

3 Affected Environment

3.1 Introduction

Federal Aviation Administration (FAA) Order 1050.1F states the affected environment section of an Environmental Assessment (EA) should “succinctly [describe] the environmental conditions of the potentially affected geographic area or areas.”⁴⁷ The amount of information on potentially affected resources should be based on the expected impact and be commensurate with the impact's importance. The following provides a description of the existing environmental conditions in and around the vicinity of the Charlotte Douglas International Airport (CLT or Airport).

3.2 Proposed Action Setting

CLT is an international airport located on approximately 6,000 acres of land within Mecklenburg County, North Carolina. For the purposes of this Final EA, two study areas have been defined. The General Study Area (GSA) depicts the area surrounding the Airport. A further refined Detailed Study Area (DSA) depicts the area that may be physically disturbed with the development of the Proposed Action. Both study areas are shown on **Exhibit 3-1**. The GSA covers approximately 9,000 acres and is defined as the area where both direct and indirect impacts may result from the development of the Proposed Action. The GSA boundary lines were squared off to follow roadways and other identifiable features where available. The DSA covers approximately 2,450 acres and is defined as the area where only direct impacts may result from the development of the Proposed Action. Coastal Resources, Farmlands, and Wild and Scenic Rivers, a subcategory of water resources, are not present and therefore not discussed in the following sections.

3.3 Resources Potentially Affected

3.3.1 Air Quality

3.3.1.1 Regulatory Setting

An airport air quality assessment requires consideration under both the Clean Air Act of 1970, as amended (CAA), and the National Environmental Policy Act of 1969, as amended (NEPA). These two federal laws require distinct analyses and may be separately applicable to an airport project. The CAA establishes standards and programs to evaluate, achieve, and maintain acceptable air quality in the United States. In accordance with CAA requirements, the United States Environmental Protection Agency (USEPA) established the National Ambient Air Quality Standards (NAAQS), for six common air pollutants (known as “criteria air pollutants”) that are potentially harmful to human health and welfare.⁴⁸ The USEPA considers the presence of the following six criteria pollutants to be indicators of air quality: Carbon monoxide (CO); Nitrogen dioxide (NO₂); Ground-level Ozone (O₃); Sulfur dioxide (SO₂); Particulate matter (PM₁₀ and PM_{2.5});⁴⁹ and, Lead (Pb).⁵⁰

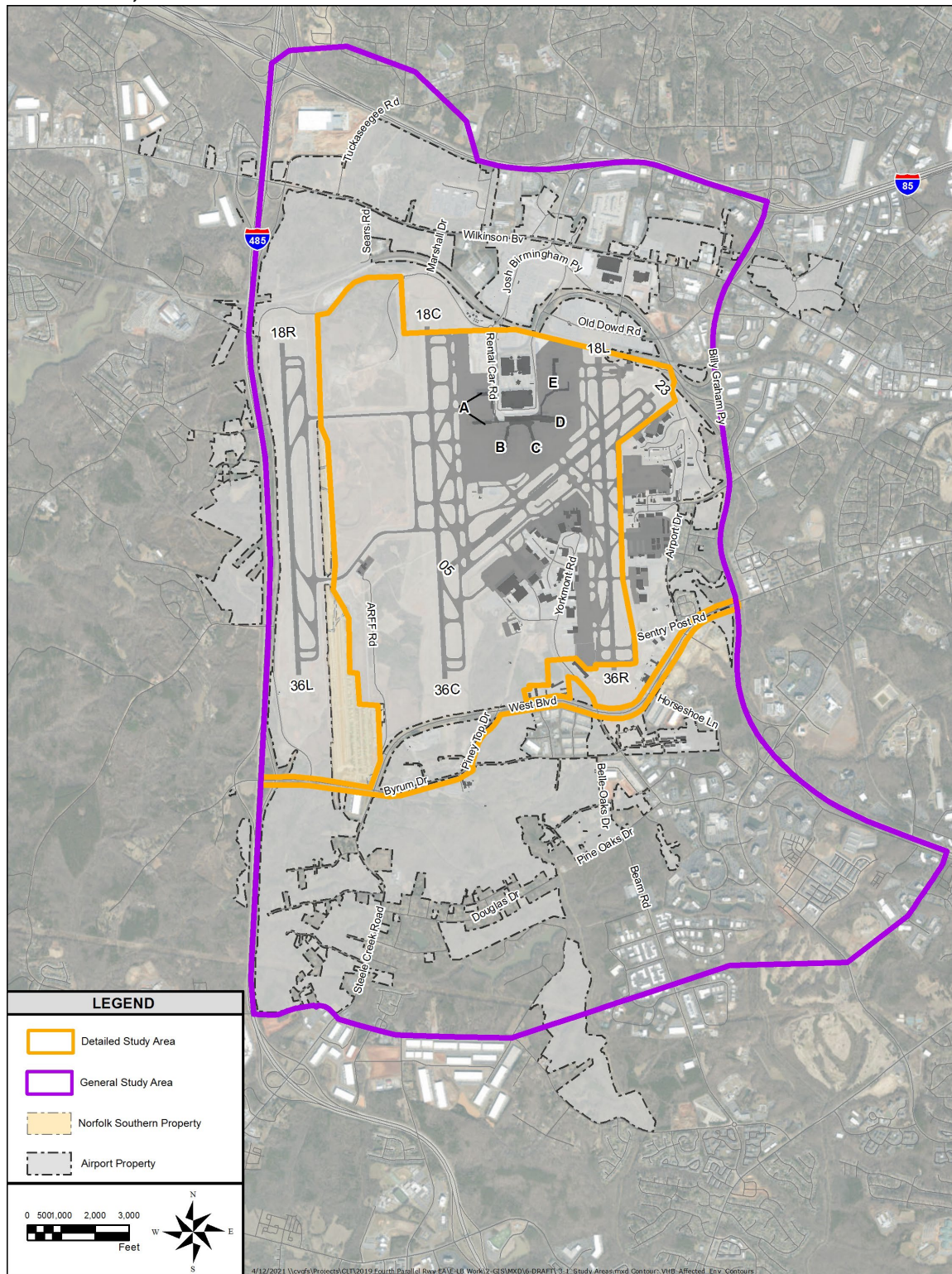
⁴⁷ FAA, 2015, Order 1050.1F, *Environmental Impacts: Policies and Procedures*, Section 6-2.1(e).

⁴⁸ USEPA, 40 Code of Federal Regulations (CFR) § 50, National Primary and Secondary Ambient Air Quality Standards (NAAQS).

⁴⁹ PM₁₀ and PM_{2.5} are airborne inhalable particles that are less than ten micrometers (coarse particles) and less than 2.5 micrometers (fine particles) in diameter, respectively.

⁵⁰ Airborne lead in urban areas is primarily emitted by vehicles using leaded fuels.

EXHIBIT 3-1, STUDY AREAS



Source: Landrum & Brown, 2020

Since 1975, lead emissions have been in decline due in part to the introduction of catalyst-equipped vehicles and the decline in production of leaded gasoline. In general, an analysis of lead is limited to projects that emit significant quantities of the pollutant (e.g., lead smelters) and is generally not applied to transportation projects. For lead, a major source, as defined by USEPA for a Nonattainment New Source Review permitting program would emit over 100 tons per year. The NAAQS are summarized in **Table 3-1**. For each of the criteria pollutants, the USEPA established primary standards intended to protect public health, and secondary standards to protect other aspects of public welfare, such as preventing materials damage, preventing crop and vegetation damage, and assuring good visibility. Areas of the country where air pollution levels consistently exceed these standards may be designated nonattainment by the USEPA.

TABLE 3-1, NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
CO		Primary	8 hour	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Pb		Primary and Secondary	Rolling 3-month average	0.15 µg/m ³⁽¹⁾	Not to be exceeded
NO ₂		Primary	1 hour	100 ppb	98 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Primary and Secondary	1 year	53 ppb ⁽²⁾	Annual Mean
O ₃		Primary and Secondary	8 hours	0.070 ppm ⁽³⁾	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
PM	PM _{2.5}	Primary	1 year	12.0 µg/m ³	Annual mean, averaged over 3 years
		Secondary	1 year	15.0 µg/m ³	Annual mean, averaged over 3 years
		Primary and Secondary	24 hours	35 µg/m ³	98 th percentile, averaged over 3 years
	PM ₁₀	Primary and Secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
SO ₂		Primary	1 hour	75 ppb ⁽⁴⁾	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

- (1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m³ as a calendar quarter average) also remain in effect.
- (2) The level of the annual NO₂ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.
- (3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O₃ standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O₃ standards.
- (4) The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO₂ standards or is not meeting the requirements of a SIP call under the previous SO₂ standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Notes: ppm is parts per million; ppb is parts per billion, and µg/m³ is micrograms per cubic meter.

Source: USEPA, February 10, 2021, NAAQS Table. On-line: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>, Accessed February 20, 2021.



A nonattainment area is a homogeneous geographical area (usually referred to as an air quality control region) that is in violation of one or more NAAQS and has been designated as nonattainment by the USEPA. Some regulatory provisions, for instance the CAA General Conformity regulations, apply only to areas designated as nonattainment or maintenance.

A maintenance area describes the air quality designation of an area previously designated nonattainment by the USEPA and subsequently re-designated attainment after emissions are reduced. Such an area remains designated as maintenance for a period up to 20 years at which time the state can apply for re-designation to attainment, provided that the NAAQS were sufficiently maintained throughout the maintenance period.

Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are gaseous organic and inorganic chemicals, compounds, and particulate matter that may be carcinogenic (known or suspected to cause cancer) or non-carcinogenic (known or suspected to cause other adverse health effects). These substances are believed to cause unique exposure risks because of the innate toxicity of each substance. The 188 substances listed in the CAA Section 112 have a variety of toxic effects causing major health concerns relating to, among others, the nervous and reproductive systems, and lung and liver diseases.

The health effects from exposure to HAPs in the ambient air are influenced by the regional meteorology. Therefore, when considering the parameters that affect the formation and dispersion of HAPs, it is clear that health effects from HAP emissions is appropriately assessed on a regional level and not confined to a project-level analysis of a single source. According to the FAA's *Aviation Emissions and Air Quality Handbook, Version 3, Update 1*, HAPs are pollutants for which there are no NAAQS but are regulated and are of concern in connection with the protection of public health and the environment.

3.3.1.2 Affected Environment

The Airport is located within the Metropolitan Charlotte Interstate Air Quality Region.⁵¹ In the past, Mecklenburg County was designated as nonattainment for 8-hour ozone; however, on August 27, 2015, the USEPA determined the area had attained the ozone standard and the region was redesignated to attainment for ozone. The area now operates under a maintenance plan for 8-hour ozone. Mecklenburg County was determined to be compliant with all other Federally-regulated air quality standards in effect at the time of the preparation of this document (see **Appendix C, Air Quality**).

An emissions inventory of 2016⁵² levels of air criteria pollutants and pollutant precursor emissions were prepared and presented in **Table 3-2**.⁵³ The CLT-related operational emission sources include aircraft, auxiliary power units (APUs), ground support equipment (GSE), and motor vehicles. See Appendix C for the HAPs emissions inventory for the 2016 Existing Conditions. The emissions inventory was developed using FAA's Aviation Environmental Design Tool (AEDT, version 2d).⁵⁴ Motor vehicle emissions were estimated with the USEPA's Motor Vehicle Emissions Simulator version 2014b (MOVES). Consistent with FAA guidelines, the inventories were prepared following procedures in the

⁵¹ Title 40 Protection of the Environment. CFR Chapter 1, Subchapter C, Part 81 Subpart B § 81.75 Metropolitan Charlotte Interstate Air Quality Control Region (2012).

⁵² The year 2016 is used throughout this Revised Draft EA as it was the year the NEPA process was initiated.

⁵³ The HAP emissions inventory is provided for disclosure purposes with respect to the FAA's Air Quality Handbook, Version 3, Update 1, and should not be relied on as an interpretation of health risks, should not be compared to other sources of HAPs in the region, or compared to HAP emissions reported for other airports.

⁵⁴ FAA, AEDT (Version 2d), <https://aedt.faa.gov/>, September 28, 2017.

FAA's *Aviation Emissions and Air Quality Handbook, Version 3, Update 1*. Appendix C presents the methodology and inputs used to prepare the emissions inventory.

TABLE 3-2, 2016 EXISTING CONDITIONS EMISSIONS INVENTORY (SHORT TONS/YEAR)

Emissions Source	CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}
Aircraft	1,989	298	1,945	196	18	18
GSE	771	26	80	4	3	3
APU	29	2	63	7	5	5
Motor Vehicles	47	3	8	0.1	0.5	0.2
Total:	2,837	329	2,096	207	26	26

Note: Numbers may not sum due to rounding

Source: Data provided by S. LePore, VHB Aviation Planner, via email correspondence on October 24, 2019 to L. Scott, CLT Planning and Environmental Manager.

3.3.2 Biological Resources (including fish, wildlife, and plants)

3.3.2.1 Regulatory Setting

Biological resources are valued for their intrinsic, aesthetic, economic, and recreational qualities and include fish, wildlife, plants, and their respective habitats. Typical categories of biological resources include:

- Terrestrial and aquatic plant and animal species;
- Game and non-game species;
- Special status species (state or Federally-listed threatened or endangered species, marine mammals, or species of concern, such as species proposed for listing or migratory birds); and
- Environmentally-sensitive or critical habitats.

