Chapter One

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CHAPTER ONE
BACKGROUND

The Charlotte Douglas International Airport (CLT or Airport) has conducted a Noise Exposure Map (NEM) Update to document the noise levels from aircraft operations. The NEM Update provides information on the existing and projected future five-year boundaries of significant levels of annual-average day noise exposure surrounding the Airport. This chapter provides the background information under which the NEM Update was prepared.

1.1 14 C.F.R. PART 150

Part 150 is a section of the Code of Federal Regulations (C.F.R.) that sets forth rules and guidelines for airports desiring to undertake airport noise compatibility planning. The regulations were promulgated by the Federal Aviation Administration (FAA) pursuant to the Aviation Safety and Noise Abatement Act (ASNA) of 1979, Public Law 96-193. ASNA was enacted to "…provide and carry out noise compatibility programs, to improve assistance to assure continued safety in aviation and for other purposes." The FAA was vested with the authority to implement and administer this act. This legislation required the establishment of a single system for measuring aircraft noise, determining noise exposure, and identifying land uses, which are normally compatible with various noise exposure levels.

Through 14 C.F.R. Part 150, the FAA established regulations governing the technical aspects of aircraft noise analysis and the public participation process for airports choosing to prepare airport noise compatibility plans. The components of 14 C.F.R. include the preparation of a Noise Compatibility Program (NCP) and Noise Exposure Maps (NEMs). NEMs depict the noise levels over land uses around an airport and identify non-compatible land uses. A NCP is a collection of measures the airport recommends to address non-compatible land uses. These measures may include operational measures that are designed at reducing noise from the source (aircraft) and land use measures designed to minimize the impact for noise-sensitive land uses. In simple terms, the NEMs identify the 'problem' and the NCP seeks to identify 'solutions'.

The Airport developed NEMs and an NCP as part of the original Part 150 Study that was completed in 1989 and approved by the FAA in 1990. The NEMs and NCP for the Airport were last updated as part of the 1998 Part 150 Study. That study prepared NEMs that were found to be in compliance with FAA guidance on April 28, 1998. This NEM Update Study updates those NEMs.

1.2 NOISE EXPOSURE MAPS (NEM)

The NEM component of 14 C.F.R. Part 150 presents the Airport's noise exposure contours for the existing condition and a forecast condition five years from the date of submission of the maps for FAA review. The current year NEM for this NEM

Update is labeled 2015 and is based on actual operating levels from March 2013 through February 2014. The total annual operations upon which the Existing (2015) NEM is based is 553,854, which results in 1,517.4 average-annual day operations.

The FAA's Terminal Area Forecast (TAF), issued in January 2015, forecasts 543,148 total annual operations in fiscal year 2015 at CLT. The difference between the operating levels used to prepare the Existing (2015) NEM and the forecasted operating levels for fiscal year 2015 from the latest TAF is less than two percent. No significant changes in fleet mix, the ratio of daytime to nighttime operations, runway use patterns, or flight corridors have occurred at CLT since the Existing (2015) NEM was prepared. As a result, the data used to prepare the Existing (2015) NEM remains reflective of current operating conditions at CLT.

2020 is used as the future year because it is five years from the date of submission. As shown in **Table 1-1**, aircraft operating levels have increased at CLT from 460,370 in 2000 to 553,854 in 2015, and are projected to increase to 686,030 by 2020. More information on the data collected for the NEMs is included in Appendix C, *Noise Modeling Methodology*.

Table 1-1
TOTAL ANNUAL AIRCRAFT OPERATIONS, 2000-2014
Charlotte Douglas International Airport

CALENDAR YEAR	TOTAL AIRCRAFT OPERATIONS
2000	460,370
2001	471,155
2002	459,488
2003	442,388
2004	467,676
2005	523,270
2006	510,918
2007	525,943
2008	537,598
2009	509,464
2010	529,107
2011	539,842
2012	552,515
2013	557,955
2014	545,294
2015	553,854
2020 (forecast)	686,030

Source: Federal Aviation Administration, Operations Network (OPSNET), Landrum & Brown Analysis

The Future (2020) NEM presents the Airport's noise exposure contours for future (2020) conditions. The operating levels for the year 2020 are based on a forecast of aviation activity for the Airport. The forecast uses a combination of socio-economic data for the region, historical activity at CLT, national trends in aviation, and specific plans from the major airlines operating at CLT to develop estimates of activity in the future. More information on this forecast is included in Appendix F, *Forecast of Aviation Activity*. The Future (2020) NEM is based on 686,030 annual operations or 1,879.5 average-annual day operations, an increase of 24 percent from the Existing (2015) NEM operating levels. More information on the Future (2020) NEM is included in Chapter Four.

14 C.F.R. Part 150 requires the use of standard methodologies and metrics for analyzing and describing noise. It also establishes guidelines for the identification of land uses that are incompatible with noise of different levels. The NEM noise contours for both years are superimposed on a land use map to show areas of incompatible land use. Incompatible land uses include residences, schools, places of worship, nursing homes, hospitals, and libraries. Appendix C, *Noise Modeling Methodology*, contains detailed information on the input data and methodology for preparing the noise exposure contours. A copy of the official Existing (2015) and Future (2020) NEMs and supporting maps at a scale of 1 inch equals 2,000 feet are included in a pocket in the back of this document. Small-scale representations of the official NEMs and supporting maps are located at the front of this document with the NEM checklist.[1]

Regarding when NEMs should be updated, 14 C.F.R. 150 states:

"(d) The airport operator shall, in accordance with this section, promptly prepare and submit a revised noise exposure map.

> (1) If, after submission of a noise exposure map under paragraph (a) of this section, any change in the operation of the airport would create any "substantial, new noncompatible use" in any area depicted on the map beyond that which is forecast for a period of at least five years after the date of submission, the airport operator shall, in accordance with this section, promptly prepare and submit a revised noise exposure map. A change in the operation of an airport creates a substantial new noncompatible use if that change results in an increase in the yearly day-night average sound level of 1.5 dB or greater in either a land area which was formerly compatible but is thereby made noncompatible under Appendix A (Table 1), or in a land area which was previously determined to be noncompatible under that Table and whose noncompatibility is now significantly increased.
>
> (2) If, after submission of a noise exposure map under paragraph (a) of this section, any change in the operation of the airport would significantly reduce noise over existing noncompatible uses that is not reflected in either the existing conditions or forecast noise exposure map on file with the FAA, the airport operator shall, in accordance with this section, promptly prepare and

[1] For those viewing this document in an electronic format, please use the zoom feature to see more detail on the NEMs and supporting maps.

submit a revised noise exposure map. A change in the operation of the airport creates a significant reduction in noise over existing noncompatible uses if that change results in a decrease in the yearly day-night average sound level of 1.5 dB or greater in a land area which was formerly noncompatible but is thereby made compatible under Appendix A (Table 1).

(3) Such updating of the map shall include a reassessment of those areas excluded under section A150.101(e)(5) of Appendix A because of high ambient noise levels.

(4) If the forecast map is based on assumptions involving recommendations in a noise compatibility program which are subsequently disapproved by the FAA, a revised map must be submitted if revised assumptions would create a substantial, new noncompatible use not indicated on the forecast map. Revised noise exposure maps are subject to the same requirements and procedures as initial submissions of noise exposure maps under this part." Section 150.21(d) of 14 C.F.R. Part 150 states that airport proprietors are required to update NEMs when changes in the operation of the airport would create any new, substantial incompatible use. This is considered to be an increase in Day-Night Average Sound Level (DNL) noise levels of 1.5 decibels (dB) over incompatible land uses when the aircraft noise level exceeds 65 DNL. Of course, the airport operator may update the NEMs at any time based on their own needs and concerns."

The airport proprietor can gain limited protection through preparation, submission, and publication of NEMs. ASNA provides in Section 107(a) that:

"No person who acquires property or an interest therein … in an area surrounding an airport with respect to which a noise exposure map has been submitted shall be entitled to recover damages with respect to the noise attributable to such airport if such person had actual or constructive knowledge of the existence of such noise exposure map unless … such person can show that:

i. A significant change in the type or frequency of aircraft operations at the airport; or

ii. A significant change in the airport layout; or

iii. A significant change in the flight patterns; or

iv. A significant increase in nighttime operations; occurred after the date of acquisition of such property."

ASNA provides that "constructive knowledge" shall be imputed to any person if a copy of the NEM was provided to them at the time of property acquisition or if notice of the existence of the NEM was published three times in a newspaper of general circulation in the area. In addition, Part 150 defines "significant increase" as occurring when a "change in the operation of an airport creates a substantial new noncompatible use if that change results in an increase in the yearly day-night average sound level of 1.5 dB or greater in either a land area which was formerly

compatible but is thereby made noncompatible (see Appendix A, Table A-1), or in a land area which was previously determined to be noncompatible…and whose noncompatibility is now significantly increased." (14 C.F.R. Part 150, Section 150.21(d), (f), and (g)).

1.3 PUBLIC INVOLVEMENT

A key element in the NEM Update process is public involvement. In order to inform and gather input from the public regarding the methodology and findings of the NEM Update, a Technical Group was convened and Public Information Meetings were held in the community at various points during the study.

1.3.1 TECHNICAL GROUP MEETINGS

A Technical Group was organized early in the planning process to provide feedback and advice to the consultant team on the contents and preparation of the NEM Update. The Technical Group provided residents, Airport users, agencies, and local officials an opportunity to provide input into the development of the NEMs. In preparing the NEM Update, staff from CLT, as well as the consultants wanted to benefit from the Group members' special viewpoints and the people and resources they represented. The Technical Group membership represents a broad range of interests and included representatives from CLT, the City of Charlotte, Charlotte Mecklenburg Schools, the FAA, airline personnel, and local citizens. Sign-in sheets from the Technical Group Meetings are provided in Appendix E, *Public Involvement*.

The Technical Group operated informally, with no compulsory attendance, no voting, and no officers. The meetings were conducted by the consultant team and were conducted at two points in the study when committee input was especially needed. Members were urged to attend the general public information workshops held during the study to listen firsthand to the concerns that were raised and to speak with members of the consultant team and representatives of the Airport one-on-one. Technical Group Meetings were held on the following dates:

Meeting #1
July 30, 2014
3:00 p.m. – 4:00 p.m.
Charlotte Douglas International Airport

Meeting #2
December 3, 2014
3:00 p.m. – 4:00 p.m.
Charlotte Douglas International Airport

1.3.2 PUBLIC INFORMATION WORKSHOPS

Five Public Information Meetings were held over the course of this NEM Update during key milestones in the process and two more meetings are scheduled to occur concurrently with Public Hearings. The meetings were conducted at different locations to make it convenient for the public to attend. Appendix E, *Public*

Involvement, includes copies of meeting notices, sign-in sheets, and comments received from these Public Information Meetings. The specific meeting dates, times, and locations are shown in the following section:

Meetings 1 & 2

July 30, 2014
6:00 p.m. – 8:00 p.m.
Charlotte-Mecklenburg West Service Center, 4150 Wilkinson Boulevard

July 31, 2014
6:00 p.m. – 8:00 p.m.
Steele Creek Presbyterian Church
7407 Steele Creek Road

Meetings 3, 4, & 5

December 3, 2014
6:00 p.m. – 8:00 p.m.
West Mecklenburg High School
7400 Tuckaseegee Road

December 4, 2014
6:00 p.m. – 8:00 p.m.
Olympic High School
4301 Sandy Porter Road

February 5, 2015
6:00 p.m. – 8:00 p.m.
CLT Center
5601 Wilkinson Blvd.

Meetings 6 & 7 (*to be held*)

October 14, 2015
6:00 p.m. – 8:00 p.m.
Olympic High School
4301 Sandy Porter Rd
Charlotte, NC 28273

October 15, 2015
6:00 p.m. – 8:00 p.m.
Sheraton Hotel - Ballroom
3315 Scott Futrell Dr
Charlotte, NC 28208

1.3.3 PROJECT WEBSITE

The Project Website provides a means to make project information available to all interested parties, including the public and agencies. The website also includes a schedule of upcoming Public Information Meetings. Information posted on the website includes the following:

- Meeting schedules,
- Information presented at past meetings,
- A frequently asked questions page,
- A Documents page, where pertinent study information is posted, including the *2015 DRAFT Noise Exposure Map Update Document for the Charlotte Douglas International Airport*.

The Project Website address is accessed through a link on the CLT website or directly at http://airportsites.net/clt-nem/

1.3.4 PUBLIC HEARING AND COMMENT PERIOD

14 C.F.R. Part 150 requires that Draft NEM documents be made available for public comment prior to submission to the FAA. The Draft NEM document was made available to the public at local libraries, the Airport, and on-line at http://www.airportsites.net/CLT-NEM/documents.htm. Public Information Meetings/Public Hearings are scheduled to be held on back-to-back nights on October 14 & 15, 2015 to obtain public comments as described in Appendix E of this document. The comment period will end on October 30, 2015.

1.4 AIRPORT FACILITIES AND ACTIVITY

The following sections provide a basic discussion of the history of the Airport, a description of the area surrounding the Airport, an inventory of the existing Airport facilities, and a description of the current aircraft activity at CLT.

