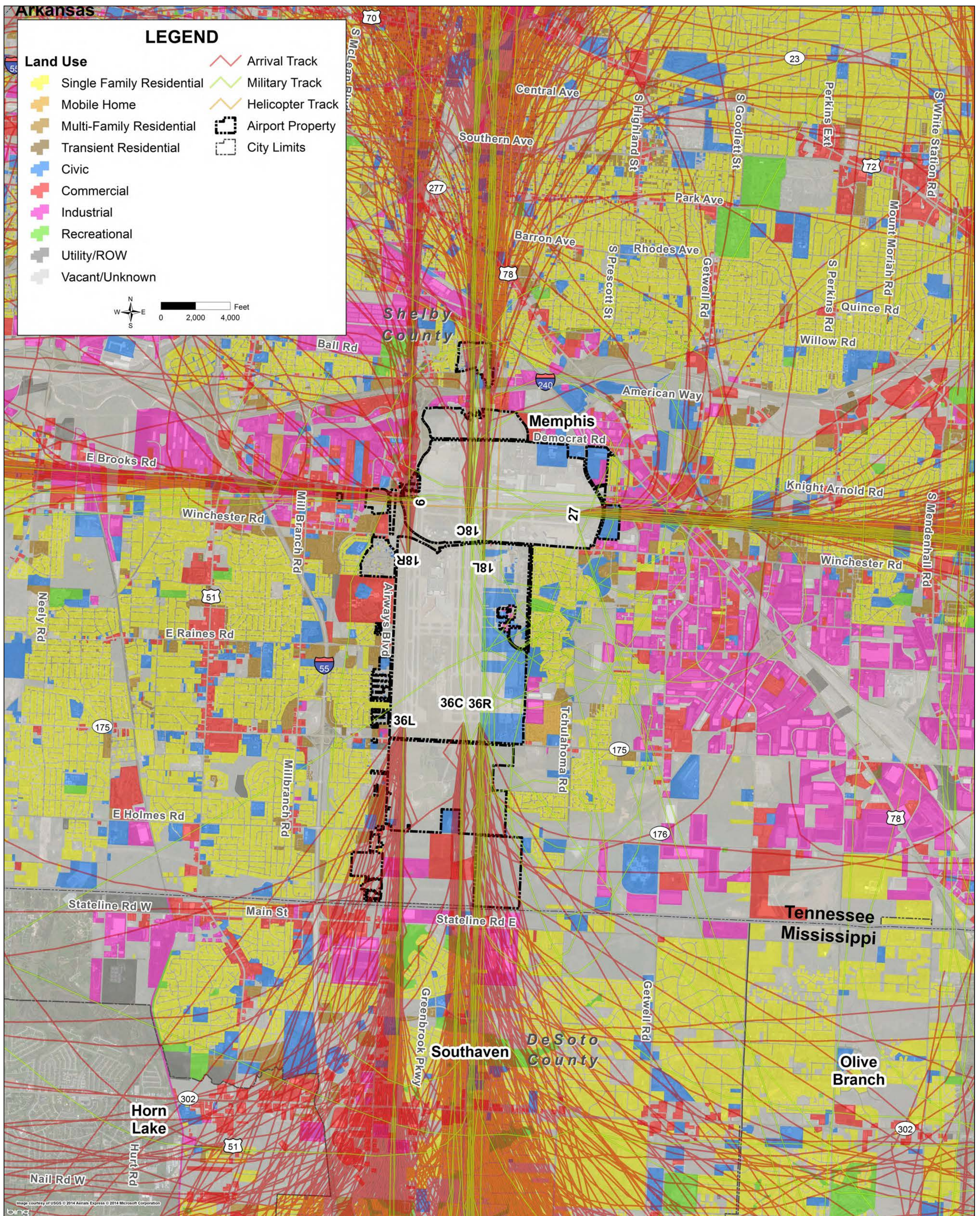
Dated at Memphis, Tennessee
this 6th day of October 2015.
Scott Brockman, A.A.E.
President and CEO
Memphis - Shelby County
Airport Authority
2491 Winchester Road
Memphis, TN 38116