3.3.2.2 Affected Environment

The affected environment or action area for biological resources is defined per 50 CFR § 402.02 as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." Biological surveys and habitat assessments of the DSA were completed in August 2018, May 2019, December 2019, and May 2020. The purpose of the surveys was to determine the potential occurrence of Federal or state-listed species or habitat to exist within the DSA at CLT. The following ground cover/vegetation types were identified in the survey areas:

- **Piedmont Dry Oak-Hickory Forest** contains a variety of oak and hickory tree species with a relatively dense understory of non-native shrubs and herbaceous vegetation.
- **Piedmont Riparian Forest** consists of a dense herbaceous layer, shrubs, and a closed canopy.
- **Forested Wetland** contains multiple forested wetland complexes.
- **Emergent Wetland** emergent vegetation lacking canopy trees.
- **Maintained Disturbed** consist of sewer line and power line corridor, mowed and ruderal areas.
- **Forest Edge** consists of sun-exposed transition area between the Maintained Open Area and the Mixed Hardwood Forest, White Pine forest, and Stream Bank and Riparian forest.
- **Mixed Pine-Hardwood Forest** contains well-drained, moderately moist soils in upland areas with a tree canopy layer, shrub/sapling layer and an herbaceous/vine layer.
- **White Pine Forest** includes white pine habitat with sparsely developed shrub/herbaceous layer.
- **Stream Bank and Riparian Forest** includes the streambanks of flowing waters with a tree canopy layer, shrub/sapling layer, and an herbaceous/vine layer.



- **Abandoned Borrow Pit** consists of an approximately 1-acre old borrow pit.
- **Maintained Open Area** consists of maintained turfgrass areas near the airfield, recently disturbed land under construction, and periodically maintained easements and hillslopes.
- **Early Successional Clear Cut** consists of a recently clear cut forest edge and an unmaintained open field that includes some small trees.

Threatened and Endangered Species

According to the U.S. Fish and Wildlife Service (USFWS), the following Federal listed species of plants and animals, shown in **Table 3-3**, are found or have the potential to be found in Mecklenburg County.

TABLE 3-3, FEDERAL THREATENED AND ENDANGERED SPECIES

Taxonomic Group	Common Name	Scientific Name	Federal Status
Bird	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGPA
Mammal	Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened
Freshwater Bivalve	Carolina Heelsplitter	<i>Lasmigona decorata</i>	Endangered
Insect	Rusty-patched bumble bee	<i>Bombus affinis</i>	Endangered
Vascular Plant	Michaux's Sumac	<i>Rhus michauxii</i>	Endangered
Vascular Plant	Schweinitz's Sunflower	<i>Helianthus schweinitzii</i>	Endangered
Vascular Plant	Smooth Coneflower	<i>Echinacea laevigata</i>	Endangered

Note: BGPA denotes protection under the Bald and Golden Eagle Protection Act

Source: U.S. Fish and Wildlife Service, July 17, 2020, *Endangered Species, Threatened Species, and Candidate Species, Mecklenburg County, North Carolina*. Available on-line: <https://www.fws.gov/raleigh/species/cntylist/mecklenburg.html> Accessed December 2020.

State Designated Threatened, Endangered, or Special Status Species

In addition to the USFWS information, the North Carolina Department of Environment Quality (NCDEQ) database was reviewed. The list of the North Carolina state designated threatened, endangered or special concern species that are found in Mecklenburg County is provided in Appendix D, *Biological Resources*.

Survey Findings

Throughout April and May 2019 and September 27, October 2-3, and October 8-10, 2019, pedestrian surveys of the DSA were conducted to verify the presence or absence of federally threatened and endangered species or potential habitat for federally threatened and endangered species listed in Table 3-3.

- **Bald Eagle:** No habitat for the bald eagle, which includes nests at tops of large, mature trees near large rivers, lakes, and marshes, was observed within the DSA. Also, no individuals of bald eagles were observed.
- **Northern long-eared bat (NLEB):** Mature trees (greater than 12 inches in diameter) that exhibit exfoliating bark (i.e., hickories and oaks) and dead tree snags were observed within the forested portions of the DSA and may serve as potential roosting habitat; however, the site was reviewed in accordance with the NLEB Standard Local Operating Procedures for Endangered Species (SLOPES) between the U.S. Army Corps of Engineers (USACE), Wilmington District, and the Asheville and Raleigh USFWS (Service) Offices. It was determined that the DSA is located outside of the highlighted areas and activities in the project limits do not require prohibited incidental take; as such, this project meets the criteria for the 4(d) rule and any associated take is exempted/excepted. Additionally, according to the North Carolina Natural Heritage Program (NCNHP) Data Explorer report, no known occurrences including hibernacula and/or maternity roost trees have been documented within or within close proximity to the DSA.

- *Carolina Heelsplitter*: The Carolina heelsplitter requires cool, clean, well-oxygenated water, prefers stable, silt-free stream bottoms, and generally occurs where the stream banks are well-vegetated with trees and shrubs. The streams within the DSA are moderately degraded and exhibit erosion, incision, and high sediment levels which are limiting habitat factors for this species. As such, no suitable habitat for Carolina heelsplitter is present within the DSA. Additionally, according to the NCNHP Project Report, there have been no confirmed instances of the Carolina heelsplitter within a mile of the DSA since prior to 1918.
- *Rusty-patched bumble bee*: There are no prairie-like habitats present in the DSA that would be considered suitable habitat for the rusty-patched bumble bee and the USFWS considers the listing of this species in Mecklenburg County to be historic. Moreover, the forested portions of the DSA consist of a dense canopy layer where there is little flower diversity to provide the necessary nectar and pollen foods for the species and the remaining areas are maintained with mechanical mowing and herbicide treatments.
- *Michaux's sumac*: The DSA contains clayey soils that are not derived from mafic rock and are not well-drained. Maintained roadsides and forested edges are potentially suitable habitat for the species; however, due to the lack of suitable soils, regular mechanical mowing of roadsides, and highly urbanized areas, the potentially suitable habitat is not expected to support this species. No individuals of Michaux's sumac were observed within the DSA during the surveys.
- *Schweinitz's sunflower*: The majority of the DSA includes open, regularly maintained airport facilities. Utility easements were heavily invaded by invasive plant species or overly vegetated to support this species. Forested areas are heavily shaded. Surveys for Schweinitz's sunflower were conducted during the survey window and no individuals were observed.
- *Smooth coneflower*: The majority of the site includes open, regularly maintained airport facilities. Utility easements were heavily invaded by invasive plant species or overly vegetated to support this species. Forested areas are heavily shaded. The soils this species prefers are not preset on the DSA. No suitable habitat for smooth coneflower was observed.

3.3.3 Climate

3.3.3.1 Regulatory Setting

According to FAA Order 1050.1F, the discussion of potential climate impacts should be documented in a separate section of the NEPA document, distinct from air quality. Where the proposed action or alternative(s) would result in an increase in greenhouse gases (GHG) emissions, the emissions should be assessed either qualitatively or quantitatively. There are no significance thresholds for aviation GHG emissions, and it is not required for the NEPA analysis to attempt to link specific climate impacts to the proposed action or alternative(s) given the small percentage of emissions that aviation projects contribute.

3.3.3.2 Affected Environment

GHG are gases that trap heat in the earth's atmosphere. The primary GHGs include water vapor (H₂O) and the following:

- Carbon dioxide (CO₂), which enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), agriculture, irrigation, and deforestation, as well as the manufacturing of cement.

- Methane (CH₄), which is emitted through the production and transportation of coal, natural gas, and oil, as well as from livestock. Other agricultural activities influence methane emissions as well as the decay of waste in landfills.
- Nitrous oxide (N₂O), which is released most often during the burning of fuel at high temperatures. This greenhouse gas is caused mostly by motor vehicles, which also include non-road vehicles, such as those used for agriculture.
- Fluorinated Gases, which are emitted primarily from industrial sources and generally include hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF₆). Though they are often released in smaller quantities, fluorinated gases have an increased ability to contribute to global warming.

Two key ways in which these GHGs differ from each other are their ability to absorb energy and how long they stay in the atmosphere. The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases by converting each gas amount to a carbon dioxide equivalent (CO₂E). GWPs provide a common unit of measure, which allows for one emissions estimate of these different gases. CO₂ has a GWP of one because it is the gas used as the reference point. Methane does not last as long in the atmosphere as CO₂ however it absorbs much more energy. Therefore, one ton of methane has 28 times more heat capturing potential than one ton of carbon dioxide. The amount of methane emissions would be multiplied by 28 to determine its CO₂E value. Nitrous oxides last in the atmosphere far longer than CO₂. The amount of nitrous oxides emissions would be multiplied by 265 to determine its CO₂E value.⁵⁵

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contributions, the General Accounting Office (GAO) reports that "domestic aviation contributes about three percent of total carbon dioxide emissions, according to USEPA data," compared with other industrial sources including the remainder of the transportation sector (20 percent) and power generation (41 percent).⁵⁶ The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly three percent of all anthropogenic (man-made) GHG emissions globally.⁵⁷ Climate change due to GHG emissions is a global phenomenon, so the affected environment is the global climate.⁵⁸

A GHG emissions inventory was prepared as part of the emissions inventory described in Section 3.3.1, *Air Quality*. **Table 3-4** provides the GHG CO₂E for aircraft and motor vehicle operations for the 2016 Existing Conditions. AEDT does not calculate GHG emissions for APUs and GSEs and are not presented in this document. This approximation is informational, as there is no federal standard for assessing the significance of GHG emissions.

⁵⁵ Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5), November 2014. IPCC presents GWPs as 1 for CO₂, 28 for CH₄, and 265 for N₂O.

⁵⁶ United States Government Accountability Office, June 2009, GAO Report to Congressional Committees, Aviation and Climate Change.

⁵⁷ Melrose, Alan, 2010, European ATM and Climate Adaptation: A Scoping Study, ICAO Environmental Report.

⁵⁸ As explained by the USEPA, "greenhouse gases, once emitted, become well mixed in the atmosphere, meaning U.S. emissions can affect not only the U.S. population and environment but other regions of the world as well; likewise, emissions in other countries can affect the United States." Climate Change Division, Office of Atmospheric Programs, U.S. Environmental Protection Agency, Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act 2-3 (2009).

TABLE 3-4, 2016 EXISTING CONDITIONS GHG EMISSIONS INVENTORY (METRIC TONS/YEAR)

Emissions Source	CO ₂ E
Aircraft	477,921
Motor Vehicles	3,094
Total:	481,016

Note: Numbers may not sum due to rounding

Source: Data provided by S. LePore, VHB Aviation Planner, via email correspondence on October 24, 2019 to L. Scott, CLT Planning and Environmental Manager.

3.3.4 Department of Transportation Act (DOT) Section 4(f)

3.3.4.1 Regulatory Setting

Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966 (49 U.S. Code [U.S.C.] § 303) protects publicly owned parks, recreational areas, wildlife and waterfowl refuges of national, state, or local significance, and public and private historic sites of national, state, or local significance. Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance, only if there is no feasible and prudent alternative to using that land and the program or project includes all possible planning to minimize harm resulting from the use. Section 4(f) applies only to transportation modal agencies within the USDOT.

3.3.4.2 Affected Environment

The Section 4(f) Resources Study Area has been defined the same as the Area of Potential Effects (APE), in Section 3.3.6, *Historic, Architectural, Archaeological, and Cultural Resources*. This study area was defined as the area where potential physical, visual, and/or noise impacts to Section 4(f) resources could occur from the project. A review of Land and Water Conservation Fund Act (LWCF)-funded resources in Mecklenburg County confirmed that there are no properties within the Section 4(f) Study Area that are protected under Section 6(f) of the LWCF. In addition, a review of records maintained by the National Park Service, the North Carolina State Historic Preservation Office (NCSHPO), the City of Charlotte and Mecklenburg County, along with information obtained from cultural resource surveys, was conducted to identify known Section 4(f) resources within the Section 4(f) Study Area. The review of records and surveys identified 2 potential Section 4(f) resources within the Section 4(f) Study Area, as identified in **Table 3-5** and **Exhibit 3-2**. Both of the properties are eligible for listing in the National Register of Historic Places (NRHP). Additional information on these resources can be found in Section 3.3.6, *Historical, Archaeological, Architectural, and Cultural Resources*. No off-Airport potential Section 4(f) resources are located within the Section 4(f) Resources Study Area.

