

APPENDIX D

Biological Resources



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Asheville Field Office
160 Zillicoa Street Suite #B
Asheville, North Carolina 28801



April 4, 2018

Ms. Kristi Ashley
FAA Environmental Specialist
Memphis Airports District Office
2600 Thousand Oaks Blvd., Ste. 2250
Memphis, TN 38118

Dear Ms. Ashley:

Subject: ER 18/144, Proposed Capacity Enhancements and Other Improvements at Charlotte Douglas International Airport, Charlotte, Mecklenburg County, North Carolina

We received (via email) the Notice of Intent for the subject project on March 22, 2018. The following comments are provided in accordance with the provisions of the National Environmental Policy Act (42 U.S.C. § 4321 et seq.) and section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

Because the project area provides little natural habitat, we have no major concerns with the project. However, the increase in impervious surfaces will contribute to the quantity and quality of storm water entering project area waterways. Recent studies ¹have shown that areas of 10- to 20-percent impervious surface (such as roofs, roads, and parking lots) double the amount of storm-water runoff compared to natural cover and decrease deep infiltration (groundwater recharge) by 16 percent. At 35- to 50-percent impervious surface, runoff triples, and deep infiltration is decreased by 40 percent. Above 75-percent impervious surface, runoff is 5.5 times higher than natural cover, and deep infiltration is decreased by 80 percent. Additionally, the adequate treatment of storm water in development areas is essential for the protection of water quality and aquatic habitat in developing landscapes. Additionally, these impervious surfaces collect pathogens, metals, sediment, and chemical pollutants and quickly transmit them (via storm-water runoff) to receiving waters. According to the Environmental Protection Agency, this nonpoint-source pollution is one of the major threats to water quality in the United States, posing one of the greatest threats to aquatic life, and is also linked to chronic and acute illnesses in human populations from exposure through drinking water and contact recreation.

Increased storm-water runoff also directly damages aquatic and riparian habitat, causing stream-bank and stream-channel scouring. In addition, impervious surfaces reduce groundwater

recharge, resulting in even lower than expected stream flows during drought periods, which can induce potentially catastrophic effects for fish, mussels, and other aquatic life. Accordingly, we recommend that all new developments, regardless of the percentage of impervious surface area they will create, implement storm-water-retention and -treatment measures designed to replicate and maintain the hydrograph at the preconstruction condition in order to avoid any additional impacts to habitat quality within the watershed.

We recommend the use of low-impact-development techniques², such as reduced road widths, grassed swales in place of curb and gutter, rain gardens, and wetland retention areas, for retaining and treating storm-water runoff rather than the more traditional measures, such as large retention ponds, etc. These designs often cost less to install and significantly reduce environmental impacts from residential development.

Where detention ponds are used, storm-water outlets should drain through a vegetated area prior to reaching any natural stream or wetland area. Detention structures should be designed to allow for the slow discharge of storm water, attenuating the potential adverse effects of storm-water surges; thermal spikes; and sediment, nutrient, and chemical discharges. Also, because the purpose of storm-water-control measures is to protect streams and wetlands, no storm-water-control measures or best management practices should be installed within any stream (perennial or intermittent) or wetland.

We also recommend that consideration be given to the use of pervious materials (i.e., pervious concrete, interlocking/open paving blocks, etc.) for the construction of roads, driveways, sidewalks, etc. Pervious surfaces minimize changes to the hydrology of the watershed and can be used to facilitate groundwater recharge. Pervious materials are also less likely to absorb and store heat and allow the cooler soil below to cool the pavement. Additionally, pervious concrete requires less maintenance and is less susceptible to freeze/thaw cracking due to large voids within the concrete.

According to our records and a review of the information you provided, no federally listed species or their habitats occur in the project area. Therefore, we believe the requirements under section 7 of the Act are fulfilled. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

We appreciate the opportunity to provide these comments. If we can be of assistance or if you have any questions, please contact Mr. Allen Ratzlaff of our staff at 828/258-3939, Ext. 229. In any future correspondence concerning this project, please reference our Log Number 4-2-18-204.

E-Copy:

Olivia Munzer, North Carolina Wildlife Resources Commission, olivia.munzer@ncwildlife.org

¹ Federal Interagency Stream Restoration Working Group (15 federal agencies of the United States Government). Published October 1998, Revised August 2001. Stream Corridor Restoration: Principles, Processes, and Practices. GPO Item No. 0120-A; SuDocs No. A 57.6/2:EN 3/PT.653. ISBN-0-934213-59-3.

² We recommend visiting the Environmental Protection Agency's Web site (<http://www.epa.gov/polluted-runoff-nonpoint-source-pollution/urban-runoff-low-impact-development>) for additional information and fact sheets regarding the implementation of low-impact-development techniques.



November 20, 2019

Mr. Byron Hamstead
U.S. Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa Street
Asheville, NC 28801

**Subject: Threatened and Endangered Species Assessment
 Charlotte Douglas International Airport
 Mecklenburg County, North Carolina**

Dear Mr. Hamstead,

This letter presents the findings of a threatened and endangered species assessment in support of a Section 404 Individual Permit (IP) application for the Charlotte Douglas International Airport (CLT or Airport) in Charlotte, Mecklenburg County, North Carolina (Figure 1). The assessment includes 4,652 acres encompassing the CLT IP Boundary (Project Site) (Figure 2).

The US Army Corps of Engineers (USACE) requested that CLT submit an airport-wide Clean Water Act (CWA) Section 404 Individual Permit (IP) application to include future projects through 2033 that will incur impacts to Waters of the US. This IP will take a phased approach, providing design and details on the most imminent projects, while providing only high-level planning details for future projects yet to be designed. The US Fish and Wildlife Service (USFWS or Service) was invited to attend a participating agency, pre-application meeting held on July 31, 2019 at CLT for the opportunity to comment on the phased IP approach to airport-wide development.

The USACE phased IP includes an airport-wide, National Environmental Policy Act (NEPA) analysis pursuant to the Section 404(B)(1) guidelines of the Clean Water Act (40 CFR, Section 230); however, each individual airport project will also undergo a NEPA analysis in accordance with Federal Aviation Administration (FAA) Orders 1050.1F, *Environmental Impacts: Policies and Procedures* and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. Prior to any airport project construction, either a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) must be issued by the FAA, regardless of USACE IP approval.

Both USACE and FAA NEPA analyses require an evaluation of threatened and endangered species under Section 7 of the Endangered Species Act (ESA) and this letter is intended to request a determination from the Service for the airport-wide IP process, but also notify the Service that Section 7 consultation will occur under the FAA NEPA process per specific project as well.

Table 1 lists all of the proposed projects and their respected phase, including those that would not incur impacts to Waters of the US (Figure 6) (Table 1). The first two projects to be permitted in the Phased IP are the North End Around Taxiway (NEAT) and South Crossfield Taxiway and Deicing Facility (SCF) (Figures 3 – 5).



Table 1. Summary of CLT projects and phasing

Proposed CLT Projects	Impacts to Waters of the US	Phase
Long Term 1 Parking Lot expansion	No	On Hold
Addition of a Centralized Receiving and Distribution Center (CRDC)	No	1
West Ramp and Concourse A Expansion	No	1
Joint Operations Center (JOC)	No	1
Amazon and FedEx airport facilities expansion	No	1
Addition of the General Aviation Group hangar	No	1
Charter Terminal Expansion	No	1
South Crossfield Taxiway Project for Existing Runway 18C/36C	Yes	1
Includes: South Crossfield Taxiway Taxiway F Extension Deice Pad Coffey Creek Stormwater Detention		
North End Around Taxiway Project for Existing Runway 18C/36C	Yes	1
Includes: NEAT Old Dowd Rd. Relocation Utility Relocation and New Utility Installation Airport Overlook Relocation Hold Pads Private Access Drive Ticer Branch Stormwater Detention		
South Ramp Expansion – requires decommissioning of crosswind Runway 05/23	Yes	2
10,000-foot 4 th Parallel Runway and associated Taxiway Enhancement	Yes	2
Includes: South End Around Taxiway for Existing Runway 18C/36C Hold Pad		
Concourse C Expansion	No	3
Concourse B Expansion	No	4
Daily North Parking Expansion	No	4
Satellite Terminal	No	5

HDR’s approach to this study involved conducting a desktop review of publically available data as well as an on-site investigation to evaluate potential habitat for federally protected species. The following sections provide a summary of HDR’s methods and findings of the desktop review and on-site field reconnaissance. Attached to this letter are supporting figures and agency reports.

Description of Study Area

The Project Site is bounded on the north by Wilkinson Boulevard, east by various streets which border the CLT property, south by City of Charlotte and CLT property lines, and on the western side by Wallace Neel Road, in Charlotte, Mecklenburg County, North Carolina (Figure 2). The land use consists of an existing airport with approximately 59% of impervious and cleared land, and



shrub/scrub land (7%). The remaining areas (34%) are forested land, consisting of mixed medium aged hardwoods and pine (21%) surrounded by urban land use containing of commercial, roadway, and utility clearings (13%).