1.4.1 AIRPORT LOCATION

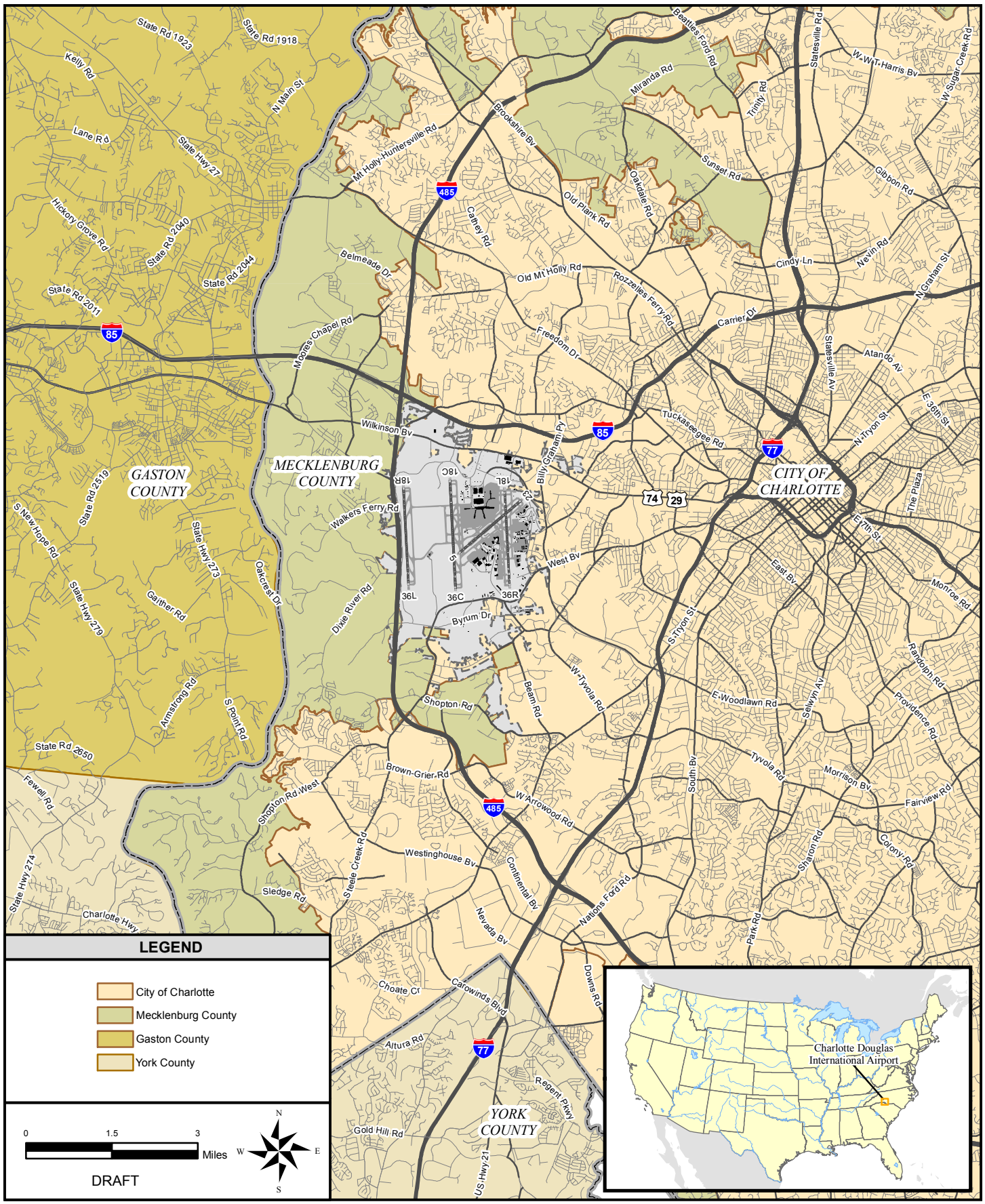
CLT is a publicly-owned airport operated by the City of Charlotte and managed by the Aviation Department. The Airport is operated financially on a fully self-sustaining basis – no general fund revenues have ever been or are appropriated to the cost of the facilities or operations. CLT is located on approximately 5,000 acres of land in the City of Charlotte, in west Mecklenburg County, North Carolina. The Airport is bounded to the north by parallel transportation corridors, I-85 and US 74 (Wilkinson Boulevard) and the Norfolk Southern Railroad. To the east, the Airport is bounded by Billy Graham Parkway (a limited access parkway) which connects the Airport with South Charlotte. To the south, there is no single boundary feature, but Douglas Drive and Pine Oaks Drive serve as road boundaries for the Airport. To the west, CLT is bounded by the I-485 Outer Beltway. **Exhibit 1-1** shows the general Airport location and surroundings.

CLT is located within the Charlotte-Concord-Gastonia, North Carolina-South Carolina Metropolitan Statistical Area (MSA). The MSA includes Cabarrus, Gaston, Iredell, Lincoln, Mecklenburg, Rowan, and Union counties in North Carolina, and Chester, Lancaster, and York counties in South Carolina.[2]

[2] U.S. Census Bureau, *Current Lists of Metropolitan and Micropolitan Statistical Areas and Delineations*, Online at http://www.census.gov/population/metro/data/metrodef.html, Accessed November 12, 2014.

1.4.2 AIRPORT HISTORY

CLT was originally constructed in 1935 with three runways on 500 acres. In 1941, the Federal government took control of the Airport to establish Morris Field Air Base, which was used for bomber training during World War II. At that time, additional land was acquired and two of the runways were lengthened to 5,000 feet. In 1951, the City extended Runway 5/23 to 7,502 feet, and in 1965 Runway 18L/36R was extended to 7,846 feet. In 1979, a new 10,000-foot parallel north/south runway was opened. Runway 18L/36R was extended to 8,676 feet in 1994. The third parallel runway, (new Runway 18R/36L) which is 9,000 feet in length, opened in January 2010 and the existing Runway 18R/36L was re-designated Runway 18C/36C.



Charlotte·Douglas INTERNATIONAL AIRPORT

Noise Exposure Map Update

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

Airport Location Map

EXHIBIT: **1-1**

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A 70,000 square-foot passenger terminal was opened in 1954 when the Airport was named Douglas Municipal Airport after former Charlotte Mayor Ben E. Douglas, Sr. A new 325,000 square-foot passenger terminal building with 25 gates was constructed in 1982 and the Airport was renamed Charlotte Douglas International Airport. In the late 1970s and early 1980s, the Airport completed improvements to the general aviation facilities and new buildings were constructed for Thurston Aviation and Butler Aviation.

Air carrier service was initiated in 1937 with two daily flights; 3,500 passengers were served that year. United Airlines began service as Capital Airlines in 1946 and by 1952, the Airport had a total of 50 daily flights. In 1962, Eastern Airlines established a connecting hub introducing jet service to Charlotte and became the dominant carrier until the early 1980s. Piedmont Airlines established its main hub at CLT following the Airline Deregulation Act of 1978 and experienced rapid growth to eventually replace Eastern Airlines as the largest carrier serving the Airport.

Between 1983 and 1985, five new airlines, Ozark, Pan Am, American, People Express, and TWA, began service at CLT. In 1989, US Airways merged with Piedmont and continued to operate the CLT hub. In 1990, a new 80,000 square-foot international and commuter concourse opened along with the US Airways maintenance base and two automobile parking decks. Lufthansa began service to Charlotte under an "open skies" agreement in 1990 and Northwest initiated service in 1994. In 1994, a 194,000 square-foot passenger terminal expansion was completed.[3] Between 2008 and 2014, several large air carriers merged, including American Airlines/US Airways, Delta Air Lines/Northwest Airlines, Southwest Airlines/AirTran, and United Airlines/Continental Airlines. CLT continues to be a hub for American Airlines following the merger with US Airways.

1.4.3 CURRENT AIRPORT OPERATORS AND SERVICE

In 2013, CLT was the seventh busiest airport in the world by total aircraft operations.[4] As of December 2014, CLT was served by the following commercial airline operators, including their regional carriers that provide scheduled passenger service:

- Air Canada
- American Airlines / US Airways
- Delta Air Lines
- Frontier Airlines
- Insel Air
- JetBlue Airways
- Lufthansa
- Southwest Airlines
- United Airlines
- ViaAir

[3] Charlotte/Douglas International Airport Environmental Impact Statement November, 1999.
[4] Airports Council International, *Final world airport traffic and rankings 2013*, December 22, 2014.

1.4.4 AIRPORT FACILITIES

1.4.4.1 Airside Facilities

The airfield system consists of four runways, three parallel runways, and a crosswind runway. The three parallel runways (18R/36L, 18C/36C, and 18L/36R) are oriented in a north-south direction. Runway 05/23, the crosswind runway is oriented in a northeast to southwest direction and intersects Runway 18L/36R. All eight runway ends have Instrument Landing System (ILS) approaches. Aircraft can also utilize non-ground based approach procedures that are based on Global Positioning System data.

1.4.4.2 Terminal Facilities

The passenger terminal at CLT is located at the center of the airfield, in between Runway 18L/36R and Runway 18C/36C, and north of Runway 05/23. The airport layout at CLT is shown on **Exhibit 1-2, *Existing Airport Layout***.

The Airport's terminal consists of one main building with five passenger concourses designated Concourses A through E. The central core building is one million square feet in size and is divided into the following six levels:

- Basement Level: building maintenance equipment, vendor storage, and receiving areas
- Ground or Ramp Level: baggage claim and ground transportation
- Ticketing Area Level: restaurants, specialty and gift/news stores, lounge area for business travelers, and five security checkpoints at each Concourse provide access to all 93 gates and concession areas
- Administrative Level: administrative offices and conference rooms
- Top two levels: the upper and lower ramp control tower

As of December 2014, there were a total of 93 gates divided between the five concourses. Most gates within Concourses A through D have jetbridge connections; although there is one hardstand gate at Concourse A. Gates at Concourse E comprise both jetbridge connections and hardstands with passenger walkways. Concourse A is occupied by Air Canada, Delta Air Lines, Frontier Airlines, Southwest Airlines, United Airlines, and ViaAir. American Airlines (including post-merger US Airways) occupies most gates within Concourses B, C, D, and E. Some of the gates within Concourse D are used by JetBlue and Lufthansa. All international gates are located on Concourse D.

1.4.4.3 Cargo Facilities

The Charlotte Air Cargo Center is located in the center of the airfield to the south of Runway 05/23 and west of Runway 18L/36R. The Cargo Center consists of approximately 570,000 square feet of facilities and more than 50 acres of aircraft ramp space. Total cargo throughput at CLT exceeded 129,800 tons in 2013. CLT is

served by several dedicated cargo airlines. The facility is also serviced by numerous freight forwarders, custom house brokers and professional international service providers.

1.4.4.4 North Carolina Air National Guard

CLT is home to the 145th Airlift Wing of the North Carolina Air National Guard (NCANG). The facility is located on the east side of the airfield. The 145th Airlift Wing maintains a fleet of C-130 aircraft and support assets for prompt mobilization.[5]

1.4.4.5 General Aviation and Fixed-Base Operator (FBO)

A majority of the general aviation parking and the fixed based operator (FBO) at CLT are located on the east side of the airfield. There is one FBO facility at CLT, the Wilson Air Center FBO, which provides aircraft services such as fueling services, ramp parking, hangar parking/storage, parts, and maintenance for general aviation aircraft at CLT.

A total of 92 aircraft were based at the Airport as of December 2014. **Table 1-2** provides the number of aircraft based at CLT by aircraft type.

Table 1-2
BASED AIRCRAFT
Charlotte Douglas International Airport

AIRCRAFT TYPE	NUMBER
Single engine airplanes	14
Multi engine airplanes	19
Jet airplanes	48
Helicopters	1
Military Aircraft	10
Total aircraft based on the field	**92**

Source: www.airnav.com. Airport information published as of December 12, 2014.

1.4.4.6 Intermodal Facility

The Norfolk Southern Railway's Charlotte Regional Intermodal Facility is located on approximately 200 acres of land between and south of Runway 18C/36C and Runway 18R/36L at CLT (see Exhibit 1-2). The facility is used to transfer trailers and containers between trucks and trains.

[5] Air National Guard, 145th Airlift Wing. Available Online at http://www.145aw.ang.af.mil/resources/index.asp. Accessed: November 12, 2014.