TABLE 3-5, POTENTIAL SECTION 4(F) HISTORIC RESOURCES

ID	Resource Name	Resource Type
1	WPA Douglas Airport Hangar (former MK2399)	Historic Structure
2	Old Terminal Building	Historic Structure

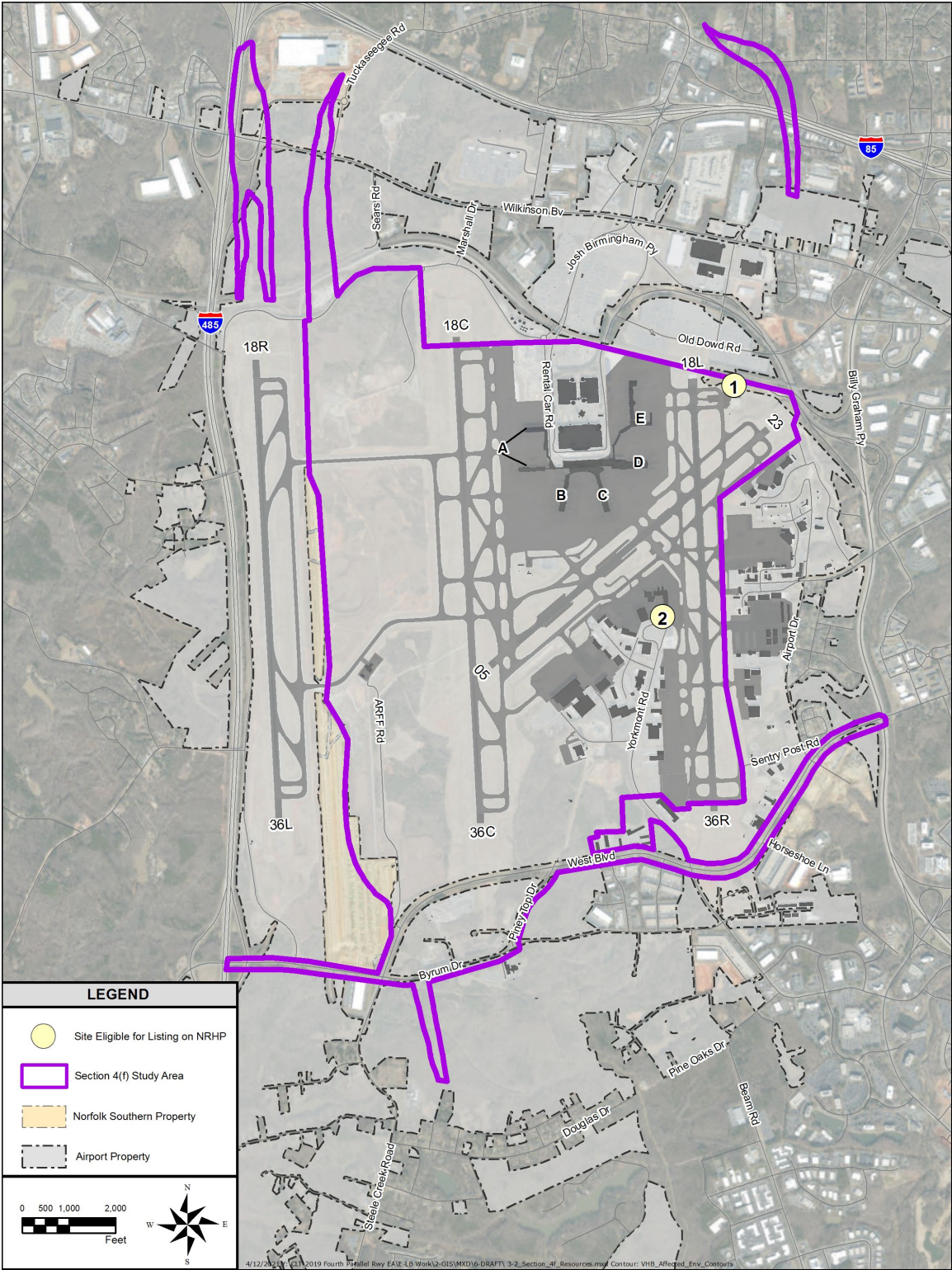
Source: North Carolina State Historic Preservation Office, National Park Service, City of Charlotte, Mecklenburg County, and cultural resources surveys.



WPA Douglas Airport Hangar – The WPA hangar was built in 1937 by the Works Progress Administration (WPA), a federal work program during a period of massive unemployment. The hangar is currently vacant but is planned to be used as an aviation museum. It is recommended eligible for listing in the NRHP under Criterion A for its association with New Deal work programs in North Carolina during the Great Depression. This property is owned by the City of Charlotte.

Old Terminal Building – The old terminal for CLT opened in 1954 and was designed by a local architect Walter Hook. The property has been recommended eligible for National Register listing under Criterion A for its association with the development of air travel in Charlotte in the mid-20th century and Criterion C as one of the best remaining examples of a mid-century air terminal, embodying the distinctive characteristics of a modernist air terminal from the early days of commercial air travel. This property is owned by the City of Charlotte.

EXHIBIT 3-2, POTENTIAL SECTION 4(F) RESOURCES



Source: Landrum & Brown, 2020

3.3.5 Hazardous Materials, Solid Waste, and Pollution Prevention

3.3.5.1 Regulatory Setting

FAA Order 1050.1F states that hazardous materials, solid waste, and pollution prevention includes an evaluation of the waste streams, potential hazardous materials, and pollution prevention procedures used at the Airport. Primary laws passed governing the handling and disposal of hazardous materials, solid waste and pollution prevention include: Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Pollution Prevention Act (PPA), Toxic Substances Control Act (TSCA), and the Oil Pollution Act (OPA).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): The CERCLA of 1980, 42 U.S.C. §§ 9601 – 9675, was amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and the Community Environmental Response Facilitation Act (CERFA) of 1992. The purpose of CERCLA is to conduct an increasingly complex series of evaluations of federally-listed suspected hazardous waste sites to determine if those sites pose sufficient threats to human health and the environment to become eligible for federally-funded investigation and clean up under Superfund. This act has four basic elements:

- (1) The establishment of a system for gathering and analyzing information for characterizing contaminated sites. This information is used in the development of the USEPA National Priorities List (NPL);
- (2) The establishment of federal authority to respond to hazardous substance emergencies and cleanup leaking sites;
- (3) The creation of a trust fund to pay for removal and remedial actions; and
- (4) Assignment of liability for cleanup and restitution costs to persons who are responsible for hazardous substance releases.

Resource Conservation and Recovery Act (RCRA): The RCRA of 1987, 42 U.S.C. §§ 6901 – 6992k, is intended to provide "cradle to grave" management of hazardous and solid wastes and regulation of underground storage tanks (USTs) containing chemical and petroleum products. The RCRA allows the USEPA to set standards for entities producing, storing, handling, transporting, and disposing of hazardous waste. The RCRA was amended with the Hazardous and Solid Waste Amendments of 1984 that addressed corrective actions and permitting of hazardous waste issues.

Pollution Prevention Act (PPA): The PPA of 1990, 42 U.S.C. §§ 13101 – 13109, established that it is the national policy of the United States that, whenever feasible:

- Pollution should be prevented or reduced at the source;
- Pollution that cannot be prevented should be recycled in an environmentally safe manner;
- Pollution that cannot be prevented or recycled should be treated in an environmentally-safe manner; and
- Disposal or other release into the environment should be employed only as a last resort, and should be conducted in an environmentally-safe manner.

Toxic Substances Control Act (TSCA): The TSCA of 1976, 42 U.S.C. §§ 2601 – 2697, states that it is the policy of the United States that:

- Adequate data should be developed with respect to the effect of chemical substances and mixtures on health and the environment, and that the development of such data should be the

responsibility of those who manufacture and those who process such chemical substances and mixtures;

- Adequate authority should exist to regulate chemical substances and mixtures that create an unreasonable risk of injury to health or the environment, and to take action with respect to chemical substances and mixtures which are imminent hazards; and
- Authority over chemical substances and mixtures should be exercised in such a manner as not to impede unduly or create unnecessary economic barriers to technological innovation while fulfilling the primary purpose of the TSCA to assure that such innovation and commerce in such chemical substances and mixtures do not create an unreasonable risk of injury to health or the environment.

Oil Pollution Act (OPA): The OPA of 1990, 33 U.S.C. §§ 2701 - 2762 was established to improve the nation's ability to prevent and respond to oil spills by establishing provisions that expand the Federal government's ability, and provide the money and resources necessary to respond to oil spills. The OPA provided new requirements for contingency planning by both government and industry. The Oil Pollution Prevention Regulation (40 CFR Part 112) was amended to incorporate requirements of the OPA, and now forms the basis of the USEPA's Oil Spill Prevention, Control, and Countermeasure (SPCC) program. The SPCC program seeks to prevent oil spills from certain aboveground storage tanks (ASTs) and USTs.

Executive Order (EO), 12088 Federal Compliance with Pollution Control Standards: EO 12088, as amended, directs Federal agencies to comply with "applicable pollution control standards" in the prevention, control, and abatement of environmental pollution; and consult with the USEPA, state, interstate, and local agencies concerning the best techniques and methods available for the prevention, control, and abatement of environmental pollution.

EO 12580, Superfund Implementation: EO 12580, *Superfund Implementation*, amended by EOs 13016 and 13308, delegates most response authorities to the USEPA and the United States Coast Guard (USCG) for abatement. Federal agencies must participate in response teams with the opportunity for public comment, before removal action is made.

3.3.5.2 Affected Environment

Hazardous Materials

The NPL is the list of sites of national priority among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the USEPA in determining which sites warrant further investigation. There are no NPL sites located within the DSA.

The USEPA and North Carolina Division of Waste Management maintain databases of other regulated sites and past incident reports. The following databases were searched for sites within the DSA:

- **Hazardous Waste Sites:** This database includes sites within North Carolina that are regulated by the hazardous waste portions of the RCRA.⁵⁹

⁵⁹ North Carolina Department of Environmental Quality, Division of Waste Management, Hazardous Waste Sites Map. On-line: <https://deq.nc.gov/about/divisions/waste-management/waste-management-rules-data/waste-management-gis-maps/tsd-map-viewer>, Accessed January 26, 2021.



- **Inactive Hazardous Sites:** This data set represents hazardous substance spill and disposal sites (as points) and includes active and inactive facilities and a variety of property types. The term “inactive” refers to the fact that cleanup was inactive at large numbers of sites at the time of program enactment. The data set includes closed remediation sites that have land use restrictions recorded as part of the remedy.⁶⁰
- **Registered Tanks Database:** This database includes a list of documented UST.⁶¹
- **Regional Underground Storage Tank (RUST) Incidents:** The data layer presented includes all UST incidents and release reports which have become incidents listed in the RUST database. This database was reviewed for open incident reports within the DSA.⁶²

Based on a review of USEPA’s databases, there are two permitted hazardous waste generators and two inactive waste sites within the DSA as listed in **Table 3-6**. In addition, three sites within the DSA are listed on the RCRA - Non Generators / No Longer Regulated database.⁶³ A review of the Registered Tanks Database found nine documented underground storage tanks within the DSA as shown in **Table 3-7**.

TABLE 3-6, HAZARDOUS WASTE SITES WITHIN THE DETAILED STUDY AREA (DSA)

Map ID	Site Name	Site Address	USEPA ID	RCRA Category
Hazardous Waste Sites				
W1	Transportation Security Administration	5501 Josh Birmingham Pkwy	NCR000144410	RCRA-LQG
W2	American Airlines (Formerly U.S. Airways) Maintenance Facility	5020 Hangar Road	NCD986227957	RCRA-LQG
Inactive Hazardous Sites				
I1	Charlotte Douglas Airport 7	5501 Josh Birmingham Pkwy	NONCD0001480	NC SHWS
I2	Warren Road	Warren Road	NONCD0002697	NC SHWS
Other Non-Generator Site				
N1	Anilox Roll	4840 Wallace Neal Rd	NCD119168813	RCRA NonGen / NLR
N2	Mecklenburg Co Central Compost	5631 West Blvd	NCG240016	NC RGA LF
N3	West Mecklenburg Recycling Center	8440 Byrum Dr	NCS000001976	RCRA NonGen / NLR

Notes: RCRA = Resource Conservation and Recovery Act, SQG = Small Quantity Generator, LQG = Large Quantity Generator, NC SHWS = Inactive Hazardous Sites Inventory, NonGen / NLR = Non Generators / No Longer Regulated, NC RGA LF = Recovered Government Archive Solid Waste Facilities List
Source: EDR Area / Corridor Report, August 2018; USEPA RCRAInfo database website, January 2021; NCDEQ Waste Management website, January 2021.

⁶⁰ North Carolina Department of Environmental Quality, Division of Waste Management, Inactive Hazardous Sites Map. On-line: <https://deq.nc.gov/about/divisions/waste-management/waste-management-rules-data/waste-management-gis-maps/ihs-map-viewer>, Accessed January 26, 2021.

⁶¹ North Carolina Department of Environmental Quality, Division of Waste Management, Underground Storage Tank Databases and Reports. On-line: <https://deq.nc.gov/about/divisions/waste-management/ust/databases>, Accessed January 26, 2021.

⁶² North Carolina Department of Environmental Quality, Division of Waste Management, Underground Storage Tank Incidents Map. On-line: <https://deq.nc.gov/about/divisions/waste-management/waste-management-rules-data/waste-management-gis-maps/rust-map>, Accessed January 26, 2021.

⁶³ Environmental Data Resources, Inc, August 14, 2018, EDR Area/Corridor Report.

TABLE 3-7, DOCUMENTED UNDERGROUND STORAGE TANKS (UST) WITHIN THE DETAILED STUDY AREA (DSA)

Map ID	Site Name	Address	Facility ID
U1	CLT - Hourly Deck / Rental Car Return Facility	5501 Josh Birmingham Parkway	00-0-0000037565
U2	Crew Training	4800 Hangar Road	00-0-0000021928
U3	American Airlines (formerly US Airways) GSE	525 Terminal Road	00-0-0000033446
U4	American Airlines (formerly US Airways) Maintenance Hangar	5020 Hangar Road	00-0-0000031429
U5	Federal Express Corp.	Express Drive	00-0-0000014628
U6	Federal Express Corp.	Express Drive	00-0-0000017067
U7	Charlotte Douglas International Airport	Hangar Road	00-0-0000032104
U8	Charlotte Douglas International Airport	Hangar Road	00-0-0000032640
U9	Charlotte Douglas International Airport	Express Drive	00-0-0000033449

Source: NCDEQ Waste Management website, January 2021.

