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DRAFT

ENVIRONMENTAL ASSESSMENT

for a New Runway at Ridgeland Airport



Prepared for
Jasper County, SC

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Chapter 1

Purpose and Need





Chapter 1: Purpose and Need

1.1 INTRODUCTION

The Ridgeland Airport (Airport, also referred to by the Federal Aviation Administration [FAA] identifier 3J1) is located in the Lowcountry region of South Carolina, in Jasper County, approximately one mile northwest of the Town of Ridgeland (refer to **Figure 1-1**). Situated directly west of U.S. Highway 278 (Grays Highway), the Airport is in close proximity to Interstate 95 (I-95), U.S. Route 17, and U.S. Route 21.

The Airport, which is owned by Jasper County, is a public-use facility that serves general aviation (GA), including recreational aircraft, flight training, and glider towing activity. 3J1 serves both transient and local aircraft with 62 based aircraft on the airfield (all single-engine piston aircraft and gliders).¹ The South Carolina Airport System Plan (SCASP) currently classifies 3J1 as SC-IV, a GA airport serving local and recreational aviation.

The airport property encompasses approximately 71 acres of land and includes a single asphalt runway, Runway 3-21, that is 2,692 feet long and 70 feet wide. Runway 3-21 is oriented in a northeast-southwest configuration and has three exit taxiways that lead to the landside facilities. As depicted on **Figure 1-2**, the airport's existing landside facilities are split into three areas that include approximately 24 private hangars in the south apron area, the terminal building and 6 private hangars in the central terminal building/apron area, and a T-hangar and 4 private hangars in the north apron area. Seven private hangars primarily for glider aircraft are also located on the opposite side of Runway 3-21, adjacent to the northern property boundary. The Airport's Fixed Base Operator (FBO), Aircraft Constructor Inc., provides self-service 100LL fuel from a 12,000-gallon aboveground tank (AVGAS tank, refer to **Figure 1-2**).



Terminal Building at Ridgeland Airport

1.2 PURPOSE OF THIS ENVIRONMENTAL ASSESSMENT

Jasper County has undertaken this Environmental Assessment (EA) to fulfill the requirements necessary for compliance with the *National Environmental Policy Act of 1969* (NEPA), FAA

¹ Michael Baker Jr., Inc., Airport Layout Plan Update, Draft, January 17, 2014, p.13.



for a New Runway at Ridgeland Airport

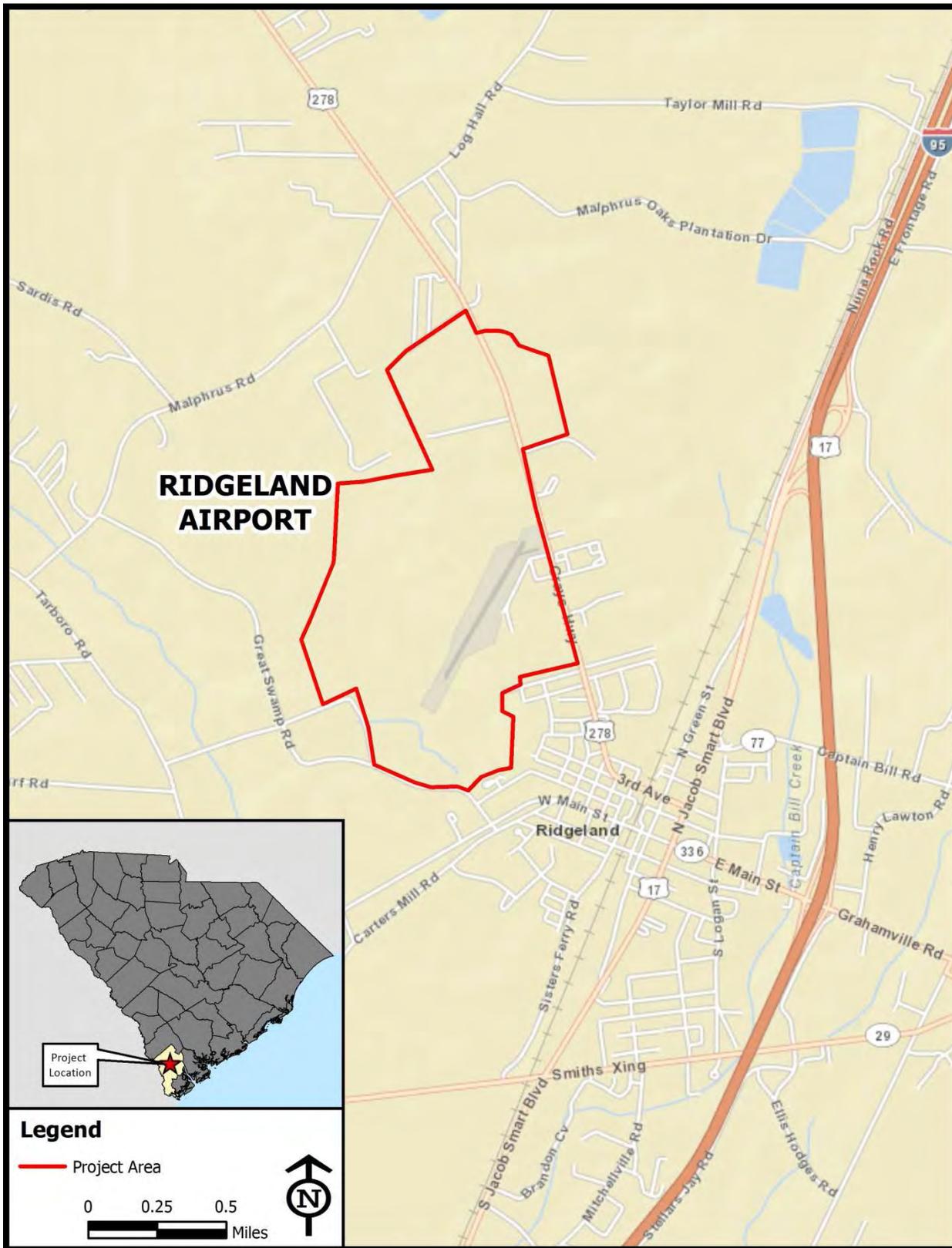


Figure 1-1: Location Map

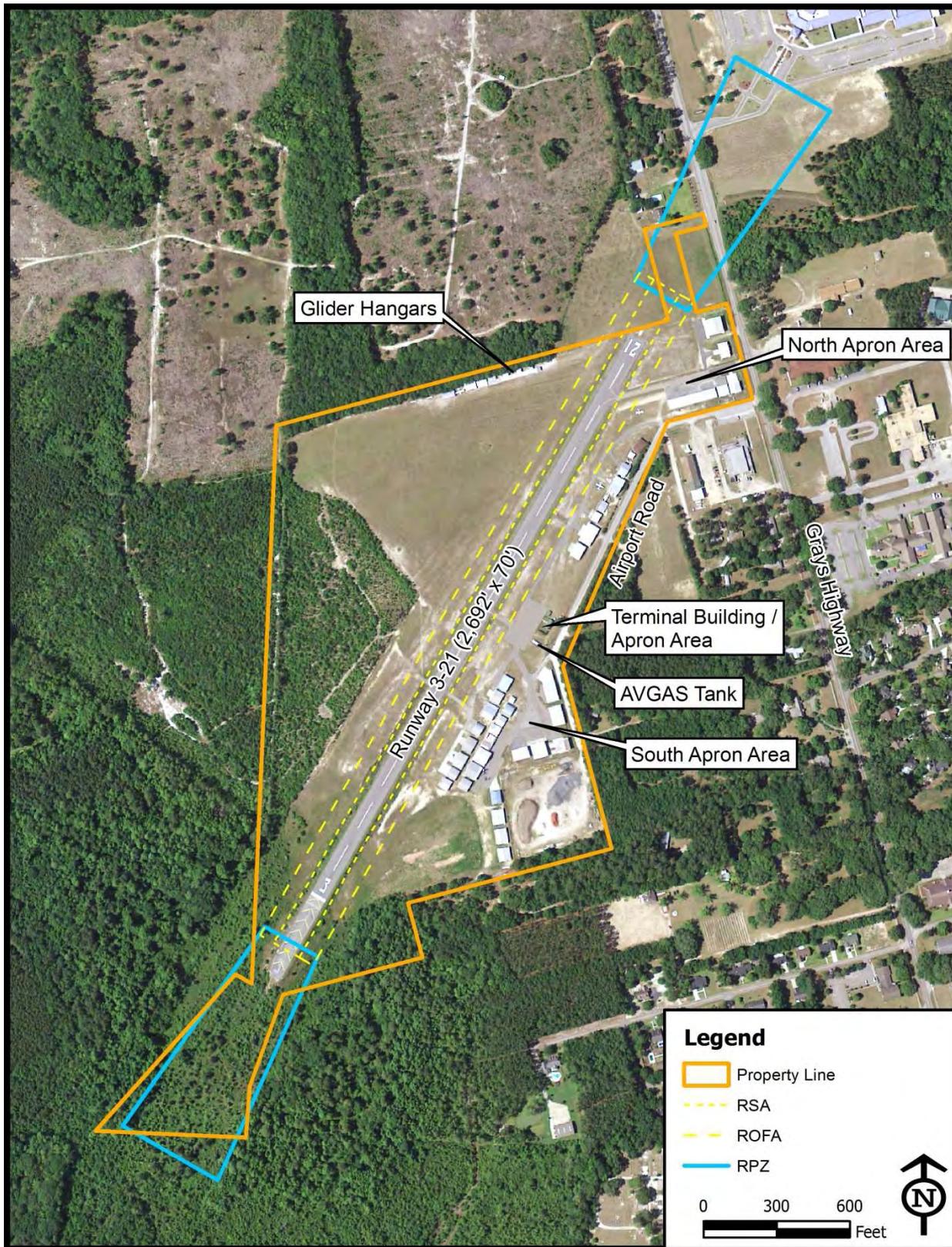


Figure 1-2: Existing Facilities



for a New Runway at Ridgeland Airport

Order 1050.1E, *Environmental Impacts: Policies and Procedures*,² and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*.³ As outlined in Order 1050.1E and 5050.4B, proposed actions (airport improvement projects) that require environmental review and approval before implementation can fall within one of three categories:

- Those actions that are normally categorically excluded, such as minor expansion of facilities where no additional land is required;
- Those actions requiring an EA, such as a runway extension project; or,
- Those actions normally requiring an Environmental Impact Statement, such as a new commercial service airport or a new runway to handle air carrier aircraft.

Based on FAA input, it has been determined that an EA will be completed to establish if the proposed project can be implemented in an environmentally acceptable manner.

1.3 PROPOSED ACTION

As previously discussed, Runway 3-21 is currently 2,692 feet in length. The airfield has three exit taxiways that provide access to landside facilities but no parallel taxiway. To accommodate current and future aviation demand and increase airfield safety, Jasper County proposes to construct a new runway, parallel taxiway, and associated landside development, including terminal building, apron, fuel farm, and hangars.

1.4 PURPOSE AND NEED

Runway 3-21 fails to comply with several of the FAA's design standards and deteriorating pavement on the southern end has mandated a shortening of the runway to 2,692 feet with



View of limited RSA from Runway 3 threshold, looking southwest

designation of the deteriorated area as a blast pad. As this deterioration continues, the runway will have to be further shortened or reconstructed in the future. The Runway Safety Area (RSA) at 3J1 is a critical design standard that is currently not met. A primary function of the RSA is to reduce the risk of damage to aircraft and injuries to aircrew and passengers in the event of an undershoot, overshoot, or excursion from the runway.⁴

² U.S. Department of Transportation, FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, April 28, 2006, Chapters 6,7, and 9.

³ U.S. Department of Transportation, FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, April 28, 2006, Chapters 3, 4, and 5.

⁴ FAA, AC 150/5300-13A, Section 307 b.



The RSA is the ground surface adjacent to the runway that is cleared and graded and has no potentially hazardous ruts, humps, depressions, or other surface variations. For Runway Design Code (RDC) B-II airports similar to 3J1, the RSA dimensions are 240 feet long and 120 feet wide. At Ridgeland Airport, the terrain within this area does not comply with existing grading standards.

Due to the existing runway length and development constraints associated with the current alignment, 3J1 has an SC-IV classification. State-wide, Ridgeland Airport has the second shortest runway and is one of only three public airports in South Carolina with a runway shorter than 3,000 feet. Despite the limited runway length, 3J1 is situated in a favorable location as evidenced by the 62 aircraft that are currently based there. This is the largest number of based aircraft among the 20 similarly classified (SC-IV) airports in South Carolina and far exceeds the average (17 based aircraft).

The proposed project is needed to address the deficiencies of the current 2,692-foot runway length. Constructing a longer runway that could effectively accommodate both short- and long-term aviation demand would remove the limitations imposed by the existing airfield and would support regional growth and development.

1.4.1 Previous Studies

As summarized in the following sections, the need for improved airfield facilities at 3J1 has been evaluated several times dating back to 1986 with FAA approval of the initial Environmental Assessment.

1.4.1.A 1986 Environmental Assessment for the Ridgeland Airport

Construction of a 3,700-foot runway was evaluated in an effort to improve safety at the Airport. An on-site inspection in 1984 by South Carolina Aeronautics Commission (SCAC) indicated that the existing facility did not meet the standards of Federal Aviation Regulations (FAR) Part 77 surfaces and also provided inadequate RSAs. Extension of the existing runway, development of a new runway at the present site, and the No-build Alternative were evaluated as part of the 1986 EA. Development of a new runway at the existing site was identified as the Preferred Alternative.

1.4.1.B 1993 Environmental Assessment – Reevaluation

Due to time limitations that had been exceeded, the 1986 EA-Finding of No Significant Impact (FONSI) was reevaluated with regard to changes in the affected environment that may have occurred and new FAA design standards (Advisory Circular [AC] 150/5300-13, dated September 29, 1989). The proposed new runway alignment was slightly shifted to the north and west as a result of the Reevaluation.

1.4.1.C 1994 Airport Layout Plan Update Study and Narrative Report

This study provides an Airport Layout Plan (ALP) drawing set that depicts the 1995 existing facilities, forecasts of aviation activity based on adjustments to the 1992 South Carolina Airport System Plan, and short-, intermediate-, and long-range planned



improvements, including the proposed new runway assessed in the 1993 EA Reevaluation.

1.4.1.D Studies for New Airport Site⁵

A 2001 airport site selection study examined the existing conditions at Ridgeland Airport and future needs. A new site location was identified as the preferred airport location and then evaluated in a 2003 ALP and Master Plan. The *Final Environmental Assessment for a New Jasper County Airport* was completed in 2005, and identified the Cypress Woods site as the preferred alternative of the three sites evaluated. However, based on the results of the 2004 public hearing and unsuccessful negotiations with the land owner, the project was terminated. A 2006 fatal flaw evaluation did determine that Jasper County could develop a new airport at an alternative site, Bailey Mill Plantation, however, this alternative was not pursued.

1.4.1.E 2008 Draft Environmental Assessment for Proposed Airport Improvements

This document evaluated the potential environmental impacts associated with re-establishment of the usable runway length of existing Runway 3-21 to 3,028 feet, and removal of obstructions from the RSA and the 20:1 approaches on either end of runway.

1.4.2 Runway Length Justification

In order to identify the runway length requirements for 3J1, it was necessary to perform a runway length analysis in accordance with AC 150/5325-4B, *Runway Length Requirements for Airport Design*. A full analysis was completed as part of the concurrent ALP Update. In accordance with AC 150/5325-4B, the FAA's methodology of determining runway length relies heavily on existing airport operational activity. However, due to 3J1's current runway dimensions (2,692 feet in length and 70 feet in width), an analysis of existing activity would not provide a true depiction of the Airport's needs. For this reason, it was necessary to evaluate the operational activity at nearby airports. **Table 1.1** illustrates that each of the three airports located within a 25-mile radius of 3J1 have longer runways and conduct more jet and turboprop activity than 3J1. It is also noted that the amount of turboprop and jet activity at each facility increases relative to runway length. Accordingly, the determination of runway length for 3J1 should not be based solely on existing airport operational activity but rather on the likelihood that a percentage of the turboprop and jet activity that frequent the area would likely utilize 3J1 if adequate runway length were provided. Based on review of aircraft activity at surrounding airports, the runway length at 3J1 should be based upon small airplanes that have 10 or more passenger seats.

⁵ Talbert & Bright, *South Carolina Airports System Plan*, prepared for the South Carolina Aeronautics Commission, 2008, p. 27.



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Table 1.1 Activity Comparison of Nearby Airports				
CHARACTERISTIC	AIRPORT			
	Ridgeland	Beaufort County	Hilton Head	Savannah/Hilton Head International
Airport ID	3J1	ARW	HXD	SAV
Distance/Direction from 3J1 ^a	--	19 nm E	22 nm SE	24 nm SW
Longest Runway (feet)	2,692	3,434	4,300	9,351
12-Month Operations	15,250	36,000	33,208	91,324
Based Aircraft	62	36	87	125
2012 Jet Operations	3	48	2,930	8,406
2012 Turboprop Operations	32	1,167	1,606	2,652
SOURCE: Michael Baker Jr., Inc., Airport Layout Plan Update, Draft, January 17, 2014, Table 3, p.8.				
^a AirNav.com				

Important factors when determining runway length requirements for airports are the airport elevation and average high temperature. The average high temperature in Ridgeland during the hottest month, July, is 94 degrees Fahrenheit⁶ and 3J1’s airport elevation is 79 feet Above Mean Sea level (AMSL). In consideration of these factors and by comparing the length requirements shown in **Figure 1-3** (which is Figure 2-2 of AC 150/5325-4B), the recommended runway length for 3J1 is 4,200 feet.

The FAA and SCAC provided review and input early in the planning stages regarding the runway length requirements for Ridgeland Airport. Based on the results of the runway length analysis completed for the concurrent ALP Update and concurrence from the FAA and SCAC, a 4,200-foot runway is needed to accommodate aviation demand at Ridgeland Airport through the 20-year study period.

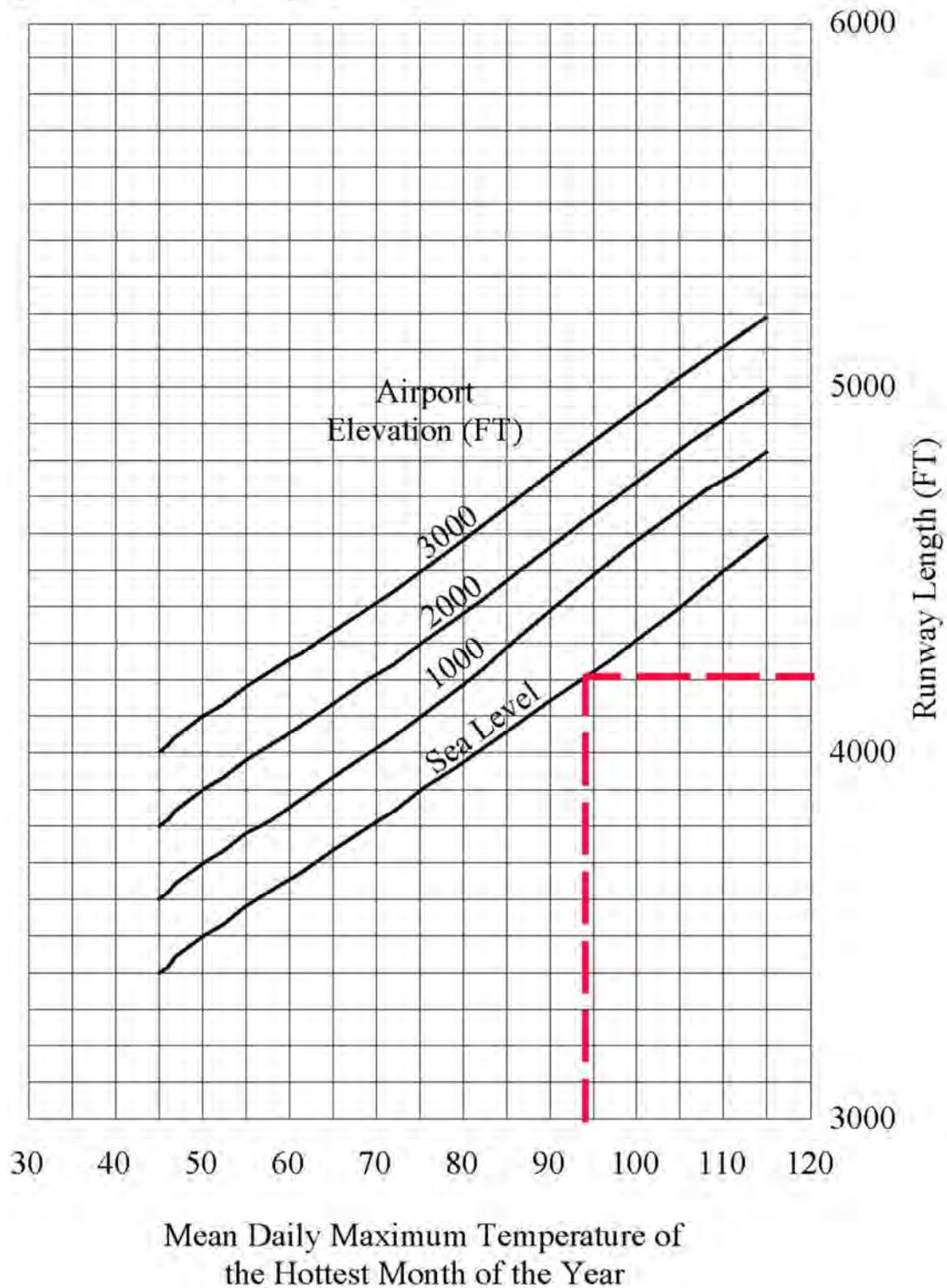
1.4.2.A Critical Aircraft Determination

The determination of critical aircraft for an airport is typically established by identifying those that regularly conduct 500 or more annual operations at a specific facility. The recommended 4,200 feet of runway length would provide ample length to allow a variety of turboprop and small jet aircraft to operate at 3J1. However, a review of activity data at nearby airports suggests that a majority of this activity would likely be comprised of turboprop aircraft having wingspans greater than 49 feet. For this reason, the Beechcraft King Air 250 was selected as the critical aircraft for 3J1. The Beechcraft 250 has an approach speed of 97 knots and a wingspan of 57 feet 11 inches. Based on these factors, this aircraft falls under the FAA’s definition of RDC B-II, which represents aircraft having approach speeds from 91 to 120 knots and wingspans ranging from 49 to 78 feet in width. **Table 1.2** depicts the various FAA categories along with the characteristics of the Beechcraft King Air 250 aircraft.

⁶ The Weather Channel, www.weather.com (November 13, 2013).



Figure 1-3: Runway Length Requirements for Small Airplanes Having 10 or More Passenger Seats



Source: Figure 2-2 of FAA AC 150/5325-4B.



Table 1.2 Runway Design Code (RDC) and Critical Aircraft			
Aircraft Approach Category		Airplane Design Group	
Category	Approach Speed (Knots)	Group	Wingspan (Feet)
A (Existing)	<91	I (Existing)	<49
B (Ultimate)	91 to <121	II (Ultimate)	49 to <79
C	121 to <141	III	79 to <118
D	141 to <166	IV	118 to <171
E	>166	V	171 to <214
		VI	214 to <262
Ultimate Critical Aircraft Characteristics			
Critical Aircraft		Beechcraft King Air 250	
Aircraft Approach Category/Approach Speed		B / 97 knots	
Airplane Design Group/Wingspan		II / 57 Feet 11 Inches	
Tail Height		14 feet 10 inches	
Max Takeoff Weight (MTOW)		12,500 pounds	
Max Landing Weight (MLW)		12,500 pounds	
Max Passengers		10	
Source: FAA AC 150/5300-13, Airport Design, and Hawker Beechcraft Corporation.			

1.4.3 Regional Growth and Development

The SCAC has recognized the need for the development of an expanded or new Ridgeland Airport for several years and addressed it in the 2008 South Carolina Airports System Plan.⁷ In the 2008 Plan, a 100 percent growth in general aviation aircraft and operations at Ridgeland Airport was projected between 2008 and 2028 and the proposed development of a new bi-state port facility in Savannah was identified as a regional economic engine that would increase the need for improved access to the nation’s air transportation system.⁸

1.4.3.A Economic Impact of Aviation

A 2006 study completed for the SCAC regarding the economic impact of aviation in South Carolina demonstrates that airports are vital to business and provide valuable economic and quality of life benefits to all South Carolina residents. Survey responses from over 3,000 South Carolina businesses indicated that approximately 40 percent use general aviation on a regular basis to support their operations and that “proximity to a general aviation airport” was ranked among the top 10 most important factors, of a total of 15, in maintaining/extending their operations in South Carolina.⁹

Despite the current limited runway length, Ridgeland Airport provides valuable economic and quality of life benefits to Jasper County. The 2006 study estimates that with the existing 2,692-foot runway and associated airfield facilities, Ridgeland Airport generates

⁷ Talbert and Bright, *South Carolina Airports System Plan, 2008*, Section 5.3.2, p. 27.

