



**Charlotte·Douglas<sup>®</sup>**  
INTERNATIONAL AIRPORT



DRAFT | MARCH 2015

# Noise Exposure Map Update



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# **CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT**

## **NOISE EXPOSURE MAP UPDATE**

**DRAFT**

September 2015

**Prepared for:**

Charlotte Douglas International Airport  
Aviation Department  
5501 R C Josh Birmingham Parkway  
Charlotte, NC 28208



Landrum & Brown, Incorporated  
11279 Cornell Park Drive  
Cincinnati, OH 45242

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Phillip J. Braden, Manager  
Federal Aviation Administration  
Memphis Airports District Office  
2600 Thousand Oaks Blvd., Suite 2250  
Memphis, TN 38118

**Subject: Submission of Noise Exposure Maps for Charlotte Douglas International Airport**

Dear Mr. Braden:

Enclosed please find five (5) copies of the above referenced document submitted under 14 C.F.R. Part 150 for appropriate FAA determination. The City of Charlotte (airport sponsor) requests FAA acceptance of the updated Noise Exposure Maps (NEMs) for existing conditions (2015 NEM) and future conditions (2020 NEM) at the Charlotte Douglas International Airport.

The future NEM is based upon reasonable forecasts and planning assumptions developed for the Airport. We herein verify that the documentation is representative of existing and future forecast conditions as of the date of submission. These NEMs are an update to the NEMs that were previously determined by the FAA to be in compliance with 14 C.F.R. Part 150.

On behalf of the City of Charlotte and Charlotte Douglas International Airport, I would like to express appreciation to the FAA for its support in conducting the Noise Exposure Map Update. We look forward to an expeditious Federal review of the NEMs.

Sincerely,

Brent Cagle  
Interim Aviation Director  
Charlotte Douglas International Airport

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**CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT  
NOISE EXPOSURE MAP UPDATE**

**PRELIMINARY DRAFT**

PROGRAM REQUIREMENT	YES	NO	SUPPORTING PAGES/REVIEW COMMENTS
<b>I. Submitting And Identifying The NEM:</b>			
A. Submission is properly identified:			
1. 14 C.F.R. Part 150 NEM?	X		Chapter One, Page 1-1
2. NEM and NCP together?		X	n/a
3. Revision to NEMs FAA previously determined to be in compliance with Part 150?	X		Chapter One, Section 1.1
B. Airport and Airport Operator's name are identified?	X		Chapter One, Page 1-1
C. NCP is transmitted by airport operator's dated cover letter, describing it as a Part 150 submittal and requesting appropriate FAA determination?		X	n/a
<b>II. Consultation: [150.21(b), A150.105(a)]</b>			
A. Is there a narrative description of the consultation accomplished, including opportunities for public review and comment during map development?	X		Appendix E
B. Identification of consulted parties:			
1. Are the consulted parties identified?	X		Appendix E, Section E.1
2. Do they include all those required by 150.21(b) and A150.105(a)?		X	Appendix E, Section E.1 provides consulted parties. Additional coordination of this Draft NEM Update will include all required parties.
3. Agencies in 2, above, correspond to those indicated on the NEM?	X		Appendix E, Section E.1 and Existing (2015) and Future (2020) NEMs
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)?	X		Statement of Certification and Public Notification On the Official Noise Exposure Maps
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 regional airports division manager?	X		Appendix E, Section E.3
<b>III. General Requirements: [150.21]</b>			
A. Are there two maps, each clearly labeled on the face with year (existing condition year and one that is at least 5 years into the future)?	X		Existing (2015) Noise Exposure Map and Future (2020) Noise Exposure Map, as well as two supporting maps
B. Map currency:			
1. Does the year on the face of the existing condition map graphic match the year on the airport operator's NEM submittal letter?	X		Existing (2015) Noise Exposure Map and Transmittal Letter
2. Is the forecast year map based on reasonable forecasts and other planning assumptions and is it for at least the fifth calendar year after the year of submission?	X		Future (2020) Noise Exposure Map, Chapter Four, and Appendix F. Operating levels for Future (2020) Noise Exposure Map are 19.4% higher than the FAA's latest Terminal Area Forecast, but City of Charlotte has certified that this forecast level is representative and reasonable.

**CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT  
NOISE EXPOSURE MAP UPDATE**

**PRELIMINARY DRAFT**

PROGRAM REQUIREMENT	YES	NO	SUPPORTING PAGES/REVIEW COMMENTS
<b>III. General Requirements: [150.21] [continued]</b>			
3. If the answer to 1 and 2 above is no, the airport operator must verify in writing that data in the documentation are representative of existing condition and at least 5 years' forecast conditions as of the date of submission?		X	n/a
C. If the NEM and NCP are submitted together:			
1. Has the airport operator indicated whether the forecast year map is based on either forecast conditions without the program or forecast conditions if the program is implemented?		X	n/a
2. If the forecast year map is based on program implementation:			
a. Are the specific program measures that are reflected on the map identified?		X	n/a
b. Does the documentation specifically describe how these measures affect land use compatibilities depicted on the map?		X	n/a
3. If the forecast year NEM does not model program implementation, the airport operator must either submit a revised forecast NEM showing program implementation conditions [B150.3(b), 150.35(f)] or the sponsor must demonstrate the adopted forecast year NEM with approved NCP measures would not change by plus/minus 1.5 DNL? (150.21(d))		X	n/a
<b>IV. Map Scale, Graphics, And Data Requirements: [A150.101, A150.103, A150.105, 150.21(a)]</b>			
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? (Note (1) if the submittal uses separate graphics to depict flight tracks and/or noise monitoring sites, these must be of the same scale, because they are part of the documentation required for NEMs.) (Note (2) supplemental graphics that are not required by the regulation do not need to be at the 1" to 2,000' scale)	X		Official Existing (2015) Noise Exposure Map, Future (2020) Noise Exposure Map, and supporting flight track maps are located in the back pocket of the document.
B. Is the quality of the graphics such that required information is clear and readable? (Refer to C. through G., below, for specific graphic depictions that must be clear and readable)	X		Official Existing (2015) Noise Exposure Map, Future (2020) Noise Exposure Map, and supporting flight track maps are located in the back pocket of the document.



<b>PROGRAM REQUIREMENT</b>	<b>YES</b>	<b>NO</b>	<b>SUPPORTING PAGES/REVIEW COMMENTS</b>
<b>IV. Map Scale, Graphics, And Data Requirements:</b> [A150.101, A150.103, A150.105, 150.21(a)] <i>[continued]</i>			
C. Depiction of the airport and its environs:			
1. Is the following graphically depicted to scale on both the existing condition and forecast year maps?			
a. Airport boundaries	X		
b. Runway configurations with runway end numbers	X		
2. Does the depiction of the off-airport data include?			
a. A land use base map depicting streets and other identifiable geographic features	X		
b. The area within the DNL <sup>1</sup> 65 dB (or beyond, at local discretion)	X		
c. Clear delineation of geographic boundaries and the names of all jurisdictions with planning and land use control authority within the DNL 65 dB (or beyond, at local discretion)	X		
D. 1. Continuous contours for at least the DNL 65, 70, and 75 dB?	X		
2. Has the local land use jurisdiction(s) adopted a lower local standard and if so, has the sponsor depicted this on the NEMs?		X	
3. Based on current airport and operational data for the existing condition year NEM, and forecast data representative of the selected year for the forecast NEM?	X		Chapters One, Three, and Four; Appendix C, Section C-5; and Appendix F. Future (2020) Noise Exposure Map, Chapter Four, and Appendix F. Operating levels for Future (2020) Noise Exposure Map are 19.4% higher than the FAA's latest Terminal Area Forecast, but City of Charlotte has certified that this forecast level is representative and reasonable.
E. Flight tracks for the existing condition and forecast year timeframes (these may be on supplemental graphics which must use the same land use base map and scale as the existing condition and forecast year NEM), which are numbered to correspond to accompanying narrative?	X		Appendix C, Exhibit C-11 through Exhibit C-19 and Supplemental Graphics located in back pocket of document
F. Locations of any noise monitoring sites (these may be on supplemental graphics which must use the same land use base map and scale as the official NEMs)	X		Appendix B, Exhibit B-1 and Supplemental maps located in the back pocket of the document

<sup>1</sup> [CNEL for California airports]  
NEM Checklist - Issued In Washington, DC -- APP-600, March 1989  
Revised June 2005 to reflect legislative changes. Reviewed for currency 12/2007.

**CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT  
NOISE EXPOSURE MAP UPDATE**

**PRELIMINARY DRAFT**

PROGRAM REQUIREMENT	YES	NO	SUPPORTING PAGES/REVIEW COMMENTS
<b>IV. Map Scale, Graphics, And Data Requirements:</b> [A150.101, A150.103, A150.105, 150.21(a)] <i>[continued]</i>			
G. Noncompatible land use identification:			
1. Are noncompatible land uses within at least the DNL 65 dB noise contour depicted on the map graphics?	X		Existing (2015) Noise Exposure Map and Future (2020) Noise Exposure Map
2. Are noise sensitive public buildings and historic properties identified? (Note: If none are within the depicted NEM noise contours, this should be stated in the accompanying narrative text.)	X		Existing (2015) Noise Exposure Map and Future (2020) Noise Exposure Map
3. Are the noncompatible uses and noise sensitive public buildings readily identifiable and explained on the map legend?	X		Existing (2015) Noise Exposure Map and Future (2020) Noise Exposure Map, and Appendix D
4. Are compatible land uses, which would normally be considered noncompatible, explained in the accompanying narrative?	X		Chapters Three and Four
<b>V. Narrative Support Of Map Data:</b> [150.21(a), A150.1, A150.101, A150.103]			
A. 1. Are the technical data and data sources on which the NEMs are based adequately described in the narrative?	X		Appendix C, Section C.5; Appendix F; and Exhibit 5-1
2. Are the underlying technical data and planning assumptions reasonable?	X		Appendix C, Section C.5 and Appendix E
B. Calculation of Noise Contours:			
1. Is the methodology indicated?	X		Appendix C, Section C.5
a. Is it FAA approved?	X		Appendix C, Section C.5
b. Was the same model used for both maps? (Note: The same model also must be used for NCP submittals associated with NEM determinations already issued by FAA where the NCP is submitted later, unless the airport sponsor submits a combined NEM/NCP submittal as a replacement, in which case the model used must be the most recent version at the time the update was started.)	X		Appendix C, Section C.5.1
c. Has AEE approval been obtained for use of a model other than those that have previous blanket FAA approval?		X	n/a
2. Correct use of noise models:			
a. Does the documentation indicate, or is there evidence, the airport operator (or its consultant) has adjusted or calibrated FAA-approved noise models or substituted one aircraft type for another that was not included on the FAA's pre-approved list of aircraft substitutions?		X	n/a
b. If so, does this have written approval from AEE, and is that written approval included in the submitted document?		X	n/a
3. If noise monitoring was used, does the narrative indicate that Part 150 guidelines were followed?	X		Appendix B, Sections B.1 and B.2.1
PROGRAM REQUIREMENT	YES	NO	SUPPORTING PAGES/REVIEW COMMENTS

<b>V. Narrative Support Of Map Data:</b> [150.21(a), A150.1, A150.101, A150.103] <i>[continued]</i>			
4. For noise contours below DNL 65 dB, does the supporting documentation include an explanation of local reasons? (Note: A narrative explanation, including evidence the local jurisdiction(s) have adopted a noise level less than DNL 65 dB as sensitive for the local community(ies), and including a table or other depiction of the differences from the Federal table, is highly desirable but not specifically required by the rule. However, if the airport sponsor submits NCP measures within the locally significant noise contour, an explanation must be included if it wants the FAA to consider the measure(s) for approval for purposes of eligibility for Federal aid.)		X	n/a
<b>C. Noncompatible Land Use Information:</b>			
1. Does the narrative (or map graphics) give estimates of the number of people residing in each of the contours (DNL 65, 70 and 75, at a minimum) for both the existing condition and forecast year maps?	X		Chapter Three, Section 3.3, and Table 3-2; Chapter Four, Section 4.3, and Table 4-2
2. Does the documentation indicate whether the airport operator used Table 1 of Part 150?	X		Chapter Three, Section 3.3; Chapter Four, Section 4.3; and Appendix A, Table A-1
a. If a local variation to table 1 was used:			
(1) Does the narrative clearly indicate which adjustments were made and the local reasons for doing so?		X	n/a
(2) Does the narrative include the airport operator's complete substitution for table 1?		X	n/a
3. Does the narrative include information on self-generated or ambient noise where compatible or noncompatible land use identifications consider non-airport and non-aircraft noise sources?		X	Some ambient noise data was collected for the noise measurement program but was not used to calibrate the INM. Ambient noise data was for informational purposes only.
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?		X	n/a
5. Does the narrative describe how forecast aircraft operations, forecast airport layout changes, and forecast land use changes will affect land use compatibility in the future?	X		Chapter Four
<b>VI. Map Certifications:</b> [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?	X		Statement of Certification and Public Notification
B. Has the operator certified in writing that each map and description of consultation and opportunity for public comment are true and complete under penalty of 18 U.S.C. § 1001?	X		Statement of Certification and Public Notification

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## **SPONSOR'S CERTIFICATION AND NOISE EXPOSURE MAPS**

The following pages contain small-scale representations of the official Noise Exposure Maps (NEMs) for Existing (2015) and Future (2020) conditions and supporting maps at the Charlotte Douglas International Airport. The official NEMs and supporting maps, at a scale of 1 inch equals 2,000 feet, are included at the back of this document. The Existing (2015) NEM is based on data developed between 2013 and 2015 as further explained in this document in Chapter Three, *Existing (2015) Condition* and Appendix C, *Noise Modeling Methodology*.