Desktop Review

A desktop review of protected species likely to occur on or in the vicinity of the Project Site was conducted. Species addressed include those listed under the Endangered Species Act or critical habitat designated under the Endangered Species Act.

HDR reviewed a list of federally protected species for Mecklenburg County from the USFWS website, which was last updated on June 27, 2018 (Appendix B). The USFWS Information for Planning and Consultation (IPaC) database was also reviewed, which summarizes species and trust resources under the USFWS's jurisdiction that are known or expected to be on or near the Project Site (Appendix B). Additionally, species that are federally protected under the Bald and Golden Eagle Protection Act (BGEPA) were included in this review. A summary of species listed on these publically available datasets is provided in Table 2.

Table 2. Federally protected species listed for Mecklenburg County

Common Name	Scientific Name	Federal Status ¹	Record Status ²	Habitat Description	Habitat Present (Y/N)
Vertebrates					
Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA	Current	Nests at tops of large, mature trees near large rivers, lakes, and marshes containing small animals, fish, and carrion.	No
Northern long-eared bat	<i>Myotis septentrionalis</i>	T	Probable/Potential	Hibernates in caves and mines during winter; roosts under bark, in cavities or crevices in trees and snags during summer	No - hibernacula ; Yes - roosting trees
Invertebrates					
Carolina heelsplitter	<i>Lasmigona decorata</i>	E	Current	Cool, clean, well-oxygenated water with stable, silt-free stream bottoms	No
Rusty-patched bumble bee	<i>Bombus affinis</i>	E	Historic	Historic	
Vascular Plants					
Michaux's sumac	<i>Rhus michauxii</i>	E	Current	Sandy or rocky, open, upland woods on acidic or circumneutral, well-drained sandy or loamy soils; sandy or submesic loamy swales and depressions in the Sandhills region; disturbed areas such as maintained roadsides and utility rights-of-way.	No
Schweinitz's sunflower	<i>Helianthus schweinitzii</i>	E	Current	Areas with poor soils in forest openings, grasslands, or disturbed areas such as roadsides and utility rights-of-way.	Yes



Common Name	Scientific Name	Federal Status ¹	Record Status ²	Habitat Description	Habitat Present (Y/N)
Smooth coneflower	<i>Echinacea laevigata</i>	E	Current	Open woods, glades, xeric hardpan forests, diabase glades in abundant sunlight and little competition in the herbaceous layer.	No

¹ BGEPA = Bald and Golden Eagle Protection Act. Federally protected under the Bald and Golden Eagle Protection Act. T = Threatened. A taxon “likely to become endangered within the foreseeable future throughout all or a significant portion of its range.”

E = Endangered. A taxon “in danger of extinction throughout all or a significant portion of its range.”

² Current = The species has been observed in the county within the last 50 years.

Probable/Potential = The species is considered likely to occur in this county based on the proximity of known records (in adjacent counties), the presence of potentially suitable habitat, or both.

Historic = The species was last observed in the county more than 50 years ago.

HDR queried the North Carolina Natural Heritage Program (NCNHP) Data Explorer database for protected species Element Occurrence distribution and proximity to the Project Site. The NCNHP Project Report (NCNHDE-10368, attached) indicates that there have been no known occurrences of federally protected species or critical habitat documented within the Project Site; however, three occurrences of Carolina heelsplitter (*Lasmigona decorata*) were last documented prior to 1918 within a one-mile radius of the Project Site.

Field Reconnaissance Results

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

No federally threatened and endangered species were observed. Potentially suitable habitat for the northern long-eared bat (NLEB), Schweinitz’s sunflower, and Michaux’s sumac were observed. Summer roosting habitat for NLEB includes trees with cavities, hollows, cracks, or loose bark. Potentially suitable habitat for the Schweinitz’s sunflower includes utility easements, early successional areas, and along roadsides and maintained forested edges for Michaux’s sumac. A reference population of Schweinitz’s sunflower was observed on September 9th and confirmed to be in flower prior to the October surveys.

Vertebrates

Bald eagle (*Haliaeetus leucocephalus*)

USFWS Recommended Survey Window: October 1 – May 15

Habitat Description: Bald eagles occur throughout much of the continental U.S. and Canada. The species frequently builds their nests in live pines or cypress trees near large bodies of open water and may congregate around fish processing plants, dumps, and below dams where fish congregate. Nests typically measure 6 to 8 feet deep and 6 feet in diameter, and are cone shaped. Bald eagles are opportunistic feeders and consume a variety of prey, which may be self-caught, scavenged, or robbed from other bird species. The threat to this species is attributed to disturbance



and destruction of foraging and nesting habitat by urban and residential development (USFWS 1978).

No habitat or individuals of bald eagles were observed; therefore, no impacts to this species are anticipated.

Northern long-eared bat (*Myotis septentrionalis*)

USFWS Recommended Survey Window: May 15 – August 15 (summer); January 15 – February 15 (winter)

Habitat Description: The northern long-eared bat is found across much of the eastern and north-central U.S. and all Canadian provinces from the Atlantic coast to the southern Northwest Territories and eastern British Columbia. The species' range includes 37 states. White-nose syndrome, a fungal disease known to affect bats, is currently the predominant threat to this species. Northern long-eared bats have two distinct seasonal habitats. Winter habitats include caves and mines, whereas summer habitats consist of roosting singly or in colonies underneath bark, in cavities, or crevices of both live and dead trees. On rare occurrences this bat has also been found roosting in man-made structures such as barns or sheds. Northern long-eared bats emerge at dusk to fly through the understory of forested hillsides and ridges feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch while in flight using echolocation. The bat also feeds by gleaning motionless insects from vegetation and water surfaces (USFWS 2015).

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 Site 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 USACE, Wilmington District, and the Asheville and Raleigh U.S. Fish and Wildlife Service (Service) Offices. It was determined that the project is located outside of the highlighted areas/red 12-digit HUCs 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. As established in the NLEB SLOPES, this project does not require prohibited intentional take of the NLEB and it meets the criteria for the 4(d) rule.

Additionally, according to the NCNHP Data Explorer report, no known occurrences including hibernacula and/or maternity roost trees have been documented within or within close proximity to the Site.

Invertebrates

Carolina heelsplitter (*Lasmigona decorata*)

USFWS Recommended Survey Window: Year-round; March 1 – September (optimal)

Habitat Description: The Carolina heelsplitter requires cool, clean, well-oxygenated water. It prefers stable, silt-free stream bottoms and generally occurs where the stream banks are well-vegetated with trees and shrubs. Historically, the Carolina heelsplitter was found in several locations in North and South Carolina. Currently, the only known populations for the Carolina heelsplitter in



Mecklenburg County occur in the Goose Creek and Duck Creek watersheds within the Yadkin Pee-Dee River Basin and the Sixmile Creek watershed within the Catawba River Basin (USFWS 2011).

The proposed project is located within the Catawba River Basin; however, the on-site streams are moderately degraded and exhibit erosion, incision, and high sediment levels which are limiting habitat factors for this species. No suitable habitat for Carolina heelsplitter is present within the Project Site. Additionally, according to the NCNHP Project Report, there have been no confirmed instances of the Carolina heelsplitter within a mile of the Project Site since prior to 1918. Therefore, no impacts to this species are anticipated.

Rusty-patched bumble bee (*Bombus affinis*)

USFWS Recommended Survey Window: April – September

Habitat Description: The rusty-patched bumble bee once occupied grasslands and tall grass prairies across the eastern, upper Midwest, and northeastern regions of the U.S.; however, most of this species' habitat has been lost, degraded, or fragmented by anthropogenic uses. This species requires an abundant diversity of blooming flowers for nectar and pollen collection. In addition, nesting colonies require underground cavities such as abandoned rodent nests and overwintering sites consisting of undisturbed soils for hibernating queen bees (USFWS 2016).

There are no prairie-like habitats present in the Project Site 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 Project Site 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. Therefore, no impacts to this species are anticipated.

Vascular Plants

Michaux's sumac (*Rhus michauxii*)

USFWS Optimal Survey Window: May – October

Habitat Description: Michaux's sumac is endemic to the inner Coastal Plain and lower Piedmont regions, and grows in sandy or rocky, open, upland woods on acidic or circumneutral, well-drained sands or sandy loam soils with low cation exchange capacities. The species is also found on sandy or submesic loamy swales and depressions in the Sandhills region as well as in openings along the rim of Carolina bays; maintained railroad, roadside, power line, and utility rights-of-way; areas where forest canopies have been opened up by blow downs and/or storm damage; small wildlife food plots; abandoned building sites; under sparse to moderately dense pine or pine/hardwood canopies; and in and along edges of other artificially maintained clearings undergoing natural succession. In the central Piedmont, it occurs on clayey soils derived from mafic rocks. The plant is shade intolerant and, therefore, grows best where disturbance (e.g., mowing, clearing, grazing, and periodic fire) maintains its open habitat (USFWS 1989).



The Project Site 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 Project Site during the surveys; therefore, no impacts to this species are anticipated.