⁸ *Ibid.*

⁹ Wilbur Smith Associates, *South Carolina Economic Impact of Aviation*, prepared for the South Carolina Aeronautics Commission, May 2006, p. 15.



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\$195,100 in direct output from on-airport employers and tenants through provision of aviation services, with approximately \$55,000 of that amount paid to three direct full-time jobs. Also, spending by the 1,440 general aviation visitors that arrive at 3J1 annually generates an additional \$50,400 in indirect aviation-related output. Finally, in consideration of the multiplier effect, which results from the re-circulation of economic impacts until the benefits ultimately leak outside of South Carolina, airport tenants and visitors at Ridgeland Airport generate \$425,600 in total economic output.¹⁰ Comparatively, Beaufort County Airport (the only other airport listed in **Table 1.1** for which information is available) has 742 feet of additional runway length (3,434 feet total) and generates an estimated \$5.1 million in total economic impact.¹¹

1.4.3.B Jasper County Port

As mentioned previously, South Carolina and Georgia are partnering in the development of a bi-state port facility known as Jasper Ocean Terminal.¹² The 1,500-acre tract, which is located on the Savannah River in Jasper County, was previously used by the U.S. Army Corps of Engineers (USACE) as a dredge disposal site and was jointly acquired by the two states in July 2008. Martin Sauls IV, a member of the Savannah River Maritime Commission tasked with the development of the Jasper Ocean Terminal, and other proponents of the project indicate that the facility will be an economic boon for the Lowcountry, generating an estimated \$2.3 billion in jobs, tax revenues, and spin-off businesses.¹³ As indicated by the SCAC in the 2008 System Plan, “if this proposal does go forward, the business and commerce generated by the port and the growth in businesses to support the new port will require access to the national air transportation system,” which 3J1 would be unequipped to provide with the existing 2,692-foot runway.¹⁴

1.4.4 Summary

Despite the very limited runway length, Ridgeland Airport boasts a high number of based aircraft, which indicates there is a demand for aviation facilities in the region. The proposed project is needed to address the deficiencies of the current 2,692-foot runway and improve safety at the Airport. Constructing a longer runway that could effectively accommodate both short- and long-term aviation demand would also support regional growth and development, such as the proposed Jasper Ocean Terminal.

1.5 REQUESTED FEDERAL ACTION

The requested federal action is conditional FAA approval of 4,200 feet of runway available for takeoffs and landings at Ridgeland Airport and associated airport improvements. This runway

¹⁰ Wilbur Smith Associates, *South Carolina Economic Impact of Aviation*, “Economic Impact of Ridgeland Airport,” prepared for the South Carolina Aeronautics Commission, May 2006.

¹¹ Wilbur Smith Associates, *South Carolina Economic Impact of Aviation*, “Economic Impact of Beaufort County Airport,” prepared for the South Carolina Aeronautics Commission, May 2006.

¹² South Carolina Ports Authority, Fact Sheet, last updated January 31, 2012.

¹³ Mark Kreuzwieser, “The Port of Jasper,” *Hilton Head Monthly*, February 3, 2009.

¹⁴ Talbert & Bright, *South Carolina Airports System Plan*, 2008, p. 27.



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length and associated airfield improvements are incorporated in the ALP Update being completed concurrently. This EA has been prepared to comply with the requirements of NEPA and other pertinent environmental regulations. It is anticipated that a FONSI would be granted as a result of this EA.

Chapter 2 Alternatives





Chapter 2: Alternatives

2.1 INTRODUCTION

As required by NEPA and the FAA implementing regulations, orders, and guidance, Chapter 2 evaluates the alternatives considered during development of the Proposed Action. The Alternatives discussed in this chapter include the following:

- No-build Alternative;
- Alternatives Considered but Eliminated;
- Reasonable Alternatives; and,
- Preferred Alternative.

FAA Order 1050.1E states that the alternatives evaluated should be discussed with sufficient detail so that the decision maker can show reasons for choosing a Preferred Alternative that meets the Purpose and Need for the proposed project. The No-build, Reasonable, and Preferred Alternatives are to be evaluated to the degree appropriate to the attributes of the proposed project and to the magnitude of its potential impacts.

2.2 ALTERNATIVE DEVELOPMENT

Potential alternatives were developed based on the Purpose and Need of the proposed project, review of previous studies, and consideration of constraints within the project area, such as incompatible land uses, roads, wetlands, and existing airfield development. The potential alternatives that were identified include:

- No-build Alternative;
- Alternative 1 - Extend Runway 3-21;
- Alternative 2 - Construct New Runway at Current Site; and,
- Alternative 3 - Construct New Runway at Different Site.

2.2.1 No-build Alternative

The No-build Alternative is included in the Alternatives Analysis as part of the NEPA process. It describes the existing conditions at the Airport, and provides a baseline for comparing the Reasonable Alternatives in terms of fulfilling the Purpose and Need of the proposed project and impacts to resources within and in the vicinity of the project area. Ridgeland Airport is located in the southeast portion of South Carolina near busy tourist destinations like Hilton Head Island and Savannah. Due to the limited availability of services and 2,692-foot length of existing Runway 3-21, the Airport does not provide adequate facilities to satisfy the aviation demand of the flying public. In addition, the RSA does not meet all of the design, operational and safety standards set forth by the FAA. The RSA dimensions are based on the RDC and at Ridgeland Airport the current RSA should be 240 feet long and 120 feet wide (refer to Section 1.4). Under the No-build Alternative, the



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project area would remain in its current condition and no improvements to the runway or RSA would be completed.

The use of another airport in the vicinity of Ridgeland Airport is also part of the No-build Alternative. **Table 2.1** lists the airports within 25 nautical miles (NM) of 3J1, while **Figure 2-1** depicts these airport locations on a map.

Table 2.1 Comparison of Nearby Airports				
CHARACTERISTIC	AIRPORT			
	Ridgeland	Beaufort County	Hilton Head	Savannah/Hilton Head International
Airport ID	3J1	ARW	HXD	SAV
Distance/Direction from 3J1 ^a	--	19 nm East	22 nm SE	24 nm SW
Approximate Travel Time from 3J1 (minutes) ^b	--	48	51	34
Runway Length (feet)	2,692	3,434	4,300	9,351 and 7,002
12-Month Operations	15,250	36,000	33,208	91,324
Based Aircraft	62	36	87	125

SOURCE: Michael Baker Jr., Inc., 2013.
^aAirNav.com
^bgooglemaps.com

All three nearby airports have longer runways than 3J1 and both Beaufort County (ARW) and Hilton Head (HXD) Airports support similar general aviation activity. However, due to the longer runways, these airports can accommodate recreational aircraft activity in conjunction with jet and turboprop activity. HXD also provides limited commercial service. Similar to the existing runway alignment at 3J1, both of these airports are challenged by various development constraints. ARW has extensive wetland systems associated with Lucky Point Creek and Morgan Creek located to the north, west, and east of the 3,434-foot Runway 7-25. The four-lane U.S. Route 21 is also located approximately 500 feet west of the Runway 7 threshold. In recent years, HXD has had difficulty completing FAA-required tree trimming and removal of tree obstructions within the approaches to Runway 3-21 due to Town of Hilton Head ordinances and three historic resources located to the north, within or adjacent to the approach to Runway 21. Although HXD does offer commercial service, the 4,300-foot runway limits the number of passengers that can be carried on each plane and has constrained commercial service at the airport. Use of the Savannah/Hilton Head International Airport (SAV) by commercial and military aircraft would make this a less appealing location for the GA operators from 3J1 to based their aircraft due to landing fees, fuel costs, and heavy aviation traffic. In addition, although SAV is located approximately 34 minutes from 3J1, it would likely not be as convenient for the Ridgeland Airport based aircraft owners that reside within Beaufort County. Due to the existing constraints on

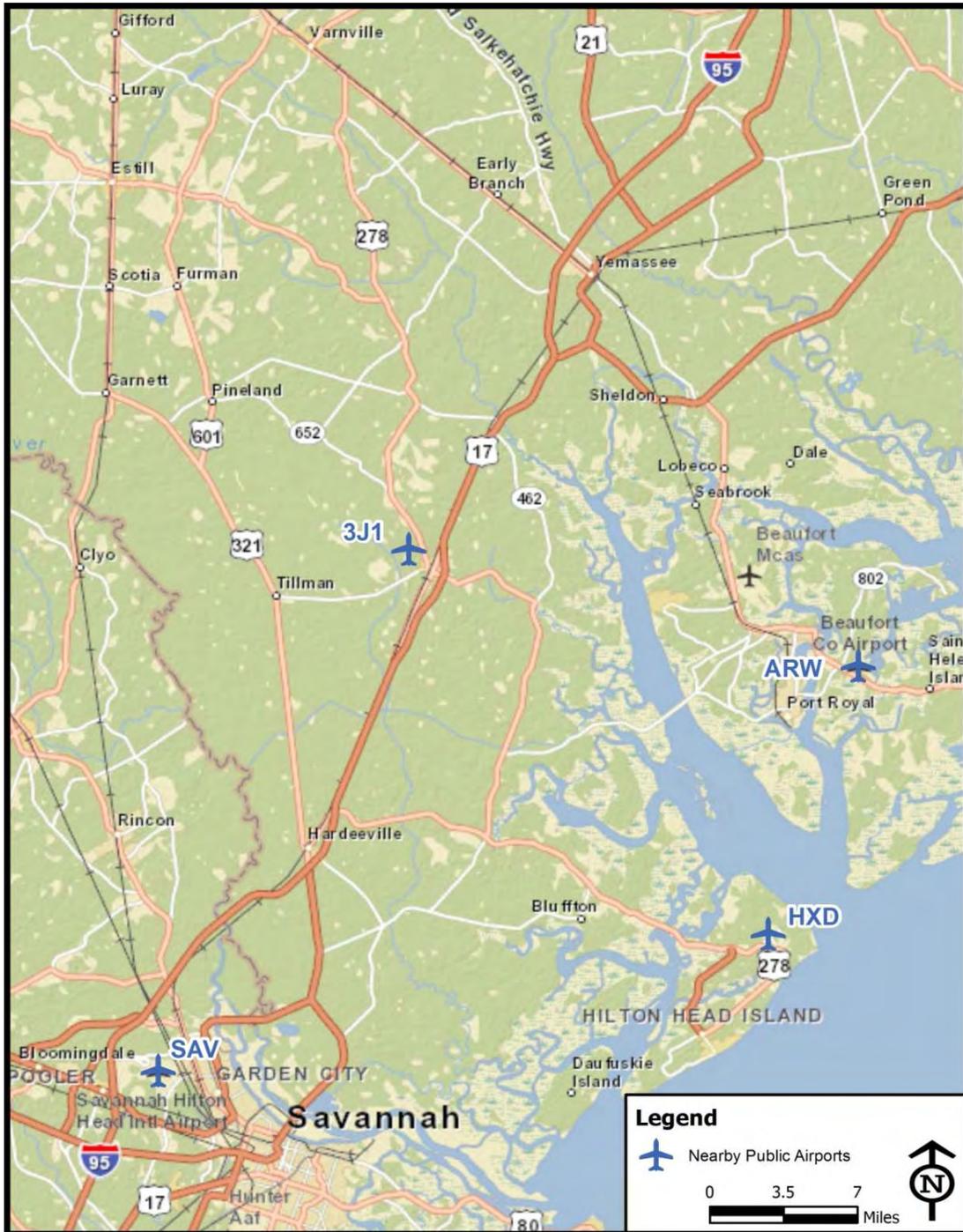


Figure 2-1: Nearby Airports



general aviation airports in the region, the SCAC has recognized the need for the development of an expanded or new Ridgeland Airport and addressed this in the 2008 South Carolina Airports System Plan.¹

Most of the existing hangar facilities that house the 62 based aircraft at the Ridgeland Airport were paid for and constructed by the aircraft owners themselves. These owners pay land lease fees to the Airport and also purchase fuel from the Airport fuel provider. Relocation or closure of the Ridgeland Airport would cause aircraft owners to lose their hangar facilities. The alternate airport facility may be less convenient and may also require high hangar rental costs that could further deter them from relocating altogether, which could equate to a system-wide loss of based aircraft and activity. Ultimately, the financial implications of relocating or closing 3J1 would equate to a loss of airport land lease and fuel revenues, create a financial hardship to existing aircraft owners, and would likely result in a reduction of aircraft owners and overall aviation activity.

2.2.2 Alternative 1 - Extend Runway 3-21

Runway 3-21 was originally designed to be 3,028 feet in length.² However, the pavement on the Runway 3 (southwest) end has severely deteriorated, which has mandated a shift in the landing threshold that has diminished the runway's length. As indicated in **Table 2.1**, the existing usable runway length is 2,692 feet, with the remaining 336 feet classified as blast pad on the Runway 3 end.

As discussed in Section 1.4.1, a 2008 EA evaluated improvements to Runway 3-21 that would re-establish the usable runway length to 3,028 feet, grade and clear obstructions from the RSA, and remove the obstructions within the 20:1 approaches on either end of the runway. Various alternatives were evaluated to improve the runway, including extending the runway either to the southwest (Runway 3 end) or the northeast (Runway 21 end). The following constraints were identified during this previous alternatives evaluation and are still present.

- Grays Highway (U.S. Highway 278) is located approximately 300 feet from the RSA on the Runway 21 end and could require relocation (refer to **Figure 1-2**, page 1-3).
- Noise sensitive land uses in the area east of Grays Highway include the Low Country General Hospital, Ridgeland Nursing Center, Inc., Faith Baptist Church, and Ridgeland Pre-Kindergarten-12 Schools North Campus, which is located directly in the northeast approach to Runway 21 and houses both the Ridgeland-Hardeeville High School and Ridgeland Elementary School.
- There are also single family residences and existing tree obstructions located west of Grays Highway that would be impacted by an extension of Runway 3-21 to the northeast.

¹ Talbert and Bright, *South Carolina Airports System Plan, 2008*, Section 5.3.2, p. 27.

² The LPA Group, Incorporated, *Airport Layout Plan, 1994*.



for a New Runway at Ridgeland Airport

- There is a significant elevation drop off the southwest end of Runway 3 that would require large quantities of fill in order to meet the grade of the existing runway;
- This area to the southwest is predominantly comprised of wetlands. The fill required to bring the area up to grade with the existing runway would be very expensive and this option would result in a large amount of wetland impacts.

2.2.3 Alternative 2 - Construct New Runway at Current Site

As discussed in Chapter 1, a north-south runway at Ridgeland Airport was considered and evaluated in the 1990's but never constructed. In 2012, in an effort to address the existing and future aviation needs of the region, Jasper County, the SCAC, and the FAA reinitiated efforts to evaluate alternatives for a new runway. It was determined that preparation of an ALP would be necessary because the existing plan had not been updated in more than 20 years. Studies conducted as part of the ALP Update, which is being completed concurrently with the EA, have established the 4,200-foot proposed runway length, identified the critical aircraft and associated RDC of B-II (refer to Section 1.4.2), and evaluated numerous runway alignment alternatives (refer to **Appendix A**). During review of the preliminary alternatives, it was realized that the runway alignment could only be rotated a couple of degrees about the northern runway end as the pivot point. Any additional rotation or east/west shifts created impacts to nearby residential properties or caused the RPZ to overlay Grays Highway. Other options evaluated included shifting the entire runway alignment to the north or to the south. Due to the previously discussed substantial drop-off south of the existing runway end, shifts too far to the south would require large quantities of fill that would result in high construction costs, as well as additional wetland impacts. Shifts too far to the north would create RPZ land use compatibility issues with Grays Highway and to nearby residential areas.

A meeting was held between representatives from the FAA, SCAC, Jasper County, and the Project Team on February 13, 2013, to discuss the ALP Update and proposed runway project at Ridgeland Airport. Prior to this meeting, two refined preliminary runway alternatives and a list of preliminary assumptions were distributed electronically to the meeting attendees. The preliminary alternatives analysis was discussed and upon conclusion of the meeting, a consensus had been reached that the proposed runway layout would be designed to RDC B-II standards and include non-precision approach procedures with horizontal visibility minimums of 1 mile or greater. The FAA requested one modification to the preliminary RDC B-II alignment: shift the runway farther west to minimize impacts from the northernmost RPZ on Grays Highway. The resulting preferred alignment for Alternative 2, Construct New Runway at Current Site, is depicted in **Figure 2-2**.

2.2.4 Alternative 3 - Construct New Runway at Different Site

In 2001, a Site Selection Study was completed that included forecasts of aviation demand for the region, identified facilities needed to meet these demands, and evaluated sites that would allow for the implementation of a plan to develop the recommended facilities. The 2001 Study evaluated eight sites (refer to **Appendix B**, Figure 1) that were identified based on



for a New Runway at Ridgeland Airport

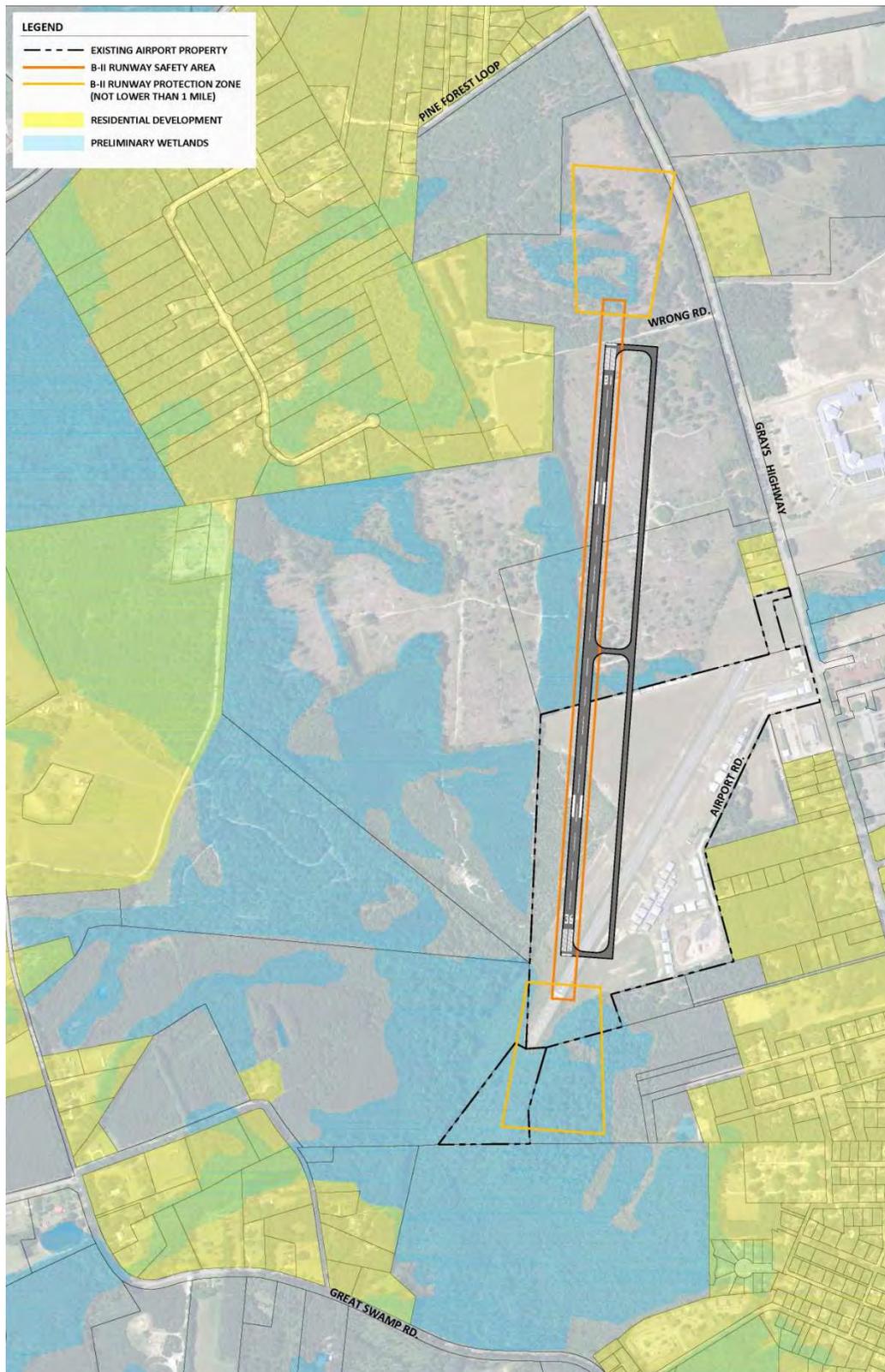


Figure 2-2: Alternative 2 Preferred Alignment



their ability to accommodate a runway length of 5,400 feet, with ultimate expansion to 6,000 feet and an area of approximately 500 acres to accommodate associated airport facilities. Based on the 2001 Study, three sites were identified that warranted detailed analysis: Ridgeland Airport, Cypress Woods Site, and Nimmer Site. Following evaluation of these three sites in the 2005 *Environmental Assessment for a New Jasper County Airport*, the Cypress Woods Site was selected as the Preferred Alternative. However, after the February 24, 2004 public hearing it was determined that the Cypress Woods Site was unattainable without “protracted and undesirable condemnation procedures”³ and three additional sites were proposed (refer to **Appendix B**, Figure 2). Of the three additional sites, the Bailey Mill Plantation Site was determined potentially suitable for airport development and a more detailed fatal flaw evaluation was completed.

The 2006 *Fatal Flaw Evaluation* concluded that no “fatal flaws” were evident at the Bailey Mill Plantation Site and that this site “represents the best obtainable alternative for development of a replacement airport in Jasper County.”⁴ The report goes on to describe that one exception to this is the existing deed restriction on the Bailey Mill Plantation Property that precludes airport development; however, it was believed that this restriction could be removed. No additional studies were completed at that time.

2.3 ALTERNATIVE SCREENING

Once potential alternatives were identified, it was determined whether they met the project’s Purpose and Need of accommodating aviation demand and supporting regional growth and development. Next, the alternatives were assessed and compared based on potential environmental impacts and whether they would be feasible (i.e. a matter of sound engineering) and prudent (i.e. a matter of rationale judgment, based on a balancing of practical concerns).⁵

Table 2.2 provides the results of the screening of potential alternatives.

As shown in **Table 2.2**, only Alternative 2, Construct New Runway at Current Site, would fully satisfy the project’s Purpose and Need, minimize environmental and land use impacts, and be feasible and prudent. This Reasonable Alternative is discussed in Section 2.5 and is the Preferred Alternative (Proposed Action).

³ Talbert & Bright, *South Carolina Airports System Plan*, prepared for the South Carolina Aeronautics Commission, 2008, p. 27.

⁴ Wilbur Smith Associates, *Fatal Flaw Evaluation – Bailey Mill Plantation Site, Jasper County Airport*, October 2006, p. 12.

⁵ U.S. Department of Transportation, FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, April 28, 2006, Paragraph 1007.e.(4)(a)-(b), p. 10-10.



**Table 2.2
Alternative Screening Matrix**

SCREENING CRITERIA	ALTERNATIVE			
	No-build Alternative	Alternative 1 - Extend Runway 3-21	Alternative 2 - Construct New Runway at Current Site	Alternative 3 – Construct New Runway at Different Site (Bailey Mill Plantation)
Satisfies Purpose and Need	No	Yes	Yes	Yes
Minimizes Environmental/Land Use Impacts	Yes	No	Yes	No
Wetland Fill (acres) ^a	0	Yes	2	33
Wetland Clearing (acres) ^a	0	Yes	39	38
Residential Relocations	0	1 potential	1	5 potential
Development Restrictions	0	Yes; Incompatible Land Use (school)	No	Yes; Airport Development Precluded
Feasible/Prudent	No/No	Yes/No	Yes/Yes	Yes/No

Sources: Michael Baker Jr., Inc., 2013, Wilbur Smith Associates, Fatal Flaw Evaluation, October 2006.
^a Rounded up to nearest acre.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED

Using the screening criteria listed in Section 2.3, the following alternatives were eliminated from further analysis for failing to minimize environmental impacts or be feasible and prudent. Although the No-build Alternative would not satisfy the project’s Purpose and Need, it is carried forward for evaluation in Chapter 3, in accordance with FAA Order 1050.1E.

