Environmental Assessment

Coastal Carolina Regional Airport Obstruction Removal Project

Croatan Ranger District, Croatan National Forest
New Bern, North Carolina
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Chapter 1 Purpose and Need

1.1 Introduction

Coastal Carolina Regional Airport (airport identifier EWN) is located in Craven County, North Carolina, approximately one mile south of New Bern. The Airport is situated on approximately 734 acres near the confluence of the Trent and Neuse Rivers, west of U.S. Route 70 and 1.5 miles south of the intersection of U.S. Route 70 and U.S. Route 17 (Figure 1.1).

Coastal Carolina Regional Airport is the main airport serving the central coastal region of North Carolina, which includes New Bern and Havelock, as well as the nearby communities of Morehead City, Emerald Isle, Atlantic Beach, Oriental, Washington, Kinston, and Jacksonville. The Airport, which is owned by Craven County, offers ten daily flights, including regional jet service with connections to over 300 destinations. EWN also serves general aviation and corporate aircraft within the area. This towered Airport averages approximately 110 daily operations.1 The airfield includes Runway 4-22, which is 6,453 feet long and 150 feet wide, aligned northeast-southwest, and is equipped with a precision Instrument Landing System (ILS). Runway 14-32 is 4,000 feet long, 150 feet wide, and aligned northwest-southeast.

Land use in the vicinity of the Airport is comprised of commercial development to the north and northeast along U.S. Route 70, with residential development to the west and north along Brice Creek and the Trent and Neuse Rivers. Craven County’s Creekside Park sports complex is located to the east along with residential subdivisions. The Croatan National Forest (CNF) is south of the Airport, adjacent to Brice Creek (Figure 1.2). CNF, which is approximately 160,000 acres, was established in 1936 and is one of four national forests in North Carolina.2

In 1968, the City of New Bern and Craven County obtained a Special Use Permit (SUP) from the U.S. Department of Agriculture, Forest Service (USFS) for management of land located within the CNF. The most recent permit renewal, covering 187 acres, was executed on January 20, 1993, and expired on December 31, 2012. This SUP (CRO100704) was obtained to ensure that the subject USFS property is managed and maintained to maximize the safety of the Airport by protecting the airspace surfaces for Runway 4-22 from obstructions in accordance with guidance outlined in Title 49 Code of Federal Regulations 14 (CFR) Part 77, Safe, Efficient Use, and Preservation of the

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Navigable Airspace, FAA Advisory Circular (AC) 150/5300-13, Airport Design, and FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS). For this environmental assessment (EA), and from hereafter, the relevant airspace surfaces from these documents are the basis for the project study area and shall be collectively referred to as the “approach surface”.

The USFS is authorized under 36 CFR 251 (B), to issue special use permits (SUPs) to non-USFS entities for all otherwise non-regulated uses of National Forest System lands. Special Uses are defined in Section 251.50 as all uses, with the exceptions of use of roads, disposal of timber, disposal of minerals, and the grazing of livestock; which are regulated under parts 212.9, 223, 228 and 222, respectively. The issuance of SUPs is a federal action for which the USFS must comply with NEPA under 36 CFR 220.

Therefore, this EA has been undertaken in accordance with the requirements of the National Environmental Policy Act (NEPA), Federal Aviation Administration (FAA) Order 1050.1E (Policies and Procedures for Considering Environmental Impacts), FAA Order 5050.4B (Airport Environmental Handbook), as well as USFS NEPA directives (FSM 1950 and FSH 1909.15) in accordance with 36 CFR 220 (Forest Service NEPA procedures).

1.2 PROJECT STUDY AREA

The project study area encompasses approximately 210 acres of the CNF land and is located entirely in Craven County, just south of the Airport. The project study area is a mixture of upland pine stands ranging from 26 to 86 years of age, bottomland hardwood forest, wetlands, and the transition zone between the zones. The upland pine stands are predominately loblolly pine interspersed with hardwoods such as oaks, poplars, and sweetgum as well as soft mass trees species like dogwood and black gum which provide forage for many wildlife species. A few scattered pines, oaks, beech, musclewood, and other hardwood species appear in the transition zone along stand perimeters. These stands provide habitat for water and water edge dwelling wildlife species. Wetlands in the project study area include riverine swamp forest and tidal freshwater marsh. The project study area is further broken down into seven categories, which are discussed in Section 1.3. The project study area also

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includes a section of Brice Creek, which is eligible for protection under the Wild and Scenic Rivers Act (Section 3.10).

1.2.1 Croatan NF Lands

Within the Forest Service ownership, lands are categorized by prescription which describe the ways in which the lands are to be managed. Approximately 162 acres of the project study area along Brice Creek are within the River Corridors Eligible for Wild and Scenic River Status management prescription. Approximately 23 acres are within the Hardwood Cypress Wetland management prescription, and approximately 28 acres are within Red Cockaded Woodpecker Habitat management prescription. All proposed actions on CNF lands must be consistent with the Croatan Forest Plan and the standards and guidelines associated with these management prescriptions. As part of this proposed action, a project specific Forest Plan amendment is being proposed to ensure project consistency with the Croatan Forest Plan.

1.3 Purpose and Need for Action

The purpose of the project is to reissue the Airport SUP and manage vegetation within the approach path of Runway 4 in order to meet FAA safety regulations. The approach path to Runway 4 is located on the CNF lands and a SUP that was originally issued in 1968 expired in 2012 (see Appendix A). There is a need to issue a SUP that would allow the continuation of Airport operations on CNF lands. The (expired) SUP allowed the Airport to restore and maintain a clear approach surface to the Runway 4. Currently, there are obstructions trees located within the approach path of Runway 4 on the CNF lands which result in unsafe conditions at the Airport. These obstruction trees violate FAA safety regulations (including FAA Advisory Circular 150/3500-13A, Airport Design (AC 150/3500-13A and 14 Code of Federal Regulations Part 77 Object Affecting Navigable Airspace (14 CFR Part 77)) and have resulted in the FAA needing to make temporary changes to the approach for the glide path of Runway 4. These temporary changes are not considered a viable long-term solution and there is a need to issue a SUP that allows the Airport to manage vegetation (including the chemical treatment of non-native invasive species such as mimosa, Chinese privet, autumn olive, bicolor lespedeza and alligator weed) within and adjacent to Runway 4 for the long-term.

There is a need for sufficient access areas to allow for timber harvest and management of tree heights (obstructions) in the future. An estimated 0.4-mile of existing abandoned roadbed would need to be improved temporarily for access during the timber sale (Figure 2.1).

Currently, the Croatan Forest Plan only allows the cutting of trees within the Brice Creek eligible Wild and Scenic River Corridor when the objective is to “maintain or enhance the outstandingly remarkable resource values of the area or to provide access for recreation use” (Croatan NF LRMP p. 107). There is a need to amend the forest plan in order to allow tree removal to protect public safety,
health, and welfare during aviation operations as part of the Special Use Permit within the Brice Creek eligible Wild and Scenic River Corridor (Forest Plan standard 4.7.0.3).

Current plan direction also requires that supracanopy trees be maintained within 300 feet of lakes and rivers. There is a need for a project-specific plan amendment allow the removal of supracanopy trees adjacent to Brice Creek when those trees are an obstruction within the Airport’s approach path.

The Forest Plan scenic integrity objective (SIO) for the area adjacent to Brice Creek is currently identified as High which means that human activities are not visually evident (Croatan Forest Plan, p. 108). Because of the proximity of this project study area to the Airport and the need to maintain a safe approach path, there is a need to amend the forest plan to allow for an SIO of Low to Moderate. This change is consistent with the current management of the area and the previously longstanding SUP (since 1968) for the airport runway approach.

The issuance of a SUP that allows the Airport to meet FAA regulations is consistent with the forest plan goals in that the lands authorized under the SUP would continue to promote the multiple use goals by providing greater community diversity and enhancing wildlife habitat by providing more “edge” habitat and more early successional habitat as well as continuing to support on-going recreational uses (Croatan Forest Plan 2.7.2).

1.4 PROPOSED ACTION

In response to the purpose and need for action, the Croatan NF proposes to issue a Special Use Permit to the Airport for a period of 20 years. The SUP would allow for:

- Removing tree obstructions on 118 acres in the Runway 4 Approach, including areas adjacent to Brice Creek;
- Selectively cutting tree obstructions on 96.3 acres of wetlands;
- Improving approximately 0.4 mile of existing abandoned roadbed to provide temporary access and creating wetland crossings on approximately 0.4 acres. The temporary road and skidding access trails would be allowed to regenerate to natural vegetation after the timber sale has been completed;
- Applying herbicide on non-native invasive species on Croatan NF lands;
- A project specific Forest Plan amendment consisting of the following changes:
  - Allow for the removal of obstruction trees within the approach path to Runway 4 of the Coastal Carolina Airport;
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- Allow for the removal of supracanopy trees within 300 feet of the river in the area covered by the Special Use Permit for the Airport.
- Amend the Scenery Integrity Objective for the area adjacent to Brice Creek and within the project study area.

The proposed amendments would replace standards and would be written as follows:

- **4.4.1.3** Allow no tree removal in river segments classified as wild. Allow tree removal in river segments classified as scenic or recreational only where proposed actions do not adversely affect outstandingly remarkable values, or as necessary for public safety in the area adjacent to Brice Creek and within the Special Use Permit area for the Coastal Carolina Airport.

- **4.2.0.10** Maintain supracanopy trees within 300 feet of lakes and rivers. In the area adjacent to Brice Creek and within the Special Use Permit area for the Coastal Carolina Airport, supracanopy trees may be removed when they pose a safety hazard as defined by Federal Aviation Administration safety regulations.

- **4.3.0.8** Meet the scenic integrity objectives for the scenic classes within each management prescription according to scenic integrity objectives table (Table 4.3a), with the exception of the area adjacent to Brice Creek and within the Coastal Carolina Airport Special Use Permit area. The area adjacent to Brice Creek and within the Coastal Carolina Airport Special Use Permit area will be maintained to an SIO of Low to Moderate to allow tree cutting for public safety, health, and welfare.

The forest plan will be amended using the 2012 Planning Rule amendment process (36 CFR 219.13(b)(3)).

### 1.4.1 Details Related to Vegetation Management

As shown in **Figure 1.3**, tracts within the approach area would be broken down by initial and future treatment options based on location (NFS lands versus Airport property) and plant community (upland and wetland forest). All obstruction trees on upland areas would be cleared and the area allowed to regenerate to native tree species. Future tree obstructions within these areas would be selectively cut by the Airport. Isolated upland areas that are not currently accessible for standard logging equipment would be accessed by temporary wetland crossings approved by USACE under a Section 404 Clean Water Act permit.

Obstruction trees in wetland areas that are within five to ten feet of the approach surface, would be selectively cleared. Clearing of wetland areas would be done by the least invasive methods practicable, including but not limited to, hand-cutting and use of low ground pressure vehicles and equipment. Small amounts of slash from the tree cutting could be chipped and spread on disturbed
areas within the wetlands pending approval by USACE; resulting in multiple benefits such as preventing erosion, reducing the amount of material to be disposed of by the Airport, and returning nutrients to the soil.

The Airport would be responsible for the clearing and continued maintenance all wetland and isolated upland areas in addition to the continued maintenance of the initial clear–cut areas in close proximity to the Airport property.

1.4.2 Details Related to Herbicide Treatment

Non-native invasive plants (NNIP) treatment is needed in the tree removal areas located on the CNF. The control of NNIP prior to the opening up of the tree canopy would address the goals of Executive Order 13112, *Invasive Species*. Treatment of NNIP such as mimosa, Chinese privet, autumn olive, and bicolor lespedeza would utilize Triclopyr 3A. Triclopyr 3A is the recommended herbicide since it is an herbicide approved by the U.S. Environmental Protection Agency (USEPA) for aquatic applications.7 This formulation is recommended due to the proximity of wetlands and streams to the treatment areas. Imazapyr and glyphosate would be used for the treatment of alligator weed.

**Monitoring**

Long-term maintenance in the on-site wetland areas would require periodic monitoring of the trees and selective removal of individual trees as they approach within five to ten feet of the approach surface. Selective removal of individual trees within wetland areas would be performed by identifying and marking the trees to be removed using sub-meter accuracy GPS equipment. Impacts from removal would be minimized by using low-impact clearing techniques, such as hand cutting/use of feller-buncher, and keeping heavy equipment out of wetlands to avoid soil disturbance.

Monitoring for non-native invasive species (NNIS) will continue throughout the duration of the SUP. Any new populations of NNIS will be treated as soon as practical in order to reduce the potential for spread.

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CHAPTER 2 Public Involvement and Alternatives

2.1 Public Involvement and Issues

This action was originally listed as a proposal on the National Forests in NC Schedule of Proposed Actions in October 2013 and updated periodically during the analysis. People were invited to review and comment on the project through scoping of the proposed action which occurred in October, 2013. The complete EA was shared with the public in March 2016, and a legal notice for a 30-day comment period was published in the New Bern Sun Journal. The EA was also posted on the National Forests in NC project webpage. The list of agencies and people that were consulted is included in Chapter 5 of this EA.

Comments on the environmental assessment expressed concern over consistency with the Forest Plan, maintaining native biodiversity, the introduction and spread of non-native invasive species, and maintaining the values of Brice Creek, eligible Wild and Scenic River.

This project is subject to the USFS objection process, as defined for the project-level objection process at 36 CFR 218. Under this process individuals and entities that provided comments during the 30-day comment period will have an opportunity to file objections (an additional 45-day review period) after the EA is completed and before a decision document is signed.

2.2 Alternatives

Chapter 2 evaluates alternatives considered during development of the Proposed Action and developed in response to concerns raised by the public. The alternatives discussed in this chapter include:

- Alternatives Considered but Eliminated from Further Analysis;
- Two Action Alternatives;
- No-Action Alternative.

FAA Order 1050.1E states that the alternatives evaluated should be discussed in sufficient detail so that the decision maker can show reasons for selecting an Alternative that meets the Purpose and Need for the Proposed Action. The various alternatives will be evaluated to the degree appropriate both for the complexity of the Proposed Action and for the magnitude of their potential impacts.

2.2 ALTERNATIVE SCREENING CRITERIA

Potential alternatives were assessed and compared based on the following screening criteria:

- Alternative satisfies the project’s Purpose and Need, which is to improve the safety of Runway 4-22 by removing existing tree obstructions within the Project study area;
- Alternative maintains the existing runway length and visibility approach minimum, which is critical to current aircraft operations at the Airport;
• Alternative complies with applicable state and Federal laws to protect the environment;
• Alternative complies with the Croatan Forest Plan and additionally prevents future obstructions; and,
• Alternative avoids unacceptable adverse economic impacts.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

In consideration of the Purpose and Need, a range of alternatives were developed. After comparing the alternatives to the screening criteria, four preliminary alternatives were eliminated from further study. The alternative screening process is summarized in Table 2.1 and discussed in the following sections.

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Satisfies Purpose and Need</th>
<th>Maintains Existing Runway Length and Approach Minima</th>
<th>Complies with State and Federal Laws</th>
<th>Complies with LRMP (as amended) and Prevents Future Obstructions</th>
<th>Avoids Unacceptable Adverse Economic Impacts</th>
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<td>Alternative 6 Selective Tree Clearing, Cut and Leave</td>
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<td>No</td>
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</table>

2.3.1 Alternative 1 - Alternate Airports

Alternative 1 would involve relocating operations from Coastal Carolina Regional Airport to another nearby commercial airport. Albert J. Ellis Airport in Richlands, North Carolina, and Pitt
Greenville Airport in Greenville, North Carolina, are the closest commercial service airports to EWN; located approximately one hour away via car and at straight line distances of thirty-seven and forty-three miles away, respectively. While implementation of this alternative would eliminate hazards to air safety at EWN, it fails to satisfy the project’s Purpose and Need and would be very costly. Airport closure would result in significant local and regional economic and air traffic impacts, such as loss of jobs, lost revenue by local businesses (such as rental car companies, hotels, and restaurants), and longer travel times for local pilots and passengers to reach a different airport location. Therefore, this Alternative would result in unacceptable adverse economic impacts and was eliminated from further consideration.

2.3.2 Alternative 2 – Shift of Runway 4-22

Under Alternative 2, Runway 4-22 would be shifted to the northeast, away from CNF. With this runway shift, trees within CNF would no longer penetrate the approach surface to Runway 4 and clearing would not be necessary. However, in addition to the construction costs associated with extending Runway 4-22, Taxiway A, and Taxiway K to the northeast and relocation of the ILS equipment and glideslope, a significant amount of off-Airport infrastructure and development would be impacted by this alternative. A runway extension to the northeast would impact U.S. Route 70, a Norfolk Southern railroad, several secondary roads (Williams Road, Airline Drive, and Brown Drive), numerous residences, Scotts Creek and associated wetlands, and Jones Chapel AME Zion Church, which is considered eligible for listing on the National Register of Historic Places8. As a result, it was concluded that this Alternative would not comply with federal laws for avoidance of wetland impacts and impacts to potentially eligible historic resources. In addition, due to the costs associated with the necessary on-Airport facility improvements and off-Airport infrastructure impacts, Alternative 2 would result in unacceptable adverse economic impacts and therefore, was eliminated from further consideration.

2.3.3 Alternative 3 – Displacing Runway 4 Threshold

Alternative 3 is similar to Alternative 2 in that it results in a shift of the Runway 4 threshold to the northeast, away from CNF. Displacing the Runway 4 threshold to the northeast would cause the approach surface to shift and trees within CNF would no longer be penetrations. However, displacing the Runway 4 threshold would reduce the runway length available for landings at the Airport. This limitation could result in reduced operations by the airlines or even discontinuation of service to EWN, which would have a negative economic impact on the Airport and the community. The reduced runway length could be resolved by extending the runway to the northeast, however, this would cause environmental and economic impacts similar to Alternative 2 above. Therefore, this Alternative was eliminated from further consideration as it fails to maintain the existing runway length at EWN and could result in unacceptable adverse economic impacts. In addition, as the trees within CNF continue to grow, particularly within the isolated

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upland areas and the areas closest to the Airport property, they could eventually penetrate the approach surface to the displaced Runway 4 threshold and would again create obstructions.

2.3.4 Alternative 4 - Topping of Tree Obstructions

Under Alternative 4, existing tree obstructions would be topped at an elevation approximately ten to twenty feet below the approach surface. This alternative would allow for the continued presence of trees within the Project Study Area, particularly the on-site areas (Airport property) and those off-site areas (CNF) closest to the Airport, however at a lower height that would not penetrate the approach surface to Runway 4. Although this would seem to be a favorable alternative for the portion of the Project Study Area that is beyond Airport property and within CNF, topping of trees can actually leave them more prone to decay and may not leave enough of the tree canopy for survival. The International Society of Arboriculture (ISA) does not endorse the topping of trees because the process causes additional stress to the tree, causes decay, and can result in the sunburn of the remaining trunks and branches. In addition, a survival mechanism that causes a tree to produce multiple shoots below each topping cut results in many fast-growing branches that can grow up to twenty feet in one year. This Alternative would not be consistent with good forest management techniques based on guidance from the ISA and would require frequent maintenance, which would result in high maintenance costs. As a result of being inconsistent with good forest management practices and the frequent maintenance impacts and associated cost, Alternative 4 was eliminated from further consideration.

2.4 ALTERNATIVES CARRIED FORWARD FOR FURTHER ANALYSIS

2.4.1 Alternative 5, Proposed Action - Tree Clearing with Clearcuts

In order to remove obstructions to air navigation within CNF under Alternative 5, a new SUP would be issued by the USFS. Issuance of the new SUP by the USFS to the Airport would allow for tree removal in the project study area.

Under Alternative 5, USFS would manage the harvest of all merchantable timber in upland areas of the approach to Runway 4. In wetland areas, trees that are currently within ten feet of the approach surface would be selectively cleared utilizing Best Management Practices and low-impact techniques, such as hand cutting and the use of low tire pressure equipment. Heavy equipment would be kept out of wetlands to minimize soil disturbance. Timbering equipment, staging areas, and temporary access trails would be located sufficiently far from streams and other water bodies where possible and at a minimum of 100’ from Brice Creek. No stump removal (grubbing), grading, or other ground disturbance would occur within the Project study area. Alternative 5 would include constructing temporary wetland crossings to provide access to the Project study area for tree clearing.

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9 International Society of Arboriculture, “Why Topping Hurts Trees”
These wetland crossings would utilize Best Management Practices and would result in approximately 0.43-acre of temporary clearing impacts to wetlands (Section 4.9). Should disturbance to the soil occur as a result of the temporary crossings, the soil would be stabilized as necessary upon removal and the Project study area would be allowed to naturally revegetate.

Marketable timber in wetland areas would be selectively cut for tree obstructions only and maintained. Upland sites would be initially clear-cut and then managed by regeneration and clear-cutting by USFS before the tree heights reach the approach surface. Upland timber areas deemed unsuitable for continued timber management due to their proximity to the Airport would be initially clear cut by USFS and then regenerated in native tree species; tree obstructions within these areas would be selectively cut by the Airport. The Airport would be responsible for the clearing and continued maintenance of all wetland and isolated upland areas located on CNF lands in addition to the continued maintenance of the initial clear-cut areas in close proximity to the Airport property.

An additional component of Alternative 5 is the control of Non-Native Invasive Plants (NNIP) on the CNF. In order to control NNIP, these species would be treated before overstory trees are removed. Controlling NNIP prior to creating an early successional habitat via tree removal would help to contain existing populations, and to fulfill the goals of Executive Order 13112. Herbicide treatment for NNIP would occur within CNF only, treatment would not occur on Airport property or on the off-Airport clearing areas.

Alternative 5 also includes a project-specific Forest Plan amendment to change three standards, which is described in Chapter 1. These changes to the plan are necessary to meet the purpose and need of the project and to allow for removal of obstruction trees within the Brice Creek eligible Wild and Scenic River corridor. The effects associated with this plan amendment are included in the effects analysis of tree removal in Chapter 4.

2.4.1.2 Croatan Forest Tree Removal

Upon issuance, the new SUP will provide details of tree removal in accordance with this EA. Under this Alternative, trees located on 118.5 acres of uplands (CNF lands) would be removed and sold through a commercial timber operation. This commercial timbering would be arranged and managed by USFS. Standard mechanized clearing practices would be used to cut and remove the trees.

The project study area is broken into four categories: the Timber Harvest Area, Isolated Uplands, One Time Harvest Area, and the Wetland Obstruction Area.

Timber Harvest Area

The Timber Harvest Area (100.2 acres) includes all loblolly pine forests within the project
study area. The harvest proposal includes a clear-cut with reserves in this area, allowing for natural regeneration post-harvest. These areas would be cut again in the future as tree heights approach the restrictions per FAA AC 150/5300-13A and 14 CFR Part 77. Trees would be skidded between individual harvest areas to reach the log landing.

**Isolated Uplands**

The Isolated Uplands Area (7.7 acres) consists of upland pine stands where access for logging equipment currently does not exist. This makes logging activities infeasible so management of this area is the responsibility of the Airport. The Airport would be allowed to remove trees in this area that become an obstruction throughout the life of the new SUP. The Airport would be limited exclusively to removal of obstruction trees and these activities would consist of chainsaw felling of individual trees that are currently obstructions or within 5 to 10 feet of becoming obstructions per FAA AC 150/5300-13A and 14 CFR Part 77.

**One Time Harvest Area**

The One Time Harvest Area (10.6 acres) consists of upland pine stands that are currently commercially viable for timber sale and have suitable access for logging. USFS would remove timber in these areas along with the Timber Harvest Area and regenerate them to native tree species. Due to the areas’ proximity to the Airport, tree heights within the boundaries of this area must be lower. As a result of the shorter height restriction, trees in this areas would become obstructions well before another timber sale would be commercially viable. Therefore, the Airport will be responsible for maintaining heights as they grow to become obstructions throughout the life of the new SUP. After the initial cut, the Airport would be limited exclusively to removal of obstruction trees and these activities would consist of chainsaw felling trees that are obstructions or within five to ten feet of becoming obstructions per FAA AC 150/5300-13A and 14 CFR Part 77.

**Wetland Obstruction Area**

The Wetland Obstruction Area consists of approximately 96.3 acres of forested wetlands where USFS would not traditionally perform vegetation management activities as they are considered unsuitable for timber production. As such, the Airport would be responsible for maintaining vegetation heights as they grow to become obstructions throughout the life of the new Special Use Permit. In Wetland Obstruction Areas, the Airport would be limited exclusively to removal of obstruction trees and these activities would consist of chainsaw felling of individual trees that are currently obstructions or within five to ten feet of becoming obstructions per FAA AC 150/5300-13A and 14 CFR Part 77. Temporary wetland crossings would be required to access upland areas. These wetland crossings would utilize Best Management Practices and would result in approximately 0.43-acre of temporary clearing impacts to wetlands (Section 4.9).
Herbicide Treatment

All herbicides would be used according to manufacturer’s label direction for rates, concentrations, exposure times, and application methods. Herbicides would be directly applied to the target plants (i.e., the NNIP species) using spot treatment at the lowest effective rate. Spot treatments would consist of various techniques for applying herbicides to target plants with minimal impact to native vegetation and other non-target organisms, including humans. Herbicide drift would be greatly reduced with spot treatments (relative to broad-scale or aerial application). Acceptable techniques include spraying foliage using a hand-held wand or backpack sprayer, basal bark and stem treatments using spraying or painting (wiping) methods, cut surface treatments (spraying or wiping), and woody stem injections. No herbicides would be applied aerially.

Within the Streamside Management Zone (SMZ), a 30-foot buffer on both sides of a stream, the following Best Management Practices (BMPs) in addition to the methods described above would be followed to minimize impacts to aquatic habitat and water quality:

- Use only aquatic-labeled herbicides in the SMZ (specifically Triclopyr 3A);
- Aquatic labeled herbicides (Triclopyr 3A) will be used along streams, riparian areas, and wetlands, including vernal pools;
- Only surfactants/adjuvants with low toxicity to aquatic species will be used with these herbicides in these areas;
- Applicators will use guards on the end of sprayer wands when applying along stream edges and banks;
- All herbicide will be sprayed away from any water source; and,
- Equipment, boots, and clothing will be cleaned thoroughly before moving from treatment sites to ensure that seed or other propagules from NNIP are not transported to other sites.

Following the above BMPs would help to prevent the Estimated Environmental Concentrations from reaching the LC50 for aquatic organisms.10

Triclopyr is a selective herbicide that controls invasive, broadleaf herbaceous and woody plants, but has little to no effect on grasses. This chemical acts as a growth regulator and can be applied as a direct foliar application, stem injection, or cut-surface treatment. It has been proven effective on a wide variety of NNIP species. This formulation is sold under the commercial brand names include Garlon 3ATM.11 Due to the persistent nature of NNIP

10 USFS, Environmental Assessment, Courthouse Creek Project, Pisgah Ranger District, Pisgah National Forest, Transylvania County, North Carolina, September 2013, p., 24.
species, and the abundance of local seed sources, it is anticipated that multiple applications would be required to control populations. The tree removal areas within the CNF would be inspected by USFS personnel before and after treatments to assess NNIP populations and to determine if additional treatment are required. It is anticipated that at least three to four applications would be required for adequate control of all NNIP.

Mimosa would be controlled with a 20-to 50 percent stem injections of Triclopyr 3A, or the trees would be felled and the cut stumps would be immediately treated with the same herbicide. Treatment for saplings and seedlings could include mechanical removal with a weed wrench or hand-pulling, and/or application of Triclopyr 3A as a 20 percent solution to young bark. Direct foliar applications to seedlings and re-sprouts using a 2 percent solution of Triclopyr 3A could also be used. A 2 percent solution of Triclopyr 3A would also be used for control of bicolor lespedeza, using foliar application.

For Chinese privet, foliar applications of Triclopyr 3A (3 to 5 percent solution) would provide control for this species, or for larger vines, would be cut and treated immediately with a 20 percent solution of Triclopyr 3A.

Autumn olive would be controlled by a direct foliar application of a 1 percent solution Triclopyr 3A, or for stems too tall for foliar application, basal bark treatments of Triclopyr 3A as a 20 percent solution with a surfactant would be used.

Alternative 5 also proposes the use of imazapyr and glyphosate for the treatment of non-native invasive plants within the project study area on CNF lands. Information that was brought forward in Fall of 2016 indicates the presence of alligator weed along the periphery of the project study area and alligator weed is most effectively treated with a combination of imazapyr and glyphosate.

Imazapyr is a non-selective herbicide that is commonly used to control a variety of grasses, roadleaf weeds, vines and brush species and may also be used to control aquatic macrophytes. Glyphosate is a broad-spectrum, non-selective systemic herbicide. It is useful on essentially all annual and perennial plants including grasses, sedges, broad-leaved weeds and woody plants.

Access

The project needs sufficient access areas to allow for timber harvest and management of tree heights (obstructions) in the future. An estimated 0.4-mile of existing abandoned roadbed would need to be improved temporarily for access during the timber sale (Figure 2.1). The temporary road and skidding access trails would be allowed to regenerate to natural vegetation after the timber sale has been completed. The new SUP would allow the Airport to access the areas needed for future obstruction management. This access would consist of the existing Forest Road 610 and allows the timber contractor to use a low ground pressure,
high clearance vehicle on the old skid trails, as needed to treat obstruction trees. There would be no vehicle access past the end the existing Forest Road 610 after the timber sale is complete as temporary crossings would be removed. It is expected that this access would be very infrequent and likely would occur less than once every five years.

Trees in wetland areas within the CNF that require removal comprise approximately 96.3 acres. The use of temporary wetland crossings would be necessary to access isolated upland portions of the Project Study Area for removal of trees. Within the wetlands, clearing of these areas would be performed utilizing Best Management Practices, such as hand-cutting (with chainsaws, polesaws and other hand tools), use of low ground pressure vehicles and equipment, and direct herbicide application to targeted trees. Logs from cut trees would need to be removed entirely from the wetland areas. Small amounts of slash from the tree cutting could be chipped and spread on disturbed areas within the wetlands pending approval by the USACE. This would result in multiple benefits such as preventing erosion, reducing the amount of material to be disposed of by the Airport, and returning nutrients to the soil.