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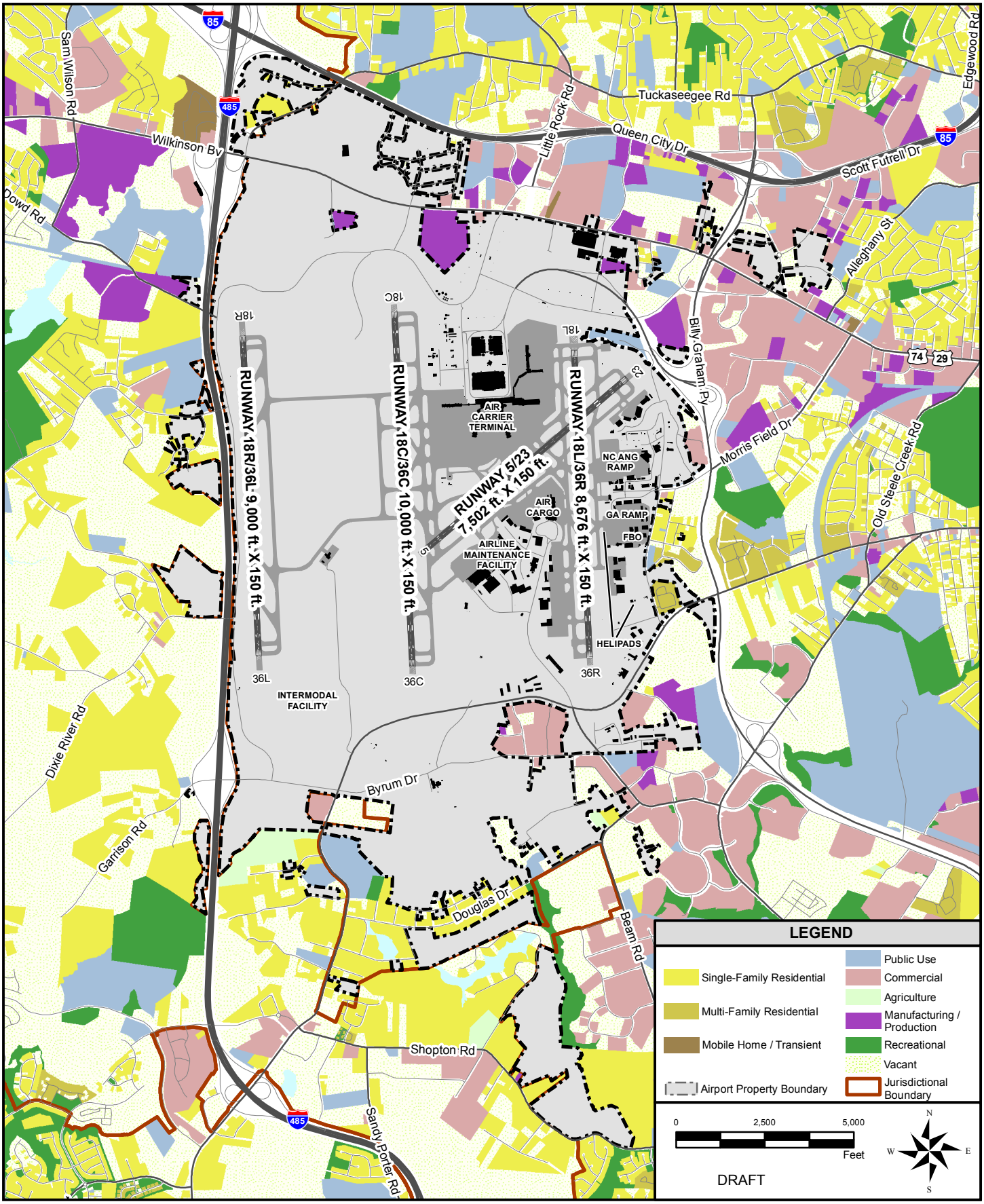

Charlotte·Douglas INTERNATIONAL AIRPORT

Noise Exposure Map Update

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

Existing Airport Layout

EXHIBIT: **1-2**

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Chapter Two

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CHAPTER TWO
AFFECTED ENVIRONMENT

Airports and aircraft operations generally have direct benefits and impacts upon surrounding communities as aviation activity is inherently intertwined with its neighbors. This includes both positive and negative impacts. Identifying and evaluating land uses surrounding an airport is an important step in quantifying potential impacts through the NEM Update process. The Federal Aviation Administration (FAA) has developed land use compatibility guidelines[1] that specify acceptable and not acceptable noise levels for a variety of typical land uses. This Noise Exposure Map (NEM) Update identifies the residential and other noise-sensitive land uses around CLT in accordance with those guidelines. A discussion of the land use mapping methodology is provided in Appendix D, *Land Use Methodology*.

2.1 AIRPORT LOCATION

CLT is located in Mecklenburg County, approximately five miles west of downtown Charlotte, in southern North Carolina.

2.2. AIRPORT ENVIRONS

The Airport Environs refers to the regional area that experiences most of the aircraft overflights from an airport. The Airport Environs for CLT is shown in **Exhibit 2-1, *Airport Environs***, and includes portions of the City of Charlotte and unincorporated Mecklenburg County. The Airport Environs, shown on Exhibit 2-1, encompasses an area of approximately 60 square miles. The map includes jurisdictional boundaries, local roads and major highways, the Airport property line, and significant geographical features. The Airport Environs was delineated based upon previous noise exposure contours as well as radar data showing existing flight tracks. The Airport Environs map extends to the north by approximately 2.2 miles from Runway end 18C, to the east by approximately 3.0 miles east of Runway end 23, to the south by approximately 4.4 miles south of Runway end 36C, and approximately 2.0 miles to the west of Runway 18R/36L.

2.3 EXISTING LAND USES WITHIN THE AIRPORT ENVIRONS

Land uses present in the Airport Environs were identified, mapped, and categorized in accordance with the Part 150 Land Use Compatibility Guidelines general land use classifications: residential (single, multi-family, and mobile homes), commercial, manufacturing and production, public uses, recreational, and vacant/open space. These uses were identified based on Mecklenburg County's Geographic Information System (GIS) database, and was supplemented as necessary by field verification.

[1] 14 C.F.R. Part 150 Appendix A, Land Use Compatibility Guidelines

Appendix D provides additional detailed information regarding the classification and identification of land uses. **Exhibit 2-2, *Generalized Existing Land Use***, depicts the existing land uses within the Airport Environs.

The area for which existing land uses were identified involves two levels of delineation: 1) the area directly adjacent to the Airport and the areas directly in line with the orientation of the runways; and 2) the regional area that may experience the broader effects of aircraft overflight and noise impacts. To the immediate north and northeast of CLT, land uses are characterized by commercial, institutional, and residential areas. To the south of CLT, land is predominantly residential and open space properties mixed with commercial and institutional land uses. To the east of CLT, land is predominantly residential and commercial land uses. To the west of CLT, land is predominantly agricultural with some scattered residential land uses.

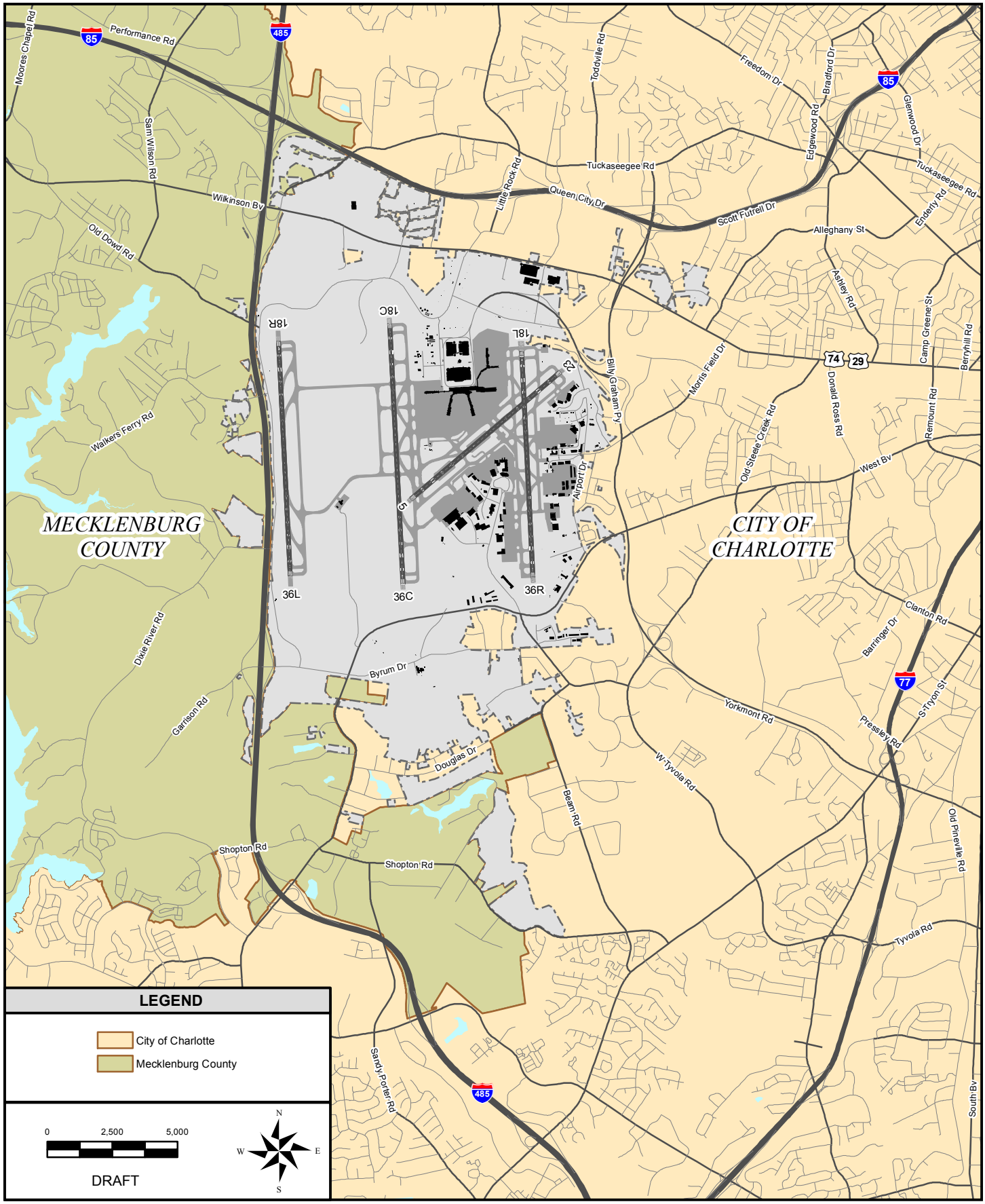
2.3.1 EXISTING NOISE-SENSITIVE PUBLIC FACILITIES

Land uses that could be considered incompatible with airport operations include more than just residential uses. FAA guidelines define certain public facilities as noise-sensitive: places of worship, schools (and daycare facilities at which licensed education occurs), nursing homes, libraries, and hospitals. Detailed information on noise-sensitive facilities was collected within the vicinity of CLT. Within this area there are 29 schools, 74 places of worship, three daycare facilities,[2] and two libraries as shown on **Exhibit 2-3, *Existing Noise-Sensitive Public Facilities***. Appendix D discusses the methodology for collecting and organizing the noise-sensitive facility data and Table D-2 provides a list of all facilities.

2.3.2 EXISTING HISTORIC PROPERTIES

Per FAA guidance, historic properties in the vicinity of CLT have been identified and displayed on the NEMs. Historic properties include those properties that are listed on the National Register of Historic Places (NRHP) and properties that are listed with the North Carolina State Historic Preservation Office that have been surveyed and determined to be eligible or potentially-eligible for inclusion on the NRHP. There are two properties listed on the NRHP within this area,[3] and twenty-two properties which are potentially eligible or determined eligible as shown on **Exhibit 2-4, *Historic Resources*** and listed in Appendix D.

[2] Includes daycare facilities were licensed education occurs as listed by Mecklenburg County.
[3] U.S. National Park Service, National Register of Historic Places Database. Online at: http://gis.ncdcr.gov/hpoweb/. 2014.



Charlotte·Douglas INTERNATIONAL AIRPORT

Noise Exposure Map Update

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

Airport Environs

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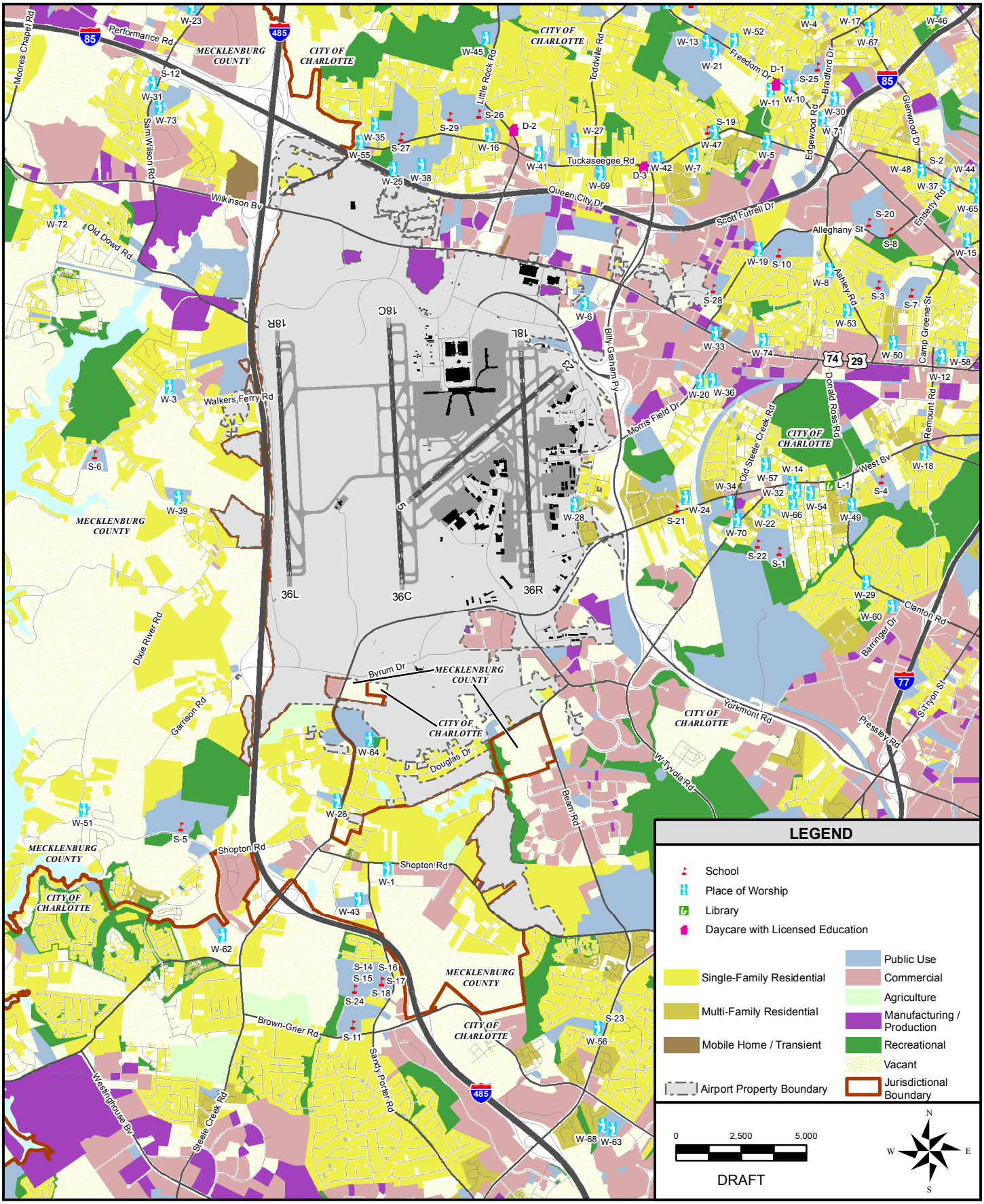