2.4.1 Alternative 1 - Extend Runway 3-21

Runway 3-21 was originally designed to be 3,028 feet in length; however, the pavement on the Runway 3 (southwest) end has severely deteriorated, resulting in a current runway length of 2,692 feet. If the current tree obstructions to Runway 3-21 were removed, the deteriorated pavement rehabilitated, and the RSA improved to meet current FAA standards, an additional 1,172-foot extension would be needed to provide the 4,200-foot runway length required for the proposed project. Options to extend the existing runway include extensions to the northeast (Runway 21) end and southwest (Runway 3) end. As indicated in **Table 2.2**, an extension to the northeast would likely result in a minimum of one residential relocation. In addition, Grays Highway is located approximately 300 feet beyond the Runway 21 RSA and could require relocation with a northeastern extension. Finally, the Ridgeland Pre-Kindergarten-12 Schools North Campus is located within the northeastern RPZ to Runway 3-21 and would be considered an incompatible land use. A runway extension to the southwest would require a substantial amount of fill material in order to bring the existing grade up to the necessary runway elevation, which would add significantly to the construction cost and would also result in wetland impacts.



In consideration of these numerous constraints to development, while Alternative 1 would satisfy the Purpose and Need for the proposed project, it would not minimize environmental impacts and is not considered a prudent development alternative. Therefore, Alternative 1 was eliminated from further consideration.

2.4.2 Alternative 3 - Construct New Runway at Different Site

As part of the studies completed for the 2005 *Environmental Assessment for a New Jasper County Airport*, numerous locations were evaluated as potential sites for a general aviation airport in Jasper County. The design and facility recommendations were based on the previous version of the FAA's *Runway Length Requirements for Airport Design* (FAA AC 150/5325-4B replaced FAA AC 150/5325-4A on July 1, 2005) and included a 4,300-foot runway with the capability to be extended to 6,000 feet. This new airport study effort culminated with the 2006 *Fatal Flaw Evaluation* (refer to **Appendix B**), which concluded that, aside from the airport development restriction, no "fatal flaws" were evident at the Bailey Mill Plantation Site.

In addition to the development restrictions on the Bailey Mill Plantation Property, anticipated environmental impacts include five potential residential relocations, approximately 33 acres of wetland fill impacts, and 38 acres of wetland clearing impacts. As indicated in **Table 2.2**, Alternative 3 fails to minimize environmental and land use impacts. In addition, based on the magnitude of the anticipated construction costs associated with developing a new site and the high acreage of wetland fill impacts, Alternative 3 is not considered a prudent alternative and was eliminated from further consideration.

2.5 REASONABLE ALTERNATIVES

2.5.1 Alternative 2 - Construct New Runway at Current Site

Alternative 2 involves construction of a new runway and associated airfield development on a new alignment at the current Airport location. Several runway alignments were evaluated (refer to **Appendix A**), with the best overall design depicted in **Figure 2-2**. Alternative 2 meets the Purpose and Need of the proposed project by providing a 4,200-foot runway at 3J1, which, as discussed in Section 1.4, has an extremely high number of based aircraft despite the current limited runway length. By providing the additional 1,508 feet of runway at the existing location, Ridgeland Airport could effectively accommodate both short- and long-term aviation demand and support regional growth and development.

The selected alignment for Alternative 2 minimizes environmental and land use impacts. In addition to the ALP Update that is being completed concurrent with the EA, meetings have been conducted with the property owners of potential parcels to be acquired. These additional investigations were undertaken in an effort to identify property conflicts early in the planning stages of the proposed project. Alternative 2 would result in comparable wetland clearing impacts and considerably lower wetland fill and residential relocation impacts, relative to Alternative 3. The project area is relatively level and conducive to



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development, keeping construction costs down. In addition, under Alternative 2, the existing hangars, terminal building, and fuel facilities, as well as runway pavement, can be utilized. As a result, Alternative 2 is considered a feasible and prudent runway development alternative.

2.6 PREFERRED ALTERNATIVE

Based on the results of the screening analysis in Section 2.3, Alternative 2 was the only development alternative to satisfy each of the criteria and thus, was identified as a Reasonable Alternative. As the only Reasonable Alternative, construction of a new runway at the current site (Alternative 2) is also identified as the Preferred Alternative and carried forward as the Proposed Action for further analysis in Chapter 3 of this EA, along with the No-build Alternative.

The Proposed Action is depicted in **Figure 2-3** and is comprised of the following proposed airport improvements:

- Construction of a 4,200-foot runway and parallel taxiway;
- Construction of associated landside facilities, including terminal building, apron, fuel farm, and hangars;
- Acquisition of approximately 179 acres of property;
- Acquisition of avigation easements on approximately 59 parcels and removal of tree obstructions within the approach surface;
- Construction of relocated Wrong Road;
- Construction of associated stormwater controls;
- Installation and temporary use of staging areas, haul roads, and sedimentation and erosion control features for construction of the Proposed Action.

More specific details regarding components of the Proposed Action were evaluated in the ALP Update and are summarized in the following sections.

2.6.1 Instrument Approach Procedures

There are currently no approach procedures available at 3J1 so pilots can only navigate to the Airport while visibility conditions are Visual Flight Rule (VFR), which is basically defined by the FAA as three miles of visibility and clear of clouds. The proposed construction of a 4,200-foot runway would accommodate turboprop and small jet activity, which are typically owned by businesses and flown by commercial pilots. Therefore, the ability to access the Airport during less than desirable weather conditions is necessary. For this reason, it is assumed that approach visibility minimums as low as one mile would be provided as part of the Proposed Action.

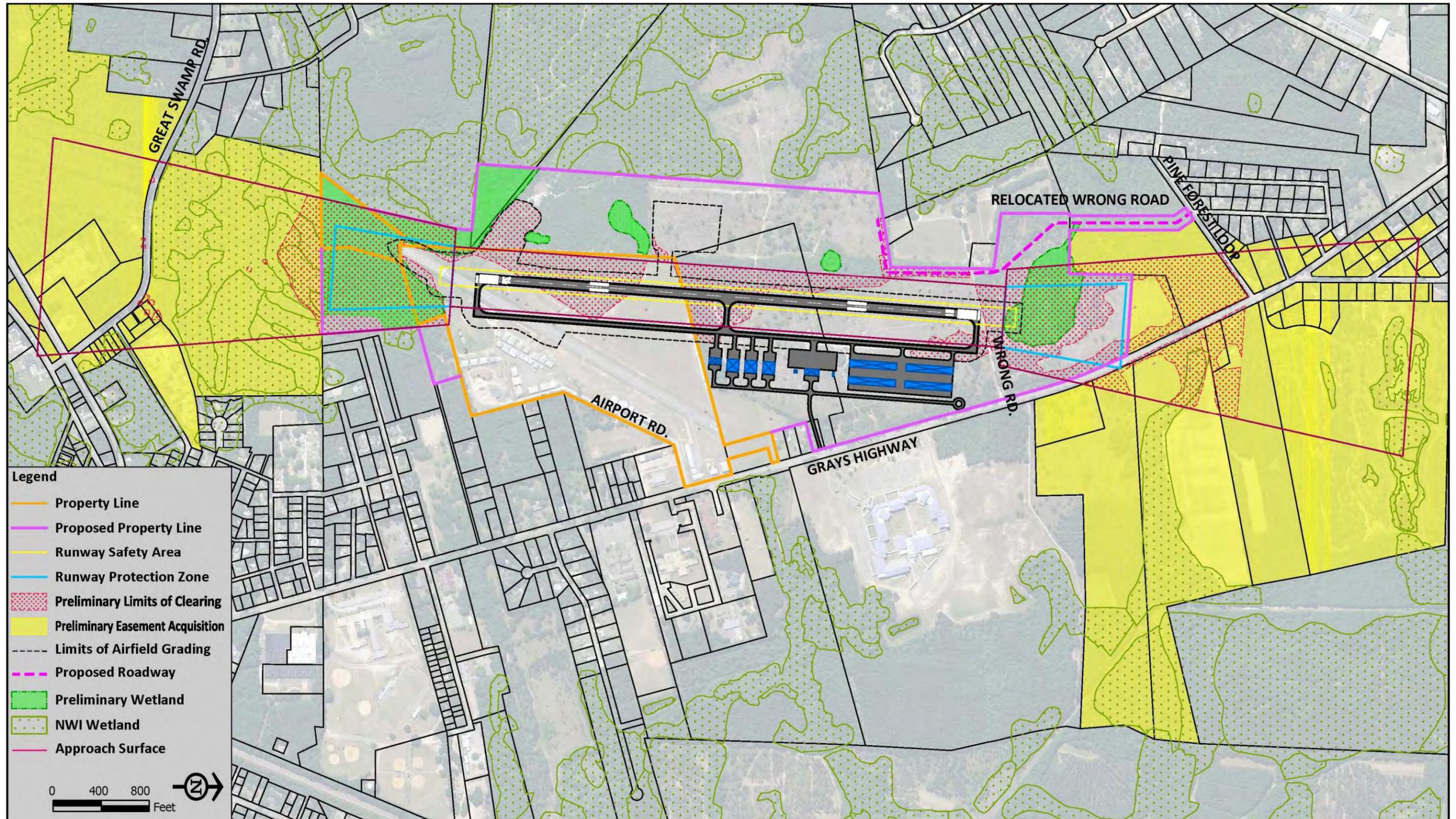


Figure 2-3: Proposed Action



2.6.2 Airfield Design Standards

The FAA has developed a number of design standards for airfield features. These standards are based on two factors: the RDC and the horizontal visibility minimums of the runway’s available instrument approach procedures. As mentioned previously, the RDC of the critical aircraft at 3J1 is B-II and the horizontal visibility minimums of the proposed runway are anticipated to be as low as one mile. Some of these various design standards that apply to the Proposed Action are included in **Table 2.3**.

Table 2.3	
B-II Runway Design Standards with <1 Mile Visibility Minimums	
ITEM	DIMENSION (feet)
Runway Design	
Runway Width	75
Shoulder Width	10
Runway Protection	
RSA Length Beyond Departure End	300
RSA Width	150
ROFA Length Beyond Runway End	300
ROFA Width	500
Runway Protection Zone (RPZ) Length	1,000
RPZ Inner Width	500
RPZ Outer Width	700
Runway Centerline Separation to:	
Holding Position	200
Parallel Taxiway / Taxilane Centerline	240
Aircraft Parking Area	250
Source: AC 150/5300-13A.	
Notes: RSA – Runway Safety Area; ROFA – Runway Object Free Area; RPZ – Runway Protection Zone.	

It is important to note that both the FAA and SCAC provide funding for, and therefore recommend, clearing airport approaches to the Federal Aviation Regulation Part 77 (FAR Part 77) surfaces. However, the FAA also provides threshold siting standards within AC 150/5300-13A, Table 3-2 which are designed to protect the use of runways in both visual and instrument meteorological conditions.

In an effort to protect the proposed runway’s approaches from encroachment by vertical structures and objects, Jasper County established a “Ridgeland Airport Height and Land Use Protection Special Purpose District” in the county’s Code of Ordinances (refer to **Appendix C**). These airspace surfaces were created based upon two separate criteria: 1) the FAR Part 77 surfaces for non-precision instrument runways other than utility, and 2) Table 3-2 of AC



150/5300-13A, Runway Type 5 – Approach end of runways expected to support instrument night operations, serving greater than approach category B aircraft. The Type 5 surface was identified because it is reasonable to expect that some activity by RDC C-I and C-II aircraft would occur with the construction of a new 4,200-foot long runway, and also because weather conditions may periodically require RDC B-I and B-II aircraft to operate at Approach Category C speeds. The FAR Part 77 surface has an inner width of 500 feet, length of 10,000 feet, and outer width of 3,500 feet and a slope of 34:1; whereas, the Type 5 surface has an inner width of 800 feet, length of 10,000 feet, and an outer width of 3,800 feet. To provide the proposed new runway with a conservative level of protection from potential obstructions, the approved “Ridgeland Airport Height and Land Use Protection Special Purpose District” incorporate the larger dimensions of the Type 5 surface (inner width of 800 feet, length of 10,000 feet, an outer width of 3,800 feet) while also utilizing the more restrictive slope mandated by the FAR Part 77 surfaces (34:1 slope).

2.6.3 Development Schedule and Aviation Activity Forecasts

During the ALP Update, the facility requirements analysis is typically completed after the aviation activity forecasts. However, because the forecasts of aviation activity at 3J1 are dependent on the construction of a new runway as part of the Proposed Action, the airfield requirements evaluation (refer to Section 1.4.2, Runway Length Justification) was conducted prior to developing aviation activity forecasts. Having identified 4,200 feet as the required runway length at 3J1 and identifying Alternative 2 as the Preferred Alternative, the anticipated development schedule was projected so that future aviation forecasts could be completed. The anticipated development schedule is:

- 2013-2014 – Conduct ALP Update and EA
- 2014-2015 – Design New/Upgraded Runway
- 2015-2016 – Conduct Environmental Permitting and Acquire Property and Easements
- 2016 – Obstruction Clearing
- 2017 – Construct New/Upgraded Runway

Using this schedule as a guideline, aviation activity and based aircraft forecasts for 3J1 were completed and are included in **Table 2.4**. The operations forecast for 3J1 does not exceed the FAA’s 2012 Terminal Area Forecast (TAF) by more than 10 percent in the five-year forecast period or by more than 15 percent in the 10-year forecast period, and is therefore considered consistent with the TAF.



Table 2.4 Ridgeland Airport Planning Forecasts				
CATEGORY	YEAR			
	Base Yr. 2012	Base Yr. + 5 2017	Base Yr. + 10 2022	Base Yr. + 20 2032
Itinerant and Local Operations				
ITINERANT OPERATIONS:				
General Aviation	3,000	3,184	3,380	3,808
Military	250	250	250	250
Total Itinerant Operations	3,250	3,434	3,630	4,058
Itinerant %	21.31%	21.24%	21.17%	21.04%
LOCAL OPERATIONS:				
General Aviation/Civil	12,000	12,737	13,520	15,233
Total Local Operations	12,000	12,737	13,520	15,233
Local %	78.69%	78.76%	78.83%	78.96%
TOTAL OPERATIONS	15,250	16,172	17,150	19,292
Difference From TAF	0.00%	6.04%	12.46%	26.50%
Operations by Aircraft Type and Critical Aircraft				
Piston	15,174	15,587	16,243	18,054
Turboprop	73	382	445	616
Jet	3	203	462	621
Based Aircraft				
Piston	62	66	70	79
Turboprop	0	1	1	2
Jet	0	0	1	1
Total Based Aircraft	62	67	72	82
Difference From TAF	0.00%	7.82%	16.32%	32.35%

Source: Draft ALP Update Narrative Report, Michael Baker Jr., Inc., January 17, 2014.

Chapter 3

Existing Conditions and Environmental Consequences





Chapter 3: Existing Conditions and Environmental Consequences

3.1 INTRODUCTION

This chapter provides a detailed description of the existing natural and human environment at the Airport to establish the baseline condition. The potential environmental impacts that would result from the Proposed Action and the No-build Alternative are also discussed in this chapter, in accordance with FAA Order 1050.1E, paragraph 405(f).

During the scoping process for the proposed project, state and federal resource agencies were sent letters requesting information about environmental resources in the project area. Information provided by these entities (refer to **Appendix D**) was used to supplement review of other available environmental data, previous studies at the Airport, and field surveys conducted for the proposed project. Based on the resource category, the affected environment may be evaluated in terms of the Airport property, the project area provided to the agencies (refer to **Appendix D**), or the proposed construction limits (**Figure 2-3**).

Although all categories in FAA Orders 1050.1E and 5050.4B were considered for applicability in defining the existing conditions, several environmental resource categories are either not present or would not be measurably impacted by the Proposed Action or the No-build Alternative, as described in **Table 3.1**.

Table 3.1 Resources Not Present in Project Area or Not Measurably Impacted	
Resource	Status
Air Quality	The project area is located in Jasper County, which is currently in attainment for all the National Ambient Air Quality Standards (NAAQS). ^a Because the project area is within an attainment area, conformity analysis is not required. An air quality analysis is required if the proposed project would occur at an airport with more than 180,000 general aviation operations. Based on the 2013 FAA Terminal Area Forecast data, general aviation airport operations are well below this threshold at 15,250 total operations through 2040. ^b
Coastal Barriers	In accordance with the <i>Coastal Barrier Resources Act of 1982</i> (CBRA), no coastal barriers are located within the vicinity of the project area. ^c Therefore, further consideration of these resources is not warranted.
Drinking Water Sources	No primary or secondary drinking water sources would be impacted by the Proposed Action. ^d
Floodplains	The project area is not located within the 100-year floodplain. ^e The closest 100-year floodplain is associated with an unnamed tributary to Bees Creek and is located east of Grays Highway, approximately 0.7 mile east of the existing Runway 21 threshold. No impacts to the 100-year floodplain would occur as a result of the Proposed Action.



Table 3.1
Resources Not Present in Project Area or
Not Measurably Impacted

Resource	Status
Section 4(f) and Section 6(f) Resources	Based on aerial photography and a limited field review, no Section 4(f) resources, including state or federal parks, wildlife refuges, scenic streams or wildlife management areas, would be impacted by the Proposed Action. In addition, no Section 6(f) resources (recreational areas that were purchased in part through grants from the <i>Land and Water Conservation Fund Act of 1965</i>) are known to exist in the vicinity of the project area. ^f
Sole Source Aquifers	There are no sole source aquifers located in the vicinity of the project area. ^g
Wastewater	The Town of Ridgeland provides sewer service to the Airport. The amount of wastewater generated from the Airport is not likely to be increased measurably by the Proposed Action.
Wild and Scenic Rivers	No Federal Wild or Scenic Rivers, Congressionally Authorized Study Rivers, or Nationwide River Inventory Listed Rivers would be impacted. ^h No state designated wild and scenic rivers would be impacted. ⁱ

SOURCE: Michael Baker Jr., Inc., 2013.

^aUSEPA, Greenbook, “Counties Designated “Nonattainment” or “Maintenance”, <http://www.epa.gov/air/oaqps/greenbk/mapnmpoll.html> (December 2, 2013).

^bFAA, APO Terminal Area Forecast Detail Report, 3J1 (Ridgeland Airport), issued January 2013 [https://aspm.faa.gov/wtaf/detail.asp?line=SELECT+*+FROM+WTAf+WHERE+SYSYEAR>^2013+AND+SYSYEAR<^2040+AND+\(LOC_ID~3J1~\)](https://aspm.faa.gov/wtaf/detail.asp?line=SELECT+*+FROM+WTAf+WHERE+SYSYEAR>^2013+AND+SYSYEAR<^2040+AND+(LOC_ID~3J1~)) (December 2, 2013).

^cFEMA, <http://www.fema.gov/national-flood-insurance-program/coastal-barrier-resource-system-south-carolina> (December 2, 2013).

^d Caldwell, A.W., 2000, Determination of the Primary and Secondary Source-Water Protection Areas for Selected Surface-Water Public-Supply Systems in South Carolina: U.S. Geological Survey Water-Resources Investigations Report 00-4097 <http://pubs.usgs.gov/wri/2000/4097/report.pdf> (December 6, 2013).

^e FEMA, Map Service Center, Flood Insurance Rate Map Community Panel 4501120100B, dated September 1986, <http://map1.msc.fema.gov/idms/IntraView.cgi?KEY=71335595&IFIT=1>

^f National Park Service, Land and Water Conservation Fund, “Detailed Listing of Grants by County,” <http://waso-lwcf.ncrc.nps.gov/public/index.cfm> (December 2, 2013).

^g USEPA, “Designated Sole Source Aquifers in EPA Region IV,” <http://www.epa.gov/safewater/sourcewater/pubs/reg4.pdf> (December 2, 2013).

^h National Wild And Scenic Rivers System, “National Wild and Scenic Rivers; Designated Wild and Scenic Rivers,” <http://www.rivers.gov/south-carolina.php> (December 2, 2013).

ⁱ South Carolina Department of Natural Resources, Designated Scenic Rivers, http://www.dnr.sc.gov/water/envaff/river/desig_rivers.html December 2, 2013).

Only those resources that would potentially be affected by the proposed project are evaluated further in this chapter. The thresholds for determining whether impacts are significant, as listed in FAA Order 1050.1E, Appendix A, and subcategories outlined in the FAA *Environmental Desk Reference for Airport Actions* were used to evaluate potential impacts to resources in the project area. Based on these thresholds, no resources would be significantly impacted by the No-build Alternative or the Preferred Alternative (Proposed Action). The potential impacts associated with the Proposed Action are discussed in the following sections.



3.2 LAND USE AND ZONING

3.2.1 Existing Conditions

Jasper County is located in the southernmost portion of South Carolina, with its western boundary formed by the Savannah River and the eastern border comprised of several river systems, including Coosawhatchie, Broad, New, and Pocatigo Rivers.¹ Jasper County is approximately 650 square miles in size and is still predominantly rural in nature, with approximately 38 persons per square mile² and most of its land in agricultural and silviculture uses. An estimated 22 percent of the county is comprised of wetlands.³ The Airport is located in central Jasper County, just north of the Town of Ridgeland.

Current land use in the vicinity of the project area was determined using GIS data from Jasper County (refer to **Figure 3-1**). Land use within the proposed property line includes Residential and Agricultural/Undeveloped. The existing Airport property has a current land use designation of Institutional. As discussed in Section 1.1, the existing property boundary at 3J1 encompasses approximately 71 acres of land and includes a single asphalt runway, Runway 3-21, that is 2,692 feet long and 70 feet wide, a total of 47 buildings and other support structures, such as a 12,000-gallon aboveground storage tank for fuel. In addition to 3J1, Institutional land uses in the vicinity include the Ridgeland Pre-Kindergarten-12 Schools North Campus within the northeastern approach to Runway 3-21, as well as Faith Baptist Church, Beaufort-Jasper Comprehensive Health Services, South Carolina Departments of Retardation and Mental Health, and Ridgeland Baptist Church east of Grays Highway, and Jasper County Emergency Services/Fire Station 30 west of Grays Highway (refer to **Figure 3-1**).

The Jasper County Comprehensive Plan is currently being updated. On the “Projected General Land Use Plan,” the project area is located within the Joint Planning Boundary (a cooperative planning initiative between Jasper County, Hardeeville, and Ridgeland) and within an Industrial District.⁴ In addition, the 2010 *Town of Ridgeland SmartCode* identifies the project area as an Intended Growth Sector, which is assigned to locations that can support substantial mixed-use development due to proximity to an existing or planned regional thoroughfare (Grays Highway).⁵

¹ Jasper County, Draft Jasper County Comprehensive Plan Update 2013, <http://www.jaspercountysc.org/fileUploads/File/Comprehensive%20Plan/Jasper%20County-%20Format%20and%20Population%202-3.pdf> (December 6, 2013).

² U.S. Census Bureau State & County QuickFacts, <http://quickfacts.census.gov/qfd/states/45/45053.html> (December 6, 2013).

³ Jasper County, Draft Jasper County Comprehensive Plan Update 2013, <http://www.jaspercountysc.org/fileUploads/File/Comprehensive%20Plan/Jasper%20County-%20Format%20and%20Population%202-3.pdf> (December 6, 2013).

⁴ Jasper County, Draft Jasper County Comprehensive Plan Update 2013, Projected General Land Use Map, <http://www.jaspercountysc.org/fileUploads/file/Planning%20and%20Zoning-%20New/Comprehensive%20Plan%20Map.pdf> (December 6, 2013).

⁵ Duany Plater-Zyberk & Company, Town of Ridgeland SmartCode, Ridgeland, South Carolina, March 18, 2010, Sector Map, <http://ridgelandsc.gov/departments/documents/Ridgeland-Sector2010.pdf> (December 6, 2013).