2.4.1.4 Continuous Tree Obstruction Maintenance

Craven County, the Coastal Carolina Regional Airport Authority, FAA, and USFS recognize that maintenance of obstruction trees would be a recurring need as trees continue to grow and penetrate the approach surface to Runway 4. A Tree Obstruction Management Plan (TOMP) has been developed by USFS based on the results of a field stand inventory. The TOMP would prescribe land management techniques based on the FAA height restrictions that apply to each stand. Under the Proposed Action, the Project study area would be allowed to naturally revegetate; however, in accordance with the TOMP, USFS would be allowed to plant vegetation in the five tree stands that are within the Runway 4 approach. Such plantings must not be of the variety that would attract birds or wildlife that would be a hazard to the aircraft utilizing the Airport, or create habitat for federally protected plant or animal species. Within the CNF, the Airport would be responsible for removing/harvesting future tree obstructions as needed and in accordance with the SUP and TOMP.

2.4.2 Alternative 6 – Selective Tree Clearing, Cut and Leave

Under Alternative 6, all existing obstruction trees and those within 5 to 10 feet of the obstruction height, would be cut and left on site. This alternative was considered in response to concerns raised about the extent of tree clearing in the project study area and the impacts to scenery and wildlife habitat, particularly the effects to the Red-cockaded woodpecker. The extent of tree cutting that would be necessary to eliminate obstruction trees would result in effects similar to those from a clearcut with reserves operation (Alternative 5). This alternative would include temporary wetland crossings and herbicide treatment of NNIP similar to Alternative 5. The project-specific plan amendment to change three standards that is described in Alternative 5 and Chapter 1, would also be included in this alternative.
2.4.3 NO-ACTION ALTERNATIVE

For this project, the no-action Alternative is defined as the continuation of existing land use and the taking of No-action to remove the tree obstructions. The primary value of assessing this alternative is that it establishes a baseline of environmental and socioeconomic conditions against which other action alternatives can be compared.

Under the No-action Alternative, the Project study area would remain in its current condition and no tree obstructions would be removed. Although potential environmental impacts would not occur, this Alternative would not satisfy the Purpose and Need. The No-action Alternative would result in hazardous conditions continuing at the Airport. Additionally, trees would continue to penetrate the approach surface, and with continued growth, the problem would worsen over time. FAA would continue to raise the approach visibility minimums, height above touchdown, threshold crossing height, and glidepath angle, resulting in an unusable approach for jet aircraft. Additionally, the presence of tree obstructions would continue to violate FAA Safety Regulations outlined in the FAA Advisory Circular 150/3500-13A, Airport Design (AC 150/3500-13A and 14 Code of Federal Regulations Part 77 Object Affecting Navigable Airspace (14 CFR Part 77). At some point, the FAA would also seek to relocate the threshold. If these steps were taken, the No-action Alternative would result in reduced operations by the airlines or discontinuation of service to EWN, which would have a negative economic impact on the Airport and the community.

The No-Action alternative would not allow for any treatment of non-native invasive plants within the project study area. Invasive species would continue to spread in the area, outcompeting native vegetation and suitable habitat for native wildlife species.

2.5 Project Design Features and Monitoring Common to Action Alternatives

Within the Streamside Management Zone (SMZ), a 30-foot buffer on both sides of a stream, the following Best Management Practices (BMPs) in addition to the methods described above would be followed to minimize impacts to aquatic habitat and water quality:

- Use only aquatic-labeled herbicides in the SMZ (specifically Triclopyr 3A);
- Aquatic labeled herbicides will be used along streams, riparian areas, and wetlands, including vernal pools;
- Only surfactants/adjuvants with low toxicity to aquatic species will be used with these herbicides in these areas;
- Applicators will use guards on the end of sprayer wands when applying along stream edges and banks or adjacent to other sensitive or rare plants;
- All herbicide will be sprayed away from any water source; and,
Equipment, boots, and clothing will be cleaned thoroughly before moving from treatment sites to ensure that seed or other propagules from NNIP are not transported to other sites.

Heavy equipment would be kept out of wetlands to minimize soil disturbance.

Timbering equipment, staging areas, and temporary access trails would be located sufficiently far from streams and other water bodies where possible and at a minimum of 100’ from Brice Creek.

No stump removal (grubbing), grading, or other ground disturbance would occur within the Project Study Area.

In the 100 feet immediately adjacent to Brice Creek, all vegetation that has not reached the obstruction height, as defined by FAA regulations, would be retained to mitigate impacts to scenery along the river.

Minimize damage to existing creek-side evergreen shrubs along Brice Creek.
CHAPTER 3 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

In accordance with FAA Order 1050.1E, paragraph 405(f) and USFS NEPA requirements in accordance with 36 CFR 220, this chapter describes the existing environment within the Project Study Area to establish the baseline conditions from which the impacts of the Proposed Action and No-action Alternative will be determined. Information provided by various agencies during the scoping process (Appendix B) was used to supplement review of available natural resource data, previous studies at the Airport, and field surveys conducted for the Proposed Action. Although all categories in FAA Orders 1050.1E and 5050.4B were considered for applicability in defining the affected environment, as well as USFS required items on USFS lands, several environmental resource categories are either not present or would not be measurably impacted by the Proposed Action, as described in Table 3.1. Only those resources that would potentially be affected by the Proposed Action are discussed further in this chapter and evaluated in Chapter 4.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>The Project Study Area is located in Craven County, which is currently in attainment for all the National Ambient Air Quality Standards (NAAQS); therefore, conformity analysis is not required. At commercial service airports such as EWN, an air quality analysis would be required if the airport experienced an annual total of 180,000 general aviation and air taxi operations. Based on the 2014 Terminal Area Forecast data, airport operations at EWN are below this threshold at approximately 33,000 annual operations.</td>
</tr>
<tr>
<td>Coastal Barriers</td>
<td>The Airport is not located within an area designated as part of the Coastal Barrier Resource System. Therefore, no impact would occur and no further evaluation is necessary.</td>
</tr>
<tr>
<td>Farmlands</td>
<td>Prime and Statewide Important farmland soils are mapped within the Project Study Area, including: Prime farmland soils of Goldsboro (GoA, 3.6 percent of Project Study Area), Norfolk (NoB, 37.4 percent) and State (StA, 10.5 percent); and, Statewide Important farmland soils of Conetoe (CnB, 5.0 percent). However, the Proposed Action includes removal of tree obstructions and would not result in conversion of farmland to nonagricultural uses. In addition, no property acquisition would be required under the Proposed Action.</td>
</tr>
<tr>
<td>Hazardous Materials</td>
<td>A regulatory record search was performed in 2009 to identify known or potential hazardous material sites, hazardous waste generators, and hazardous material users in the vicinity of the Project Study Area (Appendix C). No sites of concern were identified. Based on a 2014 search of the USEPA database four Resource Conservation and Recovery Act (RCRA) sites were identified outside of the Project Study Area, including one site at the EWN air cargo area, two sites along U.S. Highway 70, and another site located east of Creekside Park. Due to the distance of these sites from the Project Study Area and the minimal ground disturbance that would result from the Proposed Action, no impacts to known hazardous material sites would be anticipated.</td>
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ENVIRONMENTAL ASSESSMENT
Runway 4 Obstruction Removal

Table 3.1
Resources Not Present in Project Study Area or Not Measurably Impacted by the Proposed Action

<table>
<thead>
<tr>
<th>Resource</th>
<th>Status</th>
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<tbody>
<tr>
<td>Historic and Cultural Resources</td>
<td>No National Register of Historic Places (NRHP)-listed or NRHP-eligible properties would be impacted by the Proposed Action. Phase I archaeological surveys of the Area of Potential Effect (APE) for the Proposed Action were conducted and resulted in identification of 12 sites, all of which were recommended Not Eligible for listing on the NRHP (Appendix D). In letters dated February 23, 2012, and December 5, 2013, the N.C. State Historic Preservation Office (SHPO) concurred with the results of the archaeological surveys (Appendix D).</td>
</tr>
<tr>
<td>Natural Resources, Energy Supply, and Sustainable Design</td>
<td>Clearing conducted under the Proposed Action would not have a measurable effect on local supplies of natural resources or energy. The Proposed Action would result in tree removal from approximately 215 acres of the 161,000-acre CNF, however the Project Study Area would be allowed to naturally regenerate.</td>
</tr>
<tr>
<td>Noise</td>
<td>The Proposed Action would not increase air traffic, change aircraft traffic patterns, or change the aircraft class that currently utilizes the Airport; thus, no adverse noise impacts to the surrounding area from aircraft operations would be anticipated. Potential impacts from logging operations are addressed in Chapter 4.</td>
</tr>
<tr>
<td>Secondary (Induced) Impacts</td>
<td>The Proposed Action would not result in shifts in patterns of population movement or growth; public service demands; or changes in business or economic activity; thus, no further consideration of secondary impacts is necessary.</td>
</tr>
<tr>
<td>Socioeconomic Impacts, Environmental Justice, Executive Order 13045, Children’s Environmental Health and Safety Impacts</td>
<td>Based on 2010 Census data, 7.34 percent of the population that resides in the vicinity of the Airport is living below the poverty level. In addition, the surrounding area is comprised of a 19 percent minority population. By comparison, these percentages do not exceed those for Craven County and therefore, no impacts to environmental justice populations would be anticipated to result from the Proposed Action; nor would it cause children’s environmental health and safety impacts (E.O. 13045) or relocations.</td>
</tr>
</tbody>
</table>

**SOURCE:**
Michael Baker Jr., Inc., June 2014.


3.2 Recreation and Scenery

3.2.1 Croatan National Forest Recreational Uses

CNF is one of four National Forests in North Carolina. CNF’s 160,000 acres have pine forests, saltwater estuaries, bogs, and raised swamps called pocosins. Bordered on three sides by tidal rivers and the Bogue Sound, the forest is defined by water and provides a diverse range of...
recreational opportunities including camping, boating, wildlife viewing, picnicking, fishing, hiking, hunting, biking, and horseback riding. Brice Creek is a popular location for boating and fishing, and over 27 miles of the creek have been identified as an eligible Wild and Scenic River (WSR) in the CNF Land and Resource Management Plan (LRMP). Motorized boats access this coastal blackwater creek from the Trent River, private residences and docks, and from the CNF’s Brice Creek Boat Launch. Canoeist and kayakers also use the creek with access from the same locations, as well as Craven County’s Creekside Park; which lies adjacent to the Coastal Carolina Regional Airport. Motorized boating occurs from the confluence with Trent River upstream to Lee’s Brach, and with smaller craft on to SR1111. Non-motorized boating can extend further, even into the East and West Prongs of Brice Creek.

In addition to WSR eligibility, portions of Brice Creek are designated as National Forest System Trails (water trails) called the Brice Creek Interpretive Canoe Trail and Saltwater Adventure Trail; both of which begin at Brice Creek Boat Launch. Upstream from the boat launch, the interpretive trail features numbered signs corresponding to a CNF brochure. Downstream from the boat launch, the Saltwater Adventure Trail continues to the Trent River, Neuse River and Bogue Sound, with its terminus at Dixson Fields Boat Launch on the White Oak River. Although relatively few people paddle the entire Saltwater Adventure Trail for a multi-day experience, motorized and non-motorized use on Brice Creek is relatively high. Some users come for the fishing, while others are seeking solitude and scenery; the latter of which is especially true upstream of Brice Creek Boat Launch.

3.2.2 Croatan National Forest Scenic Resources

As an eligible WSR, the CNF LRMP identifies Brice Creek’s free-flowing condition, and outstandingly remarkable values (ORV) for scenery, fish and wildlife habitat, and historical and archeological sites. Although the LRMP defers a study of WSR suitability to the State of North Carolina because of the predominance of non-federal lands along the waterway, no suitability study for Brice Creek has ever been conducted by either a State or Federal agency. The LRMP does cite the following goals, desired conditions, and objectives to ensure WSR eligibility is maintained (CNF LRMP, p.53):

2.3.2. Retain the outstandingly remarkable values for scenery, fish and wildlife habitat, and historical and archeological resources, their free flowing condition, and natural settings that make the White Oak River and Brice Creek eligible for wild and scenic river status.

2.3.2.1. Manage a ¼ mile corridor along the portions of White Oak River and Brice Creek that are National Forest to retain and enhance the outstandingly remarkable values for which they are recognized.

3.2.2.1 Scenic Character
Brice Creek is a slow-moving coastal blackwater creek fed by the tannin-stained backwater from surrounding swamps. At the farthest reaches upstream the creek is a winding channel through cypress and tupelo forests. Much of the upper reaches pass through non-federal lands, but development is limited to occasional road crossings due to the natural buffer of the adjacent swamp. Downstream, there are intersecting ridges of higher ground with oak-hickory and pine forests. About a half mile upstream from Brice Creek Boat Launch, the creek’s scenic character begins to change, private lands on the eastern banks have residential developments with houses and docks, and the CNF boat ramp, dock, and picnic area is visible on the western bank.

Farther downstream, near the project study area, manmade features become more frequent. On the eastern bank, there is Craven County Creekside Park and dock, and the Coastal Carolina Regional Airport runway, mowed fields, and chain-link fencing. Although CNF lands on the western banks of this creek segment are predominately natural-appearing with a mix of wetlands, cypress/tupelo, oak/hickory, and loblolly pine forests, urban development on the on the eastern bank are dominate features affecting scenic character.

From the airport north to Trent River, the scenic character changes dramatically. In this segment, both banks of Brice Creek are highly developed with residential neighborhoods, roads, and docks; with intermittent woodlands and wetlands.

Views of the project study area as seen from Brice Creek would be within the Foreground Distance Zone, and would be considered a Concern Level 1 (high interest in scenery), because of Brice Creek’s WSR eligibility. Although the eligible WSR classification has yet to be determined, references in the Croatan NF Forest Plan do describe characteristics of potential “wild segments” of Brice Creek (Croatan Forest Plan p.67):

“Along wild segments, essentially no evidence of recent human activity is present, and access is non-motorized because there are no roads in the area. In wild segments, visitors are often isolated from the sights and sounds of other human activity and encounter few other users.”

Clearly the segment of Brice Creek within the project study area does not possess these characteristics, and would likely fall within a scenic or recreation classification. Therefore, with the project study area within the “River Corridors Eligible for Wild and Scenic River Status” management prescription area, the river segment would be “High”, as indicated in the Forest Plan (Figure 4.2.1.3b). However, a project specific forest plan amendment would allow for this section of river adjacent to the Coastal Carolina Airport to meet an SIO of “Low” to “Moderate”. A Low SIO is defined as follows: Human activities may dominate the existing landscape character. Activities must repeat form, line, color, or texture common to these landscape characters.
3.3 CLIMATE AND GREENHOUSE GASES

Of growing concern is the impact of proposed aviation projects on climate change. Greenhouse gases are those that trap heat in the earth's atmosphere. Both naturally occurring and anthropogenic (man-made) greenhouse gases include water vapor (H₂O), carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and ozone (O₃).

Research has shown that there is a direct link between fuel combustion and greenhouse gas emissions. Therefore, sources that require fuel or power at an airport are the primary sources that would generate greenhouse gases. Aircraft are probably the most often cited air pollutant source, but they produce the same types of emissions as cars. Aircraft jet engines, like many other vehicle engines, produce carbon dioxide (CO₂), water vapor (H₂O), nitrogen oxides (NOₓ), carbon monoxide (CO), oxides of sulfur (SOₓ), unburned or partially combusted hydrocarbons (also known as volatile organic compounds [VOCs]), particulates, and other trace compounds.

According to most international reviews, aviation emissions comprise a small but potentially important percentage of anthropogenic (human-made) greenhouse gases and other emissions that contribute to global warming. The Intergovernmental Panel on Climate Change (IPCC) estimates that global aircraft emissions account for about 3.5 percent of the total quantity of greenhouse gas from human activities. In terms of the United States contribution, the United States General Accounting Office (GAO) reports that aviation accounts “for about three percent of total United States greenhouse gas emissions from human sources” compared with other industrial sources, including the remainder of the transportation sector (twenty-three percent) and industry (forty-one percent).

The scientific community is developing areas of further study to enable them to more precisely estimate aviation's effects on the global atmosphere. FAA is currently leading or participating in several efforts intended to clarify the role that commercial aviation plays in greenhouse gases and climate change. The most comprehensive and multi-year program geared towards quantifying climate change effects of aviation is the Aviation Climate Change Research Initiative (ACCRI) funded by FAA and the National Aeronautics and Space Administration (NASA). ACCRI will reduce key scientific uncertainties in quantifying aviation-related climate impacts and provide timely scientific input to inform policy-making decisions. FAA also funds Project 12 of the Partnership for AiR Transportation Noise & Emissions Reduction (PARTNER) Center of Excellence research.

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15 All greenhouse gas inventories measure carbon dioxide emissions, but beyond carbon dioxide different inventories include different greenhouse gases (GHGs).
16 Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also greenhouse gases, but they are, for the most part, solely a product of industrial activities. For example, chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) are halocarbons that contain chlorine, while halocarbons that contain bromine are referred to as bromofluorocarbons (i.e., halons) or sulfur (sulfur hexafluoride: SF₆).
initiative to quantify the effects of aircraft exhaust and contrails on global and United States climate and atmospheric composition. Finally, the Transportation Research Board’s (TRB) Airport Cooperative Research Program (ACRP) Project 02-06 has prepared a guidebook on preparing airport greenhouse gas emission inventories, which was released on September 30, 2009. While not policy, airports can use this as a resource to assist them in preparing airport greenhouse gas emission inventories, when applicable.

Trees absorb carbon dioxide and release water vapor and oxygen. USFS guidance estimates that, on average, loblolly pine would sequester approximately 125,000 tons of carbon per acre. Therefore, the Project Study Area would sequester approximately 40.8 million tons of carbon.

3.4 COASTAL RESOURCES

3.4.1 Coastal Zone Management Program

The Coastal Zone Management Act (CZMA) aims to preserve, protect, develop, and where possible, restore and enhance the resources of the nation’s coastal zone. The CZMA, as amended, requires that projects within the coastal zone comply, to the maximum extent practicable, with approved state coastal management programs. Approved in 1974, the Coastal Area Management Act (CAMA) established the federally approved coastal management program for the 20 coastal counties of North Carolina. Craven County is one of the 20 coastal counties; therefore, the Proposed Action would need to comply with the CAMA and other applicable regulations under the North Carolina Coastal Management Program, including the state Dredge and Fill Law. This Program is administered by the North Carolina Department of Environmental and Natural Resources (NCDENR), Coastal Federation (NCCF).

The NCCF has jurisdiction over Areas of Environmental Concern (AEC) in coastal counties. The AECs are coastal resources of statewide importance and include:

- Estuarine Waters and Public Trust Areas;
- Estuarine Shoreline;
- Coastal Wetlands;
- Ocean Hazard Areas;
- Public Water Supplies; and,
- Natural and Cultural Resource Areas.


Within the Project Study Area, Brice Creek would be considered an AEC as a Public Trust Area since it is a navigable water.

### 3.5 COMPATIBLE LAND USE

#### 3.5.1 Existing Land Use

The Airport property is completely maintained for its intended use and comprises approximately 734 acres. As discussed in Chapter 1, land use in the vicinity of the Airport is comprised of commercial development to the north and northeast along U.S. Route 70, with residential development to the west and north along Brice Creek and the Trent and Neuse Rivers. Craven County’s Creekside Park is located to the east along with residential subdivisions. CNF is located south of the Airport, adjacent to Brice Creek (Figure 1.2).

#### 3.5.2 Zoning and Other Land Use Controls

The Airport is located within an unincorporated area of Craven County. City of New Bern zoning encompasses two areas of residential land use in the vicinity of the Airport. These areas are located adjacent to Brice Creek, both to the west and east of the Airport.

As a condition of receiving federal funding, the Airport must assure, to the extent possible, that the property within and in the vicinity of the Airport is zoned and restricted to uses compatible with normal airport operations.23 As stated in the _Craven County, North Carolina, Zoning and Height Control Ordinance_, zoning is currently in place to restrict the height of objects in the Airport approach zones (Appendix E). The Ordinance states:

> **In order to carry out the provisions of the Ordinance, there are hereby created and established certain zones for the purpose of regulating zoning to prohibit uses which may be hazardous to the safe operations of aircraft.** 24

The majority of the Project Study Area falls within the CNF. Management of this property is guided by the CNF LRMP. The Proposed Action would meet Goal 2.7.2 in the LRMP, which states “Manage special uses of Croatan NF land in a manner that protects natural resource values and public health and safety, while meeting land resource management objectives…..” CNF lands within the project study area fall under three management prescriptions: Hardwood Cypress Wetland Management, Red Cockaded Woodpecker Habitat Management, and River Corridors Eligible for W&S River Status. Activities included in the SUP must be consistent with the plan components associated with each of the management prescriptions. The Airport had a SUP from USFS for the approach path to Runway 4 located on Croatan lands that was originally issued in 1968 and expired in 2012. Issuance of a new SUP is considered part of the Proposed

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24 _Craven County, North Carolina, Zoning and Height Control Ordinance_, July 2006.
Additional land use control within the Project Study Area includes an easement on a one-acre portion Creekside Park property southeast of the Airport (Figure 1.2). Conditions of this easement allow for the removal of tree obstructions in order to maintain a clear approach to Runway 4.

3.6 DEPARTMENT OF TRANSPORTATION ACT SECTION 4(f) and 6(f) RESOURCES

Section 4(f) of the Department of Transportation Act of 1966 provides protection to publicly owned parks, recreation areas, wildlife and waterfowl refuges, and historic sites. Under Section 4(f), properties must not be impacted unless no prudent and feasible alternative exists and efforts to minimize impacts to the property are completed.

Creekside Park is located on the east side of the Airport property (Figure 1.2) and like the Airport, is owned by Craven County. The park is a multi-use public park with 12 athletic fields, picnic shelters, and access to Brice Creek for canoeists and kayakers. Approximately 4.3 acres of the 111-acre park extends into the Project Study Area (Figure 2.1). The Airport has an existing easement to clear trees on the 4.3-acre portion of Creekside Park that is located within the Project Study Area.

Approximately 204 acres of the 327-acre Project study area is located within the CNF. The Proposed Action area is not considered a Section 4(f) or 6(f) resource; however, other portions of the CNF could be considered Section 4(f) or 6(f) resources if they meet the requirements for Section 4(f) or 6(f) classification.

Section 6(f) resources are places such as public parks, trails, courts, and other recreational areas that were purchased in part through grants from the Land and Water Conservation Fund Act of 1965 (LWCF Act). The properties are protected by the LWCF Act from conversion to non-public recreational uses. No Section 6(f) resources are known to exist within or in the vicinity of the Project Study Area; therefore, the Proposed Action would not require compliance with the LWCF Act.

3.7 FISH, WILDLIFE, AND PLANTS

Within the 327-acre Project study area, approximately 61.7 acres are located within the property boundary of the Airport. Of these 61.7 acres, approximately 43.8 acres are disturbed areas; those that are mowed/maintained and actively managed by the Airport. There are also 6.8 acres of natural upland habitat and 11.1 acres of delineated jurisdictional wetland area. The remaining 265.3 acres of the Project Study Area are off-site, with a total of 204.4 acres belonging to the CNF, 8.1 acres

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belonging to Craven County, and 16.2 acres belonging to private property owners. Brice Creek and its tributaries make up 36.6 acres. **Table 3.3** below shows the acreage by type and ownership.

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<thead>
<tr>
<th>Acreage by Type and Ownership</th>
<th>Disturbed Area</th>
<th>Mesic Mixed Hardwoods</th>
<th>Mesic Pine Flatwoods</th>
<th>Riverine Swamp Forest</th>
<th>Tidal Freshwater Marsh</th>
<th>Brice Creek</th>
<th>Grand Total</th>
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</thead>
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<td>6.8</td>
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<td>1.3</td>
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<tr>
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<td>7.1</td>
<td></td>
<td>2.8</td>
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<td>42.4</td>
<td>83.4</td>
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<tr>
<td>Brice Creek</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36.6</td>
<td>36.6</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
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<td><strong>73.7</strong></td>
<td><strong>52.9</strong></td>
<td><strong>91.4</strong></td>
<td><strong>13.8</strong></td>
<td><strong>36.6</strong></td>
<td><strong>327.1</strong></td>
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</tbody>
</table>

More detailed descriptions of the biotic communities that are located within the Project study area, essential fish habitat, and wildlife, as well as descriptions of federal, state, and USFS protected and rare species, invasive plant species, and migratory birds are included in the following sections.

### 3.7.1 Essential Fish Habitat

The *Magnuson-Stevens Fishery Conservation and Management Act of 1976*, as amended, establishes regional fishery management councils to work with National Oceanic and Atmospheric Administration (NOAA) Fisheries, to identify and protect Essential Fish Habitat (EFH) when developing regional fishery management plans. NOAA Fisheries and these regional fishery management councils are required to “minimize, to the extent practicable, adverse effects to EFH caused by fishing activities.” In addition, federal agencies are required to consult with NOAA Fisheries to determine if adverse effects would result to EFH from their projects.

EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Many species use marine, estuarine, and/or freshwater at various stages of their life, as well as utilizing different strata within these waters. Thus, EFH not only includes the water column, but the underlying bottom surface of a body of water. EFH also includes

27 Ibid.
28 Ibid.
29 Ibid.
deep ocean waters, coastal waters, and inland waters used by marine and diadromous species, and includes those habitats that support different life stages of the managed species. Based on GIS data from the NOAA Fisheries, Brice Creek is designated as a Shellfish Growing Area, which is considered EFH. However, it is important to note that the segment of Brice Creek located within the Project study area is freshwater and does not support shellfish.

3.7.2 Wildlife

Over 43 acres of the 61.7 total acres of Airport property located within the Project Study Area is comprised of actively managed herbaceous cover. Although forested habitats do occur within the Airport property boundary, they provide little in the way of high quality or unique wildlife habitat since aircraft noise and active management of the Airport property make the area less desirable for wildlife. Approximately 204 acres of the total 327-acre Project Study Area are located within the CNF. Although brackish waters within the 161,000-acre CNF are considered a valuable commercial nursery for oysters, shrimp, and crab, the segment of Brice Creek that is located within the Project Study Area is considered a freshwater resource. In addition to the fish and other freshwater aquatic species that inhabit this 36-acre segment of Brice Creek, wildlife that may potentially occur within the Project Study Area include black bear, belted kingfisher, wild turkey, red-winged blackbird, and fish crow. USFS intensively manages several areas within and adjacent to the Project Study Area as early successional stage areas (i.e., food plots) to support deer, bear, turkey, squirrels, raccoons, dove and quail. Osprey have been seen using this section of Brice Creek for foraging. The food plots also provide much needed “edge” habitat that is used as forage and cover by many migratory bird species and other small animals such as mice and reptiles.

3.7.3 Biotic Plant Communities

Natural habitats observed within the Project Study Area can be classified based on their vegetative composition, landscape position, soil type, and hydrologic regime into various biotic communities. The Cowardin system, derived from Classification of Wetlands and Deepwater Habitats of the United States, further categorizes wetlands using hydrologic, geomorphologic, chemical, and biological factors. A U.S. Fish and Wildlife Service (USFWS) modification of this system aggregates the approximately 275 Cowardin wetland types into 18 general categories based on vegetative composition. This modification was used to identify wetlands within the Project Study Area, and then enhanced further with detailed descriptions of specific wetlands of North Carolina in the N.C. Wetland Assessment Method User Manual. The uplands within the Project Study Area were identified based on Classification of the Natural Communities of North Carolina. Using this process, the natural habitats observed within the Project Study Area can be

31 Ibid.
classified into the following biotic communities. A complete breakdown of the acreage of each community type by ownership is provided in Table 3.3. The locations of biotic communities within the Project Study Area are depicted on Figure 3.1. The wetland limits and USACE jurisdictional authority is discussed further in Section 3.8.

3.7.3.1 Wetlands
Wetlands identified within the Project Study Area during the field surveys included approximately 91.4 acres of riverine swamp forest (0.4 acres on the Airport, 1.3 acres in Creekside Park, 6.3 acres on private land, and 83.4 acres on CNF) and approximately 13.8 acres of tidal freshwater marsh (10.7 acres on the Airport and 3.1 acres on CNF). These communities are described below.

3.7.3.1.1 Riverine swamp forest
Riverine swamp forests are forests with a predominance of hydrophytic trees and other woody plants that withstand seasonal to semi-permanent inundation. In the Coastal Plain, they often occur in extensive mosaics with bottomland hardwood forests. These forests are also called cypress-tupelo swamps due to having a canopy of bald cypress (Taxodium distichum) and/or pond cypress (Taxodium ascendens), and swamp tupelo (Nyssa biflora) or water tupelo (Nyssa aquatica) in blackwater or brownwater systems, respectively. Riverine swamp forests identified within the Project Study Area during the wetland delineation were dominated by bald cypress, water ash (Fraxinus caroliniana), red maple (Acer rubrum), and swamp tupelo, and the occasional black willow (Salix nigra). The understory was limited to young canopy species, plus red bay (Persea palustris), laurel oak (Quercus laurifolia), planer tree (Planera aquatica), and extensive stands of cane (Arundinaria gigantea). Shrubby species included wax myrtle (Morella cerifera), swamp rose (Rosa palustris), dwarf palmetto (Sabal minor), tag alder (Alnus serrulata), and the occasional possum-haw viburnum (Viburnum nudum). Vines included poison ivy (Toxicodendron radicans), wood vamp (Decumaria barbara), and supple jack (Berchemia scandens). The herbaceous layer was dominated by royal fern (Osmunda regalis var. spectabilis), swamp pennywort (Hydrocotyle ranunculoides), arrow arum (Peltandra virginica), netted chain fern (Woodwardia areolata), lizard’s tail (Saururus cernuus), jewelweed (Impatiens capensis), and the occasional false nettle (Boehmeria cylindrica).