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## **STATEMENT OF CERTIFICATION AND PUBLIC NOTIFICATION**

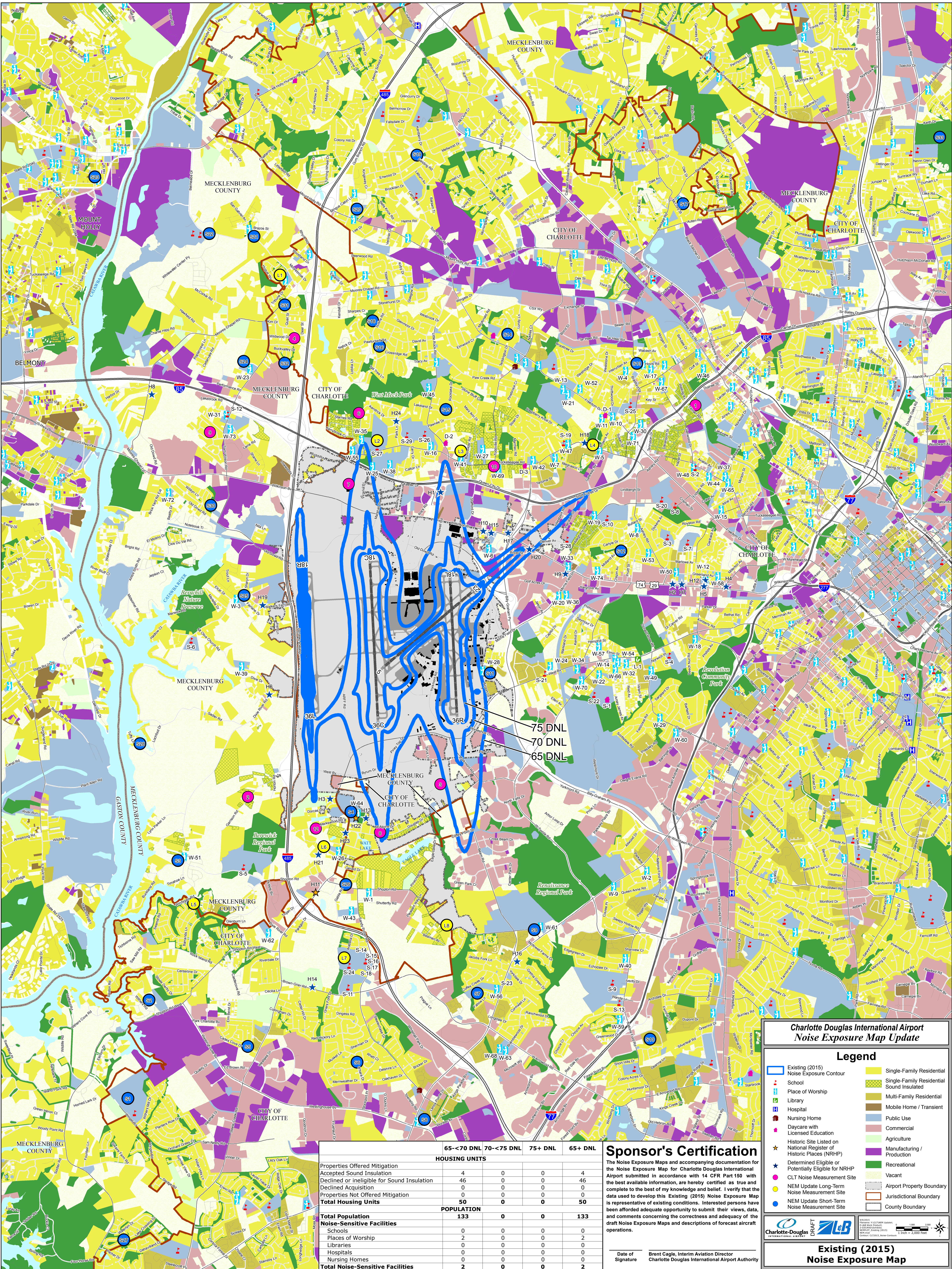
The Noise Exposure Maps and accompanying documentation for the Noise Exposure Maps for the Charlotte Douglas International Airport, submitted in accordance with 14 C.F.R. Part 150 with the best available information are hereby certified as true and complete to the best of my knowledge and belief under penalty of 18 U.S.C. 1001. I verify that the data used to develop the Existing (2015) Noise Exposure Map is representative of existing conditions and that the data used to develop the Future (2020) Noise Exposure Map is representative of the five-year forecast condition. Interested persons have been afforded adequate opportunity to submit their views, data, and comments concerning the correctness and adequacy of the draft Noise Exposure Maps and descriptions of forecast of aircraft operations. The record and description of consultation and opportunity for public comment as provided herein are, to the best of my knowledge true and complete under penalty of 18 U.S.C. 1001.