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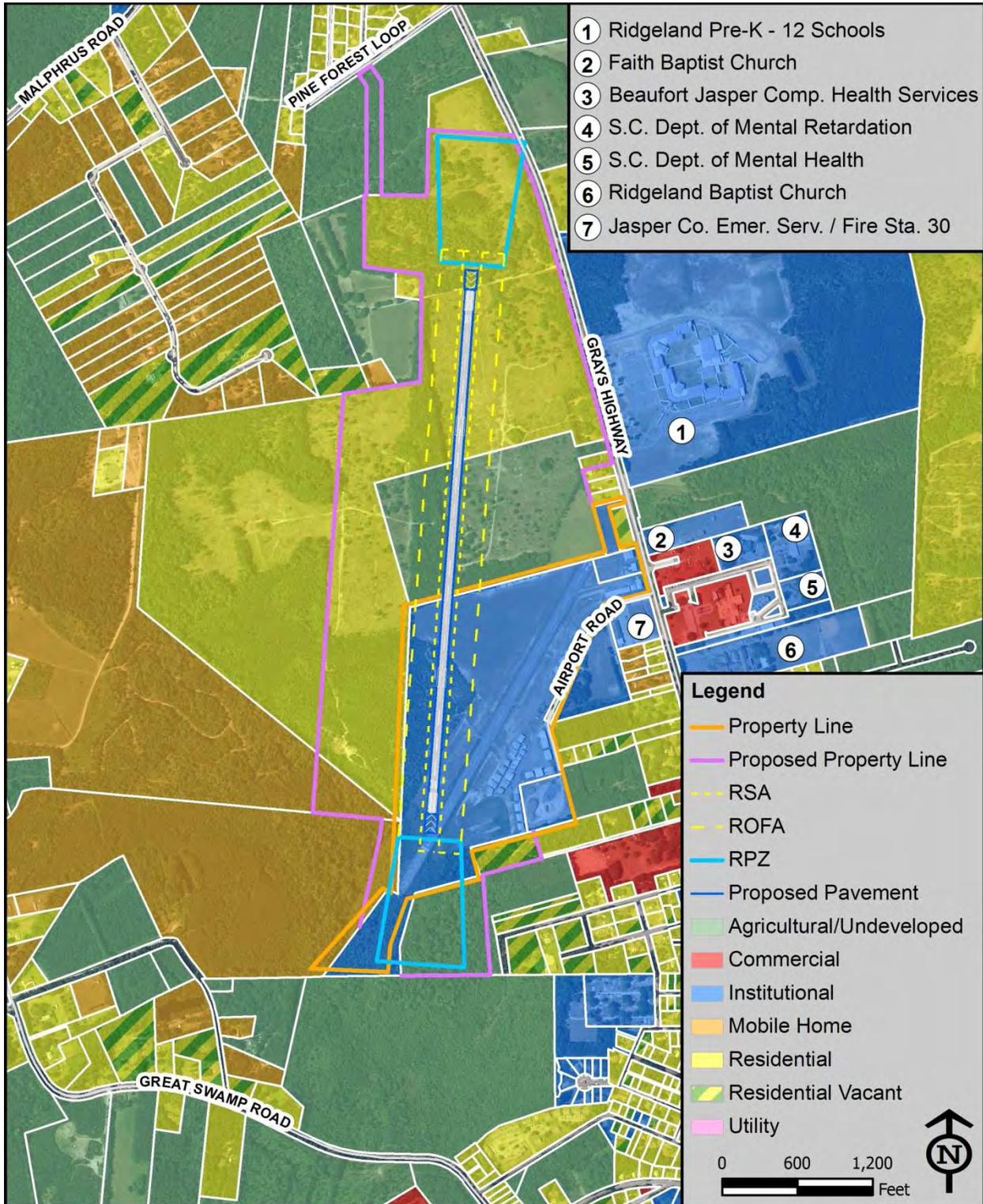


Figure 3-1: Land Use



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As depicted in **Figure 3-2**, Jasper County has zoned most of the project area and its vicinity as a Rural Preservation District, which allows for a variety of land uses including open lands, woodlands, plantations, and farmlands, with the intent of preserving, sustaining, and protecting rural areas and resources from suburban encroachment in an effort to maintain a balanced rural-urban environment.⁶ There are also three parcels within the proposed property line that are zoned as Residential District, as well as additional parcels with this zoning designation in the vicinity of the Proposed Action. The Residential District zoning is intended to protect areas in which the primary land use is for single-family dwellings and related support uses.⁷

As a condition of receiving federal funding, the Airport must assure, to the extent possible, that the land uses in the vicinity of the Airport are compatible with normal airport operations.⁸ One consideration is height restrictions in the vicinity of an airport. The FAA has established standards to determine obstructions to air navigation in FAR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*, and threshold siting standards within AC 150/5300-13A, Table 3-2. In consideration of these standards, the Jasper County Code of Ordinances has established a “Ridgeland Airport Height and Land Use Protection Special Purpose District” that places restrictions on the heights of trees and structures that are located in the vicinity of proposed Runway 18-36.⁹

3.2.2 Environmental Consequences

The No-build Alternative would have no impact to surrounding land uses or zoning.

With the Proposed Action, land use within and near the project area would remain compatible with the Airport’s normal operations. The Proposed Action would require one residential and no business relocations. Although one residential relocation would be required, no communities would be disrupted and minimal socioeconomic impacts are anticipated (refer to Section 3.5).

Approximately 179 acres of property acquisition are anticipated as part of the Proposed Action. Land uses in the areas to be acquired include residential and agricultural/undeveloped (refer to **Figure 3-1**). These parcels are zoned predominantly as Rural Preservation District with some Residential District areas also present. Despite the residential land use and zoning that are depicted on three parcels to be acquired, only one residential relocation has been identified (another structure that exists is vacant). This potential relocation is reportedly a rental property.

⁶ Jasper County, Zoning District Regulations, Article 5, p. 5-2, <http://www.jaspercountysc.org/fileUploads/file/Zoning%20Ordinance/Article%205-%20Zoning%20District%20Regulations.pdf> (December 6, 2013).

⁷ *Ibid.*

⁸ 49 U.S.C. §47107(a)(10).

⁹ Jasper County, Ridgeland Airport, Airport Height and Land Use Protection Special Purpose District, Article 5.

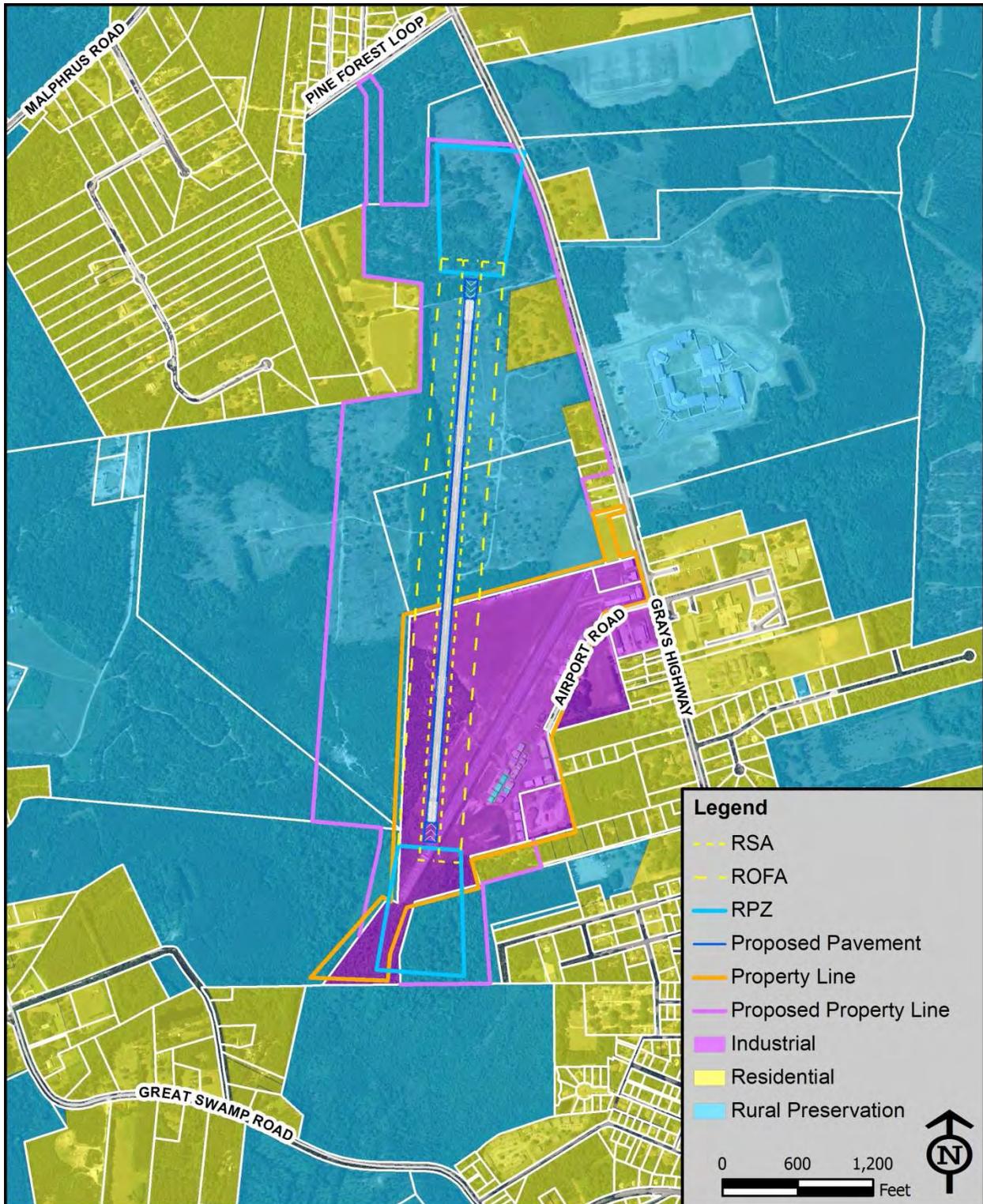


Figure 3-2: Zoning



In addition to the proposed property acquisition, aviation easements would be necessary on an estimated 59 parcels, mainly residential, in order to provide for the future removal of tree obstructions to comply with the “Airport Height and Land Use Protection Special Purpose District” for Ridgeland Airport that has been established for the proposed new runway (Runway 18-36). In addition to improving the safety of the approach surfaces for arriving or departing aircraft, the aviation easement takes the liability off the property owner and places it on the County to keep the approach surface clear. The preliminary limits of anticipated tree removal are depicted on **Figure 2-3**. These preliminary clearing limits were identified based on 2006 Light Detection and Ranging (LiDAR) data,¹⁰ which provides estimated tree heights, as compared to the “Airport Height and Land Use Protection Special Purpose District” for the proposed new runway alignment.

3.3 NOISE AND COMPATIBLE LAND USE

Noise or sound is pressure on the eardrum that is measured on a scale from one to one billion. To simplify this scale, engineers and scientists have established a decibel (dB) scale of 1 to 180 through a mathematical process called a logarithm, which is easier to use. The human ear can only hear certain frequencies of sound, so, in order to show only the level or frequencies that can be heard by the human ear, the scale is given an A-weighting, designated as dBA. The Day-Night Average Sound Level (DNL) is a noise metric used to evaluate land use compatibility within an airport noise environment. The DNL uses the average of noise levels in dBA as recommended by the FAA for evaluating aircraft noise impacts.¹¹ Within 14 CFR Part 150, the FAA provides guidelines for land use compatibility corresponding to DNL sound levels of 65 dBA or greater (65, 70, 75, etc.).¹² The 65 DNL is generally accepted as the threshold level at or below which all land uses are considered compatible. Above 65 DNL, noise sensitive land uses such as residential are typically discouraged unless a degree of noise attenuation has been incorporated into the design of the structure.

The FAA has a national policy that airports be constructed and operated to minimize current and future noise impacts on surrounding communities.¹³ The FAA assesses the effects of airport development that has the potential to cause aircraft noise outside an airport’s boundaries. Relative to the Proposed Action, a noise analysis would be needed if forecast operations exceed 90,000 annual piston-powered aircraft operations or 700 annual jet-powered aircraft operations.¹⁴

¹⁰ “LiDAR is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth. These light pulses, combined with other data recorded by the airborne system, generate precise, three-dimensional information about the shape of the Earth and its surface characteristics...LiDAR systems allow scientists and mapping professionals to examine both natural and manmade environments with accuracy, precision, and flexibility.” (NOAA, <http://oceanservice.noaa.gov/facts/lidar.html>).

¹¹ FAA, *Environmental Desk Reference for Airport Actions*, October 2007, Chapter 17 – Noise, p. 1.

¹² 14 CFR Part 150, Appendix A, Part B §A150.101.

¹³ 49 U.S.C. §47101(a)(2).

¹⁴ FAA, Order 1050.1E, *Environmental Impacts: Policies and Procedures*, Paragraph 14.6, page A-65.



Based on the new forecasts from the ALP Update (refer to Section 2.6.4, **Table 2.4**), annual activity at 3J1 is not anticipated to exceed 20,000 operations through 2032. Although, in accordance with NEPA and FAA guidelines, a noise analysis was not required, the noise environment at Ridgeland Airport was evaluated as part of the concurrent ALP Update.

3.3.1 Existing Conditions

As depicted in **Appendix E**, only the existing 60 DNL contour extends over Grays Highway to the northeast and encompasses a portion of the Ridgeland Pre-Kindergarten-12 Schools North Campus. In accordance with 14 CFR Part 150, schools are a compatible land use at noise levels below 65 DNL. The 2012 65 DNL contour is located west of Grays Highway and predominantly remains on existing airport property.

3.3.2 Environmental Consequences

The No-build Alternative would not impact the existing noise environment at 3J1.

The Proposed Action would not be anticipated to result in noise impacts to nearby residences. As depicted in **Appendix E**, the 2032 65 DNL contour would not extend beyond the proposed airport property line. One residence located west of proposed Runway 18-36 would fall within the 60 DNL contour for 2017 and 2032, however residential land uses are considered compatible at DNLs below 65 dB.

3.4 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.4.1 Existing Conditions

Jasper County is located within the Lowcountry region of South Carolina, between the two rapidly growing areas of Savannah, Georgia, and Southern Beaufort County, South Carolina, which includes Hilton Head-Bluffton.¹⁵ Based on U.S. Census data, the population of Jasper County grew by 19.8 percent between 2000 and 2010, from 20,678 to 24,777 residents, respectively. The S.C. Data Center projects an additional 12 percent growth in the population by 2025, with an anticipated 27,680 people residing in Jasper County.¹⁶

The Town of Ridgeland, which is the largest municipality in Jasper County, serves as the County seat, as well as the hub for commercial activity in the northern portion of the

¹⁵ Jasper County, Draft Jasper County Comprehensive Plan Update 2013, <http://www.jaspercountysc.org/fileUploads/File/Comprehensive%20Plan/Jasper%20County-%20Format%20and%20Population%202-3.pdf> (December 6, 2013).

¹⁶ Jasper County, Draft Jasper County Comprehensive Plan Update 2013, <http://www.jaspercountysc.org/fileUploads/File/Comprehensive%20Plan/Jasper%20County-%20Format%20and%20Population%202-3.pdf> (December 6, 2013).



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county.¹⁷ The population of Ridgeland grew over 60 percent from 2,518 people in 2000 to 4,036 people in 2010.¹⁸

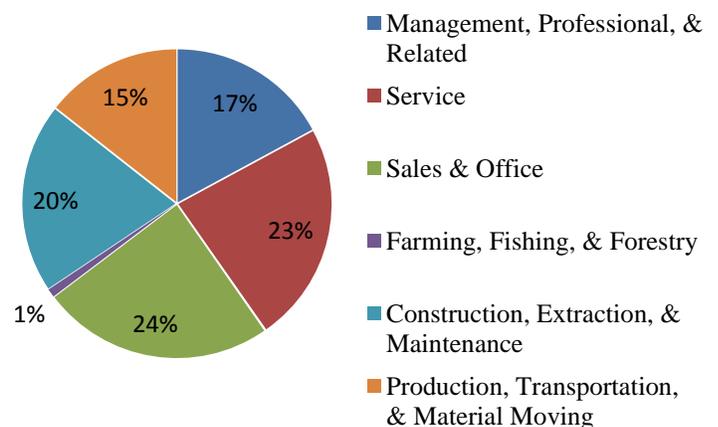
The top 10 employers in Jasper County in 2013 are provided in **Table 3.2**. The unemployment rate for Jasper County was 6.1 percent in October 2013, which is lower than the 7.5 percent unemployment for South Carolina and represents a decrease of 1.8 percent from the 7.9 percent unemployment in Jasper County in October 2012.¹⁹

Table 3.2	
Jasper County Principal Employers in 2013	
Employer	Total Employees
Jasper County School District	450
New River Auto Mall	313
Wal-Mart	296
Jasper County	252
Beaufort-Jasper Comprehensive Health	250
Coastal Carolina Medical Center	216
Ridgeland Correctional Institution	199
J.C. Board of Disabilities & Special Needs	119
Cleland Construction Company	110
Ridgeland Nursing Center	96

SOURCE: Jasper County, South Carolina, Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2013, “Principal Employers,” p.72.

As depicted by **Chart 3.1**, the types of employment in Jasper County are fairly balanced with Management/Professional; Service; Sales and Office; Construction, Extraction and Maintenance; and Production, Transportation, and Material Moving all comprising between 15 and 24 percent of the total occupations of the employed civilian population 16 years and older.²⁰ As shown, the

Chart 3.1: Occupation of Employed Civilian Population in Jasper County



¹⁷ GVA Marquette Advisors, *Housing Needs Assessment, Jasper County, South Carolina*, July/August 2008, p. 8.

¹⁸ CensusViewer, <http://censusviewer.com/city/SC/Ridgeland> (December 6, 2013).

¹⁹ South Carolina Department of Employment and Workforce, “South Carolina’s Employment Situation, October 2013”, released November 22, 2013, http://dew.sc.gov/documents/lmi-monthly-trends/October_2013.pdf (December 6, 2013).

²⁰ South Carolina Budget and Control Board, South Carolina Statistical Abstract, “Occupation of Employed Civilian Population, 16 years and older,” taken from U.S. Census Bureau 2000 Census of Population and Housing. <http://abstract.sc.gov/chapter8/employment8.php> (December 6, 2013).



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occupations of Farming, Fishing, and Forestry comprise only one percent of the county’s total.

The 2010 United States Census data (American Community Survey, 2007-2011/5-Year Summary File) was used at the Block Group (BG) level for determining population and housing characteristics within the project area. A BG is the smallest geographic division that is used by the United States Census Bureau to categorize data.²¹ The project area is encompassed by CT 9502.02 BG 4 (refer to **Figure 3-3**). **Table 3.3** provides select demographic and economic characteristics of this BG, as compared to both Jasper County and South Carolina.

Table 3.3 Select Demographic and Economic Characteristics						
AREA	CHARACTERISTIC					
	Total Population	Percent Minorities	Median Age	Average Household Size	Median Household Income (in 2011 dollars)	Percent Below Poverty Level
South Carolina	4,575,864	32.8	38	3	44,587	17.0
Jasper County	24,195	60.0	35	3	36,696	21.4
CT 9502.02 BG 4	1,392	28.4	40	2	42,449	19.5

SOURCE: U.S. Census Bureau, 2007-2011 American Community Survey 5-year Estimates.

As shown in **Table 3.3**, the minority population in the vicinity of the Airport comprises approximately 28.4 percent of the total population. In comparison to the 32.8 percent minority population of the state, the minority percentage for Jasper County is much higher at 60 percent. The minority population percentage in the immediate vicinity of the Airport (CT 9502.02 BG 4) is smaller than both the state and county minority populations.

The median age in the vicinity of the Airport is 40 years, which is older than that of both the state (38 years) and county (35 years). Average household sizes in the vicinity of the Airport, Jasper County, and South Carolina range between 2 and 3 persons.

The population surrounding the Airport has a median household income that exceeds that of Jasper County, but is just over \$2,000 less than that of the overall population of South Carolina. Based on the Census data, CT 9502.02 BG 4, has a percentage of the population living below the poverty level (19.5 percent) that is smaller than that of Jasper County (21.4 percent), but slightly larger than that of South Carolina (17.0 percent).

²¹ United States Census Bureau, “Glossary,” http://factfinder.census.gov/home/en/epss/glossary_a.html (August 30, 2012).

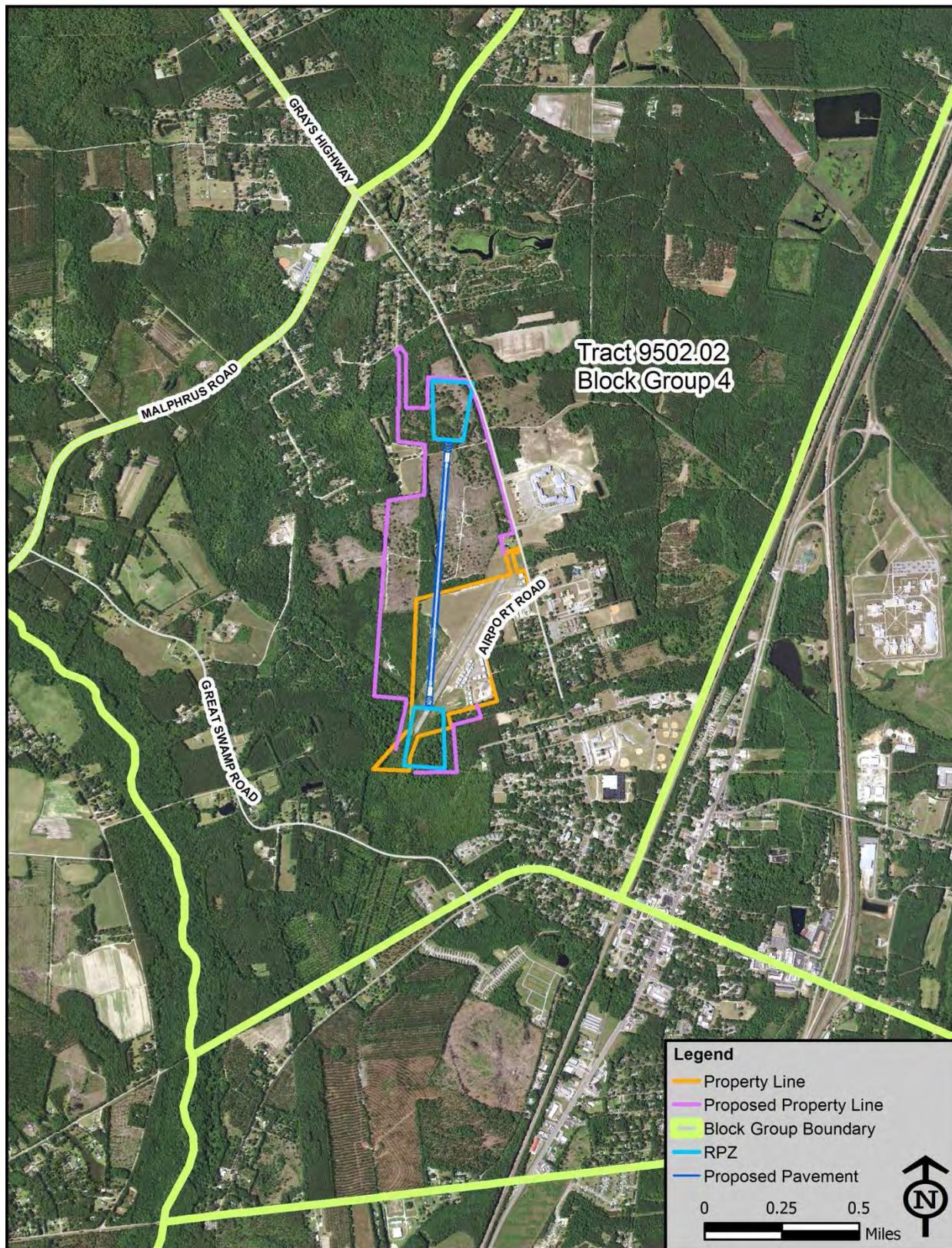


Figure 3-3: Census Blocks



Executive Order 12898: *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires federal agencies to identify community issues of concern during the NEPA planning process, particularly those issues relating to decisions that may have a disproportionate impact to low-income or minority populations. To determine if there were higher concentrations of environmental justice populations in the vicinity of the Airport, the block group data pertaining to percentage of low-income and minority populations were compared to that of Jasper County. Based on the Census data provided in **Table 3.3**, no potential environmental justice populations were identified in the project area.

3.4.2 Environmental Consequences

3.4.2.A Social Impacts

The following resource categories were used to determine the social impacts associated with the No-build Alternative and the Proposed Action:

- Health or safety risks to children;
- Residential and business relocations;
- Division or disruption of established communities;
- Alteration of transportation patterns;
- Disruption of planned development; and,
- Discernible changes to employment.

The No-build Alternative would not result in social impacts to the communities surrounding the Airport.

Per Executive Order 13045: *Protection of Children from Environmental Health Risks and Safety Risks*, federal projects should be evaluated to determine whether there would be impacts to the environmental health or safety of children. Specifically, projects must be evaluated to determine if there would be products or substances released into the environment as a result of construction of the proposed project that would be touched or ingested by children. Grading and other earthwork associated with the Proposed Action would be limited to existing Airport property and proposed property that is currently undeveloped and has been used for agriculture in the past. Equipment, materials stockpiles, and associated supplies needed for construction of the Proposed Action would be secured. The Proposed Action would not release any products or substances into the environment that would pose a significant risk to the health or safety of children; therefore, no further analysis is necessary.

No discernible changes to employment are anticipated. The Proposed Action would result in one residential relocation and no business relocations. The project would not divide established communities or disrupt planned development, nor would the Proposed Action result in relocations of community facilities, such as schools, churches, and/or



medical facilities. As discussed in Section 2.4.1, the Ridgeland Pre-Kindergarten-12 Schools North Campus is located within the northeastern RPZ of existing Runway 3-21. The runway alignment proposed under the Proposed Action would eliminate this incompatible land use.

Social impacts that would result from the Proposed Action include one residential relocation, approximately 179 acres of land acquisition, acquisition of aviation easements over several residential parcels as needed for removal of tree obstructions, and the relocation of an unpaved roadway (Wrong Road) located at the north end of the proposed runway. The residential relocation is needed in order for the proposed Airport access road to align with the existing entrance to the Ridgeland Pre-Kindergarten-12 Schools North Campus. Residential relocation and property acquisition would be completed in accordance with the *Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970*, as amended.