Charlotte·Douglas INTERNATIONAL AIRPORT	*Noise Exposure Map Update* ***CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT***	Generalized Existing Land Use	EXHIBIT: **2-2**

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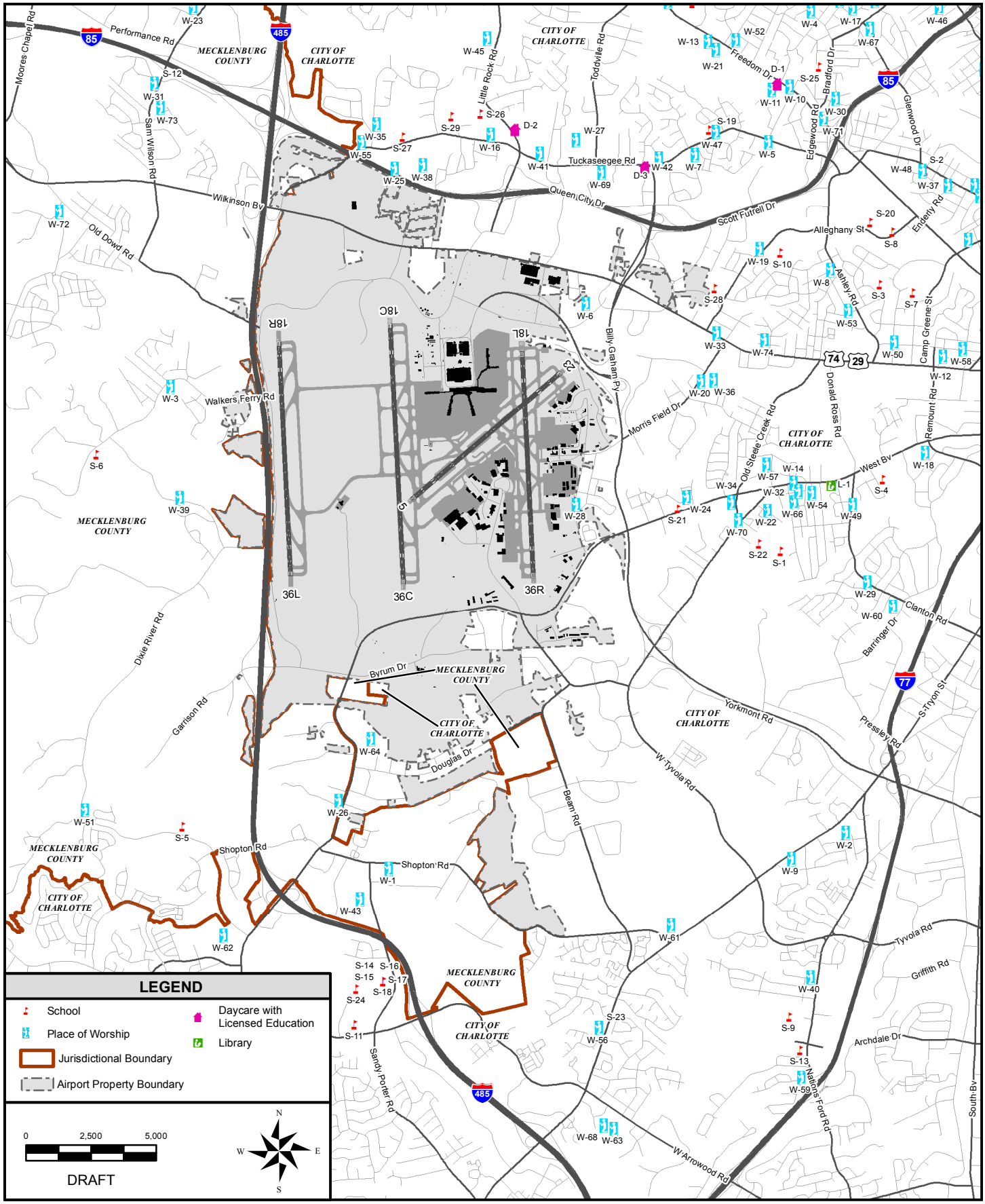

Charlotte·Douglas INTERNATIONAL AIRPORT

Noise Exposure Map Update

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

Existing Noise-Sensitive Facilities

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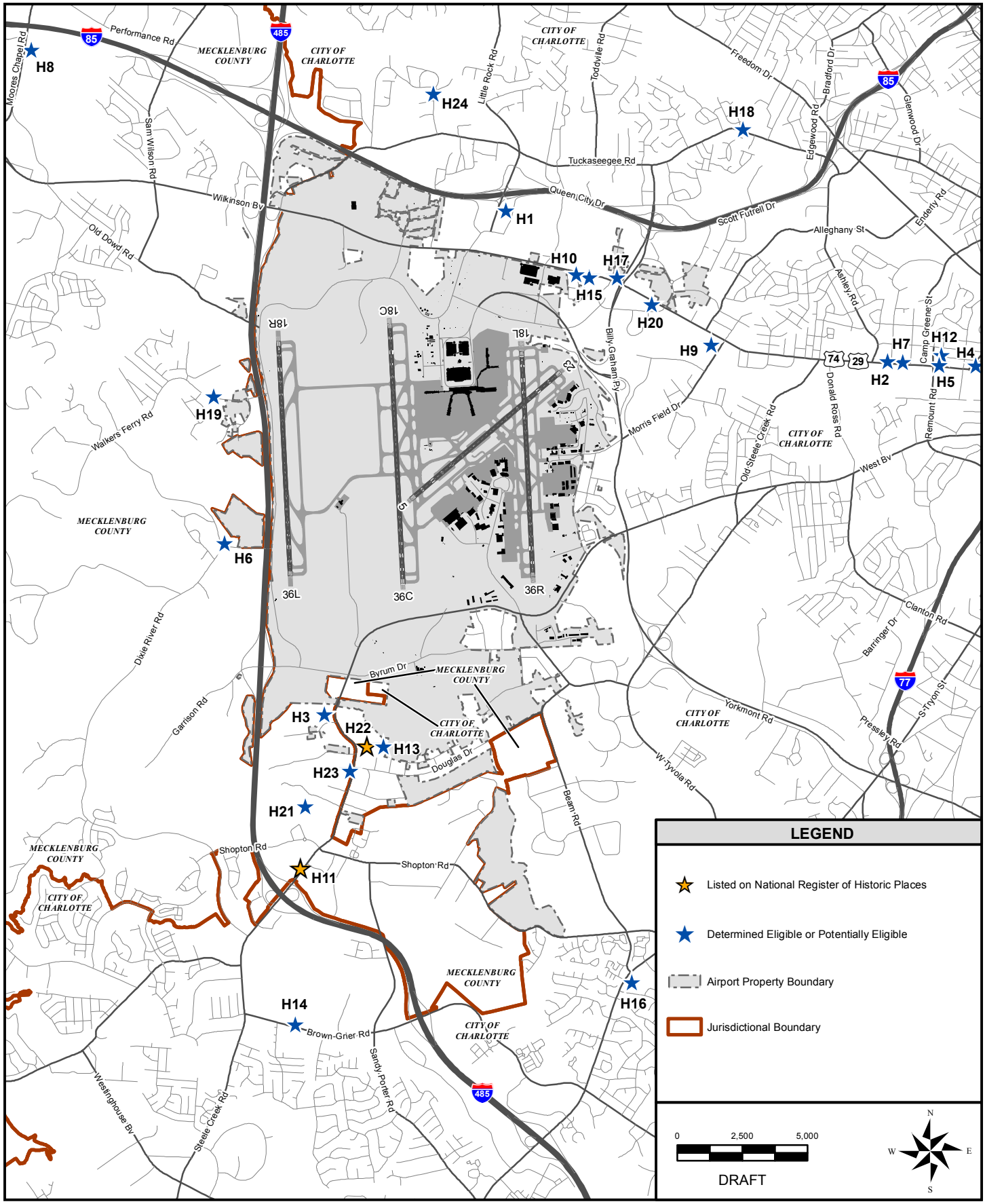

Charlotte·Douglas INTERNATIONAL AIRPORT

Noise Exposure Map Update

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

Historic Resources

EXHIBIT: **2-4**

Date: 9/2/2015 Y:\CLT\NEM Update\E-L&B Work Product\2-GIS\MXD\Exhibits\2-4_Historic Resources.mxd

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2.4 JURISDICTIONS WITH LAND USE AUTHORITY WITHIN THE AIRPORT ENVIRONS

Local jurisdictions have the authority to conduct land use planning and to implement land use controls such as zoning, subdivision regulations, and building codes. Within the airport environs, two jurisdictions have land use authority, the City of Charlotte and Mecklenburg County. The City of Charlotte has a Council-Manager form of government with a Mayor and 11 Council Members and a City Manager that oversees the day-to-day operations of the City. In Mecklenburg County a nine-member Board of County Commissioners is the governing body. Most government services are provided by joint departments that serve both the City of Charlotte and Mecklenburg County, including The Charlotte-Mecklenburg Planning Department. The Charlotte-Mecklenburg Planning Department is directed by Planning and Zoning Commission, was formed by an Inter-local Agreement as a planning advisory body to the City of Charlotte and Mecklenburg County in 1954. The Commission advises City Council on short and long range land use and design plans and general planning matters including zoning, land development, transportation/transit, economic development and community facilities. The Commission's authority extends to the City of Charlotte and the unincorporated portions of Mecklenburg County.

2.5 CURRENT ZONING AND FUTURE LAND USES WITHIN THE AIRPORT ENVIRONS

Anticipated future land uses in the Airport Environs were identified through zoning maps and subdivision plans; and were mapped, and categorized in terms of the general land use classifications presented in 14 C.F.R. Part 150, which includes residential (single, multi-family, and mobile homes), commercial, manufacturing and production, public uses, recreational, and vacant/open space. Future land uses are based on zoning data from the Charlotte Mecklenburg Planning Department, which develops plans that are used to guide zoning decisions made by the City and County and from mapping data showing planned subdivisions submitted by developers to the Planning Department. Appendix D provides additional detailed information regarding the classification and identification of zoning districts. **Exhibit 2-5, *Current Zoning***, depicts the future land use/zoning within the Airport Environs.

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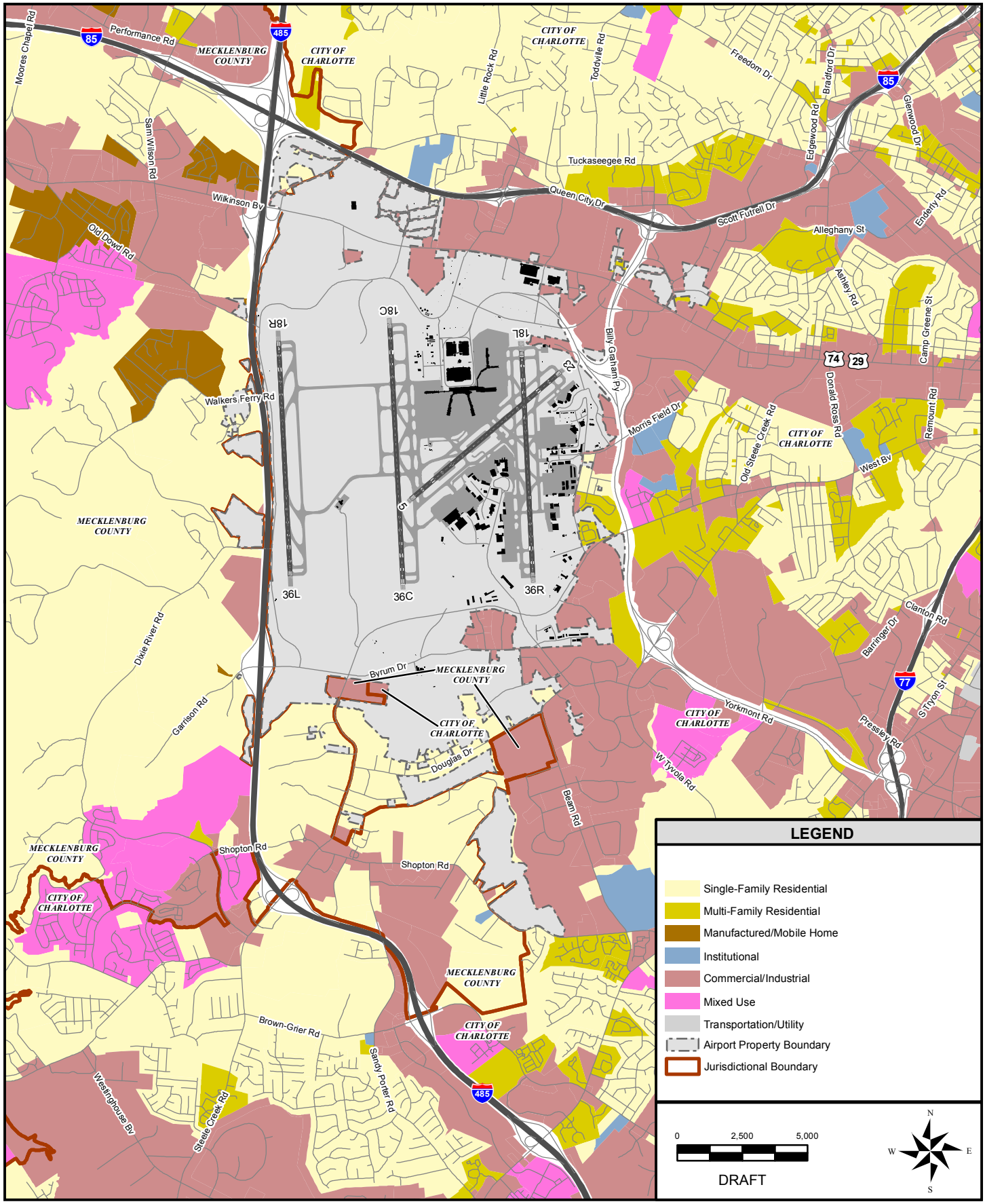

Charlotte·Douglas INTERNATIONAL AIRPORT	*Noise Exposure Map Update* ***CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT***	Current Zoning	EXHIBIT: **2-5**

Date: 9/2/2015 Y:\CLT\NEM Update\E-L&B Work Product\2-GIS\MXD\Exhibits\2-5_Current Zoning.mxd

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Chapter Three

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CHAPTER THREE
EXISTING (2015) CONDITION

3.1 OVERVIEW

The following sections describe the existing noise exposure on communities surrounding CLT. The noise analysis for this NEM Update included the development of the noise contours for the existing conditions with a base year of 2015. Aircraft-related noise exposure is defined through noise contours prepared using the FAA's Integrated Noise Model (INM) per 14 C.F.R. Part 150 guidelines. Inputs into the noise model include: the number of aircraft operations (arrivals and departures) by aircraft type and time of day, the percent of time each runway end is used for arrival and departure, and flight paths to and from the runway ends.