\_\_\_\_\_ Date \_\_\_\_\_

Brent Cagle  
Interim Aviation Director  
Charlotte Douglas International Airport

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**Charlotte Douglas International Airport  
Noise Exposure Map Update**

- Legend**
- Existing (2015) Noise Exposure Contour
  - School
  - Place of Worship
  - Library
  - Hospital
  - Nursing Home
  - Daycare with Licensed Education
  - ★ Historic Site Listed on National Register of Historic Places (NRHP)
  - ★ Determined Eligible or Potentially Eligible for NRHP
  - CLT Noise Measurement Site
  - NEM Update Long-Term Noise Measurement Site
  - NEM Update Short-Term Noise Measurement Site
  - Single-Family Residential
  - Single-Family Residential Sound Insulated
  - Multi-Family Residential
  - Mobile Home / Transient
  - Public Use
  - Commercial
  - Agriculture
  - Manufacturing / Production
  - Recreational
  - Vacant
  - Airport Property Boundary
  - Jurisdictional Boundary
  - County Boundary

**Sponsor's Certification**

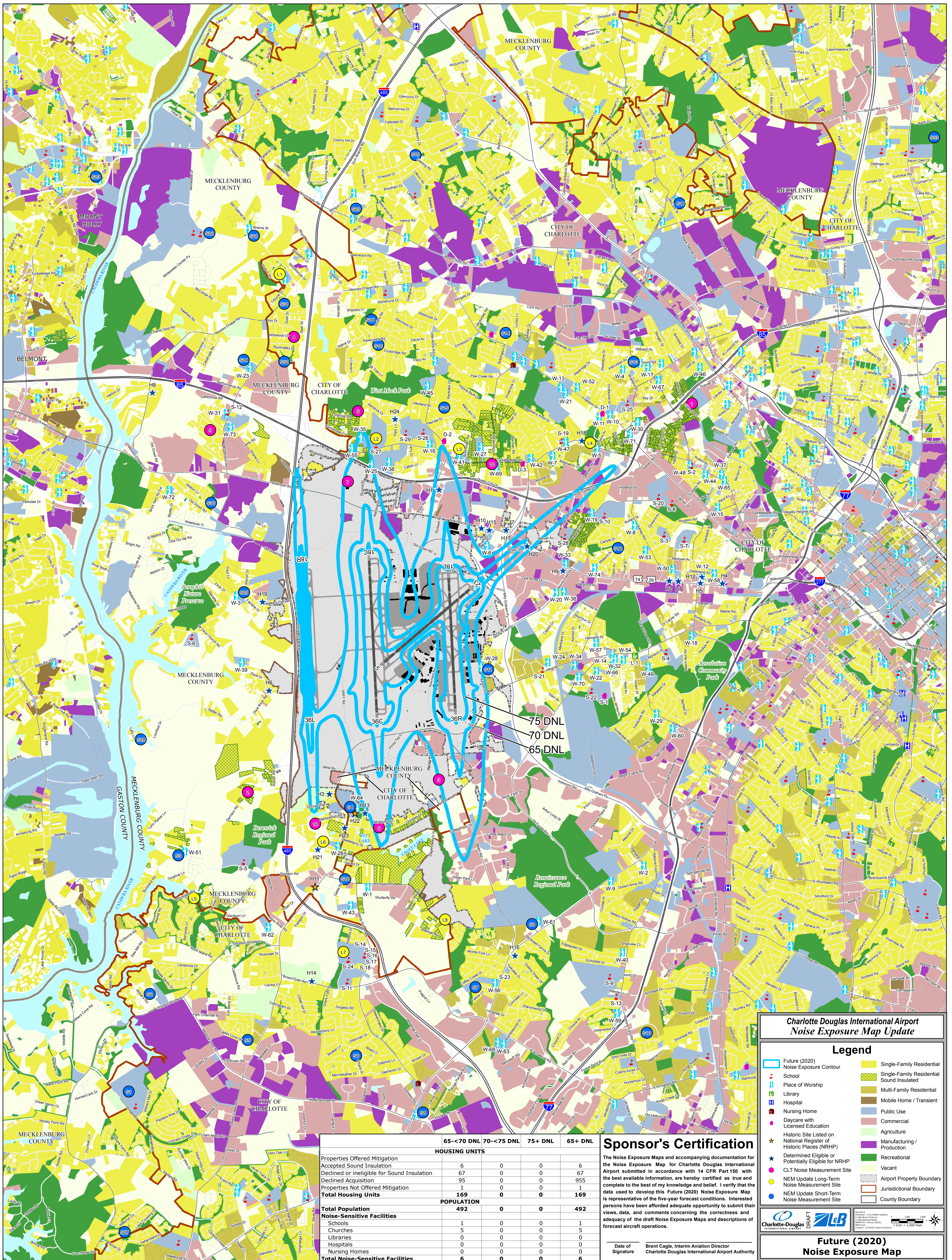
The Noise Exposure Maps and accompanying documentation for the Noise Exposure Map for Charlotte Douglas International Airport submitted in accordance with 14 CFR Part 150 with the best available information, are hereby certified as true and complete to the best of my knowledge and belief. I verify that the data used to develop this Existing (2015) Noise Exposure Map is representative of existing conditions. Interested persons have been afforded 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.