The proposed new runway alignment would extend across Wrong Road; therefore, a new road would be constructed to provide access to the three residences that currently access Grays Highway from Wrong Road. This road relocation would result in a change in traffic patterns for the occupants of three homes located on the western end of Wrong Road. The proposed new access is depicted on **Figure 2-3** (“Relocated Wrong Road”) and connects to Pine Forest Loop, which has a T-intersection with Grays Highway to the east.

The Proposed Action may increase the amount of surface traffic to and from the Airport in the short term during construction, and could increase surface traffic in the long term due to increased aircraft operations. The 2011 Average Annual Daily Traffic (AADT) recorded on Grays Highway in the vicinity of the Airport and the Ridgeland Pre-Kindergarten-12 Schools North Campus was 7,400 vehicles. The Proposed Action would not be anticipated to result in significant impacts to the AADT.

Overall, no significant social impacts would be anticipated to result from the construction of the Proposed Action.

3.4.2.B Direct, Indirect and Induced Socioeconomic Impacts

Socioeconomic impacts to communities are evaluated by determining if they would result in changes to business or economic activities, cause shifts in patterns of population movement and growth, or change demands for public services. The No-build Alternative and Proposed Action could have several economic impacts, which are categorized as the following:

- **Direct Impacts** – expenditures directly related to the construction and development as well as operation of facilities at the Airport;



- **Indirect Impacts** – expenditures or investments not directly tied to the Airport operations or development, but related to the Airport in part; and,
- **Induced Economic Impacts** – expenditures realized as a result of successive rounds of spending and re-spending of direct and indirect investments, commonly referred to as the multiplier or “ripple” effect of spending.

While the No-build Alternative would not have direct, indirect or induced economic impacts related to construction, it would have expenditures related to the existing operations at the Airport and as discussed previously, the inability to remove existing tree obstructions could result in additional runway shortening, which would result in negative economic impacts. As discussed in Section 2.2.1, the financial implications of ultimately needing to relocate or close 3J1 under the No-build Alternative would equate to a loss of airport land lease and fuel revenues and would create a financial hardship to existing aircraft owners. Based on these financial considerations, the No-build Alternative could result in negative socioeconomic impacts within Jasper County and the region.

There would be a minimal reduction in the property tax base, due to the additional 179 acres that would be acquired for construction of the Proposed Action. State and local tax revenues would increase due to construction at the Airport, given that a portion of the direct construction expenses for materials would be subject to state and local taxes. In addition, individual income taxes and indirect/induced spending of household income would provide additional tax revenues during construction, above and beyond the No-build Alternative.

The Proposed Action would produce direct short-term construction jobs. In addition, purchases of materials for the construction of the Proposed Action would be a direct impact to the economy in the area. Indirect impacts would result in the re-spending of wages earned by construction workers working on the Proposed Action as well as those workers who are at companies where materials are purchased for the Proposed Action. Ripple effects would occur when this money is then re-spent on other goods and services within the local economy. While it cannot be quantitatively estimated at this time how much the Proposed Action would impact the local economy, it is anticipated that it would qualitatively have a positive effect above and beyond the No-build Alternative.

Although the Proposed Action would require property acquisition and one residential relocation, construction of the new runway would not be likely to cause shifts in patterns of population movement and growth. Due to the short-term nature of construction, it is not likely to foster any sustainable population growth in Jasper County and increased demand in new areas for public services such as new infrastructure, water/sewer, safety services, or government services, is not likely.

Overall, the economic benefits would be positive on a local and regional scale from the Proposed Action, above and beyond what is anticipated with the No-build Alternative.



3.4.2.C Environmental Justice

The USEPA provided scoping comments in accordance with Section 102(2)(c) of the National Environmental Policy Act (refer to **Appendix D**). Among the initial concerns cited by the USEPA included the evaluation of potential socioeconomic and health related impacts to environmental justice populations.

The No-build Alternative would not impact environmental justice populations.

Potential environmental justice impacts that may result from the Proposed Action were reviewed, as required by Executive Order 12898, including impacts from property acquisition. Based on the 2010 Census data, no potential environmental justice populations were identified in the project area (refer to Section 3.4.1). The Proposed Action would not result in significant impacts to human health, historic or cultural resources, or communities. Therefore, the Proposed Action would be in compliance with Executive Order 12898.

3.5 HAZARDOUS MATERIAL AND WASTE SITES

Hazardous materials are those substances defined by the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), as amended by the *Superfund Amendments and Reauthorization Act* (SARA), and the *Toxic Substances Control Act*. In general, hazardous materials include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health or welfare, or to the environment, when released or otherwise improperly managed.²²

3.5.1 Existing Conditions

Environmental databases containing information about hazardous sites from multiple regulating state and federal agencies, including the USEPA and South Carolina Department of Health and Environmental Control (SCDHEC), were used to identify potentially hazardous materials and waste sites in the project area.²³ The database search report (refer to **Appendix F**) includes hazardous sites identified within a 1.0-mile radius of the Proposed Action and all known hazardous material and waste sites within the same postal zip code. Two sites were identified within the 0.25-mile radius of the project area during the database search, including 3J1 and Jasper County Emergency Services. Both of these sites were identified on the Leaking Underground Storage Tank (LUST) database. One release was reported at 3J1 on April 16, 1999, and received a status of No Further Action (NFA) required on September 22, 2003. Two prior releases have been reported by Jasper County Emergency Services on April 22, 1999, and March 8, 2006. These releases received NFA status on June 1, 1999, and September 29, 2006, respectively. All five Underground Storage Tanks (USTs)

²² *Resource Conservation and Recovery Act* (RCRA), Subtitle C, 40 CFR, Part 251.

²³ EDR, Radius Map Report with GeoCheck, Ridgeland Airport, No. 3789009.1s, November 18, 2013.



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at 3J1 have been abandoned. At Jasper County Emergency Services, one UST has been abandoned and two 12,000-gallon USTs remain in use. Ridgeland Airport was identified on two additional databases, Groundwater Contamination Inventory (GWCI) and Registry of Conditional Remedy (RCR). Both of these listings appear related to the prior LUST release that received NFA status in 2003.

Three additional sites, the Ridgeland Town Dump, Quality Cleaners and Laundry, and a LUST site were identified at locations between 0.5 and 1.0-mile from the Proposed Action (refer to Overview Map, **Appendix F**). The database search report indicates that the direction of groundwater flow in the vicinity of the LUST site is to the northwest, away from the Proposed Action.

The FBO operates a fuel farm for Airport users that is located east of Runway 3-21 (refer to **Figure 1-2**). The fuel farm consists of one 12,000-gallon aboveground storage tank (AST) and associated pumps and hoses.



Existing 12,000-gallon AST at 3J1

Correspondence with the SCDHEC Bureau of Land and Waste identified the previously discussed UST at Ridgeland Airport as the only facility with potential hazardous materials or hazardous waste issues located in the project area.

3.5.2 Environmental Consequences

The No-build Alternative would not result in potential impacts to hazardous materials or waste sites.

In that each of the three previous releases identified on the LUST database in close proximity to the Proposed Action were issued NFA status, no impacts to hazardous materials or waste sites are anticipated from the proposed project.

It is possible that previously unknown hazardous materials or waste sites are located within the project area. If potentially hazardous substances are encountered during construction, contaminated soil or other hazardous materials would be tested and removed and/or treated in accordance with USEPA and SCDHEC requirements.

3.6 FARMLANDS

Congress recognized the importance of farmlands and passed the *Farmland Protection Policy Act* (FPPA) in 1981. The purpose of this statute is to prevent the conversion of farmlands to non-agricultural uses by minimizing the impacts that federal programs have on farmlands. Prior to the construction of airport development projects receiving federal funding or approval, an assessment must be completed to determine if prime, unique, or statewide or locally important farmlands would be converted to non-agricultural uses. If the assessment determines that such



farmland conversion would occur in excess of the parameters defined by the Natural Resources Conservation Service (NRCS), then the federal agency must take measures to minimize the impacts to these farmlands.

3.6.1 Existing Conditions

Within Jasper County, there are 9 soil types mapped as prime farmlands, 2 additional soil types mapped as prime farmland if drained, and 31 soil types mapped as farmland of statewide importance. As depicted in **Figure 3-4**, the majority of the property within the existing airport property boundary and the property to be acquired is mapped as farmland of statewide importance. Of the existing 71 acres of airport property, approximately 66 acres are mapped as farmland of statewide importance. Of the 179 acres of property to be acquired, approximately 127 acres are mapped as farmland of statewide importance. Statewide important farmland is land that has been designated of state importance for the production of food, feed, fiber, forage, or oil-seed crops, but is not of national significance (7 U.S.C. §4201(c)(1)(C)). Within the proposed property line, the soil types that are considered farmland of statewide importance include Blanton fine sand, Okeetee fine sandy loam, Paxville fine sandy loam, and Bonneau loamy sand.

Based on information from Airport personnel, the project area historically served as a dairy farm. Although timber harvesting has been recently completed to the north of the Airport, the adjacent parcels located within the proposed property line are not in active agricultural use.

3.6.2 Environmental Consequences

The No-build Alternative would have no effect on farming operations since existing conditions would remain unchanged.

Under the Proposed Action, approximately 127 acres of farmland of statewide importance would be acquired. The majority of this property is zoned as Rural Preservation District, which is intended to preserve and “protect from suburban encroachment rural areas and resources, particularly forest and agricultural.”²⁴ A Farmland Impact Conversion Evaluation was completed for the Proposed Action and is included in **Appendix G**. By totaling the relative value and the total site assessment value, it was determined that overall threshold of 160 points, set by NRCS, would not be exceeded by the Proposed Action. Therefore, no further consideration is warranted under the FPPA.

²⁴ Jasper County, Zoning District Regulations, Article 5, p. 5-2
<http://www.jaspercountysc.org/fileUploads/file/Zoning%20Ordinance/Article%205-%20Zoning%20District%20Regulations.pdf> (December 6, 2013).

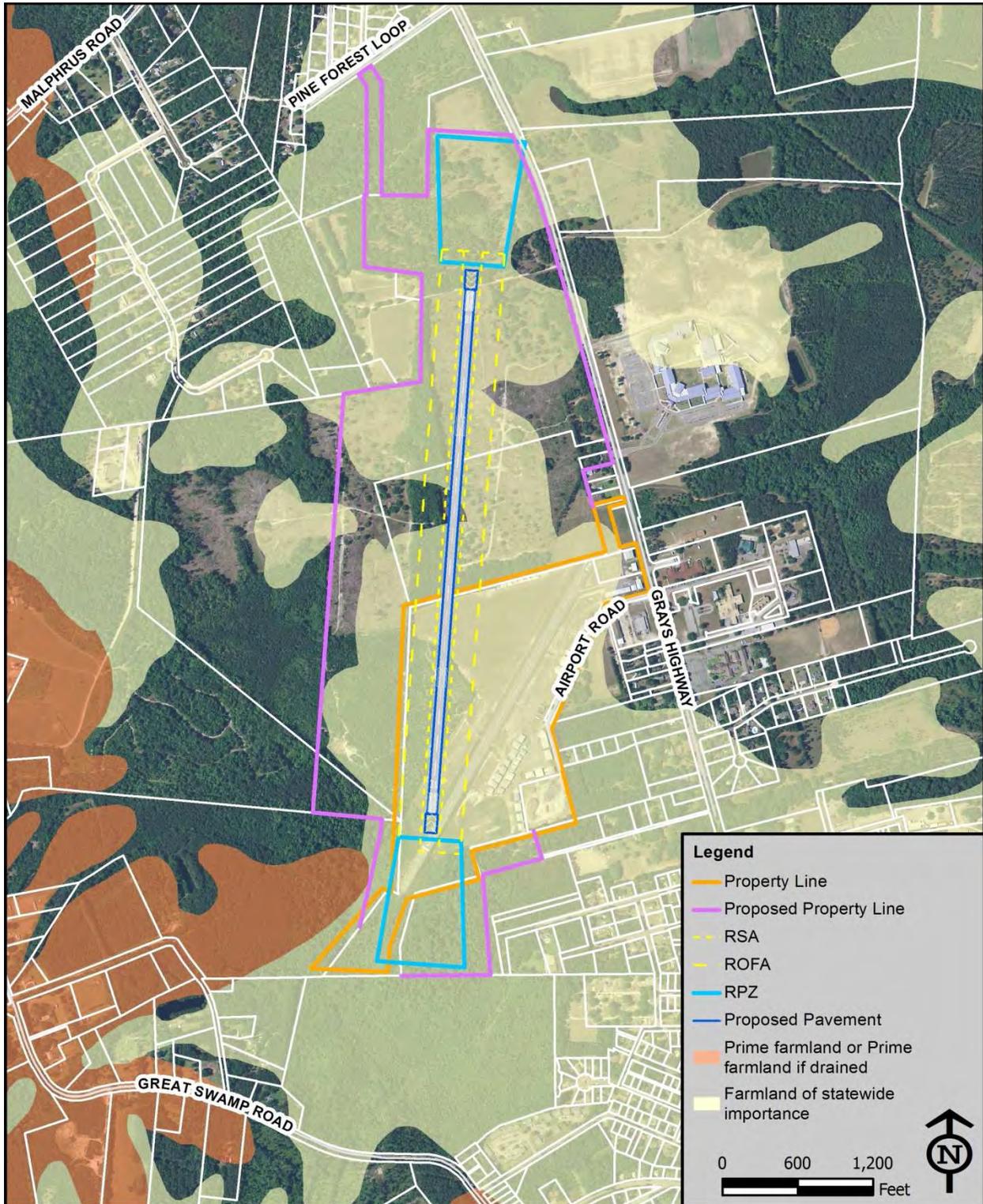


Figure 3-4: Farmland



3.7 COASTAL ZONE RESOURCES

The *Coastal Zone Management Act of 1972*, as amended, requires that projects within the coastal zone comply, to the maximum extent practicable, with approved state coastal management programs.²⁵ The *South Carolina Coastal Zone Management Act* gives the SCDHEC's Office of Ocean and Coastal Resource Management (OCRM) the authority to promote the economic and social welfare of the State's citizens, while protecting the sensitive and fragile areas of the coast. The SCDHEC-OCRM has the authority to review and certify all state/federal permit applications and activities, and issues state stormwater and sediment reduction permits within the coastal zone counties.²⁶ The SCDHEC-OCRM also has direct permitting authority over development in the critical areas of the coastal zone. The critical area of the coastal zone includes the coastal waters, tidelands, beaches, and primary ocean front sand dunes within the designated critical area, which usually begins at a designated upland area and extends three miles out into the ocean.

3.7.1 Existing Conditions

The project area is not located within the designated critical area. However, Jasper County is designated as one of eight coastal zone counties. Therefore, the Proposed Action would be subject to review by the SCDHEC-OCRM.

3.7.2 Environmental Consequences

The No-build Alternative would be consistent with the state coastal management policies.

The proposed project would be consistent with the state coastal management policies in that there is no feasible alternative that avoids wetland areas, and efforts have been and will continue to be made to avoid or minimize erosion or sedimentation problems. In addition, the proposed project would meet state and federal air quality and noise control guidelines, and no geographical areas of particular concern would be impacted. A Coastal Zone Management Consistency Determination would be included with the Section 401 Water Quality Certification application, and would be attained through coordination with the SCDHEC-OCRM.

3.8 CULTURAL RESOURCES

The *National Historic Preservation Act of 1966* requires federal agencies to review the effects of any proposed actions on historic properties. Historic resources are districts, buildings, sites, structures, or objects that are significant in American history, architecture, archaeology, engineering, and/or culture.²⁷ Prior to undertaking a project, a federal agency must determine if any resources exist in the project area through detailed literature searches and field surveys. If

²⁵ 16 U.S.C. §1456(c).

²⁶ SCDHEC, "Coastal Zone Enforcement," <http://www.scdhec.gov/environment/ocrm/enforcement.htm> (December 6, 2013).

²⁷ 16 U.S.C. §470(a)(1).



resources exist, then the federal agency will consult with the State Historic Preservation Office (SHPO) to determine whether the resource is eligible for listing on the National Register of Historic Places (NRHP) and how the proposed project would impact the resource.

3.8.1 Existing Conditions

Both archaeological and architectural resource surveys were completed for the Proposed Action, with background research and intensive field surveys being conducted. Background research included the examination of archival, documentary, and mapping resources at the South Carolina Department of Archives and History, and the South Caroliniana Library at the University of South Carolina. In addition to state site files and the listing of the NRHP, previous architectural research reports were also reviewed. This research included examination of an online Geographic Information Systems (GIS) database (ArchSite) and various historic maps for the presence of previous onsite structures. Based on this research, no past previously recorded archaeological sites or studies have been identified within the project area. Three previously recorded historic resources were identified within the project area.

The field investigations looked at two survey areas (refer to **Appendix H**, Figure 1). The archaeological survey area consists of approximately 133.5 acres that would be impacted by the Proposed Action. The historic resources survey area encompasses approximately 100.2 acres of property along Grays Highway, Wrong Road, and Pine Forest Loop that would be either directly impacted or within the viewshed of the Proposed Action. The archaeological field investigation methods consisted of a combination of pedestrian walkover, shovel testing, and surface examination of exposed areas by a four-person crew. Shovel tests were excavated at 30-meter intervals along transects spaced apart over the entire archaeological survey area. The archaeological portion of the cultural resources survey resulted in the identification of two archaeological sites and one isolated prehistoric artifact. One of the archaeological sites and the isolated artifact are not eligible for the NRHP; however, the eligibility of the third site, which is a prehistoric site dating to the Early Woodland period, is unknown.

The historic resources component of the survey revisited three previously recorded resources, identified one new individual resource, and a single historic district. None of the historic resources are recommended as eligible for inclusion in the NRHP.

3.8.2 Environmental Consequences

The No-build Alternative would not result in impacts to cultural resources.

Based on background research and field surveys, no historic or culturally significant architectural resources were identified in the project area. Although the eligibility of one site is unknown based on the initial survey, this site is located outside of the limits of airfield grading and would not be impacted by the Proposed Action. If, during future design phases, impacts to this site cannot be avoided, Phase II testing would be conducted to assess the



site's NRHP eligibility. The cultural resources report, which is included as **Appendix H**, has been submitted to the SHPO for review and coordination is ongoing. Based on the anticipated avoidance of this site, no impacts to historic or cultural resources are anticipated.

If unforeseen cultural resources are discovered during construction, work would cease in the immediate vicinity of the resource and federal regulations pertaining to emergency discover situations would be followed. The FAA Southern Region Airports Division and the SHPO would be notified, and a qualified professional would evaluate the situation. Work would continue in the project area where no cultural resources are present.

3.9 BIOTIC RESOURCES

3.9.1 Upland Communities

3.9.1.A Existing Conditions

Upland biotic communities were assessed in the project area based on published information and field surveys conducted during the site visit on May 9, 2013. The project area falls in the Carolina Flatwoods ecoregion. Carolina Flatwoods are characterized by level topography containing wide uplands and large areas of poorly drained soils.²⁸ Few natural upland communities remain in the vicinity of the Proposed Action due to the historic agricultural and silvicultural activities. The existing Airport property consists predominantly of previously disturbed areas, including grassy fields that are maintained by frequent mowing. Uplands within the property to be acquired consist largely of undeveloped parcels that have been previously disturbed by agriculture or timber production. Vegetative species noted in the fallow agricultural fields within the property to be acquired include: southern live oak (*Q.virginiana*), water oak (*Quercus nigra*), persimmon (*Diospyros* sp.), and loblolly pine (*Pinus taeda*) saplings. Herbaceous species include andropogon, prickly pear (*Opuntia turbinata*), *Cladaria* sp. and *Rumex* sp. The predominant natural upland habitat on the property to be acquired consists of oak-hickory forests, such as the area located just west and parallel to the proposed Runway 18-36 (refer to wooded area north of existing runway on **Figure 3-5**).

Oak-hickory forests

Oak-hickory forests are uplands occurring on slopes between rivers and tributaries, and dominated by a canopy of oaks, hickories, and a few other species of hardwoods in combination with pines. This is an abundant community type.²⁹ Within the project area, this habitat was dominated by several oaks: water oak, willow oak (*Q. phellos*), and southern live oak, as well as hickory (*Carya* sp.). Co-dominants were black gum (*Nyssa sylvatica*), sweetgum (*Liquidambar styraciflua*), Southern magnolia (*Magnolia*

²⁸ Glenn Griffith, et. al., *Ecoregions of South Carolina*, Regional Descriptions, July 31, 2002, ftp://ftp.epa.gov/wed/ecoregions/sc/sc_eco_pg.pdf (December 13, 2013).

²⁹ John B. Nelson, South Carolina Wildlife and Marine Resources Department, Division of Wildlife and Freshwater Fisheries, *The Natural Communities of South Carolina: Initial Classification and Description*, 1986, p. 26.



grandiflora), and red maple (*Acer rubrum*). The understory was comprised of sapling canopy species, plus American holly (*Ilex opaca*), dogwood (*Cornus florida*), and Wax myrtle (*Myrica cerifera*). Woody vines were included grape vine (*Vitis sp.*) and the herbaceous layer was sparse.

3.9.1.B Environmental Consequences

The No-build Alternative would not affect upland biotic communities.

The project area is comprised predominantly of lands that were previously disturbed for construction of the Airport or previously impacted by timbering or farming activities. Based on field surveys and review of aerial photography, approximately 54.2 acres of clearing within upland areas would occur as a result of the Proposed Action (refer to **Figure 2-3**). The remainder of the uplands within the proposed construction footprint are primarily comprised of maintained airfield property. No rare natural biotic communities would be impacted by the Proposed Action.

3.9.2 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. Additionally, wetlands and waters of the United States are protected by the *Clean Water Act* (CWA). Wetlands as currently defined by the United States Army Corps of Engineers (USACE, 33 CFR §328.3[b]) and the 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.*³⁰

3.9.2.A Existing Conditions

A desktop delineation was completed for the project area using available resources including, but not limited to, USGS topographic quadrangle maps, National Wetland Inventory (NWI) maps, Jasper County soil survey maps, and false-color infra-red aerial photography. To comply with Executive Order 11990, as well as the *Clean Water Act*, wetlands within the proposed property line that were identified during the desktop delineation were ground-truthed during a cursory site walkover on May 9, 2013. The location and approximate extent of preliminary wetlands were confirmed on the basis of soils, hydrology, and vegetation as set forth by the *1987 Corps of Engineers Wetlands Delineation Manual*³¹ and the *Interim Regional Supplement of the Corps of Engineers*

³⁰ USACE, *1987 Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1, 1987, p. 169.

³¹ *Ibid.*, p.14.



*Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region.*³² A jurisdictional wetland delineation would be completed during future design phases.

Wetlands and other waters of the United States that were identified in the field were classified based on a modified Cowardin system. The Cowardin system, derived from *Classification of Wetlands and Deepwater Habitats of the United States* by Lewis M. Cowardin,³³ categorizes wetlands using hydrologic, geomorphologic, chemical, and biological factors. This system was modified by the United States Fish and Wildlife Service (USFWS), and classifies the 275 Cowardin wetland types into eighteen general categories based on vegetative composition. This modification was used to classify the wetland types within the project area, then further refined with detailed descriptions of specific wetland types of South Carolina found in *The Natural Communities of South Carolina* by John B. Nelson.³⁴ Using this classification process, the preliminary wetlands that were identified during the site visit and depicted on **Figure 3-5** include: two swamp tupelo ponds, located immediately north of the proposed Runway 18-36 and another to the northwest; two wet pine flatwoods within the wooded area to the southwest; and bottomland hardwoods associated with the Great Swamp to the south.

Swamp tupelo ponds

Swamp tupelo ponds are palustrine (freshwater) wetlands consisting of rounded or irregularly shaped depressions on poorly draining lowlands.³⁵ Those identified within the project area during the site visit were dominated by red bay (*Persea borbonia*), red maple, sweet gum, and laurel oak (*Quercus laurifolia*). Water oak, swamp tupelo (*Nyssa biflora*), and loblolly pine were also noted. Herbaceous species included Virginia chain fern (*Woodwardia virginica*), muscadine grape (*Vitis rotundifolia*), *Rhexia* sp., and *Hypericum* sp.

As depicted on **Figure 3-5**, two swamp tupelo ponds were identified within the proposed property line and mapped in the field using a hand-held GPS unit (non-survey grade and non-submeter accuracy, for location purposes only). These two wetland areas totaled 8.7 acres in size (8.2-acre area to the north and 0.5-acre area to the northwest) are present in the project area.

³² USACE, *Interim Regional Supplement of the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*, ERDC/EL TR-08-03, 2008.

³³ Lewis M. Cowardin, *Classification of Wetlands and Deepwater Habitats of the United States*, FWS/OBS – 79/31, 1979.

³⁴ John B. Nelson, South Carolina Wildlife and Marine Resources Department, Division of Wildlife and Freshwater Fisheries, *The Natural Communities of South Carolina: Initial Classification and Description*, 1986.