This noise exposure is presented using the DNL metric, which represents the average noise energy for an average-annual day, on the decibel (dB) scale. For the calculation of DNL, an extra penalty of 10 dB is added to nighttime (10:00 pm to 6:59 am) operations. Per Federal guidelines, 65 DNL is the level at which noise-sensitive land uses are considered incompatible with aircraft noise unless mitigated to reduce interior noise levels below acceptable levels. The noise exposure patterns in this chapter are presented using noise contours, which are lines that connect areas of equal noise exposure. For this NEM Update, 65, 70, and 75 DNL noise contours were prepared. The noise contours are presented on exhibits, and the numbers of persons and housing units that fall within each of the noise contour levels are quantified.

An explanation of the INM and the DNL metric, along with a review of the physics of noise, research regarding noise impacts on humans, social impacts of noise, and the data required to develop noise contours, is summarized in Appendix C, *Noise Modeling Methodology.* This information details the operating characteristics in use at CLT, the number of operations, and the use of flight paths to and from CLT. Copies of the official NEMs, at a scale of 1 inch equals 2,000 feet, and supplemental graphics showing INM flight tracks are included in the back of this document.

3.2 EXISTING (2015) NOISE CONTOUR

The number of operations, runway use, flight track, stage length data, and engine run-ups presented in Appendix C, are used as input to the INM computer model for calculation of noise exposure in the Airport Environs. **Exhibit 3-1** reflects the average-annual noise exposure pattern present at CLT during the existing baseline period. **Exhibit 3-2** shows the same map but with the residential land use highlighted for ease of viewing. The Existing (2015) Noise Contour is the contour depicted on the official Existing (2015) NEM, which can be found at the back of this document. Noise contours are presented for the 65, 70, and 75 DNL. The FAA uses the 65 DNL as the noise level in which noise-sensitive land uses (residences, places of worship, schools, libraries, and nursing homes) are considered significantly impacted. Therefore, these land uses are considered incompatible with noise levels at or above 65 DNL unless mitigated per Federal guidelines. Below 65

DNL, all land uses are determined to be compatible. **Table 3-1** summarizes the area within each noise contour level for the Existing (2015) Noise Contour.

A DNL noise contour does not represent the noise levels present on any specific day; rather it represents the average noise energy of all 365 days of operation during the year. Noise contour patterns extend from an airport along each extended runway centerline, reflective of the flight tracks used by all aircraft. The relative distance of a contour from an airport along each route is a function of the frequency of use of each runway by aircraft type, by arrival and departure, and use at night.

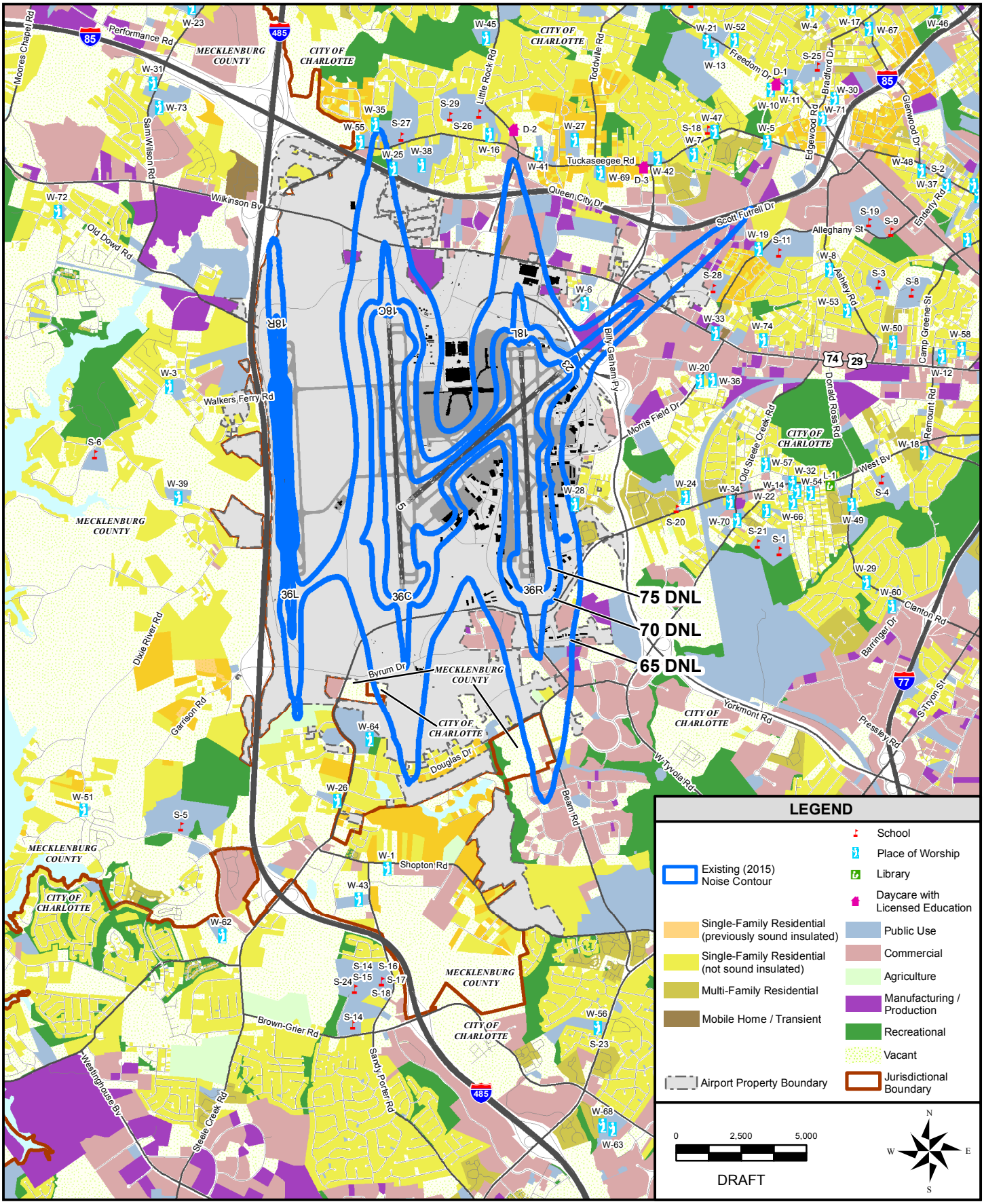
Table 3-1
AREAS WITHIN EXISTING (2015) NOISE CONTOUR
Charlotte Douglas International Airport

CONTOUR RANGE	2015 BASELINE (IN SQUARE MILES)
65-<70 DNL	3.5
70-<75 DNL	1.1
75+ DNL	1.0
65+ DNL (total)	5.6

Contour: CLT02015Noise-Contours
Source: Landrum & Brown, 2015.

The size and shape of the noise contours for CLT are primarily a function of the combination of flight tracks and runway use. Wind direction is a primary factor in determining runway use. Based on annual wind patterns, approximately 41 percent of operations occur during north flow (aircraft arrive and depart on Runway 36L, Runway 36C, and Runway 36R) and approximately 59 percent of operations occur during south flow (aircraft arrive and depart on Runway 18L, Runway 18C, and Runway 18R).

The size and shape of the noise contours are reflective of the ratio of north to south flow and the distribution of operations among the runways. In general, the noise contours are slightly longer to the south of CLT due to the slightly larger percentage of operations in south flow. The noise contours are larger in size surrounding Runway 18L/36R and Runway 18C/36C as these two runways are used for a large percentage of arrivals and departures. Runway 18R/36L is used primarily for arrivals; therefore, the contour surrounding this runway is shorter and thinner. Runway 23 is used for arrivals during off-peak times, particularly during the nighttime, which causes the noise exposure contour to be longer and thinner to the northeast of this runway.



Charlotte·Douglas INTERNATIONAL AIRPORT

Noise Exposure Map Update

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

Existing (2015) Noise Contour

EXHIBIT: **3-1**

Date: 9/2/2015 Y:\CLT\NEM Update\E-L&B Work Product\2-GIS\MXD\Exhibits\3-1 Existing 2015 Noise Contour.mxd Noise Contour: CLT2015_Noise-Contours

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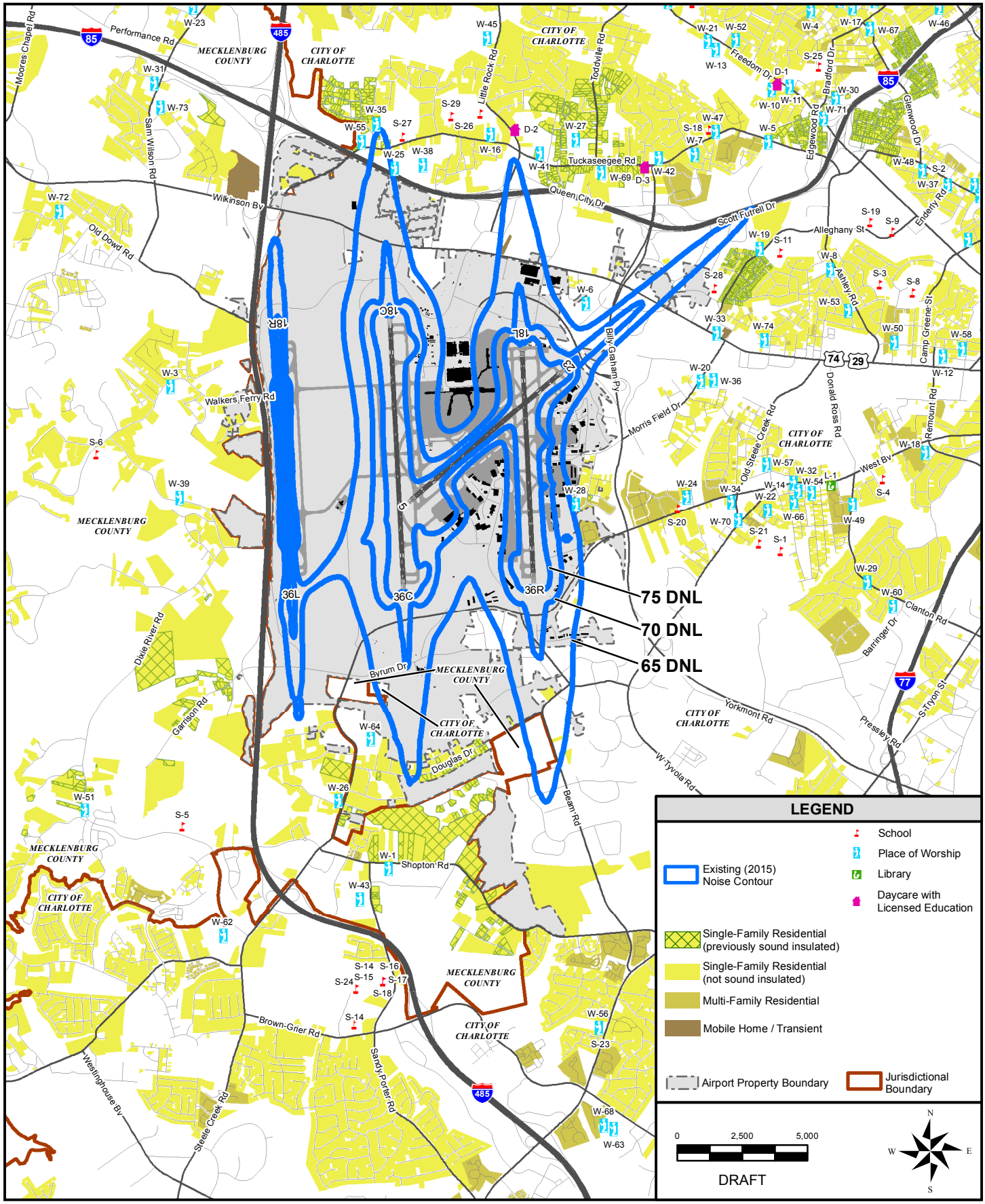

Charlotte·Douglas INTERNATIONAL AIRPORT	*Noise Exposure Map Update* ***CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT***	Existing (2015) Noise Contour with Residential Land Uses	EXHIBIT: **3-2**

Date: 9/2/2015 Y:\CLT\NEM Update\E-L&B Work Product\2-GIS\MXD\Exhibits\3-2 Existing 2015 Contour with Residential.mxd Noise Contour: CLT2015_Noise-Contours

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There are also several areas in which there are noticeable bumps in the contour due to locations in which engine run-ups are performed on the airfield, including the airline maintenance facility just south of Runway 05/23; the parallel taxiways at Runway 18C, 36C, 18L, and 36R; and the North Carolina Air National Guard Ramp. In addition, there are also points in the contour indicating noise from helicopter landings and takeoffs at helipads east of Runway 18L/36R. The locations of the run-ups and the helipads are shown on Exhibit C-10 in Appendix C.