ENVIRONMENTAL ASSESSMENT
Runway 4 Obstruction Removal

Legend
- Study Area
- Airport Property Boundary
- Plant Survey
  - Thersitum macrostachyum
- Non-native Invasive Plant Areas

Delimited Wetlands
- Tidal Freshwater Marsh
- Riverine Swamp Forest
- Waters of the U.S.

Uplands
- Disturbed area
- Mesic Pine Plantations
- Mesic Mixed Hardwoods
- State Waters

Scale: 0 150 300 450 600 900 1200 Feet
3.7.3.1.2 Tidal freshwater marsh

Tidal freshwater marshes occur along margins of estuaries, and in lower reaches of streams and rivers where they are subject to flooding at least occasionally by tides, including wind tides.\(^{35}\) They have little or no salinity (0.5 parts per thousand or less) and so are not brackish, since brackish water is defined as having a salinity ranging from 0.5 to 30 parts per thousand.\(^{36}\) They can cover hundreds of acres, or occur in small zonal areas.\(^{37}\) These areas are dominated by emergent herbaceous plants as are all marshes. Those identified during the wetlands delineation were limited to areas where the riverine swamp emptied into Brice Creek. These marshes therefore are affected by wind tides, but not lunar tides. Here, the dominant herbaceous plants included two species of cat-tail (\textit{Typha latifolia} and \textit{Typha glauca}), a sedge (\textit{Carex} sp.), soft rush, giant plumegrass (\textit{Saccharum giganteum}), and the occasional clump of common smartweed (\textit{Persicaria pensylvanicum}). Woody plants were generally scarce, with only the occasional elderberry present.

3.7.3.2 Uplands

Uplands are generally dry areas with the water table one foot or more below ground level during the growing season. Uplands identified within the Project Study Area during the field surveys included approximately 73.7 acres of mesic mixed hardwood forest, approximately 52.9 acres of pine flatwoods, and 58.7 acres of disturbed areas. A complete breakdown of the acreage of each community type by ownership is provided in Table 3.3 on page 3.8. These communities are described below.

3.7.3.2.1 Mesic mixed hardwood forest

Mesic mixed hardwood forests are uplands with moist (mesic) soils and a topography (commonly on north-facing river bluffs or “islands” surrounded by swamp) that combine to lessen the chance of fire. There is a wide assortment of trees and shrubs, and dominants are difficult to determine.\(^{38}\) Trees identified within the Project Study Area during the field survey include loblolly pine (\textit{Pinus taeda}), chestnut oak (\textit{Quercus michauxii}), sweetgum (\textit{Liquidambar styraciflua}), red maple, American beech (\textit{Fagus grandifolia}), tulip poplar (\textit{Liriodendron tulipifera}), black gum (\textit{Nyssa sylvatica}), water oak (\textit{Quercus nigra}), and American holly (\textit{Ilex opaca}). The understory consists of red bay, eastern red cedar (\textit{Juniperus virginiana}), witch hazel (\textit{Hamamelis virginiana}), sourwood (\textit{Oxydendrum arboreum}), and ironwood (\textit{Carpinus caroliniana}). The shrub

\(^{35}\) \textit{Ibid.}, p. 35.
\(^{36}\) NOAA, “What is an Estuary?”, \url{http://oceanservice.noaa.gov/education/kits/estuaries/estuaries01_whatis.html} (March 17, 2016).
\(^{38}\) \textit{Ibid.}, p. 42.
layer is dominated by wax myrtle, the invasive spring silverberry (*Elaeagnus umbellata*), highbush blueberry (*Vaccinium formosum*), and the occasional black-haw viburnum (*Viburnum prunifolium*). Vines include cross vine (*Bignonia capreolata*). The ground layer is sparse, with the exception of southern lady fern (*Athyrium asplenioide*) and the occasional partridgeberry (*Mitchella repens*).

### 3.7.3.2.2 Mesic Pine flatwoods

Mesic pine flatwoods are uplands with a canopy of pines and a thin (in areas regularly burned) to dense (in areas not burned) understory layer39 of sapling hardwood trees, scrub oaks, shrubs, and vines. Those identified within the Project Study Area during the field survey were in unburned areas, and so had a thick understory. The canopy is dominated by loblolly pine, sweetgum, red maple, and black cherry (*Prunus serotina*). The understory consists of ironwood, flowering dogwood (*Cornus florida*), red bay, and sweetleaf (*Symlocos tinctoria*). The shrub layer is dominated by wax myrtle, Chinese privet (*Ligustrum sinense*), beauty berry (*Callicarpa americana*), and groundsel-tree (*Baccharis halimifolia*). Woody vines include yellow jessamine (*Gelsemium sempervirens*), Japanese honeysuckle (*Lonicera japonica*), peppervine (*Ampelopsis arborea*), and fringed catbrier (*Smilax bona-nox*). The herbaceous layer is dominated by bracken fern (*Pteridium aquilinum*), Christmas fern (*Polystichum acrostichoides*), blackberry (*Rubus argutus*), and heartleaf (*Hexastylis arifolia*).

### 3.7.3.2.3 Disturbed areas

In addition to the natural habitats above, the Project Study Area contains disturbed areas. Disturbed areas are those lands that have been highly impacted by the activities of man, and are either under cultivation for crops or timber production, or are built upon for residential or commercial purposes. Those identified within the Project Study Area during the field survey include small wildlife food plots planted with oats, wheat, lespedeza, and other plants for game management on the south side of Brice Creek, and the maintained grassy areas on Airport property to the north of Brice Creek. The Project Study Area also includes maintained residential areas and the Creekside Park, located northwest and northeast of Brice Creek, respectively.

### 3.7.3.3 Invasive Plant Species

Invasive species are those that have been introduced by man into an area where they are not native and they reproduce by either seed or spreading vegetatively by cuttings or roots successfully enough to “invade” the natural landscape to become established or “naturalized.” While there are various definitions for invasive species, most federal agencies have adopted the invasive species definition found in Executive Order 13112, *Invasive*

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Species, which requires that the species meet two criteria: the plant must be non-native to the particular landscape, and that it may possibly cause economic harm, environmental harm, or harm to human health if introduced into an ecosystem. Executive Order 13112 prohibits federal agencies from authorizing, funding, or performing actions that may introduce or spread invasive species without fully considering reasonable measures that could be implemented to limit the risk of harm. The analysis required in the Executive Order compliments the analysis requirements found in NEPA, as well as the requirements to prevent and minimize impacts found in the *Endangered Species Act* of 1973 and the *Federal Noxious Weed Act* of 1974.

A history of disturbance from agriculture and silviculture has provided opportunities for invasive species to become established in the southern portion of the Project Study Area, on USFS land. Some plant species were likely deliberately introduced for a specific purpose such as erosion control, wildlife forage, hedgerow fences, or windbreaks. Some plant species may have been originally introduced as ornamentals for landscaping have since escaped and established themselves in natural areas. Other plant species were either accidentally introduced or the method of introduction is not known. Surveys completed for USFS listed rare plants, which included identification of invasive species and encompassed the Project Study Area, were conducted during June and July 2011, and May 2013. Invasive species listed in *Nonnative Invasive Plants of Southern Forests: A Field Guide for Identification and Control* that were observed within the Project Study Area included spring silverberry (*Elaeagnus umbellata*), Chinese privet (*Ligustrum sinense*), mimosa (*Albizia julibrissin*), Chinese lespedeza (*Lespedeza cuneata*), bicolor lespedeza (*Lespedeza bicolor*), and Japanese honeysuckle (*Lonicera japonica*).

A narrow area comprised of several large (30-foot tall) mimosa trees and numerous saplings, and dense hedges of Chinese privet and spring silverberry along the borders, was identified adjacent to the Project Study Area at Plant Survey Area A (Figure 3.1) within the CNF. Within the Project Study Area at Plant Survey Area B, dense growth of young (less than 12-inch diameter at breast height) loblolly pine indicates this area was cut over or otherwise disturbed 5 to 10 years ago. Japanese honeysuckle is abundant in the herb layer in the Project Study Area within CNF. Several medium-sized (10 to 15 foot) mimosa trees are scattered in the area. The southern section of the Project Study Area contains a number of cultivated wildlife food fields with roads connecting them. Non-native invasive plants are very

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abundant in this area within CNF (Plant Survey Area C, Figure 3.1), including mimosa trees, Chinese lespedeza and bicolor lespedeza. Of greater concern are Chinese privet and spring silverberry. These two species are very abundant along the roadsides and field borders in Plant Survey Area C. The Chinese privet has invaded the woods between fields, and is encroaching into the swamp forests to the north of the cultivated fields. The spring silverberry has successfully colonized the woods between the cultivated fields, and is encroaching into the dry/mesic forest north of the cultivated fields.

Personal communication from an environmental consultant who visited the project study area in summer 2016 indicated the presence of the invasive alligator weed (Alternanthera philoxeroides) along the periphery of the project study area. The extent of alligator weed infestation is not well known but due to the species’ ability to rapidly spread, it is expected to occur within the wetland areas on CNF lands.

3.7.4 Protected or Rare Species

3.7.4.1 Federally Protected Species

Pursuant to Section 7 of the Endangered Species Act of 1973 (ESA), the Bald and Golden Eagle Protection Act of 1940, and the Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended, a field survey was conducted to determine if any federally protected species or suitable habitat for these species were present within the Project Study Area.

Protected species are plants and animals whose protection is mandated by specific acts of the United States Congress, and managed and enforced by various federal authorities. USFWS, or National Oceanic and Atmospheric Administration (NOAA) Fisheries in the case of marine species, determines whether a species should be federally protected as threatened or endangered. A listed species is protected under the ESA until its population has recovered to the point that it can be removed from the list. If a federally protected species may be impacted by the Proposed Action, the federal agency responsible for the project must consult with USFWS and/or NOAA Fisheries. These agencies determine whether the Proposed Actions are likely to adversely impact the species or its habitat, which may lead to further decline or extinction.

Typically, federally protected species require specific conditions to sustain them. Those conditions, or requirements, are well documented for protected species. The NCDENR Natural Heritage Program online database was consulted to obtain more specific occurrence information for the species on the USFWS list. The NCDENR resource provides a list of rare species occurrences for the county and U. S. Geological Survey (USGS) quadrangle within which the Project Study Area falls. A literature search was performed for the federally listed species to determine habitat requirements and to find descriptions of the species that would facilitate identification during the field survey. Important sources of reference information included natural resource agency data and published reports, various
botanical and faunal literature, available USFWS Species Recovery Plans, and information from USFS based on previous field surveys and general observations. USFS also does intense monitoring for red-cockaded woodpeckers and that information was utilized for this project in determining survey needs for that species. Finally, aerial photographs of the Project Study Area were reviewed to identify potential suitable habitat for each species prior to beginning the field survey. The protected species known to occur or possibly occur in Craven County are shown in Table 3.4. 44

The following are descriptions of the federally protected species known to occur, or that could possibly occur within the Project Study Area, and their habitat requirements. The potential direct impacts to each from the Proposed Action are evaluated in Chapter 4. Two species, the Atlantic sturgeon and the leatherback sea turtle, were eliminated from the survey because they require marine aquatic and/or beachfront dune habitat. Beachfront dune habitat suitable for leatherback sea turtle nests is not present within the project study area; therefore, no impacts to leatherback sea turtles are anticipated. The Atlantic sturgeon could potentially utilize Brice Creek for foraging or for access to inland spawning sites but are not likely to remain within the section of Brice Creek within the Proposed Action area for extended time periods nor is an aquatic survey for Atlantic sturgeon within the scope of this document. The Proposed Action would have a minimal impact on Brice Creek and therefore, the Proposed Action is assumed to have no impact to Atlantic sturgeon. A Biological Assessment/Biological Evaluation is included in Appendix F.

### Table 3.4
Federally Protected Species Known to Occur or Possibly Occur within Craven County, North Carolina

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status</th>
<th>Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitive joint-vetch</td>
<td>Aeschynomene virginica</td>
<td>Threatened</td>
<td>Historic</td>
</tr>
<tr>
<td>Rough-leaved loosestrife</td>
<td>Lysimachia asperulaefolia</td>
<td>Endangered</td>
<td>Known</td>
</tr>
<tr>
<td>Animals</td>
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<td></td>
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<tr>
<td>American alligator</td>
<td>Alligator mississippiensis</td>
<td>T (S/A)</td>
<td>Known</td>
</tr>
<tr>
<td>Atlantic sturgeon*</td>
<td>Acipenser oxyrinchus oxyrinchus</td>
<td>Endangered</td>
<td>Known</td>
</tr>
</tbody>
</table>

Bald eagle | *Haliaeetus leucocephalus* | BGPA | Known
---|---|---|---
Leatherback sea turtle* | *Dermochelys coriacea* | Endangered | Known
Red-cockaded woodpecker | *Picoides borealis* | Endangered | Known
West Indian manatee | *Trichechus manatus* | Endangered | Known
Northern long-eared bat** | *Myotis septentrionalis* | Threatened | Unknown

**SOURCE:** USFWS, April 2015

**NOTES:**
- BGPA - Bald and Golden Eagle Protection Act.
- T (S/A) - Threatened due to similarity of appearance.
- Historic - The species was last observed in the county more than 50 years ago.
- * requires marine aquatic or beachfront dune habitat
- **Not on County List – Craven County within White Nose Syndrome Buffer Area

### 3.7.4.1.1 Sensitive joint-vetch

Sensitive joint-vetch (*Aeschynomene virginica*) is an annual legume that grows to a height of three to six feet. Each one- to five-inch long leaf has 30-56 leaflets, giving it a feathery appearance. These are sensitive to light and usually to touch.\(^{45}\) The flowers are less than an inch in size, yellow streaked with red, and bloom from July to September.

Sensitive joint-vetch “requires the unique growing conditions occurring along parts of a river close enough to the coast to be tidally influenced, yet far enough upstream to consist of fresh or slightly brackish water.”\(^{46}\) These freshwater tidal marshes are thus flooded twice daily as the high tides push the freshwater upstream. According to USFWS, the plant has not been observed in more than 50 years in Craven County, and is listed as “Historic” there.

Suitable habitat for sensitive joint-vetch is not present within the Project Study Area. The areas of tidal freshwater marsh present along the shore of Brice Creek are not affected by a lunar tide, but by wind tide only. Because of this, the shores are not left dry at low tide and flooded at high tide twice daily, which the plant needs in order to survive.

### 3.7.4.1.2 Rough-leaved loosestrife

Rough-leaved loosestrife (*Lysimachia asperulifolia*), more accurately called pocosin loosestrife, is a rhizomatous, perennial herb with slender stems to one or two feet tall. Whorls of three to four bluish-green leaves encircle the stem at intervals beneath the showy yellow flowers. The leaves of *L. asperulifolia* are not rough, but smooth and so the traditional name is a misnomer.\(^{47}\) Flowering occurs from mid-May through June,


with fruits present from July through October.

Rough-leaved loosestrife favors pocosins, especially on the edges (ecotones) between longleaf pine sandhills and pond pine pocosins. Here, the soils are “moist, seasonally saturated sands or of shallow organic soils overlying sand. It has also been found on deep peat in the low shrub community of Carolina bays.”\textsuperscript{48} It has been found in roadside depressions, firebreaks, and powerline rights-of-way adjacent to these pocosins. These habitats depend on naturally occurring fires to keep the understory clear. When these fires are suppressed, shrubby understory growth increases in density and height, expanding to eliminate the open edges that it requires.\textsuperscript{49}

Suitable habitat for rough-leaved loosestrife is not present within the Project Study Area. No ecotonal areas between sandhills and pocosins occur, and the area has been fire suppressed for many years.

3.7.4.1.3 West Indian manatee

The West Indian manatee (\textit{Trichechus manatus}) is a large aquatic mammal with a rounded body that tapers to a rounded, flattened tail. They have flipper-like forelimbs. Manatees can reach a length of 10 to 12 feet and can weigh 1,000 to 2,000 pounds. It has a small head in relation with the rest of its body, and has very small eyes, no external ears, and nostrils on the upper surface of the snout. In the murky waters of our coast, the head is sometimes all that is seen as the animal surfaces for air. The skin in very thick, gray, and lacking hairs except for the upper lip, which has numerous stiff hairs. The backs of manatees are often covered with an assortment of marine organisms.\textsuperscript{50}

Manatees favor the near shore, spending most of their time foraging in slow-moving estuarine inlets and creeks. They feed on submerged aquatic plants, such as cordgrass (\textit{Spartina} spp.), during high tide. These plants will only grow in brackish (estuarine) or freshwater tidal areas, so manatees limit their use of the ocean to moving to other foraging areas. They will swim upstream from the mouth of rivers well inland until the water depth decreases to inhibit movement or an obstruction such as a dam blocks it.\textsuperscript{51} However, foraging for aquatic plants requires a depth conducive to their growth, so deep waters without aquatic plants are avoided.

Suitable habitat for the manatee is not present within the Project Study Area. Brice Creek is a very deep blackwater stream and the lack of sunlight below the surface prevents the manatees’ food source, submerged aquatic plants, from growing.

\textsuperscript{49} \textit{Ibid.}
\textsuperscript{50} South Carolina Department of Natural Resources (SCDNR), “Florida Manatee,” http://www.dnr.sc.gov/cwcs/pdf/FloridaManatee.pdf (March 17, 2016)
\textsuperscript{51} \textit{Ibid.}
3.7.4.1.4 Northern long-eared bat

A USFWS proposal for listing the Northern Long-eared Bat (*Myotis septentrionalis*) as an endangered species was published in the Federal Register in October 2013. The listing became effective in April 2015 with the Final 4(d) Listing published in January of 2016. Furthermore, this species was previously included in USFWS’s list of protected species for Craven County, however it was subsequently removed from the list due to insufficient information regarding its presence in Craven County. Craven County is however still within the White Nose Syndrome Buffer Area. The USFWS currently has no data concerning roost trees in Craven County (*Appendix F*). At this time, there is only one documented coastal plain roost tree in Currituck County, NC and acoustic evidence of northern long-eared bat in Craven County near Bridgeton, NC. But there are no records of captured or sighted northern long-eared bats within the county.

The northern long-eared bat roosts singly or in groups under bark on trees, in cavities of trees both dead and alive, in crevices or caves, and occasionally on man-made structures. It is a medium sized bat approximately 3 to 4 inches long with a wingspan of 9 to 10 inches. It forages in the understory along ridges and slopes for an assortment of flying insects and may even take insects resting on vegetation. It breeds in the late summer and early fall prior to the females returning to hibernacula in caves. A single offspring is produced in late May to early July after females emerge from their hibernacula in caves and crevices. Large caves with near constant temperatures and high humidity are preferred.

3.7.4.1.5 Bald eagle

The bald eagle (*Haliaeetus leucocephalus*) was formerly protected under the ESA until June 2007, when it was delisted and determined to be recovered. It is, however, still federally protected under the *Bald and Golden Eagle Protection Act* (BGPA), which prohibits any form of taking of both bald and golden eagles except as provided by permit. The act makes it illegal to possess or sell an eagle or any part of an eagle (i.e., feathers, talons, eggs, or nests), and any "taking" of an eagle which includes killing, harassing, disturbing, or poisoning.

The bald eagle is a large bird of prey with a dark brown body and conspicuous white
coloration on the head, neck, and tail. Its wingspan may reach up to seven feet, and an average weight of seven pounds as an adult.\textsuperscript{57}

The bald eagle is typically associated with coasts, rivers, and lakes. Preferred nesting sites are near foraging sites, usually with an unobstructed view of each other, typically in a forest/marsh ecotone within one kilometer (0.62 mile) of open water. These sites usually have minimal human or other disturbance. In choosing a nest site, the eagle looks for large trees with an open limb structure, which will be able to provide strong support for the large, heavy nests for years without danger of falling. These trees also ensure easy access and a clear view of foraging habitat, and excellent perching opportunities. Finally, these large trees allow the re-use of the same nest in the future, or the potential for new nests should the old one collapse.

The bald eagle forages in open fresh, salt, or brackish bodies of water, including marshes and rivers. Prime habitats have shallow, slow moving water with abundant fish and bird prey. Large manmade reservoirs have provided many acres of new inland eagle foraging habitat, and concentrations of eagles may be found below hydroelectric dams where they forage on injured fish. Impounded marsh managed for waterfowl is also preferred foraging and nesting habitat.\textsuperscript{58}

Suitable foraging (Brice Creek) and nesting habitat for bald eagle exists within the Project Study Area and as depicted on \textbf{Figure 3.1}. An active bald eagle nest is located within the Project Study Area within the CNF. Bald eagles were observed foraging and using the nest during the field survey on April 23, 2009. The nest location was previously documented by USFWS. The Airport will coordinate with USFWS and USDA to remove the nest/nesting tree, since it is currently presenting a wildlife hazard to the Airport.

\textbf{3.7.4.1.6 Red-cockaded woodpecker}

The red-cockaded woodpecker (\textit{Picoides borealis}) is a small woodpecker with a wingspan up to 15 inches. The bird has black and white horizontal stripes on its back, white cheeks and breast, black-streaked flanks, and a black cap and throat. Males have small red spots or "cockades" on each side of the cap just behind the eye,\textsuperscript{59} which is not easily discernible in the field.

Preferred nesting habitat of the red-cockaded woodpecker is old-growth pine forest (stems $\geq$ 60 years old) that is relatively free of hardwood undergrowth. Suitable foraging habitat includes pine and pine hardwood stands with pine stems $\geq$ 30 years of age.


\textsuperscript{58} \textit{Ibid}.

Foraging habitat is contiguous with nesting habitat, therefore colonies typically require areas of at least 100 acres of suitable habitat. Threats to this species include loss of old-growth longleaf pine habitat, fire suppression that allows the growth of a dense hardwood and vine understory in areas that would otherwise be suitable for nesting habitat, and timber management practices that result in harvesting of pines before they reach a size that is suitable for establishment of red-cockaded woodpecker nest colonies.60

Suitable habitat for red-cockaded woodpecker in the form of nest and forage trees are present within the Project Study Area. However, fire has been suppressed to such an extent that hardwood species have grown into the canopy and understory layers of the forest throughout the Project Study Area, making the habitat much less desirable for the birds. Trees were examined during field survey and no cavities were observed. No red-cockaded woodpeckers were seen or heard.

According to the 2014 Breeding Surveys completed by USFS there are 70 known active clusters and 70 potential breeding groups within CNF. There are no known occurrence or clusters within the Project Study Area and seven known clusters within 2.0 miles of the Proposed Action (depicted in parenthesis):

- Cluster 7 (.53 miles) active;
- Cluster 47 (.93 miles) active;
- Cluster 908 (1.01 miles) inactive;
- Cluster 6 (1.01 miles) active;
- Cluster 6B (1.23 miles) inactive;
- Cluster 6A (1.36 miles) active; and,
- Cluster 22 (2.0 miles) active.

3.7.4.1.7 American alligator

The American alligator (Alligator mississippiensis) was formerly listed as endangered, both on the federal and state lists, but recovered well enough to be de-listed in the 1980s. Today, its population is secure both regionally and globally.61 It is currently listed as federally threatened by similarity of appearance to the American crocodile (Crocodylus acutus), which is restricted in distribution to extreme southern Florida and the Caribbean.62

The American alligator is a primitive semi-aquatic reptile that reaches a length of 16 feet.

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62 Ibid.
It is typically olive green to brownish with light yellow-white cross bands on the body. Juvenile alligators have bright yellow bands on the body that fade with age. Alligators differ from the American crocodile, the only other crocodilian native to the United States, in having a broader, rounded snout.

American alligators are found in large river swamps, coastal impoundments, abandoned rice fields, ponds, and other bodies of fresh water, and occasionally brackish waters, in the Coastal Plain region of the Gulf and Atlantic states.

Suitable habitat for American alligator is present within the Project Study Area. Anecdotally, alligators have been reported in Brice Creek. However, no alligators or evidence of them were observed during the field surveys and the Project Study Area is well out of the range of the American crocodile.

3.7.4.2 State-listed Species

The North Carolina Natural Heritage Program was consulted to obtain a list of state threatened and endangered species. A list of the state threatened and endangered species (not including species that are also federally listed) in Craven County, their habitat types, and their likelihood of occurrence in the Project Study Area is included in Appendix G. No legal protection is provided to state-listed species in North Carolina; however, they are evaluated based on their habitat requirements to comply with FAA guidelines.

Based on the presence of suitable habitat the eastern diamondback rattlesnake may occur within the Project Study Area although no individuals were seen during the field surveys. Airport personnel report seeing rattlesnakes on the Airport property but it is not clear if the reported animals were eastern diamondback rattlesnakes or another species.

3.7.4.3 U.S. Forest Service Rare Species

USFS maintains a list of rare species that they refer to for projects occurring in National Forests. There are 107 rare plant species found in CNF (Appendix F). A botanical survey for rare plants was conducted on CNF property within the Project Study Area during June/July 2011, and May 2013. The Project Study Area is comprised of cypress gum swamp (riverine swamp forest, Figure 3.1) and mesic mixed hardwood forest, but few of the species on the USFS list of rare plants are associated with these habitats. All 107 rare plant species identified by USFS as potentially occurring on site were evaluated for the potential presence of their habitats within CNF. A total of 39 out of the total 107 species were deemed as having potential habitat present and were included in the site survey. The complete survey results are included in Appendix F. A running tally of common species observed and the types of habitats encountered during all site visits (including those primarily for wetland delineation) was kept to verify the types of plant communities present.
Of the 39 species with potential habitat present for which field surveys occurred, only a small population (approximately 15 individuals) of one species, Piedmont meadowrue (*Thalictrum macrostylum*), was encountered on the edge of the swamp forest near the center of the Project Study Area within the CNF (Figure 3.1). This is a southeastern species, ranging from Virginia south to Florida and west to Mississippi. For occurrences within CNF, USFS classifies the status of this plant as “Sensitive”. Piedmont meadowrue is not on the North Carolina Plant Conservation Program Proposed List of Endangered, Threatened, and Special Concern Species. However, the North Carolina Natural Heritage Program rates Piedmont meadowrue as a “SR-L” species, considering it “significantly rare” in NC. It has a NC state rank of “S2”, meaning that there are between 6 and 20 known populations of this plant in North Carolina.

The Piedmont meadowrue population was found on the edge of a swamp forest along with water-pimpernel (*Samolus parviflorus*) and coastal rose-pink (*Sabatia calycina*). The canopy is dominated by red maple, swamp black gum, and sweetgum trees. Although the population of Piedmont meadowrue was small, the individual plants were robust.

In the summer of 2016, a small population of the locally rare drooping bulrush, *Scirpus lineatus*, was located in the Project Study Area. The population was located in a tidal freshwater swamp in standing water.

Rare terrestrial and aquatic animal species were treated in a similar manner as the plant species. The list of animal species presented by USFS for CNF was evaluated for the potential presence of the specific habitats preferred by those species. Some animal species do not have known habitat preferences and/or requirements. These species were marked as “Unknown” for their potential habitat presence. If more information regarding these species and their specific habitat preferences/requirements becomes available, then their potential presence can be further evaluated at that time. A few species and/or subspecies of more common species may have habitat present but are not well represented in scientific literature and, therefore, are difficult to identify in a survey. These species are noted on the list as “An undescribed shrew (*Sorex sp. 1*)”, “Chameleon Lampmussel (*Lampsilis sp. 2*)”, and “Wood Frog (*Rana sylvatica pop. 3*)”, and would require additional survey by qualified individuals. Out of a total of 91 terrestrial and aquatic animal species, 26 terrestrial and aquatic species have potential habitat within the project study area. Thirteen additional aquatic species are associated with Brice Creek, such as the two sturgeon and West Indian manatee, and two species are “Unknown”. The results of the evaluation are in Appendix F.

In the summer of 2016, habitat for the Duke’s skipper, a Region 8 Sensitive butterfly species, was located within the Project Study Area. Effects to this species along with other rare animal and plant species are evaluated in Chapter 4.

3.7.4.4 Migratory Birds

The *Migratory Bird Treaty Act of 1918* (MBTA) prohibits a person “to pursue, hunt, take,
capture, kill,” or “possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner,” or attempting to do any of those things to any extent to a migratory bird, migratory bird parts, nests, or eggs. The MBTA includes a list of the protected species of birds that can be found in 50 C.F.R §10.13.

The USFWS interpretation of migratory bird protection under the MBTA extends to structures and trees that are being actively used by migratory birds for nesting. It would therefore be illegal to destroy bird nests (including trees with nests) that contain eggs or young or to cause an adult to abandon its nest due to disturbances from any sort of construction activities (no construction would occur as part of the Proposed Action). However, it is not illegal to remove nests that do not contain eggs or young, nor is it illegal to prevent birds from nesting during or prior to the Proposed Action activity (i.e. tree removal) period.

Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, requires federal agencies to take actions to implement the MBTA. Primarily these actions are to evaluate agency actions on migratory birds and to identify impacts with a measurable negative effect on migratory bird populations. If such impacts are identified, then the federal agency must mitigate the effects and consult with USFWS prior to initiating the action.

Migratory birds are those that fly long distances from their winter habitat to summer nesting grounds and back to their over-wintering grounds annually. Migration generally occurs in the spring and fall. Some species use areas temporarily as roosting and foraging habitat while on their way to more northern nesting or southern wintering grounds. These temporary residents are referred to as transients. The majority, however, utilize various areas not as seasonal stopovers, but as “long-term destinations”. These visitors stay for the winter (overwinter) or breed and nest in the summer months. The Project Study Area is within the Atlantic Flyway, which is the migration route along the eastern seaboard of the United States used by waterfowl and other birds. As a result, numerous migratory bird species can be found within the Project Study Area on Airport property as well as on CNF at any given time of year. Bird species observed within the Project Study Area and their migratory status are included in Table 3.5.