³⁵ John B. Nelson, South Carolina Wildlife and Marine Resources Department, Division of Wildlife and Freshwater Fisheries, *The Natural Communities of South Carolina: Initial Classification and Description*, 1986, p. 43.

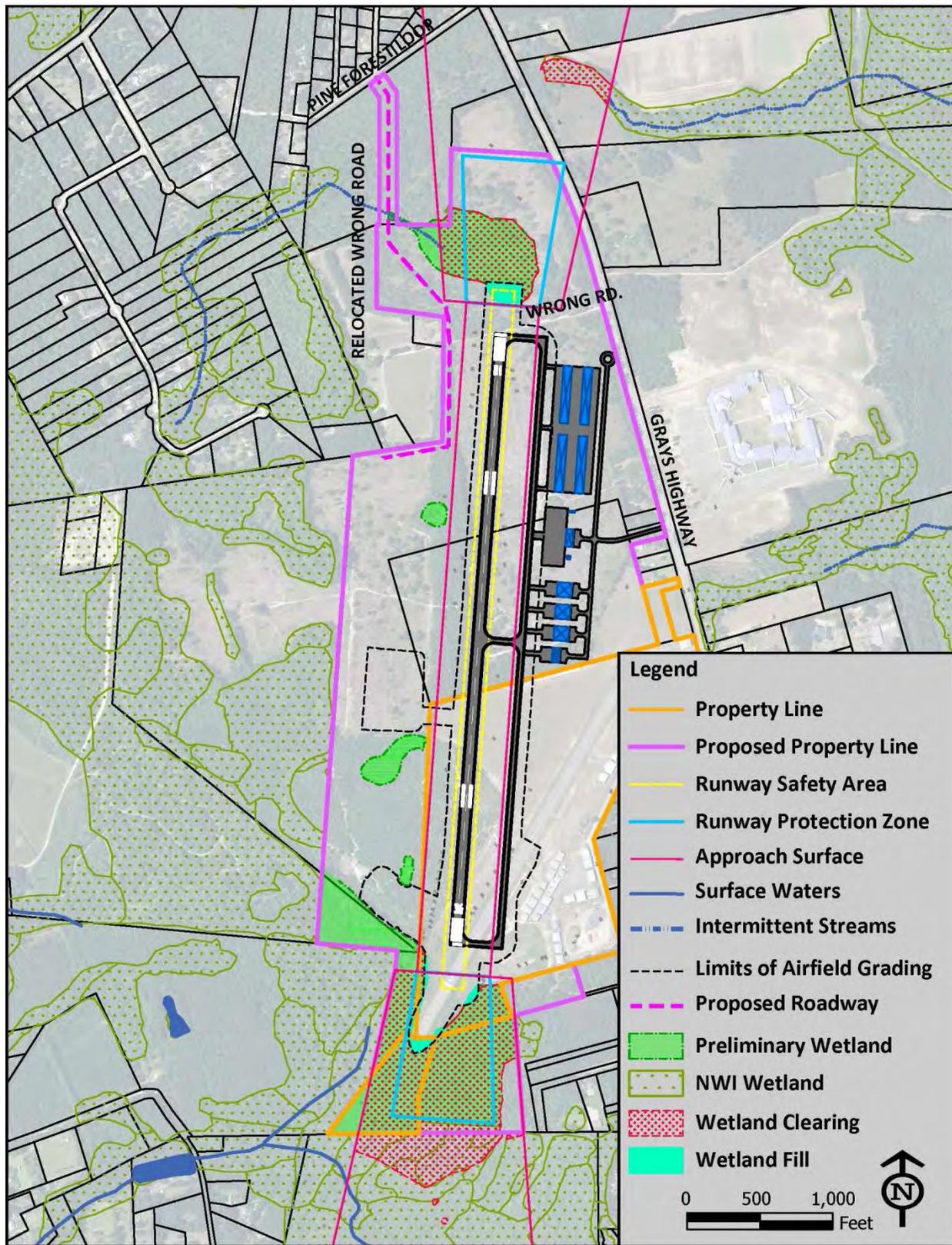


Figure 3-5: Wetlands and Streams



Pine savannahs and wet flatwoods

Pine savannahs and wet flatwoods are palustrine (freshwater) wetlands with soils saturated for most of the year, a canopy of widely scattered pines, very little or no understory, and a highly-varied herbaceous layer. The pines are usually longleaf (*Pinus palustris*) or pond (*P. serotina*), with loblolly (*P. taeda*) occasionally occurring. Without fire, pine wet flatwoods and savannahs succeed to closed-canopy upland systems, starting with pine flatwoods.³⁶ Vegetation within the wet flatwoods that were identified within the project area include: water oak, loblolly pine, sweet gum, sweet bay (*Magnolia virginiana*), willow oak, and red bay. Virginia chain fern and cinnamon fern (*Osmunda cinnamomea*) were also noted in the herbaceous layer.

Two wetland areas (1.6 and 0.3 acres in size) located west of the proposed Runway 18-36 and outside of the limits of airfield grading were mapped during the site visit and are depicted on **Figure 3-5**.

Bottomland hardwoods

Bottomland hardwoods are freshwater wetlands typically associated with rivers, streams, or other drainage systems.³⁷ These low-lying bottomlands frequently serve as holding areas for waters from the main channel of a river or creek, especially after a heavy rain upstream. They may also occur in low areas and along small surface drainages that are temporarily flooded or saturated during the growing season. Bottomland hardwood communities identified within the project area are dominated by red maple, red bay, pond pine (*Pinus serotina*), swamp tupelo, sweet pepperbush (*Clethra alnifolia*), highbush blueberry (*Vaccinium corymbosum*), and loblolly bay (*Gordonia lasianthus*). Vines include laurel greenbrier (*Smilax laurifolia*).

The bottomland hardwoods within the proposed property line are associated with an unnamed tributary to Great Swamp, located southwest of the Airport. The jurisdictional limits of the bottomland hardwood wetland located to the south of Runway 3-21 was approved by the USACE in associated with the 2008 Draft EA for Proposed Airport Improvements.³⁸ The bottomland hardwoods within the project area are the upper reaches of the floodplain. Based on review of true color and infra-red aerial photography, some of the bottomland hardwood wetland areas appear to have been previously impacted by clearing. Based on the limits of the previous delineation, a total of 18.4 acres of bottomland hardwoods are present on the existing Airport property or the additional property to be acquired for the Proposed Action (refer to **Figure 3-5**).

³⁶ Nelson, John B. 1986. *The Natural Communities of South Carolina: Initial Classification and Description*. Columbia, SC: South Carolina Wildlife and Marine Resources Department Division of Wildlife and Freshwater Fisheries.

³⁷ *Ibid*, p. 6.

³⁸ Wilbur Smith Associates, Draft Environmental Assessment for Proposed Airport Improvements, Ridgeland Airport, Jasper County, May 2008, Figure 3.3, p. 3.9.



3.9.2.B Environmental Consequences

The No-build Alternative would not result in impacts to jurisdictional waters of the United States since existing conditions would remain unchanged; however, it would fail to meet the project’s Purpose and Need (refer to Chapter 1, Section 1.4).

In accordance with the CWA and Executive Order 11990: *Protection of Wetlands*, potential impacts to wetlands and other jurisdictional waters of the United States were evaluated for the Proposed Action, as well as the amount of mitigation potentially needed to offset unavoidable impacts. The potential impact areas were calculated based on the estimated construction footprint (“limits of airfield grading”) for the Proposed Action, as depicted on **Figure 3-5** and listed in **Table 3.4**. As noted in **Table 3.4**, the anticipated clearing impacts were identified for the proposed new runway alignment based on 2006 LiDAR data (refer to Section 3.2.2), which provides estimated tree heights, as compared to the 34:1 approach surface, as defined by the “Airport Height and Land Use Protection Special Purpose District” for Ridgeland Airport. These provisions, together with state/federal grant obligations, require that Jasper County remove airspace penetrations in order to maintain the necessary runway approach standards and runway thresholds.

It is important to note that no grubbing or disturbance of the soil would occur within the wetlands to be cleared that are located outside of the limits of airfield grading. The proposed mechanized tree clearing would occur within upland areas, as depicted on **Figure 2-3**; however, in jurisdictional wetland areas, clearing would be completed utilizing low tire pressure equipment to avoid disturbance of the soils and root-mat.

Table 3.4 Potential Wetland Impacts		
WETLAND TYPE	IMPACT	
	Fill (acres)	Clearing (acres)
Swamp Tupelo Pond	0.8	7.8
Bottomland Hardwood	0.9	30.9
TOTAL	1.7	38.7

SOURCE: Michael Baker Jr., Inc.
NOTE: Clearing is based on 2006 LiDAR data for tree heights, as compared to the 34:1 approach surface, as defined by the “Airport Height and Land Use Protection Special Purpose District” for Ridgeland Airport.

Because the Proposed Action would impact greater than one-half acre of jurisdictional wetlands, the proposed project would require an Individual Section 404 Permit under the CWA.



Avoidance and Minimization

When there is a proposed discharge of fill material, all appropriate and practicable steps must first be taken to avoid and minimize impacts to aquatic resources. The USACE and USEPA require a project to adhere to the “mitigation sequence” of avoid, minimize, and compensate where impacts must first be avoided and minimized, and then for unavoidable impacts, compensation is required. For unavoidable impacts, compensatory mitigation is required to replace the loss of wetland, stream, and/or other aquatic resource functions. The USACE and/or approved state authority is responsible for determining the appropriate form and amount of compensatory mitigation required.³⁹

Due to the locations of mapped wetlands and other jurisdictional waters of the United States within the project area, complete avoidance of impacts was not possible. Practicable measures were implemented during planning and preliminary design of the Preferred Alternative to avoid wetlands to the extent practicable. Additionally, construction activities would be confined to the permitted construction limits. During construction, potential impacts to adjacent jurisdictional areas would be minimized by implementing sediment and erosion control measures. Other BMPs would be required of the contractor to ensure compliance with the policies of 23 CFR §650B.

Compensatory Mitigation

Compensatory mitigation is required for a project that impacts more than 0.10 acre of wetlands. The USACE and USEPA issued a rule⁴⁰ on April 10, 2008, that requires the use of established wetland and stream mitigation banks and discourages onsite mitigation to meet mitigation obligations, unless there are no established banks that service the project study area. Therefore, the wetland mitigation credits required under the Proposed Action would be obtained from a USACE-approved commercial mitigation bank.

Review of the USACE Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS) indicates that Ridgeland Airport is located within the primary service area of Swallow Savannah mitigation bank and the secondary service area of Sweetleaf Swamp mitigation bank.⁴¹ Based on the USACE mitigation credit worksheet, it is anticipated that approximately 20.4 credits (11.5 to 12 credits per acre of impact) would be required as compensatory mitigation for the 1.7 acre of wetland

³⁹ USEPA, *Compensatory Mitigation Rule: Improving, Restoring, and Protecting the Nation’s Wetlands and Streams Questions and Answers*, http://www.epa.gov/owow/wetlands/pdf/Mit_rule_QA.pdf (May 15, 2009).

⁴⁰ USACE and USEPA, *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*, April 10, 2008.

⁴¹ USACE, RIBITS, “Banks and ILF Sites”, https://rsgisias.crrel.usace.army.mil/ribits/f?p=107:158:5153523610205::NO:RP:P27_BUTTON_KEY:1 (December 13, 2013).



fill impacts associated with the Proposed Action (refer to **Table 3.4**).⁴² Additional wetland clearing impacts would also need to be coordinated with the resource agencies and could require compensatory mitigation (approximately 425.7 credits based on 11 credits per acre). No grubbing or disturbance of the soil would occur within the wetlands to be cleared that are located outside of the limits of airfield grading. In these jurisdictional wetland areas, clearing would be completed utilizing low tire pressure equipment to avoid disturbance of the soils and root-mat.

Coordination with the USACE regarding the proposed new runway at Ridgeland Airport is ongoing and they have been made aware of the Proposed Action via the early scoping letter and additional conversations with USACE personnel. However, submittal of the request for a wetland jurisdictional determination during future project phases will represent the USACE's first opportunity to provide formal comments on the project.

3.9.3 Wildlife

3.9.3.A Existing Conditions

The majority of the Airport property is comprised of actively managed herbaceous cover. Large tracts of undeveloped property are located adjacent to the Airport and are within the limits of the property to be acquired. As reported in previous environmental studies at the Airport, common wildlife species include: white-tailed deer (*Odscoileus virginianus*), raccoons (*Procyon lotor*), gray squirrels, opossum (*Didelphis virginiana*), red fox (*Vulpes vulpes*), and striped skunk (*Mephitis mephitis*).⁴³

3.9.3.B Environmental Consequences

Although the forested and maintained grass areas within the proposed construction footprint do provide habitat for some species, they would not be considered unique or significant in their contribution to wildlife habitat. In accordance with 14 CFR 139.337, *Wildlife Hazard Management*, wildlife are potential hazards to aviation and are managed on Airport property through regular maintenance, such as mowing and upkeep of perimeter fences, as well as specialized management actions for wildlife removal.⁴⁴ It is important to note relative to the alignment of the proposed runway, that the 8.2-acre swamp tupelo pond wetland is located within the northern RPZ and could attract ducks

⁴² The current estimated cost of wetland mitigation at the Swallow Savannah commercial wetland mitigation bank is \$5,000 to \$6,000 per credit and the purchase of approximately 20.4 credits would likely be needed for the wetland fill impacts associated with the Proposed Action. Additional credits (approximately 425.7 credits based on 11 credits per acre) could also be required to compensate for clearing in jurisdictional wetlands.

⁴³ Wilbur Smith Associates, Draft Environmental Assessment for Proposed Airport Improvements, Ridgeland Airport, Jasper County, May 2008, Figure 3.3, p. 3.5.

⁴⁴ U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services, *Wildlife Hazard Assessment for Asheville Regional Airport, January 2008 – January 2009*, March 2010.



and wading birds. Methods to minimize or eliminate potential wildlife hazards associated with this habitat should be evaluated during future design phases.

As discussed in Section 3.9.4, no designated critical habitat is found within the study area. Due to the areas within the proposed construction footprint providing relatively common habitat impacts would not be significant.

3.9.4 Federally Protected Species

3.9.4.A Existing Conditions

Pursuant to Section 7 of the *Endangered Species Act of 1973*, 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 area. **Table 3.5** lists federally protected species that are known to occur or possibly occur in Jasper County as of April 2013 by the United States Fish and Wildlife Service (USFWS). Since the project area is inland from the coast, the finback whale, green sea turtle, humpback whale, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, piping plover, red knot, right whale and West Indian manatee were excluded from further consideration of being in the project area since they require coastal dune and/or marine habitats.

A literature search was performed to obtain descriptions of the species listed in **Table 3.5** and their habitat requirements to facilitate identification of the species or suitable habitat during the field survey, which was conducted concurrent with the wetland delineation on May 9, 2013. Sources of information included USFWS Recovery Plans, data from the South Carolina Department of Natural Resources (SCDNR) and other published technical reports. In addition, aerial photography and soil survey mapping were reviewed to identify potential areas of suitable habitat for these species. As recommended by the USFWS in their response to the initial scoping letter for the proposed project, the Information, Planning, and Conservation System (IPAC) was reviewed regarding federally protected resources within the project area. No critical habitats, national wildlife refuges, or additional protected species were identified by IPAC.

The SCDNR Heritage Trust Program online database was used to obtain occurrence for the aforementioned federally protected species within the project area. Based on this database, which was last updated in January 2006, no known occurrences of federally protected species occur within or within a one mile radius of the project area. The species listed in **Table 3.5** with known occurrences in the vicinity of 3J1 (i.e. occurrences on USGS quadrangle maps: Calpen Bay, Coosawhatchie, Ridgeland, or Tillman) include American chaffseed, bald eagle, gopher tortoise, and red-cockaded woodpecker. In addition to these species, pondberry and wood stork were identified as possibly having suitable habitat within the project area and are therefore, discussed in greater detail below.



Table 3.5
Federally Protected Species Known to Occur or Possibly Occur
within Jasper County, South Carolina

Common Name	Scientific Name	Status ^a	Occurrence in County ^c
American chaffseed	<i>Schwalbea americana</i>	E	Known
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	E	Possible
Bald eagle	<i>Haliaeetus leucocephalus</i>	Protected ^b	Known
Canby's dropwort	<i>Oxypolis canbyi</i>	E	Possible
Finback whale*	<i>Balaenoptera physalus</i> *	E	Possible
Frosted flatwoods salamander	<i>Ambystoma cingulatum</i>	T	Known
Gopher tortoise	<i>Gopherus polyphemus</i>	C	Known
Green sea turtle**	<i>Chelonia mydas</i> **	T	Possible
Humpback whale*	<i>Megaptera novaengliae</i> *	E	Possible
Kemp's ridley sea turtle**	<i>Lepidochelys kempii</i> **	E	Possible
Leatherback sea turtle**	<i>Dermochelys coriacea</i> **	E	Possible
Loggerhead sea turtle**	<i>Caretta caretta</i> **	T	Possible
Piping plover**	<i>Charadrius melodu</i> **s	T, CH	Possible
Pondberry	<i>Lindera melissifolia</i>	E	Known
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	Known
Red knot**	<i>Calidris canutus rufa</i> **	C	Possible
Right whale*	<i>Balaena glacialis</i> *	E	Possible
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	Known
West Indian manatee*	<i>Trichechus manatus</i> *	E	Possible
Wood stork	<i>Mycteria americana</i>	E	Known

SOURCE: USFWS, April 2013.

*= requires marine habitat; **= requires coastal dune and/or marine habitat

^a T= Threatened, E = Endangered, C = Candidate

^b Protected under the Bald and Golden Eagle Protection Act.

^c Based on data from the South Carolina Department of Natural Resources, Heritage Trust Program.

American chaffseed

American chaffseed (*Schwalbea americana*) is a perennial herb currently found New Jersey, and in the coastal states of the southeast, from North Carolina south to Florida, and from Louisiana east to Georgia.⁴⁵ The stem of this upright, perennial

⁴⁵ USFWS, “Species Profile for American chaffseed (*Schwalbea americana*),” <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q2I4#status> (May 6, 2013).



herb is unbranched or only branches at its base.⁴⁶ American chaffseed grows to a height of one to two feet and flowering occurs May to June, with fruits maturing shortly afterward.⁴⁷

American chaffseed habitat includes savannahs, sandhill-pocosin ecotones, sandhill longleaf pine woodlands,⁴⁸ as well as “areas between peaty wetlands and xeric sandy soils, and other open, grass-sedge systems.”⁴⁹ Although naturally occurring fires historically maintained these open habitat types, now controlled burns, mowing, or fluctuating water tables more typically provide the open or partially open suitable habitat for American chaffseed.⁵⁰

Based on the SCDNR Heritage Trust Program online database, the closest known occurrence of chaffseed was identified in 1982 and is located approximately 3.6 miles northwest of the Airport. Suitable habitat was not present for the American chaffseed, and no species were observed during the field survey.

Bald eagle

The bald eagle (*Haliaeetus leucocephalus*) was formerly protected under the *Endangered Species Act* until August 2007, when the USFWS determined that populations of the species had recovered to the point in the country that the species could be removed from the federal threatened and endangered species list. Federal protection is still provided to the species by the *Bald and Golden Eagle Protection Act*, which prohibits any form of taking of both bald and golden eagles except as provided by a permit.⁵¹

Bald eagles normally forage in large bodies of water, such as coastal areas, bays, rivers, lakes and other waterbodies that have an abundant source of food.⁵² Nearby habitats are utilized for nesting and roosting. These birds construct nests that can last for many years in large trees with open limb structures in close proximity to open waters, so that they can have a line of sight to nearby foraging areas.⁵³

Based on the SCDNR Heritage Trust Program online database, the closest known eagle nest is located approximately 1.9 miles north of the existing runway; this nest

⁴⁶ USFWS, Southeast Region, *Endangered and Threatened Species of the Southeastern United States (The Red Book)*, “American Chaffseed,” January 1995.

⁴⁷ *Ibid.*

⁴⁸ Alan S. Weakly, *Flora of the Carolinas, Virginia, Georgia, and Surrounding Areas*, Working Draft, January 11, 2007, p. 532, http://www.herbarium.unc.edu/FloraArchives/WeakleyFlora_2007-Jan.pdf (May 6, 2013).

⁴⁹ Richard D. Porcher and Douglas A. Rayner, *A Guide to the Wildflowers of South Carolina*, 2001, p. 249.

⁵⁰ USFWS, Southeast Region, *Endangered and Threatened Species of the Southeastern United States (The Red Book)*, “American Chaffseed,” January 1995.

⁵¹ 16 U.S.C. §668(a).

⁵² Nature Serve Explorer, “Comprehensive Report Species – *Haliaeetus leucocephalus*,” July 2011, <http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Haliaeetus+leucocephalus> (December 13, 2013).

⁵³ *Ibid.*



was last observed in 2003. Suitable habitat for the bald eagle is not present within the project area, as no large bodies of water suitable for foraging are located within or near the project area. Transitional areas for nesting and roosting habitat were not found, and no eagles or nests were observed during field surveys.

Gopher tortoise

The gopher tortoise (*Gopherus polyphemus*) is the only native tortoise in our area. It has a dome-shaped, dark-brown carapace to 15 inches long. Completely terrestrial, the tortoise digs burrows and tunnels in sandy soils up to approximately 33 feet long, most of which is horizontal. Each individual tortoise maintains at least three such burrows, which are used for resting at night and during cold or extremely hot and dry periods.⁵⁴

Gopher tortoises occupy habitats with a well-drained sandy substrate, ample herbaceous vegetation for food, and sunlit areas for nesting. In South Carolina, sandhill communities characterized by wide patches of white sand and scattered clumps of wiregrass, turkey oak, and longleaf pine are utilized.⁵⁵ Open habitats that support a wide variety of herbaceous ground cover vegetation for forage are critical. They usually will abandon densely canopied areas for lack of forage, and because the shade hampers the tortoises from reaching minimum thermal requirements for normal daily activities.⁵⁶

Based on the SCDNR Heritage Trust Program online database, the closest known gopher tortoise occurrence was observed in 1980 and is located approximately 5.0 miles north of the existing runway. The fallow fields within the property to be acquired and the mowed/maintained areas on existing Airport property could provide suitable habitat for the gopher tortoise; however, the project area is not contiguous with large tracts of suitable habitat. No burrows were observed during the site visit.

Pondberry

Pondberry (*Lindera melissifolia* syn. *L. melissaefolium*) is listed as an endangered species by the USFWS, with populations of the species currently existing in North Carolina, South Carolina, Georgia, Alabama, Mississippi, Arkansas and Missouri.⁵⁷ The species is a deciduous shrub that can reach up to six feet in height, and has distinctive, drooping leaves⁵⁸ that are arranged in an alternate pattern.⁵⁹ The shrub is

⁵⁴ Walton Beacham, et al., editors, *Beacham's Guide to the Endangered Species of North America*.

⁵⁵ Bernard S. Martof, et al., *Amphibians and Reptiles of the Carolinas and Virginia*, 1980.

⁵⁶ NatureServe, "NatureServe Explorer" <http://www.natureserve.org/explorer/servlet/NatureServe>, (March 20, 2013).

⁵⁷ USFWS, "Species Profile: pondberry (*Lindera melissifolia*)," <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q2CO> (March 20, 2013).

⁵⁸ Linda Delay, Roslyn O'Conner, Joe Ryan, and Robert Currie, USFWS, *Recovery Plan for Pondberry (Lindera melissifolia)*, September 23, 1993, p. 1., http://ecos.fws.gov/docs/recovery_plan/930923a.pdf (May 6, 2013).

⁵⁹ Richard D. Porcher and Douglas A. Rayner, *A Guide to the Wildflowers of South Carolina*, 2001, p. 322.



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aromatic, with its leaves having a fragrance similar to sassafras when crushed.⁶⁰ The pondberry flowers in late February to mid-March before the leaves appear, producing small yellow flowers in clusters along the branches.⁶¹ The plant produces bright red fruits in the late summer to early fall.⁶²

In South Carolina, pondberry grows along the edges of sandy and lime sinks, ponds, swamp forests, open bogs, and in wet depressions in pine flatwoods.⁶³ While the pondberry is tolerant of shade, it grows faster in areas of partial or no shade if it is not competing with other species.⁶⁴

Suitable habitat for pondberry is present within the project area along the edge of the northernmost swamp tupelo pond wetland area. The entire edge of this area was investigated during the field survey conducted on May 9, 2013; however, no species were identified.

Red-cockaded woodpecker

The red-cockaded woodpecker (*Picoides borealis*) is listed as an endangered species by the USFWS.⁶⁵ Current populations are known to occur from Virginia south to Florida, and extending west through the southeastern states to Texas and Oklahoma.⁶⁶ The bird is a small woodpecker, approximately seven inches in length, with a wingspan up to 15 inches.⁶⁷ The bird has black and white horizontal stripes on its back, white cheeks and breast, black-streaked flanks, and a black cap and throat.⁶⁸ Adult males have small red spots or "cockades" on each side of the cap just behind the eye,⁶⁹ which are not easily discernible in the field.