The 65 DNL of the Existing (2015) Noise Contour extends approximately 0.74 miles to the north of Runway 18R/36L, 1.41 miles to the north of Runway 18C/36C, 1.39 miles to the north of Runway 18L/36R, and approximately 1.83 miles to the northeast of Runway 5/23. The 65 DNL noise contour extends approximately 1.04 miles to the south of Runway 18R/36L, 1.43 miles to the south of Runway 18C/36C, 1.63 miles to the south of Runway 18L/36R, and 1.25 miles to the southwest of Runway 5/23.

The 70+ DNL of the Existing (2015) Noise Contour is located entirely over Airport property or other compatible land uses. Small areas of open space located to the northeast of CLT are located within the 70 DNL. The 75 DNL noise contour remains entirely over Airport property.

3.3 LAND USE COMPATIBILITY – EXISTING (2015) NOISE CONTOUR

Identifying and evaluating all land uses within the Airport Environs is necessary to quantify the number of residential and other noise-sensitive land uses that are impacted by aircraft noise. Chapter Two, *Affected Environment*, and Appendix D, *Land Use Assessment Methodology*, summarize the land use data collection process. The FAA has created land use compatibility guidelines relating types of land use to airport sound levels. These guidelines are defined in 14 C.F.R. Part 150, *Land Use Compatibility with Yearly Day-Night Average Sound Levels*. The compatibility table is reproduced in Appendix A, *FAA Policies, Guidance*, and Regulations, of this document (see Table A-1, *Land Use Compatibility Guidelines – 14 C.F.R. Part 150*). These guidelines show the compatibility parameters for all incompatible properties relevant to the Existing (2015) and Future (2020) Contours including residential (single, multi-family, and mobile homes), commercial, manufacturing and production, public uses, recreational, and vacant/open space. According to 14 C.F.R. Part 150 guidelines, all land uses exposed to noise levels below the 65 DNL noise contour are compatible with airport operations.

Summaries of the residential population, housing units, and noise-sensitive facilities affected by noise levels exceeding 65 DNL for the Existing (2015) Noise Contour is provided in **Table 3-2**. Properties were considered to be within the 65 DNL noise exposure contour if all or part of the parcel on which the noise-sensitive structure was located was inside the contour line.

There are 50 housing units and an estimated 133 residents located within the 65+ DNL of the Existing (2015) Noise Exposure Contour. These housing units are located to the north and south of Runway 18L/36R and Runway 18C/36C. Four of the housing units accepted sound insulation as part of the previous Part 150 or the

2000 Runway 18R/36L EIS mitigation programs. The remaining 46 housing units either declined participation or were determined to be ineligible for sound insulation[1].

There are two noise-sensitive facilities located in the 65+ DNL of the Existing (2015) Noise Contour, the Harvest Church of Charlotte (identified as W-25 on Exhibit 3-1) and the Montagnard Alliance Church (identified as W-35 on Exhibit 3-1). Both of these churches are located north of I-85 near the extended centerline of Runway 18C/36C.

Table 3-2
HOUSING, POPULATION, AND NOISE-SENSITIVE FACILITIES LOCATED WITHIN THE EXISTING (2015) NOISE CONTOUR
Charlotte Douglas International Airport

	65-<70 DNL	70-<75 DNL	75+ DNL	65+ DNL
HOUSING UNITS				
Properties Offered Mitigation				
Accepted Sound Insulation	4	0	0	4
Declined or ineligible for Sound Insulation[1]	46	0	0	46
Declined Acquisition	0	0	0	0
Properties Not Offered Mitigation	0	0	0	0
Total Housing Units	**50**	**0**	**0**	**50**
POPULATION				
Total Population	**133**	**0**	**0**	**133**
Noise-Sensitive Facilities				
Schools	0	0	0	0
Places of Worship	2	0	0	2
Libraries	0	0	0	0
Hospitals	0	0	0	0
Nursing Homes	0	0	0	0
Total Noise-Sensitive Facilities	**2**	**0**	**0**	**2**

Notes: 1. Housing units within the previous sound insulation program boundary may have been ineligible if they were constructed after the 1996 noise contour was published, if interior noise levels already met the 20 dB reduction standard, or are mobile homes, which cannot be effectively sound insulated.

2. Total population estimated based upon the housing counts multiplied by the 2010 Census average household size for each Census Block Group.

Source: Landrum & Brown, 2015. (Contour: CLT2015_Noise-Contours)

[1] Housing units within the previous sound insulation program boundary may have been ineligible if they were constructed after the 1996 noise contour was published, if interior noise levels already met the 20 dB reduction standard, or are mobile homes, which cannot be effectively sound insulated.

Chapter Four

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CHAPTER FOUR
FUTURE (2020) CONDITION

4.1 OVERVIEW

The discussion of the affected environment for noise and compatible land uses describes the existing noise exposure on communities surrounding CLT. This chapter presents the noise exposure for the future conditions – 2020. Aircraft-related noise exposure is defined through noise contours prepared using the INM. This noise exposure is presented using the DNL metric. The noise patterns are presented on exhibits, and the numbers of persons and housing units that fall within the noise contour are quantified.

An explanation of the INM and the DNL metric, along with a review of the physics of noise, research regarding noise impacts on humans, social impacts of noise, and the data required to develop noise contours, is summarized in Appendix C, *Noise Modeling Methodology.* This information details the operating characteristics in use at CLT, the number of operations, and the use of flight paths to and from CLT. Copies of the official NEMs at a scale of 1 inch equals 2,000 feet, and supplemental graphics showing INM flight tracks are included in the back of this document.

4.2 FUTURE (2020) NOISE CONTOUR

The future noise contour projected for 2020 is presented in **Exhibit 4-1, *Future (2020) Noise Contour*.** **Exhibit 3-2, *Future (2020) Noise Contour with Residential Land Uses*,** shows the same map but with the residential land use highlighted for ease of viewing. The Future (2020) Noise Contour is the contour depicted on the official Future (2020) NEM, which can be found at the back of this document. This noise contour assumes growth as forecasted in the Aviation Activity Forecast prepared for this Noise Exposure Map (NEM) Update (See Appendix F).

The 65 DNL of the Future (2020) Noise Contour extends approximately 1.20 miles to the north of Runway 18R/36L, 1.56 miles to the north of Runway 18C/36C, 1.55 miles to the north of Runway 18L/36R and extends approximately 2.25 miles to the northeast of Runway 5/23. The 65 DNL noise contour extends approximately 1.23 miles to the south of Runway 18R/36L, 1.55 miles to the south of Runway 18C/36C, 1.79 miles to the south of Runway 18L/36R and extends approximately 1.28 miles to the southwest of Runway 5/23.

The 70+ DNL of the Future (2020) Noise Contour is located entirely over Airport property or other compatible land use. Small areas of open space located to the northeast of CLT are located within the 70 DNL. The 75 DNL noise contour remains entirely over Airport property.

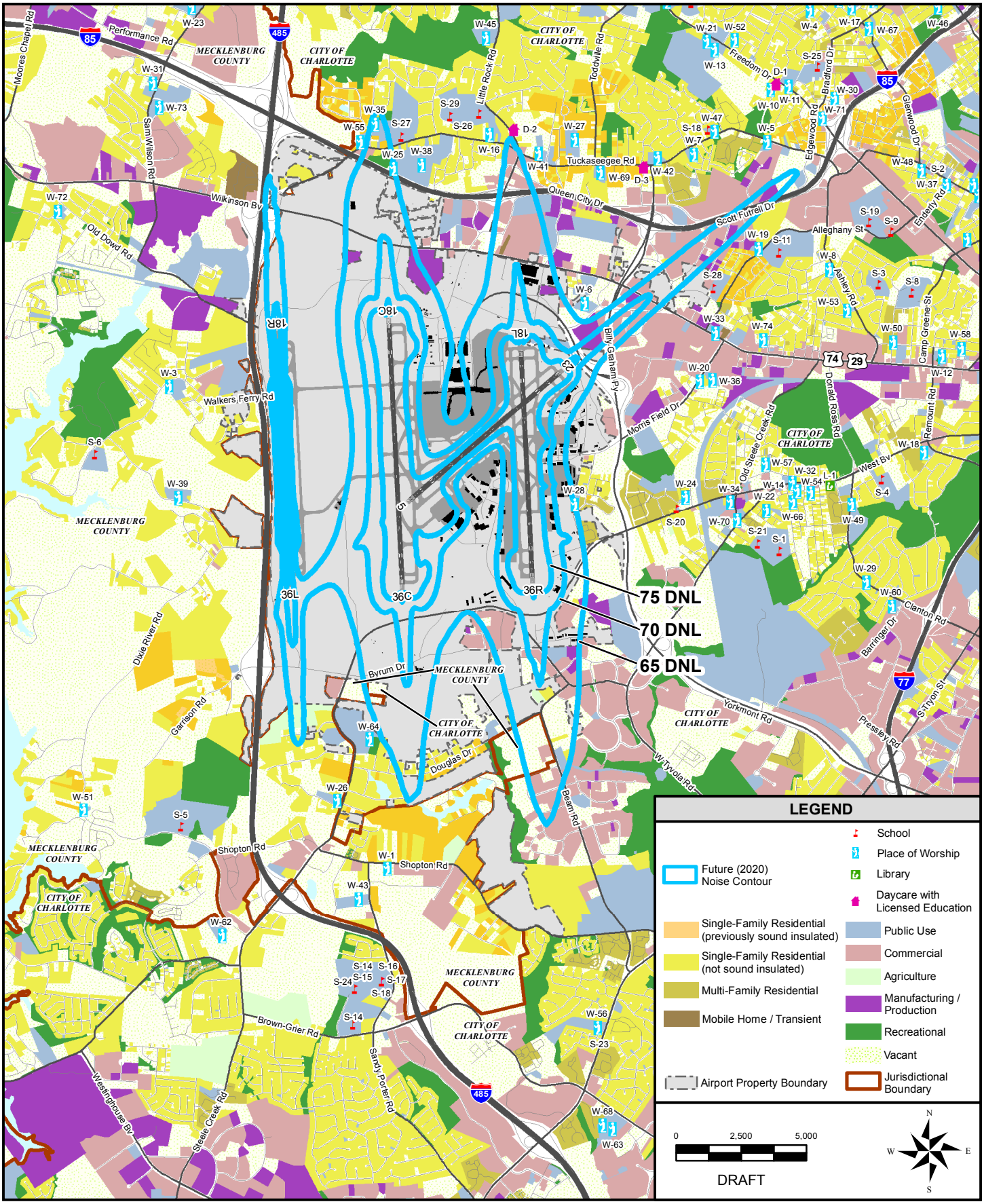
As shown in **Exhibit 4-3, *Comparison of Existing (2015) Noise Contour to Future (2020) Noise Contour***, the Future (2020) Noise Contour is slightly larger than the Existing (2015) Noise Contour. This change in size is due to an overall increase in operations forecast to occur at CLT. This increase is expected to be partially offset by the continued phase-out of older, louder aircraft at CLT by 2020. Operating levels are expected to increase from 1,517.4 average-annual day operations for the Existing (2015) condition to 1,879.5 average annual day operations for the Future (2020) condition. The projected future fleet mix modeled for the Future (2020) Noise Contour is presented in Appendix C.

The shape of the Future (2020) Noise Contour remains similar to the Existing (2015) Noise Contour because there is no anticipated change in runway use or flight tracks from current conditions within the next five years. **Table 4-1** provides a comparison of the areas within the Existing (2015) and Future (2020) Noise Contours.

TABLE 4-1
COMPARISON OF AREAS WITHIN THE EXISTING (2015) AND FUTURE (2020) NOISE CONTOURS (IN SQUARE MILES)
Charlotte Douglas International Airport

CONTOUR RANGE	2015 NOISE CONTOUR	2020 NOISE CONTOUR	DIFFERENCE
65-<70 DNL	3.5	4.3	0.8
70-<75 DNL	1.1	1.4	0.3
75+ DNL	1.0	1.2	0.2
65+ DNL (total)	5.6	6.8	1.2

Contours: CLT2015Noise-Contours/CLT2020Noise-Contours
Source: Landrum & Brown, 2015.