### Table 3.5
Bird Species Observed at Coastal Carolina Regional Airport
April 2009

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Migratory Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great crested flycatcher</td>
<td><em>Myiarchus crinitus</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Acadian flycatcher</td>
<td><em>Empidonax virescens</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Northern cardinal</td>
<td><em>Cardinalis cardinalis</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Summer tanager</td>
<td><em>Piranga rubra</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Carolina chickadee</td>
<td><em>Poecile carolinensis</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Tufted titmouse</td>
<td><em>Baeolophus bicolor</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Pine warbler</td>
<td><em>Dendroica pinnas</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Red-bellied woodpecker</td>
<td><em>Melanerpes carolinus</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Ruby-throated hummingbird</td>
<td><em>Archilochus colubris</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Red-winged blackbird</td>
<td><em>Agelaius phoeniceus</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>American crow</td>
<td><em>Corvus brachyrhynchos</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Red-tailed hawk</td>
<td><em>Buteo jamaicensis</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Turkey</td>
<td><em>Meleagris gallopavo</em></td>
<td>Resident</td>
</tr>
<tr>
<td>Wood duck</td>
<td><em>Aix sponsa</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Canada Goose</td>
<td><em>Branta canadensis</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Blue-gray gnatcatcher</td>
<td><em>Polioptila caerulea</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>White-breasted nuthatch</td>
<td><em>Sitta carolinensis</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Louisiana water thrush</td>
<td><em>Parkeia motacilla</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Bald eagle</td>
<td><em>Haliaetus leucocephalus</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Pileated woodpecker</td>
<td><em>Dryocopus pileatus</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Blue jay</td>
<td><em>Cyanocitta cristata</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Carolina wren</td>
<td><em>Thryothorus ludovicianus</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Belted kingfisher</td>
<td><em>Megaceryle aleyon</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Barred owl</td>
<td><em>Strix varia</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Osprey</td>
<td><em>Pandion haliaetus</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Catbird</td>
<td><em>Dumetella carolinensis</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>White-eyed vireo</td>
<td><em>Vireo griseus</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Northern parula warbler</td>
<td><em>Parula americana</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Downy woodpecker</td>
<td><em>Picoides pubescens</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Prothonotary warbler</td>
<td><em>Protonotaria citrea</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Green heron</td>
<td><em>Butorides virescens</em></td>
<td>Migratory</td>
</tr>
<tr>
<td>Turkey vulture</td>
<td><em>Cathartes aura</em></td>
<td>Migratory</td>
</tr>
</tbody>
</table>

**SOURCE:** Michael Baker Engineering, Inc. 2016.

### 3.8 FLOODPLAINS

Executive Order 11988, *Floodplain Management*, requires that efforts be made by federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains. It also directs federal agencies to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. In addition, it prohibits floodplain encroachments that are uneconomic, hazardous, or result in incompatible development of the floodplain. E.O. 11988 also prohibits any action that would cause a critical interruption of an emergency transportation facility, a substantial flood risk, or an adverse impact on the floodplain’s natural resource values.
The 100-year floodplain boundary delineates a flood elevation that has a one percent chance of being equaled or exceeded each year. Placing fill within the floodplain is discouraged, since it removes floodwater storage capacity. However, federal regulations will allow development in the 100-year floodplain if it is demonstrated through hydrologic and hydraulic analysis that the development would not result in an increase in the base flood elevation of more than one foot. Additionally, the floodplain must remain unobstructed to convey the 100-year flood.

Floodplain data for the Project Study Area was obtained from the State of North Carolina, through the Flood Risk Information System (FRIS). As depicted on Figure 3.2, 100-year floodplains associated with Brice Creek comprise a majority of the Project Study Area. The Federal Emergency Management Agency classifies these 100-year floodplains as Zone AE, meaning that prior hydraulic studies have been completed for this area and base flood elevations (BFEs) are available. The 100-year floodplain in the vicinity of Brice Creek to the south of the Airport has a BFE of 8 feet above mean sea level. For reference, the existing Airport property is characterized by level topography with elevations ranging from 8 to 18 feet above mean sea level. The portion of the project located on Forest Service land consists of terrain ranging from 7 to 15 feet above mean sea level.

### 3.9 WATER QUALITY

The Proposed Action is located in the Lower Neuse watershed of the Neuse River Basin and the Project Study Area drains into Brice Creek, a perennial tributary to the Trent River. Georges Branch and three unnamed tributaries to Brice Creek were also identified within the Project Study Area (Figures 3.1 and 3.2). Brice Creek is a deep, black water stream that flows to the northwest through the center of the Project Study Area. The NCDENR, Division of Water Resources (DWR) designates Brice Creek with a primary surface water classification of Class C waters, which are described as:

> Waters protected for uses such as secondary recreation, fishing, wildlife, fish consumption, aquatic life including propagation, survival and maintenance of biological integrity, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner.⁶⁶

Brice Creek has the supplemental classification of Nutrient Sensitive Waters (NSW). NSWs are waters that require additional management due to excessive growth of microscopic and macroscopic vegetation, due to high nutrient loads. This waterway also has the supplemental classification of Swamp Waters (SW), which have a low velocity and other natural characteristics that are different from the surrounding stream channels.

Under the CWA, states are required to record the condition of surface waters in their respective jurisdictions by Section 305(b) and Section 303(d) documentation. The Section 305(b) documentation serves to evaluate the extent to which surface waters are supporting their designated

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uses for categories such as drinking water supply, aquatic life, recreational use, and fish consumption. NCDENR produces a Basinwide Assessment Report (BAR) to meet the requirement under Section 305(b), with each basin in the state. The most recent BAR for the Neuse River Basin was published in 2006. In addition, there are no sole source aquifers located in the vicinity of the Project Study Area.  

The Section 303(d) documentation is a comprehensive list of water bodies that do not support their designated use classifications and are considered impaired. NCDENR develops a priority list of water bodies pursuant to Section 303(d) of the CWA, as well as in accordance with 40 CFR §130.7. The Section 303(d) documentation lists the water bodies that do not meet state water quality standards after the application of required controls for point and non-point source pollutants, as well as priority water bodies to which NCDENR can direct its attention when developing required controls such as Total Maximum Daily Loads (TMDLs). Watersheds that consistently fail to meet their designated uses are required to develop TMDLs per Section 303 of the CWA. A TMDL is a calculation of the total amount of pollutant a water body can accept from point and non-point sources and still meet water quality standards. Existing and future projects or facilities discharging into a watershed with a TMDL in place must coordinate with state water quality agencies to ensure compliance with the TMDL.

The NCDENR Modeling and Assessment Branch is responsible for developing the list of waters not meeting 303(d) water quality standards, prioritizing impaired waters for management strategy or TMDL development, and developing TMDLs. There are seven categories used to describe and categorize water bodies on the Section 303(d) list; ranging from Category 1, which designates waters that are fully supporting all designated uses, to Category 7, which are impaired waters but the proper conditions do not exist to develop a TDML. Category 5 waters have been assessed as impaired and are expected to require a TDM.

According to the Draft 2014 North Carolina Water Quality Assessment and Impaired Waters List there are no waters within, or in the vicinity of the Project Study Area which are considered Category 5 (requiring a TMDL) impaired waters. Based on USEPA data from 2010, a TMDL is needed for the segment of the Trent River located at the confluence of Brice Creek to address high levels of Chlorophyll-A.

The Neuse River Riparian Buffer is an additional water quality consideration within the Project Study Area. Riparian buffers serve to maintain vegetation and root systems adjacent to streams,

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which prevents soils from eroding into the water and also filters pollutants from water runoff prior to entering adjacent water bodies. Guidance relating to the Proposed Action in accordance with the Neuse River Basin Riparian Buffer Protection Rules was received in August, 2014 (Appendix H).
3.10 WETLANDS AND OTHER WATERS OF THE UNITED STATES

Executive Order 11990, Protection of Wetlands, mandates that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural values. To comply with this Executive Order, the wetlands within the Project Study Area were identified to aid in avoidance and minimization during the design phase and to estimate unavoidable impacts.

3.10.1 Definition

Wetlands as currently defined by the USACE (33 CFR §328.3[b]) and USEPA (40 CFR §230.3[t]), are:

Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands typically include swamps, marshes, bogs, and similar areas.68

Wetlands are specifically protected by laws and orders because of the functions and values they provide with respect to:

- **Hydrology** (e.g., flood control, groundwater recharge and discharge, and dissipation of erosive forces);
- **Water quality** (e.g., removal of sediments, toxins, and nutrients);
- **Food chain support and nutrient cycling** (e.g., primary production and nutrient export/utilization);
- **Wildlife habitat** (e.g., breeding, rearing, and feeding grounds for fish and wildlife species); and,
- **Socioeconomics** (e.g., recreational, educational, aesthetic, and consumptive uses).

3.10.2 Identification

A field delineation was performed within the Project Study Area in April 2009, October 2011, and December 2013. Wetland boundaries were determined using the methodology described in the on the basis of soils, hydrology, and vegetation as set forth by the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0).69 The wetland boundaries were mapped using sub-meter accuracy Global


69 USACE, *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0).*
Positioning System (GPS) equipment. The delineated wetlands are depicted on Figure 3.1 and the specific wetland types are discussed in Section 3.6.3, Biotic Communities. The wetland map and supporting documentation was submitted to the USACE and a request for a wetland approximation was included. A Jurisdictional Determination (JD, SAW 2008-02623) was received from the USACE on April 15, 2010, and is included in Appendix I. Expansions of the Project Study Area in 2011 and 2013 required additional delineation after the JD was issued. The USACE issued an additional JD on September 20, 2012, which covered the entire project study area (Appendix I), and USACE approval of the wetland areas flagged was received in 2014 (Appendix I).

3.10.3 Jurisdictional Status

For wetlands that were identified in the Project Study Area using the Regional Supplement to the 1987 Corps of Engineers Delineation Manual, a determination on the jurisdictional status of the feature must be made by the USACE. In order to assist the USACE in making this decision, wetlands identified in the field were analyzed to determine if they would be considered jurisdictional waters of the United States under the Clean Water Act. Based on the United States Supreme Court Cases, Rapanos v. United States and Carabell v. United States, the USACE and USEPA have released joint guidance describing the limits of federal jurisdiction under the CWA.70 The USACE and USEPA also released joint guidance for determining the jurisdictional status of a feature in the field.71 The final jurisdictional status of a feature is decided by the USACE and is an approved Jurisdictional Determination.

3.10.3.1 Jurisdictional Streams

USACE has regulatory authority over streams as waters of the United States under Section 404 of the CWA. USACE will assert jurisdiction over traditional navigable waters (TNWs), which are described in 33 CFR 328(a), as, “[a]ll waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.” The USACE will also assert jurisdiction over non-navigable tributaries, where the waters flow directly, or indirectly into a TNW, and are a relatively permanent water (RPW) which has a continuous flow for at least three consecutive months.72

70 USACE and USEPA, Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in Rapanos v. United States & Carabell v. United States, (December 2008),
71 USACE and USEPA, U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook May 2007,
72 USACE and USEPA, Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in Rapanos v.
Five jurisdictional streams were identified within the Project Study Area. These consisted of Brice Creek, George’s Branch, and three unnamed tributaries (Figures 3.1 and 3.2). Brice Creek, a perennial tributary to the Trent River, is a deep, black water stream the flows to the northwest through the northern portion of the Project Study Area. George’s Branch and the three unnamed tributaries are perennial tributaries to Brice Creek. All five of these jurisdictional streams are RPWs.

3.11 WILD AND SCENIC RIVERS

Rivers and streams that are designated as Wild and Scenic Rivers are federally protected under the *Wild and Scenic Rivers Act of 1968*. This Act protects rivers and streams for their scenic, cultural, historical, recreational, wildlife, geologic or other values, along with those that are under consideration for inclusion on the list. In addition, under a 1979 Presidential Directive, federal agencies are required “to take care to avoid or mitigate adverse effects on rivers identified in the Nationwide Inventory.” Rivers in North Carolina may also be protected under the *Natural and Scenic Rivers Act of 1971* for their outstanding values.

No federally designated Wild or Scenic Rivers, Congressionally Authorized Study Rivers, Nationwide River Inventory (NRI) Listed Rivers, or state designated wild and scenic rivers are located within the Project Study Area. However, Brice Creek is managed as an eligible Wild and Scenic River.

The 2002 *Revised Land and Resource Management Plan for the CNF* (LRMP) identifies Brice Creek as an eligible Wild and Scenic River and addresses the management of Brice Creek and the corridor adjacent to Brice Creek. Management within the eligible WSR corridor allows for a range of vegetation management and timber harvest practices, if these practices are designed to protect users, or protect, restore, or enhance the river environment, including the scenic character. At the time of river evaluation, the Coastal Carolina Airport had held a SUP for nearly 34 years, and the CNF lands adjacent to Brice Creek had been cut as recently as the late 1980s. The forest condition adjacent to Brice Creek consisted of 10-15 year old mixed pine and hardwood forest at the time of eligibility determination.

More recently, the 2009 *5-Year Review: Findings and Recommendations; The Croatan National Forest’s Revised Land and Resource Management Plan* indicates that management activities are assessed on a case-by-case basis in regard to their compatibility with sustainment of wild and scenic designation within the one-half mile corridor along Brice Creek. During the five year review, the project study area was under a SUP with the Coastal Carolina Airport and the Forest Service did not identify any issues nor recommend any changes in the current management plan and/or status of Brice Creek as a potentially eligible wild and scenic river. Activities along the river had been

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*United States & Carabell v. United States,* (December 2008),
consistent with protecting the outstandingly remarkable values for which the river was found to be
eligible.

Brice Creek was found to have outstandingly remarkable scenic, botanical, wildlife, and historical
and cultural values. Scenic and botanical values are co-existent and consist of the lake and stream
swamps where the vegetation is cypress and closed canopy hardwoods, primarily in the wetland
habitats adjacent to the river. The fish and wildlife ORV is attributed to the diverse fishery species,
and the historic and cultural ORV can be attributed to the abundance of historical and archeological
sites that are located in the riverbed or along the streambank. The historical and archeological ORVs
are attributed to eligible sites that are located outside of the Project Study Area. Impacts to the
existing ORVs from the proposed alternatives will be analyzed in Chapter 4.
CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

The following chapter describes the potential impacts of the alternatives on the environmental resource categories presented in Chapter 3. The No-Action Alternative proposes no cutting nor herbicide application within the Project Study Area.

Alternatives 5 and 6 include three project specific Forest Plan amendments to allow for the cutting of obstruction trees within the SUP Project study area. These amendments are explained in Chapter 1 and the effects of the amendments to individual resources are analyzed in this Chapter.

4.1.1 Direct Impacts

The CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1508.8) defines direct impacts as those effects that “are caused by the action and occur at the same time and place.” These impacts are directly attributable to the construction and operation of a project, such as a loss of wetland acreage as a result of clearing, filling, and grubbing the area. This EA considers, in accordance with CEQ guidelines, the direct impacts of the Proposed Action that will occur as an immediate result of the project within the boundaries of the Project Study Area. Indirect and cumulative impacts (ICI) are discussed further in Section 4.13.

4.2 RECREATION AND SCENERY

4.2.1 Removal of Tree Obstructions

4.2.1.1 Direct Impacts to Recreation

The primary use of the CNF by the public is recreational activities including hiking, biking (on established trails), hunting, wildlife viewing, and fishing and boating in Brice Creek. Of these activities, public hunting, fishing and boating on Brice Creek were observed during the site visits to the Project Study Area.

Under Alternative 5, the removal of canopy trees within the Project Study Area would impact recreation activities during and after removal by altering the environment from a mature forested community to a shrub/scrub community on upland sites. In wetland areas, residual trees ranging from 20 to 90 feet tall would be retained depending on distance from the Airport. During the tree removal process, noise from heavy machinery and tree cutting equipment would be expected to disrupt the quiet atmosphere sought by recreational users. Additionally, noise from equipment would likely temporarily displace wildlife from the immediate area, thereby impacting opportunities for hunting and wildlife viewing. Similar impacts would be expected to occur to fishing and boating activities from tree removal in the...
vicinity of Brice Creek, which is eligible for designation as a Wild and Scenic River (refer to Section 3.9).

USFS intends to manage the entire length of Brice Creek within the CNF as an eligible Wild and Scenic River and evaluate all ongoing management activities within the 0.5-mile corridor of Brice Creek accordingly on a case-by-case basis. Noise impacts would be temporary and heavy machinery would only be used on upland areas accessible by such machinery. Forested tracts adjacent to Brice Creek are primarily wetlands which have limited access and tree removal would be by hand cutting, thereby reducing potential noise impacts. In upland areas adjacent to Brice Creek, there would be a 100 foot buffer zone of no equipment, which would further reduce the impacts of timber operations on recreation users on Brice Creek.

Amending LRMP standards 4.4.1.3, 4.2.0.10, and 4.3.0.8 under both Alternatives 5 and 6 would allow for tree cutting within the area adjacent to Brice Creek and would change the recreation experience in the project area from one of closed thick forest understory, to open conditions interspersed with wooded wetlands.

Under Alternative 6, obstruction trees would be cut and left on site rather than harvested for timber. The temporary impacts from cutting operations would be similar to those of Alternative 5 but there would be extensive amounts of trees on the ground which would impede movement of hikers and hunters throughout the area for many years.

The No-action Alternative would not require tree removal and would result in no direct impacts to recreation and scenery. Under the No-action Alternative, the Project Study Area would remain in its existing state, which is currently providing a scenic and recreation use.

4.2.1.2 Direct Impacts to Scenery

Alternative 5 proposes clear cutting with reserves on upland areas within the approach path. In the 100 feet immediately adjacent to Brice Creek, all vegetation that has not reached the obstruction height, as defined by FAA regulations, would be retained to mitigate impacts to scenery along the river.

Additional design features of minimizing damage to existing creek-side evergreen shrubs (wax myrtle, yaupon holly, etc.), prohibiting heavy equipment within 100 feet of Brice Creek, and use of a cut-and-leave approach in wetland zones would all contribute to maintaining a natural appearing condition. Within several growing seasons after the initial harvest, residual vegetation would grow taller, evergreen shrubs would grow denser, and the Project Study Area would recover to a point where initial and subsequent treatments would meet an SIO of Low.

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The proposed project-specific forest plan amendment would allow for cutting of trees in Brice Creek WSR corridor and would allow human activities to be visually evident in the area adjacent to Brice Creek (Low SIO) to provide for public safety and welfare. The lower SIO would allow for impacts of management to be noticeable along the river but would not change the eligibility of Brice Creek as a Wild and Scenic River.

The proposed cutting in Alternative 6 would result in cleared patches of two to five acres adjacent to Brice Creek, interspersed with low growing vegetation that is retained in the wetland areas. While these cleared patches would be most evident immediately following harvest, within a few growing seasons the residual vegetation would grow taller, evergreen shrubs would grow denser, and the Project Study Area would recover to a point where treatments would not be visually evident to the average viewer. This would create a mosaic of vegetative patterns, open and closed canopies, shrub layers, and trees of varying height and species composition across the landscape.

As distance from the airport runway increases, taller trees would be retained or allowed to grow, primarily within wetland areas. At the closest point to the airport, CNF lands adjacent to Brice Creek would retain vegetation up to 20 feet tall, in the next 200 horizontal feet from the airport, trees up to 25 feet tall would be retained, and likewise for each subsequent 200 foot band where trees would be retained that are 5 feet taller than the previous band. Since the creek snakes through multiple “height bands”, the variation in tree height within wetland areas would change as a boater/viewer moves up or down stream. This variety in vegetative forms, lines, colors, patterns, and scale of openings would mimic natural landscape variation, and over time would have a natural appearance.

Mitigation measures would include monitoring to insure treatments under either alternative meet scenery standards over time, and additional tree cutting to blend the Project Study Area with adjacent forests may be necessary. This could be done in conjunction with future maintenance cutting of obstruction trees.

4.2.2 Issuance of Special Use Permit

4.2.2.1 Direct Impacts
Direct impacts to recreation and/or aesthetics are not anticipated to occur from the issuance of a SUP to the Airport under Alternative 5 or 6. Access for recreational activities would be maintained on the CNF and outside of the Airport property. Direct impacts related to the SUP would not occur under the No-action Alternative.

4.2.3 Herbicide Treatment

4.2.3.1 Direct Impacts
Under both Alternative 5 and 6, the use of herbicides to control NNIP would reduce the amount of ground cover prior to clearing activities, which would limit the spread of NNIP after the clearing is complete. Species of NNIP such as Chinese privet and autumn olive tend
to grow in dense thickets. Therefore, removal of these species and implementation of control measures would likely improve aesthetics and recreation such as hiking; however, it may impact recreational activities such as hunting and wildlife viewing by displacing those animals that use NNIP species for forage or cover. The detriment of allowing NNIP to continue to grow would outweigh the benefits related to providing wildlife habitat.

Recreation on the CNF relies on the natural resources in the area including the aquatic habitats that support nurseries to support sport fishing and terrestrial ecosystems to support small and big game species. Within the Project Study Area, Brice Creek supports a variety of freshwater fishes and the terrestrial habitats support a variety of game species.

As specified in Section 2.9.2.5, only herbicides approved for aquatic applications would be utilized and specific BPMs would be implemented to mitigate potential impacts to aquatic wildlife. Following the BMPs and utilizing herbicides approved for aquatic use would help to prevent the Estimated Environmental Concentrations from reaching the LC50 for aquatic organisms.74 Therefore, an adverse impact to aquatic ecosystems that support sport fishing are not anticipated.

During application, there is potential for impacts to wildlife to occur. Various terrestrial species could come in direct contact with the herbicide during application. Food sources for other species (such as insects, nuts, and seeds), could also come into contact with the herbicide and in turn be ingested. Triclopyr acid and imazapyr were found to be slightly toxic to birds and practically nontoxic to mammals, insects, freshwater fish and invertebrates.75 These impacts are not anticipated to have an adverse impact on populations utilized for hunting.

In order to minimize potential impacts to humans, all herbicides would be used according to manufacturer’s label direction for rates, concentrations, exposure times, and application methods. Herbicides would be directly applied to the target plants (i.e., the NNIP species) using spot treatment. Spot treatments would consist of various techniques for applying herbicides to target plants with minimal impact to native vegetation and other non-target organisms, including humans. Herbicide drift would be greatly reduced with spot treatments (relative to broad-scale or aerial application). Acceptable techniques include spraying foliage using a hand-held wand or backpack sprayer, basal bark and stem treatments using spraying or painting (wiping) methods, cut surface treatments (spraying or wiping), and woody stem injections. No herbicides would be applied aerially. Utilizing these techniques would help to ensure that drift from the Project Study Area is minimized to the maximum extent practical, and no adverse impacts to humans are anticipated.

74 USFS, Environmental Assessment, Courthouse Creek Project, Pisgah Ranger District, Pisgah National Forest, Transylvania County, North Carolina, September 2013, p., 24.
The No-action Alternative would leave the Project Study Area in its existing condition, which currently has large populations of NNIP. The No-action Alternative would not control NNIP and they would continue to propagate within the Project Study Area. Thick growths of NNIP can impact recreation and scenery due to visual screening and by making the forest understory impassable due to dense growth.

4.3 CLIMATE AND GREENHOUSE GASES

4.3.1 Removal of Tree Obstructions

4.3.1.1 Direct Impacts
As discussed in Section 3.10, trees absorb carbon dioxide a type of greenhouse gas, from the atmosphere. Under Alternative 5, approximately 126 acres of uplands to be cleared as part of the Proposed Action (118 acres on CNF lands) would be allowed to naturally re-vegetate. As such, CO₂ absorption would be diminished both temporally and quantitatively from the temporary total removal of trees within the 126 acres and from the replanted replacement trees, which would not be as large as the existing trees. An additional 110.8 acres of tree obstructions within the Project Study Area would be selectively cleared which would also result in a reduction in total potential carbon dioxide absorption. These reductions would be permanent as long as the Airport maintains the obstruction-free approach surface. USFS guidance estimates that on average, loblolly pine would sequester approximately 125,000 tons of carbon per acre.76 Therefore, the Project Study Area would sequester approximately 40.8 million tons of carbon. The adjacent 161,000-acre CNF would sequester approximately 20 trillion tons of carbon using the same factor. Therefore, this limited and temporary tree removal (approximately 0.002 percent of total carbon in the CNF) would have a negligible impact on climate change.

Under Alternative 6, the selective removal of individual obstruction trees would have a negligible effect on climate change. Carbon sequestration within the project study area would be similar to Alternative 5; however, additional carbon would be stored in the trees that are cut and retained on site.

The temporary wetland crossings would impact approximately 0.43-acre of wetlands, based on a total length of 1,555 feet for all crossings multiplied by a width of 12 feet. Because the vegetation to be removed consists primarily of woody shrubs and the area would be allowed to re-vegetate naturally, the wetland crossings would result in a minimal and temporary impact to greenhouse gases in relation to the entire Proposed Action.

76 http://www.nrs.fs.fed.us/pubs/gtr/gtr_wo059.pdf
Based on FAA data, operations at the Airport represent less than 0.04 percent of United States aviation activity. Therefore, assuming that greenhouse gases occur in proportion to the level of activity, greenhouse gas emissions associated with existing and future aviation activity at Coastal Carolina Regional Airport would be expected to represent less than 0.04 percent of United States-based greenhouse gases. Therefore, greenhouse gas emissions at EWN would be considered minimal. Furthermore, these emissions are associated with existing and future aviation activity at EWN and are not related to the Proposed Action.

Under both Alternatives 5 and 6, changing climate conditions may result in increased threats from fire, insect and plant invasions, disease, and extreme weather events within the Project Study Area. Cutting that is proposed in both Alternatives 5 and 6 would potentially reduce the spread of insects and disease in an otherwise closed canopy forest.

The No-action Alternative would not reduce the overall carbon sequestration of the Project Study Area, as the mature trees would remain. The increased threats from fire, insect and plant invasions, disease, and extreme weather events would largely remain unaddressed. NNIP would continue to spread without treatment and potentially rising sea levels would increase the amount of wetlands in the Project Study Area.

4.3.2. Issuance of Special Use Permit

4.3.2.1 Direct Impacts
Direct impacts to climate change and/or greenhouse gases are not anticipated to occur with the issuance of a SUP to the Airport. Direct impacts related to the SUP would also not occur under the No-action Alternative.

4.3.3 Herbicide Treatment

4.3.3.1 Direct Impacts
The use of the herbicides to control NNIP would reduce the amount of ground cover prior to clearing activities, which would limit the spread of NNIP after the clearing is complete. Herbicides can be applied as a direct foliar application, stem injection, or cut-surface treatment. While not beneficial to the ecosystem, NNIP do tend to grow in dense thickets. Therefore, removal and control measures would likely reduce the overall carbon sequestration in the shrub layer. However, the detriment of allowing NNIP to grow unchecked, would outweigh the small benefit related to carbon sequestration. Indirect impacts are not anticipated.

The No-action Alternative would allow NNIP to continue to propagate in the Project Study Area. This would likely have a benefit to greenhouse gas, since the greater these populations spread the greater biomass that is available for carbon sequestration; however, spreading NNIP populations would have a detrimental effect on native plant species in the Project Study Area through displacement.

4.4 COASTAL RESOURCES

4.4.1 Removal of Tree Obstructions

4.4.1.1 Direct Impacts
Craven County is designated as a coastal county in North Carolina. Brice Creek, as a navigable waterway, is considered an Area of Environmental Concern (AEC). Tree obstruction removal under Alternatives 5 and 6 would not directly impact Brice Creek. Both Alternatives would be consistent with the state coastal management policies as there are no feasible alternatives that avoid wetland areas.

Under Alternative 5, during the initial logging operations, there would be a possibility for impacts from sediment reaching Brice Creek. Research has estimated that sediment load for loblolly pine stands ranges from 0.5 tons per/acre per/year (undisturbed) to 4.0 tons per acre per year (mechanical site preparation). Therefore, using a worst case scenario, there is a potential for approximately 1,300 tons of sediment per year to reach Brice Creek. BMPs have been, and would continue to be utilized, to avoid or minimize erosion or sedimentation problems. Potential water quality impacts would be controlled during the logging operation in accordance with USFS and FAA criteria through the use of BMPs, such as silt fencing and hay bales to catch sediment. Since the project is a federal action, the NCDCM will review the project for coastal zone consistency during the permitting process.

Under Alternative 6, there would be less disturbance to the upland areas as only individual obstruction trees would be removed. All BMPS would be followed to avoid or minimize erosion or sedimentation.

The temporary wetland crossings would impact approximately 0.43-acre of wetlands, based on a total length of 1,555 feet for all crossings multiplied by a width of 12 feet. Because the impacts would result from the placement of timber mats and/or other temporary structures and all vegetation would be cut by hand within the wetland areas, impacts are anticipated to be negligible.

Under the No-action Alternative, since no work would occur, there would be no likelihood

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for impacts to occur to coastal resources.

4.4.2 Issuance of Special Use Permit

4.4.2.1 Direct Impacts
Direct impacts to coastal resources are not anticipated to occur with the issuance of a SUP to the Airport. Direct impacts related to the SUP would also not occur under the No-action Alternative.

4.4.3 Herbicide Treatment

4.4.3.1 Direct Impacts
All treatments undertaken would conform to policy, laws, and regulations, including the NC Forest Practice Guidelines Related to Water Quality, the NC Best Management Practices for Forestry in the Wetlands of NC, and the Final Environmental Impact Statement for the Revised Land and Resource Management Plan for the Croatan National Forest. Application methods as described in Section 2.9.2.5 would additionally minimize soil and water contamination by herbicides.