Schweinitz's sunflower (*Helianthus schweinitzii*)

USFWS Optimal Survey Window: late August – October

Habitat Description: Schweinitz's sunflower is endemic to the Piedmont of North and South Carolina. The few sites where this rhizomatous perennial herb occurs in relatively natural vegetation are in xeric hardpan forests. The species is also found along roadside rights-of-way, maintained power lines and other utility rights-of-way, edges of thickets and old pastures, clearings and edges of upland oak-pine-hickory woods, Piedmont longleaf pine forests, and other sunny or semi-sunny habitats where disturbances (e.g., mowing, clearing, grazing, blow downs, storms, frequent fire) help create open or partially open areas for sunlight. The species is intolerant of full shade and excessive competition from other vegetation. Schweinitz's sunflower occurs in a variety of soil series, including Badin, Cecil, Cid, Enon, Gaston, Georgeville, Iredell, Mecklenburg, Misenheimer, Secrest, Tatum, Uwharrie, and Zion, among others. It generally grows in shallow sandy soils with high gravel content, shallow, poor, clayey hardpans, or shallow rocky soils, especially those derived from mafic rocks (USFWS 1991).

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. Surveys for Schweinitz's sunflower were conducted during the survey window and no individuals were observed. Therefore, no impacts to this species are anticipated.

Smooth coneflower (*Echinacea laevigata*)

USFWS Optimal Survey Window: Late May – October

Habitat Description: Smooth coneflower, a perennial herb, is typically found in meadows, open woodlands, the ecotonal regions between meadows and woodlands, cedar barrens, dry limestone bluffs, clear cuts, and roadside and utility rights-of-way. In North Carolina, the species normally grows in magnesium- and calcium- rich soils associated with gabbro and diabase parent material, and typically occurs in Iredell, Misenheimer, and Picture soil series. It grows best where there is abundant sunlight, little competition in the herbaceous layer, and periodic disturbances (e.g., regular fire regime, well-timed mowing, clearing) that prevent encroachment of shade-producing woody shrubs and trees. In locations where woody succession is held in check, it is characterized by a number of species with prairie affinities (USFWS 1995).

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 present on the Site. No suitable habitat for smooth coneflower was observed; therefore, no impacts to this species are anticipated.



Effect Determination

Based on the desktop review and the field surveys HDR has concluded that the project will have no effect on the bald eagle, Carolina heelsplitter, Michaux's sumac, Schweinitz's sunflower, or smooth coneflower. The project may affect, but is not likely to adversely affect the northern long-eared bat, but meets the criteria for the 4(d) rule and any associated take is exempted/excepted.

Many areas of the Project Site have been previously reviewed under Section 7 of the ESA in accordance with previous USACE permit actions (Figure 7) and determined there would be no effect on listed species. Moreover, Section 7 consultation is required to be conducted during the FAA NEPA process for each project as well.

We ask that you review the project area based on the attached information to determine if there will be any adverse impacts to federally protected species. If you have any questions or require additional information, please contact me at 704-338-6710 or Kelly.Thames@hdrinc.com.

Sincerely,

HDR Inc.

A handwritten signature in cursive script that reads "Kelly Thames".

Kelly Thames, PWS
Project Manager/Environmental Scientist

Appendix: Appendix A – Figures
 Appendix B – Agency Reports
 Appendix C – Photopage

cc: Amber Leathers, CLT



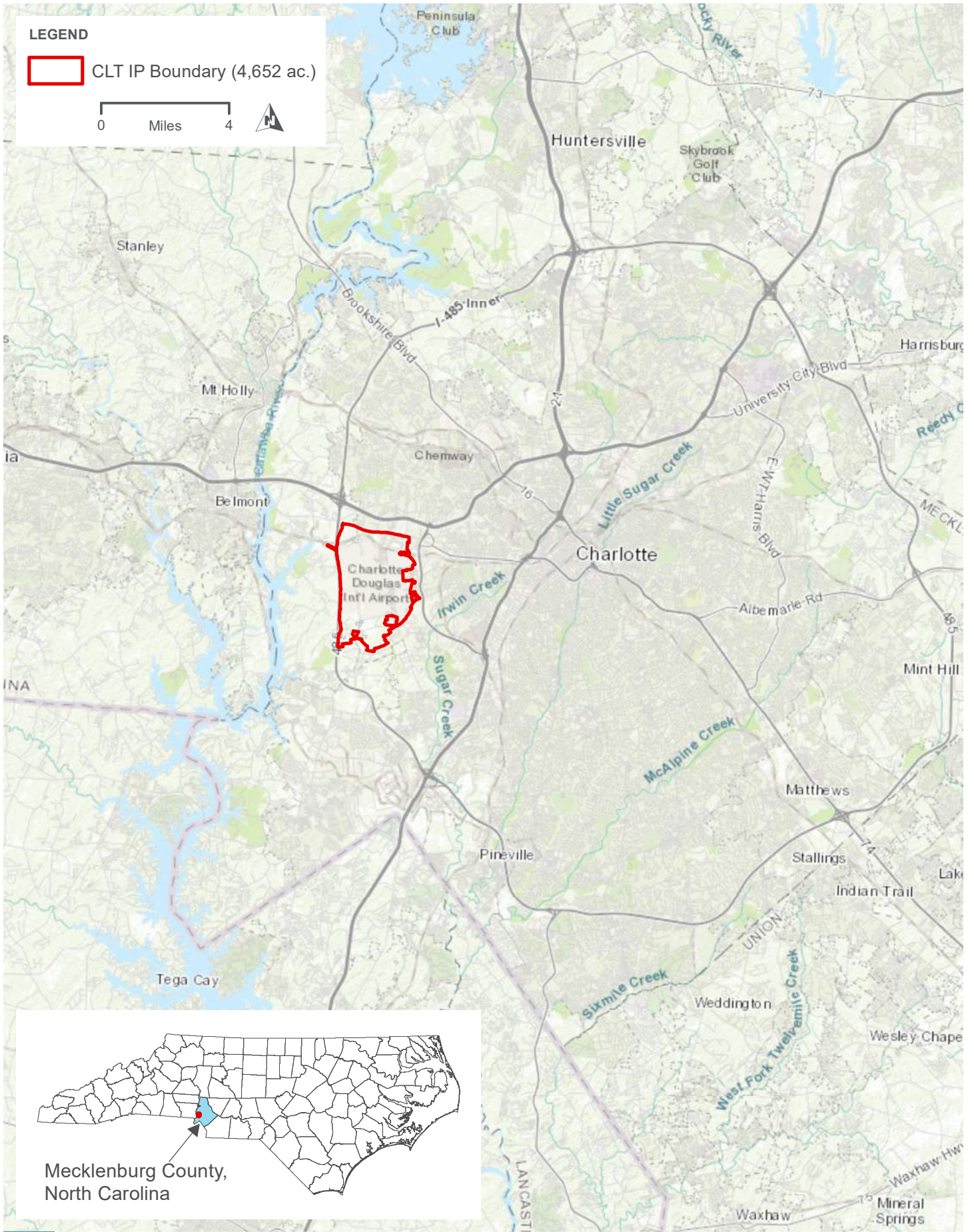
References

- U.S. Fish and Wildlife Service. 2017. Endangered Species, Threatened Species, Federal Species of Concern, and Candidate Species, Mecklenburg County, North Carolina. Updated June 27, 2018. (<https://www.fws.gov/raleigh/species/cntylist/mecklenburg.html>)
- _____. 2015. Threatened Species Status for the Northern Long-eared Bat with 4(d) Rule. April 2015. (<https://www.gpo.gov/fdsys/pkg/FR-2015-04-02/pdf/2015-07069.pdf>)
- _____. 2011. Fact Sheet for Carolina heelsplitter (*Lasmigona decorata*). December 2011. (https://www.fws.gov/asheville/pdfs/CarolinaHeelsplitter_factsheet.pdf)
- _____. 1995. Recovery Plan for Smooth Coneflower (*Echinacea laevigata*). April 1995. (https://ecos.fws.gov/docs/recovery_plans/1995/950418.pdf)
- _____. 1991. Schweinitz's Sunflower (*Helianthus schweinitzii*) Determined to be Endangered. May 1991. (https://ecos.fws.gov/docs/federal_register/fr1852.pdf)
- _____. 1989. Determination of Endangered Status for Michaux's Sumac (*Rhus michauxii*). September 1989. (https://ecos.fws.gov/docs/federal_register/fr1601.pdf)
- _____. 1978. Determination of Certain Bald Eagle Populations as Endangered or Threatened. U.S. Fish and Wildlife Service, Washington, D.C. (https://ecos.fws.gov/docs/federal_register/fr183.pdf)