The USEPA RUST database shows three sites with previous and present contamination within the DSA in which an incident report is on file located that have not received a designation of No Further Action from the North Carolina Department of Environment and Natural Resources. These sites are shown in **Exhibit 3-3** and **Table 3-8**. Previous contamination sites for which cleanup or remediation activities have been completed and assigned a No Further Action determination are identified in **Appendix F, Hazardous Materials, Solid Waste, and Pollution Prevention**. The Airport conducted lead and asbestos surveys for structures in the DSA. Of the structures surveyed, seventeen structures were found to contain lead and nine structures were found to contain asbestos-containing materials (ACMs).⁶⁴

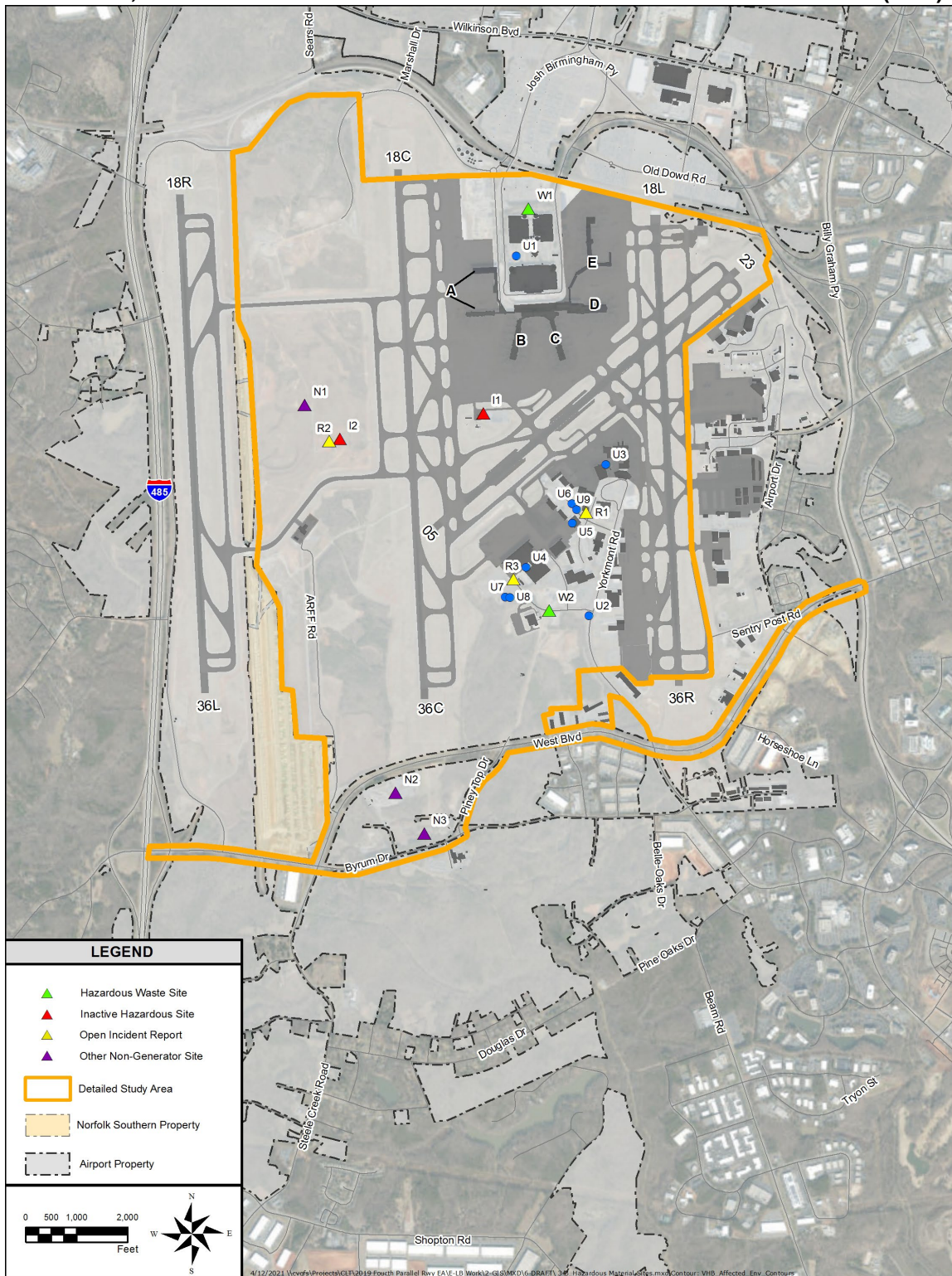
TABLE 3-8, OPEN INCIDENT REPORTS WITHIN THE DETAILED STUDY AREA (DSA)

Map ID	Site Name	Address	Incident Number	Assessment / Cleanup Actions	Status
R1	Delta Airlines	4812 Express Drive	3779	Jet fuel, gasoline, glycol, and motor oil USTs and two oil/water separators were removed; impacted soil removed; classified as low-risk; no monitoring activities are ongoing	Open
R2	Holman And Moody Facility	4933 Wallace Neel Road	27963	Petroleum USTs removed from former Holman & Moody facility; petroleum-related soil and groundwater impacts detected; contamination limited to Airport property; all monitoring wells abandoned; classified as low-risk; no monitoring activities are ongoing	Open
R3	American Airlines (formerly U.S. Airways) Maintenance Hangar	5020 Hangar Road	14908	Free product detected around former UST system and maintenance area; ethanol and 1,4-dioxane detected in groundwater; monitoring and cleanup is ongoing	Open

Source: NCDEQ Waste Management website, Accessed January 2021.

⁶⁴ Building 220 was inaccessible for a lead survey. The surveys are available in Appendix F.

EXHIBIT 3-3, HAZARDOUS MATERIAL SITES WITHIN THE DETAILED STUDY AREA (DSA)



Source: North Carolina Division of Waste Management, 2021; Environmental Data Resources, Inc., 2018; Landrum & Brown, 2021

Solid Waste

Terminal and aircraft trash generated at the Airport is stored in numerous dumpsters and compactors on the Airport property. The majority of the dumpsters and compactors are emptied on a daily basis and others are emptied on an as-needed basis. Wastes from the dumpsters and compactors are collected by a private contractor (Waste Management), and disposed off-Airport, in accordance with state regulations. In addition, recycling bins for recyclables are maintained throughout the Airport facilities. The Airport is committed to reducing the volume of waste generated and to shift the waste stream toward increased diversion, maximizing reuse, recovery, and recycling over disposal through measures identified in the Airport's Comprehensive Sustainability Plan. This includes the recycling of construction and demolition (C&D) waste, as well as waste generated through the operation of the Airport.

CLT currently generates approximately 4,200 tons of solid waste on an annual basis.⁶⁵ The majority of the solid waste generated on the Airport are collected by a private contractor (Waste Management), and disposed of off-Airport, in accordance with state regulations. In addition, recycling bins for miscellaneous recyclables are maintained throughout the CLT Airport facilities, which are processed off-site. The Airport recycles concrete and asphalt on-site during construction and development, as able. Several solid waste landfills with sufficient capacity to accept the remaining C&D waste from the Airport exist in the vicinity of CLT. These landfills, their locations, and estimated remaining capacities, as reported by NCDEQ, are provided in **Table 3-9**. Hazardous material disposal sites for certain contaminated materials and debris include Environmental Soils, Inc. and Republic Services Landfill. Numerous other permitted municipal solid waste management landfills, land clearing and inert debris landfills, C&D landfills, and hazardous waste collection centers are located in Mecklenburg County and surrounding counties in North and South Carolina.^{66,67}

TABLE 3-9, SOLID WASTE LANDFILL CAPACITY

Landfill	Permitted Volume Remaining (Tons)	Permitted Volume Remaining (Years)
Mecklenburg County Landfill	9,117,561	87.2
Greenway Waste Solutions at North Mecklenburg Landfill	748,172	6.5
Highway 49 C&D Landfill	2,524,299	27.3

Source: NCDEQ, January 29, 2021, Waste Management Solid Waste Section, Landfill Capacity for Fiscal Year 2018-2019. On-line: <https://edocs.deq.nc.gov/WasteManagement/DocView.aspx?id=1360283&dbid=0&repo=WasteManagement&searchid=cfaa04f4-835e-40b9-9ef4-c9da32a4e4df>, Accessed January 29, 2021.

Pollution Prevention

The Airport maintains a series of SPCC plans for multiple onsite facilities that are designed to minimize spill risk and identify measures to be used to respond to spills that do occur. The SPCC plans are reviewed at least every five years and revised if necessary. These plans include the CLT Airport SPCC Master Plan, the Hourly Parking Deck and Consolidated Rental Car Facility SPCC Plan, and the Airfield Fuel System Master Plan. Some airport tenants also prepare, certify, and maintain their own SPCC Plans, which must also abide by state and federal regulations.

⁶⁵ Landrum & Brown, March 2016, Final Environmental Assessment, Charlotte Douglas International Airport, Terminal Area and Support Facilities Improvements.

⁶⁶ NCDEQ, *Solid Waste* On-line: <https://deq.nc.gov/about/divisions/waste-management/sw/data>, Accessed September 24, 2018.

⁶⁷ South Carolina Department of Environmental Control Solid Waste website <https://www.scdhec.gov/environment/land-management/solid-waste>, Accessed September 24, 2018.



3.3.6 Historic, Architectural, Archaeological, and Cultural Resources

3.3.6.1 Regulatory Setting

The National Historic Preservation Act (NHPA) is the primary Federal law governing the preservation of historic and prehistoric resources, encompassing art, architecture, archaeological, and other cultural resources. Section 106, *Protection of Historic Properties* requires Federal agencies to take into account the effects of their undertakings (Proposed Action) on properties that are listed on or determined eligible for inclusion in the NRHP, and requires Federal agencies to consult with the State Historic Preservation Office, Tribal Historic Preservation Officers (THPO), and other parties to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties. The independent Federal agency overseeing Federal historic preservation and tribal programs, the Advisory Council on Historic Preservation (ACHP), is afforded a reasonable opportunity to comment on such undertakings subject to Section 106. The ACHP typically reserves its comments either for complex consultations in which it has had previous involvement or for consultations wherein a Federal agency seeks ACHP comment on unresolved consultation issues.

3.3.6.2 Affected Environment

The APE is “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties” (36 CFR § 800.16(d)). For purposes of Section 106, the term “historic properties” can include architectural, archeological, or cultural resources. The determination of the APE considers the character of a project area and the potential for resources to be found. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR § 800.16(d)). For this undertaking, the FAA defined the APE based on the area where potential physical, visual, and/or noise impacts could occur from the proposed undertaking. The APE covers approximately 2,622 acres and is shown in **Exhibit 3-4**. The NCSHPO concurred with the delineation of the APE on January 21, 2021 (see **Appendix G, Historic, Architectural, Archaeological, and Cultural Resources**).

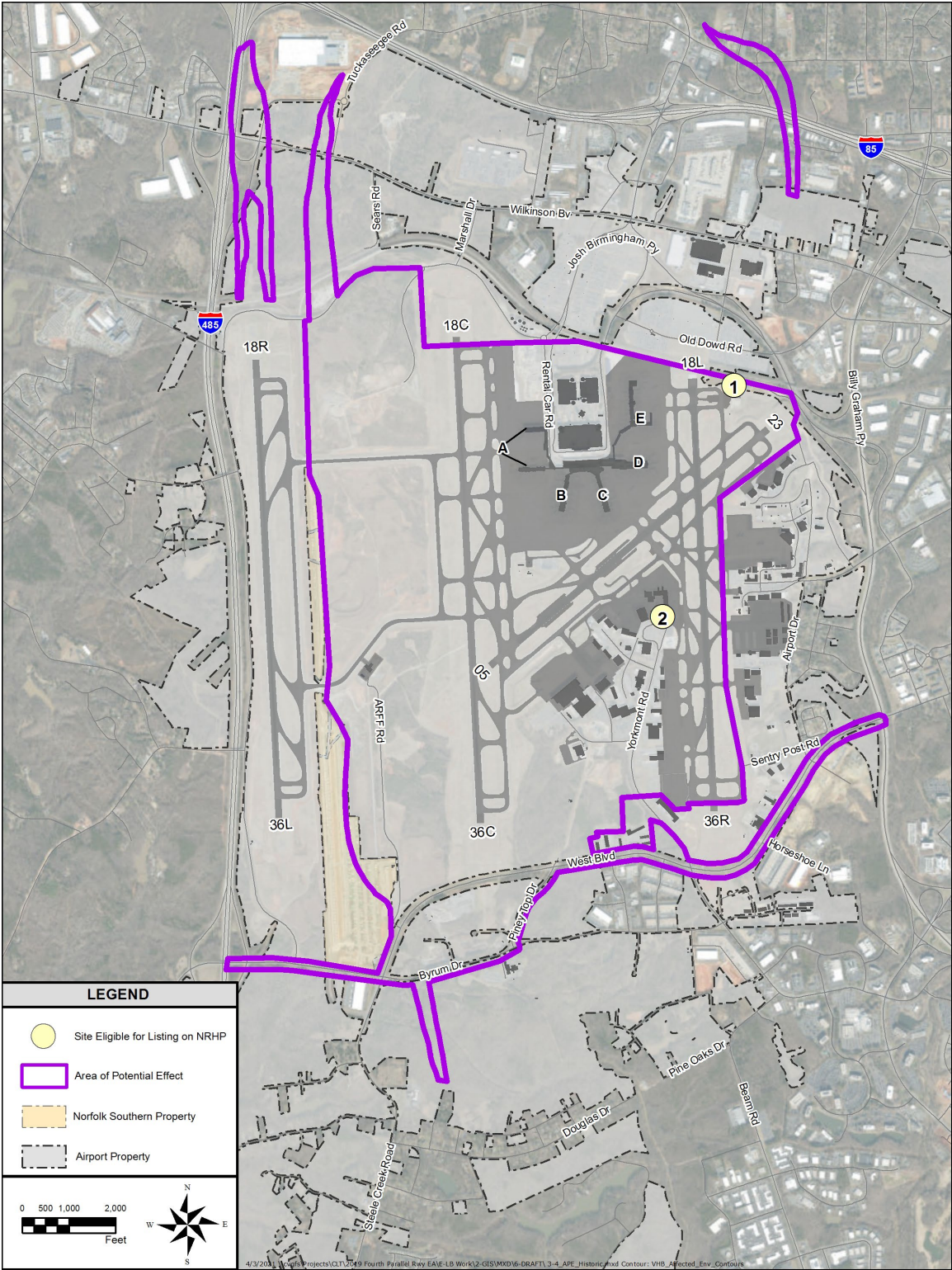
Architectural and Phase I archeological surveys were conducted for the proposed undertaking in compliance with Section 106 of the NHPA and NCSHPO guidelines to identify any historic properties that are listed or eligible for listing in the NRHP. The cultural resources investigation consisted of a records search and literature review, as well as an archeological pedestrian survey of the APE. The background research included a review of the NCSHPO’s online GIS service, historical aerials, and the Mecklenburg County tax assessor’s GIS website. Fieldwork within the APE took place in March 2019, February 2020, March 2020, and May 2020. Based on the survey, two structures eligible for listing in the NRHP are located within the APE. No off-Airport NRHP resources are located within the APE. The NCSHPO concurred with the eligibility recommendation in a letter dated October 12, 2020 and April 8, 2021. These resources are summarized in **Table 3-10**.