Direct effects to soil and water resources may include some limited drift from fine mists during application. Once in the soils, herbicides can migrate via gravity, leaching, and surface runoff to other soils, groundwater, or surface water. To determine the level of risk for accumulation of herbicide residues on soils and possible contamination of ground and surface water, factors such as persistence (measured in half-life), mobility, and mechanisms for degradation have been reviewed. However, herbicide treatments would be applied directly to targeted species and relatively little herbicide would make contact with the soil. Due to the limited acreage when compared to the CNF as a whole and dispersed extent of the areas, and the short half-lives of the chemicals proposed for use, the effects would be temporary and minor.

Under the No-action Alternative the propagation of NNIP would continue in the Project Study Area. The continued presence of NNIP is not anticipated to have an adverse effect on coastal resources.

4.4.4 Coastal Area Management Act (CAMA)

Although a CAMA permit would not be required because the Proposed Action would not impact Brice Creek, a Coastal Zone Consistency Certification from NCCF would be required. The CAMA requires that a federal agency, when it proposes any activity inside or outside of the coastal zone that would have a reasonably foreseeable effect on any coastal uses or any natural resources located within the coastal zone, provide the State of North Carolina with a consistency

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This determination would be initiated along with the CWA Section 404 and 401 permitting process for impacts to Waters of the U.S and state Water Quality Consistency Certification, respectively.

4.5 COMPATIBLE LAND USE

4.5.1 Removal of Tree Obstructions

4.5.1.1. Direct Impacts

Clearing of tree obstructions and construction of temporary wetland crossings under both Alternatives 5 and 6 would bring the Airport into compliance with the existing Zoning and Height Control Ordinance (refer to Appendix E). In addition, a new SUP from USFS would be issued for approximately 204 acres within the Project Study Area as part of the Proposed Action. The permit would establish guidelines for ongoing forest management and would allow for removal of future tree obstructions when they are within 10 feet of penetrating FAA clearance requirements. Finally, acquisition of additional avigation easements would be necessary on several adjacent properties (totaling 11 parcels and 19.8 acres) to allow for the removal of tree obstructions in perpetuity. These proposed avigation easements are depicted on the 2013 Airport Property Map (Appendix J) and include:

- Seven residential parcels to the west consisting of approximately 4.5 acres and located between Brice Creek and existing Airport property;
- Two residential parcels to the southwest consisting of approximately 11.4 acres and located adjacent to USFS property; and,
- Two parcels to the southeast (one 0.3-acre residential parcel and one 3.6-acre parcel that is part of the County-owned Creekside Park).

In addition to improving the safety of the approach surface for arriving or departing aircraft, the avigation easement takes the liability off the property owner and places it on the County to keep the approach surface clear. On-Airport land use changes would continue in its current state after the implementation of the Proposed Action. Removal of trees on residential areas and Creekside Park would alter the property viewshed, but would not result in a direct change in land use. Impacts to land use changes on the CNF with respect to recreation and scenery are discussed in Section 4.1. Under Alternative 5, uplands on the CNF would be clear-cut and there would be a loss of habitat managed for RCW. Over time, the forest would return to a mid-successional forest but tall trees would be removed prior to becoming obstructions as part of the SUP. Stands on the northwest of the project study area would be most impacted as they are closest to the Airport and have the shortest tree height restrictions.

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82 Craven County, North Carolina, Zoning and Height Control Ordinance, July 2006.
Land use would remain unchanged with the implementation of Alternative 6, as the portion of the Project Study Area within the CNF would remain consistent with its current management. In the area closest to the Airport, trees over 40 to 50 feet in height would be selectively removed but the overall forest condition would remain unchanged. As distance from the Airport increases, maximum tree heights also increase so that only the tallest trees would be removed at points further from the Airport.

Under the No-action Alternative, land use would continue in its existing state, which would not result in impacts to land use.

4.5.2 Issuance of Special Use Permit

4.5.2.1 Direct Impacts
The issuance of the SUP would have a direct impact on land use in the CNF. The original SUP accounted for the management of 187 acres of land within the CNF. The new area proposed for coverage under the SUP would include an additional seventeen acres for a total of 204 acres within the CNF. Therefore, from a management standpoint, the issuance of the SUP would add 17 acres within the CNF under management by the Airport (for tree heights). All proposed cutting treatments covered by the SUP would be consistent with the Croatan Land and Resource Management Plan and this would be consistent with how the area has been managed under the previous special use permit.

The No-action Alternative would not allow the management of the area for tree obstructions, which would result in unsafe conditions for arriving and departing aircraft.

4.5.3. Herbicide Treatment

4.5.3.1 Direct Impacts
Since the herbicide treatment would only control NNIP on lands within the CNF, direct impacts to land use are not anticipated to occur. The No-action Alternative would not result in a change of land use.

4.6 DEPARTMENT OF TRANSPORTATION ACT SECTION 4(f) and 6(f) RESOURCES

Section 4(f) of the Department of Transportation Act of 1966 provides protection to publicly owned parks, recreation areas, wildlife and waterfowl refuges, and historic sites. No historic sites of national, state, or local significance would be impacted as a result of Alternative 5 or 6. In letters dated February 23, 2012, and December 5, 2013, the SHPO concurred with the results of the Phase I archaeological surveys that had been completed for the Proposed Action and indicated that there are no properties eligible for listing on the NHRP within the APE of the Proposed Action (refer to Appendix D).
Creekside Park is located east of the Airport and like EWN, is owned by Craven County. As discussed in Section 3.5, the park is a large multi-use public park with twelve athletic fields, picnic shelters and an access to Brice Creek for canoeists and kayakers. Approximately 8.1 acres of the 111-acre park extends into the Project Study Area for proposed tree obstruction removal. Of these 8.1 acres of County-owned property, the Airport has an existing avigation easement on 0.85-acre. As identified on the 2013 Airport Property Map, an additional 3.43 acres are proposed for avigation easement and 3.82 acres are identified as future Airport property (refer to Appendix J). The proposed acquisition of 3.43 acres of avigation easement and transfer of the 3.82 acres to Airport property would proceed under the Proposed Action; however, based on intra-County agreements, two tree obstructions have recently been removed from this area. In accordance with the avigation easements to be acquired on Creekside Park under the Proposed Action, future tree obstruction removal from this area would continue to be coordinated through the County Manager’s office and the Department of Recreation and Parks. As both the Airport and Creekside Park are owned and managed by Craven County, no significant impacts to Department of Transportation Section 4(f) resources or formal *de minimis* Memorandums of Agreement are anticipated under the Proposed Action. The FAA requested a determination of a *de minimis* finding from the Department of Interior in a formal letter dated December 17, 2014 (Appendix K). The FAA also had determined through coordination with the USFS that the CNF is not a Section 4(f) resource (Appendix K).

In addition, approximately 204 acres of the 327-acre Project Study Area are located within the CNF. As discussed in Section 4.3, a new Special Use Permit from USFS would be issued as part of Alternative 5 and Alternative 6. The SUP would allow for removal of future tree obstructions when they are within ten feet of penetrating FAA clearance requirements; no additional requirements under Department of Transportation Section 4(f) are anticipated.

Since Section 4(f) is mandated under the *Department of Transportation Act of 1966*, it only applies to the FAA approval of this EA. As discussed in Section 3.1, no Section 6(f) resources would be impacted by the Proposed Action.

### 4.7 FISH, WILDLIFE, AND PLANTS

#### 4.7.1 Essential Fish Habitat

##### 4.7.1.1 Removal of Tree Obstructions

**4.7.1.1.1 Direct Impacts**

Based on GIS data from the NOAA Fisheries, Brice Creek is designated as a Shellfish Growing Area, which is considered Essential Fish Habitat (EFH).^83^ Under Alternatives 5 and 6, impacts related to crossing Brice Creek to access the Project Study Area would be avoided by accessing the project site south of Brice Creek utilizing the existing CNF roads. In

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addition, the small island immediately southeast of Runway 4-22 would be cleared manually by hand and accessed by boat from Airport property. This would negate the need for a temporary crossing of Brice Creek, thereby avoiding impacts to EFH related to a crossing. Since no direct fill impacts would occur to Brice Creek, formal concurrence from NOAA-NMFS would not be required. NOAA-NMFS indicated that EFH was not present within the Project Study Area (Appendix L). There would be a potential for impacts to downstream EFH from sediment leaving the project study area, which is discussed further below.

As discussed in Section 4.3.1.1, there would be a possibility for sediment to reach Brice Creek during initial logging operations. North Carolina State University and the USFS have estimated that sediment load for loblolly pine stands ranges from 0.5 tons/acre/year (undisturbed) to 4.0 tons per acre per year (mechanical site preparation). Therefore, using a worst case scenario, there is a potential for approximately 1,300 tons of sediment per year to reach Brice Creek during harvest operations. Efforts have been, and would continue to be, made to avoid or minimize erosion or sedimentation problems. Potential water quality impacts would be controlled during the logging operation in accordance with USFS and FAA criteria through the use of BMPs, such as silt fencing and hay bales to catch sediment. Since the project is a federal action, NCDCM will review the project for coastal zone consistency during the permitting process.

The temporary wetland crossings would impact approximately 0.43-acre of wetlands, based on a total length of 1,555 feet for all crossings multiplied by a width of 12 feet. Because the impacts would result from the placement of timber mats and all vegetation would be cut by hand within the wetland areas, impacts are anticipated to be negligible.

The proposed project-specific forest plan amendment would not impact EFH under either Alternative 5 or Alternative 6 because the amendment is primarily associated with addressing scenery impacts adjacent to an eligible wild and scenic river. Additional tree cutting within the corridor adjacent to the river will not substantially affect EFH given the BMPs and design criteria that would be applied to protect the aquatic resources.

The No-action Alternative would not result in impacts to EFH.

4.7.1.2 Issuance of Special Use Permit

4.7.1.2.1 Direct Impacts
No direct impacts to EFH are anticipated from issuance of the SUP under Alternatives 5 or 6. Direct impacts related to the SUP would also not occur under the No-action Alternative.

4.7.1.3 Herbicide Treatment
All treatments undertaken would conform to policy, laws, and regulations, including the NC Forest Practice Guidelines Related to Water Quality and the NC Best Management Practices for Forestry in the Wetlands of NC. Anticipated Project Commitments relating to the Proposed Action, which would be included in the FONSI issued by FAA, would additionally minimize soil and water contamination by herbicides.

Direct effects to soil and water resources may include some limited drift from fine mists during application. Once in the soil, herbicides can migrate via gravity, leaching, and surface runoff to other soils, groundwater, or surface water. To determine the level of risk for accumulation of herbicide residues on soils and possible contamination of ground and surface water, factors such as persistence (measured in half-life), mobility, and mechanisms for degradation have been reviewed. However, herbicide treatments would be applied directly to targeted species and relatively little herbicide would make contact with the soil. Due to the limited acreage when compared to the CNF as a whole and dispersed extent of the areas, and the short half-lives of the chemicals proposed for use (Triclopyr 3A, imazapyr, and glyphosate), the effects would be temporary and minor.

Under the No-action Alternative, the persistence of NNIP is not anticipated to have a direct impact on EFH.

4.7.2 Wildlife

4.7.2.1 Removal of Tree Obstructions

4.7.2.1.1 Direct Impacts
In accordance with 14 CFR 139.337, Wildlife Hazard Management, wildlife and aircraft interactions are potential hazards to aviation and are managed on Airport property through regular maintenance, such as mowing and upkeep of the perimeter and wildlife fences. Specialized management actions for wildlife removal are also utilized, including use of harassment techniques such as pyrotechnics, horns, vehicles, and lights. Wildlife species hazardous to aviation operations such as Canada geese and white-tailed deer have been identified as “zero tolerance” species within the perimeter fence and require immediate removal from the operations area. As these activities are on-going, there would not be an expected increase in impacts to wildlife as the result of Alternatives 5 and 6. However, the removal of tree obstructions within the boundaries of the Project Study Area would have both positive and negative impacts on wildlife with regards to airfield safety.

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Under Alternatives 5 and 6, the reduction of woody habitat along the perimeter would reduce the cover used by deer and turkey to investigate the open areas for potential predators prior to venturing out to forage. The reduced cover would discourage individual animals from utilizing the airport property open areas for foraging and would reduce the potential for interactions between wildlife and aircraft. As the cleared areas begin to re-vegetate into an early successional stage habitat, they would provide more cover and more “edge” utilized by small mammals and migratory birds. These areas would be included in the management program currently utilized by the airport to maintain the vegetation and prevent future penetrations in the approach surface. Removal of tree obstructions in the future could have a direct impact on wildlife utilizing the trees during the time of removal. Similar to the impacts that would occur during the initial tree removal process; future tree removal would result in additional edge habitat being created.

Potential direct impacts to wildlife would include:

- Removal of trees providing nesting habitat for birds;
- Removal of trees that provide foraging habitat for birds;
- Compaction of burrows used by small mammals from equipment;
- Loss of trees that provide nesting habitat for mammals;
- Loss of trees that provide foraging habitat for mammals (squirrels, deer, etc.);
- Disruption of debris on forest floor used by reptiles, amphibians, and mammals; and,
- Removal of beaver dams to access areas for tree removal (by hand) would remove beaver habitat and alter pond habitat used by fish, birds, amphibians, and reptiles.

The removal of the beaver dams would result in a change of the ecosystem type in these areas. The existing ecosystem in areas inundated by beaver activity, provide aquatic habitat for fish, birds, amphibians, and reptiles, as well as the beavers. These aquatic areas also provide habitat for aquatic insects, which contribute to the overall food web of the aquatic ecosystem. The removal of the dams would result in the loss of open water habitat in these areas. These areas would likely function as intermittently inundated wooded swamps with an associated perennial braided stream channel after the dam removal, which would not provide the continuous open water currently present. The resulting wooded swamp wetland system would still provide high quality habitat for amphibians and reptiles, while fish habitat would be likely impacted since streams in these areas are shallow and braided in nature. The composition of the aquatic insect habitat would also be impacted, resulting in a change of the aquatic insect species present. Fish and aquatic species habitat would still be present in the form of a perennial braided stream channel. Birds that would utilize the open water habitat, such as ducks and wading birds, would easily find adjacent areas of suitable habitat after the dams are removed. Wading birds would still utilize the resulting wooded swamp for feeding, while ducks would likely need to seek out other inundated areas for nesting and foraging. Beavers would likely relocate within the drainage system, and since long term beaver management is not included in Alternative 5 and 6, it is anticipated the beavers would repopulate the area over time. Since it is likely that beavers would repopulate the area and recreate the existing open water habitat, impacts to the aquatic ecosystem would be
temporary in nature and are not anticipated to impact the overall viability of aquatic species that currently utilize the open water habitat. Neither Alternative 5 or Alternative 6 include provisions to encourage the reestablishment of open water habitat due to concerns related to wildlife attraction as specified by FAA guidelines.

Overall, both alternatives would result in some species that are adapted to living in the Project Study Area outside of the airport boundary, such as deer, turkey, squirrels, raccoons, opossums, rodents, reptiles and migratory birds, being displaced temporarily by the logging activities (from noise, vibration, and movement of heavy equipment). As a result of cutting proposed in Alternative 5, there would be a loss of suitable foraging, nesting, and/or cover habitat. However, displaced wildlife would find comparable habitat in neighboring forested areas. Some species of small mammals, birds, reptiles and deer could utilize the area that would be created as a result of clearcutting for foraging. Therefore, Alternative 5 would have both positive and negative impacts depending on the individual wildlife species. With the creation of more edge habitat in a previously wooded area, indirect impacts to wildlife just outside the project boundary could occur. Woodland species would likely be pushed from wooded edges farther into the forest interior, as edge species eventually dominate these areas.

Alternative 6 would result in temporary impacts to wildlife from the logging activities, but the overall species composition would be unchanged. Overall, Alternative 6 would have less of an impact to wildlife than Alternative 5 because there would be less tree removal in the upland portions of the Project Study Area.

The temporary wetland crossings would impact approximately 0.43-acre of wetlands, based on a total length of 1,555 feet for all crossings multiplied by a width of 12 feet. Because the impacts would result from the placement of timber mats and all vegetation would be cut by hand within the wetland areas, impacts are anticipated to be negligible. The timber mats would be removed immediately after completion of tree removal and the areas would be allowed to re-vegetate naturally; therefore, the impacts would be temporary in nature.

The proposed project-specific forest plan amendment would have similar impacts to wildlife species present in the Project Study Area under either Alternative 5 or Alternative 6. Cutting of supracanopy trees adjacent to Brice Creek would eliminate nesting habitat for some wildlife species but sufficient habitat is available on adjacent forest lands, therefore impacts to wildlife would not be significant.

Under the No-action Alternative, the ecosystems within the Project Study Area would continue in their existing states, which would not result in negative impacts to wildlife.

4.7.2. Issuance of Special Use Permit

4.7.2.1 Direct Impacts
Direct impacts to wildlife are not anticipated from issuance of the SUP. While the SUP would allow future maintenance activities to occur, these potential impacts are described in Section 4.13.6.4.2. Direct impacts related to the SUP would also not occur under the No-action Alternative.

4.7.2.3 Herbicide Treatment

4.7.2.4.3 Direct Impacts
By removing NNIP species, native vegetation has the potential to be reestablished and the associated native plant community restored. A restored native plant community would provide more diverse habitat and food sources for wildlife. The treatments would be expected to provide long-term benefits to native wildlife populations.

During application there is potential for impacts to wildlife to occur. Various terrestrial species could come in direct contact with the herbicide during application. Food sources for other species (such as insects, nuts, and seeds), could also come into contact with the herbicide and in turn be ingested. Triclopyr acid was found to be slightly toxic to birds and practically nontoxic to mammals, insects, freshwater fish and invertebrates. Imazapyr has been found to be practically non-toxic to mammals, birds, honeybees, fish, and aquatic invertebrates. Low toxicity formulations of glyphosate do not appear to present any risks to terrestrial organisms other than terrestrial plants.

As specified in Section 2.9.2.5, herbicides approved for aquatic applications (Triclopyr 3A and imazapyr) would be utilized and specific BPMs would be implemented to mitigate potential impacts to aquatic wildlife. Following the BMPs and utilizing an herbicide approved for aquatic use would help to prevent the Estimated Environmental Concentrations from reaching the LC50 for aquatic organisms. Therefore, an adverse impact to aquatic ecosystems that support aquatic wildlife are not anticipated.

Under the No-action Alternative the populations of NNIP would continue to persist in the Project Study Area. Since many species are adapted to this condition, the impact would generally be positive in nature. However, species diversity would likely be hindered when compared to a community with native vegetation.

4.7.3 Biotic Plant Communities

4.7.3.1 Removal of Tree Obstructions

4.7.3.1.1 Direct Impacts


88 USFS, Environmental Assessment, Courthouse Creek Project, Pisgah Ranger District, Pisgah National Forest, Transylvania County, North Carolina, September 2013, p., 24.
Of the 327-acre Project Study Area, approximately 233 acres contain natural biotic plant communities (Figure 3.1). Approximately 58.2 acres that are mowed and maintained by the Airport and/or privately and are not addressed in this section; an additional 35.6 acres is comprised of Brice Creek and other stream channels. Tree removal activities that would occur under Alternative 5 are summarized by type in Table 4.1. Neither Alternative 5 nor Alternative 6 would result in grubbing or ground disturbance impacts to upland or wetland communities. Potential impacts to uplands, including soil disturbance from forest management activities are described in further detail below.

Under Alternative 5, the individual forested areas would be cleared initially and allowed to revegetate naturally. USFS will be responsible for initial clearing of all uplands within the CNF as specified in their management strategy (Section 2.6). The Airport shall be responsible for initial clearing of areas outside of the CNF and in the wetland areas of the CNF as well as future maintenance of those areas for removal of tree obstructions.

<table>
<thead>
<tr>
<th>Plant Community</th>
<th>Activity Type</th>
<th>Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wetlands</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riverine Swamp Forest</td>
<td>Selective Tree Removal</td>
<td>93.3</td>
</tr>
<tr>
<td>Tidal Freshwater Marsh</td>
<td>Selective Tree Removal</td>
<td>13.8</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td>107.1</td>
</tr>
<tr>
<td><strong>Uplands</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mesic Mixed Hardwood</td>
<td>Tree Removal</td>
<td>73.7</td>
</tr>
<tr>
<td>Mesic Pine Flatwoods</td>
<td>Tree Removal</td>
<td>48.7</td>
</tr>
<tr>
<td>Mesic Pine Flatwoods</td>
<td>Selective Tree Removal</td>
<td>3.7</td>
</tr>
<tr>
<td>(on Creekside Park property)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td>126.1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>233.2</td>
</tr>
</tbody>
</table>

*Proposed Action would not involve grubbing/ground disturbance activities apart from disturbance typical to forest management.

The cutting of forested areas would change the community types from mature forests to scrub/shrub communities until the planted or naturally regenerated trees reach maturity in approximately twenty to forty years, depending on the dominant tree species. Regardless of the original community type or the future dominant tree species, none of the future biotic communities would become the same type of mature forest as is currently present. The limited timber management in the project study area in the past by USFS resulted in larger growth of the mature trees than would be permitted in the future. The initial clearing and future regrowth would also result in even-aged stands where all of the oldest trees would be
of a similar age rather than the more natural mix of variously aged mature trees. Even-aged stands have been found to be more susceptible to disease and insect pests.

Under Alternative 6, only obstruction trees would be removed in both upland and wetland sites on CNF lands. The biotic communities would remain as they currently exist with the exception of the tallest canopy trees which would be removed, resulting in small canopy gaps. Understory vegetation would increase in the canopy gaps and impacts to the biotic community would be temporary.

The proposed project-specific forest plan amendment would have similar impacts to botanical species present in the Project Study Area under either Alternative 5 or Alternative 6. While the composition of the overstory would be allowed to change as a result of the amended plan standards, understory and native plant species composition would remain intact.

Under the No-action Alternative, existing biotic communities could continue in their existing state. If left undisturbed over time, the communities would follow natural succession, which would be positive in nature.

4.7.3.1.1.1 Wetlands

Approximately 107 acres of wetland biotic communities (including non-tidal freshwater marsh and tidal freshwater marsh) are present within the Project Study Area; disturbance in these biotic communities would be limited to select clearing of tree obstructions in both alternatives. Tree obstructions would be identified and marked in the field using sub-meter accuracy GPS equipment. Along the wetland edge, trees would be hand-cut to ground level and dropped into the adjacent upland area, removed from the site, and sold, if possible. Otherwise, the select clearing of wetlands would involve cutting of the tree obstruction by hand to ground level and leaving the tree where it was dropped within the wetland, mulched, or removed as applicable pursuant to the USACE Section 404 permit. Grubbing or other land disturbance would not be performed in these areas, nor would on-site burning of tree debris. The select tree removal would not lead to the conversion of these communities as they would be allowed to naturally re-vegetate.

It is anticipated that eleven temporary wetland crossings would need to be constructed to provide access to upland areas for the proposed tree removal activities. Construction of these wetland crossings would result in approximately 0.43-acre of temporary clearing impacts within wetlands. The crossings would be constructed by the placement of timber mats and all vegetation would be cut by hand within the wetland areas. The timber mats would be removed immediately after completion of tree removal and the areas would be allowed to re-vegetate naturally. A typical detail of the temporary wetland crossing to be constructed is included in Appendix M. The temporary wetland crossings depicted in Figure 4.1 would be located at the narrowest points possible across the wetlands and designed to minimize
disturbance.

Because wetland areas would be selectively cleared with minimal land disturbance as part of the both Alternative 5 and 6, impacts to wetland biotic communities would be minimized and wetland biotic communities within the Project Study Area would continue to function as wetlands and provide habitat for both aquatic and terrestrial species. Impacts to wetlands are further discussed in Section 4.9.

4.7.3.1.1.2 Uplands

Approximately 126 acres of forested upland communities (including mesic mixed hardwood forest and mesic pine flatwoods) are present on Airport or CNF property within the Project Study Area. An additional 58.2 acres of mowed and maintained upland areas are present on the Airport, USFS property, and private properties within the Project Study Area. No tree removal would be necessary and these areas would continue to be mowed and maintained in the future.

Under Alternative 5, direct impacts to upland communities would occur by the conversion of the existing mature mesic mixed hardwood forest and mesic pine flatwoods to early successional areas. This would result in the overall loss of these habitats, and due to future maintenance requirements and timber management, these areas would not succeed back to their mature state. The implementation of Alternative 5 would result in the permanent conversion of 126 acres of mesic mixed hardwood forest and mesic pine flatwoods to early successional vegetation which would not succeed back to its current state, due to tree height restrictions.

Soil disturbance can occur as a result of use of heavy equipment during logging. Areas of concentrated use, such as log landings and skid roads are most affected. Compaction of these areas would increase the bulk density of the soils and result in a decrease of pore space, soil air, infiltration rate, and the water holding capacity of the soils would potentially increase water runoff. These effects are detrimental to plant growth. The degree and depth of compaction depends on the number of passes the equipment makes and the moisture content of the soils at the time the passes are made. Puddling or rutting could result from equipment use during wet weather or wet soil conditions. Compacted areas would be ripped and seeded to help mitigate the effects of compaction and promote re-vegetation.89

In addition to compaction, due to the sandy nature of the soils in the CNF (and the Project Study Area), erosion and displacement during timber management activities is a concern. Direct displacement of soil material (and the nutrients it contains) during construction of skid roads and landings should be minimal on the nearly level (predominantly) to gently sloping

89 Paragraph on soil impacts quoted from: USFS, Environmental Assessment, Courthouse Creek Project, Pisgah Ranger District, Pisgah National Forest, Transylvania County, North Carolina, September 2013, p., 28.
terrain characteristic of the CNF (and the Project Study Area); however, skidding could result in some displacement on heavily used trails, except on sandy soils and soils with thick sandy surfaces (coarser than, and not including, fine sandy loam). Within the CNF, USFS Region 8 Soil Quality Standards would limit the areal extent of disturbances associated with timber harvest activities and preclude significant impairment of the productive capacity of the soil.\textsuperscript{90}

Alternative 6 would result in slightly less soil disturbance and compaction than Alternative 5 because only obstruction trees would be removed in both the wetlands and on upland sites. While the cutting of tall mature trees would change the structural composition of the stands, the species composition would remain relatively constant.

\textbf{4.7.3.1.1.3 Invasive Plant Species}

As described in Section 3.6.3.3, NNIP are present within the Project Study Area. Tree removal activities under Alternatives 5 and 6 would be conducive to the spread of NNIP, with Alternative 5 posing a greater risk because of the greater extent of disturbance and clearing. Within the portion of the project on the CNF, treatment of NNIP is included as part of both Alternatives. With respect to the introduction of additional NNIP species, prevention is the most cost-effective and successful method of eliminating NNIP. Prevention consists of early detection of NNIP, as well as BMPs adopted during the construction, landscaping, and maintenance activities.\textsuperscript{91}

\textbf{4.7.3.2 Issuance of the Special Use Permit}

\textbf{4.7.3.2.1 Direct and Indirect Impacts}

No direct impacts related to biotic plant communities are anticipated due to the issuance of the SUP. While the SUP would allow for future maintenance to occur, these potential impacts are described above. The future maintenance of the upland areas would not allow the habitats to succeed back to their current state. Direct impacts related to the SUP would also not occur under the No-action Alternative.

\textbf{4.7.3.3 Herbicide Treatment}

\textbf{4.7.3.3.1 Direct and Indirect Impacts}

By removing the NNIP species, the associated native vegetation could become reestablished and the associated native plant community restored. A restored native plant community would provide a habitat and food source with greater diversity for wildlife in the treated areas. The NNIP treatments would be expected to provide long-term benefits to native wildlife populations.


Under the No-action Alternative, NNIP would continue to populate the Project Study Area. This would be detrimental to the overall species diversity, which would have an adverse effect on the plant communities with native species having to compete with NNIP.

4.7.4 Protected or Rare Species

4.7.4.1 Removal of Tree Obstructions

4.7.4.1.1 Direct Impacts

4.7.4.1.1.1 Federally Protected Species
No USFWS-designated critical habitat is found within the project study area. Field surveys were performed in April 2009, June/July 2011, October 2011, and December 2013 within the Project Study Area to search for federally listed species known to occur in Craven County or their potentially suitable habitat. No suitable habitat or occurrences of sensitive joint-vetch, rough-leaved loosestrife, or West Indian manatee were identified during the field surveys. Therefore, it is anticipated that Alternatives 5 and 6 would have no effect on these species.

Under the No-action Alternative no negative impacts to protected or rare species are anticipated. Habitats would remain undisturbed, which would be positive in nature. Over time some habitats could succeed to provide potential habitat for protected and/or rare species.

Species for which suitable habitat was identified are discussed in further detail below.

**Bald eagle**
Suitable nesting and foraging habitat for bald eagle exists within the Project Study Area, and an active bald eagle nest is located within an area of off-site tree removal south of Brice Creek (Figure 3.1). The nest and birds were observed during the protected species survey and wetland delineation in April 2009 and the nest location was mapped with sub-meter accuracy GPS equipment. Based on the 2010 Wildlife Hazard Assessment prepared for the Airport by USDA, a pair of mature bald eagles was routinely observed between March 2009 and March 2010 perching in a pine tree in the approach to Runway 4 and an eaglet was observed perching in the same tree in August 2009. The 2010 Wildlife Hazard Assessment reports that one of the eleven wildlife strikes that have occurred at EWN since 1990 involved a bald eagle (July 7, 2006).

Both Alternative 5 and Alternative 6 would have a direct adverse effect on the bald eagle,

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as the nest tree is one of the tree obstructions to be removed. It is anticipated that USFWS permit would be obtained and the tree and nest would be removed under either Alternative.

**Northern long-eared bat**

Some suitable habitat in the form of daytime roosts is present for the northern long-eared bat. There are numerous standing dead trees with loose bark available for daytime roosts for these bats. However, the coastal plain would not have suitable winter hibernacula for these bats, so they would likely only be present during the warmer months of the year. Also, there are no ridges and slopes with somewhat open understory to provide optimal foraging habitat. The lack of active management of the forest in this area has allowed a dense midstory to develop over most of the project study area.