Buy & sell locally!
The Commercial Appeal LocalBooks

Appendix H

Noise Exposure Maps and Flight Track Maps at a Scale of 1"=2,000'

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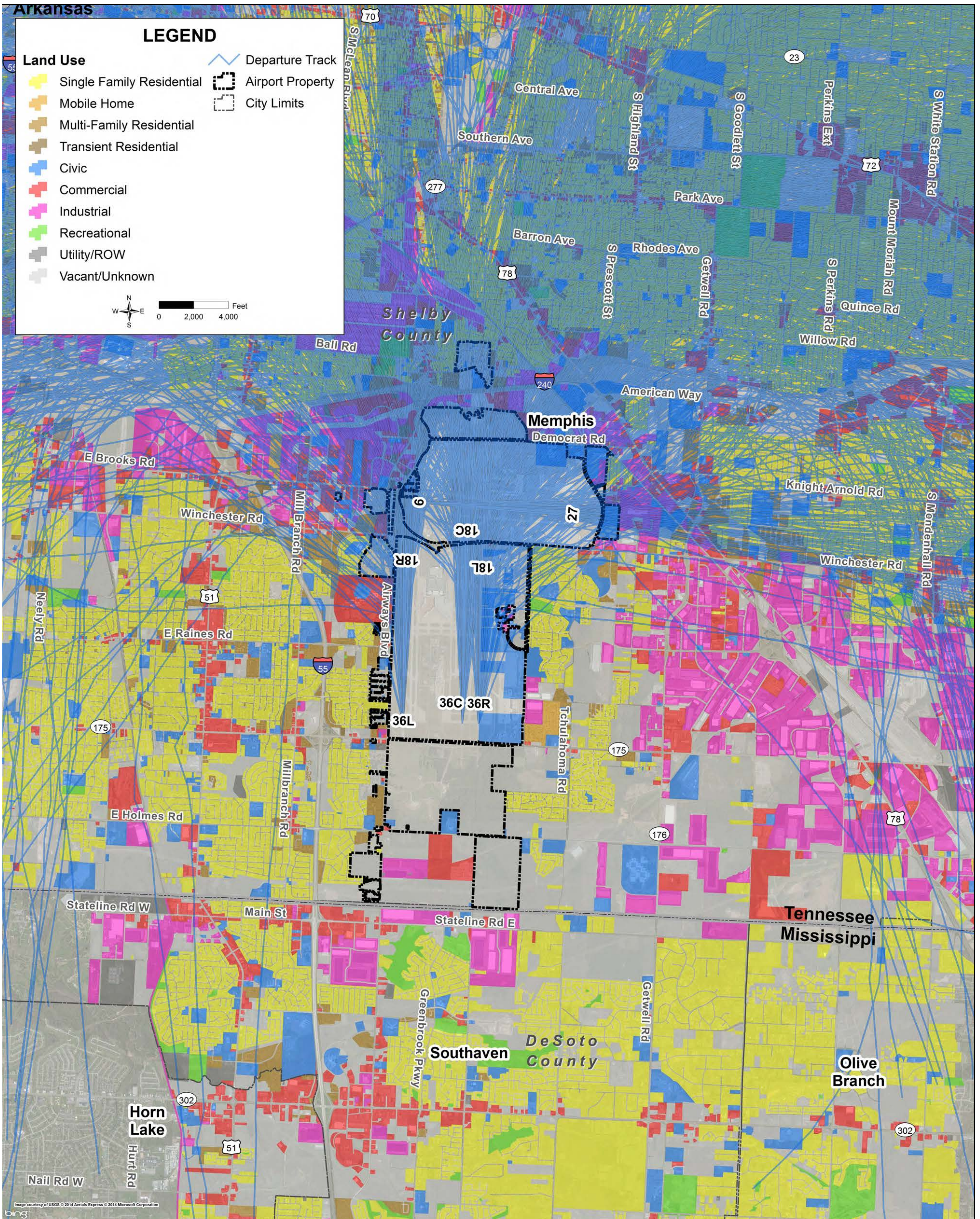
Memphis International Airport