Appendix A

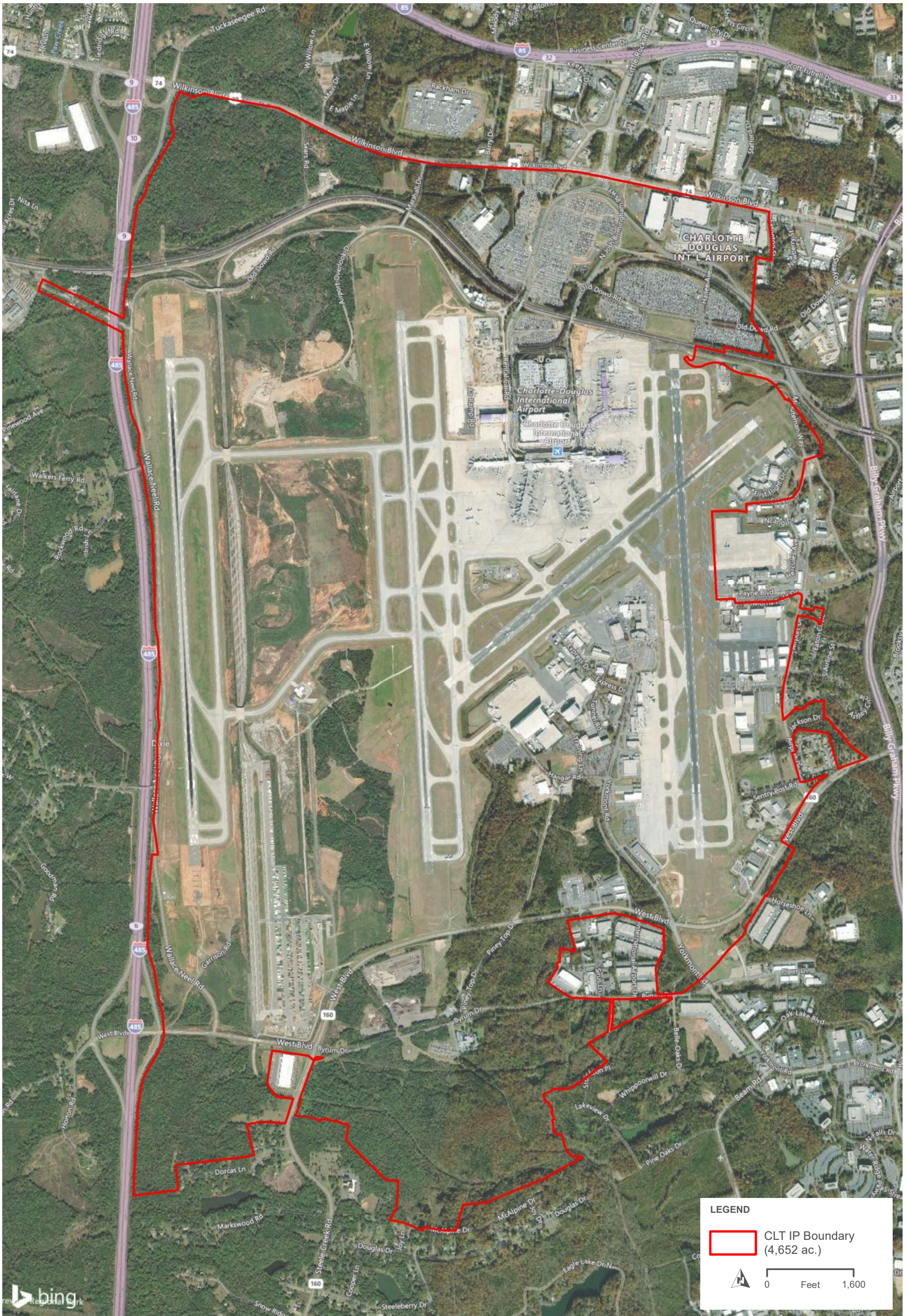
Figures



**CLT AIRPORT EXPANSION
PROJECT VICINITY**

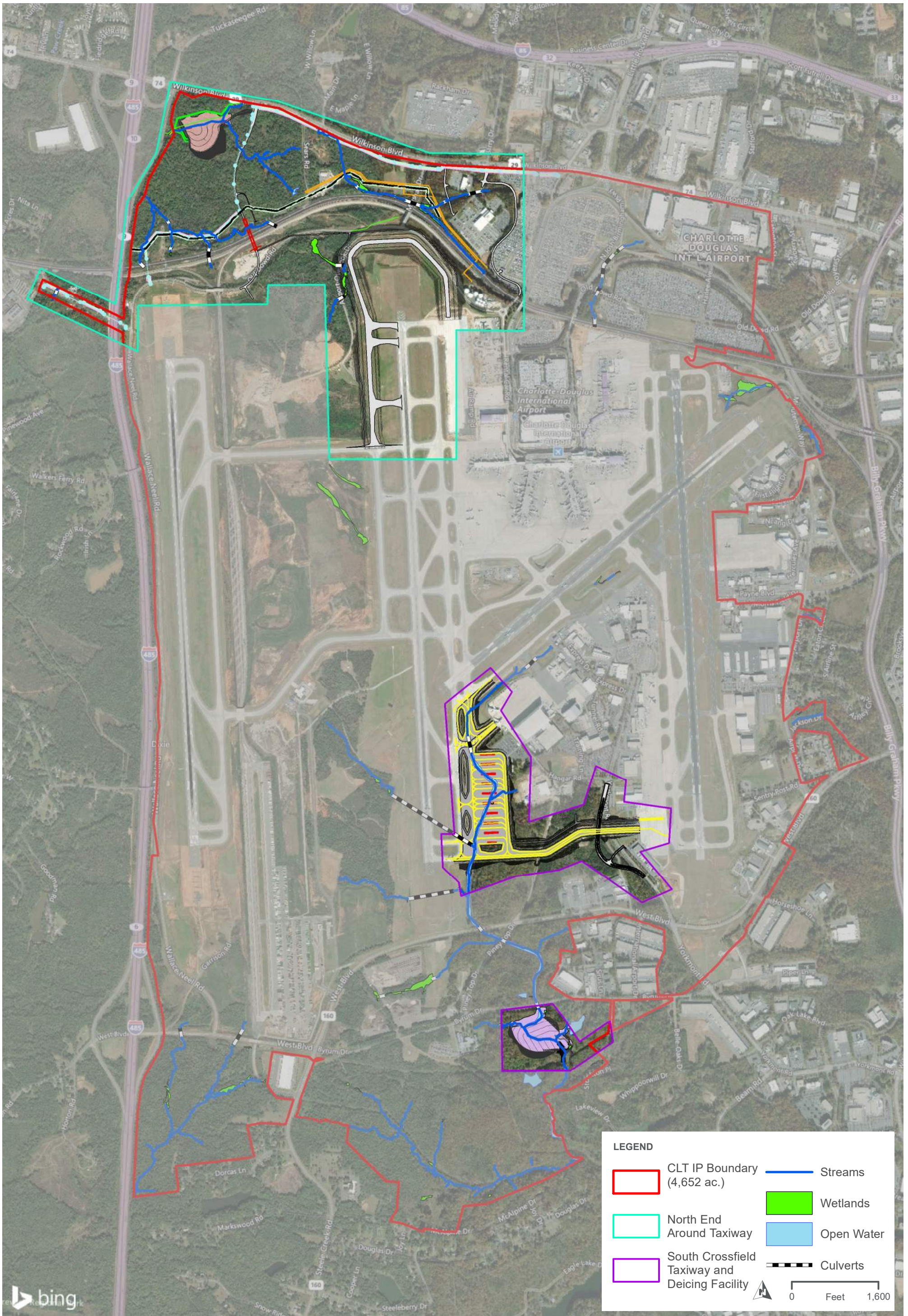
FIGURE 1







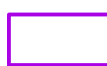
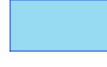




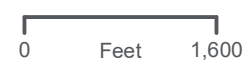
**CLT AIRPORT EXPANSION
AERIAL IMAGERY
FIGURE 2**