Date of Signature: Brent Cagle, Interim Aviation Director  
Charlotte Douglas International Airport Authority

	65<70 DNL	70<75 DNL	75+ DNL	65+ DNL
<b>HOUSING UNITS</b>				
Properties Offered Mitigation	4	0	0	4
Accepted Sound Insulation	46	0	0	46
Declined Acquisition	0	0	0	0
Properties Not Offered Mitigation	0	0	0	0
<b>Total Housing Units</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>50</b>
<b>POPULATION</b>				
<b>Total Population</b>	<b>133</b>	<b>0</b>	<b>0</b>	<b>133</b>
<b>Noise-Sensitive Facilities</b>				
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
<b>Total Noise-Sensitive Facilities</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Existing (2015)  
Noise Exposure Map**

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**Charlotte Douglas International Airport  
Noise Exposure Map Update**

- Legend**
- Future (2020) Noise Exposure Contour
  - Single-Family Residential
  - School
  - Single-Family Residential Sound Insulated
  - ⛪ Place of Worship
  - Multi-Family Residential
  - ⛪ Library
  - Mobile Home / Transient
  - ⛪ Hospital
  - Public Use
  - ⛪ Nursing Home
  - Commercial
  - ⛪ Daycare with Licensed Education
  - Agriculture
  - ★ Historic Site Listed on National Register of Historic Places (NRHP)
  - ★ Manufacturing / Production
  - ★ Determined Eligible or Potentially Eligible for NRHP
  - ★ Recreational
  - ★ CLT Noise Measurement Site
  - ★ Vacant
  - ★ NEM Update Long-Term Noise Measurement Site
  - ★ Airport Property Boundary
  - ★ NEM Update Short-Term Noise Measurement Site
  - Jurisdictional Boundary
  - County Boundary