Part 150 NEM Update

EXISTING CONDITION ARRIVAL TRACKS

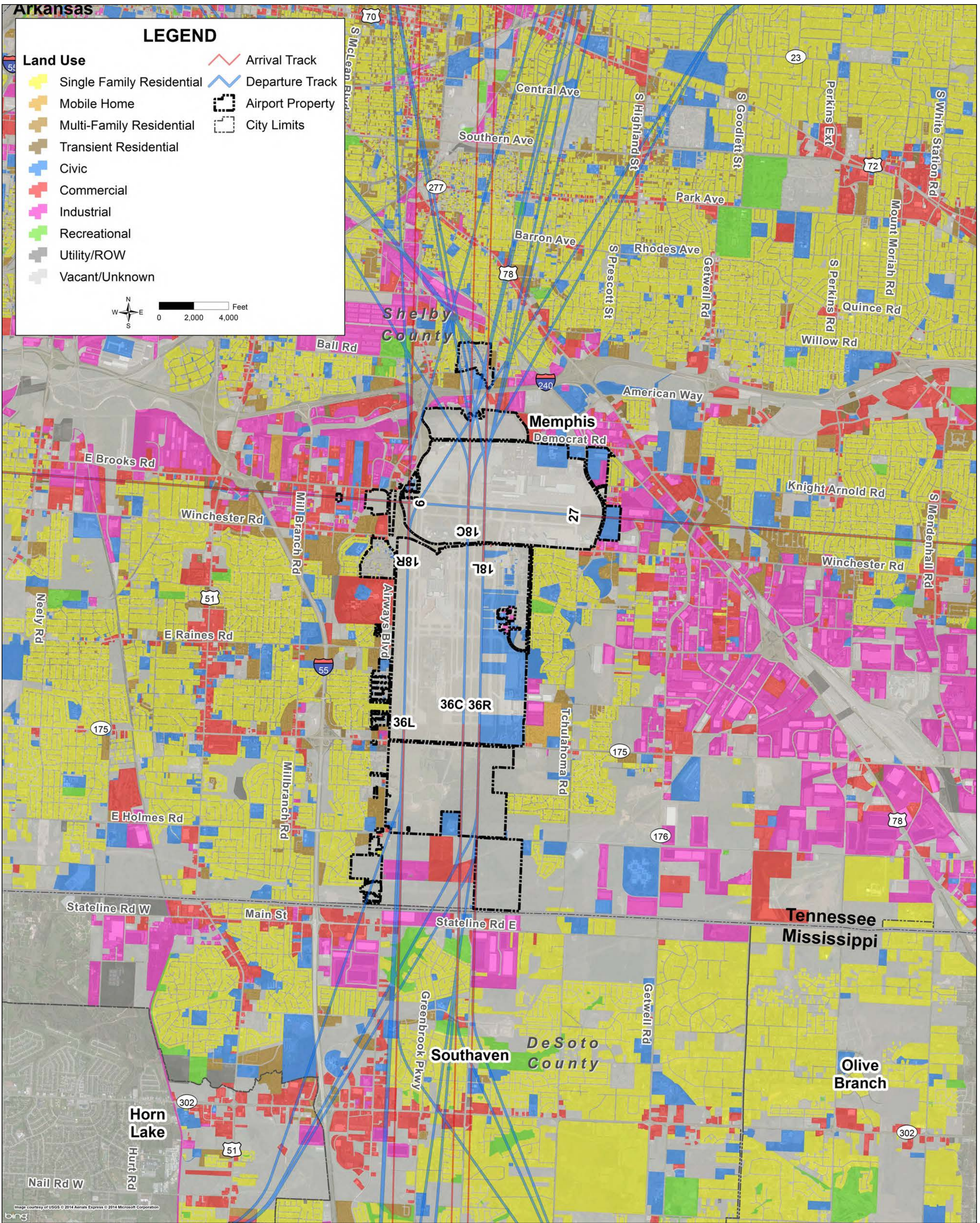
FIGURE
H.1