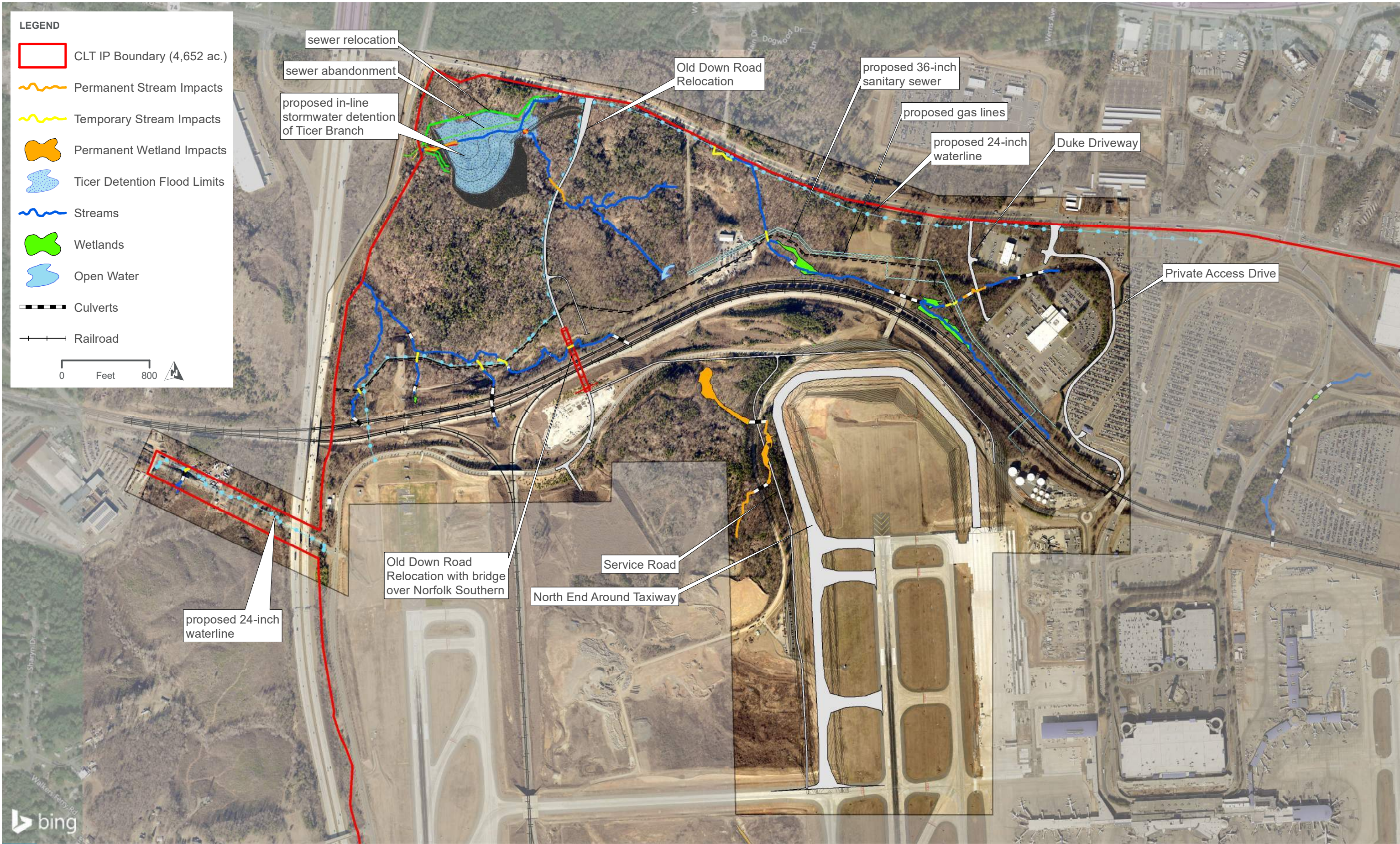
LEGEND

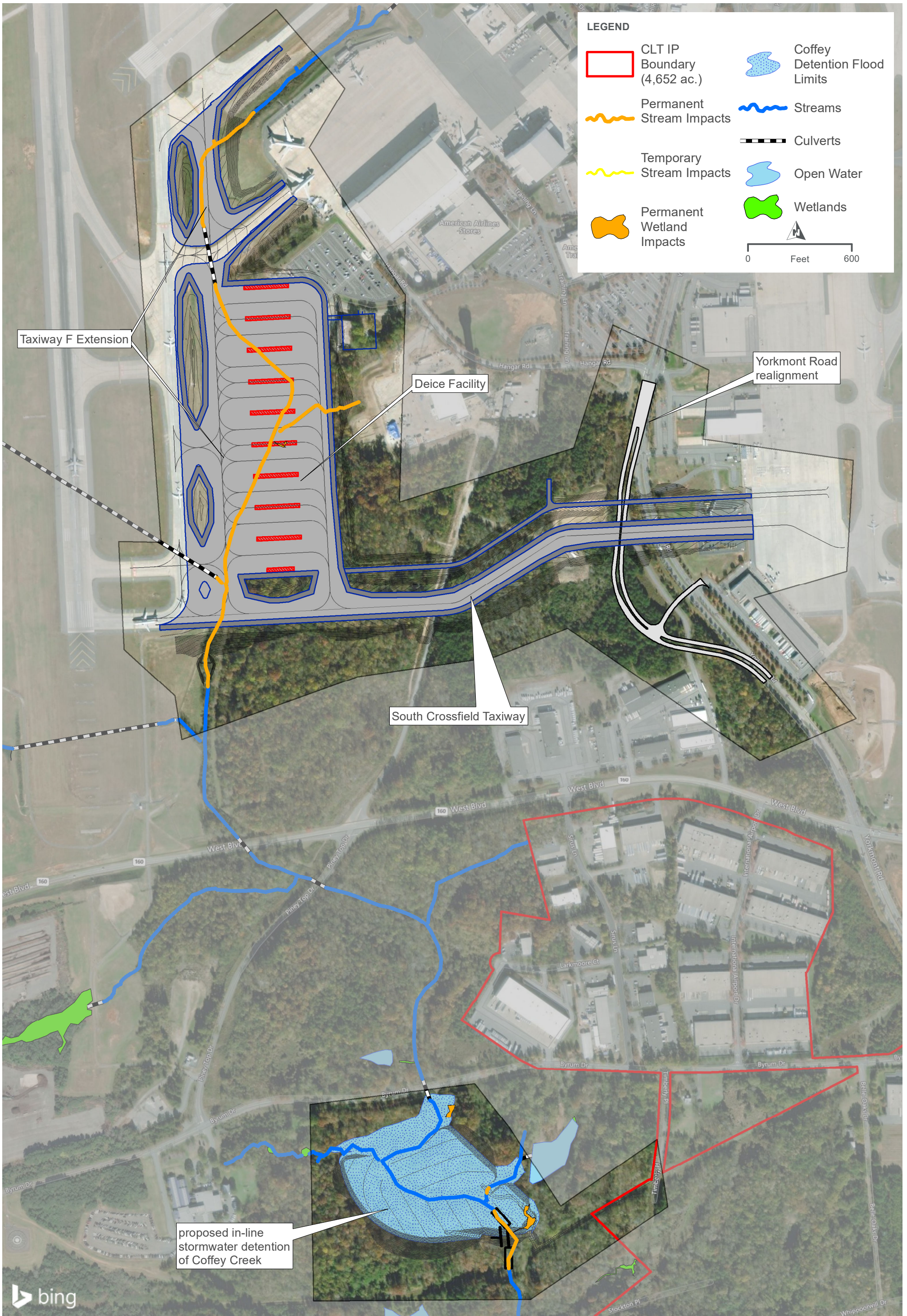
	CLT IP Boundary (4,652 ac.)		Streams
	North End Around Taxiway		Wetlands
	South Crossfield Taxiway and Deicing Facility		Open Water
			Culverts