Charlotte·Douglas INTERNATIONAL AIRPORT

Noise Exposure Map Update

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

Future (2020) Noise Contour

EXHIBIT: **4-1**

Date: 9/2/2015 Y:\CLT\NEM Update\E-L&B Work Product\2-GIS\MXD\Exhibits\4-1 Future 2020 Noise Exposure Contour.mxd Noise Contour: CLT2020_Noise-Contours

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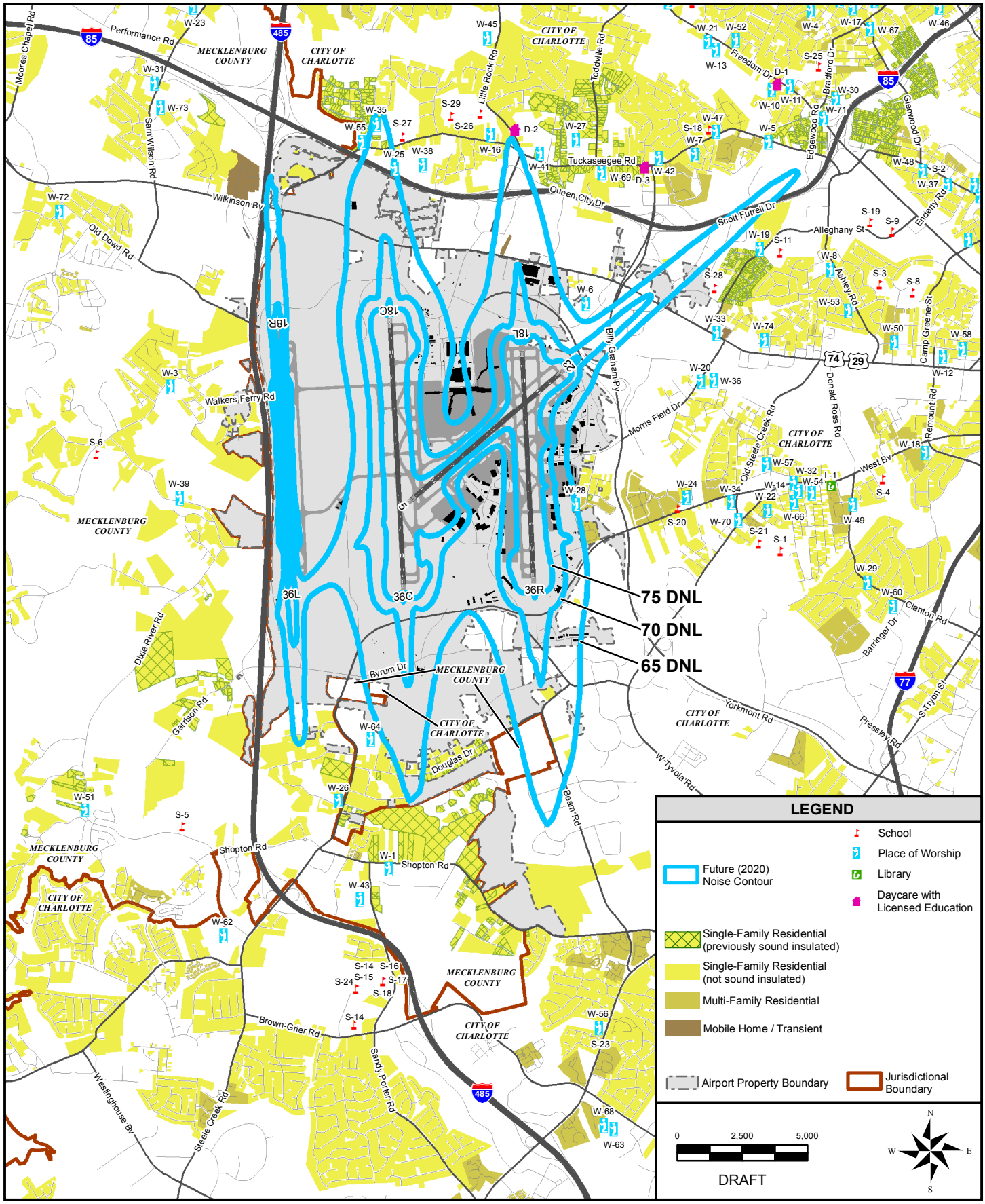

Charlotte·Douglas INTERNATIONAL AIRPORT	*Noise Exposure Map Update* ***CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT***	Future (2020) Noise Contour with Residential Land Uses	EXHIBIT: **4-2**

Date: 9/2/2015 Y:\CLT\NEM Update\E-L&B Work Product\2-GIS\MXD\Exhibits\4-2 Future 2020 Contour with Residential.mxd Noise Contour: CLT2020_Noise-Contours

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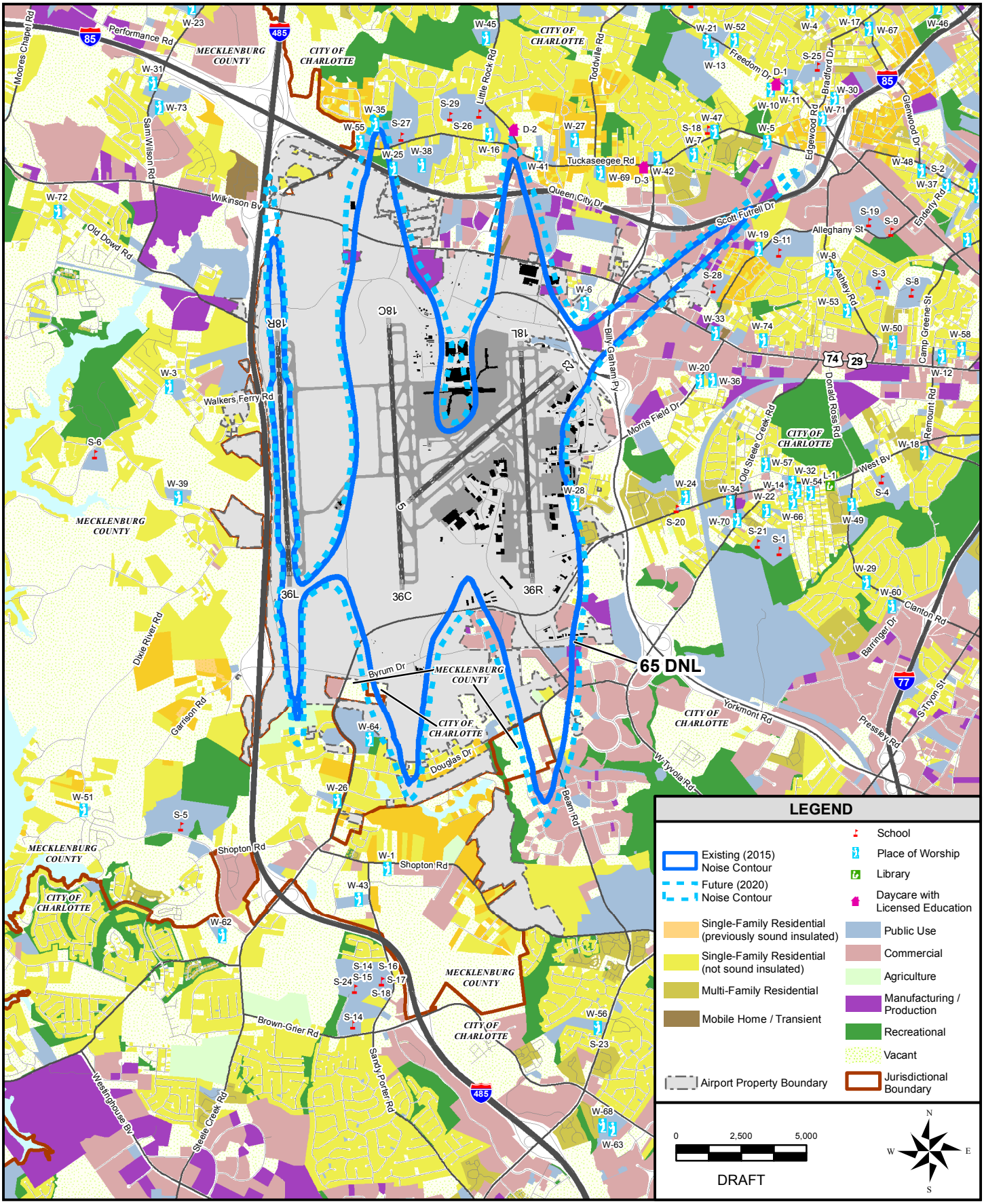

Charlotte·Douglas INTERNATIONAL AIRPORT	*Noise Exposure Map Update* ***CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT***	Existing (2015) and Future (2020) Noise Contours	EXHIBIT: **4-3**

Date:9/2/2015 Y:\CLT\NEM Update\E-L&B Work Product\2-GIS\MXD\Exhibits\4-3 2015 Contour Compared to 2020 Contour.mxd Noise Contour: CLT2015_Noise-Contours/CLT2020_Noise-Contours

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4.3 LAND USE COMPATIBILITY –FUTURE (2020) NOISE CONTOUR

Identifying and evaluating all land uses within the Airport Environs is necessary to quantify the number of residential and other noise-sensitive land uses that are impacted by aircraft noise. Chapter Two, *Affected Environment*, and Appendix D, *Land Use Assessment Methodology*, summarize the land use data collection process. The FAA has created land use compatibility guidelines relating types of land use to airport sound levels. These guidelines are defined in 14 C.F.R. Part 150, *Land Use Compatibility with Yearly Day-Night Average Sound Levels*. The compatibility table is reproduced in Appendix A, *FAA Policies, Guidance*, and Regulations, of this document (see Table A-1, *Land Use Compatibility Guidelines – 14 C.F.R. Part 150*). These guidelines show the compatibility parameters for all incompatible properties relevant to the Existing (2015) and Future (2020) Contours including residential (single, multi-family, and mobile homes), commercial, manufacturing and production, public uses, recreational, and vacant/open space. According to 14 C.F.R. Part 150 guidelines, all land uses exposed to noise levels below the 65 DNL noise contour are compatible with airport operations.

Summaries of the residential population, housing units, and noise-sensitive facilities affected by noise levels exceeding 65 DNL for the Future (2020) Noise Contours are provided in **Table 4-2**. Properties were considered to be within the 65 DNL noise contour if all or part of the parcel on which the noise-sensitive structure was located was inside the contour line.

There are 169 housing units and an estimated 492 residents located within the 65+ DNL of the Future (2020) Noise Contour. These housing units are located to the north and south of Runway 18L/36R and Runway 18C/36C. Six of the housing units accepted sound insulation as part of the previous Part 150 or the 2000 Runway 18R/36L EIS mitigation programs. 67 housing units either declined participation or were determined to be ineligible for sound insulation. Five single family property owners and a 90-unit multi-family development were offered acquisition but declined the offer. One housing unit located north of Runway 18L/36R is within the 65 DNL of the Future (2020) Noise Contour, but has never been offered mitigation through any of the previous programs implemented by the Airport.

There are six noise-sensitive facilities located in the 65+ DNL of the Existing (2015) Noise Contour, the Harvest Church of Charlotte (identified as W-25 on Exhibit 4-1), the Montagnard Alliance Church (identified as W-35 on Exhibit 4-1), Ridgeview Baptist Church (identified as W-55 on Exhibit 4-1), Jackson Park Ministry (identified as W-28 on Exhibit 4-1), Steele Creek Presbyterian Church (identified as W-64 on Exhibit 4-1), and West Mecklenburg High School (identified as S-27 on Exhibit 4-1).

Table 4-2
HOUSING, POPULATION, AND NOISE-SENSITIVE FACILITIES LOCATED WITHIN THE FUTURE (2020) NOISE CONTOUR
Charlotte Douglas International Airport

	65-<70 DNL	70-<75 DNL	75+ DNL	65+ DNL
HOUSING UNITS				
Properties Offered Mitigation				
Accepted Sound Insulation	6	0	0	6
Declined or ineligible for Sound Insulation [1]	67	0	0	67
Declined Acquisition[2]	95	0	0	955
Properties Not Offered Mitigation	1	0	0	1
Total Housing Units	**169**	**0**	**0**	**169**
POPULATION				
Total Population[3]	**492**	**0**	**0**	**492**
Noise-Sensitive Facilities				
Schools	1	0	0	1
Churches	5	0	0	5
Libraries	0	0	0	0
Hospitals	0	0	0	0
Nursing Homes	0	0	0	0
Total Noise-Sensitive Facilities	**6**	**0**	**0**	**6**

Notes: 1. Housing units within the previous sound insulation program boundary may have been ineligible if they were constructed after the 1996 noise contour was published, if interior noise levels already met the 20 dB reduction standard based on current building codes, or are mobile homes, which cannot be effectively sound insulated.
2. The 95 housing units that declined acquisition were made up of five single family property owners and a 90-unit multi-family development.
3. Total population estimated based upon the housing counts multiplied by the 2010 Census average household size for each Census Block Group.
Source: Landrum & Brown, 2015. (Contour: CLT2015_Noise-Contours)

A comparative summary of the impacts for the Existing (2015) and the Future (2020) Noise Contours is provided in **Table 4-3**. As previously discussed, the Future (2020) Noise Contour is slightly larger to the north and south of CLT when compared to the Existing (2015) Noise Contour. Since the contour grows in each direction, the number of housing units within the Future (2020) Noise Contour is greater than the Existing (2015) Noise Contour. There are 119 more housing units in the 65 DNL of the Future (2020) Noise Contour compared to the 65 DNL of the Existing (2015) Noise Contour, including 111 housing units that were not previously eligible for the sound insulation program. Part of this increase is due to the fact that one parcel with a 90-unit multi-family development is located within the 65 DNL of the Future (2020) Noise Contour, but is not within the 65 DNL of the Existing (2015) Noise Contour.