Potential impacts to northern long-eared bat were analyzed using the *Key to the Northern Long-Eared Bat 4(d) Rule for Federal Actions that May Affect Northern Long-Eared Bats.*\(^{94}\) The proposed project would follow the key as follows:

- Action area is located wholly within the white-nose syndrome area;
- The action will not take place within a northern long-eared bat hibernaculum or alter its entrance or environment;
- Action does involve tree removal;
- Action is not removing hazardous trees (as defined by USFWS); and,
- Action is not removing a known occupied maternity roost tree or trees within 150 feet of a known occupied maternity roost tree and is not removing trees within 0.25-mile of a known hibernaculum.

Following this framework results in the determination that tree removal activities are not prohibited. In addition, USFWS indicated that project level survey for the presence of bats was not required (refer to Appendix F).

Since using the USFWS Key results in the determination of an ‘Incidental Take’, the proposed project may affect, but is not likely to adversely affect northern long-eared bat.

**Red-cockaded woodpecker**

Suitable habitat for red-cockaded woodpecker in the form of nest and forage trees is present within the Project Study Area. However, fire has been suppressed to such an extent that hardwood species have grown into the canopy and understory layers of the forest throughout the Project Study Area, making the nesting habitat much less desirable for the birds. Trees were examined during field survey, and no cavities were observed. No red-cockaded woodpeckers were seen or heard. The foraging habitat that would be

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impacted by either alternative is greater than 0.5-mile from the nearest known cluster, which is the limit of foraging from a cluster defined by USFWS.\textsuperscript{95} Therefore, it is anticipated that the project may affect, but is not likely to adversely affect the red-cockaded woodpecker as a result of either Alternative 5 or Alternative 6.

\textit{American alligator}

Suitable habitat for American alligator is present within the Project Study Area. Anecdotally, alligators have been reported in Brice Creek. However, no alligators or evidence of them were observed during the field survey and the Project Study Area is well out of the range of the American crocodile. Neither Alternative 5 nor Alternative 6 would convert existing alligator habitat to an incompatible wetland type. Therefore, it is anticipated that there would be no effect to American alligator as a result of either alternative.

Based on the results of the field surveys, it is anticipated that the project would have no effect on sensitive joint-vetch, rough-leaved loosestrife, West Indian manatee, the red-cockaded woodpecker, or American alligator. Efforts are currently underway by USFS to obtain a permit from USFWS for removal of the existing bald eagle nest and nest tree located within the Project Study Area. In an effort to improve safety at the Airport, this wildlife hazard would be removed under both alternatives. There would be no effect to the remaining listed species that require marine or beachfront dune habitat because those habitats do not occur within the Project Study Area. No indirect impacts to federally listed species are anticipated.

The proposed project-specific forest plan amendment to change the scenery standard and allow cutting of supracanopy trees adjacent to Brice Creek would impact available habitat for the bald eagle. There would be no effects of the amendment on other rare species with the Project Study Area.

\textbf{4.7.4.1.1.2 State-listed Species}

Potential impacts to state-listed species were determined based on loss of habitat types from tree removal. None of the state-listed species were observed within the Project Study Area during field surveys;\textsuperscript{96} however, based on the presence of suitable habitat, impacts may occur to eastern diamondback rattlesnake. The other state-listed species did not have suitable habitat present, were aquatic species, or occurred in wetlands. Since grubbing and ground disturbance activities would be minimized in wetland areas, other than the wetland crossing areas, impacts to herbaceous wetland species would be minimized. However, minor impacts to herbaceous wetland species could occur from trampling/flattening/disturbance from


contractors and falling trees. Contractors and all Airport personnel will be directed to avoid open marshy wetlands for any type of access (personnel, vehicles, etc.) and to direct falling trees away from such as areas to minimize potential impacts to herbaceous species.

Impacts could occur to the eastern diamondback rattlesnake due to loss of pine flatwoods habitat within the Project Study Area. It is likely that any eastern diamondbacks located in the Project Study Area would relocate to similar adjacent habitats within the remaining 161,000-acre CNF. No indirect impacts to state listed species are anticipated to occur.

4.7.4.1.3 U.S. Forest Service Rare Species
A botanical survey for rare plants was conducted on a 268.5-acre tract of the CNF during June/July 2011 and May 2013 (refer to Appendix F). All ninety-four rare plant species identified by USFS as potentially occurring on site were evaluated for the potential presence of their habitats within the CNF. Thirty-nine out of the total ninety-four species were deemed as having potential habitat present and were included in the site survey. The complete survey results are included in Appendix F. In 2014, USFS revised the official rare plant list for the CNF. Added to this new list were nineteen plant species which were not targeted in the previous survey work. As a result, the study site was revisited on June 4-6, 2015 and appropriate habitats for the ‘new’ rare species were surveyed. A running tally of common species observed and the types of habitats encountered during all site visits (including those site visits primarily for wetland delineation) was kept to verify the types of plant communities present.

Of all 113 species, only a small population (approximately 15 individuals) of Piedmont meadowrue (*Thalictrum macrostylum*) was encountered on the edge of the swamp forest/wetland area near the center of the Project Study Area (refer to Figure 3.1) during the 2011 survey. During the course of the 2015 survey, another population comprised of nine flowering plants was found along the banks of Brice Creek on the eastern edge of the property. No other species on the list were observed during this survey. Locations of this species would be marked as “off limits” prior to project initiation and only selective clearing would occur within adjacent wetland areas; therefore, direct impacts to Piedmont meadowrue are not anticipated under either alternative. Indirect impacts to Piedmont meadowrue would be possible due to the change in the surrounding landscape. These impacts would mimic the changes from natural succession after a catastrophic event, such as a fire, from early colonization by herbaceous plants up to establishment of a mature hardwood forest. The Piedmont meadowrue populations within the study area would likely benefit from the opening of the adjacent canopy but then be negatively impacted by the resprouting of woody species until a more mature open forest is re-established. The persistence of the existing


98 Ibid.
populations of robust individuals within the study area would indicate that the species capable of tolerating some level of over-crowding/over-shadowing and will re-populate the area when conditions are again suitable. Therefore, the proposed project may impact individuals in the Piedmont meadow rue populations within the study area, but would not affect the viability of the species across the CNF.

In the summer of 2016, a population of the Sensitive sedge, Drooping bulrush (\textit{Scirpus lineatus}) was located in the Project Study Area. This is the sixth documented site for this species within the Croatan NF, although three of the populations have not been relocated for 25 years. The majority of the populations have fewer than 30 individuals. The population in the project study area is less than 10 individuals. Drooping bulrush is a Croatan NF Locally Rare species that was previously thought to lack suitable habitat within the Project Study Area. Drooping bulrush is typically found in low rich swamp forests. Two of the previous observations have been in wet, open ditchlines. Opening of the canopy associated with cutting trees in either Alternative 5 or 6 may have temporary indirect impacts to individuals with the increase in light, as well as potential for drying of the soil. However, considering the presence of the species in other open sites, as long as an adequate moisture regime is maintained, it is believed the drooping bulrush population will persist at this site. Populations of drooping bulrush would be marked and any trees felled directionally away from them. The proposed actions for alternative 5 or 6 may impact \textit{Scirpus lineatus} individuals but will not affect its viability across the CNF.

Since none of the other rare plant species were found during surveys, no direct or indirect impacts to the remaining species are anticipated.

Rare animal species were surveyed in a similar manner as the plant species. The list of rare animal species presented by USFS for the CNF was evaluated for the potential presence of the specific habitats preferred by those species. Out of a total of ninety-one animal species, twenty-six would have potential habitat within the project study area. Thirteen additional species would be associated with Brice Creek, such as two species of sturgeon and West Indian manatee, and two species are “Unknown”. The results of the evaluation are in Appendix F. Some species, such as the American alligator, rattlesnakes (although not necessarily the Eastern diamondback rattlesnake), Dukes’ skipper, and bald eagle, have been observed by Airport personnel, USFS personnel and others, in the vicinity of the Project Study Area.

Most of the species with potential habitat in the Project Study Area are associated with the wetlands, which include both forested and open marsh areas adjacent to Brice Creek. Since there would be only selective cutting of canopy trees in the forested wetlands and no work in the open marsh areas, most of the rare animal species would not be impacted by the proposed tree clearing, except for temporary disturbance from noise, vibration and movement of heavy equipment in the nearby upland areas. The largest known threat to Dukes’ skipper is wetland
draining and logging. While there may be short term impacts to the skipper from logging operations under either alternative, the opening of the canopy may improve the foraging habitat for the species in the long term. Some species, such as the undescribed shrew, Eastern woodrat, Dukes’ skipper, Pungo white-footed mouse and Eastern Henslow’s sparrow may benefit from an increase in the amount of shrubby, early successional stage plant communities created by the removal of the large canopy trees. Indirectly, the creation of edge habitat along the perimeter of the project study area in currently forested areas could force species that utilize woodlands further into the forest interior.

**4.7.4.1.1.4 Migratory Birds**

General threats to migratory bird species include habitat loss, habitat degradation, and, to a lesser extent, habitat fragmentation. Clearing forests results in a direct loss of habitat utilized by forest birds. However, brushy habitat created along the edges of cleared areas generates nesting and foraging areas for forest birds as well as other species. Additionally, since the Project Study Area is within the approach surface for Runway 4, bird habitats should not be encouraged in this area. The entire Project Study Area is located within the 10,000-foot siting criteria for wildlife attractants as defined in AC 5200-33B, *Hazardous Wildlife Attractants on or Near Airports*.

Potential impacts would be minimized by limiting wetland tree removal to only trees that are either currently hazards, or within ten feet of becoming a hazard, thereby reducing the habitat loss for migratory birds in wetland areas. The Project Study Area would be allowed to naturally re-vegetate, therefore the removal of wooded habitat would be temporary. Indirectly, the creation of edge habitat along the perimeter of the Project Study Area would likely change the type of bird species utilizing the areas directly adjacent to the clearing limits from species preferring woodlands to those preferring more scrub/shrub type of habitat. Overall, this change would likely be negligible as most migratory birds are able to utilize a variety of habitats ranging from city parks to pristine wilderness.

**4.7.5 Issuance of Special Use Permit**

**4.7.5.1 Direct Impacts**

The issuance of the SUP would change the management of the Project Study Area within the CNF by allowing the Airport to maintain tree heights. This would limit the USFS ability to manage the area for the preservation of rare and protected species by effectively removing approximately 207 acres from USFS management. Under the No-action Alternative, direct impacts related to the SUP are not anticipated.

**4.7.5.2 Herbicide Treatment**

**4.7.5.2.1 Direct Impacts**

By removing the NNIP species, the associated native vegetation could become reestablished and the associated native plant community restored. The host plant for the rare Dukes’ skipper, *Carex hyalinolepis* occurs in the Project Study Area but is at risk of being
outcompeted by the NNIP alligator weed. Treatment of alligator weed and other NNIPs with herbicides will result in a restored native plant community that would provide better habitat for other rare and protected species, such as Duke’s skipper. Ongoing herbicide treatments would be expected to provide long-term benefits to rare and protected species.

Under the No-action Alternative, NNIP would continue to propagate in the project study area, which has a negative impact on potential habitats for protected and/or rare species.

4.8 FLOODPLAINS

4.8.1 Removal of Tree Obstructions

4.8.1.1 Direct Impacts
As discussed in Section 3.7 and depicted on Figure 3.2, the 100-year floodplain associated with Brice Creek comprises a majority of the Project Study Area. The proposed removal of tree obstructions from the Project Study Area would not involve grubbing or grading activities and therefore, would not be anticipated to negatively impact flood elevations. The Proposed Action would not result in direct or indirect support of floodplain development, critical interruption of an emergency transportation facility, a substantial flood risk, or an adverse impact on the floodplain’s natural resource values. No management actions will cause detrimental changes in water temperature or chemical composition, blockages of water courses, or deposits of sediment that seriously and adversely affect water conditions or fish habitat (see 36 CFR 219.8(a)(3)(ii)(B)).

It is anticipated that eleven temporary wetland crossings would need to be constructed to provide access to upland areas for the proposed tree removal activities. Construction of these wetland crossings would result in approximately 0.43-acre of temporary impacts within the floodplain of Brice Creek and its tributaries. The crossings would be constructed by the placement of timber mats, which would be removed immediately after completion of tree removal, allowing the areas to re-vegetate naturally. Construction of the timber mats would not impede water flow within the wetland or floodplain and are not anticipated to negatively impact flood elevations. The Craven County Floodplain Administrator concurred that a Flood Development Permit was not required (Appendix N). A typical detail of the temporary wetland crossing to be constructed is included in Appendix M. The temporary wetland crossings depicted in Figure 4.1 would be located at the narrowest points possible across the wetlands and designed to minimize disturbance.

Since no work would occur under the No-action Alternative, it would have no impact to floodplains.

4.8.2 Issuance of the Special Use Permit

4.8.2.1 Direct Impacts
The issuance of the SUP would change the management of the Project Study Area in the CNF by allowing the Airport to maintain tree heights. This would not impact floodplains as no changes in land elevation from tree removal are anticipated. No direct impacts related to the SUP would be anticipated under the No-action Alternative.

4.8.3 Herbicide Treatment

4.8.3.1 Direct Impacts
Removal of the NNIP species is not anticipated to impact floodplains associated with Brice Creek and/or its tributaries. The application of herbicide would have no impact on floodplain elevations, as this activity would not include a component that would alter the base ground elevation of the project site.

The continuation of NNIP that would occur under the No-action Alternative is not anticipated to have a direct impact to floodplains.

4.9 WATER QUALITY

4.9.1 Removal of Tree Obstructions

4.9.1.1 Direct Impacts
No permanent degradation of water quality standards would be anticipated to result from the either Alternative 5 or 6. Because no grubbing or earth moving/excavation would occur as part of the proposed tree removal activities, only a minimal increase in erosion and sedimentation would be anticipated during tree removal.

As previously discussed in Section 4.6.3.1.1, soil disturbance can occur as a result of heavy equipment during logging. Areas of concentrated use, such as log landings and skid roads are most affected. Compaction of these areas would increase the bulk density of the soils and result in a decrease of pore space, soil air, infiltration rate, and the water holding capacity of the soils would potentially increase water runoff. Compacted areas would be ripped and seeded to help mitigate the effects of compaction and promote re-vegetation.99

In addition to compaction, due to the sandy nature of the soils in the CNF (and the Project Study Area), erosion and displacement during timber management activities is concern. Direct displacement of soil material (and the nutrients it contains) during construction of skid roads and landings should be minimal on the nearly level (predominantly) to gently sloping terrain characteristic of the CNF (and the Project Study Area); however, skidding could result in some displacement on heavily used trails, except on sandy soils and soils with thick sandy surfaces (coarser than, and not including, fine sandy loam).100

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100 Information related to soils within the CNR quoted from: USFS, Final Environmental Impact Statement for the
To minimize temporary impacts to water quality, the contractor would be required to comply with erosion and sediment control measures as specified in FAA AC 150/5370-10 entitled *Standards for Specifying Construction of Airports*, and specifically Item P-156 *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*. All temporary stormwater management techniques would be designed to ensure they are not in conflict with AC 5200-33B, *Hazardous Wildlife Attractants on or Near Airports*.

Brice Creek has a supplemental classification as a NSW; however, since no impervious surface would be created under either Alternative 5 or 6, a State Stormwater Management Plan would not be required by NCDWR. Additionally, because no grubbing or excavation/earth moving would occur, a Sediment and Erosion Control Permit would not be required.

Tree removal within riparian buffers regulated by NCDWR under the Neuse River Buffer Rules would occur as a result of either Alternative 5 or 6. Streams within the Project Study Area determined to be subject to the Neuse River Buffer Rules are depicted on *Figure 4.1*. The riparian buffer zone is a fifty-foot wide area measured from the top of bank on both sides of a subject stream. Impacts to riparian buffers are divided into two zones per DWR regulations. Zone 1 is the first thirty feet from the top of the stream bank outward, while Zone 2 is the additional twenty feet outward from the edge of Zone 1.

Tree removal, vegetation disturbance, or root system impacts within the fifty-foot zone on either side of subject stream are considered impacts by NCDWR. The removal of existing and potential obstructions within the approach surface would require the removal of trees within both zones of subject riparian buffers. As indicated in *Table 4.2*, tree removal associated with both Alternative 5 and 6 would result in approximately 23.3 acres of impact to Zone 1 and 14.4 acres of impact to Zone 2, for a total of 37.7 acres of riparian buffer impact. Not included in this total are approximately 2.17 acres of Zone 1 and 1.55 acres of Zone 2 riparian buffers located on residential parcels to the west, Airport property, or Creekside Park property, which are already cleared of woody vegetation and currently maintained in a grassed state.

<table>
<thead>
<tr>
<th>Riparian Buffer Zone</th>
<th>Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1</td>
<td>23.3</td>
</tr>
</tbody>
</table>

*Table 4.2*  
**Neuse River Buffer Impacts**  

Revised Land and Resource Management Plan for the Croatan National Forest, pgs., 78-79,  
<table>
<thead>
<tr>
<th>Zone 2</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14.4</td>
</tr>
<tr>
<td></td>
<td>37.7</td>
</tr>
</tbody>
</table>

**SOURCE:** Michael Baker Engineering, Inc. 2016.

**NOTE:** Not included in this total are approximately 2.17 acres of Zone 1 and 1.55 acres of Zone 2 riparian buffers that are already cleared of woody vegetation and currently maintained in a grassed state.

Based on coordination with NCDWR, Alternatives 5 and 6 would be considered “Protection of existing structures, facilities and stream banks when this requires additional disturbance of the riparian buffer or the stream channel,” as defined by the Table of Uses in 15A NCAC 02B.0233, which is listed as an “Allowable” action under the Neuse River Buffer Rules.\(^{101}\)

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Runway 4 Obstruction Removal

Allowable use is defined in 15A NCAC 02B.0233 as uses designated that may proceed within the riparian buffer provided that there are no practical alternatives to the requested use and require written authorization from the Division or the delegated local authority. In contrast to “Allowable with Mitigation,” “Allowable” uses, while requiring a Buffer Certification from NCDWR, do not require mitigation.

It is anticipated that eleven temporary wetland crossings would need to be constructed to provide access to upland areas for the proposed tree removal activities. Construction of these wetland crossings would result in approximately 0.43-acre of temporary impacts within the floodplain of Brice Creek and its tributaries. The crossings would be constructed by the placement of timber mats, which would be removed immediately after the completion of tree removal by hand; the crossing areas would be allowed to re-vegetate naturally. All of the temporary crossings would be inspected regularly and any accumulated soil on the timber mats would be removed to prevent sediment impacts to the wetland and/or stream. Impacts to water quality from the temporary wetland crossings would be minimal. A typical detail of the temporary wetland crossing to be constructed is included in Appendix M. The temporary wetland crossings depicted in Figure 4.1 would be located at the narrowest points possible across the wetlands and designed to minimize disturbance.

Under the No-action Alternative no direct impacts to water quality are anticipated to occur. Without work occurring within the Project Study Area, there would no likelihood of impacts related to erosion and sedimentation. Riparian buffers would also stay intact, which would continue to filter runoff before entering surface waters.

4.9.2 Issuance of the Special Use Permit

4.9.2.1 Direct and Indirect Impacts
The issuance of the SUP would change the management of the Project Study Area within the CNF by allowing the Airport to maintain tree heights. This would not impact water quality as no changes in land elevation from tree removal are anticipated. No direct impacts to water quality would be anticipated to occur under the No-action Alternative.

4.9.3 Herbicide Treatment

4.9.3.1 Direct Impacts
Removal of the NNIP species is not anticipated to impact water quality of Brice Creek and/or its tributaries. The contractor would be required to adhere to all applicable federal, state and local regulations regarding the use of herbicides, particularly when in the vicinity of wetlands and/or streams. Many NNIP species require cutting and painting the stumps with appropriate herbicides for efficient removal. Painting of stumps rather than broadcast spraying of target vegetation will be emphasized to the extent practicable to reduce the potential for water quality impacts.
As specified in Section 2.9.2.5, BMPs will be in place within 30 horizontal feet of water (SMZ). Field applications of herbicides where stream buffers have been maintained and an aquatic approved herbicide is used (Triclopyr 3A) have resulted in concentrations of these herbicides in streams below the lethal concentration – generally concentrations ≤ 0.0072 ppm in the adjacent streams. Furthermore, Triclopyr 3A would degrade into a nontoxic compound in approximately 65 days. Following the BMPs and utilizing an herbicide approved for aquatic use would help to prevent the Estimated Environmental Concentrations from reaching the LC50 (Lethal Concentration at which 50 percent of the organisms suffer mortality) for any aquatic species because the herbicides would not enter the streams in any measurable quantity. Project Study Area streams would be protected by a 30 foot buffer (minimum) which would prevent the concentrations of non-approved aquatic herbicides from accumulating within the treatment area streams in measurable quantities. There would be no effects to aquatic communities and/or water quality because the amount of herbicides not approved for aquatic application in activity area waters would be immeasurable.102

Under the No-action Alternative, NNIP would continue to populate the project study area, which would have no impact on water quality.

4.9.4 Section 401 Water Quality Certification

Applicants for state and federal permits for projects that would result in a discharge to wetlands and waters of the United States must obtain a Section 401 Water Quality Certification from NCDWR. This certification involves a review of the Proposed Action and analyzes its potential impact to water quality. The review is performed to ensure that any discharge into jurisdictional areas is in accordance with state water quality standards.

The Section 401 Water Quality Certification would also ensure compliance with the Neuse River Buffer Rules (refer to Section 4.8.1.1). Based on coordination with NCDWR, it is anticipated that the either Alternative 5 or 6 would be classified as an “Allowable” action under the Neuse River Buffer Rules and, while requiring a Buffer Certification from NCDWR, would not require mitigation.103

4.10 WETLANDS AND OTHER WATERS OF THE UNITED STATES

4.10.1 Removal of Tree Obstructions

4.10.1.1 Direct Impacts

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A Jurisdictional Determination (JD, SAW 2008-02623) was received from USACE on April 15, 2010. Expansions of the Project Study Area in 2011 and 2013 required additional field delineation after the JD was issued. USACE issued a supplemental JD on September 20, 2012, which covered the entire project study area (refer to Appendix I); USACE approval of the wetland areas flagged in 2013 occurred on November 9, 2014.

Tree removal within the wetlands of the Project Study Area would be performed using the least environmentally destructive manner possible pursuant to the USACE Section 404 permit. Non-mechanized land clearing generally does not require a Section 404 permit; however, if combined with any other activity requiring a permit, then the clearing must be reported and the affected areas shown on permit drawings. The tree removal would be performed as described previously and in accordance with the conditions of the USACE Section 404 permit. Once cut, the logs may be removed, mulched, or simply left in place as specified by USACE. Removal of the trees should not alter the wetland functions, and it is assumed that the wetland areas would continue to function as wetlands with the same values and functions that they now provide.

As depicted in Figure 4.1, it is anticipated that eleven temporary wetland crossings would need to be constructed to provide access to upland areas for the proposed tree removal activities. Construction of these wetland crossings would result in approximately 0.43-acre of temporary clearing impacts within wetlands. The crossings would be constructed by the placement of timber mats and all vegetation would be cut by hand within the wetland areas.

Under both Alternative 5 and Alternative 6, the timber mats would be removed immediately after completion of tree removal and the areas would be allowed to re-vegetate naturally. A typical detail of the temporary wetland crossing to be constructed is included in Appendix M.

Under the No-action Alternative no direct impacts to wetlands would occur and wetlands would continue to function in their existing state.

4.10.1.1 Avoidance and Minimization

Due to the existing Airport geometry, location of the existing runway, and the location of jurisdictional wetland areas south of Runway 4-22 within the Project Study Area, avoidance of wetlands would not be possible. The linear nature of the project, a result of the existing runway location, limits the flexibility of the design to avoid impacts to jurisdictional areas. The temporary wetland crossings depicted in Figure 4.1 would be located at the narrowest points possible across the wetlands and designed to minimize disturbance. Selective removal of tree obstructions within wetland areas would be done by identifying and marking the trees to be removed in the field using sub-meter accuracy GPS equipment. Impacts from removal would be minimized by using low-impact clearing techniques, such as hand cutting, and keeping heavy equipment out of wetlands to avoid soil disturbance. Since grubbing/soil disturbance would not occur during the removal of tree obstructions, mitigation is not
anticipated to be required for the tree removal impacts. During the selective removal of tree obstructions within wetland areas, potential impacts to waters downstream of the Project Study Area would be minimized by implementing sediment and erosion control measures including hay bale emplacement, silt fencing, and sediment basins, as appropriate. Other BMPs would be required of the contractor to ensure compliance with the policies of FAA AC 150/5370-10A entitled Standards for Specifying Construction of Airports, and specifically Item P-156 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control. All temporary stormwater management techniques and permit requirements will be designed to ensure they are not in conflict with AC 5200-33B, Hazardous Wildlife Attractants on or Near Airports.

**4.10.1.1.2 Permitting and Mitigation**

USACE is authorized under Section 404 of the CWA to issue permits for the placement of dredged or fill material in waters of the United States, including jurisdictional wetlands. Construction of an anticipated eleven wetland crossings would result in approximately 0.43-acre of temporary clearing impacts within wetlands. These impacts to jurisdictional wetlands would require USACE authorization under Section 404. Applicants for state and federal permits for projects that would result in a discharge to wetlands and waters of the United States must also obtain a Section 401 Water Quality Certification from NCDENR. This certification involves a review of the Proposed Action and analyzes its potential impact to water quality. This review is performed to ensure that any discharge into jurisdictional areas is in accordance with State water quality standards. The Section 401 Water Quality Certification would also ensure compliance with the Neuse River Buffer Rules.

The final amount (if any) of mitigation required for the approximately 0.43-acre impacted by the temporary wetland crossings would be determined by USACE and NCDWR during the permitting process. Due to FAA regulations concerning hazardous wildlife attractants (AC 150/5200-33), mitigation is not likely to be available on-site. Mitigation, if needed, would likely have to be obtained off-site and could come from a variety of sources.

Per the current requirements issued jointly by USACE and USEPA in the Department of Defense, Department of the Army, Corps of Engineers 33 CFR Parts 325 and 332/Environmental Protection Agency 40 CFR Part 230 Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, dated April 10, 2008, mitigation banks are the preferred method of mitigation. Therefore, existing mitigation banks in the Neuse River Basin were investigated for the potential future purchase of mitigation credits, in the event that mitigation would be required. The USACE Regional In-lieu Fee and Bank Information Tracking System (RIBITS)\(^\text{104}\), shows one mitigation bank, Brice Creek, with a service area that includes the Project Study Area.

If a commercial mitigation bank could not be used for either wetland and/or riparian buffer

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mitigation, if required, the North Carolina Ecosystem Enhancement Program (NCEEP) In-lieu Fee Program could be used to compensate for unavoidable impacts to waters of the United States and riparian buffer areas. The NCEEP is a state run statewide in-lieu fee program administered by NCDENR and is similar in function to a mitigation bank. The NCEEP provides a mitigation options for permit applicants when commercial mitigation bank credits are not available.

Additionally, in order to comply with NC Session Law 2008-152, mitigation banks serving HUC 03020204 would need to be contacted to determine if commercial bank credits are available before the use the NCEEP In-lieu Fee Program. This would ensure that any banks that would come on-line (including Brice Creek) prior to permit application are investigated.

At the time of permit issuance (as specified by the conditions of the Section 404 Permit), approximately 0.5 to 1.5 acres (dependent on USACE mitigation ratio), would be purchased from the Brice Creek Mitigation Bank. If credits are not available from the Brice Creek Mitigation Bank at the time of permit issuance, 0.5 to 1.5 credits would be purchased from the NCEEP In-lieu Fee Program.

4.10.2 Issuance of the Special Use Permit

4.10.2.1 Direct and Indirect Impacts
The issuance of the SUP would change the management of the Project Study Area on the CNF by allowing the Airport to maintain tree heights. This would not impact wetlands and/or streams as no changes in land elevation from tree removal are anticipated. The No-action Alternative is not anticipated to have any direct impacts related to the issuance of the SUP.

4.10.3 Herbicide Treatment

4.10.3.1 Direct Impacts
Removal of the NNIP species is not anticipated to impact wetlands or streams such as Brice Creek and/or its tributaries. The contractor would be required to adhere to all applicable federal, state and local regulations regarding the use of herbicides, particularly when in the vicinity of wetlands and/or streams. Painting of stumps rather than broadcast spraying of target vegetation will be emphasized to the extent practicable to reduce the potential for wetland and/or stream impacts. No significant indirect impacts are anticipated to occur.

As previously discussed in Section 4.8.4.1, BMPs will be in place within 30 horizontal feet of water (SMZ). Field applications of herbicides where stream buffers have been maintained and an aquatic approved herbicide is used (Triclopyr 3A) have resulted in concentrations of these herbicides in streams below the lethal concentration – generally concentrations ≤ 0.0072 ppm in the adjacent streams. Furthermore, Triclopyr 3A would degrade into a nontoxic compound in approximately 65 days. Following the BMPs and utilizing an herbicide approved for aquatic use would help to prevent the Estimated Environmental
Concentrations from reaching the LC$_{50}$ (Lethal Concentration at which 50 percent of the organisms suffer mortality) for any aquatic species because the herbicides would not enter the streams in any measurable quantity. Treatment area streams would be protected by a 30 foot buffer (minimum) which would prevent the concentrations of non-approved aquatic herbicides from accumulating within the treatment area streams in measurable quantities. There would be no effects to aquatic communities and/or water quality because the amount of herbicides not approved for aquatic in activity area waters would be immeasurable.$^{105}$

Under the No-action Alternative, NNIP are expected to continue to populate the Project Study Area. Since the NNIP species identified would mostly inhabit uplands and wetland/upland fringes, the continuation of NNIP in the study area is not anticipated to have a direct impact on wetlands.