TABLE 3-10, POTENTIAL HISTORIC SITES WITHIN THE APE

ID	ASM Site Number	Description	NRHP Status
Above Ground Resources			
1	MK2399	WPA Douglas Airport Hangar	Eligible
2	MK2189	Old Terminal Building	Eligible
Below Ground Resources			
None			

Source: Environment & Archaeology, LLC, 2020; Legacy & Associates 2019.

EXHIBIT 3-4, AREA OF POTENTIAL EFFECT (APE)



Source: Landrum & Brown, 2020



3.3.7 Land Use

3.3.7.1 *Regulatory Setting*

Special guidance relevant to land use is given in the NEPA implementing regulations, which require consideration of “[p]ossible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned.”⁶⁸ The impacts on land use may include indirect impacts such as the disruption of communities, relocation, induced socioeconomic impacts, and impacts to land uses protected under USDOT Section 4(f) Act. The regulations recognize that certain inconsistencies may exist between the proposed Federal action and any approved state or local plan or law. Where an inconsistency exists, the NEPA document should describe the extent to which the agency would reconcile its action with the plan or law (See 40 CFR § 1506.2(d)).

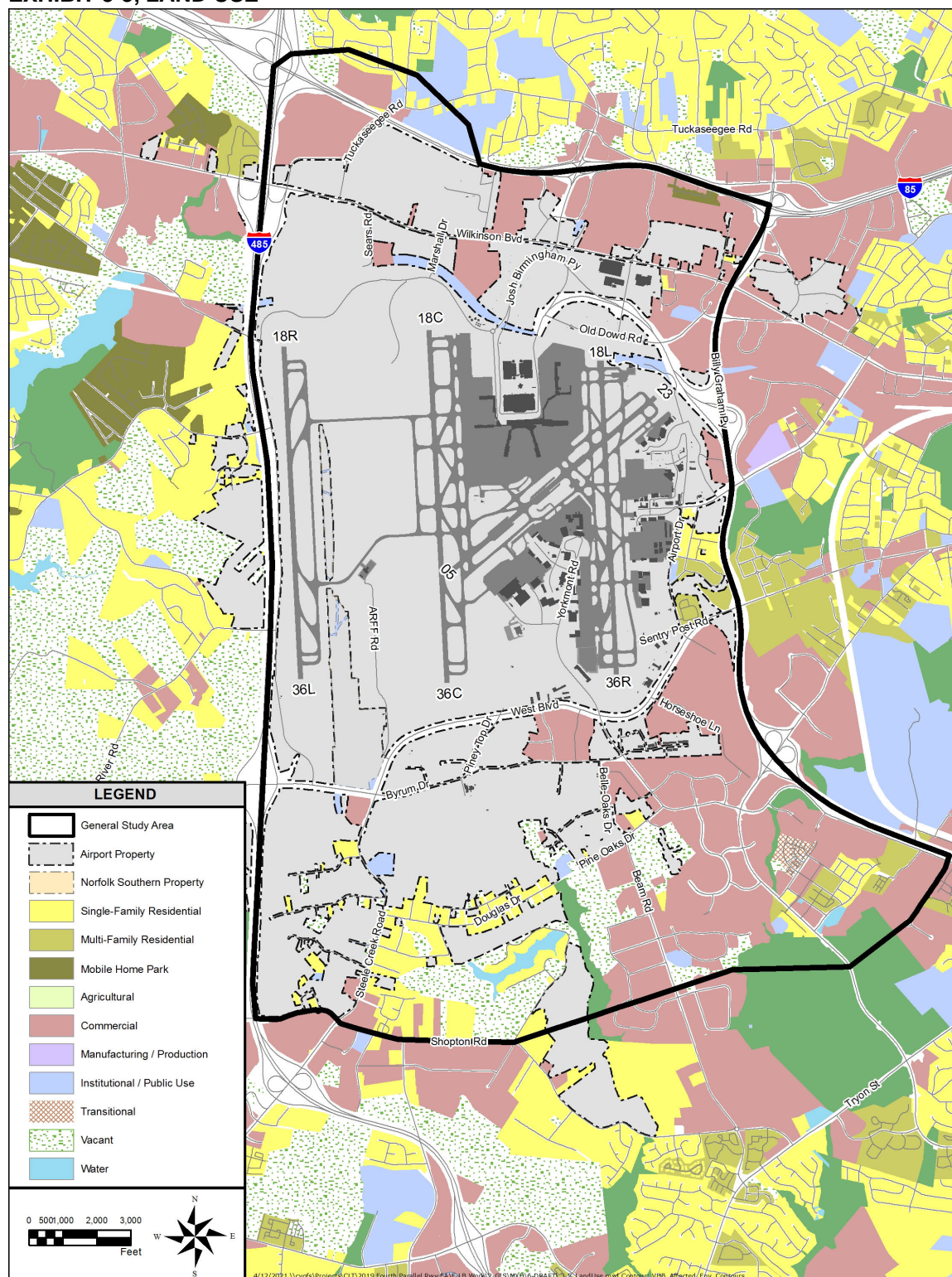
3.3.7.2 *Affected Environment*

Existing land use in the GSA is shown in **Exhibit 3-5**. The land uses depicted are based on data from the Planning, Design, and Development Department in the City of Charlotte, and the Land Use and Environmental Services Agency of Mecklenburg County. Land uses were classified based on guidelines contained in 14 CFR Part 150, Appendix A, Table A-1 (see Table 3-12). Land uses within the DSA were verified using recent aerial imagery and field verification where necessary.

The Airport is bounded to the west by Interstate-485, a major transportation corridor. To the immediate north and northeast of CLT, land uses are characterized by commercial, manufacturing/production, public use, and residential areas. To the south of CLT, land is predominantly residential and open space properties mixed with commercial and public land uses. To the east of CLT, land is predominantly residential, commercial, and manufacturing/production land uses. To the west of CLT, land is predominantly vacant with some scattered residential and public land uses.

⁶⁸ 40 CFR § 1502.16

EXHIBIT 3-5, LAND USE



Source: Mecklenburg County; Landrum & Brown, 2021



3.3.8 Natural Resources and Energy Supply

3.3.8.1 Regulatory Setting

FAA Order 1050.1F states that natural resources and energy supply identifies the consumption of natural resources and use of energy supplies. Consumption of natural resources and use of energy supplies may result from construction and operation of the Airport. The following laws, regulations, EOs, and other guidance apply to the Proposed Action:

Energy Independence and Security Act: This statute requires Federal agencies to take actions to move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy GHG capture and storage options, and to improve the energy performance of the Federal government.

Energy Policy Act: This statute requires Federal agencies to take actions to ensure jobs with secure, affordable, and reliable energy.

EO 13693, *Planning for Federal Sustainability in the Next Decade*: This EO revokes EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, and EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, and updates Federal sustainability and GHG emission reduction goals.

EO 13123, *Greening the Government Through Efficient Energy Management*: This EO directs Federal agencies to promote the use of renewable energy, reduce GHG emissions associated with energy use, and improve the energy efficiency of Federal buildings.

Charlotte Douglas International Airport Comprehensive Sustainability Plan: In 2017, CLT began the development of its first Comprehensive Sustainability Plan. The Comprehensive Sustainability Plan will be tailored specifically to the Airport and will integrate and align with the sustainability targets and objectives identified in the City of Charlotte's environmental policies. Sustainability initiatives at CLT have included the installation of solar panels, energy efficient systems, electric vehicle charging stations, and the utilization of alternative fuel vehicles. CLT routinely recycles crushed concrete and asphalt during construction.

3.3.8.2 Affected Environment

Natural Resources

Materials that may be needed for construction of new runways and taxiways, terminal facilities, parking, and roadways include lumber, aggregate, concrete, gravel, steel, asphalt, sand, and water. These materials are not in short supply in the Charlotte area. Asphalt, cement, sand, gravel, and aggregate can be found at multiple vendor locations in and near Mecklenburg County, including the Charlotte Quarry, Mallard Creek Quarry, Matthews Quarry, Arrowwood Quarry, and Bonds Gravel Pit. Building materials are readily available and provided by numerous vendors in the Charlotte area including Professional Builders Supply, L&W Supply, Matthews Building Supply, and Colonial Materials. Concrete is provided by several entities, including Concrete Supply Company and Southern Concrete Materials.

Energy Supply

CLT requires electricity and natural gas to power its facilities. Electricity is used at the airport to power and illuminate parking areas, buildings, and the airfield. Duke Energy, which is headquartered in Charlotte, provides electricity to 3.5 million customers in North Carolina, including CLT, and has over

51,000 megawatts of electric generating capacity.⁶⁹ Based on information provided by CLT staff, the Airport's electric usage was approximately 89,000-megawatt hours in 2019.⁷⁰

Natural gas is used at CLT for gas-fired water heaters and appliances. Natural gas is provided to CLT by Piedmont Natural Gas, which operates as a business unit of Duke Energy. Duke Energy acquired Piedmont Natural Gas in 2016, and the acquisition added Piedmont's one million natural gas customers to Duke Energy's existing customer base of 525,000 natural gas customers.⁷¹ Based on information provided by CLT staff, the Airport's annual natural gas usage was approximately 98,400 million British thermal units. CLT is located in an urban area with a sufficient supply of electricity and natural gas.

3.3.9 Noise and Noise Compatible Land Use

3.3.9.1 Noise

Regulatory Setting

For aviation noise analyses, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of annual Day-Night Average Sound Level (DNL), the FAA's primary noise metric. To evaluate aircraft noise, the FAA has an approved computer model, the AEDT that simulates aircraft activity at an airport.

The FAA uses the 14 CFR Part 150, *Airport Noise Compatibility Planning*, land use compatibility guidelines to determine compatibility with most land uses. These guidelines are consistent with land use compatibility guidelines developed by other federal agencies such as the USEPA and the United States Department of Housing and Urban Development. A DNL of 65 decibels (dB) is the noise level at which noise-sensitive land uses (residences, churches, schools, libraries, and nursing homes) become significantly impacted. Below DNL 65 dB, all land uses are determined to be compatible with airport noise. Special consideration is given to noise sensitive areas within Section 4(f) properties (including, noise sensitive areas within national parks, national wildlife and waterfowl refuges and historic sites, including traditional cultural properties) where the land use compatibility guidelines in 14 CFR Part 150 are not relevant to the value, significance, and enjoyment of the area in question.

Affected Environment

The 2016 Existing Conditions noise exposure contour⁷² for DNL 65, 70, and 75 dB are shown in **Exhibit 3-6**. These contours reflect the DNL levels in areas surrounding CLT on an average annual day in 2016. A DNL noise contour does not represent the noise levels present on any specific day, but represents the energy-average 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 end for total arrivals and departures, as well as its use at night, and the type of aircraft assigned to it.