Suitable habitat for the red-cockaded woodpecker includes old-growth open pine forests, with longleaf pines over eighty years old, or loblolly pines over seventy years of age.⁷⁰ The tree's age makes it prone to fungal heartwood disease that will soften

⁶⁰ Linda Delay, Rosyln O'Conner, Joe Ryan, and Robert Currie, USFWS, *Recovery Plan for Pondberry (Lindera melissifolia)*, September 23, 1993, p. 1., http://ecos.fws.gov/docs/recovery_plan/930923a.pdf (May 6, 2013)

⁶¹ *Ibid.*

⁶² *Ibid.*

⁶³ Richard D. Porcher and Douglas A. Rayner, *A Guide to the Wildflowers of South Carolina*, 2001, p. 322.

⁶⁴ Linda Delay, Rosyln O'Conner, Joe Ryan, and Robert Currie, USFWS, *Recovery Plan for Pondberry (Lindera melissifolia)*, September 23, 1993, p. 9., http://ecos.fws.gov/docs/recovery_plan/930923a.pdf (May 6, 2013)

⁶⁵ USFWS, "Red-cockaded Woodpecker Recovery," <http://www.fws.gov/rcwrecovery/rcw.html> (May 6, 2013).

⁶⁶ USFWS, "Species Profile: Red-cockaded woodpecker (*Picoides borealis*)," <http://www.fws.gov/ecos/ajax/speciesProfile/profile/speciesProfile.action?scode=B04F> (May 6, 2013).

⁶⁷ USFWS, "Red-cockaded Woodpecker Recovery," <http://www.fws.gov/rcwrecovery/rcw.html> (May 6, 2013).

⁶⁸ *Ibid.*

⁶⁹ Walton Beacham, et. al., *Beacham's Guide to the Endangered Species of North America*, Volume 1, 2001, p. 423.

⁷⁰ USFWS, *Red-cockaded Woodpecker: Picoides borealis*, <http://www.fws.gov/rcwrecovery/files/rcwoodpecker.pdf> (May 6, 2013).



the hardwood, allowing the woodpecker to excavate a cavity in a live pine tree.⁷¹ The red-cockaded woodpecker also uses this same mature pine habitat for foraging.⁷²

Based on the SCDNR Heritage Trust Program online database, the closest known red-cockaded woodpecker occurrence is approximately 2.8 miles to the east at Good Hope Plantation, where six active and one inactive cavity trees were noted in 1992. Suitable habitat for the red-cockaded woodpecker is not present within the project area, as the pine stands that are present are too young to be utilized as nesting or foraging habitat.

Wood stork

The wood stork (*Mycteria americana*) is a large wading bird that reaches four feet in height and has a wingspan of up to five feet. The wood stork's plumage is white except for the black feathers on its tail, primary feathers, and the trailing edge of its wings.⁷³ Its head and neck are featherless, and its long bill is normally black in color.⁷⁴ The wood stork is highly colonial, nesting in large rookeries and feeding in flocks.⁷⁵

Standing water is an essential component of nesting colonies, as it deters mammalian predators. Cypress or mangrove swamps are commonly used for nesting.⁷⁶ Although, forested riverine floodplain habitats are common feeding sites for the wood stork, ponds and ditches, as well as manmade wetlands that are not entirely rainfall dependent such as diked marsh habitats, are also utilized.⁷⁷

Suitable habitat for the wood stork is present within the project area, within the two swamp tupelo ponds that are located on the property to be acquired. The 0.5-acre area to the northwest could provide suitable nesting habitat and the 8.2-acre area to the north could provide suitable foraging habitat. No wood storks were observed during the site visit.

3.9.4.B Environmental Consequences

The No-build Alternative would not impact protected species.

⁷¹ *Ibid.*

⁷² USFWS, *Recovery Plan for the Red-cockaded Woodpecker (Picoides borealis)*, Second Revision, January 27, 2003, p. 45, <http://www.fws.gov/rcwrecovery/files/RecoveryPlan/finalrecoveryplan.pdf> (May 12, 2013).

⁷³ *Ibid.*

⁷⁴ *Ibid.*

⁷⁵ *Ibid.*

⁷⁶ *Ibid.*

⁷⁷ SCDNR, "Comprehensive Wildlife Conservation Strategy: Wood stork Description," <http://www.dnr.sc.gov/cwcs/pdf/woodstork.pdf> (March 13, 2013).



Potentially suitable habitat for gopher tortoise, pondberry, and wood stork was identified within the project area. No burrows were observed in the fallow fields within the project area or the mowed/maintained areas of existing Airport property that could provide suitable habitat for the gopher tortoise. Potentially suitable habitat for pondberry was identified along the edge of the swamp tupelo pond that is located just north of the proposed new runway. The entire edge of this area was investigated during the field survey conducted on May 9, 2013; however, no species were identified. Based on the results of the field survey, it is anticipated that there would be no effect to the gopher tortoise or pondberry as a result of the proposed project.

Potentially suitable habitat was also identified for the wood stork within the two swamp tupelo ponds that are located on the property to be acquired; however, no wood stork were identified during the field survey. It is anticipated that the Proposed Action may affect, but is not likely to adversely affect, the wood stork.

3.9.5 Essential Fish Habitat

3.9.5.A Existing Conditions

The *Magnuson-Stevens Fishery Conservation and Management Act of 1976*, as amended, establishes regional fishery management councils to work with National Oceanic Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries), to identify and protect Essential Fish Habitat (EFH) when developing regional fishery management plans.⁷⁸ NOAA Fisheries and these regional fishery management councils are required to “minimize, to the extent practicable, adverse effects to EFH caused by fishing activities.”⁷⁹ In addition, federal agencies are required to consult with NOAA Fisheries to determine if adverse effects would result to EFH from their projects.⁸⁰

EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.”⁸¹ Many species use marine, estuarine, and/or freshwater throughout their lives, 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.⁸² EFH also includes 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.⁸³

⁷⁸ NOAA Fisheries, Office of Habitat Conservation, Habitat Protection Division, “EFH Statute & Regulations,” http://www.nmfs.noaa.gov/habitat/habitatprotection/efh/stat_reg_index.htm (March 13, 2013).

⁷⁹ NOAA Fisheries, “Essential Fish Habitat Fact Sheet,” http://www.nmfs.noaa.gov/habitat/habitatprotection/pdf/efh/factsheets/EFH_factsheet.pdf (March 13, 2013).

⁸⁰ *Ibid.*

⁸¹ *Ibid.*

⁸² NOAA Fisheries, Office of Habitat Conservation, Habitat Protection Division, “What is essential fish habitat?” http://www.nmfs.noaa.gov/habitat/habitatprotection/efh/index_a.htm (March 14, 2013).

⁸³ *Ibid.*



Based on data from the NOAA Fisheries, no EFH exists within the project area, with the nearest being on the upper reaches of the New River, extending as far inland as a point just south of the intersection of South Okatie Highway (S-170) and Plantation Drive (S-46) near Pritchard, South Carolina, over 17 miles southeast of the project area.⁸⁴

3.9.5.B Environmental Consequences

The No-build Alternative would not impact EFH.

While no construction would occur in EFH, the Proposed Action would result in impacts to wetlands associated with an unnamed tributary to the Great Swamp (refer to Section 3.9.2), which eventually flows to the New River approximately 17 miles southeast of the project area. However, with Best Management Practices (BMPs) in place to prevent stormwater runoff at the Airport, no impacts are anticipated as a result of the Proposed Action.

3.10 WATER QUALITY

3.10.1 Existing Conditions

3.10.1.A Groundwater

The project area is situated above the Southeastern Coastal Plain Aquifer System, which is comprised of seven regional aquifers and four major confining layers.⁸⁵ An aquifer is an underground layer of porous rock or gravel that holds water. The regional aquifers in descending order are the Surficial Aquifer, the Tertiary Sand/Limestone Aquifer, the Black Mingo Aquifer, the Pee Dee Aquifer, the Black Creek Aquifer, the Middendorf Aquifer, and the Cape Fear Aquifer.

The SCDHEC has evaluated the relative vulnerability of the state's aquifers based on their geographic/physiographic location and divided South Carolina into three geographic areas. The coastal zone counties are located within Zone 3, where the aquifers are generally confined and considered the least vulnerable, relative to Areas 1 and 2.⁸⁶ In addition, the SCDHEC has established an ambient groundwater quality monitoring network to determine statewide and aquifer-specific baseline values for groundwater quality within each of the nine regional aquifers in South Carolina. As depicted on to **Figure 3-6**, no monitoring wells are located within the project area; however, monitoring well AMB-098 is located 1.4 miles east of the project area and monitors the Tertiary

⁸⁴ NOAA Fisheries, Office of Habitat Conservation, Habitat Protection Division, "EFH Mapper," <http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html>, (March 13, 2013).

⁸⁵ USGS, *Ground Water Atlas of the United States: Alabama, Florida, Georgia, South Carolina*, HA 730-G, 1990, http://pubs.usgs.gov/ha/ha730/ch_g/G-text7.html (December 6, 2013).

⁸⁶ SCDHEC, Bureau of Water, Source Water Assessment, Water System: Town of Ridgeland, Water Source: Groundwater, April 24, 2003, <http://www.scdhec.net/water>, (December 6, 2013).

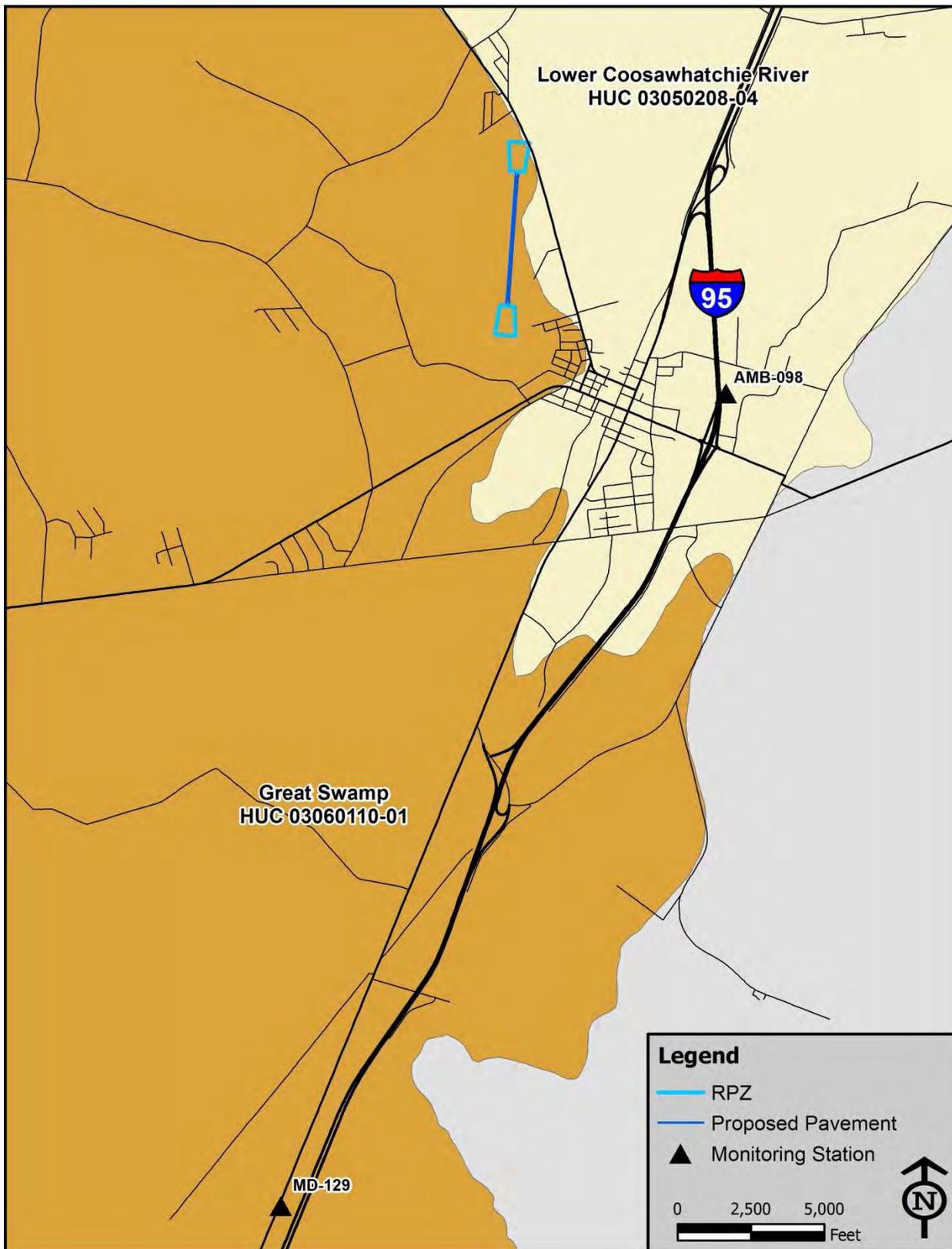


Figure 3-6: Watersheds



Limestone Aquifer.⁸⁷ Based on the most recent sampling data, water sampled from AMB-098 was within normal drinking water standards as classified by the SCDHEC.⁸⁸

3.10.1.B Surface Water

The Proposed Action is located within the Great Swamp watershed 03060110-01 and is just southwest of the Coosawhatchie River watershed 03050208-04 (refer to **Figure 3-6**). The Great Swamp watershed is comprised of 212.7 stream miles, 32.5 acres of lake waters and 6.7 acres of estuarine waters that are all classified as “SA,” which are tidal saltwaters suitable for primary (complete submergence) and secondary (activity occurring near water; e.g. fishing, boating) contact recreation. Surface waters in the project area include an unnamed tributary to Great Swamp that is located approximately 0.2 mile south of the proposed runway. This unnamed tributary flows approximately 0.9 mile and through one pond, to its confluence with Great Swamp, which eventually drains into the New River. North of the proposed new runway, a swamp tupelo pond wetland (refer to Section 3.9.2) drains toward the southwest via an intermittent stream (refer to **Figure 3-5**).

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 uses for categories such as drinking water supply, aquatic life uses, contact recreation, and fish consumption. The SCDHEC produces a Watershed Water Quality Assessment (WWQA) to meet the requirement under Section 305(b). The Section 303(d) documentation is a comprehensive list of impaired water bodies that do not support their designated use classifications. The SCDHEC develops this priority list of water bodies, which includes those 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 the SCDHEC can direct its attention when developing required controls such as Total Maximum Daily Loads (TMDLs).⁸⁹

The SCDHEC evaluates surface waters based upon a permanent monitoring network of water quality sampling stations located throughout each watershed. There are no water quality monitoring stations located within the project area; however, Station MD-129 is located approximately 7.7 river miles downstream of the project area, where U.S. Route 17 crosses the Great Swamp (refer to **Figure 3-6**). Recreational uses were not supported at this site due to fecal coliform excursions.⁹⁰ The 2012 303(d) List has a targeted TMDL for 2016 to address the fecal coliform levels in this watershed. According to the WWQA, aquatic life uses were previously not fully supported at the site due to occurrences of zinc

⁸⁷ SCDHEC, <http://www.scdhec.gov/environment/water/shed/docs/50208-04.pdf> (December 6, 2013).

⁸⁸ SCDHEC, Bureau of Water, R.61-68, *Water Classifications & Standards*, Effective June 22, 2012, p. 39, <http://www.scdhec.gov/environment/water/regs/R.61-68.pdf> (December 6, 2013)

⁸⁹ SCDHEC, *The State of South Carolina's 2012 Integrated Report, Part I: Listing of Impaired Waters*, http://www.scdhec.gov/environment/water/tmdl/docs/tmdl_12-303d.pdf (December 6, 2013).

⁹⁰ *Ibid.*, p. 40.



in excess of the aquatic life chronic criterion.⁹¹ However, the standards for zinc and ammonia have been attained and aquatic life uses are now fully supported, as of the 2010 303(d) list.⁹²

In 1975, the USEPA granted the SCDHEC the authority to administer the NPDES permit program as outlined in Section 402 of the CWA for all point source and non-point source discharges. Point source discharges are those from a discrete source such as the wastewater from a sanitary sewer treatment facility or an industrial plant. Non-point source discharges are those from diverse or unknown sources such as stormwater runoff. According to the SCDHEC, no point source NPDES-permitted facilities are found within the project area.⁹³ One active NPDES-permitted facilities are located within the Great Swamp watershed unit, and five are located in the Coosawhatchie River watershed.⁹⁴

3.10.1.C Stormwater

Stormwater occurs when excess water flows across land surfaces, most commonly during and immediately after rains. The presence of impervious surfaces such as roadways, runways, parking lots, buildings and other hard surfaces allows stormwater to flow more quickly unfiltered and pick up pollutants, which then can be deposited into natural waterways such as wetlands, streams, and lakes.

Stormwater is regulated under the NPDES established by the CWA as a non-point source discharge by the SCDHEC, in accordance with the *South Carolina Pollution Control Act*, the *South Carolina Stormwater Management and Sediment Reduction Act*, and SCDHEC regulations. The State of South Carolina has obtained NPDES General Permit # SCR100000 from the USEPA, which covers stormwater discharges from large construction activities such as the proposed project. An applicant must apply to the SCDHEC-OCRM for coverage under this general permit in Jasper County, since it is a coastal zone county (refer to Section 3.8).

Runoff from the existing runway is treated through grassed waterways adjacent to the runway and apron areas. The grassed waterways filter the runoff before it collects through various outfalls to the southwest to wetlands associated with an unnamed tributary to Great Swamp.

⁹¹ SCDHEC, *Watershed Water Quality Assessment: Savannah Basin*, <http://www.scdhec.gov/environment/water/shed/docs/savannah.pdf> (December 6, 2013).

⁹² SCDHEC, *The State of South Carolina's 2012 Integrated Report, Part I: Listing of Impaired Waters*, p. A-7, http://www.scdhec.gov/environment/water/tmdl/docs/tmdl_12-303d.pdf (December 6, 2013).

⁹³ *Watershed Water Quality Assessment: Savannah Basin*, <http://www.scdhec.gov/environment/water/shed/docs/savannah.pdf> (December 6, 2013).

⁹⁴ *Ibid.*



3.10.2 Environmental Consequences

The No-build Alternative would not impact water quality.

3.10.2.A Groundwater

Based on preliminary design, the Proposed Action would not require excavation greater than approximately 4 feet in depth for the two stormwater management ponds located west of the proposed runway. The hazardous materials database search report included in **Appendix F** indicates that the releases at the Airport have resulted in no drinking water well impact.⁹⁵ This report also indicates the depth to groundwater is 8 feet.⁹⁶ Based on the preliminary design of the Preferred Alternative and information provided in the hazardous materials report, the Proposed Action would not be anticipated to result in impacts to groundwater resources.

BMPs would be in place during construction of the Proposed Action, which would include a Spill, Prevention, Control, and Countermeasures (SPCC) Plan to manage spills and leaks of soluble materials if they were to occur during construction.

3.10.2.B Surface Water

Although no streams are located within the limits of airfield grading (refer to **Figure 2-3**), a portion of the 8.2-acre wetland area to the north of the proposed runway was comprised of open water at the time of the site visit and would be filled as part of the Proposed Action.

As previously mentioned, the Great Swamp at U.S. Route 17 (Station MD-129) is included on the 2012 303(d) list as impaired recreational uses due to high fecal coliform. The Proposed Action would not add to this impairment.

3.10.2.C Stormwater

Stormwater runoff occurs during and immediately after rain events, when excess water flows across land surfaces. Currently, runoff from the runway and taxiways is treated through grassed waterways adjacent to the runway and taxiways. The grassed waterways filter the runoff before it collects through various outfalls to the unnamed tributaries and drainageways within the project area. Under the Proposed Action, approximately 23.5 acres of additional impervious surfaces are anticipated at the Airport. These impervious surfaces would include the new runway and taxiway, as well as future apron, hangars, and terminal building, and vehicle parking areas in the proposed landside development area (refer to **Figure 2-3**). Grassed areas would continue filtering runoff prior to its entry

⁹⁵ EDR, Radius Map Report with GeoCheck, Ridgeland Airport, No. 3789009.1s, November 18, 2013, p. 7.

⁹⁶ *Ibid.*, p. 8.



into the unnamed tributary to the Great Swamp located to the south or the intermittent stream located to the northeast. In addition, two stormwater management ponds are included in the preliminary design of the Preferred Alternative (refer to **Figure 2-3**). These ponds would be permanent and both would be designed to be dry when not detaining storm runoff.

3.11 CLIMATE CHANGE

3.11.1 Existing Conditions

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),⁹⁷ methane (CH₄), nitrous oxide (N₂O), and ozone (O₃).⁹⁸

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 (NO_x), carbon monoxide (CO), oxides of sulfur (SO_x), 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.⁹⁹ In terms of the United States contribution, the United States General Accounting Office (GAO) reports that aviation accounts “for about 3 percent of total United States greenhouse gas emissions from human sources” compared with other industrial sources, including the remainder of the transportation sector (23 percent) and industry (41 percent).¹⁰⁰

The scientific community is developing areas of further study to enable them to more precisely estimate aviation's effects on the global atmosphere. The FAA is currently leading

⁹⁷ All greenhouse gas inventories measure carbon dioxide emissions, but beyond carbon dioxide different inventories include different greenhouse gases (GHGs).

⁹⁸ 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).

⁹⁹ IPCC Report as referenced in GAO *Environment: Aviation's Effects on the Global Atmosphere Are Potentially Significant and Expected to Grow*; GAO/RCED-00-57, February 2000, p. 4.

¹⁰⁰ *Ibid.*, p. 14; GAO cites available USEPA data from 1997.



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 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, 2009.¹⁰¹ While not policy, airports can use this as a resource to assist them in preparing airport greenhouse gas emission inventories, when applicable.

3.11.2 Environmental Consequences

Based on FAA data, operations activity at the Airport represents less than 0.015 percent of United States aviation activity.¹⁰² Therefore, assuming that greenhouse gases occur in proportion to the level of activity, greenhouse gas emissions associated with existing and future aviation activity at the Airport would be expected to represent less than 0.015 percent of United States-based greenhouse gases. Therefore, the emissions of greenhouse gases produced as the result of the proposed project would be minimal.

3.12 ENERGY SUPPLY AND NATURAL RESOURCES

3.12.1 Existing Conditions

Energy supply requirements for the proposed project fall into two categories: those relating to changing demand from stationary facilities that could exceed local supplies or capacities, and those that involve the increased movement of aircraft and ground vehicles to the extent that the demand exceeds available energy supplies.

3.12.2 Environmental Consequences

The No-build Alternative would not change the energy supply requirements at the Airport.

The Proposed Action would not change demand from stationary facilities. However, depending on the phasing/construction of new landside facilities, GA aircraft would have to

¹⁰¹ ACRP, *Report 11: Guidebook on Preparing Airport Greenhouse Gas Emission Inventories*, September 2009, http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_011.pdf (June 17, 2013).

¹⁰² FAA, *APO Terminal Area Forecast for 3J1*, January 2013, [https://aspm.faa.gov/wtaf/summary.asp?line=SELECT+*+FROM+WTAf+WHERE+SYSYEAR>^2012+AND+SYSYEAR<^2013+AND+\(LOC_ID^~3J1~\)](https://aspm.faa.gov/wtaf/summary.asp?line=SELECT+*+FROM+WTAf+WHERE+SYSYEAR>^2012+AND+SYSYEAR<^2013+AND+(LOC_ID^~3J1~)) (December 19, 2013).



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taxi farther to reach the new runway. This may slightly increase fuel consumption at the Airport, but not by a significant amount. This increase would not cause a shortage in fuel in the local or regional areas and would only be during construction.

In addition, consumable natural resources to be used for construction of the proposed project would not be considered scarce or unusual. Sources of construction materials needed for the proposed project are available locally and regionally, and would not cause an undue demand on supplies in the area.

3.13 LIGHT EMISSIONS/VISUAL EFFECTS

3.13.1 Existing Conditions

Light emissions from the Airport were evaluated to determine if they would create an annoyance/disturbance to nearby residences or businesses. The main lighting systems to be constructed in conjunction with the proposed new runway are the runway and taxiway edge lights. These lights are used to outline the edges of runways and taxiways during times of reduced visibility or darkness. These lights provide a clear marking of the pavement edge and type to a pilot, thereby increasing the overall safety at an airport. The runway edge lights are white, while the taxiway edge lights are blue. Runway and taxiway edge lights are located close to the pavement edges (usually within ten feet), and are placed approximately six to nine inches above the ground. There are also threshold lights at the end of each runway, which emit red light toward the runway to departing aircraft and emit green light away from the runway toward landing aircraft. Finally, runway end identifier lights (REILs) may be installed on Runway 18-36. REILs are directional flashing white, high-intensity lights, and two are located on each runway end.