Table 4-3
HOUSING, POPULATION, AND NOISE-SENSITIVE FACILITIES LOCATED WITHIN THE EXISTING (2015) AND THE FUTURE (2020) NOISE CONTOURS
Charlotte Douglas International Airport

	EXISTING (2015) NOISE CONTOUR 65+ DNL	FUTURE (2020) NOISE CONTOUR 65+ DNL	DIFFERENCE
HOUSING UNITS			
Properties Offered Mitigation			
Accepted Sound Insulation	4	6	2
Declined or ineligible for Sound Insulation [1]	46	67	21
Declined Acquisition	0	95	95
Properties Not Offered Mitigation	0	1	1
Total Housing Units	**50**	**169**	**119**
NOISE-SENSITIVE FACILITIES			
Places of Worship	2	5	3
Schools	0	1	1

Note: 1. Housing units that are ineligible to receive sound insulation include mobile homes which cannot be properly sound insulated and housing units that were determined to already meet the interior noise reduction standards without additional treatment.
Source: Landrum & Brown, 2015.

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Chapter Five

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CHAPTER FIVE
NOISE COMPATIBILITY PROGRAM REVIEW

5.1 OVERVIEW

The previous chapters provided the methodology and input data that was used in the preparation of the official Noise Exposure Maps (NEMs) for Charlotte Douglas International Airport (CLT or Airport). The current Land Use Mitigation Measures were based on the 1996 NEM/NCP and/or the 2001 NEM/NCP noise contours from the last Part 150 Study Update, which were approved by the Federal Aviation Administration (FAA) in 1996 and 1998. This study recommended Noise Abatement Measures, Land Use Control Measures, and Land Use Mitigation Measures designed to minimize and mitigate noise impacts with the existing airfield in 1998 (referred to as Phase I measures) and the proposed future airfield with a third parallel runway (referred to as Phase II measures). This section reviews the currently approved measures to determine if any of the measures should be removed or modified, or if new measures should be considered. It should be noted that the runway names discussed below were changed after the opening of the third parallel runway. Runway 18R/36L became Runway 18C/36C and Runway 17/35 became Runway 18R/36L. Clarification of this is noted below where it applies.

5.2 CURRENT NOISE ABATEMENT MEASURES

The currently approved Noise Abatement Measures for the Airport are listed below:

- NA-1 Continue periodic monitoring procedures, initiated as a result of the 1990 Part 150 NCP, within the Airport environs. (Continuation of implemented Measure NA-1 of adopted 1990 NCP.) (Phase I) *Approved in 1996*

- NA-2 Measure not recommended. Listed for numeric continuity.

- NA-3 Measure not recommended. Listed for numeric continuity.

- NA-4 Provide monthly reports on late night (11:00 p.m. to 7:00 a.m.) runway utilization and variances from NCP assumptions to Air Traffic Control Tower management and frequent nighttime operators. Conduct follow-up with FAA and carriers to enhance voluntary adherence to existing program. (Phase I) *Approved in 1996*

- NA-5 Designate Runway 18R [*became Runway 18C*] or 18L as preferred for takeoffs by turbojet and large four-engine prop aircraft between 11:00 p.m. and 7:00 a.m. when, under the current preferential runway use program, Runway 23 or Runway 5 cannot be used for reasons of wind, weather, operational necessity, or required runway length. (Phase I) *Approved in 1996*

- NA-6 Reaffirm Airport user policy which designates locations and procedures for aircraft engine runups. Establish a runup position on the USAir ramp parallel to Runway 5/23. (Phase I) *Approved in 1996*

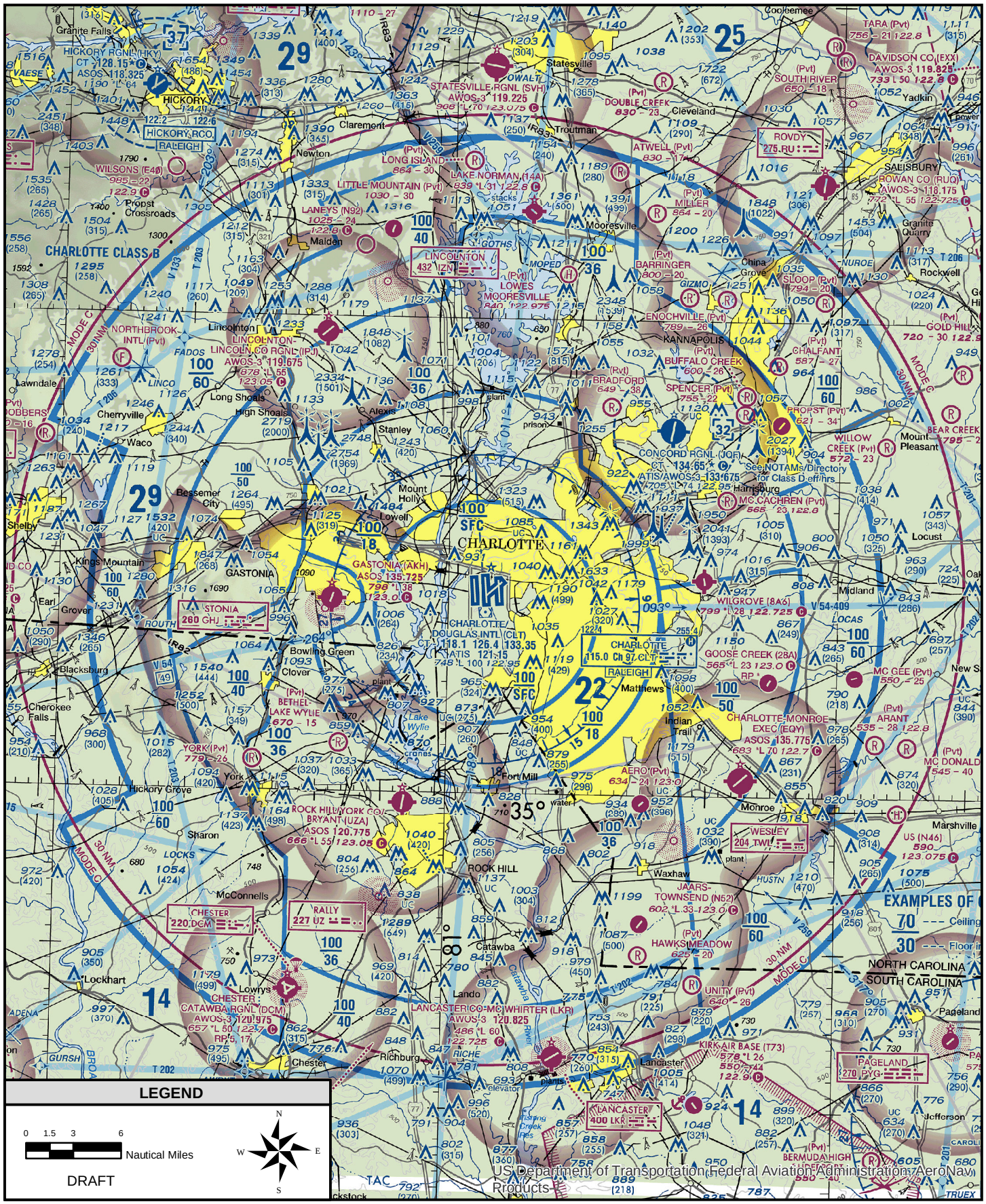
- NA-7 Departing Runways 36R and 36L [*became Runway 36C*], turbojet and large four-engine prop aircraft initiate turns at the 2.6 and 2.5 DME north of the CLT VOR/DME, respectively. (Phase I) *Approved in 1996*

- NA-8 After construction of a third parallel runway (17/35) [*became Runway 18R/36L*] 3,700 feet west of Runway 18R/36L, establish an initial departure turn for Runway 17 [*became Runway 18R*], to be made as soon as practicable by turbojets and large four-engine prop aircraft, to a heading of 195 degrees. (Phase II) *Approved in 1996*

- NA-9 After commissioning of a third parallel runway west of Runway 18R/36L [*became Runway 18C/36C*], establish an initial departure turn, as soon as practicable, by turbojets and large four-engine prop aircraft to a heading of 315 degrees from Runway 35 [*became Runway 36L*]. (Phase II) *Approved in 1996*

The current Noise Abatement Measures define flight corridors for arriving and departing aircraft at CLT. Based on field observations and flight track analysis of radar data, the goals of the measures are being accomplished. Changes in operating levels and fleet mix since the measures were first implemented do not have a negative impact on their effectiveness to reduce noise for surrounding residents. Therefore, it is not recommended to modify, remove, or supplement the existing, currently approved Noise Abatement Measures.

The FAA is responsible for the safe and efficient use of the national air space. Flight procedures are designed to fit within the existing airspace and topography. **Exhibit 5-1, *Airspace Chart***, shows the existing airspace, including terrain and other airports, in the vicinity of CLT.



Charlotte·Douglas INTERNATIONAL AIRPORT

Noise Exposure Map Update

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

Airspace Chart

EXHIBIT: **5-1**

Date: 9/8/2015 Y:\CLT\NEM Update\E-L&B Work Product\2-GIS\MXD\Exhibits\5-1_Airspace_Chart.mxd

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5.3 CURRENT LAND USE CONTROL MEASURES

The currently approved Land Use Control Measures for the Airport are listed below:

- LU-1 Promote compatible land use planning within the 65 DNL of the combined 1996 NEM contours and 1996 NCP contours. (Phase I) *Approved in 1996*
- LU-2 Pursue zoning for compatible development. (Phase I) *Approved in 1996*
- LU-3 Removed by City of Charlotte and replaced by Measures LU-7, LU-8, and LU-9. Listed for numeric continuity.
- LU-4 Require the dedication of an avigation easement as a condition to approval of development of property located in the Airport Environs. (Phase I) *Approved in 1996*
- LU-5 Measure not recommended. Listed for numeric continuity.
- LU-6 Revoke previously approved 1990 Measure LU-6 as contrary to adopted policies of public bodies and legal requirements of the City to provide public utilities within annexed areas. (Revocation of unimplemented measure.) Listed for numeric continuity.
- LU-7 Pursue the establishment of an Airport Overlay District that corresponds to the Airport Environs. (Phase I) *Approved in 1996*
- LU-8 Pursue amending the state building code to authorize the City of Charlotte and Mecklenburg County to raise the minimum building standards (Noise Level Reduction requirements) by incorporating noise attenuation requirements for new residential construction within an Airport Overlay District. (Phase I) *Approved in 1996*
- LU-9 Develop a purchaser disclosure notice and pursue method of enforcement. (Phase I) *Approved in 1996*

The current Land Use Control Measures have been implemented and continue to help protect the compatibility of the areas around the Airport. Based on the NEMs prepared for this study it is not recommended to modify, remove, or supplement the existing, currently approved Land Use Control Measures.

5.4 CURRENT LAND USE MITIGATION MEASURES

The currently approved Land Use Mitigation Measures for the Airport are listed below:

- NM-1 Establish a public information program which distributes noise and noise abatement information to the public. (Phase I) *Approved in 1996*
- NM-2 Sound insulate noise-sensitive public buildings intended for public use, instruction (e.g., schools) or assembly (e.g., churches) located within the 65

DNL noise contour of the combined 1996 NCP/NEM contours, whichever is greater. (Phase I) *Approved in 1996 and again in 1998 to add churches.*

- NM-3 Sound insulate eligible houses located within the 65 DNL noise contour of the 1996 NCP/NEM contours, whichever is greater, which may be benefited under FAA design criteria. (Phase I)

- NM-4 Reduce existing noise-sensitive uses within 70-75 DNL zone of the 1994 NEM via purchase assurance, sound insulate residences to NLR standards, purchase avigation easements, or acquisition of developed incompatible property. (Phase I) *Approved in 1996*

- NM-5 Acquire property within the 75 DNL of the 1994 NEM contours. (Completed) Listed for numeric continuity.

- NM-6 Acquire mobile homes located within the 70 DNL noise contour of the 1996 NCP and 1996 NEM, whichever is greater. (Phase I) *Approved in 1996*

- NM-7 At the Airport's option, purchase avigation easements, sound insulate, or acquire houses within the combined 65 DNL of the 1996 NEM/NCP contour, whichever is greater, where sound insulation is infeasible or not cost-effective because the property does not comply with the Building Code. (Phase I) *Approved in 1996*

- NM-8 Sound insulate eligible houses located within the 65 DNL noise contour of the 2001 NCP , if any remain to be treated. (Phase II) *Approved in 1996*

- NM-9 Acquire mobile homes located within the 65 DNL noise contour of the 2001 NCP. (Phase II) *Approved in 1996*

Land Use Mitigation Measures NM-8 and NM-9 were Phase II measures that addressed the potential impacts associated with the proposed third parallel runway. An Environmental Impact Statement (EIS) was prepared in conjunction with the Part 150 Study Update and incorporated these two measures as mitigation commitments that the City of Charlotte is required to fulfill as a condition of the approval of the EIS. Therefore, these two measures cannot be altered without prior FAA approval and the commitments will continue indefinitely.

The other Land Use Mitigation Measures have been and continue to be implemented. Based on the NEMs prepared for this study, there is only one home that has never been part of the mitigation programs offered by the Airport. The home is located north of Runway 18L/36R. It is recommended that this home be offered participation in the Airport's sound insulation program in accordance with approved Land Use Mitigation Measures NM-3 and NM-8. Because there are no residential or other noise sensitive facilities located within the 65 DNL of the 2020 NEM that are not covered by one of the existing Land Use Mitigation Measures, no new measures are recommended. Furthermore, because the programs continue to be an effective tool for reducing incompatible land uses, none of the Land Use Mitigation Measures are recommended for modification or removal.