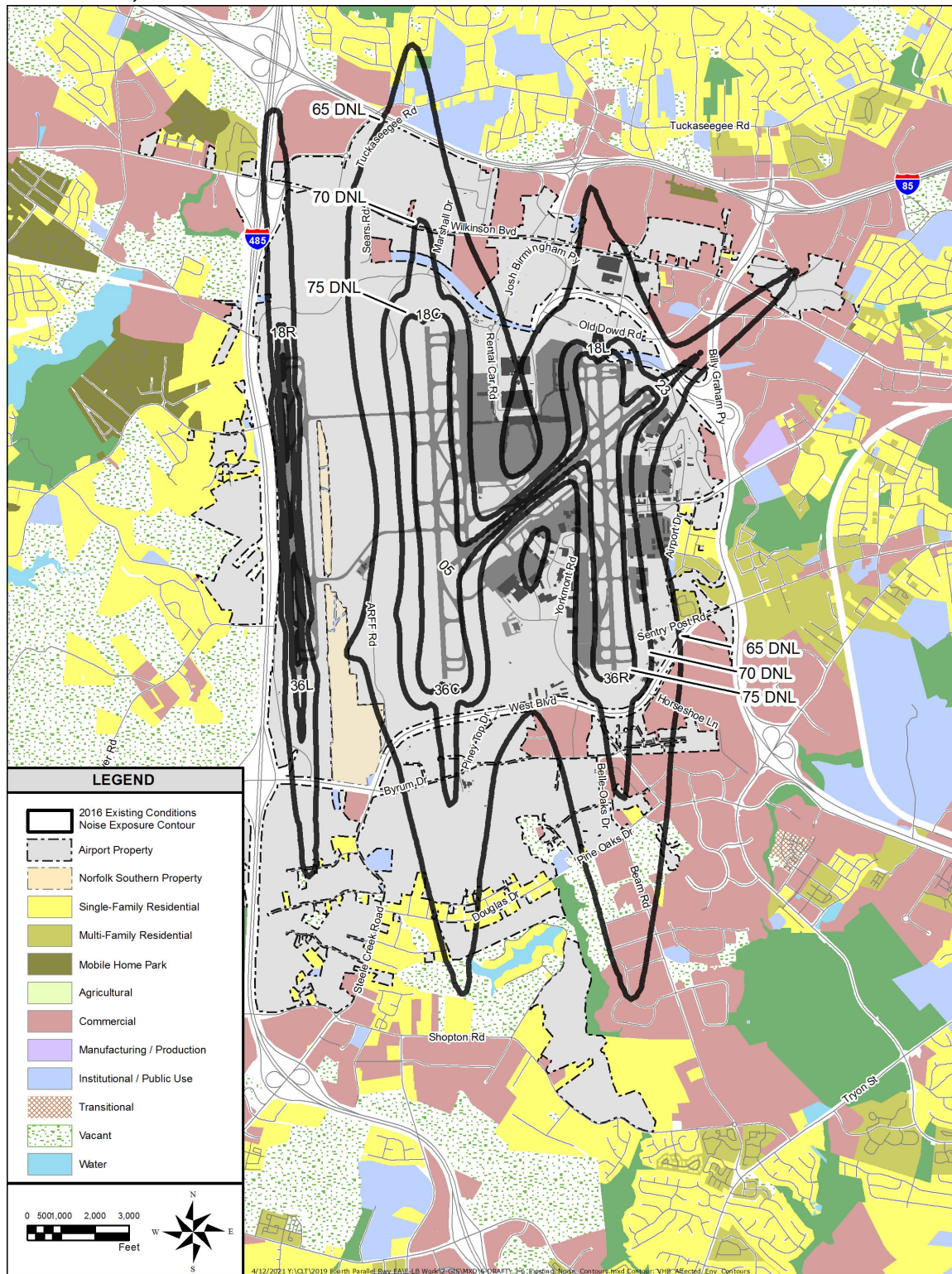
⁶⁹ Duke Energy, December 2019, *Fast Facts*. On-line: <https://www.duke-energy.com/media/pdfs/our-company/duke-energy-fast-facts.pdf?la=en>, Accessed December 2020.

⁷⁰ Data from 2020 was not compiled as it was not considered a typical year due to the COVID-19 pandemic.

⁷¹ Duke Energy, 2016, *Duke Energy completes acquisition of Piedmont Natural Gas*. On-line: <https://news.duke-energy.com/releases/duke-energy-completes-acquisition-of-piedmont-natural-gas>, Accessed September 19, 2018.

⁷² The 2016 Existing Conditions noise exposure contour is the most recent contour that reflects CLT existing conditions.

EXHIBIT 3-6, 2016 EXISTING CONDITIONS NOISE EXPOSURE CONTOUR



Source: 2016 Existing Conditions Noise Exposure Contour: ESA; Land Use data: Mecklenburg County, Landrum & Brown, 2021

Table 3-11 summarizes the land area within each noise contour.

TABLE 3-11, AREAS WITHIN THE 2016 EXISTING CONDITIONS NOISE EXPOSURE CONTOUR (IN SQUARE MILES)

Contour Range	2016 Existing Noise Exposure (Square Miles)
65-70 DNL	4.28
70-75 DNL	1.26
75 + DNL	0.93

Source: ESA, 2018, verified by Landrum & Brown in 2019.

The shape and size of the noise contours reflect several factors, including: the number of aircraft operations during the period evaluated, the types of aircraft flown, the time of day when they are flown, the way they are flown, how frequently each runway is used for landing and takeoff, and the routes of flight used to and from the runways.

3.3.9.2 Noise-Compatible Land Use

Regulatory Setting

The FAA has created guidelines regarding the compatibility of land uses with various aircraft noise levels measured using the DNL metric. These guidelines are defined in Appendix A of 14 CFR Part 150. The land use compatibility table is reproduced in **Table 3-12**. These guidelines show the compatibility parameters for residential, public (schools, churches, nursing homes, hospitals, and libraries), commercial, institutional, and recreational land uses. All land uses exposed to noise levels below the DNL 65 dB noise contour are generally considered compatible with airport operations.

TABLE 3-12, LAND USE COMPATIBILITY GUIDELINES – 14 CFR PART 150

Land Use	YEARLY DAY-NIGHT AVERAGE SOUND Level (DNL) In Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
<u>RESIDENTIAL</u>						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
<u>PUBLIC USE</u>						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
<u>COMMERCIAL USE</u>						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N



Land Use	YEARLY DAY-NIGHT AVERAGE SOUND Level (DNL) In Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
<u>MANUFACTURING AND PRODUCTION</u>						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
<u>RECREATIONAL</u>						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

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

- Notes:
1. The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.
 2. SLUCM=Standard Land Use Coding Manual.
 3. Y (Yes)=Land Use and related structures compatible without restrictions.
 4. N (No)=Land Use and related structures are not compatible and should be prohibited.
 5. NLR=Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
 6. 25, 30, or 35=Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Source: 14 CFR Part 150, *Airport Noise Compatibility Planning*, Appendix A, Table 1.

Affected Environment

Three churches (Every Nation Church, Harvest Church, Montagnard Alliance Church) and one school (East Voyager Academy of Charlotte) are located within the 2016 Existing Conditions DNL 65 dB noise contour. There are no day care facilities, nursing homes, hospitals, or libraries within any of the contours. Summaries of the residential population and housing units affected by noise levels exceeding 65 DNL for the 2016 Existing Conditions Noise Exposure Contour are provided in **Table 3-13**. For more information on the noise exposure contours see **Appendix I, Noise**.

TABLE 3-13, 2016 EXISTING INCOMPATIBILITIES

2016 Existing Conditions	DNL 65-70 DNL	DNL 70-75 DNL	DNL 75+ DNL	Total
RESIDENTIAL				
Housing Units	45	0	0	45
ESTIMATED POPULATION				
Total	123	0	0	123
NOISE-SENSITIVE FACILITIES (NSF)				
Schools	1	0	0	1
Churches	3	0	0	3
Day Care Facilities	0	0	0	0
Nursing Homes	0	0	0	0
Hospitals	0	0	0	0
Libraries	0	0	0	0

Source: Landrum & Brown analysis, 2021; Noise contours from ESA.

3.3.10 Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks

3.3.10.1 Socioeconomics

Socioeconomics is an umbrella term used to describe aspects of a project that are either social or economic in nature. A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by the Proposed Action and alternatives.

Regulatory Setting

Section 1508.14 of the Council on Environmental Quality (CEQ) Regulations requires all Federal agencies to conduct a socioeconomic analysis in the event that economic or social and natural environmental effects are interrelated as a result of the proposed action and alternative(s). This would include an evaluation of how elements of the human environment such as population, employment, housing, and public services might be affected by the proposed action and alternative(s). The Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970, 42 U.S.C. § 61 et seq., and implementing regulations found at 49 CFR Part 24, provides standards if acquisition of real property or displacement of people would occur as a result of implementing the proposed action.

Affected Environment

CLT is located in the city of Charlotte within Mecklenburg County, North Carolina. As shown in Exhibit 1-1, Proposed Action, the Proposed Action would occur predominantly on Airport-property and require the acquisition of 2.5 acres of Norfolk Southern property within the airfield. **Table 3-14** presents a comparison of the socioeconomic characteristics of the City of Charlotte and Mecklenburg County.

TABLE 3-14, EXISTING POPULATION AND DEMOGRAPHICS

	City Of Charlotte	Mecklenburg County
Population	857,425	1,074,475
Not Hispanic	734,998	932,003
White	355,662	503,210
Black / African American	296,802	333,294
Native American / Alaskan Native	2,482	2,828
Asian	55,631	62,551
Native Hawaiian or Pacific Islander	460	514
Other	23,961	29,606
Hispanic	122,427	142,472
Percent Hispanic	14.3%	13.3%
Percent Total Minority	58.5%	53.2%
Percent Below Poverty Level*	12.8%	11.6%

Note * For 2019, the U.S. Census Bureau determined the poverty threshold to be an income of \$13,011 for an individual and \$26,172 for a family of four.

Source: Population and race/ethnicity data was obtained from the U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates; Landrum & Brown analysis, June 2021.

CLT ranks as the world's sixth busiest airport in operations and provides service to 178 destinations throughout the world.⁷³ CLT is also a major employment center. Employers who maintain staff on-site have nearly 30,000 workers, including airlines, tenants, other businesses and the City of Charlotte's Aviation Department. The economic activity that CLT generates is a major contributor to the region's economy. The Airport also contributes nearly \$23 billion in annual total economic impact to the region. Additionally, more than 300,000 jobs in the region are directly or indirectly related to the Airport and its services. Those workers earn \$12.6 billion in wages and salaries. CLT's state and local tax contribution is approximately \$1.1 billion.

3.3.10.2 Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies. Meaningful Involvement means that:

- People have an opportunity to participate in decisions about activities that may affect their environment and/or health;
- The public's contribution can influence the regulatory agency's decision;
- Their concerns will be considered in the decision-making process; and,
- The decision makers seek out and facilitate the involvement of those potentially affected.

⁷³ Charlotte Douglas International Airport, 2020, *CLT Fast Facts*. On-line: https://assets.ctfassets.net/jaw4bomip9l3/5F2nlKBcnrtqIGJqEMaU3X/b29e68b6a9d680ee215eef1ed4412ad0/Fast_Facts-Jan_2020.pdf, Accessed January 2020.

Regulatory Setting

Title VI of the Civil Rights Act of 1964 as amended, 42 U.S.C. §§ 2000d – 2000d-7, states that, “No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.” Title VI expressly prohibits any discrimination in federally funded programs and projects, including those sponsored by the FAA.

EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, requires all federal agencies to address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. USDOT Order 5610.2(a) defines a minority population as any readily identifiable group of minority persons living in geographic proximity to a proposed USDOT program, policy or activity including, if circumstances warrant, geographically dispersed or transient persons (such as migrant workers or Native Americans) who will be similarly affected by the proposed program, policy, or activity.

Requirements for meaningful public involvement by minority and low-income populations are addressed in Paragraph 2-5.2.b of FAA Order 1050.1F. As stated in the Order, the FAA must provide for meaningful public involvement by minority and low-income populations. In accordance with USDOT Order 5610.2(a), this public involvement must provide an opportunity for minority and low-income populations to provide input on the analysis, including demographic analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse. The public involvement process can also provide information on subsistence patterns of consumption of fish, vegetation, or wildlife. This information should be disclosed to potentially affected populations for proposed actions and alternative(s) that are likely to have a substantial effect and for CERCLA sites.

Affected Environment

The U.S. Census Bureau’s American Community Survey (ACS) 5-Year Estimates were used to identify environmental justice populations within the project’s GSA. The environmental justice populations include minority and/or low-income populations. Minority population refers to any readily identifiable group of minority persons (Black, Hispanic or Latino, Asian American, American Indian, Alaskan Native, Native Hawaiian, other Pacific Islander, or other non-White populations). Low-income is defined as a person whose median household income is at or below the Department of Health and Human Services poverty guidelines.

The AEDT Version 3b used the GSA to identify nine census block groups surrounding the Airport. The ACS 5-Year Estimates were used to identify the percent of minority populations (primarily of Hispanic or Latino population and American Indian populations) and percent of low-income populations within each census block group in 2019. **Table 3-15** identifies the percent low-income and percent minority for the census block groups and identifies the presence of an environmental justice population within the GSA. **Table 3-16** provides a breakdown of the minority groups within the census block groups in the GSA.

In order to establish environmental justice populations near the Airport, the percentage of low-income and minority populations for Mecklenburg County as a whole was used as a threshold. Meaning, the Mecklenburg County percent low-income and minority populations was used to determine whether the census block groups contained low-income and minority populations. As previously presented in Table 3-14, Mecklenburg County has a low-income population of 11.6 percent and minority composition of 53.2 percent. Out of the nine census block groups identified, seven have low-income and seven have minority environmental justice populations, as shown in **Exhibit 3-7** and **Exhibit 3-8**. Therefore, this analysis identified eight environmental justice populations located within the GSA.