**Sponsor's Certification**

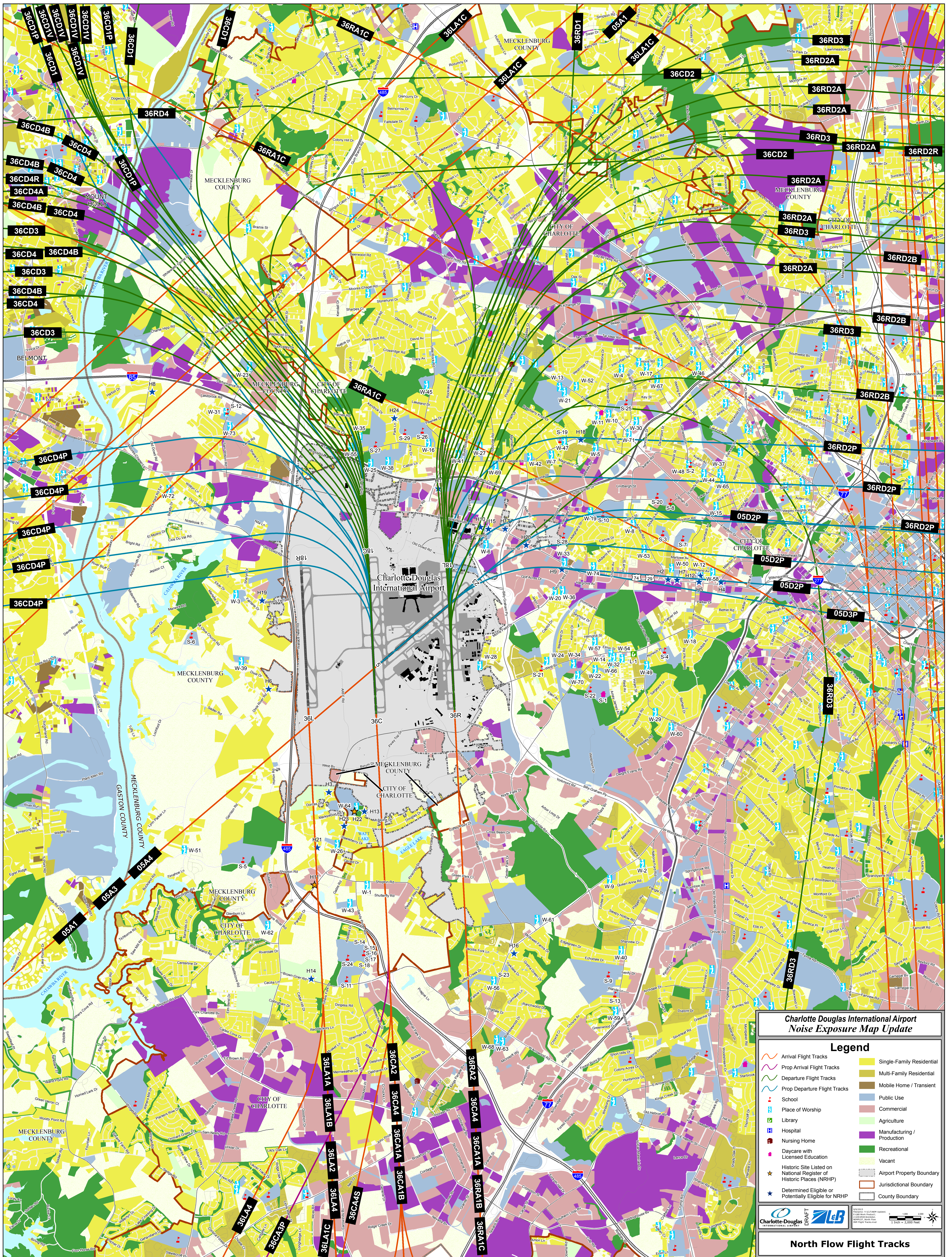
The Noise Exposure Maps and accompanying documentation for the Noise Exposure Map for Charlotte Douglas International Airport submitted in accordance with 14 CFR Part 150 with the best available information, are hereby certified as true and complete to the best of my knowledge and belief. I verify that the data used to develop this Future (2020) Noise Exposure Map is representative of the five-year forecast conditions. Interested persons have been afforded 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.

Date of Signature: Brent Cagle, Interim Aviation Director  
Charlotte Douglas International Airport Authority

	65-<70 DNL	70-<75 DNL	75+ DNL	65+ DNL
<b>HOUSING UNITS</b>				
Properties Offered Mitigation	6	0	0	6
Accepted Sound Insulation	67	0	0	67
Declined or ineligible for Sound Insulation	95	0	0	955
Declined Acquisition	1	0	0	1
Properties Not Offered Mitigation	169	0	0	169
<b>Total Housing Units</b>	<b>169</b>	<b>0</b>	<b>0</b>	<b>169</b>
<b>POPULATION</b>				
<b>Total Population</b>	<b>492</b>	<b>0</b>	<b>0</b>	<b>492</b>
<b>Noise-Sensitive Facilities</b>				
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
<b>Total Noise-Sensitive Facilities</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Future (2020)  
Noise Exposure Map**

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**Charlotte Douglas International Airport  
Noise Exposure Map Update**