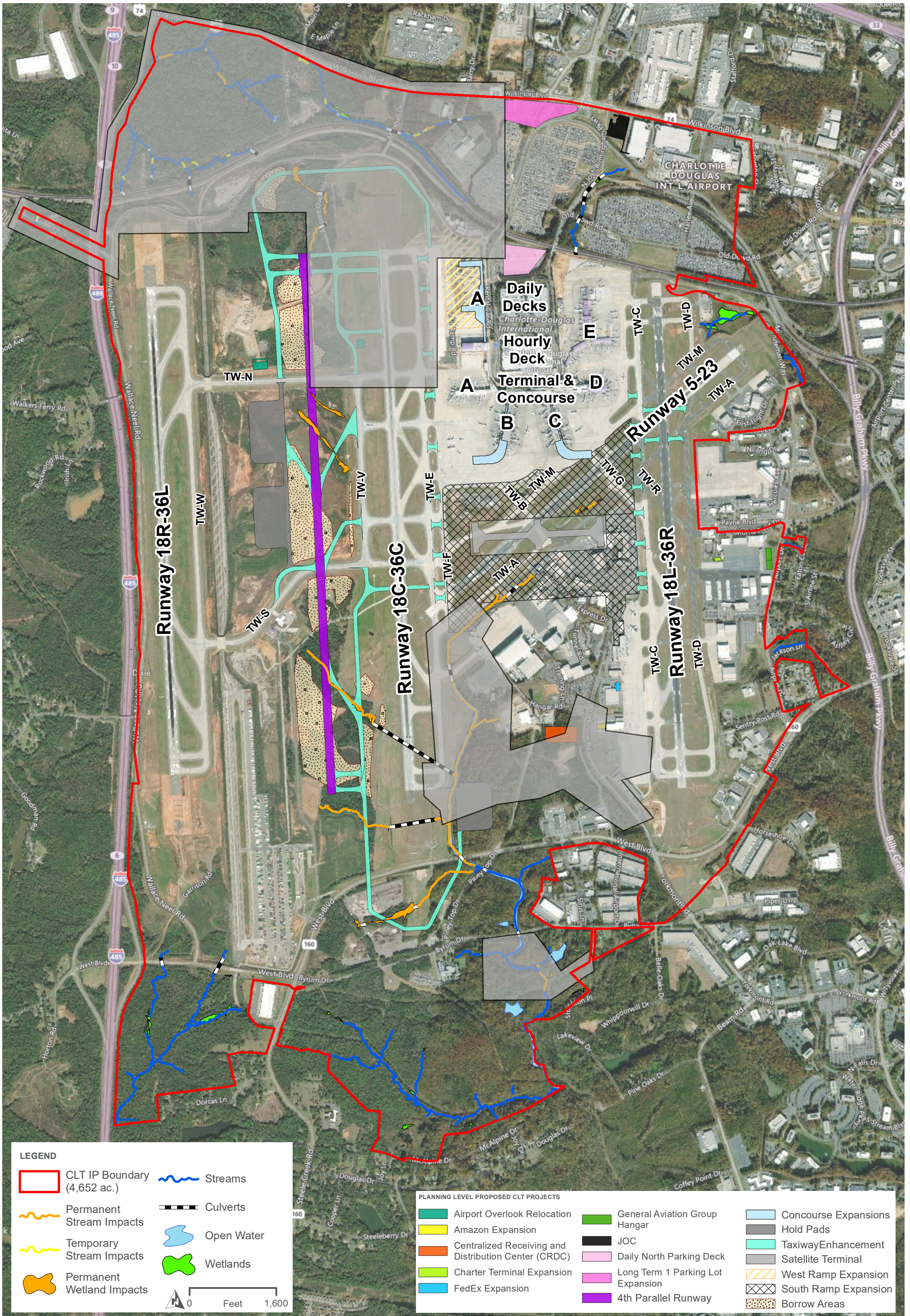



**CLT AIRPORT EXPANSION
PHASE 1 OF CLT PROJECTS
FIGURE 3**

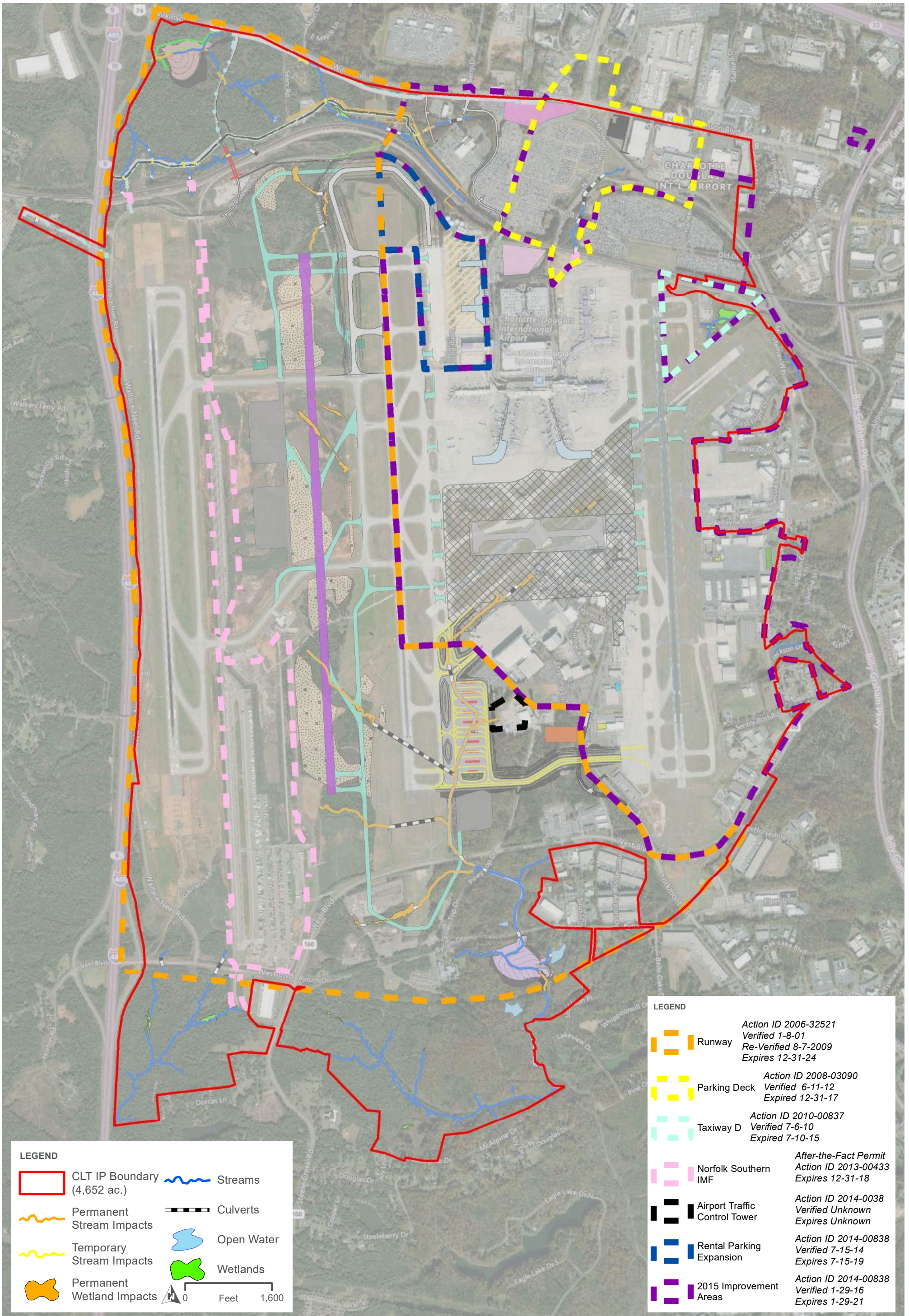








CLT AIRPORT EXPANSION
REMAINING CLT PROJECTS
FIGURE 6



LEGEND

- CLT IP Boundary (4,652 ac.)
- ~ Streams
- ~ Permanent Stream Impacts
- ~ Temporary Stream Impacts
- ~ Permanent Wetland Impacts
- Culverts
- ~ Open Water
- ~ Wetlands

0 Feet 1,600

LEGEND

- Runway
Action ID 2006-32521
Verified 1-8-01
Re-Verified 8-7-2009
Expires 12-31-24
- Parking Deck
Action ID 2008-03090
Verified 6-11-12
Expired 12-31-17
- Taxiway D
Action ID 2010-00837
Verified 7-6-10
Expired 7-10-15
- Norfolk Southern IMF
After-the-Fact Permit
Action ID 2013-00433
Expires 12-31-18
- Airport Traffic Control Tower
Action ID 2014-0038
Verified Unknown
Expires Unknown
- Rental Parking Expansion
Action ID 2014-00838
Verified 7-15-14
Expires 7-15-19
- 2015 Improvement Areas
Action ID 2014-00838
Verified 1-29-16
Expires 1-29-21

**CLT AIRPORT EXPANSION
PREVIOUS PROJECT AREAS
FIGURE 7**





Appendix B

Agency Reports

U.S. Fish & Wildlife Service

Endangered Species, Threatened Species, Federal Species of Concern, and Candidate Species,

Mecklenburg County, North Carolina



Updated: 06-27-2018

Common Name	Scientific name	Federal Status	Record Status
Vertebrate:			
<u>Bald eagle</u>	<i>Haliaeetus leucocephalus</i>	BGPA	Current
Carolina darter	<i>Etheostoma collis collis</i>	FSC	Current
<u>Northern long-eared bat</u>	<i>Myotis septentrionalis</i>	T	Probable/Potential
Invertebrate:			
Carolina creekshell	<i>Villosa vaughaniana</i>	FSC	Current
<u>Carolina heelsplitter</u>	<i>Lasmigona decorata</i>	E	Current
<u>Rusty-patched bumble bee</u>	<i>Bombus affinis</i>	E	Historic
Vascular Plant:			
Carolina Hemlock	<i>Tsuga caroliniana</i>	ARS	Historic
Georgia aster	<i>Symphotrichum georgianum</i>	C	Current
<u>Michaux's sumac</u>	<i>Rhus michauxii</i>	E	Current
Piedmont aster	<i>Eurybia mirabilis</i>	FSC	Current
<u>Schweinitz's sunflower</u>	<i>Helianthus schweinitzii</i>	E	Current
<u>Smooth coneflower</u>	<i>Echinacea laevigata</i>	E	Current
Nonvascular Plant:			
Lichen:			

Definitions of Federal Status Codes:

E = endangered. A taxon "in danger of extinction throughout all or a significant portion of its range."

T = threatened. A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range."

C = candidate. A taxon under consideration for official listing for which there is sufficient information to support listing. (Formerly "C1" candidate species.)

BGPA = Bald and Golden Eagle Protection Act. See below.

ARS = At Risk Species. Species that are Petitioned, Candidates or Proposed for Listing under the Endangered Species Act. Consultation under Section 7(a)(2) of the ESA is not required for Candidate or Proposed species;

although a Conference, as described under Section 7(a)(4) of the ESA is recommended for actions affecting species proposed for listing.

FSC=Federal Species of Concern. FSC is an informal term. It is not defined in the federal Endangered Species Act. In North Carolina, the Asheville and Raleigh Field Offices of the US Fish and Wildlife Service (Service) define Federal Species of Concern as those species that appear to be in decline or otherwise in need of conservation and are under consideration for listing or for which there is insufficient information to support listing at this time. Subsumed under the term "FSC" are all species petitioned by outside parties and other selected focal species identified in Service strategic plans, State Wildlife Action Plans, or Natural Heritage Program Lists.

T(S/A) = threatened due to similarity of appearance. A taxon that is threatened due to similarity of appearance with another listed species and is listed for its protection. Taxa listed as T(S/A) are not biologically endangered or threatened and are not subject to Section 7 consultation. See below.