4.11 WILD AND SCENIC RIVERS

4.11.1 Removal of Tree Obstructions

4.11.1.1 Direct Impacts.

Brice Creek was identified as an eligible Wild and Scenic River during the Croatan NF Plan Revision, in 2002. At the time that the river was evaluated in the late 1990s, the Airport had been under a Special Use Permit for nearly thirty years and the area adjacent to the river had been managed to provide a safe runway approach to the airport. The most recent tree clearing of the area occurred in the late 1980s and the Outstandingly Remarkable Values (ORVs) that were attributed to the river in 2002 were reflective of management that had occurred as part of the Special Use Permit.

Alternative 5 would result in clearing of all obstruction trees directly adjacent to the river and on upland areas within the river corridor. Low growing vegetation would be maintained along the bank of the river to screen impacts to scenery but cutting of trees would temporarily impact the botanical ORVs by removal of hardwood-cypress vegetation. These effects would be temporary as the overall species composition would remain the same and regrowth of the understory vegetation would screen impacts to scenery in two to three growing seasons.

There would be no impacts to the wildlife ORV as the diverse fisheries noted in Brice Creek would not be impacted by the cutting of trees within the river corridor. There would be no impacts to the historic and cultural ORVs because none of the sites within the Project Study Area and identified during the archeological survey were considered to be eligible for listing on the National Register of Historic Places. While Alternative 5 may have short-term impacts to the scenic and botanical ORVs for the section of river within the project study area, these impacts will be temporary and the ORVs will be maintained in the long-term. Proposed

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$^{105}$ Paragraph on herbicide and water quality quoted from: USFS, Environmental Assessment, Courthouse Creek Project, Pisgah Ranger District, Pisgah National Forest, Transylvania County, North Carolina, September 2013, p., 24.
activities would not impact Brice Creek’s current eligibility as a Wild or Scenic River as there would be no impacts to the wildlife or historic and cultural ORVs and no long term impacts to scenic and botanical ORVs.

Alternative 6 proposes selective cutting of only obstruction trees with the eligible WSR corridor. While the cutting of individual canopy trees may be noticeable within the river corridor, effects from cutting operations will be limited and temporary in nature. The understory would be retained, providing screening directly adjacent to the river and throughout the eligible WSR corridor. Likewise, the botanical ORV would be maintained as the dominant ecological community would be left intact. There would be no impacts to the wildlife ORV as the diverse fisheries noted in Brice Creek would not be impacted by the cutting of trees within the river corridor. There would be no impacts to the historic and cultural ORVs because none of the sites within the Project Study Area and identified during the archeological survey were considered to be eligible for listing on the National Register of Historic Places. Alternative 6 would not have an impact on Brice Creek’s current eligibility as a Wild or Scenic River.

The No-action Alternative would not result in direct impacts to Wild or Scenic Rivers. Allowing the Brice Creek corridor to remain in its existing condition would not have an impact on its current eligibility as a Wild or Scenic River.

4.11.2 Issuance of the Special Use Permit

4.11.2.1 Direct Impacts

The issuance of the SUP would change the management of the Project Study Area within the CNF by allowing the Airport to maintain tree heights throughout the length of the SUP. This would impact the proposed viewshed of Brice Creek in the vicinity of the Proposed Action due to the continuing presence of tree stumps after removal of tree obstructions for the foreseeable future. However, modifications to the tree canopy as part of the ongoing permit would be minor and not inconsistent with other areas along this same stretch of the Brice Creek where openings occur at the Airport, Creekside Park, and on adjacent private lands. The original SUP permit for the Airport and associated clearing was in existence at the time that Brice Creek was initially determined to be eligible and the issuance of a new SUP would not jeopardize the eligibility of Brice Creek as a Wild and Scenic River.

Under the No-action Alternative, a SUP would not be issued and the vegetation along Brice Creek would continue to grow. The ORVs associated with Brice Creek would not be impacted by the No-action Alternative.
4.11.3 Herbicide Treatment

4.11.3.1 Direct Impacts
By removing the NNIP species, the associated native vegetation could become reestablished and the associated native plant community restored. A restored native plant community would provide a more realistic representation of the original “Wild” state in the treated areas. The treatments would be expected to provide long-term benefits to native plant populations. Removal of NNIP species would benefit the potential designation of Brice Creek as a Wild or Scenic River because the native botanical community would be enhanced.

The No-action Alternative would allow NNIP species to continue to propagate in the Project Study Area. Since NNIP species do not represent native species, there could be a potential for a visual impact along the corridor of Brice Creek.

4.12 SOLID WASTE

4.12.1 Removal of Tree Obstructions

4.12.1.1 Direct Impacts
The Proposed Action was evaluated in terms of its impacts from increased solid waste generation. Three categories of solid waste generation were evaluated:

- The potential for temporary generation of solid waste due to demolition and construction activities;
- The potential for increased, long-term generation of solid waste due to Airport operations; and,
- The potential for landfills to be operated adjacent to the Airport that accept putrefiable wastes where a bird strike hazard could occur.

Solid waste would be produced during the implementation of the Proposed Action, such as land-clearing debris or trash generated by construction workers. Merchantable trees, including pulpwood or saw timber, would be salvaged and sold. Smaller trees and shrubs would be mulched and left in place or removed from the site and disposed of. In addition, clearing debris from uplands that is too large to mulch but considered non-merchantable would be hauled off-site, likely to the Tuscarora Landfill located approximately fifteen miles northwest of the Airport. Based on the “Ten Year Solid Waste Plan, 2012-2022” by Coastal Environmental Partnership, sufficient landfill capacity is available in Craven County.

FAA AC 150/5200-33B, entitled Hazardous Wildlife Attractants On or Near Airports, recommends that airports have a separation distance of at least 10,000 feet from landfills accepting putrescible waste, and at least five statute miles from an airport’s air operations area to protect approach, departure, and circling airspace. Therefore, the potential for attracting potential wildlife into or across approach or departure paths for aircraft would be

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Runway 4 Obstruction Removal

Minimal. No landfills were identified within this 10,000-foot (Zone B) distance in the 2010 Wildlife Hazard Assessment completed for EWN.\textsuperscript{107}

Since no solid waste would be created under the No build Alternative, no direct impacts would be anticipated.

4.12.2 Issuance of the Special Use Permit

4.11.2.1 Direct Impacts
Direct impacts to solid waste are not anticipated to occur from the issuance of a SUP to the Airport except as the issuance allows the Airport to perform tree obstruction removal. Indirectly, the SUP would allow for the Airport to continually maintain tree heights. No direct impacts from the No-action Alternative related to the SUP would be anticipated.

4.12.3 Herbicide Treatment

4.12.3.1 Direct Impacts
The use of herbicide to control NNIP would reduce the amount of ground cover prior to clearing activities, which would limit the spread of NNIP after the clearing is complete. Species of NNIP such as Chinese privet and autumn olive tend to grow in dense thickets. Therefore, removal of these species and implementation of control measures would reduce the amount of vegetation and resulting debris that needs to be removed in the future. Should the NNIP be allowed to continue growing, it would need to be cleared at regular intervals, increasing the amount of solid waste generated by the Airport.

The continuance of NNIP that would occur under the No-action Alternative is not anticipated to have a direct impact on solid waste.

4.13 LIGHT EMISSIONS AND VISUAL IMPACTS

4.13.1 Removal of Tree Obstructions

4.13.1.1 Direct Impacts
The current visual environment at the Airport is consistent with transportation and light industrial land uses and features a commercial terminal building, hangars, parking lots, and other light industrial buildings and equipment. While these facilities are confined to Airport property, they may be visible to adjacent land uses and they contribute light emissions to the nighttime visual environment.

As discussed in Section 3.4.1, land use in the vicinity of the Airport is comprised of commercial development to the north and northeast along U.S. Route 70, with residential development to the west and north along Brice Creek and the Trent and Neuse Rivers.

\textsuperscript{107} USDA, Department of Agriculture Animal and Plant Health Inspection Service Wildlife Services, \textit{Wildlife Hazard Assessment for Coastal Carolina Regional Airport}, March 2010.
Craven County’s Creekside Park is located immediately to the east and the CNF is located south of the Airport, adjacent to Brice Creek. These surrounding commercial, residential, recreational, and industrial land uses utilize existing light sources that contribute to the overall nighttime visual environment, particularly to the north of Airport property. Under Alternatives 5 and 6, the removal of tree obstructions to the south in the approach to Runway 4 would not affect existing light emissions from the Airport. In addition, due to the location of the adjacent residential properties west of the Airport on Yucca Lane and Marion Drive relative to the alignment of Runway 4-22, lighting impacts to these residences would not result from the Proposed Action. The trees to be removed are located farther south and no residences would experience a lighting impact from the Airport facilities due to their removal.

Under both Alternatives 5 and 6, the visual environment would be altered due to the removal of tree obstructions within the Project Study Area: specifically tree obstructions on residential parcels along Yucca Lane and Marion Drive and trees within the upland area (mesic pine flatwoods) south of Brice Creek on USFS property, across from the residential parcels. The removal of trees in these areas would result in the loss of wooded habitat within the viewshed of these residences, as well as removal of shade trees directly from their property in some cases. However, due to height restrictions for the Runway 4 approach surface, the removal of tree obstructions is necessary to maintain safe aircraft operations at EWN. These impacts would be minimized in that no grubbing would occur in the upland habitat on USFS property. Therefore, the visual impact would be temporary as the area would be allowed to naturally re-vegetate, re-establishing the wooded habitat within the viewshed for the residences across Brice Creek on Yucca Lane and Marion Drive.

Since the viewshed would not change under the No-action Alternative, no direct light or visual impacts would be anticipated to occur.

4.13.2 Issuance of the Special Use Permit

4.13.2.1 Direct Impacts
The issuance of the SUP would change the management of the Project Study Area on the CNF by allowing the Airport to maintain tree heights. This would impact the Project Study Area due to the continuing removal of tree obstructions for the foreseeable future. However, the upland areas would be replanted after the initial tree removal and the wetland areas would be allowed to re-vegetate naturally. Although the maximum tree heights would be controlled, the midstory trees would be allowed to grow unchecked and would soon return the area to wooded state. No direct impacts from the No-action Alternative related to the SUP would be anticipated.
4.13.3 Herbicide Treatment

4.13.3.1 Direct Impacts
By removing the NNIP species, the associated native vegetation could become reestablished and the associated native plant community restored. A restored native plant community would provide a more realistic representation of the original “wild” state in the treated areas, thereby enhancing the visual impacts. The treatments would be expected to provide long-term benefits to native plant populations and ongoing benefits to visual impacts.

Since the No-action Alternative would result in the continuation of the existing condition of the Project Study Area, no direct impacts to the project viewshed and/or light emissions are anticipated to occur.

4.14 INDIRECT AND CUMULATIVE IMPACTS

As defined under 40 CFR 1508.8(b), indirect impacts are: “... caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” Although indirect impacts are not directly attributable to the construction and operation of a project, such impacts could occur because of induced growth from new or improved facilities or from other causes.

A cumulative impact is also defined under 40 CFR 1508.7, as an impact that “... results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result for individually minor but collectively significant actions taking place over a period of time.”

Therefore, in accordance with CEQ guidelines, this EA considers the indirect and cumulative impacts of the Proposed Action, including the consequences of subsequent related actions. These related actions can include past actions, present actions, and reasonably foreseeable future actions, both federal and non-federal, as discussed below:

**Past actions** – This evaluation requires the establishment of a geographic scope and time scale for the project impact area, a description of the baseline conditions, and the meaningful changes in the natural and human environment associated with past actions, including any known cause and effect relationships.

**Present actions** – This evaluation should include actions within the same geographic area and time frame, and affecting the same environmental resources as would be potentially affected by the Proposed Action.
Reasonably foreseeable future actions – This evaluation should include projects that occur on or off the area potentially affected by the Proposed Action, and should be developed with enough detail that it will “... provide useful information to a decision maker and the interested public.”

An analysis of the potential cumulative impacts from the Proposed Action was completed in accordance with 40 CFR §1508.25(c). The regulations state that cumulative effects of the Proposed Action should be examined along with the direct impacts. This evaluation considered, to the extent reasonable and practical, the possible impacts of the Proposed Action and other developments, both on and off the Airport, that are related in terms of time and proximity.

Cumulative impacts are defined by 40 CFR §1508.7 as:

*the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

FAA’s *Environmental Desk Reference for Airport Actions* goes on to describe that the cumulative impact analysis under NEPA requires FAA to assess a Proposed Action’s direct and indirect impacts on a particular resource to determine if those effects, in combination with the effects of other projects on the same resource, would be cumulatively significant. Further, cumulative effects analysis is prepared in accordance with USFS *NEPA Handbook* 1905.15, Chapter 10, Section 15.1.

4.14.1 ICI Study Area Boundaries

The study area for ICI was determined by using the project limits and determining disturbances, natural, and man-made features that would likely bound the ICI of the proposed project. These limits bound the ICI Study Area to the south by Forest Service Road 610 which provides a west to east boundary, by segmenting the CNF. The western boundary would be Perrytown Road and Brice Creek Road, which serves as a separation point between the undeveloped and residential areas farther to the north and west. The northern boundary would occur along Williams Road and U.S. Route 70, which divide the existing Airport environment and dense residential/commercial development. The eastern boundary would occur along the residential development and the Taberna Country Club, which serves as a separation between the wetlands/natural areas associated with Brice Creek and developed areas. Creekside Park is included in the ICI Study Area for analysis of any impacts on recreation. The study area boundary for ICI is depicted on Figure 4.2.

The timeframe used for the analysis is approximately 20 years, since the FAA requires airports to develop Airport Layout Plans (ALP) using a 20-year timeframe and the USFS LRMP usually


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encompasses a 10-15 year timeframe. Using the 20-year timeframe captures incremental impacts that would occur as development continues over time.

4.14.2 Directions and Goals of ICI Study Area

As described in Section 3.1, Land Use, the Project Study Area for the proposed improvement is largely undeveloped forest (partially containing the CNF) and the existing Airport property. Looking at the larger ICI Study Area captures Creekside Park, additional CNF to the south, and development along existing roadways. Future land use in the ICI Study Area would be driven by future plans at the Airport, future planning within the CNF, and County Zoning. The portion of the ICI Study Area within the CNF would continue to be managed by USFS per the LRMP and the SUP. The portions of the ICI Study Area within the existing Airport property, could be developed for future Airport projects as shown on the Airport’s ALP. Areas adjacent to the Airport and the CNF consist of Creekside Park and areas shown as Mixed Use, Residential Development, and Office/Institutional in the Craven County CAMA Core Use Plan.109

Therefore, the overall goal and direction for the ICI Study Area is a mix of forest management and mixed use development. It is anticipated that due to the large amount of wetland area present in the ICI Study Area, much of the existing undeveloped land would remain in its existing undeveloped state.

4.14.3 Inventory of Notable Features

As shown on Table 3.1, the Proposed Action is not anticipated to result in impacts to:

- Air Quality;
- Coastal Barriers;
- Farmlands;
- Hazardous materials;
- Historic and cultural resources;
- Natural resources, energy supply, and sustainable design;
- Noise; and,
- Socioeconomic Impacts, Environmental Justice, and Children’s Health and Safety Impacts.

Therefore, these impact categories are not included in the ICI analysis.

Because the ICI Study Area is largely undeveloped at this time, notable features are primarily composed of natural resources located within the ICI Study Area boundaries. The ICI Study Area consists of large expanses of wetlands and forested habitat, with scattered residential, commercial (including the Airport), recreational, and agricultural areas. The ICI Study Area

would also include the wetlands associated with Brice Creek and its tributaries. The CNF makes up a large portion of the southern ICI Study Area and Creekside Park is also present. Both of these features provide ample recreation opportunities within the ICI Study Area.

Habitats within the ICI Study Area could potentially include suitable habitats for federally and state-listed species as well as USFS Rare Species. Coordination with USFS has indicated occurrences of red-cockaded woodpecker in the vicinity of the ICI Study Area. Habitat for federally listed species likely occurs within the ICI Study Area; however, without detailed surveys, their presence or absence cannot be verified. In addition to the potential for habitat related to listed species, the ICI Study Area provides habitat for a variety of terrestrial and aquatic species. Due to the amount of the ICI Study Area that is currently forested, there is a potential for carbon sequestration due to the amount of biomass present. The large amount of area that is wooded with mature forest (approximately 1,000 acres) has a potential to sequester a large amount of carbon when compared to the adjacent suburban/urban area of New Bern.

Changes to the landscape from undeveloped forested areas to developed land would lead to changes in the land use. Future development could result in additional impervious surface that has the potential to impact water quality within the ICI Study Area.

Table 4.4 lists potential notable features and whether ICI to these features are anticipated.
4.14.4 Projects Evaluated for Indirect and Cumulative Impacts

Activities associated with the Proposed Action that would potentially cause impacts include tree removal and the application of herbicide. The tree removal would also include potential impacts from activities such as temporary access roads, skidder trails, and wetland crossings. Impacts related to past, present, and future actions would likely include land clearing, excavation, and addition of impervious surface.

<table>
<thead>
<tr>
<th>Notable Features</th>
<th>Potential ICI (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation</td>
<td>Yes</td>
</tr>
<tr>
<td>Climate/Greenhouse Gas</td>
<td>Yes</td>
</tr>
<tr>
<td>Land Use</td>
<td>Yes</td>
</tr>
<tr>
<td>Protected Species and Wildlife</td>
<td>Yes</td>
</tr>
<tr>
<td>Water Quality</td>
<td>Yes</td>
</tr>
<tr>
<td>Wetlands/Streams</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**SOURCE:** Michael Baker Engineering, Inc. 2016.

Past residential, commercial, and recreational development has occurred in the vicinity of the Airport, especially to the north and east, adjacent to U.S. Route 70. Recent Airport development includes the Runway 22 Extension and Localizer Relocation and the Runway 4 Extension and EMAS Installation. In addition, the Runway 4-22 Pavement Rehabilitation project is slated to begin construction. Reasonably foreseeable Airport projects are listed in Table 4.5 and are based on the FAA Capital Improvement Program (CIP) at Coastal Carolina Regional Airport and the 2013 ALP.

4.14.5 Identification of Indirect and Cumulative Impacts for Analysis

The inventory of notable features was compared to impact causing activities to determine which features would likely be impacted by these activities. The features selected for further evaluation using this method are land use, recreation, water quality, wetlands/streams, habitats/federally listed species, wildlife, and climate/greenhouse gas.

Potential Indirect and Cumulative Impacts are discussed for each element of the Proposed Action Removal of Tree Obstructions, Issuance of SUP, and herbicide Treatment.
### Table 4.5
#### Past, Present, and Future Impact Causing Activities within the ICI Study Area

<table>
<thead>
<tr>
<th>Project</th>
<th>Project Type</th>
<th>Timeframe</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of Airport</td>
<td>Transportation</td>
<td>Past (1940’s)</td>
<td>Clearing, Excavation, Fill, Impervious Surface</td>
</tr>
<tr>
<td>Extension of RW 22</td>
<td>Transportation</td>
<td>Past (1990’s)</td>
<td>Clearing, Excavation, Fill, Impervious Surface</td>
</tr>
<tr>
<td>Runway 4-22 Rehabilitation</td>
<td>Transportation</td>
<td>Present</td>
<td>Impervious Surface</td>
</tr>
<tr>
<td>Drainage Improvements</td>
<td>Transportation</td>
<td>Future (2015-2016)</td>
<td>Drainage</td>
</tr>
<tr>
<td>Airfield Lighting and T/W B Rehabilitation</td>
<td>Transportation</td>
<td>Future (2015-2016)</td>
<td>Impervious Surface</td>
</tr>
<tr>
<td>GA Corporate Area Expansion (Proctor Property)</td>
<td>Transportation</td>
<td>Future (2017)</td>
<td>Excavation, Fill, Impervious Surface</td>
</tr>
<tr>
<td>Air Carrier Apron and Entrance Road Rehabilitation</td>
<td>Transportation</td>
<td>Future (2018)</td>
<td>Impervious Surface</td>
</tr>
<tr>
<td>Air Traffic Control Tower</td>
<td>Transportation</td>
<td>Future (2019)</td>
<td>Impervious Surface</td>
</tr>
<tr>
<td>Property Acquisition (Howell Road, 2.4 ac.)</td>
<td>Transportation</td>
<td>Future (2015-2016)</td>
<td>Land Use</td>
</tr>
<tr>
<td>Property Acquisition (Clermont Road – approx. 7 acres)</td>
<td>Transportation</td>
<td>Future (2018)</td>
<td>Land Use</td>
</tr>
<tr>
<td>Airport Industrial Facility</td>
<td>Transportation</td>
<td>Future (beyond 2020)</td>
<td>Clearing, Excavation, Fill, Impervious Surface</td>
</tr>
<tr>
<td>Airport Cargo Facility</td>
<td>Transportation</td>
<td>Future (beyond 2020)</td>
<td>Excavation, Fill, Impervious Surface</td>
</tr>
<tr>
<td>Existing Residential Development</td>
<td>Development</td>
<td>Past (1960’s to Present)</td>
<td>Clearing, Excavation, Fill, Impervious Surface</td>
</tr>
<tr>
<td>Existing Agricultural/Food Plots</td>
<td>Agriculture</td>
<td>Past (30 plus years)</td>
<td>Clearing, Excavation, Fill, Impervious Surface</td>
</tr>
<tr>
<td>Existing Transportation</td>
<td>Development</td>
<td>Past (30 plus years)</td>
<td>Clearing, Excavation, Fill, Impervious Surface</td>
</tr>
<tr>
<td>Existing Creekside Park</td>
<td>Recreation</td>
<td>Past (1990s)</td>
<td>Clearing, Excavation, Fill, Impervious Surface</td>
</tr>
<tr>
<td>Existing CNF Roads</td>
<td>Transportation</td>
<td>Past (1940’s)</td>
<td>Clearing, Excavation, Fill, Impervious Surface</td>
</tr>
<tr>
<td>Existing Wildlife Depot</td>
<td>Development</td>
<td>Past (30 plus years)</td>
<td>Clearing, Excavation, Fill, Impervious Surface</td>
</tr>
</tbody>
</table>

4.14.6 Analysis of Indirect and Cumulative Impacts

The following is an analysis of the indirect and cumulative impacts for the notable features identified within the ICI Study Area

4.14.6.1 Recreation

Past actions that likely had an impact on recreation include the existing Creekside Park, the existing CNF roads, and the food plots located in the southern portion of ICI Study Area. The construction of the Creekside Park converted an area that was previously undeveloped and consisted of forested and agricultural areas, to a recreational facility. The existing CNF Roads and food plots in the southern portion of the ICI Study Area expanded opportunities for recreation in the CNF, which included the additional of access to Brice Creek. From a recreational standpoint, these past actions were positive in nature. No additional present and/or future actions are anticipated to impact recreation in the ICI Study Area.

4.14.6.1.1 Removal of Tree Obstructions

Indirect

Some indirect impacts to the overall experience of recreational users could occur from the implementation of the tree removal portion of the Proposed Action. The viewshed of Creekside Park would be impacted by the removal of trees on and adjacent to the park property. Trees would also be removed in areas of the CNF that are adjacent to areas used for recreational purposes, which would also impact the viewshed of recreational users outside of the project study area. This visual impact would not impact the recreational function or activity, but could result in a change of the ‘feel’ of the area because the project study area will not retain its current undisturbed environment.

Cumulative

As previously indicated past impacts to recreation in the ICI Study Area were positive in nature; therefore, cumulative impacts to recreation from issuance of the SUP are anticipated to be negligible. In addition, compatible recreational activities such as hiking, wildlife viewing, hunting, boating, and fishing on Brice Creek, could continue within the project study area except during the active periods of tree removal due to safety issues.

4.14.6.1.2 Issuance of SUP

Indirect

Indirectly, the SUP would allow for the Airport to continually maintain tree heights, which could potentially have a temporary impact on those utilizing the CNF and/or Creekside Park for recreational purposes. These impacts could include noise from tree removal and the limiting of access during tree removal activities. These impacts are anticipated to be temporary and transient in nature.
Cumulative
As previously indicated past impacts to recreation in the ICI Study Area were positive in nature; therefore, cumulative impacts to recreation from issuance of the SUP are anticipated to be negligible.

4.14.6.1.3 Herbicide Treatment

Indirect
The application of herbicide is not anticipated to induce additional development at the Airport, the CNF, or in the surrounding area. Therefore, indirect impacts to recreation from the application of herbicide as part of the Proposed Action are not anticipated.

Cumulative
Direct impacts from the herbicide application would likely improve aesthetics and recreation such as hiking; however, it would impact recreational activities such as hunting and wildlife viewing by displacing those animals that use these species for forage or cover. The herbicide treatment would utilize BMPs to protect water quality and aquatic life, no cumulative impacts to fishing resources is anticipated due the application of herbicide. As previously indicated past impacts to recreation in the ICI Study Area were positive in nature; therefore, cumulative impacts to recreation from herbicide treatment, are anticipated to be negligible.

4.14.6.2 Climate and Greenhouse Gases
In looking at past, present and future actions in the ICI Study Area, all actions that involve construction would directly result in an impact to the climate and greenhouse gases from emissions of construction equipment. Projects that involve clearing would remove biomass that provides for carbon sequestration.

4.14.6.2.1 Removal of Tree Obstructions

Indirect
All impacts to climate and greenhouse gases are anticipated to occur at the time of the implementation of the Proposed Action. The tree clearing would not result in a change of aircraft use or different aircraft types that could result in additional emissions. No additional development in the ICI Study Area would be induced by the removal of the tree obstructions. Therefore, the removal of the tree obstructions is not anticipated to result in impacts that are later in time or farther removed in distance, but are still reasonably foreseeable.

Cumulative
As discussed in Section 4.2.1.1, although the Proposed Action would not increase aircraft operations at EWN, it would result in the temporary reduction of carbon dioxide absorption due to the clearing and natural re-vegetation of approximately 126 acres of uplands. Because aviation activity at Coastal Carolina Regional Airport represents such a small amount of global greenhouse gas emissions (0.04 percent), and due to the related uncertainties involving
the assessment of such emissions regionally and globally, the cumulative contribution of the proposed CIP/ALP projects cannot be adequately assessed given the current state of the science and assessment methodology.

Forest management, which includes tree clearing in other areas outside of the Project Study Area, is ongoing within the CNF. Because USFS uses timber management practices within the CNF that allow for the regeneration of cleared areas, the overall cumulative impact of past, present, and future projects is anticipated to be minimal.

The Proposed Action would temporarily result in reduced carbon dioxide absorption due to the approximately 126 acres of uplands to be cleared of trees and allowed to naturally re-vegetate. Although ongoing development within Craven County would be anticipated to increase carbon in the atmosphere, the impacts are anticipated to be negligible even when coupled with activities that would occur under the Proposed Action.

4.14.6.2.2 Issuance of SUP

**Indirect**
Indirectly, the SUP would allow for the Airport to continually maintain tree heights within the SUP area (as shown of Figure 1.2). By limiting the tree size in the SUP area, the overall potential for long term carbon sequestration is minimized. However, since the SUP area will regenerate and only the trees that are safety concerns would be removed, this difference is anticipated to be negligible.

**Cumulative**
The cumulative impacts to climate and greenhouse gases from the issuance of the SUP as part of the Proposed Action are anticipated to be negligible and would contribute little or no incremental effect when combined with impacts of other past, present, or reasonably foreseeable future activities.

4.14.6.2.3 Herbicide Treatment

**Indirect**
All impacts to climate and greenhouse gases are anticipated to occur at the time of the herbicide application. The application would not result in a change of aircraft use or different aircraft types that could result in additional emissions. No additional development in the ICI Study Area would be induced by the herbicide application. Therefore, the control of NNIP s not anticipated to result in impacts that are later in time or farther removed in distance, but are still reasonably foreseeable.

**Cumulative**
The use of herbicide to control NNIP would reduce the amount of ground cover prior to clearing activities, which would limit the spread of NNIP after the clearing is complete.
While not beneficial to the ecosystem, NNIP do tend to grow in dense thickets. Therefore, removal and control measures would likely reduce the overall carbon sequestration in the shrub layer. However, since the area would be allowed to re-vegetate with native shrub species, while the volume of biomass would be anticipated to be less than a stand of NNIP, this difference is anticipated to be negligible and would contribute little or no incremental effect when combined with impacts of other past, present, or reasonably foreseeable future activities.

4.14.6.3 Land Use
Past actions shown on Table 4.5 that potentially impacted land use include:

- Construction of the Airport;
- Extension of R/W 22;
- Existing Residential;
- Existing Agricultural/Food Plots;
- Existing Transportation;
- Existing Creekside Park; and,
- Existing CNF Roads.

The construction of the Airport resulted in a change in the general land use from a rural agricultural area to an industrial/commercial facility. The extension of R/W 22, resulted in relocation of Williams Road, and expansion of Airport property to the north, which converted former rural residential areas to an industrial/commercial facility. Residential growth in the ICI Study Area has changed land uses from undeveloped forested areas and agriculture to suburban areas of New Bern. Existing agricultural areas, including food plots in the CNF have changed land uses from undeveloped forested areas to agricultural areas. Transportation features in the ICI Study Area likely helped to induce development, which also resulted in changes in land use. This resulted in residential areas along travel ways in the ICI Study Area. The existing Creekside Park resulted in a change in land use from forested and agricultural areas to a recreational facility. The construction of roads within the CNF would have helped to develop the CNF into an area used for recreation and timber management.