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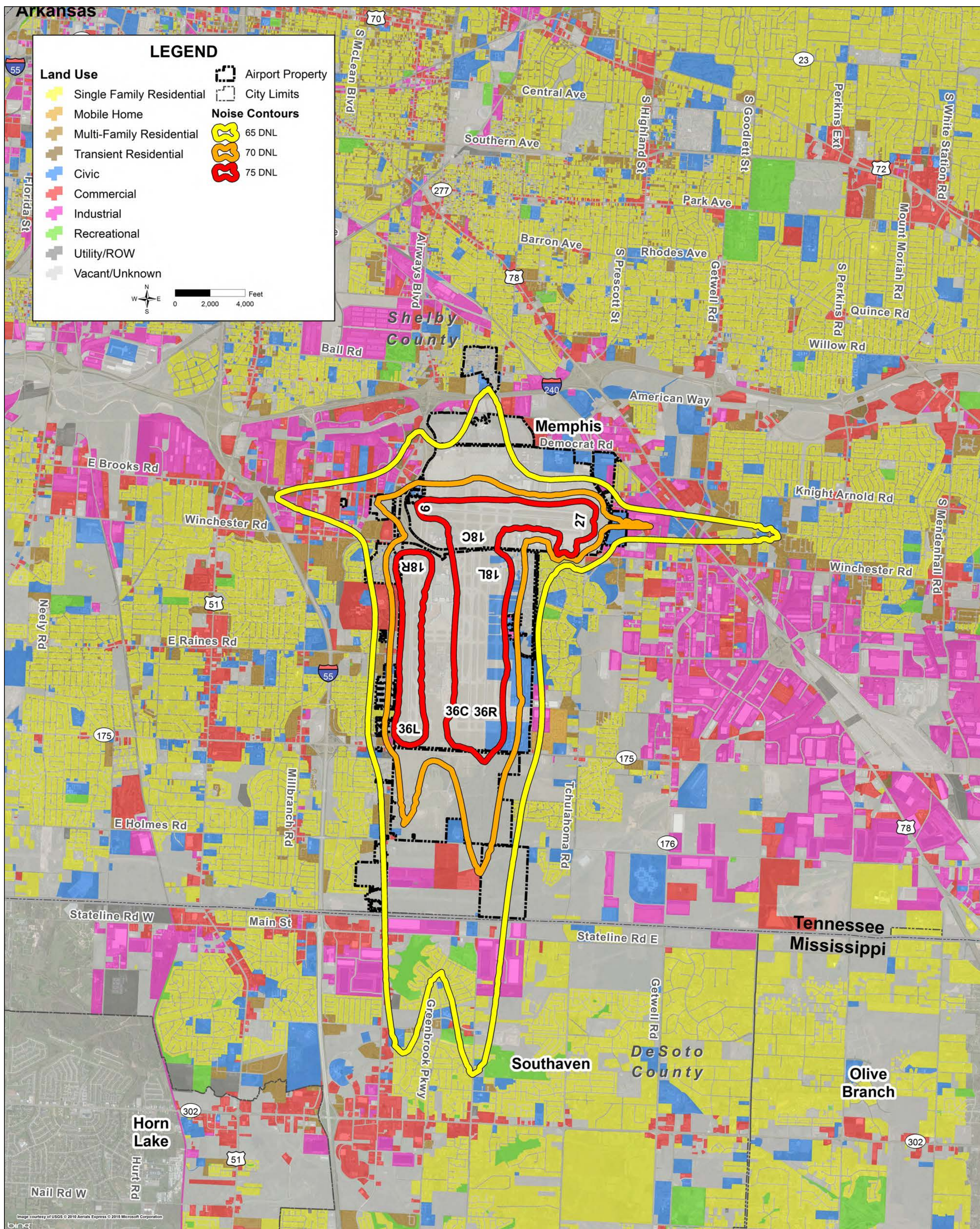
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