EXP = experimental population. A taxon listed as experimental (either essential or nonessential). Experimental, nonessential populations of endangered species (e.g., red wolf) are treated as threatened species on public land, for consultation purposes, and as species proposed for listing on private land.

P = proposed. Taxa proposed for official listing as endangered or threatened will be noted as "PE" or "PT", respectively.

Bald and Golden Eagle Protection Act (BGPA):

In the July 9, 2007 Federal Register(72:37346-37372), the bald eagle was declared recovered, and removed (de-listed) from the Federal List of Threatened and Endangered wildlife. This delisting took effect August 8, 2007. After delisting, the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668d) becomes the primary law protecting bald eagles. The Eagle Act prohibits take of bald and golden eagles and provides a statutory definition of "take" that includes "disturb". The USFWS has developed National Bald Eagle Management Guidelines to provide guidance to land managers, landowners, and others as to how to avoid disturbing bald eagles. For mor information, visit <http://www.fws.gov/migratorybirds/baldeagle.htm>

Threatened due to similarity of appearance(T(S/A)):

In the November 4, 1997 Federal Register (55822-55825), the northern population of the bog turtle (from New York south to Maryland) was listed as T (threatened), and the southern population (from Virginia south to Georgia) was listed as T(S/A) (threatened due to similarity of appearance). The T(S/A) designation bans the collection and interstate and international commercial trade of bog turtles from the southern population. The T(S/A) designation has no effect on land management activities by private landowners in North Carolina, part of the southern population of the species. In addition to its official status as T(S/A), the U.S. Fish and Wildlife Service considers the southern population of the bog turtle as a Federal species of concern due to habitat loss.

Definitions of Record Status:

Current - the species has been observed in the county within the last 50 years.

Historic - the species was last observed in the county more than 50 years ago.

Obscure - the date and/or location of observation is uncertain.

Incidental/migrant - the species was observed outside of its normal range or habitat.

Probable/potential - the species is considered likely to occur in this county based on the proximity of known records (in adjacent counties), the presence of potentially suitable habitat, or both.

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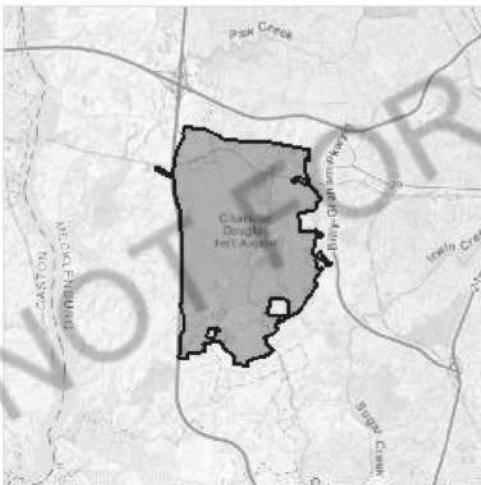
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Mecklenburg County, North Carolina



Local office

Asheville Ecological Services Field Office

☎ (828) 258-3939

📅 (828) 258-5330

160 Zillicoa Street
Asheville, NC 28801-1082

<http://www.fws.gov/nc-es/es/countyfr.html>

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME

STATUS

Northern Long-eared Bat *Myotis septentrionalis* Threatened
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/9045>

Clams

NAME	STATUS
Carolina Heelsplitter <i>Lasmigona decorata</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3534	Endangered

Flowering Plants

NAME	STATUS
Michaux's Sumac <i>Rhus michauxii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5217	Endangered
Schweinitz's Sunflower <i>Helianthus schweinitzii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3849	Endangered
Smooth Coneflower <i>Echinacea laevigata</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3473	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.

2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus*

Breeds Sep 1 to Jul 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Blue-winged Warbler <i>Vermivora pinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Kentucky Warbler <i>Oporornis formosus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler <i>Dendroica discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that

- week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
 - The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

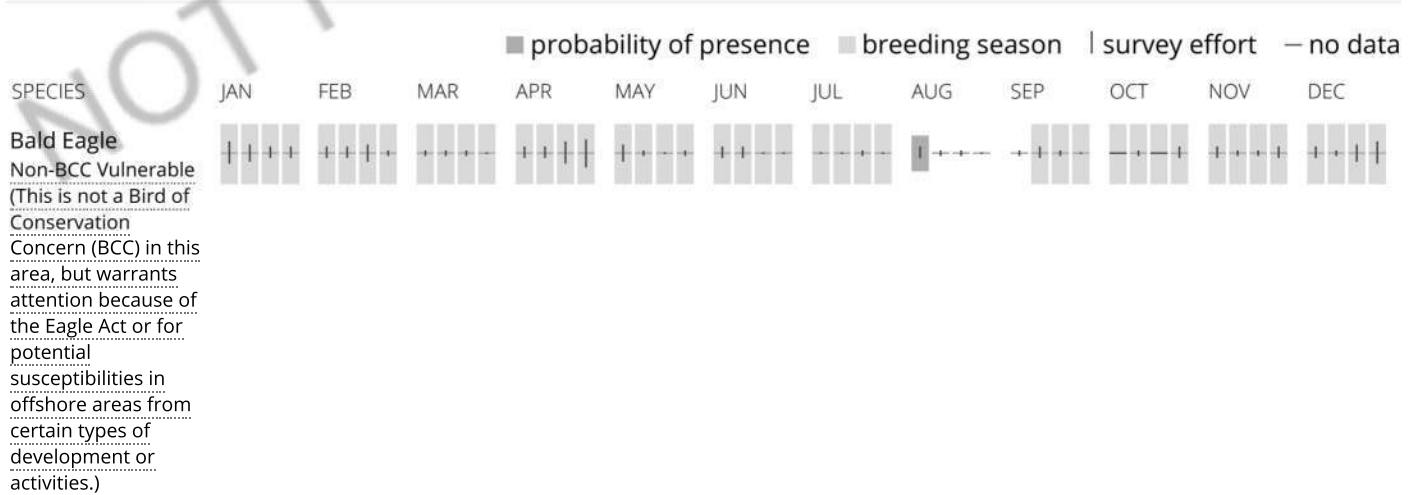
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

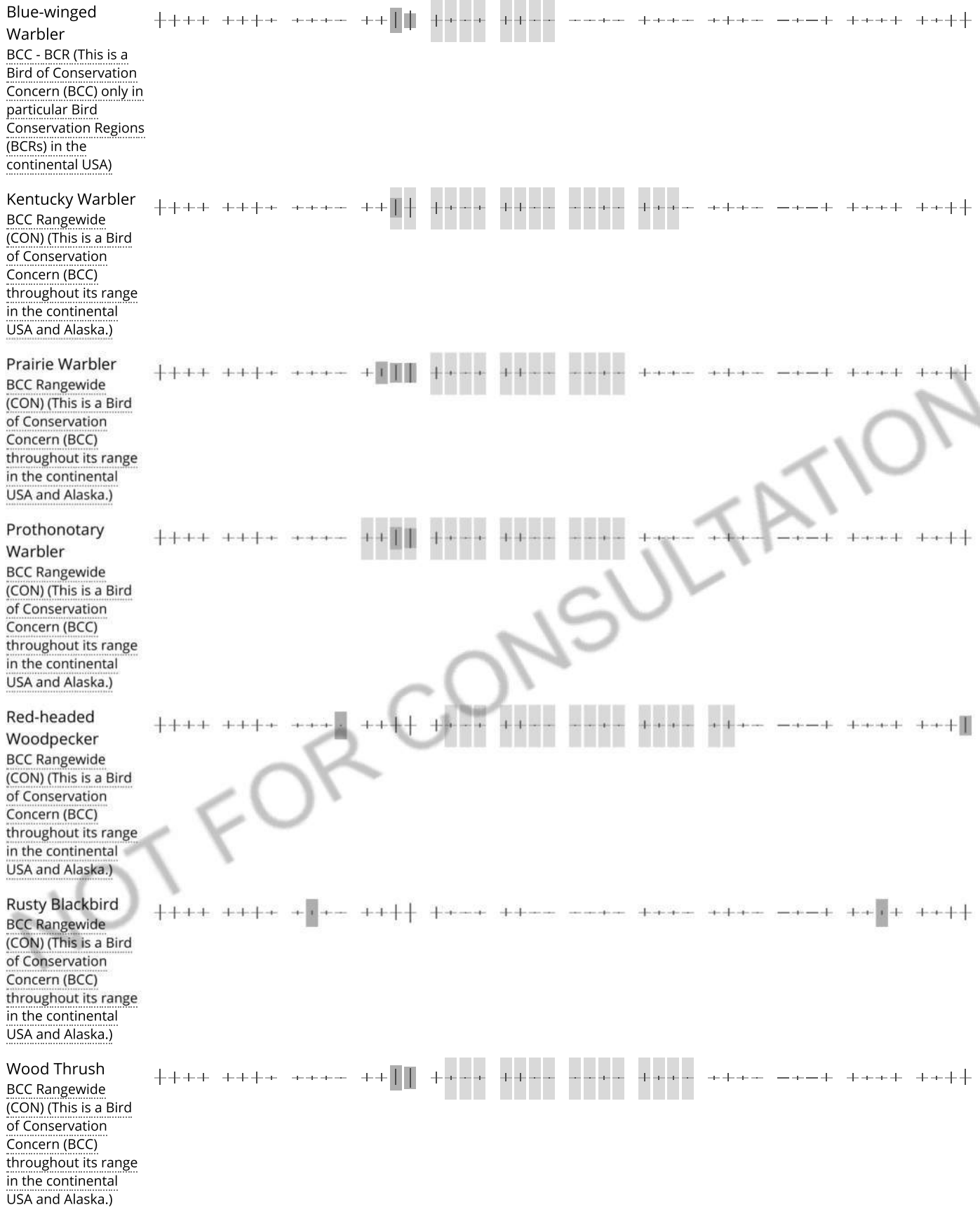
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and

avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangelwide" birds are [Birds of Conservation Concern \(BCC\)](#) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangelwide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird

impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

PEM1C

FRESHWATER FORESTED/SHRUB WETLAND

PFO1A

PSS1Ch

PFO1C

PFO1Ch

PFO1Ah

PSS1A

FRESHWATER POND

PUBHh

PUSCh

PUBHx

PUBFh

RIVERINE

R2UBH

R5UBH

R2UBHx

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error

is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.