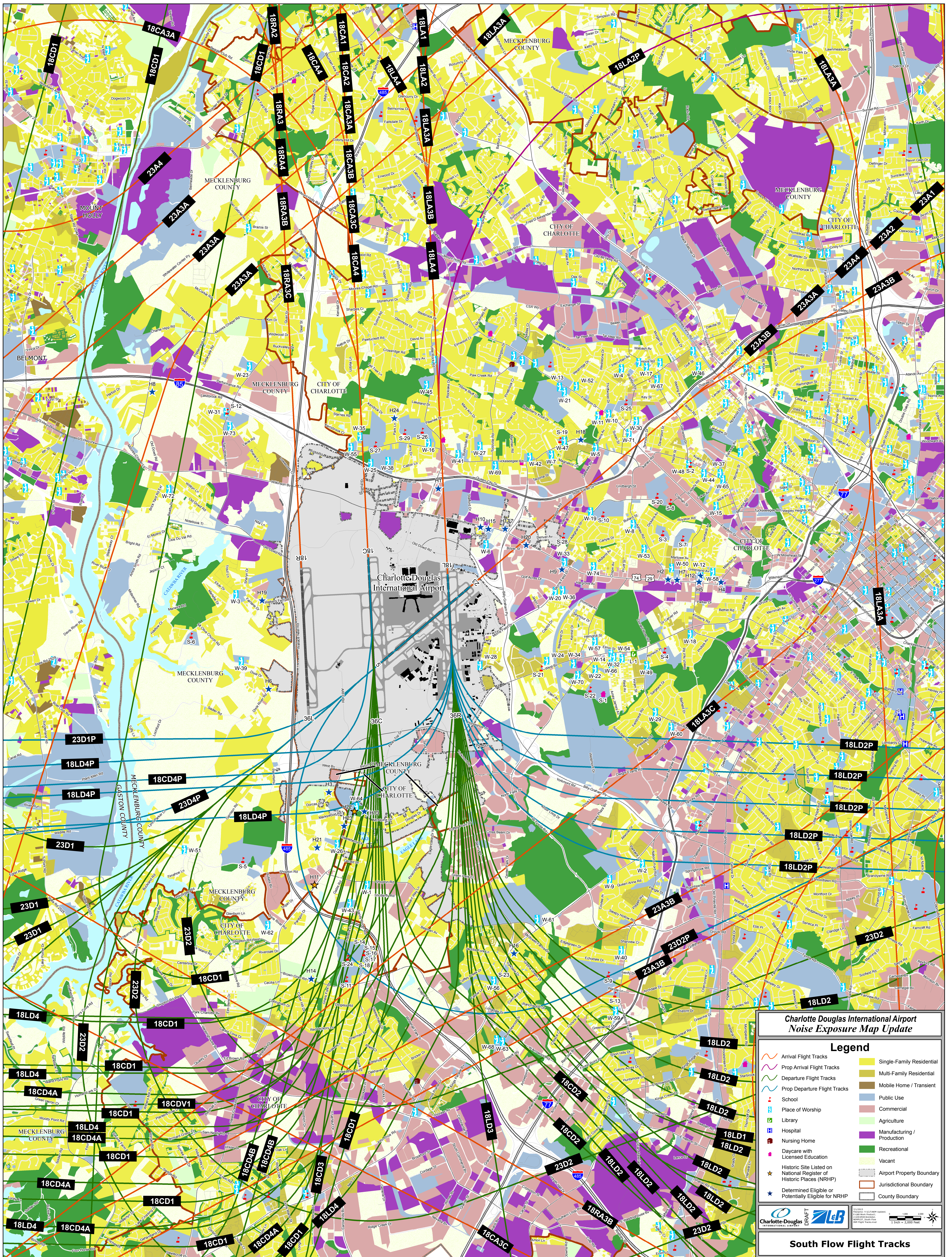
- Legend**
- Arrival Flight Tracks
  - Prop Arrival Flight Tracks
  - Departure Flight Tracks
  - Prop Departure Flight Tracks
  - School
  - Place of Worship
  - Library
  - Hospital
  - Nursing Home
  - Daycare with Licensed Education
  - Historic Site Listed on National Register of Historic Places (NRHP)
  - Determined Eligible or Potentially Eligible for NRHP
  - Single-Family Residential
  - Multi-Family Residential
  - Mobile Home / Transient
  - Public Use
  - Commercial
  - Agriculture
  - Manufacturing / Production
  - Recreational
  - Vacant
  - Airport Property Boundary
  - Jurisdictional Boundary
  - County Boundary

Charlotte-Douglas International Airport  
DRAFT

**North Flow Flight Tracks**

Scale: 1 inch = 2,000 feet

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**Charlotte Douglas International Airport  
Noise Exposure Map Update**

- Legend**
- Arrival Flight Tracks
  - Prop Arrival Flight Tracks
  - Departure Flight Tracks
  - Prop Departure Flight Tracks
  - School
  - Place of Worship
  - Library
  - Hospital
  - Nursing Home
  - Daycare with Licensed Education
  - Historic Site Listed on National Register of Historic Places (NRHP)
  - Determined Eligible or Potentially Eligible for NRHP
  - Single-Family Residential
  - Multi-Family Residential
  - Mobile Home / Transient
  - Public Use
  - Commercial
  - Agriculture
  - Manufacturing / Production
  - Recreational
  - Vacant
  - Airport Property Boundary
  - Jurisdictional Boundary
  - County Boundary

202011  
 PREPARED BY ZEB  
 1:10000  
 1 inch = 2,000 feet

**South Flow Flight Tracks**

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### **OFFICIAL NOISE EXPOSURE MAPS**

Existing (2015) Noise Exposure Map .....	Back Pocket of Document
Future (2020) Noise Exposure Map .....	Back Pocket of Document
Supporting Documentation	
North Flow Flight Tracks.....	Back Pocket of Document
South Flow Flight Tracks .....	Back Pocket of Document

*Note: The maps located in the back pocket of the document are the official Noise Exposure Maps and comply with all FAA requirements regarding Noise Exposure Map submittals. The small-sized copies of the maps included with the Certification Statement are not the official maps and provided as informational only.*