TABLE 3-15, GENERAL STUDY AREA (GSA) DEMOGRAPHIC DATA BY CENSUS BLOCK GROUP

Map ID	Mecklenburg County Census Tract Block Group	Percent Of Population Living Below Poverty Level	Percent Minority Population	Environmental Justice Population?
1	Block Group 3, Census Tract 60.06	20.7%	83.7%	YES
2	Block Group 1, Census Tract 43.03	14.3%	77.8%	YES
3	Block Group 2, Census Tract 59.06	44.5%	72.3%	YES
4	Block Group 4, Census Tract 40	11.9%	83.0%	YES
5	Block Group 2, Census Tract 39.03	44.5%	91.1%	YES
6	Block Group 1, Census Tract 39.03	80.3%	99.2%	YES
7	Block Group 4, Census Tract 59.06	38.6%	30.9%	YES
8	Block Group 1, Census Tract 59.12	4.6%	44.8%	NO
9	Block Group 1, Census Tract 38.05	9.4%	70.0%	YES

Note: For 2019, the U.S. Census Bureau determined the poverty threshold to be an income of \$13,011 for an individual and \$26,172 for a family of four.

Source: Population and race/ethnicity data was obtained from the U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates. Landrum & Brown, June 2021.

3.3.10.3 Children's Environmental Health and Safety Risks

Regulatory Setting

Pursuant to EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, federal agencies are directed to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Environmental health risks and safety risks include risks to health or to safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products to which they might use or be exposed.

Affected Environment

Schools and day care centers are locations where the potential for a child to be exposed to environmental health risks is increased because a higher concentration of children are located in one place during the day. Currently the Steele Creek Presbyterian Child Development Center, Children's Academy at Lake Point are within the GSA. As stated in Section 3.3.9, *Noise and Noise-Compatible Land Use*, one public school, the East Voyager Academy of Charlotte, is located within the Existing (2016) Conditions Noise Exposure Contour DNL 65 dB.

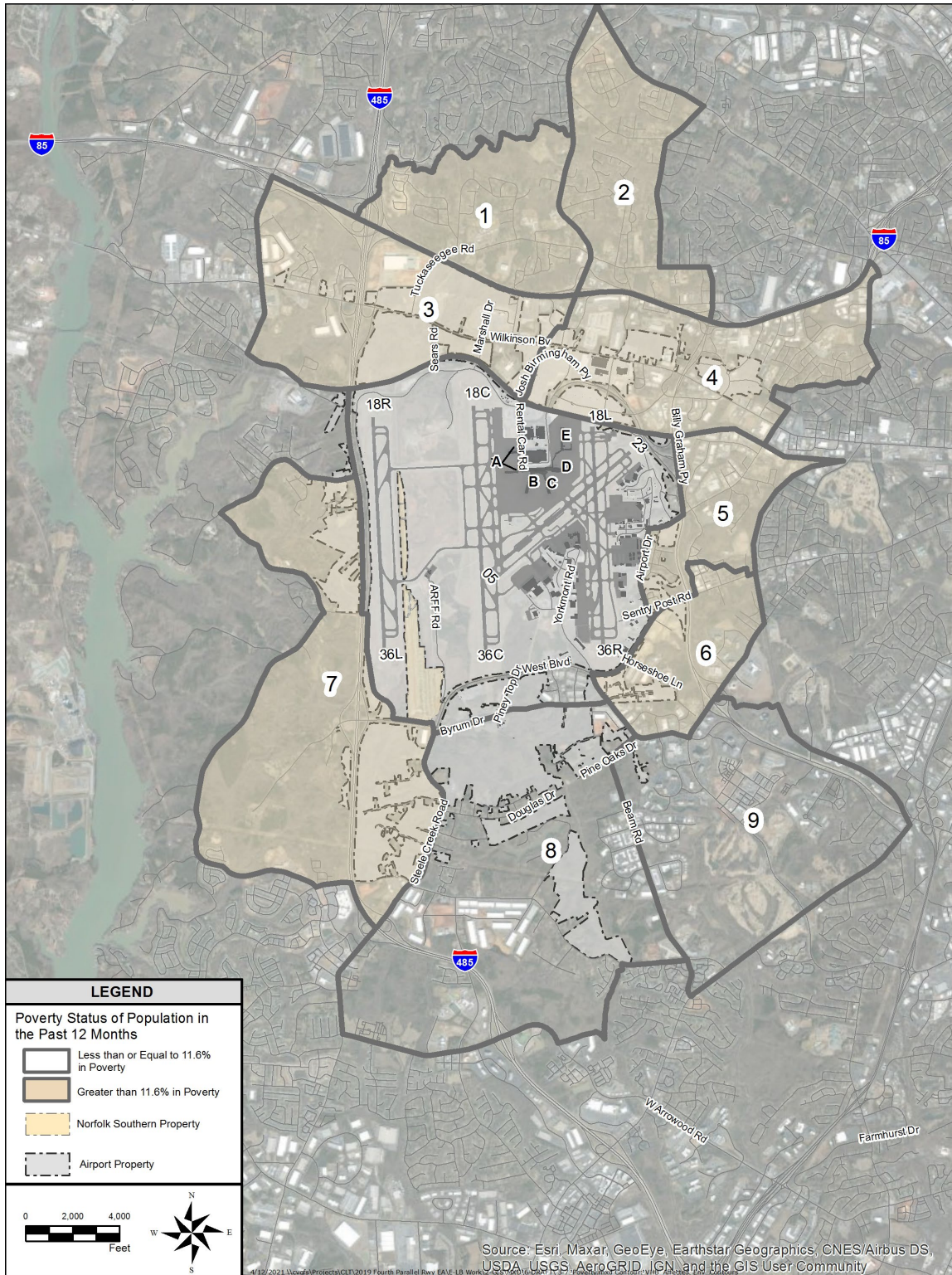
TABLE 3-16, GENERAL STUDY AREA (GSA) MINORITY GROUP IDENTIFICATION

Map ID	Census Block Group	Percent Not Hispanic						Percent Hispanic	Total Percent Minority
		Percent White	Percent Black / African American	Percent Native American/ Alaskan Native	Percent Asian	Percent Native Hawaiian Or Pacific Islander	Percent Other		
1	Block Group 3, Census Tract 60.06, Mecklenburg County, North Carolina	16.3%	14.9%	0.0%	53.4%	0.0%	0.9%	14.4%	83.7%
2	Block Group 1, Census Tract 43.03, Mecklenburg County, North Carolina	22.2%	52.7%	0.0%	6.3%	0.0%	1.5%	17.3%	77.8%
3	Block Group 2, Census Tract 59.06, Mecklenburg County, North Carolina	27.7%	0.0%	0.0%	8.5%	0.0%	3.2%	60.6%	72.3%
4	Block Group 4, Census Tract 40, Mecklenburg County, North Carolina	17.0%	66.2%	0.0%	0.0%	0.0%	6.5%	10.3%	83.0%
5	Block Group 2, Census Tract 39.03, Mecklenburg County, North Carolina	8.9%	70.6%	0.0%	9.4%	0.0%	0.0%	11.0%	91.1%
6	Block Group 1, Census Tract 39.03, Mecklenburg County, North Carolina	0.8%	94.6%	0.0%	2.2%	0.0%	0.0%	2.5%	99.2%
7	Block Group 4, Census Tract 59.06, Mecklenburg County, North Carolina	69.1%	0.0%	0.0%	0.0%	0.0%	8.5%	22.3%	30.9%
8	Block Group 4, Census Tract 40, Mecklenburg County, North Carolina	55.2%	34.1%	0.0%	7.6%	0.0%	1.1%	2.1%	44.8%
9	Block Group 1, Census Tract 38.05, Mecklenburg County, North Carolina	30.0%	15.4%	0.1%	35.5%	0.0%	2.0%	17.0%	70.0%

Note: Total Percent Minority may not equal the sum of the individual minority group due to rounding.

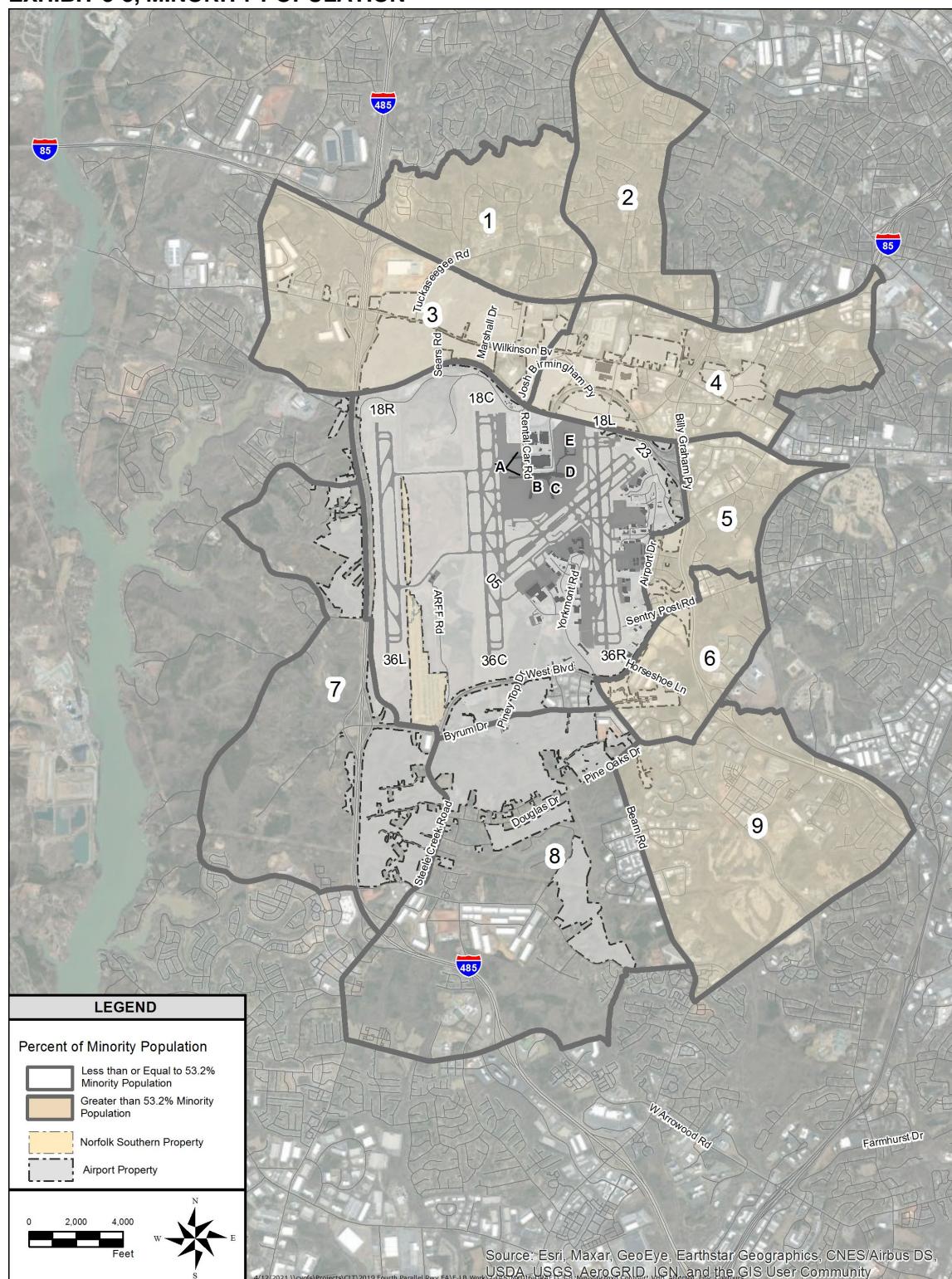
Source: Population and race/ethnicity data was obtained from the U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates. Landrum & Brown, June 2021.

EXHIBIT 3-7, LOW-INCOME POPULATION



Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates. Landrum & Brown, 2021.

EXHIBIT 3-8, MINORITY POPULATION



Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates. Landrum & Brown, 2021.



3.3.11 Visual Effects (including light emissions)

3.3.11.1 Regulatory Setting

FAA Order 1050.1F states that the Visual Effects environmental impacts category deals with the extent to which the proposed action would have the potential to either 1) produce light emissions that create annoyance or interfere with normal activities; or 2) affect the nature of the visual resources or visual character of the area, including the importance, uniqueness and aesthetic value of the affected visual resources, including by contrasting with, or detracting from, the visual resources and/or the visual character of the existing environment or blocking or obstructing the views of visual resources, including whether those resources would still be viewable from other locations.⁷⁴ Although there are no special-purpose laws or requirements for visual effects or light emissions, the analysis for proposed projects must consider other special-purpose laws and requirements that may be relevant. Regulations that may provide protection to visual resources include Section 106 of the NHPA for impacts to historic and cultural resources, Section 4(f) of the USDOT Act for impacts to parks, wildlife and waterfowl refuges, the Endangered Species Act for impacts to light-sensitive species, and applicable state and local regulations, policies, and zoning.

3.3.11.2 Affected Environment

Light Emissions

According to the FAA Order 1050.1F Desk Reference, light emissions “include any light that emanates from a light source into the surrounding environment. Examples of sources of light emissions include airfield and apron flood lighting, navigational aids, terminal lighting, parking facility lighting, roadway lighting, safety lighting on launch pads, additional lighting to support nighttime commercial space launches, and light generated from such launches.”