3.13.2 Environmental Consequences

The No-build Alternative would not require the installation of additional runway or taxiway lighting systems and thus, would not result in additional light emissions or visual impacts.

The Proposed Action would require installation of additional runway and taxiway edge light systems, threshold lights, and possibly REILs. North of the proposed runway, the nearest homes are located over 1,500 feet north from the runway threshold; therefore, the installation of additional lighting systems should not create a disturbance to the residences located north of the Runway 36 end. To the south, the nearest home is located approximately 1,460 feet from the proposed Runway 18 threshold and a wooded buffer would remain and no lighting impact would be anticipated.

Based on the distance to the nearest homes, the installation of additional lighting systems at 3J1 would not be anticipated to create a disturbance. However, if necessary following construction, the REILs could be further shielded from nearby residences.



Under the Proposed Action, the visual layout of the Airport on the northern side would be altered with acquisition of approximately 179 acres of property and construction of a new runway. However, this is an existing airport site and no significant effects are anticipated to the visual landscape of residences located in the viewshed of the Airport beyond what is already present with the No-build Alternative.

3.14 SOLID WASTE

3.14.1 Existing Conditions

The proposed project was evaluated in terms of its impacts from increased solid waste generation. Three categories of solid waste generation were evaluated, as follows:

- 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.

The Jasper County Landfill is a Class I landfill located south of Ridgeland on Highway 29 that would be utilized for land clearing debris associated with the construction of the Proposed Action.

3.14.2 Environmental Consequences

Solid waste would be produced during the construction of the Proposed Action, such as limited pavement removal debris, tree clearing, or trash generated by construction workers. This could be disposed of at the Jasper County Landfill.¹⁰³ It is anticipated that there would be ample space available for disposal of land clearing debris and solid waste generated during construction of the proposed project.

In accordance with the new aviation activity forecasts provided in **Table 2.4**, moderate growth in aircraft operations at 3J1 is projected (i.e. an increase of 4,042 annual operations, from 15,250 operations in 2012 to 19,292 operations in 2032). Therefore, long-term generation of solid waste may also increase, but not to appreciable levels where collection or disposal methods would exceed available capacity.

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

¹⁰³ Jasper County, Jasper County Solid Waste, Recycling Centers and Litter Control, <http://www.jaspercountysc.org/secondary.aspx?pageID=76> (December 13, 2013).



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area to protect approach, departure, and circling airspace.¹⁰⁴ Based on information from Jasper County, no landfills are currently located within five statute miles to the Airport.¹⁰⁵ Therefore, the potential for attracting potential wildlife into or across approach or departure paths for aircraft would be minimal. In addition, the 2012 Solid Waste Management Plan for Jasper County does not project the need for any new facilities through 2031.¹⁰⁶

3.15 CONSTRUCTION IMPACTS

The No-build Alternative would not result in construction impacts.

Impacts may be caused by construction of the Proposed Action, which would be temporary in nature and their degree of impact would subside as construction concludes. As discussed below, potential temporary impacts can be successfully mitigated using BMPs and other procedures. Potential temporary construction impacts related to the proposed project were evaluated by their potential to result in adverse impacts to ambient noise levels, air quality, and water quality. Detailed engineering and construction plans would be developed for the proposed project and would specify procedures to mitigate potential impacts to any of the aforementioned categories. The following descriptions are based on impacts that can typically occur on similar size projects.

3.15.1 Noise Impacts from Construction

Noise impacts during construction are associated with an increase in ambient noise levels from the construction equipment. Typical noise levels generated by different types of construction equipment are presented in **Table 3.6**. Construction operations are typically broken down into several phases including clearing and grubbing, earthwork, paving and finishing. Although these phases can overlap, each has their own noise characteristics and objective.

Distance would rapidly attenuate noise, and it is not anticipated that construction would occur close enough to existing residential areas or sensitive receptors to cause disturbances. However, specific measures could be considered during construction to further reduce noise, including limiting the time of day heavy equipment can be operated, or ensuring that equipment is shut off when not in use.

¹⁰⁴ FAA Advisory Circular 150/5200-33B, August 28, 2008, p. 3.

¹⁰⁵ Mr. LeNolon Edge, Director, Planning and Building Services, email correspondence, February 6, 2013.

¹⁰⁶ *Ibid.*

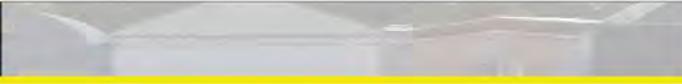


Table 3.6 Leq Noise Level (dBA) at 50 Feet for Construction Equipment	
EQUIPMENT	dBA Leq @ 50 feet
<u>Earth Moving:</u>	
Front Loader	79
Back Hoe	85
Dozer	80
Tractor	80
Scraper	88
Grader	85
Truck	91
Paver	89
<u>Materials Handling:</u>	
Concrete Mixer	85
Concrete Pump	82
Crane	83
Derrick	88
<u>Stationary:</u>	
Pump	76
Generator	78
Compressor	81
<u>Impact:</u>	
Pile Driver	100
Jackhammer	88
Rock Drill	98
<u>Other:</u>	
Saw	78
Vibrator	76
SOURCE: Grant, Charles A. and Reagan, Jerry, A., <i>Highway Construction Noise: Measurement, Prediction and Mitigation.</i>	

3.15.2 Air Quality Impacts from Construction

Potential air quality impacts would be temporary and would primarily be in the form of emissions from diesel-powered construction equipment and dust (airborne particles) from embankments, cleared areas prior to re-vegetation, and haul road areas. Air pollution associated with the creation of airborne particles would be controlled through the use of watering or the application of calcium chloride in accordance with BMPs established as part of the land disturbance permit requirements.

Operation of construction equipment is not expected to produce appreciable impacts with regard to air quality, since construction would be of short-term duration. Contractors would be required to maintain their equipment in satisfactory condition to minimize air pollution from exhaust emissions. State and local laws regarding open burning regulations and restrictions would be followed. Any merchantable trees, including pulpwood or saw timber,



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would be salvaged prior to the beginning of construction, and slash would be chipped/shredded and moved off-site rather than being burned on-site.

3.15.3 Water Quality Impacts from Construction

Water turbidity could temporarily increase in drainage ditches during construction and would likely occur when excavated areas are exposed prior to paving or re-vegetation. As part of receiving coverage under the SCDHEC NPDES general permit for stormwater, a SWPPP would have to be developed and implemented for the construction site. Sediment and erosion control measures and BMPs would be in place to minimize sediment transport, such as silt fencing and the use of check dams in ditches to catch sediment. In addition, efforts would be made to schedule construction operations to minimize the exposure of excavated areas and re-vegetate these areas as soon as possible after grading.

Potential water quality impacts resulting from erosion and sedimentation would be controlled in accordance with FAA criteria, through use of BMPs and through permit requirements. Construction activities would comply with FAA Advisory Circular 150/5370-10C entitled *Standards for Specifying Construction of Airports*, specifically Item P-156, *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*. Given the above procedures, no significant adverse impacts to water quality would be anticipated as a result of the construction phase of the project.

3.16 PERMITS AND CERTIFICATIONS

To construct the proposed project, the following environmental permits and/or certifications would be needed from local, state, and federal regulatory agencies.

3.16.1 Section 404 of the CWA

The USACE is authorized under Section 404 of the CWA to issue permits for the placement of dredged or fill material into jurisdictional wetlands or other waters of the United States. Potential wetlands within the limits of airfield grading for the Preferred Alternative have been identified; a wetland delineation and request for jurisdictional determination from the USACE would be completed during future project phases. Potential impacts to jurisdictional wetlands or other waters of the United States, as described in Section 3.9.2, would require Section 404 authorization by the USACE. The Preferred Alternative would require an Individual Section 404 Permit, since it would impact more than one-half acre of jurisdictional wetlands or other waters of the United States.

3.16.2 Section 402 of the CWA

Section 402 of the CWA authorizes the USEPA to regulate stormwater discharges. This regulatory authority in Jasper County was given to the SCDHEC-OCRM through the *Stormwater Management and Sediment Reduction Act of 1991*. Stormwater discharges are regulated through the issuance of NPDES permits. Section 402 compliance would be



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completed prior to construction of the proposed project. In addition to the Section 402 NPDES permit requirements, the Proposed Action would also be designed in accordance with the Jasper County Stormwater Management Design Manual.¹⁰⁷

3.16.3 Section 401 of the CWA

Projects requiring state or federal permits that would result in a discharge to wetlands or other waters of the United States must also obtain a Section 401 Water Quality Certification from SCDHEC-OCRM. Under Section 401 of the CWA, SCDHEC-OCRM must review the proposed project and analyze its potential impact to water quality, and ensure that any discharge into jurisdictional areas would be in accordance with state water quality standards.

3.16.4 Coastal Zone Management Act

As previously discussed in Section 3.7, a Coastal Zone Management Consistency Determination would be required from SCDHEC-OCRM for the proposed project and would be included as part of the Section 401 Water Quality Certification application to SCDHEC-OCRM.

3.16.5 Tree Protection

The Proposed Action would require approximately 93 acres of tree clearing. Article 13, Tree Protection, of the Jasper County Zoning Ordinance provides protection to tree species that are classified as Significant (various tree species that are typically 8 inches in diameter at breast height [DBH]) or Landmark (live oak, southern magnolia, bald cypress, American holly, hickory, or pecan tree species that are typically 25 inches DBH), as determined by completion of a tree survey.¹⁰⁸ Based on coordination with Jasper County and the Town of Ridgeland (refer to **Appendix D**), the Proposed Action would be exempt from these tree protection requirements in that the tree clearing would be completed in accordance with the “Airport Height and Land Use Protection Special Purpose District” at Ridgeland Airport in order to protect public safety.

3.17 INDIRECT AND CUMULATIVE IMPACTS

An analysis of the potential indirect and cumulative impacts from the proposed project was completed in accordance with 40 CFR §1508.25(c). The regulations state that indirect and cumulative effects of the proposed project should be examined along with the direct impacts. This evaluation considered to the extent reasonable and practical, the possible impacts of the

¹⁰⁷ Jasper County, Stormwater Management Design Manual, October 3, 2011, <http://www.jaspercountysc.org/fileUploads/File/Planning%20and%20Zoning-%20New/Stormwater%20Manual-%2010-3-11.pdf> (December 13, 2013).

¹⁰⁸ Jasper County, Zoning District Regulations, Article 13, p. 13-1 <http://www.jaspercountysc.org/fileUploads/file/Zoning%20Ordinance/Article%2013-%20Tree%20Protection.pdf> (December 6, 2013).



proposed action and other developments, both on and off the Airport, that are related in terms of time and proximity.

3.17.1 Indirect Impacts

Indirect effects, as defined by 40 CFR §1508.8(b), are caused by the Proposed 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, impacts could occur because of induced growth resulting from new or improved facilities.

Land use, water quality, and socioeconomics could be indirectly impacted by the proposed project. The proposed project could attract new aircraft to the Airport, thereby increasing the number of operations. If additional aircraft are based at 3J1, it may require the construction of additional facilities such as aprons, T-hangars, aircraft tie-down parking, or vehicle parking. This landside development could convert undeveloped areas of Airport property to impervious surfaces, which could increase the amount of runoff into nearby surface waters and wetlands. However, as previously mentioned in Section 3.15.3, new development would require review of the SWPPP, which would ensure that the proper stormwater controls would be in place during construction to minimize pollutant runoff into nearby surface waters and wetlands.

Construction of the Proposed Action would indirectly benefit the economy of the area through the short-term generation of jobs. If increased operations result in the need for additional Airport facilities, future employment opportunities could be created. The increase in operations and aircraft based at 3J1 would also result in additional revenue to Jasper County through aircraft parking rental fees/leases and fuel sales.

3.17.2 Cumulative Impacts

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.

The FAA’s *Environmental Desk Reference for Airport Actions* goes on to describe that the cumulative impact analysis under NEPA requires the 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.¹⁰⁹ Accordingly, the resources of concern relative to the Proposed Action include social, wetlands, and water quality.

With regards to the existing runway at 3J1, no recent improvements have been completed. The County is currently in negotiations with a property owner east of Runway 3-21 in an effort to acquire land or secure an avigation easement in order to remove trees that currently penetrate the existing 20:1 approach surface. However, other present and reasonably foreseeable projects at 3J1 would be related to the Proposed Action and the development of a new runway at 3J1. As indicated in **Table 3.7**, proposed construction projects between 2015 and 2019 include clearing, grading, and drainage for the proposed runway, runway/taxiway paving, road relocation, and construction of a new GA terminal, apron, and access road.

Past residential, commercial, and institutional development has occurred in the vicinity of the Airport, especially adjacent to Grays Highway and in the Town of Ridgeland. The most significant development project in the vicinity of 3J1 was the construction of the Ridgeland Pre-Kindergarten-12 Schools North Campus immediately east of the Airport on Grays Highway (refer to **Figure 3-1**).

Potential cumulative impacts to the various resources of concern that could occur as a result of past, present, and reasonably foreseeable future projects at 3J1 or in the vicinity are evaluated in the following sections.

Table 3.7 Proposed Capital Improvement Program Projects at Ridgeland Airport	
YEAR	PROJECT
2015	Runway Program: Clearing, Grading, and Drainage, Road Relocation (Construction) Runway Paving and Lighting (Design)
2016	Runway Program: Runway Paving and Lighting (Construction) Taxiway Paving and Lighting (Design)
2017	Runway Program: Taxiway Paving and Lighting (Construction) General Aviation Terminal: Apron and Access Road (Design)
2018	General Aviation Terminal: Apron and Access Road (Construction) Terminal (Design)
2019	General Aviation Terminal: Terminal (Construction) Bulk Hangar (Design)

SOURCE: HOLT Consulting Company, LLC, 2013.

3.17.2.A Social Impacts

Between 1990 and 2012, the population growth rate experienced by Jasper County was second only to that of Beaufort County, which was the fastest growing county in South

¹⁰⁹ FAA, *Environmental Desk Reference for Airport Actions*, October 2007, Chapter 23, pp. 2 and 3.



Carolina.¹¹⁰ Moderate growth is anticipated in the future. Based on the growing population, available property in the Cypress Ridge and North Ridgeland – Moultrie Tract Industrial Parks, large undeveloped tracts in the County, and convenient access to I-95, continued residential, commercial, industrial and transportation growth are anticipated. These future development impacts would be a boost to the economy of the region, and could provide many new jobs in the construction and manufacturing sectors.

3.17.2.B Wetlands

Executive Order 11990 and the 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 the USACE prior to construction of projects and a Section 401 Water Quality Certification by the SCDHEC-OCRM. Mitigation may be required for impacts, which would offset the wetland loss associated with future development projects. Therefore, with USACE and SCDHEC-OCRM oversight as well as mitigation requirements, the potential impacts to wetlands from projects occurring in the area would be minimized.

3.17.2.C Climate

Because aviation activity at the Ridgeland Airport represents such a small amount of United States and global greenhouse gas emissions (.015 percent), and the related uncertainties involving the assessment of such emissions regionally and globally, the cumulative contribution of the proposed project cannot be adequately assessed given the current state of the science and assessment methodology.¹¹¹

3.17.2.D Water Quality

The most significant development project in the vicinity of 3J1 was the construction of the Ridgeland Pre-Kindergarten-12 Schools North Campus immediately east of the Airport on Grays Highway (refer to **Figure 3-1**). This facility includes a significant amount of impervious surfaces, such as parking lots, access roads, and buildings. It is important to note however, that this facility is located in a different watershed than the Airport (refer to **Figure 3-6**) and would not be considered cumulatively relative to water quality impacts. The Proposed Action and other future improvements impacting greater 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

¹¹⁰ Jasper County, Draft Jasper County Comprehensive Plan Update 2013, p. 7, <http://www.jaspercountysc.org/fileUploads/File/Comprehensive%20Plan/Jasper%20County-%20Format%20and%20Population%202-3.pdf> (December 13, 2013).

¹¹¹ NEPA Regulations, Council on Environmental Quality, 40 CFR §1502.22, *Incomplete or unavailable information*.



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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.

Chapter 4 Agency Coordination and Public Involvement





Chapter 4: Agency Coordination and Public Involvement

4.1 AGENCY COORDINATION

Early and continued involvement with federal, state, and local agencies is an essential part of the project development process. A scoping letter regarding the proposed project was sent to the following agencies and organizations.

Federal

- NOAA Fisheries
- USACE, Regulatory Division – Charleston District
- U.S. Department of Agriculture, Natural Resource Conservation Service – South Carolina State Office
- USEPA, Region 4
- U.S. Housing and Urban Development
- USFWS

State

- S.C. Aeronautics Commission
- S.C. Department of Archives and History (SCDAH), SHPO
- S.C. Department of Commerce
- SCDHEC, Bureau of Land and Waste Management
- SCDHEC, Bureau of Water
- SCDHEC-OCRM
- SCDNR
- S.C. Department of Parks, Recreation, and Tourism
- S.C. Forestry Commission
- S.C. Human Affairs Commission
- S.C. Institute of Archaeology and Anthropology

Region

- Low Country Council of Governments (LCCOG)

The scoping letter provided information about the project and gave federal and state agencies, along with the LCCOG on a regional level, an opportunity to comment on the proposed project. Agency comment letters that were received in response to the scoping letter are summarized below and are addressed in this EA. Copies of the agency comment letters are located in **Appendix D**.



The USEPA provided scoping comments in accordance with Section 102(2)(c) of the *National Environmental Policy Act* and Section 309 of the *Clean Air Act* and requested a copy of the Draft EA when it becomes available for review. The initial concerns cited by the USEPA included potential wetland impacts and mitigation, as well as the evaluation of potential socioeconomic and health related impacts to environmental justice populations.

The USFWS provided the April 2013 list of endangered, threatened, and candidate species for Jasper County and recommended that the USFWS Information, Planning, and Consultation (IPAC) System website be consulted for a list of federally protected resources specific to the project area. The USFWS also indicated a concern for potential impacts to migratory bird species, wetlands, and water quality, the introduction of invasive species throughout construction of the proposed project, and the provision of adequate compensatory mitigation for unavoidable impacts.

The SCDHEC Bureau of Land and Waste Management indicated a presence of “non-vulnerable” sites within one-half mile of the project area and supplied a location map depicting these sites. With the exception of the abandoned UST at the Airport, no other sites were identified within the project area. One additional UST and three infectious waste generators were identified within one-half mile of the project area.

The SCDNR stated it was unable to provide specific comments on potential impacts to natural resources, due to the limited information provided about the proposed project. General comments regarding wetland identification and regulation were stated. SCDNR also reviewed the state’s database for known populations of federally protected species and other sensitive species in the vicinity of the project area. This database yielded no records of any federally protected species within the project area; however, SCDNR cautioned that this database was not assumed to be complete.

The SHPO provided several websites that should be consulted for information regarding historic properties and archaeological sites and also indicated that they would provide comments regarding historic and archaeological resources and effects once consultation has been initiated.

A copy of the Draft EA will be sent to the aforementioned agencies for review and comment.

4.2 PUBLIC INVOLVEMENT

For thirty days after it is approved by the FAA, the Draft EA will be available for review and comment by the public on the County’s website (www.jaspercountysc.org), at the Planning and Building Services Office in the Jasper County Government Building, at the Pratt Memorial Library in Ridgeland, South Carolina, and at the Hardeeville Community Library in Hardeeville, SC. Notice of the availability of the Draft EA and the date of the Public Hearing will be advertised in the local *Jasper County Sun*, *Hardeeville Today*, and *Island Packet* newspapers.

Chapter 5

List of Preparers





Chapter 5: LIST OF PREPARERS

5.1 FEDERAL AVIATION ADMINISTRATION

Parks Preston, Program Manager, provided input on the Proposed Action, including runway length and Preferred Alternative alignment.

Rusty Nealis, Program Manager, provided input on the Proposed Action and the concurrent ALP Update study.

Rob Rau, Airport Planner, provided input on the Proposed Action and the concurrent ALP Update study.

Lisa Favors, Environmental Program Specialist, responsible for review of the Environmental Assessment.

5.2 SOUTH CAROLINA AERONAUTICS COMMISSION

Paul Werts, Executive Director, provided input on the Proposed Action including the Preferred Alternative alignment.

Mihir Shah, P.E., AICP, Lead Aviation Planner, provided input throughout the project and responsible for review of the Environmental Assessment.

5.3 JASPER COUNTY

Andy Fulghum, ICMA-CM, County Administrator, provided input and Airport information throughout the project and responsible for review of the Environmental Assessment.

5.4 MICHAEL BAKER JR., INC.

Mike Reiter, P.E., Operations Manager, responsible for technical input and review of the Environmental Assessment.

Gordon Murphy, Director of Environmental Planning, responsible for the wetland mapping and natural resources field surveys, as well as review of the Biotic Communities section in Chapter 3 of the Environmental Assessment.

Laura Stevens, Environmental Planner II, participated in site visit and principal author of the Environmental Assessment.

Richard Osborne, Manager of Operations-Aviation Planning, responsible for concurrent ALP Update study, including runway length evaluation and development of alternatives. Responsible for review of Chapters 1 and 2 of the Environmental Assessment.



Renee Flinchum-Bowles, Environmental Scientist II, contributing author to the Biotic Communities section in Chapter 3 of Environmental Assessment.

Troy McNall, Senior Aviation Designer, responsible for report graphics and quantification of potential environmental impacts.

Jay Gable, Environmental Scientist II, responsible for review of Chapters 3 of the Environmental Assessment.

5.5 NEW SOUTH ASSOCIATES

Natalie Adams Pope, Principal Investigator, responsible for cultural resources survey.

Matthew Tankersley, Archaeologist and Co-Author, responsible for cultural resources survey.

Tracy Martin, Archaeologist and Co-Author, responsible for cultural resources survey.

Summer Ciomek, Historian and Co-Author, responsible for cultural resources survey.

Chapter 6

List of Acronyms





Chapter 6: LIST OF ACRONYMS

A

AADT	Average Annual Daily Traffic
AC	Advisory Circular
ACCRI	Aviation Climate Change Research Initiative
ACRP	Airport Cooperative Research Program
ALP	Airport Layout Plan
AMSL	Above Mean Sea Level
ARW	Beaufort County Airport
AST	Aboveground Storage Tank
ATCT	Airport Traffic Control Tower
AVGAS	Aviation Gasoline

B

BG	Block Group
BMPs	Best Management Practices

C

CBRA	Coastal Barrier Resources Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CT	Census Tract
CWA	Clean Water Act

D

DBH	Diameter Breast Height
DNL	Day-Night Average Sound Level

E

EA	Environmental Assessment
EFH	Essential Fish Habitat

F

FAA	Federal Aviation Administration
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FAR	Federal Aviation Regulation
FBO	Fixed Base Operator
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act

G

GA	General Aviation
GAO	General Accounting Office
GIS	Geographic Information Systems
GPS	Global Positioning System
GWCI	Ground Water Contamination Index

H

H ₂ O	water vapor
HXD	Hilton Head Airport

I

ICIS	Integrated Compliance Information System
IPAC	Information, Planning, and Conservation System
IPCC	Intergovernmental Panel on Climate Change

J

K

L

LCCOG	Low Country Council of Governments
LiDAR	Light Detection and Ranging
LUST	Leaking Underground Storage Tank

M

N

NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act of 1969
NFA	No Further Action
NM	Nautical Miles



NOAA	National Oceanic Atmospheric Administration
NO _x	Nitrogen Oxides
N ₂ O	Nitrous Oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
O	
OCRM	Office of Coastal Resource Management
O ₃	Ozone
P	
PARTNER	Partnership for AiR Transportation Noise and Emissions Reduction
Q	
R	
RCRA	Resource Conservation and Recovery Act
RDC	Runway Design Criteria
REILs	Runway End Identifier Lights
RIBITS	Regulatory In-lieu Fee and Bank Information Tracking System
RSA	Runway Safety Area
S	
SARA	Superfund Amendments and Reauthorization Act
SAV	Savannah/Hilton Head International Airport
SCAC	South Carolina Aeronautics Commission
SCASP	South Carolina Aviation System Plan
SCDAH	South Carolina Department of Archives and History
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SHPO	State Historic Preservation Officer
SO _x	Oxides of Sulfur
SPCC	Spill Prevention, Control, and Countermeasures
SWPPP	Stormwater Pollution Prevention Plan



T

- TERPS Terminal Instrument Procedure
- TMDL Total Maximum Daily Load
- TRB Transportation Research Board

U

- USACE United States Army Corps of Engineers
- USDA United States Department of Agriculture
- USEPA United States Environmental Protection Agency
- USFWS United States Fish and Wildlife Service
- UST Underground Storage Tank

V

- VOCs Volatile Organic Compounds

W

- WWQA Watershed Water Quality Assessment

X

Y

Z

Other

- 3J1 Ridgeland Airport