Future projects within the ICI Study Area likely to impact land use include:

- GA Area Expansion (Arthur Property);
- R/W 32 Corporate/Industrial Area Expansion;
- GA Corporate Area Expansion (Proctor Property);
- Property Acquisition (Howell Road, 2.4 ac.);
- Property Acquisition (Clermont Road – approx. 7 acres);
- Airport Industrial Facility; and
- Airport Cargo Facility.
Property acquisition contiguous with existing Airport property is proposed over the next five years (refer to Appendix J). Property acquisition in these areas would improve land use compatibility in the vicinity of the Airport and would be accomplished in accordance with the Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970, as amended. Acquisition of property by the Airport would convert residential and undeveloped areas to an industrial/commercial facility. Future development at the Airport, including the GA Area Expansion, the R/W 32 Corporate Area Expansion, the Airport Industrial Facility, and the Airport Cargo Facility would all largely occur on existing Airport property. These projects would change land use from grassed/maintained and forested/undeveloped areas to an industrial and commercial use.

4.14.6.3.1 Removal of Tree Obstructions

Indirect
The removal of tree obstructions is not anticipated to induce additional development at the Airport, the CNF, or in the surrounding area. Therefore, indirect impacts to land use from the implementation of the removal of tree obstructions as part of the Proposed Action are not anticipated.

Cumulative
Craven County and the City of New Bern have land use controls in place to limit negative impacts from development. An additional land use control is the Craven County, North Carolina, Zoning and Height Control Ordinance, which is currently in place to restrict the height of objects in the Airport approach zones (refer to Appendix E).

No direct changes to land use are anticipated with the implementation of the Proposed Action. Therefore, the cumulative impacts to land use from the removal of tree obstructions as part of the Proposed Action are anticipated to be negligible and would contribute little or no incremental effect when combined with impacts of other past, present, or reasonably foreseeable future activities.

4.14.6.3.2 Issuance of SUP

Indirect
The issuance of the SUP is not anticipated to induce additional development at the Airport, the CNF, or in the surrounding area. Therefore, indirect impacts to land use from the issuance of the SUP as part of the Proposed Action are not anticipated.

Cumulative
The issuance of the SUP would have a direct impact on land use in the CNF. The original SUP accounted for the management of 187 acres of land within the CNF. The new area proposed for coverage under the SUP would include an additional seventeen acres for a grand total of 204 acres within the CNF. Therefore, from a management standpoint, the
issuance of the SUP would add 17 acres within the CNF under management by the Airport (for tree heights). The cumulative impacts to land use from the issuance of the SUP as part of the Proposed Action are anticipated to be negligible and would contribute little or no incremental effect when combined with impacts of other past, present, or reasonably foreseeable future activities

4.14.6.3.3 Herbicide Treatment

**Indirect**
The application of herbicide is not anticipated to induce additional development at the Airport, the CNF, or in the surrounding area. Therefore, indirect impacts to land use from the application of herbicide as part of the Proposed Action are not anticipated.

**Cumulative**
The herbicide treatment would only control NNIP on lands within the CNF, direct impacts to land use are not anticipated to occur. Therefore, the cumulative impacts to land use from the herbicide treatment as part of the Proposed Action are anticipated to be negligible and would contribute little or no incremental effect when combined with impacts of other past, present, or reasonably foreseeable future activities

4.14.6.4 Rare/Protected Species and Wildlife

Past actions that could have resulted in impacts to protected species and/or wildlife include:

- Construction of Airport;
- Extension of R/W 22;
- Airport Cargo Facility;
- Existing Residential;
- Existing Agricultural/Food Plots;
- Existing Transportation;
- Existing Creekside Park;
- Existing CNF Roads; and,
- Existing Wildlife Depot.

Past development at the Airport and surrounding ICI Study Area likely resulted in impacts to wildlife, and potentially to protected species. The clearing that would have likely been required for the development would have displaced terrestrial species and birds, which could have included impacts to red cockaded woodpecker and bald eagle. Clearing for these areas resulted in a direct conversion of forested areas to disturbed/maintained areas. This change in ecosystem would have likely altered species composition in these areas to populations that thrive in disturbed areas. Maintained areas (kept in mowed condition) are also not conducive to populations of rare and/or protected species. Development also likely altered hydrology in the ICI Study Area (due to installation of pipes/culverts), which could have impacted the
movement of aquatic species. Past impacts to wetlands and streams also could have had an adverse impact on aquatic species.

Future Actions that could result in impacts to rare/protected species and wildlife include:

- Security/Wildlife Fencing;
- R/W 32 Corporate/Industrial Area Expansion;
- GA Corporate Area Expansion (Proctor Property);
- Air Carrier Apron and Entrance Road Rehabilitation;
- Airport Industrial Facility; and,
- Airport Cargo Facility.

4.14.6.4.1 Removal of Tree Obstructions

**Indirect**

No indirect impacts to rare/protected species and/or wildlife are anticipated with the implementation of the obstruction removal portion of the proposed action. Direct impacts would occur during the implementation of the Proposed Action. However, these impacts would be localized in nature, and are not anticipated to result in impacts that are later in time or farther removed in distance, but are still reasonably foreseeable. Future development is anticipated to occur in the ICI Study that could impact rare/protected species and/or wildlife. However, these actions would occur independently of the Proposed Action and would not be induced by the completion of the Proposed Action. Furthermore, additional developments in the ICI Study Area would be required to comply with Section 404 of the CWA, NEPA (for federally funded projects), and USFS requirements (for actions in the CNF). These requirements would afford an analysis of impacts to rare/protected species and wildlife, and would require impacts to be avoided and minimized to the maximum extent practical.

**Cumulative**

Habitat loss and fragmentation are anticipated to continue as previously undeveloped tracts of land are converted to residential, commercial, and industrial uses. Some of the habitat impacted by development could be suitable for protected species. However, without detailed surveys, the presence or absence of protected species cannot be verified. General impacts to wildlife would result from the conversion of forested areas to maintained areas/development and potential impacts to aquatic species from filling wetlands and streams.

Past development has occurred at the Airport within the ICI Study Area including the clearing of trees that resulted in the removal of mature forested habitat preferred by some wildlife species. The relative lack of clearing that has occurred over the past fifty years in the portion of the Project Study Area within the CNF has thereby benefited these same species. Under the original SUP, some clearing activities occurred along Brice Creek. The cleared areas along Brice Creek within the CNF have reverted to mature forest suitable for wildlife habitat, while the areas on Airport property have been regularly maintained and remain
cleared. Cumulatively, the Proposed Action would likely have an overall beneficial impact on wildlife that prefer early successional/edge plant communities during the initial logging operation, and a negative impact on woodland wildlife species that prefer mature forested habitat. As these areas regenerate, woodland wildlife species may start to re-populate the area, but as maintenance clearing continues to occur, early successional wildlife species would again benefit. Ultimately, the ongoing cycle of clearing and regrowth will be beneficial in creating a mosaic of differing successional stage plant communities. A diverse pattern of habitats will support a greater variety of wildlife as well as a greater abundance of wildlife overall due to the ability of individuals to move to the best available habitat to meet their immediate needs, such as when wildlife typically found in upland forests moves into the wetland areas where food is more abundant during a time of drought.

Future projects in the ICI Study Area, including future projects at the Airport, would impact natural habitats utilized by a variety of wildlife. Past projects, such as the construction of the Airport, converted natural habitats to maintained grassed areas. However, the Project Study Area makes up only 0.2 percent of the total area of the CNF. Although activities with potential for impacts will continue in the future, the cumulative effects from implementation of the Proposed Action and past, present, and future projects are not expected to result in an increase of negative impacts wildlife or wildlife habitat due to the relatively small size of the Proposed Action Area when considered within the context of the larger CNF.

A threatened and endangered species survey would be required as part of the permit process for all future development requiring a Section 404 permit. Coordination with USFWS would occur during the permitting process to ensure compliance with the ESA and the Bald and Golden Eagle Protection Act, which affords protections to the bald eagle. Due the large amount of wetland area in the ICI Study Area, it is likely that any future development would require a Section 404 permit. Future projects in CNF and at the Airport would also require review under NEPA, which requires an analysis of potential impacts to federally listed species and wildlife. An analysis of impacts to National Forest Rare Species would also be required for projects in the CNF. This thorough review and permitting process would help minimize cumulative impacts resulting from past, present, and future projects when combined with the Proposed Action by ensuring that protected species are accounted for and considered during the planning process.

4.14.6.4.2 Issuance of SUP

*Indirect*

The issuance of the SUP is not anticipated to induce additional development at the Airport, the CNF, or in the surrounding area. Future maintenance of tree heights would only include removal of offending trees by hand, and timber would likely be dropped and left in place. Therefore, some indirect impacts may occur to wildlife with the issuance of the SUP as part of the Proposed Action are not anticipated. Since taller trees would be available for nesting
immediately adjacent to the cleared areas, bald eagles are not anticipated to be utilizing this area for nesting after the implementation of the Proposed Action. Due to the limited amount of disturbance that would occur with the maintenance activity, no other indirect impacts to rare and/or protected species area anticipated.

**Cumulative**
The cumulative impacts to rare/protected species and/or wildlife from the issuance of the SUP as part of the Proposed Action are anticipated to be negligible and would contribute little or no incremental effect when combined with impacts of other past, present, or reasonably foreseeable future activities.

4.14.6.4.3 Herbicide Treatment

**Indirect**
Removal of the canopy trees would be conducive to the spread of NNIP into the project study area if not treated or controlled. Upon removal of the canopy trees, areas left untreated for NNIP may act as a seed bank/refuge to allow the spread of these species to adjacent areas, thereby causing increased maintenance and treatment costs to the CNF and the surrounding community. During application there is a potential for impacts to wildlife to occur. Various terrestrial species could come in direct contact with the herbicide during application. Food sources for other species (such as insects, nuts, and seeds), could also come into contact with the herbicide and in turn be ingested. Triclopyr acid was found to be slightly toxic to birds and practically nontoxic to mammals, insects, freshwater fish and invertebrates.\(^{110}\) While some mortality is anticipated to occur due to the application, losses are anticipated to be temporary in nature due to the short half-life of Triclopyr 3A.\(^{111}\) Since these impacts are anticipated to be temporary and transient, the application of herbicide is not anticipated to result in impacts that are later in time or farther removed in distance, but are still reasonably foreseeable. Because development within the ICI Study Area is anticipated to occur independently of the proposed improvements, no other indirect impacts as a result of the Proposed Action, to protected species, wildlife, and habitat related to development are expected to occur.

**Cumulative**
By removing the NNIP species, the associated native vegetation could become reestablished and the associated native plant community restored. A restored native plant community would provide a habitat and food source with greater diversity for wildlife in the treated areas. The treatments would be expected to provide long-term benefits to native wildlife populations. Impacts to aquatic wildlife is not anticipated to occur, since BMPs would be


utilized in the 30-foot SMZ (as described in Section 2.9.2.5) around waters and wetlands and only an herbicide approved for aquatic use would be utilized. The use of the BMPs in the SMZ and utilizing an herbicide approved for aquatic use would prevent the levels of herbicide in water from reaching the LC50. While some adverse impact is anticipated during the implementation of the herbicide application, the overall result is anticipated to have a positive benefit to natural habitats in the Project Study Area. Therefore, the cumulative impacts to rare/protected species and/or wildlife the application of herbicide are anticipated to be negligible and would contribute little or no incremental effect when combined with impacts of other past, present, or reasonably foreseeable future activities.

4.14.6.5 Water Quality
The following past actions potentially had an impact on water quality
- Construction of Airport;
- Extension of R/W 22;
- Extension of R/W 4 and EMAS;
- R/W 4-22 Rehabilitation;
- Existing Residential;
- Existing Agricultural/Food Plots;
- Existing Transportation;
- Existing Creekside Park; and,
- Existing CNF Roads.

The previous actions that occurred at the Airport potentially had an impact to water quality due to the addition of impervious surface, the filling of wetlands, and the loss of riparian buffers. The addition of impervious surface due to Airport facilities such as the runways and taxiways would have changed the infiltration rates for stormwater, which causes stormwater to not go through the natural filtration processes that occur in natural ecosystems. Removal of riparian buffer would have a similar effect in areas adjacent to streams. The filling of wetlands also reduces storage capacity and natural filtering processes. Similar impacts would have occurred with the overall development of the ICI Study Area including residential areas, Creekside Park, and existing roadways. Roads in the CNF are largely unpaved, so while these roadways would not impact infiltration rates to the extent of impervious surface, there would be an increased risk for sedimentation due to the bare soils on the roadway.

Presently, the rehabilitation of R/W 4-22 could potentially have an impact to water quality related to addition of impervious surface. Impacts to water quality resulting from impervious surface would be similar in nature to impacts realized from past actions.

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112 USFS, Environmental Assessment, Courthouse Creek Project, Pisgah Ranger District, Pisgah National Forest, Transylvania County, North Carolina, September 2013, p., 24.
Future Actions that could potentially impact water quality include:
- Drainage Improvements;
- Airfield Lighting and T/W B Rehabilitation;
- GA Area Expansion (Arthur Property);
- R/W 32 Corporate/Industrial Area Expansion;
- Air Carrier Apron and Entrance Road Rehabilitation;
- Airport Industrial Facility; and,
- Airport Cargo Facility.

Impacts to water quality from future actions could occur due to increases in impervious surface, loss of wetlands, and loss of riparian buffer. The impacts from future actions are likely to be of less magnitude than past actions that occurred prior to water quality regulations. The use of BMPs to meet federal and state stormwater management regulations, would lessen the overall impact to the ICI Study Area. In addition mitigation requirements for wetlands and riparian buffer impacts help to offset impacts to these features. Drainage improvements at the Airport could potentially have an overall positive impact on water quality by utilizing pretreatment.

4.14.6.5.1 Removal of Tree Obstructions

**Indirect**
No indirect impacts to water quality are anticipated with the implementation of the obstruction removal portion of the Proposed Action. Additional impervious surfaces would be added in areas within the ICI Study Area associated with Airport development. These actions would occur independently of the Proposed Action and would not be induced by the completion of the Proposed Action. Furthermore, additional developments in the vicinity of the proposed project would be required to comply with Section 402 of the CWA and receive necessary NPDES permits.

**Cumulative**
Past impacts to water quality may have resulted from increased impervious surfaces and maintenance practices related to residential and industrial development within and adjacent to the ICI Study Area. Impacts to water quality have also occurred from the construction of roadways and Airport facilities, which would have increased impervious surfaces in a largely undeveloped area.

The Proposed Action would not result in additional impervious surfaces at the Airport; however, tree removal would occur within Zones 1 and 2 of the Neuse River Buffer. The recently completed Runway 22 Extension/Localizer Relocation and the Runway 4 Extension/EMAS Installation also did not impact the Neuse River Buffer; however, these projects also contributed to an increase in impervious surfaces at the Airport. Although the present and future construction projects at the Airport are not anticipated to impact the Neuse...
River Buffer, they would result in an increase in the impervious surfaces at the Airport. Other future development at the Airport, as listed in Table 4.5, would also result in the construction of additional impervious surface. The present and future improvements impacting an area larger than one acre would be required to complete the NPDES permitting process prior to construction, which would minimize the amount of stormwater runoff entering into surface waters in the area. Implementation of various long-term water quality measures would also help to minimize potential cumulative impacts to water quality near the Airport.

Past and present development in the vicinity of the project study area likely has impacted the water quality of Brice Creek and its tributaries. The Lower Neuse Sub-basin (03020204) contains approximately 1.0 million acres of drainage area. The project study area makes up less than 0.03 percent of the total drainage area of this sub-basin. Therefore, any impact that would occur to water quality as a result of the Proposed Action, would be unlikely to have a measureable impact on the overall water quality in Lower Neuse Sub-basin. Activities impacting water quality will continue in the future and the cumulative effects from implementation of the Proposed Action are not expected to result in an increase of negative impacts to water quality.

### 4.14.6.5.2 Issuance of SUP

**Indirect**
The issuance of the SUP is not anticipated to induce additional development at the Airport, the CNF, or in the surrounding area. Future maintenance of tree heights would only include removal of offending trees by hand, and timber would likely be dropped and left in place. Therefore, indirect impacts to water quality from the issuance of the SUP as part of the Proposed Action are not anticipated.

**Cumulative**
The cumulative impacts to water quality from the issuance of the SUP as part of the Proposed Action are anticipated to be negligible and would contribute little or no incremental effect when combined with impacts of other past, present, or reasonably foreseeable future activities.

### 4.14.6.5.3 Herbicide Treatment

**Indirect**
Because BMPs would be utilized to ensure herbicide would not leave the project study area, no measureable indirect impacts are anticipated to occur with the application of herbicide to control NNIP as a result of the Proposed Action. Long term impacts from the application of the herbicide are not anticipated because the herbicide would degrade to a non-toxic

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compound within approximately 65 days. Indirect impacts for the chemical treatments typically include some loss of ground cover as the treated vegetation dies and decomposes. Because herbicides do not physically remove plants and their root systems, herbicide use would not increase the potential for soil erosion; the dead plants would be expected to provide short-term soil stabilization until native plants re-vegetate the area.

Cumulative
As previously indicated, the Lower Neuse Sub-basin (03020204) contains approximately 1.0 million acres of drainage area. The project study area makes up less than 0.03 percent of the total drainage area of this sub-basin. Therefore, any impact that would occur to water quality as a result of the Proposed Action (including application of herbicide), would be unlikely to have a measureable impact on the overall water quality in Lower Neuse Sub-basin. Activities impacting water quality will continue in the future and the cumulative effects from implementation of the application of herbicide are not expected to result in an increase of negative impacts to water quality.

4.14.6.6 Wetlands
Past impacts to wetlands potentially occurred with the development of the following actions:
- Construction of Airport;
- Extension of R/W 22;
- Existing Residential;
- Existing Agricultural/Food Plots;
- Existing Transportation;
- Existing Creekside Park;
- Existing CNF Roads; and,
- Existing Wildlife Depot.

Impacts to wetlands likely occurred from these past actions due to fill and clearing for development. Impacts would have occurred due to site grading, which likely resulted in the filling of wetlands due to the proximity of wetlands to these areas currently. The construction of the Airport likely resulted in impacts to wetlands associated with Brice and Scotts Creek. Impacts to Scotts Creek also occurred due to areas where the creek is piped on the Airport. The extension of R/W 22 also likely resulted in impacts to wetlands associated with Scotts Creek. Existing residential and agricultural areas likely resulted in wetland impacts due to the number of lots that back up to wetland areas associated with Brice Creek. Transportation facilities (including CNF Roads) result in crossings of Brice Creek, Scotts Creek, and various associated wetland systems. These crossings resulted in impacts from fill and piping at wetland crossings, and impacts related to bridge installation. Lot grading

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114 USFS, Environmental Assessment, Courthouse Creek Project, Pisgah Ranger District, Pisgah National Forest, Transylvania County, North Carolina, September 2013, p., 24.
likely resulted in fill impacts in these areas. Creekside Park directly borders the wooded swamps along Brice Creek, so impacts to this system likely occurred during construction. The construction of the Wildlife Depot on the CNF likely resulted in fill impacts to wetlands associated with Georges Branch.

In looking at National Wetland Inventory Mapping, future actions that could result in impacts to wetlands include:

- R/W 32 Corporate/Industrial Area Expansion;
- GA Corporate Area Expansion (Proctor Property); and,
- Airport Cargo Facility.

The expansion of these Airport facilities, could result in wetland impacts due to fill required for grading of project sites. Wetland systems in these areas are associated with Scotts Creek and areas that drain to the Trent River. Mitigation requirements for wetlands would help to offset impacts to these features.

4.14.6.6.1 Removal of Tree Obstructions

**Indirect**

No indirect impacts to wetlands are anticipated with the implementation of the obstruction removal portion of the Proposed Action. Direct impacts to wetlands associated with the installation of the wetland crossings would only occur during the Proposed Action and are not anticipated to result in impacts that are later in time or farther removed in distance, but are still reasonably foreseeable. Future development is anticipated to occur in the ICI Study that would impact wetlands. However, these actions would occur independently of the Proposed Action and would not be induced by the completion of the Proposed Action. Furthermore, additional developments in the ICI Study Area would be required to comply with Section 404/401 of the CWA.

**Cumulative**

Past impacts to wetlands have occurred from residential, commercial, and industrial development within and adjacent to the ICI Study Area, where wetlands have been filled, drained, or otherwise altered by road construction and with borrow pits and berms. In addition, natural streams within the area have also been channelized for silviculture.

Executive Order 11990 and the CWA Section 404 process have dramatically reduced the rate of wetland loss; however, wetland loss is likely to continue. The protection of wetlands is regulated on a case-by-case basis by state and federal agencies and mitigation for permitted impacts is typically required. To fill wetlands or other waters of the United States, a permit would have to be granted by USACE prior to construction of projects and a Section 401 Water Quality Certification from NCDENR. Mitigation may be required for impacts, which would offset the wetland loss associated with future development projects. Therefore, with
USACE and NCDENR oversight as well as mitigation requirements, the potential impacts to wetlands from projects occurring in the area would be minimized.

The recently completed Runway 22 Extension/Localizer Relocation and the Runway 4 Extension/EMAS Installation did not require authorization under Section 404; no wetlands were impacted by these projects. The Proposed Action is anticipated to result in approximately 0.43-acre of temporary clearing impacts within wetlands for the construction of eleven wetland crossings to access upland areas for tree removal activities. In addition, the upcoming CIP/ALP construction projects (Table 4.5) could potentially result in impacts to wetlands and other jurisdictional waters of the United States. The Lower Neuse Sub-Basin is estimated to contain 350,000 acres of wetland. Impacts resulting from the Proposed Action would affect approximately 0.0001 percent of this wetland acreage. As a result, no cumulative impacts to wetlands on and in the vicinity of the Airport would be anticipated.

Past and present residential and commercial development in the vicinity of the project study area has impacted wetlands and streams such as Brice Creek and its tributaries. These activities will continue in the future regardless of the status of the Proposed Action, and the cumulative effects from implementation of the Proposed Action are not expected to result in an increase of negative impacts to wetlands and/or streams.

4.14.6.6.2 Issuance of SUP

Indirect
The issuance of the SUP is not anticipated to induce additional development at the Airport, the CNF, or in the surrounding area. Future maintenance of tree heights would only include removal of offending trees by hand, and timber would likely be dropped and left in place. Therefore, indirect impacts to wetlands from the issuance of the SUP as part of the Proposed Action are not anticipated.

Cumulative
The cumulative impacts to wetlands from the issuance of the SUP as part of the Proposed Action are anticipated to be negligible and would contribute little or no incremental effect when combined with impacts of other past, present, or reasonably foreseeable future activities.

4.14.6.6.3 Herbicide Treatment

Indirect
Because BMPs would be utilized to ensure herbicide would not leave the project study area, no measureable indirect impacts are anticipated to occur with the application of herbicide to control NNIP as a result of the Proposed Action. Long term impacts from the application of the herbicide are not anticipated because the herbicide would degrade to a non-toxic compound within approximately 65 days.\textsuperscript{117}

Cumulative
With adherence to the anticipated Project Commitments associated with the Proposed Action (to be included in the FONSI issued by FAA) and application rates and methods, no herbicide is expected to leave the Project Study Area boundaries, and none is expected to enter the Project Study Area from other projects. Any effects of past herbicide use on other lands within the affected watersheds will likely have dissipated due to short half-lives of these compounds. The impacts from the proposed treatment activities are negligible and would contribute little or no incremental effect when combined with impacts of other past, present, or reasonably foreseeable future activities. Consequently, they are not expected to contribute to any measurable increase in cumulative degradation to soil or hydrological resources.

4.14.7 Summary
A summary of the anticipated ICI of the Proposed Action and past, present, and future actions is shown in Table 4.6.

\textsuperscript{117} USFS, Environmental Assessment, Courthouse Creek Project, Pisgah Ranger District, Pisgah National Forest, Transylvania County, North Carolina, September 2013, p., 24.
## Table 4.6
### Summary of Past, Present, and Future Impact Causing Activities within the ICI

<table>
<thead>
<tr>
<th>Proposed Action (Alternative 5 and 6)</th>
<th>Land Use</th>
<th>Recreation</th>
<th>Water Quality</th>
<th>Wetlands /Streams</th>
<th>Wildlife</th>
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<tbody>
<tr>
<td>Construction of Airport</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Extension of RW 22</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Extension of RW 4 and EMAS</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Runway 4-22 Rehabilitation</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Drainage Improvements</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Airfield Lighting and T/W B Rehabilitation</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>GA Area Expansion (Arthur Property)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security/Wildlife Fencing</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R/W 32 Corporate/Industrial Area Expansion</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>GA Corporate Area Expansion (Proctor Property)</td>
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<tr>
<td>Air Carrier Apron and Entrance Road Rehabilitation</td>
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<td>Air Traffic Control Tower</td>
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<tr>
<td>Property Acquisition (Howell Road, 2.4 ac.)</td>
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<tr>
<td>Property Acquisition (Clermont Road – approx. 7 acres)</td>
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<tr>
<td>Airport Industrial Facility</td>
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<tr>
<td>Airport Cargo Facility</td>
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<tr>
<td>Existing Residential</td>
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<td></td>
</tr>
<tr>
<td>Existing Agricultural/Food Plots</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Existing Transportation</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Existing Creekside Park</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
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<tr>
<td>Existing Wildlife Depot</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Red checkmarks indicated potential impacts for that category.
CHAPTER 5

AGENCY COORDINATION AND PUBLIC INVOLVEMENT

5.1 Agency Coordination

Involvement with federal, state, and local agencies is an essential part of the project development process and a requirement under NEPA. Changes in scope, such as those being evaluated under this Supplemental EA, necessitate additional agency coordination. Per FAA Order 5050.4B, the Supplemental EA must meet the same circulation and filing requirements used for the original EA. Accordingly, agencies that provided comments on the 2010 EA, as well as other agencies with jurisdiction or special expertise within the areas that may be affected by the change in scope, will receive copies of the draft Supplemental EA for review.

The following agencies and organizations were contacted for comments and/or information on this project. The agency comment letters received are included in Appendix B.

5.2 Original 2009 Scoping Conducted by Airport

Federal Agencies
U.S. Army Corps of Engineers
U.S. Department of Agriculture, Natural Resource Conservation Service
U.S. Department of Agriculture, Forest Service
U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region 4 Environmental Accountability Division

State Agencies
N.C. Department of Cultural Resources, Office of Archives and History
N.C. Department of Environment and Natural Resources
N.C. Forest Service
N.C. Wildlife Resources Commission
N.C. Department of Administration, State Clearinghouse
N.C. Department of Transportation, Division of Aviation
N.C. Department of Transportation, Division of Highways

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1 FAA, Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions, pp. 14-3 – 14-4.
5.3 USFS Scoping 2013

Federal Agencies
U.S. Department of Agriculture, Natural Resource Conservation Service
U.S. Department of the Interior, Fish and Wildlife Service
U.S. Army Corps of Engineers

State Agencies
N.C. Division of Marine Fisheries
N.C. Department of Administration, State Clearinghouse
N.C. Forest Service
N.C. Wildlife Resources Commission
N.C. Department of Environment and Natural Resources
N.C. Division of Coastal Management
N.C. Division of Water Resources
N.C. Natural Heritage Program
N.C. Museum of Natural Sciences
N.C. Department of Agriculture
N.C. Division of Parks and Recreation

Local Governments
Craven County Chamber of Commerce Neuse River Council
of Governments

Public Interest Groups
Nature of Conservancy
Southern Environmental Law Center Neuse River Foundation
Wild South
National Wild Turkey Federation
N.C. Bowhunters Association National Wildlife Federation
CHAPTER 6

LIST OF PREPARERS

6.1 FEDERAL AVIATION ADMINISTRATION

Aaron Braswell, Environmental Protection Specialist, responsible for review and approval of Environmental Assessment.

Dana Perkins, Airport Environmental Programs Manager, provided review and comments on Environmental Assessment.

6.2 UNITED STATES FOREST SERVICE, CROATAN NATIONAL FOREST

Donald Simon, Lands and Realty Specialist, responsible for coordination of U.S. Forest Service project team.

Cody Hutchinson, District Ranger, responsible for review of the Environmental Assessment.

Lee Thornhill, Ecosystem, Fire & Forest Staff Officer, responsible for review of the Environmental Assessment.

Sheryl Bryan, Forest Wildlife Biologist, responsible for review of the Environmental Assessment.

Gary Kauffman, Forest Botanist, responsible for review of botanical sections of the Environmental Assessment.

Jöel Hardison, responsible for review of archaeological sections of the Environmental Assessment.

Hugo Cobos, Croatan District Wildlife Biologist, responsible for review of wildlife sections of the Environmental Assessment, preparation of the USFS scoping letter, and input regarding bald eagles.

Heather Luczak, Forest NEPA Coordinator, responsible for review of the Environmental Assessment.

Erik Crews, Dispersed Recreation Program Manager, responsible for Environmental Assessment review and input regarding recreation, scenery, wild and scenic rivers.

6.3 COASTAL CAROLINA REGIONAL AIRPORT AUTHORITY

Thomas Braaten, Airport Manager, Coastal Carolina Regional Airport, provided review and comments on Environmental Assessment.
6.4 MICHAEL BAKER ENGINEERING, INC.

Jim Farthing, Project Manager, responsible for coordination of project team, engineering and design.

Gordon Murphy, Environmental Planning Manager, responsible for review of natural resource sections of the Environmental Assessment.

Edward Smail, Environmental Scientist, responsibilities include co-author of the Environmental Assessment, responsible for collection of natural resource data, natural resources impact analysis, and technical report preparation.

Jennifer Kennelly, Environmental Planner, responsible for QA/QC of Environmental Assessment.

Danielle Cemprola, Environmental Planner, responsible for QA/QC of Environmental Assessment.

Renee Flinchum-Bowles, Environmental Scientist II, responsible for preparing Chapters 3 and 4 graphics in GIS.

Troy McNall, Senior Designer, responsible for finalizing the report figures.

6.5 NEW SOUTH ASSOCIATES, INC.

Christopher Espenshade, RPA, Project Manager/Principal Investigator in charge of Archaeological investigations.

6.6 WALKER BOTANICAL CONSULTING

Andy Walker, Botanist, responsible for survey of USFS rare plant species.