CLT is currently illuminated by various types of lighting on the airfield and landside facilities. Lighting that emanates from the airfield includes runway, apron, and navigational lighting such as, hold position lights, stop-bar lights, and runway and taxiway signage. Airfield lighting is located along taxiways and ramps for guidance during periods of low visibility, and to assist aircraft movement on the airfield. Aircraft lighting, such as landing lights, position and navigation lights, beacon lights, and vehicle lighting are other types of light sources on the airfield. Lights for landside facilities include buildings, roadways, and parking facilities. CLT is located in an urbanized area which is comprised of other development that is also lighted and contributes to the overall light emissions in the area. Residential neighborhoods, which are generally considered sensitive to light emissions, are located north and south of the airport. Because much of the GSA outside of the Airport property has varied topography and is heavily vegetated, most potentially light-sensitive resources do not currently have a direct line of sight to runways, taxiways, terminals, or other airport facilities.

Visual Resources/Visual Character

According to the FAA Order 1050.1F Desk Reference, visual resources include “buildings, sites, traditional cultural properties, and other natural or manmade landscape features that are visually important or have unique characteristics” and “visual characters refers to the overall visual makeup of the existing environment where the proposed action and alternative(s) would be located.”

⁷⁴ FAA, 2015, Order 1050.1F, *Environmental Impacts: Policies and Procedures*, Exhibit 4-1, page 4-10.

The majority of the DSA is located on Airport property in a predominantly commercial and industrial area. The land use adjacent to the DSA to the north of the Airport primarily consists of commercial and manufacturing/production uses. Land use to the south is largely commercial, manufacturing/production, and public uses. The visual character of the commercial and manufacturing/production land consists mainly of large concrete buildings with large parking areas that are set back from the roadway. The visual character is typical for these land uses in the Charlotte area. A portion of the DSA on Airport has been cleared and graded, making it visually distinct from the rest of the surrounding areas. Such areas include the airfield where large paved runways and taxiways are the primary visual feature, with the terminal buildings appearing distant from most off-airport vantage points.

3.3.12 Water Resources (including wetlands, floodplains, surface waters, and groundwater)

3.3.12.1 Regulatory Setting

Water resources are surface waters and groundwater that are vital to society; they are important in providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. Surface water, groundwater, floodplains, and wetlands do not function as separate and isolated components of the watershed, but rather as a single, integrated natural system.

Federal Clean Water Act: The 1972 Federal Water Pollution Control Act, 33 U.S.C. § 1251 et seq., also known as the Clean Water Act (CWA), is intended to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The CWA establishes the basic structure for regulating the discharge of pollutants into waters of the U.S., including jurisdictional surface waters, through Section 404 permit and Section 401 certification processes as well as the Section 402 permit process. Section 401 of the CWA (33 U.S.C. § 1341) requires any federal license or permit applicant to obtain a water quality certification if any proposed project activity may result in a discharge of pollutants into waters of the United States. This certification assures that the discharge would comply with the applicable effluent limitations and water quality standards. Section 301 of the CWA (33 U.S.C. § 1311) prohibits discharges to waters of the United States except with a permit. Section 402 establishes a framework for regulating stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) to ensure water quality standards are attained. All discharges require a permit through the NPDES.

Safe Drinking Water Act (SDWA): The SDWA, 42 U.S.C. §§ 300(f) – 300j-26, was established to protect the health of the public by ensuring that a safe drinking water supply exists. The Sole Source Aquifer Program, authorized by Section 1424(e) of the SDWA, requires the USEPA to review any federally financially-assisted projects that have the potential to contaminate a sole source aquifer or its recharge area.

Fish and Wildlife Coordination Act of 1980: If a proposed action would impound, divert, drain, control, or otherwise modify the waters of any stream or other body of water, the Fish and Wildlife Coordination Act (FWCA), 16 U.S.C. §§ 661 – 667d, is applicable, unless the project is for the impoundment of water covering an area of less than ten acres. The FWCA requires the FAA to consult with the USFWS and the applicable state agency to identify means to prevent loss or damage to wildlife resources resulting from a proposed action.

EO 11990, *Protection of Wetlands* and USDOT Order 5660.1A, *Preservation of the Nation's*

Wetlands: EO 11990 states federal actions must "... avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." EO 11990 states that agencies shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands. Agencies are also responsible for preserving and enhancing the natural and beneficial values of wetlands. USDOT has implemented EO 11990 through policies and procedures documented in USDOT Order 5660.1A, *Preservation of the Nation's Wetlands*. USDOT Order 5660.1A requires that transportation facilities and projects should be planned, constructed, and operated to assure the protection, preservation, and enhancement of the nation's wetlands to the fullest extent practicable, and establishes procedures for implementation of the policy.

EO 11988, *Floodplain Management* and USDOT Order 5650.2, *Floodplain Management and*

Protection: EO 11988 directs federal agencies to take actions to reduce the risk of flood loss, minimize flood impacts on human safety, health and welfare, and restore and preserve floodplain natural and beneficial values. To do this, the Order bans approving activities in a floodplain unless (1) No practicable alternative exists; and (2) Measures to minimize adverse impacts to the floodplain's natural and beneficial values are included. USDOT Order 5650.2 contains policies and procedures for carrying out EO 11988. Based on USDOT Order 5650.2, if an action includes development within a floodplain, the analysis shall indicate if the encroachment would be a "significant encroachment," that is, whether it would cause one or more of the following impacts (1) have a considerable probability of loss of human life; (2) likely have substantial encroachment- associated costs or extent, including interrupting aircraft service or loss of a vital transportation facility (e.g., flooding of a runway/taxiway; important navigational aid out of service); or (3) cause notable adverse impacts on natural and beneficial floodplain values. Moreover, the National Flood Insurance Act requires any community participating in the National Flood Insurance Program, a voluntary floodplain management program, follow the community's Federal Emergency Management Agency (FEMA) approved floodplain management regulations.

3.3.12.2 *Affected Environment*

Wetlands

Linear footage of streams within the DSA consists of 20,535 linear feet of streams and 8.2 acres of wetlands, as shown in **Table 3-17**. The wetlands and streams are shown on **Exhibit 3-9**. See **Appendix K, *Water Resources***, for more information.

TABLE 3-17, WETLAND AND STREAMS WITHIN THE DETAILED STUDY AREA (DSA)

	Linear Feet	Acreage
Streams		
Intermittent	1,563	N/A
Perennial	14,353	N/A
Culverted	4,620	N/A
Total	20,535	N/A
Wetlands		
Total	N/A	8.2

Source: Mitigation Assessment for Proposed Impacts, CLT Airport Expansion (SAW-2018-01071), prepared by HDR, January 27, 2020, revised May 1, 2020.

Floodplains

Floodplains are defined as the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one-percent or greater chance of flooding in any given year (i.e., 100-year floodplain). Floodplains within the DSA are depicted on the FEMA Flood Insurance Rate Map Panels 3710451400K, 3710452400K, 3710451300K, and 3710452300K (effective September 2, 2015) as reproduced in Exhibit 3-9. As shown in this exhibit, the DSA is located in an area that is designated as a 100-year floodplain.

Surface Waters

The Airport lies within the Catawba River Drainage Basin. Surface drainage flows from the Airport by numerous conveyances, such as ditches, creeks, and streams, and eventually enters the Catawba River or one of its impoundments. Most of the existing Airport drains southeast into Taggart Creek and south into Coffey Creek. Ticer Branch drains the northwest corner, Little Paw Creek drains the west side, and Beaverdam Creek drains the southwest corner of the Airport. The primary source of drinking water in Mecklenburg County is the Catawba River. Water is pumped from the river either at Mountain Island Lake or Lake Norman intakes, to one of three treatment plants where the water is cleaned, tested, and pumped into the distribution system. The Catawba River is located to the west of CLT and several tributaries flow from CLT property into the Catawba River.

CLT property is situated within two watersheds as denoted by the 8-digit hydrologic unit codes (HUC) 03050101 (Upper Catawba) and 03050103 (Lower Catawba). The boundary between the two watersheds runs roughly northeast to southwest through CLT property between Runway 18C/36C and Runway 18R/36L. The HUC 03050101, which is located on the western side of CLT property, is designated by Mecklenburg County as a drinking water protection watershed. The nearest municipal water supply intake on the Catawba River is approximately 32 miles downstream from the DSA. In North Carolina, stormwater discharges are regulated by the NPDES as administered by the North Carolina Division of Water Resources. CLT currently holds an individual NPDES Permit (NC0083887) for industrial/commercial activity.

Groundwater

Approximately 15 percent of the water supply in Mecklenburg County comes from groundwater. Groundwater is obtained via wells that extract water from aquifers for drinking, irrigation, water quality monitoring, and industrial uses. Based upon a review of USEPA's interactive map of Sole Source Aquifers,⁷⁵ no USEPA-designated sole source aquifers are located within the DSA or within the State of North Carolina. However, a number of potable water wells are located within the area. Based on a review of the Mecklenburg County Groundwater and Wastewater Services (GWS) Well Information System website, there are currently four active private wells located within the DSA as shown in Exhibit 3-9.^{76,77} No wells located within the DSA are used to supply drinking water.

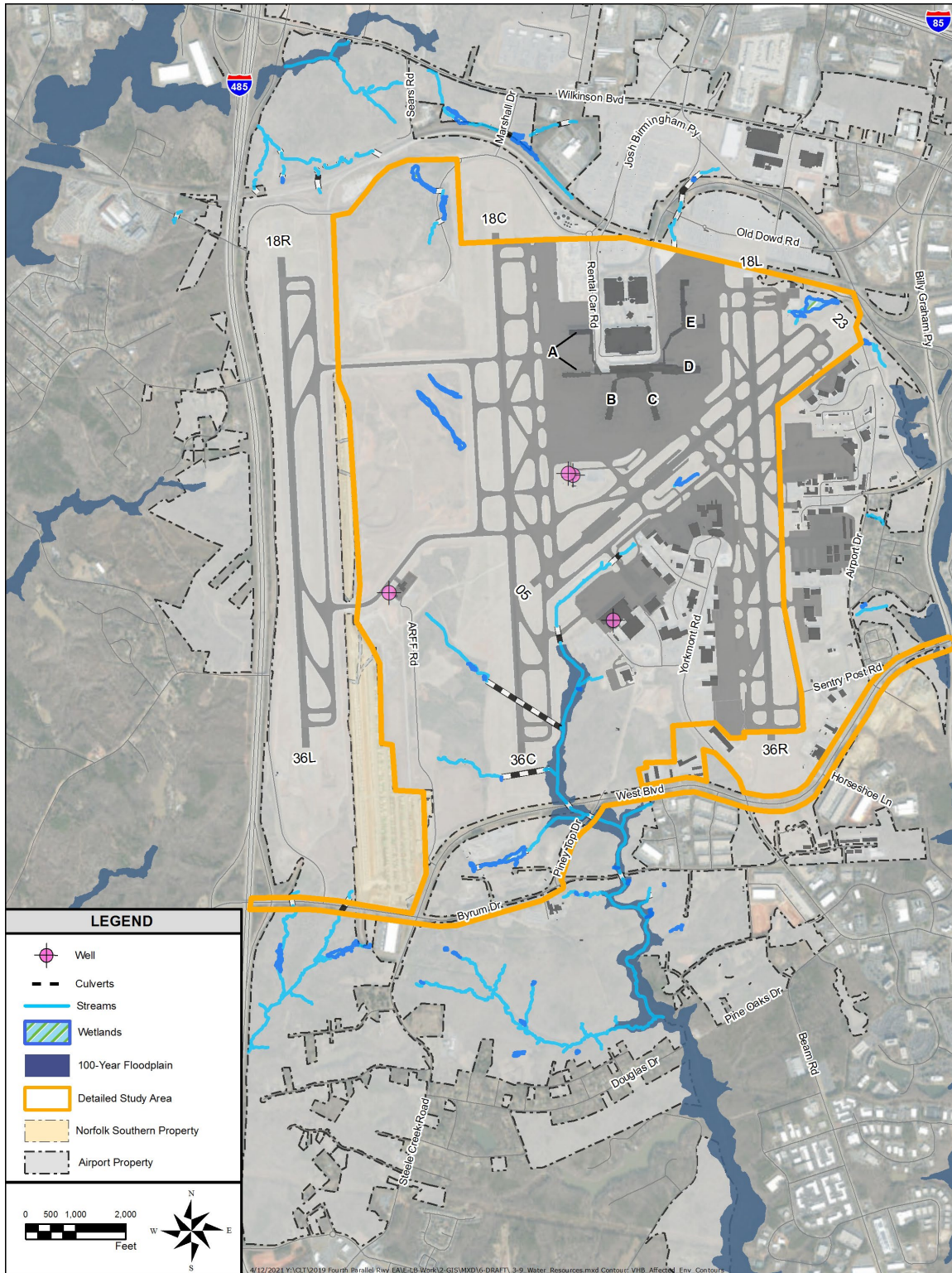
⁷⁵ USEPA, Interactive Map of Sole Source Aquifers. On-line: <https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b>, Accessed January 25, 2021.

⁷⁶ Mecklenburg County GWS Well Information System 3.0, Mecklenburg County GWS. Available on-line: <https://edmsmapserver.mecklenburgcountync.gov/wis4/>, Accessed January 25, 2021

⁷⁷ According to the Mecklenburg County GWS Well Information System 3.0, one well is designated for irrigation, one well is designated for water quality monitoring, and two wells are designated for "other private" use



EXHIBIT 3-9, WATER RESOURCES



Source: Landrum & Brown, 2020