Roy Cooper, Governor
Susi Hamilton, Secretary
Walter Clark, Director, Land and Water Stewardship

NCNHDE-10368

October 2, 2019

Jessica Tisdale
HDR
555 Fayetteville Street
Raleigh, NC 27601
RE: Charlotte Airport

Dear Jessica Tisdale:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources for the project referenced above.

Based on the project area mapped with your request, a query of the NCNHP database indicates that there are no records for rare species, important natural communities, natural areas, and/or conservation/managed areas within the proposed project boundary. Please note that although there may be no documentation of natural heritage elements within the project boundary, it does not imply or confirm their absence; the area may not have been surveyed. The results of this query should not be substituted for field surveys where suitable habitat exists. In the event that rare species are found within the project area, please contact the NCNHP so that we may update our records.

The attached 'Potential Occurrences' table summarizes rare species and natural communities that have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists. Tables of natural areas and conservation/managed areas within a one-mile radius of the project area, if any, are also included in this report.

If a Federally-listed species is found within the project area or is indicated within a one-mile radius of the project area, the NCNHP recommends contacting the US Fish and Wildlife Service (USFWS) for guidance. Contact information for USFWS offices in North Carolina is found here: <https://www.fws.gov/offices/Directory/ListOffices.cfm?statecode=37>.

Please note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may not be redistributed without permission.

The NC Natural Heritage Program may follow this letter with additional correspondence if a Dedicated Nature Preserve, Registered Heritage Area, Clean Water Management Trust Fund easement, or Federally-listed species are documented near the project area.

If you have questions regarding the information provided in this letter or need additional assistance, please contact Rodney A. Butler at rodney.butler@ncdcr.gov or 919-707-8603.

Sincerely,
NC Natural Heritage Program

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area
Charlotte Airport
October 2, 2019
NCNHDE-10368

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Freshwater Bivalve	13485	Lasmigona decorata	Carolina Heelsplitter	1918-Pre	X	3-Medium	Endangered	Endangered	G1	S1
Freshwater Bivalve	7236	Lasmigona decorata	Carolina Heelsplitter	1880-Pre	X	3-Medium	Endangered	Endangered	G1	S1
Freshwater Bivalve	450	Lasmigona decorata	Carolina Heelsplitter	1918-Pre	X	3-Medium	Endangered	Endangered	G1	S1
Vascular Plant	13743	Delphinium exaltatum	Tall Larkspur	1800s	Hi?	5-Very Low	---	Endangered	G3	S2

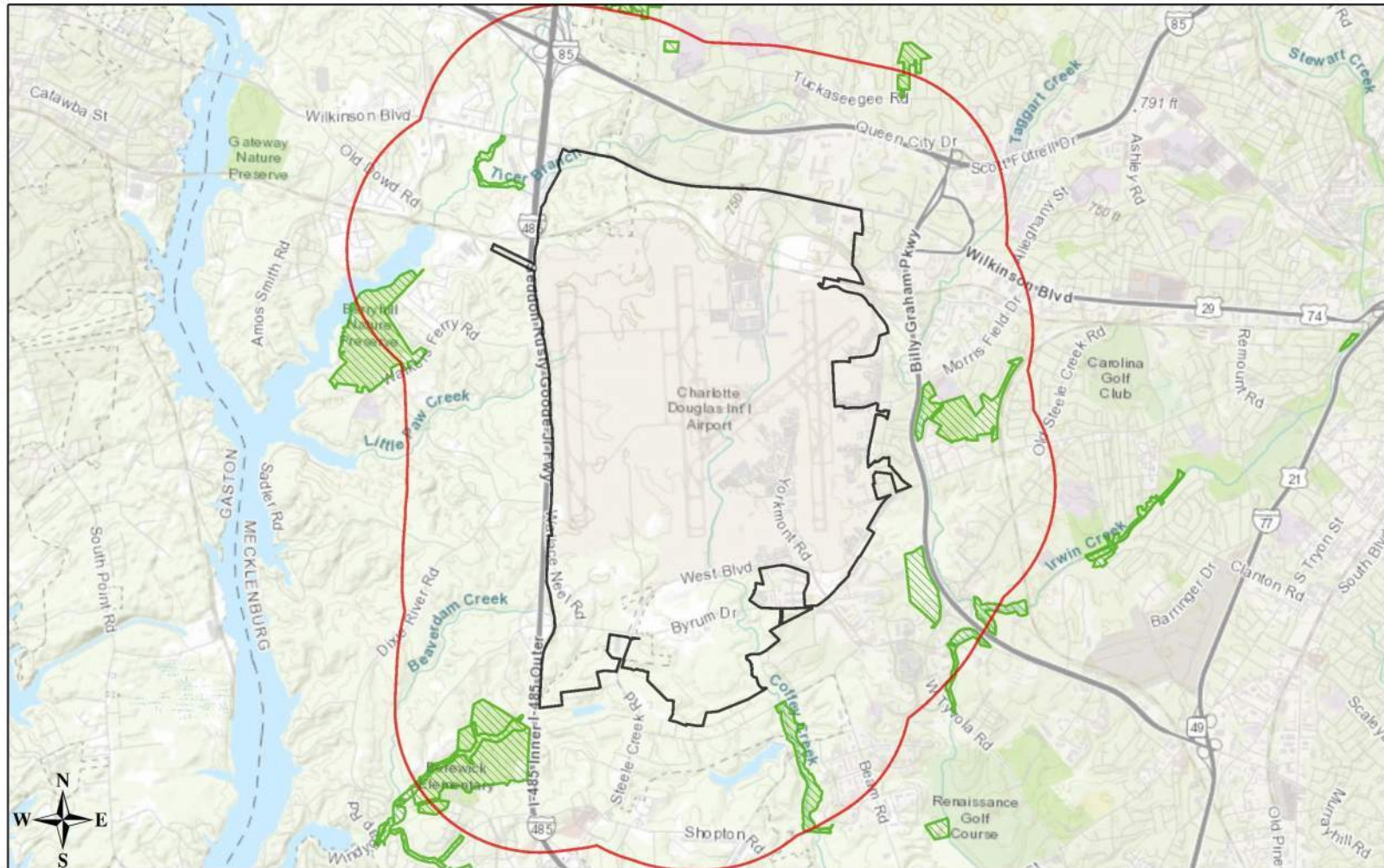
No Natural Areas are Documented Within a One-mile Radius of the Project Area

Managed Areas Documented Within a One-mile Radius of the Project Area

Managed Area Name	Owner	Owner Type
NC Division of Mitigation Services Easement	NC DEQ, Division of Mitigation Services	State
Robert L. Smith Park	Mecklenburg County	Local Government
Berewick Park	Mecklenburg County	Local Government
Sugar Creek Greenway	Mecklenburg County	Local Government
Berryhill Nature Preserve	Mecklenburg County	Local Government
Coffey Creek Greenway	Mecklenburg County	Local Government
Southview Park	Mecklenburg County	Local Government
Irwin Creek Greenway	Mecklenburg County	Local Government
Former Charlotte Correctional Center	NC Department of Public Safety	State
Paw Creek Greenway	Mecklenburg County	Local Government
Marmac Road Park	Mecklenburg County	Local Government
West Mecklenburg Park	Mecklenburg County	Local Government

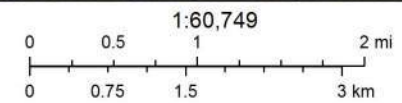
Definitions and an explanation of status designations and codes can be found at <https://ncnhde.natureserve.org/content/help>. Data query generated on October 2, 2019; source: NCNHP, Q3 Jul 2019.

NCNHDE-10368: Charlotte Airport



October 2, 2019

- Project Boundary
- Buffered Project Boundary
- Managed Area (MAREA)



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Appendix C

Photographs



Photograph 1 – View of Site, Facing Northeast (dated September 13, 2019).



Photograph 2 – View of Site, Facing South (dated September 12, 2019).